



COMMONWEALTH of VIRGINIA

DEPARTMENT OF HEALTH
OFFICE OF DRINKING WATER
Lexington Field Office

131 Walker Street
Lexington, VA 24450
Phone: 540-463-7136
Fax: 540-463-3892

SUBJECT: Albemarle County
Waterworks: Keswick Estates
PWSID: 2003400

May 31, 2018

Mr. John Trevenen, General Manager
Keswick Utilities, Inc.
701 Club Drive
Keswick, VA 22947

Dear Mr. Trevenen:

This letter provides the results of our May 29, 2018 inspection of the proposed well site(s) to serve Keswick Estates. In accordance with the *Waterworks Regulations*, the following well sites are tentatively approved by the Virginia Department of Health Office of Drinking Water (VDH-ODW) for the construction of a well to be utilized as a public drinking water supply:

Sites TW1-26, TW3-45, TW4-36.5 and TW5-14

The approval of the well sites listed above expires 12 months from the date of this letter, and is subject to the conditions described in the attached Well Site Approval Conditions Form. This approval is limited to well drilling, casing, grouting, and testing of the well. If drilling of any well listed above has not commenced by the expiration date, a re-inspection of the well site is required.

Upon receipt of the required documentation and after plans and specifications have been approved, a Construction Permit will be issued by the State Health Commissioner in accordance with the *Waterworks Regulations*. Construction of the waterworks facilities shall not be started until the construction permit has been issued.

Waterworks wells must be constructed by a licensed Water Well Systems Provider in Virginia. You may confirm licensure status by contacting the Virginia Department of Professional and Occupational Regulation (DPOR) or using the search tool on DPOR's website at the following address:
<http://www.dpor.virginia.gov/LicenseLookup/>.

A Preliminary Source Water Assessment (PreSWA) has been compiled for the proposed well(s). Attached you will find inventory, maps and summaries of land use and potential sources of contamination within the assessment area of the proposed well. Please take the time to review this information and contact me if you have any questions or corrections. This information may be used to generate a Source Water Protection Plan if desired. For assistance developing a Source Water Protection Plan, please contact Aaron Moses, PE, at (804)864-7492.

Mr. John Trevenen
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Upon request, an electronic version of the Preliminary Source Water Assessment information may be emailed to you. If you or your consultant has GIS software, we can also provide a geodatabase to facilitate further work with the data. To learn more about our Source Water Assessment and Protection Programs, as well as eligibility for assistance and funding opportunities to implement source water protection measures, we encourage you to visit our website at the following address: <http://www.vdh.virginia.gov/ODW/SourceWaterPrograms/index.htm>.

Please contact me at 540-463-0424 or steve.kvech@vdh.virginia.gov if you have further questions, or need to coordinate a preliminary engineering conference to discuss water supply alternatives as a result of the rejected well site(s).

Sincerely,



Steven J. Kvech, PE
District Engineer

SJK/kl/180531_1

Enclosures:

Well Approval Conditions Form
Preliminary Source Water Assessments

cc/w Encl: Albemarle County Health Department – Attn: Dr. Denise Bonds, MPH
Albemarle County Executive – Attn: Mr. Jeff Richardson
Albemarle County Building Official – Attn: Mr. Michael Dellinger
Timmons Group – Attn: Mr. Bruce Strickland, PE ✓
VDH-ODW-Central

