



# TOWN OF NORTH CASTLE

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## MEMORANDUM

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To: Adam Kaufman, Director of Planning

From: Sal Misiti

Date: October 19, 2022

Cc: North Castle Planning Board  
Joseph M. Cermele, P.E.  
Roland Baroni, Jr., Town Attorney

Re: **The Summit Club at Armonk, Proposed Water System**  
**North Castle Water District No. 2B**

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As a follow up to our discussion on 10/13/22, I have further reviewed the plans provided for the water distribution system and pumping/treatment facility. I will detail concerns I raised during the meeting and additional items that will be required, and some which remain in question. I will list my items in a numeric format below:

1. Water distribution system as designed is not looped, basically it is a 2,400' dead end. Volume of the 8" water main is approximately 6,267 gallons; it will prove to be difficult for the last Townhouse at the high end of the system, to replenish enough water over time to eliminate stagnant water.
2. Water service lines to buildings are 4" how were they sized? Is 4" necessary? A 4" line at 20 psi can flow 1,000 gpm –12 units per building is equal to 83 gpm each—excessive.
3. There is no detail for water metering of service connections.
4. Verify fire line sizes to buildings, provide calculations and have fire inspector verify.
5. With the exception of the plan fire hydrant detail, there are no details for thrust blocking of the water main fittings. Each tee, bend, etc, will require thrust blocks and mega lug retention glands.
6. Water storage tank size, volume, and location. Verify capacity is adequate for fire flows.



7. Tank as illustrated on the plans is 50' in diameter with a working height of 24.5' this calculates to a volume of 360,000 gallons when full. Language indicates that a tank volume of 105,000 gallons will be used? If it is the latter, that equals 4,286 gallons per foot, if the two well pumps run it will take approximately 70 minutes to replenish one foot of water in the tank, provided no booster pumps are running.
8. Provide a level transducer in the water storage tank.
9. Treatment building, there are no details of building finish. Is there room to expand building should additional treatment become necessary in the future. What size property footprint will the water district have for this purpose should the need arise.
10. Booster pump sizing and additional fire/booster pumps are not the standard used for fire protection, please verify. 8" suction header may be undersized for an "all pumps on" situation, total of 145 HP should all five (5) pumps come on, suction header can go air bound.
11. Provide a table similar to the well pump table for all specified booster pumps.
12. Plans include erroneous storm drain lines illustrated under storage tank and treatment building.
13. Provide control system details for incorporation into our existing SCADA system, coordinate with our SCADA consultant.
14. Well line jacking pits should have an access chamber for future use so a pressure reading can be attained in verification of transmission main leak. If a well is losing its yield this will enable us to rule out the discharge line, and focus on the well pump.
15. For each well, the Health Department will require source protection fencing.
16. Illustrate how irrigation of the residential area will be accomplished, showing the plumbing from a different source.
17. Provide verification that irrigation wells which were not part of the recent domestic well testing report will not impact the production of the three (3) domestic wells during the peak season.
18. A tank drain valve is routed towards the treatment building, verify where the discharge will go. It appears to be a floor drain which may not be adequate. If the intent is to go to sanitary this may present a problem with the operation of the WWTP. Typically, this is accomplished by using a fire hydrant as a blow off on the distribution main near the tank, configured with specific valving.
19. Well line flow meters should be mag meters, connected to the PLC.



20. The blow off lines for the three production wells discharge outside of the building onto a splash pad, this will cause erosion.
21. Clarify provided continuous Cl2 monitoring device information, should be non-reagent type. Also feed line to unit appears to be originating from the blow off header which will not work. Also, should have the ability to connect to SCADA. Provide details for the Turbidity meter as well.
22. Provide Health Department language regarding fire hydrant drains.
23. Service line detail shows HDPE pipe, K-copper should be specified. Our code indicates a minimum size of 1" K-copper, if the plan is to use HDPE pipe a meter pit will be required.
24. Distribution main profile shows several 90° bends. They should be sweep transitions accomplished with two 45° bends.
25. An air release is shown as a manual operating valve at the high point of the distribution system. This should be an automatic air release in a chamber where it will have access for service or replacement.
26. The Health Department will require the Water District to have a sampling monitoring plan once the system is operational. Sampling stations should be added at various points along the distribution main for the ability to sample accordingly. This eliminates the requirement to enter residences.
27. Verify pool fill/top off requirements. Pool water use numbers were provided for the patrons; however, it is not described whether the pool will require a supply line from the distribution system for topping off. If so, a volume will need to be provide and proof that the system can supply the need with proper Health Department approved backflow prevention.
28. There is no fire service line proposed for the pool/clubhouse.
29. The raw water treatment/contact time 82' of 24" piping looped/return end should not be reduced; it would be cleaner to connect with standard fittings eliminating multiple joints in reducing to 4". Additionally, you would pick up added contact time if the inlet and outlet lines of the contact vessel were increased in size, plans show 4" in and out. The method in which the line is reduced utilizing concentric reducers at the inlet and outlet will make it impossible to drain the line completely. Utilization of "Eccentric" reducers which will accomplish this.



30. The control table settings on page 4 of 11 is questionable. Well pump turn on or feed to the storage tank should be based upon level settings, I believe the low-level setting would be the low turn on point. When the tank calls for water at a pre-determined turn on point a well pump comes on, if the level continues to drop a second well comes on, etc. In a worst-case scenario if all three well pumps were to run that would be the equivalent of 113 gpm. What is not listed are the flow rates for the five booster pumps I described in item #10 above.
31. The well table information on page 4 of 11 should include the length of the discharge/transmission main from the wells to the treatment building. I used the information on the plans in order to calculate the pipe volume of the discharge lines using the pump level setting in the well (riser column) and transmission main to the treatment building which are as follows: Well #1 = 1,374 gallons (@37 gpm will take 37 minutes to replenish the line). Well #3 = 428 gallons (@33 gpm will take 13 minutes to replenish the line). Well #6A= 1,280 gallons (@43 gpm will take 30 minutes to replenish the line)—we are going to have a water age (stagnant water) issue.

Finally, it would be advantageous for the District/Town to have an easement running from the South West corner of the Summit property to the East originating in the vicinity of Willow Pond Lane and ending at Byram Hills property at the very least, or entirely up to the existing parking lot. In the event at some point in the future, a water main from Water District No.4 could extend to the area to serve the Summit and potentially also service Water District No.2.

Please call me if you or any of the Planning Board members should have any questions or require any additional information. I can be available to attend the planning board meeting.