

**From:** NCEnvironmental  
**To:** NCEnvironmental; [REDACTED]  
**Subject:** RE: [EXTERNAL] Re: WQ Complaints - Mott's Village

---

**From:** NCEnvironmental  
**Sent:** Wednesday, June 29, 2022 8:58 AM  
**To:** [REDACTED]  
**Subject:** RE: [EXTERNAL] Re: WQ Complaints - Mott's Village

Good morning [REDACTED]

The blow-off that we anticipated to have discolored water along the River Rd main was clear and not discolored; therefore, we are not sure that this main is the issue. Regardless, it is best practice to have the ability to isolate and operations is obtaining quotes for a contractor to install an isolation valve past the Mott's Village entrance. There is not one there currently.

With respect to my calculation, there are 5,200 connections total in the Cape Master System. Motts Village comprises 434 residential connections and 357 irrigation. When I was calculating the % demand in Mott's Village, that was taken into account. The neighborhood irrigation demand is approximately 14% of the total and residential is 4%. Some homes with irrigation do not have irrigation meters.

I cannot provide locations and gpm at each well due to security reasons. I can state the 4 wells closest to you are permitted for a total of 1,800 gpm and the system as a whole is permitted for 3,944 gpm.

Let me know if I can answer any additional questions for you or the community.

Thank you,



**Amanda Berger**  
**Director, Environmental Compliance**  
**Aqua North Carolina**  
202 Mackenan Court; Cary, NC 27511



---

**From:** [REDACTED]  
**Sent:** Sunday, June 26, 2022 6:06 PM  
**To:** NCEnvironmental [REDACTED]  
**Subject:** [EXTERNAL] Re: WQ Complaints - Mott's Village

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Amanda- Thank you for sharing the information with me. I have a few more questions that I hope you can clear up. First, has there been any progress in isolating the main in River Road. Also you had mentioned 5500 connections between Motts Village and Snows Cut. Every house in Motts Village has two meters, one for domestic water and one for irrigation. In that calculation of 5500, is each home in Motts Village one connection or two. I have reviewed Aqua's Annual report for our area. The report lists 10 well sites (the relevant page is attached). Are you able to share with us what the pumping rate is for each of the lots. Any information you share would be most helpful.

On Thu, Jun 23, 2022 at 12:51 PM NCEnvironmental [REDACTED] wrote:

Good afternoon [REDACTED],

Dawn and I appreciate your time speaking with us to discuss the water quality (WQ) concerns in Mott's Village. This email is a follow-up to that conversation.

Dawn is Aqua's dedicated expert who answers WQ calls for all 700 + systems that we operate in North Carolina. In April, she brought it to my and the operations manager's attention that we were receiving an uptick in calls from the Mott's Village area.

1. Aqua began to investigate by first checking water quality and looking for operational issues.
  - a. Our inorganic chemical (IOC) results did not indicate that the source (wells) that supplies your system had iron and manganese in the supply.
  - b. Our operational survey did not indicate that we had an issue with leaks.
2. Our next step was to survey demand as the increased call volume correlated with irrigation season.
  - a. The results our analysis from February – May analysis indicated that demand for Mott's Village went from a little over 1 million gallon (MG)/month in February to almost 9 MG/month in May (Picture 1).
    - i. Mott's Village is currently 18% of the Cape Master system demand and our investigation indicates this demand is between the hours of 6 AM and 12 PM.
1. Motts is approximately 9% of the connections in the system.
3. Dawn also noticed that the calls are coming in between the hours of 9 AM and 12 PM, often cyclical in nature (every 3 days), and impacting primarily one area of the neighborhood.
  - a. She has spoken with several customers who indicated that the contracted landscaper has advised residents to irrigate 3x/week for approximately 2-3 hours/day. This correlates with the complaints.
  - b. I was on-site last week to perform Aged Water Testing – which helps us identify if we have minerals in the source or the distribution system. Samples were collected at the wells, in the distribution system, and at homes that have complained. The results of this investigation

indicated that there is not a chronic water quality – iron and manganese – issue in the distribution system or in the wells. All results were clear.

