

The Rocky Hill Water Facility.

The Rocky Hill PFAS Remediation system.

Section 12. --- Recrimination.

Now that the Rocky Hill PFAS remediation proposal is apparently working its way through to a conclusion, the subject matter of any related correspondence now becomes centered around review, summary, critique, regret, and recrimination.

I have never personally come across a system project so incompetently handled with total and deliberate disregard for normally accepted and required professional procedures, and so lacking in basic scientific and engineering understanding and capability.

Under any normal circumstances this proposal would have been completely rejected from the outset, following any reasonably competent review process. But, of course, there has never been any such review - competent or otherwise - or even any open presentation of the proposal to the Rocky Hill community, or any presented analysis of basic operational and engineering details.

Even by the most amateurish standards, the procedure has been contrived and has been deliberately pursued without any form of oversight, and ignoring any external advice and any provided relevant or important information.

The final action taken has therefore concluded with a deliberate exclusion of Community input and support, although the project is a designated Community project and is funded as such by Federal grant DWSRF financing, specifically awarded to the Rocky Hill community.

This is the whole Rocky Hill PFAS story:

Awareness started in year 2020, when PFAS was reported as being detected by the existing **New Jersey DWW** (drinking water watch) testing program.

The EPA had been aware of the general PFAS contamination problem for a while, especially after the US FDA disclosure in a Helsinki meeting in May 2019 of serious PFAS contamination of foods. This is described in the first introductory **Section 1** of the website **www.rockyhillwater2020** that was set up in 2020 to provide basic information to the Rocky Hill community on the rapidly expanding PFAS issue, and particularly how it was all being addressed scientifically.

There was nothing of any real use on this topic being presented on the official Rocky Hill website, and this has remained the case for the past several years.

There will be repeated reference to mentioned **Sections** on this website. These Sections are detailed, and presented in Word format for viewing and for print-out.

There were trace levels of PFAS detected in Rocky Hill water - nothing at a level to be seriously concerned about in terms of the overall issue, but its very presence was sufficient to cause major concern in the Rocky Hill community.

The NJ DEP tried to inform everybody of the general PFAS situation and on Sept 30th 2020 there was a full two-part presentation made to the Rocky Hill community on the issue.

The presentations were science based, including the toxicology and health significance of PFAS, and were well presented. They outlined the very dangerous health concerns and overall seriousness of the PFAS contamination problem. The presentations, however, were somewhat above the general comprehension level and the community was left with a residual level of confusion at the situation. That was the main reason for the website.

As an example, there was (and still is) no basic clear understanding of what a part per trillion (ppt) really means, and what PFAS contamination at this trace level is really all about.

Concepts are often reinforced and better understood through analogy and, as an analogy, a part per trillion is less than one inch in 1 million miles, and to make this even more significant, 1 million miles is four (4) times the distance to the moon.

This hopefully gives some idea of what a trillionth is - less than 1 inch in 4x the distance to the moon. In the Rocky Hill water there are trace contamination levels of PFAS in the low trillionths.

The worst PFAS contaminant is PFOS at around 16 parts per trillion.

This would be analogous to the 1 inch in a million miles.

The word "around" is used because measurement at the ppt level is (obviously) extremely difficult and involves statistical and instrumental (systematic) errors, and the PFAS detection limit is set by the instrument system noise level, which is equivalent to 2 ppt. So, one cannot reliably measure any PFAS level below 2 ppt.

All this however does not seem to inhibit some labs from citing numbers such as 16.2 ppt as being scientifically valid numbers, nor does it prevent people from believing them and quoting them.

There is then the basic question of how these (LC/MS/MS) instrument systems are calibrated, and how standard reference samples are reliably made at parts per trillion (now knowing what a trillionth really means).

This explains why different labs often come up with different measurement results. It is not that one or the other is right or wrong - they (both) are required to be State certified to perform such analyses, which are conducted in accordance with a strict (EPA 537.1) standard protocol.

But, there are no verifiable standards at the low ppt level.

To further present the overall picture concerning PFAS contamination, as of July 2019 only 16 States had any regulations whatsoever on the levels of PFAS contamination in drinking water. The remaining 34 States may or may not have adopted the earlier EPA advisory of a combined 70 ppt PFAS limit for regional DEP State enforcement. There is no federal enforcement (and no Superfund - type law) and any enforcement limit is left to the individual States. This situation applied to Pennsylvania. Only very recently has PA issued mandated MCL (contaminant limit) numbers. Interestingly, the PA MCL numbers match those of NJ except for PFOS (where their MCL is 18 ppt). Their toxicology for estimated lifetime exposure limit

for PFOS is therefore different from that of NJ (13 ppt) and both are different from the MCL numbers mandated in New York (10 ppt).

In reality all of this should be established, and not based on postal zip code, and illustrates how totally unsatisfactory the whole regulation situation is regarding PFAS contamination of drinking water. With a PFOS MCL of 18 ppt Rocky Hill would not have any perceived PFOS contamination problem at their 16 ppt level, and there would be no compliance concern, and there also perhaps might be no deplorable PFOS remediation proposal situation like we are facing at present.

This illustrates the nonsense in the overall situation - especially considering that these MCL numbers are toxicology - based estimates of ppt levels for lifetime exposure to the contaminant, that are then incorporated into State law as specific mandated requirements.

If PFAS chemicals are an existential health menace (and they are) then the only logical response would be to totally eliminate them. In other words, the MCL numbers would be ND (not detectable) by present analytical technique.

In this situation one can then forget that NY toxicology estimates for lifetime exposure differ from NJ toxicology estimates, that differ from the Michigan or Wisconsin or (now) the PA estimates.

These are all fixed specific numbers at parts per trillion (less than 1 inch in 4x the distance to the moon) and such small differences are essentially totally meaningless. Yet, ridiculous million dollar project proposals are being presented in efforts to simply meet such fixed MCL numbers. It is a bit like a huge bingo numbers game.

What is essentially required is total PFAS contaminant removal, and a thorough understanding of how this might be achieved, and how existing technology or emerging technology can be adapted and incorporated to this end.

That was the reason for creating the **rockyhillwater2020** website, with the goal to present a clear overview of the PFAS issues, and to find the possible solutions.

The Rocky Hill ad-hoc water committee.

In 2020 the environment was somewhat dystopian, politically and also practically, because of being in the middle of a major pandemic. There were no community meetings, and everything was being done on-line and “virtually” and it was an environment of isolation. The **rockyhillwater2020 website** was even called “fake news” - illustrative of growing paranoia.

This was a time that required some structured leadership. The PFAS problems obviously needed to be clearly understood and defined before any real solutions could be developed and considered.

The normal, rational, scientific, approach in such situations is to establish a small task force of knowledgeable individuals (which can change as things evolve) to fully research and evaluate the situation in planned detail to come up with viable working procedures that are then further evaluated, to finally result in consideration of submitted proposals and presentations. This is the normal standard process, regardless of project type, and it was suggested on the website. The seemingly inept mayor completely ignored this suggestion and formed an ad-hoc water committee from a group of invited individuals including himself, several

council members, the attorney, borough engineer, an invited (but as a non-active observer) representative of the community, and also a (presumably hired) hydro-geologist expert. They discussed the overall Rocky Hill water situation, including 7 fire hydrants (all reportedly broken beyond possible repair) a list of perceived infrastructure problems, and a wide variety of water system issues.

Ad-hoc committees by definition, and from experience, are largely un-focused and ineffective. In the meantime, the hydro-geologist scoured Rocky Hill to find a pristine location for an alternative well in the contaminated Rocky Hill aquifer.

It has now transpired (even though strongly suspected at the time, and has been admitted) that the main intent of the mayor, and some others, lay in selling off the Rocky Hill water system and switching to the use of American Water Co., a regional supplier primarily using surface water sources (river and canal).

One might then reasonably assume that the ad-hoc water committee was essentially a charade, that led to scripted presentations that were referred to as being town hall meetings but which were used to present a litany of problems, both real and imaginary, with no time made available for any public discussion, or (even if there was some discussion) with no commitment to any actual meaningful response.

The only arranged and invited presentation was by American Water Co., describing the benefits of their system. Their presentation was actually quite factual and was presented very fairly.

They were not specifically asked the fundamentally difficult question of how they would remove PFAS contaminants from polluted surface waters, and to what level (presumably to the legally mandated MCL). They did however concede that the average age of their regional infrastructure was around 70 years (so much for the Rocky Hill “crumbling infrastructure”).

There were no presentations in regard to any PFAS remediation proposals, because there have never been any invited proposals for such PFAS remediation systems.

The hydro-geologist never submitted any report that has been presented to the community as to whether or not he ever identified any pristine well locations in our contaminated aquifer, and he may not be a water committee member at the present time (the water committee is still in regular session).

The committee has discussed the myth of “firm capacity” (see **Section 7** on the website) and the addition of extra wells and even the construction of an additional water tower. [Rocky Hill, the little town with two water towers, one for Near and one for Far (with apologies to Grover’s “Near and Far” and Sesame Street)].

The Horsham pilot study.

In the meantime, literature searches related to PFAS research activities led to the discovery of the groundbreaking Horsham pilot study introducing electrostatic anion exchange as a viable PFAS elimination technology for municipal water systems.

This Horsham study was then immediately introduced verbatim as **Section 2** on the **rockyhillwater2020.com** website.

The very difficult problem of removal of PFAS molecules at very low (ppt) trace levels had been solved in this study.

It is not absolutely clear if the authors themselves understood the full significance of the study, since the important paper by Dixit et al. (Univ. B.C. Canada) had not yet been published at the time of the Horsham study.

This later (Dixit) work was based on the stoichiometry of the anion exchange reaction with low-level PFAS contamination. Essentially, a Chloride anion was being released into solution for every PFAS anion captured, and with measured 1:1 correspondence. This established that the PFAS capture process under these conditions of low-level contamination was entirely due to electrostatic anion exchange (Chloride being the mobile anion of the resin) and there was no molecular adsorption process involved. The molecular adsorption process, such as with granular activated carbon (GAC), has nothing to do with any electrostatic attraction or with any exchange of anions, and there would never be any Chloride release.

What the Horsham study primarily indicated was that the manufacture of PuroLite anion exchange polymer resin had now been developed up to the point of creating a very powerful new, unique, process with the production of small polymer resin gel beads having embedded cation (positive) charge groups in enormous quantity to provide total capture of trace level PFAS anion contaminants in water systems. This was a completely different process to GAC (molecular adsorption) and was the crucially needed new process to solve the PFAS trace level contamination problem. Fortunately, the PFAS chemicals all have an attached anion (carboxylic or sulfonic) functional group. This is their molecular weak link - that they are firmly bonded to mobile anion groups in solution.

