



QUONOCHONTAUG CENTRAL BEACH FIRE DISTRICT
February 5, 2020

Dear QCBFD,

I have very little to update regarding the Boil Water Advisory which remains in place. Most recent well sampling revealed NO bacteria i.e. tc-/ec- in both Well #2 and the distribution line. Well #1 continues to return tc+/ec-(total coliform +/ e coli-). We have yet to receive a formal declaration from RIDOH regarding mandatory 4-log disinfection.

I appreciate that there may be frustration, confusion, and misunderstanding as to where QCBFD stands regarding the present water situation. I have prepared the following FAQ type response based upon several comments forwarded on to me by community members. I believe it is a good synopsis of where we stand.

1). "Are we waiting to fix a water system that is demonstrably in need of radical repair?"

There is no defect in our system requiring a radical repair! The QCBFD public water system is certified and licensed (RI 1647512) by the Rhode Island Department of Health and annually has its license renewed by the RIDOH subject to the following regulations.

<https://rules.sos.ri.gov/regulations/part/216-50-05-1>

2). "....The water system is quite antiquated."

The water system, while originally designed for a summer community with the wells initially developed in the 1950's, is far from antiquated and a very common misconception. The

distribution system was laid out in a tree branch fashion, rather than continuous loop, about 50 years ago and is constructed of PVC piping rather than cast iron. Quite modern for the time and still recommended piping for use today.

In 2008, 12 years ago, QCBFD underwent a 250K+ capital improvement of our wells and storage system because we were having trouble with water quantity i.e, keeping up with demand during high peak seasonal requests. The pump house and well technology is recent state of the art, electronically controlled, and the entire project application, plans, calculations and specifications, (properly reviewed, developed, and stamped by a Rhode Island Licensed Professional Engineer), were submitted and approved by RIDOH.

Design consideration back then was given to a 4-log chemical and UV disinfection system; concerns about residual chlorine by products (THM) and elevated water iron levels complicated implementation of both systems and eventually we installed a RIDOH approved UV disinfection system (not 4-log) to recirculate the water tank contents off season and provide disinfection of water sitting in the storage tank for an extended period of time. RIDOH was consulted at that time and RIDOH agreed, based upon water quality sampling history going back to 1950, when the wells were first placed in service, that system-wide disinfection was not required nor indicated at that time.

Until August of 2019 we had had several coliform hits, as did East Beach, but these all cleared spontaneously.

Our water quality has been excellent until recently. To put this in perspective, for almost 70 years (840 months) we have had essentially "clean" water. Now for just about 4-5 months, we have had a hiccup in our water quality which seems to defy logic. This is NOT an indication of a defect in our water system. It is a comment on the quality of the water in the well source. Presently there are 4 wells within 200ft in the well field; we have 2 wells, East Beach has 2 wells and ONLY our well #1, which is right smack in the middle of the well field (not at the edge of the well field) and further from the swampy wetlands (located east of the East Beach wells) than the 2 east beach wells is the only well consistently returning + total coliform samples (NOT E Coli!**).**

The suggestion we are waiting to fix something is plain wrong. Based upon the initial RIDOH Level 2 Assessment report in August we have developed a Corrective Action plan (CAP) dictated by RIDOH which we are presently undertaking. This CAPS includes:

- Vegetation maintenance/removal and regrading of the well field to prevent areas of standing water pooling...ongoing**
- Repeat sampling of wells, disinfection, and soil testing.**
- Signage to prevent trespassing and dog wastes...done**
- Video inspection of the wells and re-development of the wells....completed**
- Initiation of Microscopic particulate analysis for determination of possible surface water influence (a 6 month process)**

RIDOH will NOT accept UV disinfection as a 4-log system and will only accept a chemical disinfection system, i.e. chlorine, so the concept of QCBFD simply slapping on a disinfection system is not as straightforward as you placing a water treatment assembly or inline filter in your home.

As per my prior e-blasts, THREE engineering firms are working on designing a system which would be RIDOH compliant; remove the excess iron, and allow for potentially carcinogenic chlorine by products (THHM) to be within EPA guidelines in a water system which delivers 3000 gallons per day in the winter and 56000 gallons of water per day in the summer. One of our consultants has essentially told us NOT to utilize the high iron well and find another low iron water source! Why? Removal of iron requires a green sand filter or membrane filtration system to remove iron and manganese prior to adding chlorine to the water. The former requires about 10-20% parasitic water loss, meaning water must flush the green sand filter, which, in the summer, up to 10000 gallons of water must be diverted from our well field and disposed of somewhere....EVERYDAY! Granted in the off season the parasitic water amount would be negligible.