WELL APPROVAL CONDITIONS FORM

Approved Well Site(s)		TW 1-26	TW 3-45	TW 4-36.5	TW 5-14
Location:	Latitude:	37.99956°	38.00056°	38.00021°	38.00003°
	Longitude:	-78.34454°	-78.34357°	-78.34265°	-78.34484°
	Marked: {e.g., Blue Flagging Tape}	Stake & Survey flag	Stake & Survey flag	Stake & Survey flag	Stake & Survey flag
Well Construction Class:	Class IIB. If an outer casing is deemed necessary during well construction the outer casing should be pulled as the inner casing is grouted. If the outer casing is left in place the grout must extend as least 50 feet below the bottom of the outer casing to seal the annular space between the inner casing and formation.				
Approval Expiration Date:	May 31, 2019 If drilling of the well has not commenced by this date, re-inspection of the well site is required.				
Well Lot Characteristics:	Minimum distance of 50 feet between the well and all potential sources of contamination, property lines, and rights-of-way or easements on the property. A 100-foot setback from petroleum or chemical storage tanks or pipes is required if plastic well casing is used. See attached aerial photos and maps.				
	The well lot must be graded as necessary to divert surface run-off from the well and to prevent ponding on the well lot.				
	The well lot must be served by an all-weather access road.				
	The entirety of the well lot must be located higher than the 100-year flood elevation.				
Grouting:	Use cement mortar grout, in accordance with <i>Waterworks Regulations</i> . Notify this office of the date and time that the well will be grouted. Provide this information as soon as possible so that a member of our staff may be present during grouting.				
Well Capacity Test	A yield and drawdown test must be run for <u>at least</u> 48 hours. We recommend the pumping rate be controlled throughout the test to maximize the production from the well and to produce a stabilized pump water level for at least the last six hours of the yield test. Immediately following the yield and drawdown test the water level recovery in the well should be recorded for <u>no less than</u> 6 hours or until the well returns to its static water level, whichever occurs first. If water will discharge into streams during pumping tests, please contact the Department of Environmental Quality Valley Regional Office to determine if a discharge permit is required.				
Simultaneous Testing Required:	Because several of the proposed wells are located within close proximity of existing Wells 1, 2 and 4, monitoring of the water level of the nearby well(s) should be conducted during the yield pump test. If the water level in the nearby well drops, a simultaneous pump test may be required. This will assure better information with which to determine the safe yield of both sources.				

Well in Groundwater Management Area:	Not applicable
Required Bacteriological, Chemical, and Physical Sampling:	A series of twenty bacteriological samples must be collected from the well discharge and submitted to a certified laboratory (DCLS or private laboratory) in order to determine the bacteriological quality of the raw groundwater. One bacteriological sample should be collected at minimum thirty minute intervals during the last ten hours of the yield and drawdown test.
	Water samples must be collected and analyzed for cyanide, nitrate + nitrite (combined), nitrite-N, inorganic chemicals, metals, radiological, and volatile organic chemicals. The chemical samples should be collected near the end of the pump test, prior to the recovery period.
	As the wellhead area does not appear to be vulnerable to contamination by synthetic organic chemicals (SOCs), SOC sampling is not required at this time.
Submittals Required Prior to Issuance of Construction Permit:	Water Well Completion Report (GW-2)
	Well yield, drawdown, and well recovery test results
	Results of required bacteriological and chemical sampling (if not reported directly by laboratory)
	Recorded plat of the well lot, and a recorded deeded dedication document for the well lot. The dedication document shall clearly state that the well lot will be used only for the waterworks appurtenances as long as the lot is being used as part of the waterworks.
	Construction permit application
	Final construction plans and specifications, including design calculations, prepared by a licensed professional engineer. A Preliminary Engineering Report may be required prior to submission of final construction documents.



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July 17, 2018

Mr. John Trevenen
Keswick Utilities, Inc.
701 Club Drive
Keswick, VA 22947

Dear Mr. Trevenen:

A Preliminary Engineering Report prepared by Timmons Group for Keswick Estates located in Albemarle County has been reviewed by this office. The report is titled "Water and Wastewater Facilities Plan 2017 Update" and is dated March 19, 2018.

This report proposes several alternatives to increase the overall capacity of the waterworks. Improvements appear to be necessary to enhance fire suppression systems at Keswick Hall and for the larger community. Alternatives include adding one or more new well sources, increasing booster pumping capacity and storage volume in phases.

The Virginia Health Department, Office of Drinking Water, in accordance with 12 VAC 5-590-200 of the Commonwealth of Virginia *Waterworks Regulations* approves the water portion of the Preliminary Engineering Report with the following comments:

- The report is not clear with respect to Improvement W5 and suggests that this improvement would eliminate the need for Improvement W2. Improvement W2 includes an additional well source(s). More source capacity will still be required to increase operation permit capacity of the waterworks to the desired 110,000 gpd.

One copy of the approved report is on file in the Lexington Field Office. If we can be of additional assistance, please do not hesitate to contact Steve Kvech, P.E., District Engineer, at (540) 463-0424.

Sincerely,

James W. Moore, P.E.
Engineering Field Director
Lexington Field Office

JWM/SJK/kl/180717_2

cc Timmons Group – Attn: Mr. Bruce W. Strickland, PE ✓
Albemarle County Health Department – Attn: Dr. Denise Bonds, MD, MPH
Albemarle County Executive – Attn: Mr. Jeff Richardson
VDH – ODW – Richmond Central

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