Of course the Dixit study also showed that GAC molecular adsorption was not a functioning process for PFAS capture at low (ppt) PFAS contamination levels, which had also been observed in the Horsham study.

That is why the Horsham study was groundbreaking, and very important.

There was no response to the **Section 2** (Horsham study) on the website by mayor or council, although they were made aware of it in council meeting. Perhaps the council members did not basically understand what it was all about, because nobody has admitted to reading Section 2. They were apparently never informed of anything, and individually did not appear to ever know anything of the PFAS situation or of any related proceedings - according to several residents who attempted to occasionally question council members on the PFAS situation.

The Horsham study lasted for around 2 years with extensive measurement of PFAS contaminant levels. The data indicated a value of 329,000 bed volumes to the point of PFAS contaminant breakthrough of the resin. This is the correct method of measuring the resin capacity, namely in terms of the volume of water (at known level of input contamination) that is processed to the point of anion resin saturation, and this is then presented as the number of volumes of the resin medium (the bed volume).

All scientific studies involving molecular adsorption, or using ion exchange columns, deal in terms of the number of bed volumes to the point of saturation breakthrough because this is dependent on the medium involved, and is simply and directly dependent on the volume processed. The caveat with molecular adsorption studies (such as with GAC) is that the filtration time (in terms of the hydraulic loading of the

filter) is adequately long to provide the close molecular contact required by the molecular adsorption filtration process.

With GAC (involving molecular adsorption) the typical number of bed volumes to PFAS saturation is around 15,000, though there are differences due to the various GAC characteristics and even to the type of PFAS contaminant and its molecular structure (such as short Carbon chain, or long Carbon chain molecules). Such details can become quite complicated. Most materials, such as clays, shale, sandstone, are basically hydrophobic and they exhibit molecular adsorption, which is a short range close-contact surface effect, that is based on short range molecular attraction forces. Therefore, polymer anion exchange resin (highly hydrophobic when styrene based) can exhibit excellent molecular adsorption, so anion exchange resin can have both molecular adsorption and electrostatic anion exchange abilities.

This can appear to be rather confusing, but the Horsham study clearly showed that the valuable feature of anion exchange is due to the unique nature of the electrostatic anion exchange process that is fully operational (even at very low (ppt) PFAS contaminant levels) whereas the molecular adsorption process (such as with GAC) relies on establishing close-contact surface interactions, which are increasingly unlikely at very low (ppt) contaminant levels.

In the case of PFAS removal at low contaminant (ppt) levels in Rocky Hill water, the filtration system **must** therefore be geared for electrostatic anion exchange (since the PFAS contaminants are anions). This conclusion is fully presented and is rationally established in **Section 9** on the website.

Residual anion background due to organic and inorganic material in the water can be reduced with aeration. The Rocky Hill water facility has a two-stage aeration section that can significantly extend resin operation time, although it is not possible to accurately predict by how much.

PFAS remediation system design for Rocky Hill.

Section 3 on the website was then generated, and it described a PFAS remediation system design for Rocky Hill based on the Horsham pilot study and with two regular sized filters using anion exchange resin that are located in the aeration section of the Rocky Hill water system.

Since the Horsham water chemistry was very similar to that of Rocky Hill, the Horsham data on the number of bed volumes to PFAS breakthrough were directly used and scaled to extend the operating time of the resin, while maintaining a relatively small resin volume and manageable filter unit size in the system design. Allowing for extension of resin life due to placement in the aeration section, gave an estimated 4+ years before required resin replacement in one filter. The system was a dual filter lead-lag arrangement with a standard commercial bulk volume (Purolite super-sack) package (1 cubic meter - 35.3 cubic feet) of resin in each filter.

The resin costs were based on those presented in the Horsham study for a proposed dual filter on-line system, and the costs for selected appropriate commercial (fiberglass) filter units were based on internet prices from distributors. Of course, these are listed base costs and as such were primarily intended to illustrate the very significant cost difference in comparison to the typical mega-dollar costs associated with the GAC filtration systems.

This proposed system for Rocky Hill in Section 3, based on the Horsham pilot study using anion exchange resin, was therefore relatively inexpensive and required no changes to the Rocky Hill water system operation or of any pumping equipment. The major cost item was the required construction of a filtration building to house the filter units because there is no available space for such filter units in the aeration building.

There was no response from mayor or council to **Section 3** on the website. It was seemingly ignored for some inexplicable reason.

At this point in time the Rocky Hill PFAS remediation problem had essentially been solved in a very simple and relatively inexpensive manner – and they did not realize it, or want to believe it.

The mayor was repeatedly pressed to contact Horsham for further information, and to set up a confirming virtual meeting with the active parties – to no effect.

A major setback.

An enterprising Rocky Hill resident then took it upon himself to contact someone in Horsham PA Township administration and was informed of their documented and budgeted costs related to their extensive PFAS remediation efforts. Horsham is a township of over 26,000 residents and has 14 on-line well systems.

They had a history of significant PFAS contamination directly related to nearby military bases and had received considerable federal (military) funding for PFAS remediation, which was all based on the use of GAC filtration systems. The costs involved were over \$ 1 million for each typical GAC installation.

It was then apparently stated that from their extensive experience the required PFAS remediation for Rocky Hill NJ as described would certainly cost the same, and that any other proposed systems (such as that outlined in Section 3) were totally unrealistic and misguided.

This, of course was all conveyed to mayor and council and water committee, and was enthusiastically received by the borough engineer as a total vindication of the **Ad Edge** based proposal that he had submitted to NJDEP for approval and to US DA for long term loan financing. [**AdEdge** proposal is described later, page **13**].

The **Section 3** cost estimate was referred to as **SWAG** (smart wise-assed guess).

The trouble with all this was that the contacted Horsham individual was referring to the installed GAC (carbon) systems already installed at Horsham with major military funding, that had nothing whatsoever to do with the Horsham pilot study, and which they (he or she) probably knew absolutely nothing about.

And, apparently, our enterprising Rocky Hill resident was also totally unaware that the Horsham study was solely concerned with electrostatic anion exchange, which was a completely new process for municipal water system treatment of PFAS contamination. In fact in **Section 2** (the actual Horsham study report) it is stated that the study had the first permit ever granted in PA for ion exchange use in municipal water systems.

All of this was very clearly presented, in Sections 2 and 3 (especially in **Section 3**) if the individual had just taken the time to read them, and had made some small effort to try and understand them.

The Horsham study had shown that GAC was useless in totally removing PFAS contaminants from well (aquifer) water systems having low-level (ppt) PFAS contamination (which is clearly the Rocky Hill situation). The only working process (which worked extremely well) was electrostatic anion exchange that used relatively small volumes of anion exchange resin (not huge volumes of GAC) in relatively small, low-cost, filter units (not the huge steel filter tanks of GAC systems) and therefore, obviously, was very much less costly overall. None of these simple, fundamental, basic facts seem to have been understood. The use of activated carbon (GAC) filtration for everything was so ingrained that any possible better alternative could not (apparently) be imagined or believed. It was now vitally necessary to visit Horsham directly, to confirm the results of the Horsham study, and to discuss the implications.

The Horsham visit.

Three Rocky Hill residents travelled by car to Horsham PA on May 3rd 2022 for an arranged visit with Michael Pickel the Chief Engineer and Head of the Horsham Water and Sewer Authority, and a co-author of the Horsham study. The Horsham study (which is presented verbatim in **Section 2**) had been funded through community action, demanding total removal of PFAS contaminants from the water supply rather than conformity to the combined PFOA/PFOS advisory level of 70ppt suggested by the **EPA**, that PA DEP was following. A possible way of achieving this was with the use of selected anion exchange resin. There were already existing anion exchange column studies indicating the feasibility of such an approach, but there were no real-world studies with municipal water systems at the trace levels of PFAS contamination (ppt levels) found in municipal well systems. The Horsham Water and Sewer Authority assigned a small well (#10) to the study, and Purolite (a locally based company) supplied support and their PFAS selective PFA 694E anion exchange resin. The PA DEP gave permission for the municipal water system study but only as an experimental procedure, and the treated water was returned to waste and not added to the municipal water supply. The study lasted nearly 2 years, and was extensive and extremely successful. Mike Pickel was extremely cooperative and we had extensive discussion. He confirmed the 329,000 bed volumes number presented in the study, and stated that their continuing (phase 2) work had indicated around 350,000 bed volumes for the sulfonate PFAS contaminants. Their very important continuing work suggesting “desorption” effects from the resin is further described in **Section 10** on the website in **Q 10** and **A 10 (pages 7 and 8)**.

They did not receive timely permission from PA DEP to construct the planned on-line resin-only dual filter PFAS remediation systems described in the Horsham study, so they did not have any on-line anion exchange systems to show us. They were now in the process of constructing such systems for wells 10, 17, and 21. Well 10 had been demolished and was being totally rebuilt with modern facilities. Mike offered to show us one of their large GAC on-line systems (well#26), as the best he could do. This well No. 26 was pumping continuously at 200gpm producing over 100 million gallons of water per year. There were two huge GAC filter tanks operating in lead-lag configuration. The best operation with this GAC system was to

maintain the PFAS contamination output level within the range of 2 ppt to 4 ppt by dumping and replenishing one (the lead) GAC filter unit every year. This was an expensive operation for them.

We can fully understand the situation. With GAC the process is molecular adsorption that requires close molecular contact and involves an empirical EBCT contact time parameter of 10 to 20 minutes. If we assume 15 minutes, then at 200gpm there is the required GAC volume of 3000 gallons (401 cu ft). With a GAC (such as Calgon Filtrasorb 400) apparent density is 0.54 g/cc (33.7 lb/cuft) and the amount of GAC per filter is around 13,500 lbs – almost 7 tons US – that needs to be dumped each year, with the added service cost of the GAC removal and replacement.

It was suggested that we should visit nearby Warminster, which had already converted a GAC system to an on-line anion exchange resin system for one of their main wells as part of a military funded and directed PFAS remediation program. Later information provided to us has indicated that Horsham wells #10 and #17 are continuous pumping at 100gpm (50 + million gallons per year) using two filters of 4ft diameter in lead-lag with 40 cu ft of anion exchange resin in each filter. The larger Horsham well#21, pumping continuously at 200 gpm, (105+ million gallons per year) has two filters of 6ft diameter in lead-lag, using 85 cu ft of anion exchange resin in each filter.