4. Operations investigation indicates that we have bi-directional flow which creates a vacuum effect occurring in the distribution system during peak demand.
  - a. A quick calculation of the demand for irrigation can be done by taking the number of homes x the average sprinkler head demand.
    - i. Hypothetically – if 200 homes are irrigating at the same time with 1 sprinkler head (avg. 7 gpm)– that is 1,400 gpm demand. There are other areas within the Cape Master that are also irrigating during these hours, in addition these hours are peak domestic demand hours (showers, cooking, etc.).
    - ii. This calculation supports what we are seeing in the system, so the next step is to attempt to identify where the bi-directional flow is occurring and determine **IF** we can make adjustments to reduce this “scouring” effect. Operations has identified one possible area, and we have a contractor coming out to investigate tomorrow.
1. Note – This calculation is not indicative that we have an issue with our wells or ability to supply the system. The average 4 person home with 30% irrigation demand at an individual premise is 5,000 gallons/month. The average in Mott’s Village is 18,000 gallons/month, with several homes exceeding 40,000 gallons/month. Utilities do not design water systems to supply a hypothetical irrigation demand, nor do DEQ regulations require us too. There is more than sufficient supply and pressure to serve the system under the standard domestic w/30% irrigation demand utilizing the 5,000 gallons/month/connection. The issue is that the irrigation demand is 75% - 90% of the demand and is occurring at one time during the day. This demand is calling for our wells to supply a 12-hour demand in 3-hours and the flow is changing direction as the system calls for more supply.
  - a. I point this out as complaints made to Aqua and DEQ have indicated that there is insufficient supply and the discolored water is attributable to the aquifers.

So what is Aqua doing...

1. Operations has a contractor coming out to investigate a section of main along River Rd. that may be able to be isolated. Our investigation indicates this could be a source of the complaints along Mott’s Village Rd; Fayemmarsh Lane, and a couple of other locations near the River Rd. entrance.
2. You mentioned that neighbors have seen contracted water tankers filling up from our hydrants. The area you mentioned and timing correlates to the homes outside of the isolated area that complained earlier this week. Tankers using our hydrants will cause discolored water calls. Aqua has not issued anyone a permit to utilize those hydrants. We will be monitoring this area closely and please request customers call us when they see this occurring.
  - a. I will be reaching out to CFPUA and requesting they notify their permitted contract haulers not to use our hydrants.
3. Capital Expenditures -

a. Master Plan

i. Completed in 2021 and multiple projects identified in this plan have been included in our capital plan to be executed within the next 5 years.

b. Three new wells

i. 2 in Mott's Village and 1 on the southern side of the system

1. Estimated construction timeline is Q4 2022 – Q1 2023

c. Elevated Storage

d. Additional well sites are currently under evaluation.

In the interim, I would like to suggest that Mott's consider alternating irrigation days (odd/even address alternating), starting irrigation at pre-dawn hours (4:30ish AM, summer), and potentially irrigating more days, but less hours/day. Several residents have mentioned irrigating for 3-4 hours/day, 3 days/week. I am not suggesting to stop irrigating, just suggesting that alternating times, intensity, etc. could help. With the summer heat, irrigating after 7 AM leads to more water evaporating vs infiltrating. Starting a little earlier and doing it more frequently, but less time/day could help with the water quality concerns and also improved lawn performance. I have reached out to the New Hanover County AG office to schedule a lunch and learn for your community. I am waiting for a return call. I will contact you once I speak to them.

Pictures and data are below my signature. I typically do not provide this much information; however, I want to assure the community that we are investigating and analyzing every available data point to address your concerns. It is also provided for transparency in our processes.

I appreciate your time and assistance. Hopefully I will be back in touch soon with news on the Lunch and Learn and a capital update.

