



**Vermont Department of Environmental Conservation
Drinking Water and Groundwater Protection Division**

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Agency of Natural Resources

Woodstock Aqueduct Company
PO Box 441
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Otter Creek Engineering
Attn: Craig Jewett
jewett@ottercrk.com

Re: WSID # VT0005343 Woodstock Aqueduct Company
Preliminary Engineering Report, PER-5343-1

Dear Woodstock Aqueduct Company,

Thank you for submitting the Preliminary Engineering Report (PER) dated December 2023 prepared for the Woodstock Aqueduct Company (Water System) by Otter Creek Engineering (OCE). Submitted alongside the PER was the Water System Hydraulic Model Development, Evaluation, and Report (Hydraulic Evaluation) dated December 2023. The Drinking Water and Groundwater Protection Division (Division) has completed its review of the document and **approves the PER and Hydraulic Evaluation with conditions and comments**, which are described below.

The Division concurs with the recommended projects of a second finished water storage facility to improve hydraulics and ensure that appropriate maintenance can be performed on the existing storage facility; and with the replacement and upsizing of the distribution main from the water storage tank down to the Cox District Road Route 4 intersection. Some of the targeted distribution main was reportedly constructed over 100 years ago and is undersized for the current uses and priorities of the Water System.

The Division has determined the PER meets the requirements of the Vermont Water Supply Rule (WSR), and is approved, subject to the following condition:

1. An addendum is required to outline life cycle costs for tank types and site characteristics once potential properties narrowed.

The Division has the following comments on the PER and Hydraulic Evaluation:

- Redevelopment or replacement of Well #5 requires a Source Permit. The Water System must apply for and obtain the Source Permit prior to doing this work.
- Over 66% (11.55 miles) of the distribution system has exceeded its expected useful life, unaccounted for water is estimated at 31%, and 48% of distribution mains are undersized for

conveying fire flows. The Water System should be developing a replacement plan and schedule to address the aged and undersized distribution system.

- Of the Water System's 96 fire hydrants, 95 of them do not meet the minimum requirements of the WSR. The minimum requirements of the WSR (500 gpm for 2 hours while maintaining 20 psi throughout distribution) are far less than the desired fire flows outlined in the PER and Hydraulic Evaluation (3,000 gpm for 3 hours while maintaining minimum pressures throughout distribution). The desired fire flows are based on an Insurance Service Office (ISO) report; ISO develops recommendations on fire flows based on numerous factors (e.g., building density and construction [ex. wood framed]). If fire protection is a priority for the Water System and its users, significant investment must be made to provide this service.
- Conveying the desired firefighting flows through small diameter, 100+ year old pipe will result in high velocities and increased likelihood for pressure transients and associated consequences (e.g., line breaks, potential for property damage.) Replacing these undersized lines with adequately sized, new lines must be prioritized if the Water System wishes to provide fire protection services.
- The Hydraulic Evaluation report recommends: *"Any hydrant flow testing in the future should be done only when the tank is full and the well pumps are on. There should also be the requirement to issue a boil water notice in the area of College Hill Road to prevent any negative effects of low pressure."* The Division concurs with the recommendations listed here, unless specifically required to do otherwise (e.g., hydrant flow testing to meet the Division's Draft Evaluating Water System Hydraulics guidance).
- The responsible Water System staff are required to review the Boil Water Notice procedures with the Compliance Section, specifically David Love (david.love@vermont.gov).
- The Division recommends performing needed maintenance on the existing storage tank including zinc cathodic anode replacement.
- Page 12 of the PER states that the Water System will issue a "voluntary Do Not Drink Notice" whenever a fire hydrant is used. Note: the Division requires a Boil Water Notice be issued, not a Do Not Drink Notice.
- Per the OCE response provided October 24, 2023, the current operation of maintaining adequate storage levels in the water storage tank does not meet Appendix A, Subpart 7.3.3 of the WSR. The Water System needs to work to address this deficiency.
- There are some inconsistencies with the average day demand (ADD) and maximum day demand (MDD) numbers presented in the PER and in the Division's databases; however, they do not affect the conclusions drawn. Therefore, further refinement and concurrence on ADD and MDD numbers will be included in next steps.

The Division looks forward to your response and to the forthcoming Construction and Source Permit Applications to address the priorities identified in the PER. Questions can be directed to Allison Murphy via email at allison.murphy@vermont.gov or phone 802-272-2449.

Sincerely,



Allison Murphy, P.E.
Division Engineer

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