The Warminster visit. May 19th, 2022.

A visit was made to Warminster on May 19th, meeting with Tim Hagey the General Manager of the Warminster Municipal Authority and some of his plant personnel at their well#26.

They, indeed, had an on-line anion exchange PFAS remediation system in operation. It also turned out that they had an aeration system on well #26 that was constructed around 1989 for TCE removal. It was a single stage aeration system operating into a receiving tank (so-called “dry-well”) that occupied an adjacent building. Water from the dry well was then pumped at low pressure through the anion exchange filters. This is exactly what is proposed for Rocky Hill in **Section 3**, where the filter units would be directly installed on-line in the aeration section of the water system. Warminster well#26 had two large steel filter tanks that were originally used as GAC filter units in a lead-lag dual filter GAC system. These GAC filter tanks had been emptied of GAC and each loaded with 50 cubic feet of Purolite anion exchange resin, which they said only occupied around 1 foot or so of filter height. They were pumping continuously at around 100gpm (52 million gallons per year). The resin had needed replacement after 5 years. They were very pleased with the system performance. They were completely eliminating PFOA and PFOS contaminants. Their system is conceptually equivalent to the Rocky Hill system described in **Section 3** and **Section 8** on the website. Direct comparison with the Rocky Hill proposed use of 35 cuft of resin at a volume of 26 million gallons per year suggested that our estimated 4+ years for resin life was perhaps underestimated. The Warminster system was claimed to have resin life of 5 years at 52 million gallons per year with the use of 50 cubic feet of resin. This indicates a very significant beneficial effect of the aeration stage in their system (from estimate based on using the Horsham bed volume numbers).

The suggestion was made that we should visit Altair Engineering Co., located a few miles away. Altair had supplied the filter units used in the Horsham study.

Altair visit.

Altair constructs filtration assemblies. They use a variety of filtration units from different manufacturers depending on the job requirements. Their filtration systems were often custom assemblies, but the majority of them were configured in the usual lead-lag twin filter arrangement used extensively in the water industry. This lead-lag arrangement is described in several Sections on the website, and a variety of possible equivalent arrangements of filtration units is described at some length in **Section 11** as applicable to a modular based Rocky Hill system, where different filtration units can be added or interchanged as modular units that can be de-coupled from the working system.

The whole point of the lead-lag arrangement is to have an available spare filter unit attached to the working system, so the operation of the water facility does not have to be interrupted by filter unit replenishment.

The Altair twin-filter units are mounted in a constructed support frame, referred to as a skid, with support mountings for pipework and valves. The valve coupling system is worked out to essentially permit the two filter units to interchange roles. One filter unit is nominated as the original lead unit that is then connected in series to the second filter referred to as the lag filter. The remedial filtration is intentionally performed only in the lead filter, while the lag filter is essentially a spare on-line floater. The lead filter is equipped with a sampling port to monitor its output. At established detection of contaminant breakthrough in the lead filter (remembering that any contaminant breakthrough will be treated by the following lag filter) the lead filter unit is saturated and needs to be replenished. The lead filter is then isolated by closing appropriate valves and is bypassed such that the flow is now through the lag filter alone and the lead filter is isolated from the system. This lead filter can then (at leisure) be drained and emptied, and the resin medium replaced.

When the lead filter has been re-loaded it is then re-introduced to the lead-lag system, and the connecting valves are now arranged so that it becomes a fresh lag filter unit in the lead-lag configuration, with the original lag filter still maintaining the lead role. This lead-lag exchanging operation permits an un-hurried replenishment of filtration medium to be made without disrupting the water plant operation, and with the control sequence performed entirely through valve operations.

Altair fabricates these types of lead-lag filtration system assemblies.

They (Altair) stated that many of their customer requirements involve modifications or replacements of activated carbon (GAC) systems that do not work.

Presumably this refers to replacing GAC with anion exchange resin in appropriate systems where the residual PFAS contaminant level is in the ppt range and where the anion exchange process becomes dominant and very effective.

These situations would be related to aquifer (well) systems where the aquifer itself has done the heavy lifting and has reduced PFAS contaminant levels to the ppt

range, but still requiring PFAS remediation to conform to mandated MCL values, or to achieve desired ND results.

Altair knew exactly what we were talking about and describing in **Section 3**. They are fabricating and offering an almost standard package, based around 4ft diameter fiberglass filter units made by Pentair, in lead-lag configuration. These filter units would be appropriate for most water systems up to 52 million gallons per year – such as those with up to 100 gpm continuous pumping. For instance, reference is made to the Horsham systems for wells #10 and #17 (which were mentioned above) that use 4ft diameter filter units in lead-lag. The hydraulic loading is perfectly acceptable at 100gpm with such size filters.

In the case of Rocky Hill the duty cycle pumping is burst driven at 200gpm. This requires a slightly larger diameter filter unit to achieve the desired hydraulic loading parameter for filtration during the 200gpm duty cycle operation. At 200gpm, the standard 4ft diameter filter unit would be applicable as a single filter unit, but not as a two filter system in series (lead-lag) operation in the low pressure aeration stage of the Rocky Hill water system.

This is all described in **Section 11** as well as in **Section 8**, and an appropriate filter unit (Waterco SMD 1400) has been previously mentioned in **Section 8 (pgs7,8)** and other Sections in this regard, for a two filter lead-lag system that would be correctly sized to operate in the Rocky Hill aeration section without any required system pumping modification. Its diameter is 1400 mm (4ft, 7 inches). A standard Altair package with these filters, would work for Rocky Hill.

The Waterco filter units are made in the USA and can be supplied with side-mount bulkhead couplings, which are extremely convenient. These Waterco Micron fiberglass filter units will be mentioned again later.

An interesting aspect of the Altair meeting was that they stated they had many requests for a standard filtration unit as a demonstration loaner (rental) system. This could satisfy DEP compliance deadline requirements for PFAS remediation, as well as providing operational performance information while full on-line system requirements and details were being resolved.

A single standard 4 ft diameter filtration unit with the 35.3 cubic feet bulk package of resin, is estimated to last around 4 years or more if connected into the Rocky Hill aeration section.

We now had field based evidence of four (4) municipal water systems using anion exchange resin in two-filter lead-lag arrangement for PFAS remediation, including one (Warminster well#26) that incorporated an aeration stage, exactly as proposed for Rocky Hill in **Section 3** and that, reportedly, had extremely good resin performance (50 cu ft of resin lasting for 5 years at 52 million gallons per year).

The Altair visit had additionally confirmed the general use of commercially available fiberglass filter units of very manageable size (4ft diameter) and of relatively low cost, and also the availability of rental anion exchange filtration units to meet deadline PFAS compliance requirements, and provide extra time for thorough planning of the permanent on-line filtration system addition to the water facility.

The visits to Horsham, Warminster and Altair Engineering Co. were described in a trip report formally submitted to Rocky Hill mayor and council, and documented. There was however no response to, or acknowledgement of, this trip report.

The **Martucci/AdEdge** proposal had been “approved” by the NJ DEP and so was now considered to be the “official” and “approved” Rocky Hill PFAS remediation proposal. The mayor stated that the borough engineer was the officially hired water expert responsible for the Rocky Hill PFAS remediation, and his proposal was now NJ DEP approved, and final.

There was no independent review of any type of this ill-conceived and totally inappropriate **Ad Edge-based** proposal, and no presentation of it to the Rocky Hill community. [The history of this **AdEdge** proposal is described below in detail.]

Up to this point, a group of 3 Rocky Hill residents had been operating as a type of small Community task force addressing the PFAS remediation problem.

The background situation regarding PFAS contamination had been researched and presented in **Section 1** on the website as an overview. The scientific literature on PFAS was also being reviewed. It turned out that although a significant amount of research work was underway on PFAS removal, the only viable method available with the required scale for direct use in water systems was the application of the electrostatic anion exchange process, using the newly available anion exchange polymer resin materials.

The Horsham pilot study was the needed game-changer, validating this approach. The **Section 3** design for a Rocky Hill PFAS remediation system could then be proposed – based on the experimental results of the Horsham investigation.

Horsham was visited, and the significance of the Horsham study results discussed. The Horsham concerns about the elimination of the short chain carboxylic PFAS contaminants due to the competitive affinity of the anion exchange process (as seen in Horsham study Phase 2 work) led to the concept of a modular multiplexed PFAS filtration approach for Rocky Hill as being the optimum type of system design. The specifics of component choice, especially in regard to the filter vessel material types (carbon steel/stainless steel/ fiberglass) were investigated in regard to the overall system design and NSF/ANSI 61 conformity.

For the sake of completeness, the important conclusions reached on filter units are presented here in later pages, and are pointedly related and contrasted to the totally wrong choices that were made in the **AdEdge/Martucci** proposal for Rocky Hill.

The overall conclusion reached was complete validation of the Rocky Hill PFAS remediation system as presented in **Section 8** – and presented in sufficient detail to easily construct a viable proposal for submission to NJ DEP and to funding sources. This **Section 8** proposal used relatively small fiberglass filtration units (NSF 61 compliant) of low cost, and permitting a multiplexed modular system approach to address expected future, specialized, filtration needs.

This was the correct and professional way to develop a system project of this simple type – not by adopting a botched GAC (carbon) huge **AdEdge** system, modified down to incorporate the “new” technology of anion exchange – even though this was obviously not fully understood, and was incorrectly applied (**see Section 11**).

This **AdEdge** trailer based system was a totally wrong approach for Rocky Hill. Even perhaps knowing this, it seems to have been deliberately and blindly forced through procedurally in an arrogant and incompetent administrative manner. This is undeniable, and is all described below in detail.

The Rocky Hill PFAS remediation saga.

The history of the AdEdge proposal.

In October 2020 there had been a PFAS remediation proposal submitted to Tom Decker the Rocky Hill borough engineer by **AdEdge**, a contractor company based in Atlanta GA. This is fully described at the end of **Section 4** on the website in an **Addendum** section.

The AdEdge proposal had the stated goal of achieving less than the 13 ppt MCL requirement for PFOS contamination (from the existing PFOS level of 16 ppt). To achieve this trivial goal, huge volumes of GAC were to be employed in two large steel filter units of 11 ft diameter and 15 ft height. It was a huge GAC filtration system. It was an absurd proposal for Rocky Hill, costing well over \$1 million. Tom Decker may not have thought very highly about this proposal because it was copied to me for opinion. Tom Decker was later fired, and replaced by Robert Martucci, who was enthusiastic about AdEdge – a well known contractor company in the water systems business. (The events may not necessarily be directly related.)