Both green sand and membrane filtration systems (minimal parasitic water loss) would require the pump house be enlarged and also requires regular shipping or removal of solid waste material which will need to be stored on site until it is removed;

The reconstruction requires RIDEM and Coastal Resources oversight application and approval. This process would probably take 12 months at a minimum to obtain.

A simple chlorine system would cost about \$30K (if we had no iron); a uv system (not a possibility) about \$30 K...Green sand filter about \$190K (assuming we can dump up to 10K gallons of water somewhere) and Membrane filtration up to \$250K. We are looking at annual long term maintenance costs of the green sand and membrane filtration system presently estimated about \$30-\$40K per year. Finally THHM remediation requirements and cost, given our tree branch distribution system, are being looked into. We could pull up the distribution lines and lay down new water mains at about 3-400K per mile excavation costs, easement and right of way issue reviews, and of course the regulatory oversights (RIDOH, DEM and CRMC oversight). We have almost 2 miles of water distribution lines.

We are still awaiting to see if the CAP's we are in the process of undertaking will have any positive effect on the water quality. That doesn't mean we aren't actively exploring any and all options.

3). "Aren't we entitled to clean drinking water free of coliform and e coli? "

Of course and I wish to point out that e coli (fecal coliform) has NEVER been isolated in our distribution water going to the consumer. It was only found in well #2 for a 2-3 week period in August.

Coliform bacteria, which are NOT fecal coliform bacteria are NOT an acute health concern (they are an indicator or marker for potential fecal coliform infiltration). Coliform bacteria have persisted in Well #1 and also were previously found in the distribution line. However, for December and January there has been NO coliform bacteria in the distribution line water going to the consumer. As of today, there has been NO bacteria in your water for the past 2+ months.

4). "Let's get out in front of RIDOH and fix this amongst ourselves. "

We cannot modify or change a single valve without RIDOH review, approval, and consent. We had hoped RIDOH would allow us to place a more robust 4-log UV sterilization system in

place...but they will not. As I mentioned above RIDOH will only allow chemical disinfection for a 4 log system. 4 log means that with a single pass, 99.99% of all pathogens (bacteria, viruses, spores, etc.) are removed. 3 log would mean 99.9% and 5 log would mean 99.999%.

Presently RIDOH has not yet fully decided whether we need to put a 4-log system in place. I believe they are awaiting the repeat GUDI test in March or April and even if they decide tomorrow we need to go 4-log AND we have a system designed and RI Professional Engineer approved (stamped) in place it will take 12 to 16 months for the system to be installed, tested and finally approved so that it will be functional.

Ideally, our plan is to get off the BWA as quickly as possible. If we should have the good fortune of this occurring we will continue to explore more permanent disinfection options but without the time pressure of a RIDOH mandate which could subject us to fines. Please understand that the RIDOH is a regulatory agency with protocols written which may not reflect the reality of our situation.

We are a Fire District and our financial budget and processes are also strictly regulated by another set of regulations. In order to install any RIDOH approved system would require three bids to be obtained, per RI Department of State, BOG open meeting approval, and then approval by the community at an annual or special meeting called particularly if we would need to pursue financing. Notwithstanding that Fire District annual budgets are potentially subject to a State mandated 5% increase limit.

5). "Your last email about a BWA throughout the Summer of 2020 Season is quite disturbing".

Yes it is but I think the community needs to understand this is a very likely possibility.

6). "Another summer without water is unthinkable."

Several folks are using the water as is and several residents have installed UV disinfection systems in their homes (RIDOH has no jurisdiction over that) at +/- \$2K per install.

Finally, speaking for myself (and I believe representative of everyone else on the PW Committee and the BOG) I do feel we have a sense of responsibility, fiduciary and otherwise, to

properly research, explore, and assure that we design a water disinfection system which is comprehensive, cost effective and allows for the community to be provided drinking water at the highest quality for many years to come. As an example we do not want to install a system and find 2 years down the road that the THM by products are exceeding RIDOH/EPA limits and then we have another problem to address. While we are all volunteers, and many of us have other professional lives to juggle, we are not ignoring the "needs" of the community. Quite the contrary.

**Vincent Reppucci
Chairperson QCBFD PW Committee.**

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