Best regards,

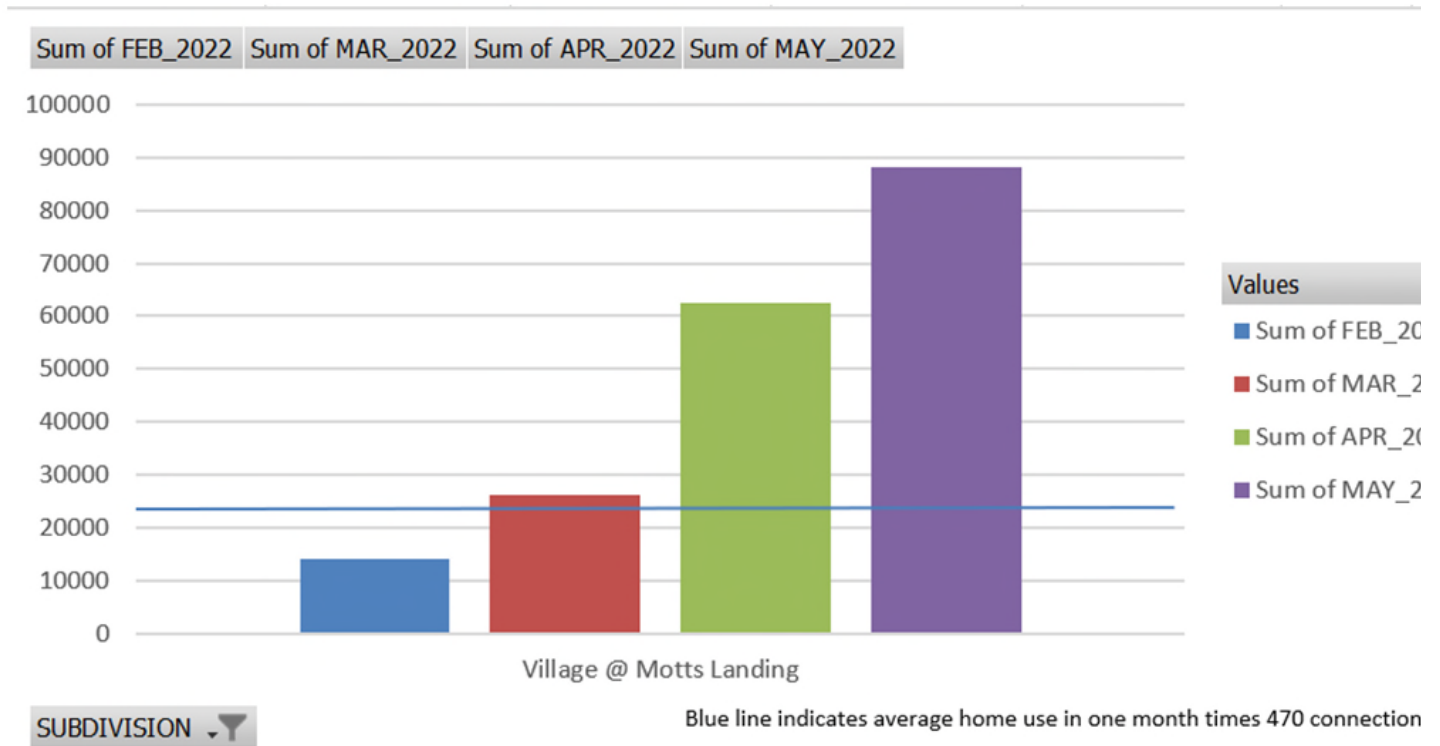
The logo for AQUA, featuring the word "AQUA" in a stylized blue font with a wave-like underline.