AdEdge knew very little about the operation of the Rocky Hill water system, and apparently only that the well pump operated at 250 gpm – and from this they had assumed that it was a large system pumping continuously at 250 gpm (131 million gallons per year) and was a pressurized system. With the use of GAC at that 250 gpm pumping rate, the rule of thumb estimate of required GAC volume (based on an empirical contact time (EBCT) parameter of 10 to 20 minutes for GAC) would be at least 2500 gallons (334 cubic feet) for each filter of the huge two-filter system. In reality AdEdge did not know that the Rocky Hill system was a duty cycle system operating at an average 25% duty cycle at 200 gpm and only pumping 26 million gallons per year, and that it was essentially a small water system. The AdEdge proposal was wrongly conceived from the very beginning, and was totally inappropriate for Rocky Hill.

After the Horsham study, and the rapid acceptance of anion exchange resin as a preferred filtration medium for PFAS remediation, AdEdge changed their initial GAC proposal to Rocky Hill to a system using two (smaller) filter units with the Purolite anion exchange resin.

They however still made the major mistake of treating Rocky Hill as a system pumping continuously at 250 gpm, and they also made the mistake of treating anion exchange resin as a type of molecular adsorption material with a contact time parameter that they now assigned to be 3.4 minutes.

Treating the system exactly as for GAC, but now with an EBCT of 3.4 minutes, they deduced a resin volume of 850 gallons (114 cubic feet) for each filter. This is still a large volume of resin, and still requiring two quite large filters.

So, they again modified the AdEdge design, now replacing these two filters with six (6) smaller (3 ft diameter, 7 feet high) filters installed as a filter train in a 40 ft long trailer unit.

Apparently, according to the mayor recently, it was Martucci's proposal to use anion exchange resin instead of GAC, with the train of 6 filters in a trailer unit.

Actually, this is highly unlikely.

Ted Begg (the East coast sales manager for Purolite) was already very familiar with this AdEdge proposal for Rocky Hill in 2021, and knew all about it - since it apparently involved around 4.8 tons of Purolite anion exchange resin - which was a large resin purchase order (pending). AdEdge had used GAC filter trains assembled in trailer units or shipping containers before, as cheap substitutes for filtration buildings (**such as in Ramsey, N.J.**) and had used trailer units as mobile test labs, and in temporary evaluation systems. Also, the use of such filter trains and filter groups was well known.

Once again, but now using anion exchange resin, AdEdge had the same wrong understanding of the operation of the Rocky Hill system, now compounded by the fact that they also wrongly treated anion exchange resin as a molecular adsorption material with an assumed contact time parameter of 3.4 minutes, and they just divided the 228 cubic ft of resin among the 6 filter units.

In reality, electrostatic anion exchange is nothing like molecular adsorption, and is a fast chemical exchange reaction that has nothing to do with required close molecular contact, and there is no EBCT contact time parameter with the anion exchange chemical process.

The engineer Martucci totally adopted this latest AdEdge proposal as his own Rocky Hill "official" proposal, not understanding any of these major AdEdge problems, and therefore (apparently) not fully knowing himself how the Rocky Hill (duty cycle) water system actually worked.

As a result, the **Martucci/AdEdge** proposal is basically designed for a very large system pumping 131 million gallons of water a year, not the 26 million gallons of Rocky Hill, and as such it is **grossly (5x) oversized** and is totally inappropriate for the Rocky Hill water system.

There is also a list of design and engineering flaws in the proposal that are presented in **Section 11** on the website **www.rockyhillwater2020.com**.

Section 11 is a detailed factual analysis and critique of the **Martucci/AdEdge** proposal. A supposed engineering justification of the proposed system design was presented in a brief e-mail correspondence from Martucci that is shown in the **Section 11 critique** to be totally nonsensical, and clearly indicating that he basically does not know what he is doing, and apparently not even understanding how the 6 unit filter-train is supposed to be configured in the AdEdge system design.

There are also listed violations of **N.J.A.C.** specification requirements for filtration systems described in the **Section 11 critique** of the proposal, and an indicated total lack of understanding of the mechanism of the electrostatic anion exchange process with the fragile resin gel beads – that has been described in detail in **Section 8**.

The **Martucci/AdEdge** proposal clearly should never have been considered an "approved" project by NJDEP. It is riddled with design flaws and errors.

The NJ DEP.

The routine check list “approval” of proposals by NJDEP are inadequate bureaucratic paperwork procedures that do not involve any real science or any engineering system evaluations, and are consequently meaningless in reality. Of course it is not the province (i.e. function or responsibility) of the DEP to approve projects to the point of endorsing any specific construction or functional detail that would suggest direct control and direct involvement, or any implied obligation or direct responsibility for municipal affairs.

This has to be reconciled with the formal N.J.A.C. listing of filtration design requirements that are represented as being specific rules.

There are some listed filtration system specifications (**N.J.A.C. 7:10-11.14 (c) 2**) that are clearly totally inappropriate for normal filtration procedures, and that do not appear to have been correctly listed or properly understood.

The above listed particular specification relates to an impossible hydraulic loading requirement of **less than 3 gpm per square foot** for the filtration units, and is described at length in the **Section 11 critique** as most likely relating to high pressure membrane filtration, and hardly to be considered as being related in any way to routine filtration systems using filtration media – which is being implied.

[The N.J.A.C. regulations also supposedly being the latest updated version.]

As described in the **Section 11 critique**, Martucci goes to considerable lengths to try to convince everyone that his proposal conforms to the above stated required hydraulic loading specification – which is of course totally impossible.

He should have known this, and does not appear to understand the significance of hydraulic loading in filtration design.

But, also, it should not have been a listed N.J.A.C. rule in this context.

As a further example of a ludicrous item in the proposal, the 40 ft long trailer unit is apparently specified as being HVAC climate controlled, involving a suggested (?) 3 ton (36,000 BTU) air conditioning package.

Most people know that there is a ground water temperature of around 50 F in this region of the USA, year round. With many thousands of gallons per hour of such groundwater flowing through the pipework and the receiving tanks, the temperature of the water facility is always rather chilly, and around 50F. Why would anyone require any additional air conditioning? Someone at **AdEdge**, writing the proposal for Rocky Hill with 6 filter units in a trailer, probably thought that a “climate-control” HVAC specification for the trailer sounded hi-tech, although in the circumstances it was not based on any common sense. All that is required is some space heater unit set quite low (around 45F) to avoid any possible freezing conditions in the winter (especially during the overnight OFF times of the duty cycle system). That is the arrangement used in the Rocky Hill aeration building.

The very use of a trailer unit as a permanent installation in a water system would also seem to be in violation of **N.J.A.C.** regulations relating to building construction requirements for additional water system operations and components (such as for added filtration building and filtration units). **N.J.A.C. 7:10 - 11. 6 (g)**

A trailer unit or shipping container cannot be considered equivalent to a permanent facility building. It certainly was not considered as such by the NJDEP in June 17th

2020 correspondence relating to a temporary treatment approval permit in the case of Bellmawr N.J. PFNA remediation – where it was specifically stated that the trailer based anion exchange system package (to be used in a trial period) should not be utilized in any final on-line remediation system. [1] (permit item 8). But, who cares about N.J.A.C. regulations? It has apparently now all been NJDEP “approved” in this Rocky Hill PFAS remediation proposal, and that includes the use of a 40 foot long trailer, instead of any constructed filtration building.

The Project Funding, and its importance to the bidding process.

The recent Bipartisan Infrastructure Law (**BIL**) has provided needed funding on a large scale to generate the very important and much needed infrastructure improvements for the future.

Under the existing Clean Water Act (**CWA**) the EPA set industrial wastewater standards and compliance monitoring for discharge into surface waters.

Under the later Safe Drinking Water Act (**SDWA** -Dec. 2019) the EPA additionally established drinking water standards with a listed code of Federal Regulations under 40CFR 141. The recent (2021) **BIL** has led to the Clean Water and Drinking Water state revolving fund programs; **CWSRF** and **DWSRF**.

The **SRF's** are federal funds administered by US states for the purpose of providing low interest loans for investment in water and sanitation infrastructure.

Under the BIL an unprecedented amount of DWSRF funding was made available to the States (\$ 11.7 billion).

This level of directed funding is rare. The last major infrastructure program on this scale was during the Eisenhower administration in the 1950's after WW 2, for the U.S. Interstate Highway Development program.

This SRF funding is crucially needed and should not be wasted. The term “State Revolving” is because the repaid loans, with interest, are then specifically revolved (re-issued) for new loan requests.

N.J. has received \$1.638 billion for **CWSRF** and \$1.126 billion for **DWSRF**, and the State is supposed to contribute 20% matching funds.

The State can take a variety of set-asides to assist the funding of state programs related to safe drinking water (up to 31%). The balance (with the state's 20% match) then go into the revolving fund (SRF), that provides loans, and grants, for eligible infrastructure projects. The **DWSRF** programs therefore function like infrastructure banks, providing low interest loans.

Rocky Hill has received a DWSRF grant (not a loan) of \$1.167 million. This is outlined in **Section 10**, in **Q 12** and **A 12** on **page 10 of Section 10**.

The DWSRF program in NJ is administered through the NJDEP, and there is a designated SRF program manager within the NJDEP in Trenton.

The previous entity NJ Environmental Infrastructure Trust joined in partnership with NJDEP to form what is now known as the New Jersey Water Bank (**NJWB**).

The **NJWB** therefore utilizes **DWSRF** funding, which is federal funding.

With federal (taxpayer) funding there are associated federal requirements for competitive bidding and procurement procedures (described on pages **18,19**).

The first NJWB loan was in 1987. Since then 1,350 revolving loans have reportedly been made, now totaling \$ 7 billion.

Long term \$2.3 million loan to Rocky Hill.

Rocky Hill, via Martucci and his AdEdge-based proposal, also applied for a long term loan, which apparently has been granted, of **\$2.3 million**.

It is not clear if this is through the **NJWB** or as a stated loan through the Department of Agriculture (**DOA**) under the Clean Water Act (**CWA**) relating to groundwater, which might equally apply, and is a federal loan.

Once again, the details of this proposal for a \$2.3 million long-term loan for Rocky Hill have not been disclosed or openly presented to the Rocky Hill community.

It seems to be top secret, although it commits Rocky Hill to paying back a long term \$2.3 million loan, with interest – conceivably an excessive and unnecessary financial debt that nobody is fully informed about. There is of course mention of paying off this federal long term loan (with accrued interest) when the federal DWSRF grant is actually obtained, paying off one federal funding with another – if this type of federal fund switch accounting is actually permitted.

Little scattered statements suggest that the large loan proposal is based on the same **Martucci/AdEdge** proposal as submitted to the NJDEP (using anion exchange resin in a 6 filter 40ft long trailer unit) but with the further construction of **another (second) water facility** with another separate well, under the guise of needed “firm capacity” – and including some related infrastructure water pipe work.

This “**firm capacity**” nonsense was hopefully de-bunked in **Section 7** on the website way back in Dec 10th 2021, but apparently was ignored because that is not what anyone really wanted to hear (who knows?).

This “firm capacity” requirement relates to the “back-up” redundancy of the Rocky Hill pumping system, specifically in terms of the basic well and the well pump unit.

Rocky Hill is a duty cycle system. This simple fact does not seem to be totally understood. All duty cycle water systems have to use a high quality and prolific well, and they all need to be equipped with a high capacity well pump.

The whole duty cycle operation is based around quickly refilling the water tower, on demand, to maintain constant water height – which then maintains the water pressure for the whole Rocky Hill community. The water system operates with one aquifer, and one well, and one well pump operating in duty cycles.

We only have one aquifer. It is highly unlikely that this needs “back-up” (and with what exactly?). We only have one well. This is a hole in the ground with a well casing. It is highly unlikely that this is going to fail or need “back-up” with another hole in the ground (into the same aquifer).

So, what one is possibly talking about is a failure of the well pump. The “firm capacity” therefore simply relates to redundancy of the well pump unit. This now at least makes some sense. This was all presented and fully discussed in **Section 7**.

The question of redundancy “back-up” of the well pump was very carefully considered in 1980, when the Rocky Hill aeration system was designed and the old jet pump was replaced by a new modern type, submersible, well pump unit.

The well pump is therefore an expensive high quality and high performance, submersible, pump. The documented mean time between failure (MTBF) of such high quality industrial pumps is 25 to 30 years.

The new well pump was deliberately chosen as a generic water industry standard specification unit and it (or equivalent) is readily available. There is a standard operating procedure (**SOP**) that can remove and replace this type of well pump unit in around 2 days. We did so about 7 years ago. There is certainly no need to build another back-up water facility with another well and another expensive well pump – especially not to be utilized in any way for another 25 to 30 years, when the standard routine well pump replacement procedure can be done in 2 days. It would be absurd. All of this is presented in **Section 7**.

Nevertheless, this is all included in the **Martucci/AdEdge** proposal for the \$2.3 million loan to Rocky Hill (and presumably this was also routinely “approved” by the NJDEP).

The \$2.3 million AdEdge/Martucci loan proposal even included the requirement of high pressure, high volume backwash equipment as used in GAC systems (although the proposed system uses anion exchange resin (not GAC) – and the last thing that the fragile anion exchange resin gel beads want is any type of high pressure backwash routine). There seems to be no idea about how anion exchange works.

This Martucci proposal is also (as stated repeatedly) based on the (wrong) assumption by AdEdge that the Rocky Hill facility is a pressurized system that is continuously pumping 131 million gallons of water per year at 250 gpm – which is five times (**5x**) the amount of water actually pumped by Rocky Hill, and so it is grossly 5x oversized.

The **Martucci/AdEdge** proposal makes absolutely no sense overall for Rocky Hill.

There has seemingly been a deliberate exclusion of input from the Community and a total lack of any full and open presentation to the Rocky Hill community of any proposals submitted to the NJDEP, or to any funding source, on behalf of Rocky Hill. That is definitely **not** the way that Municipal government is supposed to operate. The **DWSRF** funding, either loan or grant, is federal funding and there are strict conditions and requirements associated with it.

Anyone who has ever dealt with federally funded projects knows that there are implied requirements and a code of ethics to ensure that the use of federal (taxpayer) funding is totally transparent and open, and **fully disclosed**, and also that any related bidding or procurement process is also fully disclosed, fully competitive, and fully equitable.

The bidding and procurement process.

The procurement phase of the proposed **Martucci/AdEdge** Rocky Hill PFAS remediation project has been critically described in **Section 10** on the website. The issued bidding proposal process, involving federal funding, was a total sham and will be described next.

The following **Q** and **A** statements are taken from **Section 10 pages 10 to 12**.

Q 13. Are there procedural requirements for project proposals and bidding procedures based on the use of Federal funding and taxpayer dollars?

A 13. Yes. With federally-funded projects in government agencies, or in government contracts and proposals dealing with corporate entities, there are usually very specific bidding requirements, including: full and open listing and announcement: full and open project disclosure (involving a statement of work and description of desired project goals) and including fully competitive bidding process with a required minimum number of vendors participating. At the initial phases, this does not allow for the introduction of a specific project design or proposal to be used as a pre-requisite for supportive bidding purposes. In other words, there are no pet projects to be introduced as initial conditional items in a fully competitive bidding process involving federal funding. These requirements have been codified. Under **45 CFR –74, Uniform Administrative Requirements for Awards and Sub Awards:** “All capital projects to be completed under contractual arrangements must be procured by the methods described in 45CFR–74.40 through 74.48, or in 92.36 as applicable.” Contracts of \$100,000 or more need to go through competitive bidding under 45 CFR – 92.36, and “Procurement shall be conducted in a manner to provide to the maximum extent practical, open and free competition.”

Q 14. Does the “request for proposal” (RFP) issued by the Engineer on behalf of Rocky Hill Borough comply with the Administrative Requirements for projects using Federal (taxpayer) funding?

A 14. No, it does not. In the so-called “Open RFP” issued in the Courier News dated August 11th 2022, there is not a single mention of the word “proposal” in the whole **Request for Proposal** document.

The relevant section of the RFP, posted 8/11/22, is presented below.

The project description is emboldened for identification.

BOROUGH OF ROCKY HILL 15 MONTGOMERY AVENUE ROCKY HILL NEW JERSEY 08553
PURCHASE OF TREATMENT FILTER UNIT FOR PFOS TREATMENT WELL NO. 2
ADVERTISEMENT FOR BIDS Sealed Bids for the construction of the PFOS Treatment Unit Purchase will be received by the Borough Engineer, Robert Martucci on Thursday September 8, 2022, at the office of the Borough Engineer Martucci Engineering LLC 49 East Main Street Avenue, Flemington, New Jersey 08822, until 11:00 a.m. local time. The bid opening will be virtual and conducted via Live-Stream from Borough Hall. You can access the Live-Stream from the Borough' website <http://www.rockyhill.gov> via zoom meeting with the invitation that will be posted on the Borough website and all plan holders at the prevailing date and time stated in this Notice to Bidders. During the bid opening process, the bidders will be announced as well bid amounts. A bid review providing unit prices will not take place at the openings. Instead, this information will be posted on the Borough's website once available. **The project consists of fabrication and delivery of the following: Base Bid: Purchase of pre-manufactured filtration unit for PFOS treatment (40'long x 8' wide); six steel pressure filtration units that are ASME certified for up to 100 psi; all related equipment and treatment resin. This unit to be delivered to 1 Young Drive Rocky Hill, NJ 08553. (Vendor to coordinate with site contractor for delivery and set up of equipment).** The Borough shall reserve the right to award the base bid or to reject all bids. The Issuing Office for the Bidding Documents is: Martucci Engineering LLC, 49 East Main Street, Flemington, New Jersey 08822, the office of the Borough Engineer Robert Martucci (rmartucci@martucciengllc.com)

There are no requests for any independent proposals. There are no descriptive statements of work defining the tasks to be undertaken or the problems to be solved, and there are no requests for proposals on how a solution or solutions to

such problems (in this case PFOS contaminant remediation) could be best achieved. There is no competitive bidding for any independent proposals for a Rocky Hill water facility remediation system for PFOS removal.

Comments.

This RFP, issued by the Borough Engineer, is entirely a fixed-job bidding situation. Bids are only being sought for six (6) high-pressure steel filter tanks and the supporting hardware and resin material for his own specific system proposal that is based on revisions to an inappropriate early GAC filtration system design from a company called AdEdge.

Any proposals for correct and appropriately sized two-filter lead-lag systems (such as those described in the Horsham and Warminster trip report) have been excluded from the bidding process.

Q 15. Why is solid Community support so vitally important for such projects?

A 15. Community support and involvement is critically important.

In projects of this type, involving significant levels of Federal funding, there are stated implementation requirements that community concerns are to be met, and that there is citizen inclusion in the process. This inclusion builds trust in the scientific validity, and the fiscal justification of the project, and also establishes true community ownership of solutions.

An EPA directive to the States defines this critical need for active community involvement, and describes it as being a key fundamental requirement for use of **DWSRF** funding. A section from the directive is presented here, below.

Note: **IUP** means “intended use plan” and **SRF** means “state revolving fund”.

“5. Public Review and Comment: The IUP must contain a statement of how the state met the requirement of CWA section 605 or SDWA section 1452(b)(1) for meaningful public review and comment on the preparation of the IUP. When seeking public review, states should include a diverse set of potential interested parties, including community groups, neighborhood associations, environmental organizations, environmental justice foundations and public health groups, that represent a broad spectrum of community interests and extend beyond those on existing mailing lists and traditional participants in the SRF process. In addition, states should strive to achieve the following objectives when seeking public review: (1) assure that the public has the opportunity to understand official programs and proposed actions, and that the state fully considers the public’s concerns; (2) assure that the state does not make any significant decision on any SRF activity without consulting interested and affected segments of the public; (3) assure that the state action is as responsive as possible to public concerns; (4) encourage public involvement in implementing the SRFs; (5) keep the public informed about significant issues and proposed project or program changes as they arise; (6) foster a spirit of openness and mutual trust between the state and the public; and (7) use all feasible means to create opportunities for public participation, and to stimulate and support public participation. States should make a particular effort to identify and engage organizations that work in disadvantaged communities.

EPA will review IUPs with particular focus on whether the state has meaningfully engaged an inclusive spectrum of community interests” (page 12 of 56 in <https://www.epa.gov/dwsrf/bipartisan-infrastructure-law-srf-memorandum>).