Amanda Berger

Director, Environmental Compliance

Aqua North Carolina

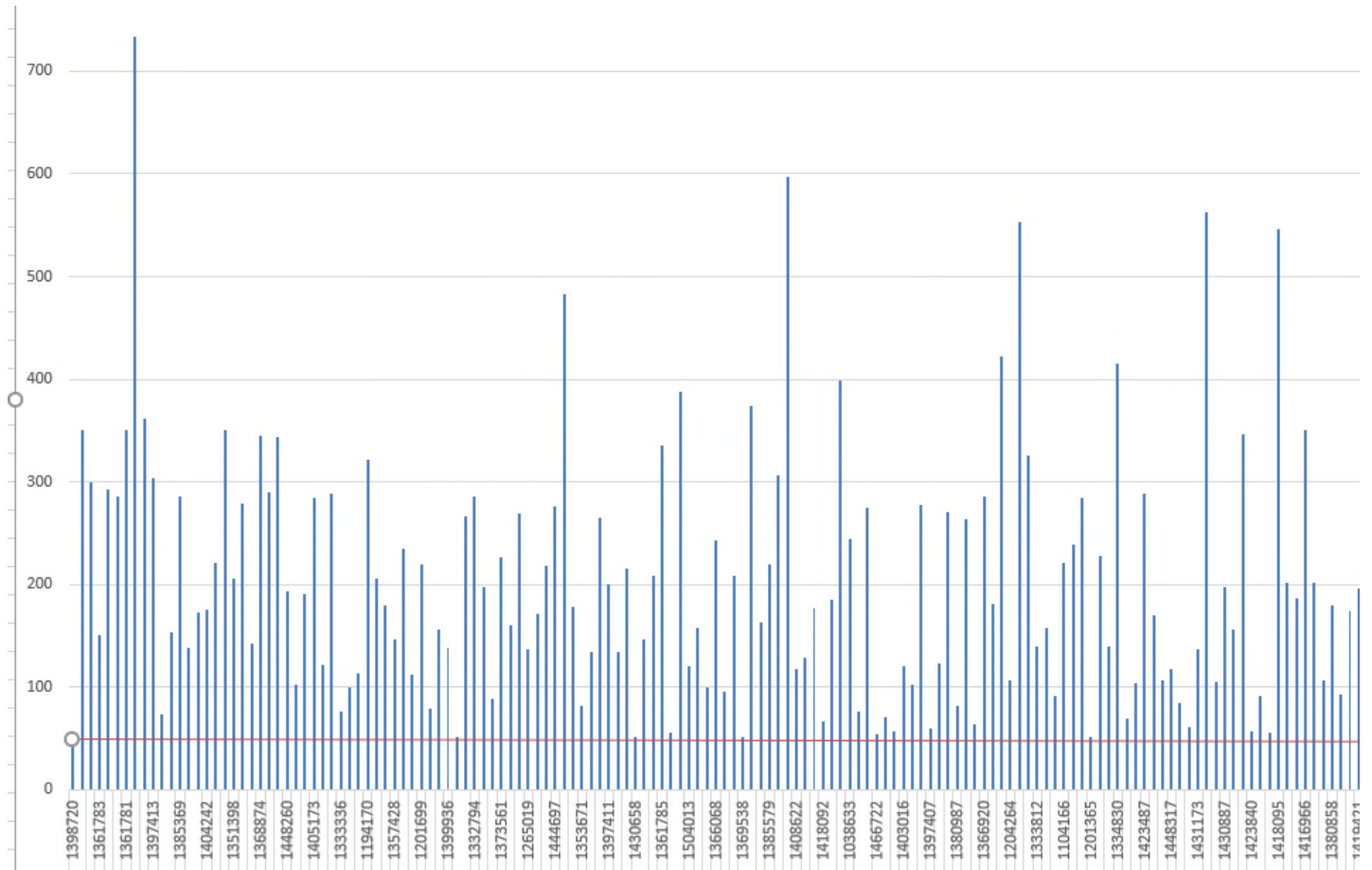
Demand -



Aged Water Test result. We look for deposition and discoloration. To date, day 8, there is no indication of either.



May Demand in Mott's Village (red line is 5,000 gals/month). Add 2 zeroes to the numbers on the x-axis.





Complaints: The Glen Ellen Rd and Jacob Mott's occurred around the time you mentioned the water issue. The others are mostly isolated to River Rd. Interesting, several of the customers with the majority of concentrated complaints have one home using ~25kg/month and the other home is a ~10kg/month user. Not sure if there's any value in that information, it is just something that we have noticed.



Call volume: Looking at the dates where there is a drop in calls correlates with when it has rained. With the knowledge that customers have rain gauges on their irrigation or not, it was just something that we noticed when we were evaluating the calls.