Comments.

In the case of the Rocky Hill situation, there is no community support. On the contrary there are significant elements of the community in vehement opposition to the engineer's stated "official" Rocky Hill proposal for PFAS remediation, and this has been fully expressed.

The Engineer has stated that communicating with Rocky Hill residents about his plan is merely a "courtesy" and that the Rocky Hill PFAS remediation plan has been "decided". The issuance of the RFP in the Courier News in the manner described above in **A 14** is clear evidence of this.

Letter to EPA.

In August 2022 a letter was sent to Hon. Radhika Fox , Assistant Administrator, Office of Water, U S EPA , William Jefferson Clinton Building, 1201 Pennsylvania Av NW, Washington DC., – and which outlined the Rocky Hill situation as previously described.

It stated that the Rocky Hill community had not seen or been informed of any IUP (intended use plan) for the DWSRF (although a NJ IUP might exist) and that open disclosure, full project description and especially community involvement, inclusion, and approval – which are all stated by the **EPA** to be essential requirements for projects involving DWSRF program funding – have not existed.

Oversight of the **DWSRF** program administration for Rocky Hill was badly needed. It was emphasized that Rocky Hill may not be an outlier in this regard in New Jersey, or in other States, pointing to possible major failure in the national DWSRF program. Since the NJDEP has administrative responsibility for the SRF program in NJ, it was suggested that the directive memorandum to the States from Radhika Fox provided a clear pathway for the NJDEP to address the problem by requiring a documented and verifiable level of community involvement and support for any submitted proposals for SRF funding made on community behalf.

This could have considerable beneficial impact on the successful implementation of the DWSRF program at the municipal level by sorting out general practical and solid proposals for DWSRF funding from those that were badly conceived and inappropriate and wasteful, and which did not have active community support or inclusion. The letter was also copied to senior members of NJDEP.

It was not expected that there would be reply from Administrator Fox. The **EPA** could do nothing further in this particular situation. The DWSRF program necessarily involves direct administration through the State DEPs.

The **EPA** had perhaps fully anticipated problems at local municipal levels, and deliberately introduced the essential need for community support and involvement in the process to hopefully provide a corrective remedy.

There was, noticeably, no response from any of the contacted NJDEP members.

This was basically inexcusable. The **NJ DEP** assumes administrative responsibility for the **DWSRF** program, but is seemingly incapable of carrying it out.

They (NJ DEP) seem to routinely "approve" flawed proposals that undergo no serious or rigorous review by anybody.

The NJDEP is now staffed at around 2900 that appear to be in multiple separate divisions with tightly defined non-overlapping bureaucratic responsibilities. Nobody seems to be fully responsible for anything, and possibly troublesome communications from the public are apparently simply ignored – the easy and dismissive routine.

Further repeated communications to certain NJDEP personnel were similarly ignored, so it was not accidental omission. There are some direct issues to be addressed.

1. Who, for instance, is basically responsible for approving the Martucci/AdEdge proposal for Rocky Hill PFAS remediation, funded through **DWSRF**, when any high school student can see it is riddled with serious, obvious, errors?
2. Can this be corrected, and is NJDEP equipped to initiate any meaningful scientific or engineering review of the proposal – with or without reference to the above described **Section 11 critique**?
3. Why is there the general impression that NJDEP “approvals” are “officially” significant and meaningful when in reality they are not, and when there is no associated NJDEP commitment or direct involvement – because they are not mandated or equipped to provide it?

The mission statement of the NJDEP is “ to ensure that New Jersey’s environment is clean, safe, enjoyable and maintained for future generations” – truly admirable, no disagreement with that.

The present situation.

Martucci latched onto the AdEdge proposal, and based his Rocky Hill PFAS remediation proposal around it, totally.

This must have been in spite of knowing that it was not a serious proposal because of the vocal opposition to it, even though it was not fully disclosed and only the sketchy details of it were deduced. The AdEdge proposal (even in the version using anion exchange resin instead of activated carbon (GAC)) was still founded on totally wrong assumptions about how the Rocky Hill water system worked. This was pointed out repeatedly – ad nauseam – but to no effect, in various **Sections** on the website, and in communications to the mayor and others by a number of Rocky Hill residents.

The borough engineer probably hoped that AdEdge would win the bidding process, and the **RFP** was specifically set up that way (as has been previously presented in detail – page **20**). AdEdge would then take charge of the proceedings, and hopefully might sort things out for him.

Altair Engineering Co. was fully aware of the Rocky Hill situation and of the mega-dollar **DWSRF** grant funding for the Rocky Hill PFOS remediation.

This type of PFAS remediation with anion exchange resin is their core business, and they know what to do, and decided to submit bid – even though they certainly knew full well that it was a nonsense proposal, and that the bidding process was totally contrived. That was not their problem; there was nothing they could do about that. They have implied that they normally try to avoid dealing with municipalities and their generally egocentric local officials.

Nevertheless, Altair submitted lowest bid with no exceptions, and by a considerable amount – and in spite of AdEdge attempts to get them disqualified, won the bidding.

There are some Rocky Hill residents who somehow thought and hoped that the Altair involvement might then somehow change things, and correct the situation in some form of agreeable, manner. That was just wishful thinking.

Altair is not looking to change anything – they do not have the responsibility or the authority to do so. They know how to construct these sorts of systems and there is considerable financing involved in this instance and they would hopefully make a quite satisfactory profit from the job – one would hope so. Like most engineering companies, they just follow the specifications.

They are obviously not going to contest any major elements of the proposal (which is not of their doing). It is not in their capability to do so. It is just another job.

Therefore, for instance, they do not raise any concerns or objection to the specified six (6) high–pressure steel filter vessels of the **Martucci/AdEdge** proposal.

High pressure steel filter vessels.

Another major error in the **Martucci/AdEdge** proposal for Rocky Hill is the specification of six (6) 100psi high pressure carbon steel filter vessels.

This is in spite of the fact that nowhere in the Rocky Hill water system is there any pressure anywhere near 100psi. The Rocky Hill water system operates at atmospheric pressure with open aeration columns and receiving tanks. There is nothing remotely close to 100psi pressure anywhere. The requirement of 100 psi ASTM rating for steel filters (and associated steel pipework) is complete nonsense. This also has further implications of required coating treatments, described later.

The **ASTM** (American Society for Testing and Materials) can trace its origin back to the early days of the industrial revolution. There was great need for standards relating to quality and to material composition and performance. This involved rigorous testing procedures and measured properties of materials, and ASTM addressed this major problem.

Today there are reportedly over 12800 ASTM standards on a variety of products and materials, so when something is required to meet ASTM standard, it is necessary to specify exactly which particular ASTM standard is being referred to. The ASTM is an independent, non-profit, organization with extensive laboratory and testing capabilities, and they are a world-recognized authority.

The Rocky Hill bid specification only refers ... “ to steel pressure filtration units that are **ASME** certified for up to 100 psi.” (page **19** of this document).

It perhaps needs to be pointed out at this stage that **ASME** and **ASTM** standards are essentially the same. The ASTM standards are the most widely used in the USA for steel products, and are developed for a variety of uses, including non pressurized equipment. The ASME specifications are only developed for use in the fabrication of pressurized equipment. These are not competing specifications, and are basically the same in most cases. The **ASME Boiler and Pressure Vessel Code** is legally followed when, for example, building power plants and boilers.

The Rocky Hill water facility is **NOT** a high pressure system – **in fact it is not a pressurized system at all**, it is internally operating at atmospheric pressure, and this has been repeatedly described. The filter vessels being considered are certainly not high pressure boilers, and in fact there is no real relevance of either ASTM or ASME standards for any pressure specification for the proposed Rocky Hill PFAS remediation system. This is missing the whole point of what is being done.

NSF/ ANSI 61.

In the case of filtration units for use with potable water, the most important requirement of all is establishing the suitability of the filtration system material in contact with the water, and the required absence of contaminants imparted to the drinking water from the material. The standard related to this requirement is **NSF 61 or ANSI 61 (American National Standards Institute)**.

The **NSF 61** standard followed the Safe Drinking Water Act (**SDWA**) in 1980. **NSF 61** is now the legally recognized national standard in the USA for the human health effects of drinking water system components, and certification to NSF 61 requires a toxicological evaluation of chemical contaminants that leach from the material being tested to ensure they are below levels that may cause adverse human health effects. This is very similar to the now familiar MCL determinations for PFAS contaminant levels in drinking water.

Certification of conformity to **NSF 61** is now an essential requirement for potable water systems, but this critically important requirement was not even mentioned in the Rocky Hill bid specification – seemingly more focused on boiler pressures.

With the many new materials being regularly produced, there is a constant need for NSF 61 certification through testing, and the critical significance of NSF 61 is well known. However, it is not clear if there is any mentioned requirement of conformity to **NSF/ANSI 61** anywhere in the extensive volumes of N.J.A.C. rules and regulations.

It might reasonably be expected that the best materials for use in filtration systems for potable water supplies would be those that are water repellent (hydrophobic) with no porosity, a smooth continuous surface, low vapor pressure, and uniform structure with no undesirable chemical impurity content.

The high density polyethylene (HDPE) is such a material, and fully satisfies the NSF 61 standard. Not all plastic and polymer products and epoxies conform to NSF 61, and there are some surprises. For instance, the low density variant of polyethylene (LDPE) would seem to be unsuitable in our case since PFAS chemicals are reportedly used in the manufacture. Using LDPE, we could possibly be generating more PFAS than we are attempting to remove. It is important to know such details.

Stainless steel filter units.

While on this topic of the filter vessels and NSF 61 certification, several Rocky Hill residents seemed to strongly favor and advocated the use of stainless steel filtration vessels, rather than the heavy carbon steel filters of the Martucci/AdEdge proposal (and which have other major problems that are mentioned later).

Stainless steel is used extensively in scientific work, and there is good availability of stainless steel rolled sheet products, stainless steel tubing, and extrusions.

One might then think it would be an obvious excellent material for use in potable water systems. This is largely true, but there are some important issues to be considered. (Stainless steel filters were provided by Altair for the Horsham study). Although stainless steel is highly corrosion resistant, this is only due to the rapid surface formation of thin film Chromium oxide in media containing Oxygen. There is dissolved oxygen in water. The passive film of Chromium oxide is self-replenishing when damaged. Other metals, such as Ti, Al, Fe, also have such stable oxide films. Stainless steel has many different alloy grades. Two of the most commonly used stainless steel alloys are Grade 304 and Grade 316. The Grade 304 alloy is based on Iron with 18 to 20% Chromium, and 8 to 11% Nickel. Alloy formulations of this 304 type (based on the addition of Nickel to the Chrome-Iron) generate a specific (face centered cubic) crystalline structure referred to as austenitic, with superior corrosion resistance (also essentially non-magnetic). The Grade 316 stainless steel is very similar, but with an extra 2 to 3% Molybdenum. This is also an austenitic alloy. The extra few percent of Mo reportedly further improves resistance to localized corrosion. Stainless steel alloys have low carbon- around 0.03 % (L grade) to 0.08 % (max).

When corrosion of stainless steel occurs it is in the form of pitting in areas where the protective Chromium oxide film contains defects or has been damaged. The possible leaching out of Chromium and Nickel then exists. That is the concern. There has been (justifiable) concern about Chromium and Nickel contamination from the use of stainless steel cookware, and there have been some very scientifically based home experiments relating to measured contamination levels of Chromium and Nickel leached into hot tomato paste (acidic) recipes. The conclusion reached was that it very much depended on the type of stainless steel, and product, but it was a real concern. [2] and [3].

In the case of Rocky Hill PFAS remediation, the aim is to remove extremely low (ppt) contamination levels from the water supply, and it is highly undesirable to be trying to remediate such low level PFAS contamination using filtration systems that could themselves possibly introduce heavy metal or other contaminants into the water. The **NSF 61** testing required in this case resulted in approval of SS 304 and SS 316 for use in potable water systems - provided that the stainless steel had more than 16% Chromium content.

The 304 and 316 alloy grades of stainless steel (and some others) are then approved in NSF/ANSI Standard 61 Annex C. They were tested at water temperatures of 23 C and 30 C, namely in the temperature range of potable water, and only over the pH range permitted for potable water (6.5 to 8.5). So the testing was very specific to their use with potable water.

The wider question of stainless steel chemical corrosion is apparently much more complicated than simply relating to pH and temperature, and Chlorides can reportedly cause multiple forms of corrosion with Grade 316 stainless steel.

In the NSF tests it was stated that if the stainless steel filtration units or included components are welded or subjected to passivation procedures, the final product will require testing for overall NSF 61 certification.

This restriction is solely due to damage of the Chromium oxide layer in welding or heat treatment procedures. Because of the low thermal conductivity, stainless steel can seriously overheat with welding. The welding can lead to the formation of

carbides, and destruction of the Chromium oxide layer. There have been some procedural revisions as a result of the stainless steel manufacturing industry's involvement in these issues. The welding problems can be addressed in many cases by requiring certified welding procedures, and by totally avoiding welding whenever possible with the use of compression fittings and of designed "O-ring" assemblies, attachments with union couplings, and designing with "external" welds. Stainless Steel is listed as an accepted material to the ANSI/NSF 61 standard and may be used without the need to obtain NSF material approval. [4].

A significant advantage of stainless steel in water systems is that the material is strong and can be of thinner and lighter composition than carbon steel, resulting in much less weight.

The main important advantage however is that Grades 304, and 316 stainless steel are accepted materials for the ANSI/NSF 61 standard – **whereas general carbon steel material is certainly not.**

This means that the high pressure carbon steel filters that are specified in the stated **Martucci/AdEdge** proposal **do not conform to NSF 61, and must be internally coated with approved epoxy resin to seal the internal surface to meet NSF 61 approval.** Connecting steel pipework also has to be internally epoxy coated. This may not be generally realized.

There are always serious concerns about damage to such internal epoxy coatings as a result of any type of welding or brazing or soldering operations on such coated carbon steel filter units, and on associated steel pipework and components. Carbon steel filter vessels and associated pipework with the required approved internal epoxy coatings can also, obviously, become quite expensive.

Comments

The specification and use of such high-pressure carbon steel filter vessels in the **Martucci/AdEdge** proposal is clearly the totally wrong approach for the Rocky Hill water system - where there is no high pressure involved. It creates problems and high costs for absolutely no reason, and there is no sense in any of this. Simply citing an ASTM (or ASME) requirement in a specification is not meaningful or relevant if it does not apply to the situation.

The problem of reducing trace level contaminants in the water supply is often totally overshadowed by the larger problem of contaminants introduced by the water distribution system itself, and which is often not addressed.

The **SDWA** (Safe Drinking Water Act) requires public water suppliers to provide non-corrosive drinking water. This involves pH control to above 6.5 (6.5 to 8.5) and the Pb (lead) levels in the water must be below 15 micrograms per liter (15 ppb) and Cu (copper) levels below 1300 micrograms per liter (1300 ppb). These are not exactly negligible levels.

Fiberglass filter units.

Very importantly, corrosion does not happen with fiberglass epoxy polymer materials. The whole Rocky Hill aeration system is constructed with fiberglass.

The aeration towers of the two-stage aeration system are constructed from wound fiberglass filament with epoxy resin. Access electrical boxes and inspection ports are molded into the design, and the aeration columns are reinforced to withstand 100 mph wind gusts. The receiving tanks located below the aeration columns inside the aeration building are also of fiberglass, and the system has been in successful on-line operation for more than 40 years.

With the Rocky Hill water system all the connecting pipework is standard PVC, which is NSF approved for potable water use, and no internal epoxy coating pipework is used anywhere. The whole construction is of relatively low cost.

The Rocky Hill PFAS remediation system, proposed in **Section 3** on the website and based on the Horsham study, used specified Waterco Micron fiberglass filter vessels [5] that have been fully described and evaluated in **Section 8** and are wound on an inner shell of fiberglass reinforced polyester resin approved by NSF. They can also be fabricated with HDPE inner tank cores, also NSF 61 approved for potable water. Fiberglass vessels weigh only 1/3 the weight of steel vessels, with the same level of strength, and they do not corrode. Their cost is also a small fraction of the cost of regular carbon steel vessels requiring internal epoxy coating. Once installed there are no maintenance repairs needed with fiberglass filter units (especially when located in a building) and there are no anti corrosion coatings to be periodically maintained.

Also, a major feature of commercial fiberglass filter units (such as the Waterco Micron SMD series) is that they incorporate optimum design features to maximize filtration efficiency, which is especially important in industrial filtration processes. Even in the case of PFAS remediation using anion exchange resin, it is very desirable to utilize every particle of the expensive resin material to optimize the filtration efficiency and extend the operating life of the resin.

With the heavy weight of the high pressure steel filter tanks of the **AdEdge/Martucci** proposal, gone are any hopes for a modular concept filtration system design with the flexibility to meet any future multiplexed filtration needs (as described in **Section 11** and elsewhere).

From all points of view the proposed system initially presented in **Section 3** was the simplest, the most cost effective (by a significant margin) and the most flexible general purpose method of achieving Rocky Hill PFAS remediation to ND level. It was based on the Horsham study and further motivated by seeing the Horsham results verified and utilized in two-filter unit lead-lag systems already installed in four (4) working municipal water systems in the Horsham/Warminster area, in total vindication of the design and the methodology. Also, the simplest and the most cost-effective and best designed filtration units for use in this type of Rocky Hill system are those made from fiberglass, as described. This is without question.

In complete contrast,

From all points of view (many of which have been mentioned and described here) the **AdEdge/Martucci** proposal is the most complex, the most expensive (by a

significant margin) and the most inappropriate and wrong method of trying to achieve PFAS remediation to ND level for Rocky Hill.

The use of a 40 foot long trailer with a train of six (6) steel, high-pressure, internally epoxy coated, filter vessels in the Rocky Hill (atmospheric pressure) water facility has been referred to as being outlandish.

Other more explicit descriptions are crazy and absurd, for all the reasons that have been presented here.

It is not possible to design anything correctly when, firstly, you do not have the correct starting information and, secondly, when you do not really know what you are doing, and what the essential problems are.

The removal of trace level PFAS to ND levels for Rocky Hill became a very simple problem more than two years ago as a result of the Horsham pilot study, and with a simple and low cost solution fully presented in great detail in **Section 3** – that should have become quite obvious to anyone who really wanted to consider it.

Instead of this obvious, rational, outcome, the whole Rocky Hill PFAS remediation situation has gone completely off the rails, and in a totally ludicrous manner that is scarcely believable, and is almost impossible to adequately describe.

The complete background situation of the Rocky Hill PFAS remediation saga has been presented here at considerable length and in detail to make it very clear that all the described events and critique and analysis of the **Martucci/AdEdge** proposal are based on verifiable and documented and reasoned facts, and are not based on conjecture or simply opinion.

Then who is to blame ?

And how did the situation degrade to this low level?

The first on the list are clearly the mayor and the borough engineer. Over the past 3 years they have adamantly refused to listen to anybody, have had rigidly fixed ideas, and additionally have seemed to be basically clue-less.

As previously stated, there has not been any formal or detailed description of any “official” Rocky Hill PFAS remediation proposal presented to the Rocky Hill community at any time. Nobody apparently was capable of presenting one?

The listed **AdEdge** goal (in a single page original system outline) is to remediate PFOS to meet the N.J. mandated MCL level of 13 ppt from the current level of 16 ppt, and there is certainly no commitment mentioned anywhere of achieving ND for PFAS. So, it remains essentially a mega-dollar proposal without any stated final goal, except to reduce PFOS to below 13 ppt.

There is no presented description of locating the filtration units in the Rocky Hill aeration section (for the many reasons already frequently described) nor is there any description of where they are actually being located in the system.

There is no calculation of any estimated operational time for the resin.

There are no presented descriptions of any intended or possible alterations or replacements of components or pumping systems in the Rocky Hill water facility – or of any necessity for doing so. Nothing is planned or described.

What sort of project is this, without any description details and without any acceptable stated goals? Is this the project that we all have to accept?

We have a Borough Engineer who **(as shown in the Section 11 critique)** clearly does not know what the goals are, or even how the proposed AdEdge system actually works, and how the six filter vessels are connected together.

The **Section 11 critique** shows that he does not understand the significance of hydraulic loading in filtration design, leading to a nonsensical mathematics scenario that was concocted in an attempt to establish conformity with a N.J.A.C. specified hydraulic loading requirement of **less than 3gpm per sq foot** of filtration medium – **N.J.A.C. 7:1011.14 (c) 2** – that is clearly absurd and totally impossible for an assumed system flow rate of 250 gpm, and with an anion exchange filtration system. So much for our water expert, appointed by the mayor.

This brings us to the general question of mayoral appointments.

It may be remembered that in 2019 the Rocky Hill Borough council was completely dysfunctional. The mayor had fired the borough attorney after many years (perhaps with cause – no reason was ever presented). One would expect however that normal procedure would involve consensus of Council, and evaluation and approval of any replacement attorney.

Apparently, a replacement was appointed without any presentation of background or resume or any personal presentation to the council members, and at rather short notice. There was dispute over all this.

Whatever the reason, this led to an ethics complaint being filed against the mayor on procedural grounds.

There was then council discussion on hiring an ethics lawyer to resolve such issues. Nothing seems to have been learned from any of this.

In late 2020 the borough engineer Tom Decker (a Van Cleef engineer) was fired by the mayor, with no reason being presented to the Rocky Hill community, and presumably as a mayoral prerogative. The present borough engineer Robert Martucci was then hired by mayoral appointment quite rapidly, and presumably this was passed through borough council as a formality.

There did not appear to be any presentation of resume and credentials and letters of recommendation, and there was no interview process with Council. It was apparently another mayoral appointment – presumably without any background check or any borough council evaluation.

Over the past 2+ years the municipal administration has been quite chaotic. There have been three 3 (or is it 4?) borough attorneys, two (2 or 3?) CFO's, 2 borough engineers, one (1) stand-in borough clerk (who quit but didn't) – and 5 out of 6 council members replaced for one reason or another.

A case can be made for revision of Rocky Hill bylaws such that pending mayoral appointment candidates are required to submit resumes and references to the Council for approval including a required interview presentation for evaluation before appointment is later voted on.

At present the replacement of professional administrative staff seems to resemble a rotating sequence of temporary candidates at the level of itinerant workers.

Municipal salaries are low, and the staff generally require multiple jobs at different municipalities to make ends meet. Maybe the salary payments should be increased appropriately. Also the professional staff may not be the best and brightest, and this should perhaps be expected, and accommodated.

For instance, the borough attorney and the CFO should never have approved the issuance of the Rocky Hill RFP bid proposal in the manner that has been described – (pages **18,19,20.**) – which involved federal funding but with no transparency, no competitive proposal bidding, and with no conformity to established federal administrative regulations relating to federally funded projects.

Of course, the claim might be made that these federal procedures are unfamiliar to them – but this is no excuse. They should have known (and the mayor should have known) that there are local resources (such as in nearby Hopewell) that can handle governmental bidding proposals and contracts on a consulting basis, and can assist in appropriately structuring a bidding proposal involving federal funding.

In regard to the Borough Engineer, he may not have known anything about the PFAS problems, but he could have tried to read about them, and learn. He could have listened to Rocky Hill residents, rather than deliberately refusing to interact with them. Also, in terms of forming an engineering understanding, he could possibly have tried to consult with some ex-colleagues at Van Cleef Engineering, or even directly with the **NJWA** (New Jersey Water Association) which had a 2% set-aside funding in the NJ DWSRF program to assist small municipalities in an advisory and helpful capacity on such matters. They were State funded for this purpose. He should have known about this, and the mayor should have known about it, and the NJ DEP would have told them of it – if they had been contacted and asked.

The mayor and Martucci should have visited Horsham, as was requested of them. They did not want to do so, and made an excuse that Martucci would need travel reimbursement that would need formal Council approval.

Three (3) Rocky Hill residents then visited Horsham themselves. The mayor and Martucci could have come with us, but basically did not want to do so. They also did not read or acknowledge the trip report that explained what had transpired. They have not attempted in the slightest to read or understand anything posted on the www.rockyhillwater2020 website. That is why mayor and borough engineer are high on the blame list. They, and consequently the whole Rocky Hill municipal administration, have been completely incompetent and totally amateurish in regard to this PFAS remediation issue.

There are residents in Rocky Hill who are engineers or industrial chemists, who have all said that the single person **Martucci** proposal for Rocky Hill should not have been accepted by borough council without some second opinion or review, as is the normal, standard, requirement in such situations. This of course is totally true, and had been repeatedly stated, and repeatedly ignored. It needed more residents of influence stating this forcefully. These resident engineers and professionals, and ex-Borough officials, could at least have said something and done something, even in the form of a short e-mail to mayor and council on the matter, indicating growing community concern.

But they sat around and did nothing – so are also on the list, as they well know.

Then we have the Community Groups, supposedly relating to Rocky Hill Community issues and activities. Their functions are generally considered to act as a catalyst and motivational force for the good of the community. One would think that a long term debt of \$2.3 million inflicted on the Rocky Hill residents, and including dubious and unwanted work projects, would be an issue of some serious community concern and active interest. But, apparently not. Their major concerns seem to be more centered on floral arrangements. They are certainly on the do-nothing blame list.

We then come back to the **NJ DEP** who has responsibility for administration of the **DW SRF** program.

As stated earlier, they (NJ DEP) have very limited specialized ability to scientifically or technically evaluate deeply flawed proposals which they routinely “approve”, but they are quite willing to perpetuate the belief that this “approval” means some official technical approval and justification – which is definitely not the case.

They do some good basic science at NJDEP, but they are not equipped and are not mandated to assume any direct responsibility for constructing or enabling specific public projects. That is always a local, municipal, responsibility.

There is a SRF Manager at NJ DEP to oversee the NJ DWSRF program. It is his/her obvious responsibility to ensure that the SRF applications are basically sound.

It has been described (on pages **20, and 21** of this text) that the **EPA** has stated that a fundamental requirement of **DWSRF** funding is an active community participation and involvement. This is directed at ensuring that SRF funded proposals are soundly based and community approved.

This requirement of demonstrated community support was totally missing from the NJDEP approval checklist for proposals, such as the **Martucci/AdEdge** proposal for Rocky Hill, funded by the DWSRF. They (NJDEP) have badly failed in correctly administering the DWSRF program as requested by the **EPA**, and so they are certainly on the blame list.

We next come to the Rocky Hill Council members. It could be claimed that they are essentially the municipal governing body, and that they were quite vacuous and let it all happen, and are therefore collectively responsible. This may be true, but is not entirely fair.

Council members are volunteers, with good intentions of trying to help and serve the community. If the mayor does not confer with them, they are basically totally uninformed – and this has largely been the situation. They were always uninformed. They might possibly have read Sections of the www.rockyhillwater2020.com website but, if they don't sense any community involvement or supportive activity, they are left with making personal decisions, perhaps opposed to those of the mayor, and it becomes difficult for them to individually assume any direct responsibility.

The council members are elected representatives of the community, and they respond to the community. They often look for and need a clear signal from the community, and never got one on this PFAS issue. Of course, they also never asked for one, in over 2 years.

Democracy is easy (in theory) to implement, and at the municipal level is fairly simple. One Council member proposes that the PFAS remediation proposal has not

been adequately represented, and should be halted to permit review and allow alternative proposals to be additionally presented and considered.

Temporary remediation systems can be used to avoid non-compliance default. Another Council member then seconds the motion. It is then opened to discussion (which has been sadly lacking in this whole sorry story) leading eventually to a final vote on the matter by the Borough Council.

That is the way that things should work. The Council members decide the issue (not the mayor and borough engineer) on behalf of the Rocky Hill Community, who they are supposed to represent.

Things have not been done that way, as must be obvious by now to everybody.

This democratic form of governance is what the **EPA** relied on to get a correct implementation of the **DWSRF** program (in spite of seemingly anticipated incompetent local municipal administrations) based on the belief that the common sense and collective good judgment of communities would prevail, as a result of specifically requiring community support of proposals and community active involvement in the DWSRF process.

It obviously does not always work out that way.

Roman Law. Qui tacet consentire videtur - basically means silence implies consent. Indifference has consequences – it implies agreement with what is going on.

The Rocky Hill community has been bombarded with 12 Sections on the website www.rockyhillwater2020.com for around 3 years, and with flyers announcing every new Section for everyone to see. In spite of all this, the Rocky Hill community has overall done nothing, said nothing, and perhaps even thought nothing, and read nothing about the current PFAS situation.

The Rocky Hill community is seemingly indifferent to what happens to their Rocky Hill municipal water system.

That has become blatantly obvious, and is why the Rocky Hill community as a whole is totally at fault and is at the top of the do-nothing blame list.

It is the normal human response to stay quiet, do nothing, and go along with the flow, and there are always a host of excuses to justify inaction, such as:

1. I am not technically inclined.
2. Nobody said anything to me about it.
3. I trust their judgment. It is not my responsibility.
4. They say they are only using 4 filters, all's good.
5. Let's get it done quickly, so we will all be safe.
6. Let the engineer do his job. That's what we pay him for. He is the expert.
[Nobody ever asks: Who is this guy? What is his background? – A mayoral appointment? – Has the proposal been reviewed by anybody?] - and then, of course,
7. So what if it's **5X** bigger than we need?
8. Somebody should do something about it.

In the meantime one can only think of the total waste of substantial federal DWSRF grant money that we could have used in much better manner, in so many ways. This type of funding will not come around again.

We end up with a 40 foot long, 10 foot high, trailer or shipping container from China, filled with a train of 6 steel high pressure filter vessels loaded with around 4.8 tons of very expensive anion exchange resin as a lasting monument to bad science, bad engineering, and to Rocky Hill administrative incompetence and failure. It can perhaps be covered with colorful or painted siding and, with the use of a few potted plants, can perhaps be disguised as a cabana – as apparently at Ramsey N.J. – but everyone will know of the pathetic joke.

This is what happens when municipal actions are allowed to fall under the paralyzing control and influence of the three (3) i's – – –
Ineptitude, Incompetence, and Indifference.

There is shame and regret at not having been able to prevent this sad situation. There is enough blame to go around. This is going to be a constant regret. We should all be ashamed for letting this happen – and doing absolutely nothing about it. A repeat of the **MJML** debacle.
Does anybody care?

Ivor. Taylor.
July 10 2023.

References/ links.

- [1] <https://bellmawr.com/wp-content/uploads/2020/07/Temporary-Treatment-Approval-Warren-WTF.pdf>
- [2] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4284091/>
- [3]] <https://www.nontoxu.com/kitchenware/stainless-steel-leach-water->
- [4] NSF/ANSI 61 and Stainless Steel. www.solleder.com **NSF international.**
- [5] Waterco Micron Filters.
https://image.makewebeasy.net/makeweb/0/nn4gKaELe/Document/PRODUCT_BROCHURES_MICRON_COMMERCIAL.pdf?v=202012190947

