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STATE OF VERMONT
DEPT OF PUBLIC SERVICE
MONTPELIER, VT.
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Christopher J. Wamser
Site Vice President - VY

July 11, 2012

The Honorable Harry L. Chen, M.D.
Commissioner
Department of Health
108 Cherry Street – P.O. Box 70
Burlington, VT 05402-0070

The Honorable Justin Johnson
Deputy Commissioner
Department of Environmental Conservation
103 South Main Street, One South Building
Waterbury, VT 05671-0401

The Honorable Elizabeth Miller
Commissioner
Department of Public Service
112 State Street, Drawer 20
Montpelier, VT 05620-2601

Re: Construction Office Building Well Testing

Dear Commissioner Chen, Commissioner Miller and Deputy Commissioner Johnson:

Thank you for your letter dated March 27, 2012. This letter responds to your renewed request for Vermont Yankee to collect a grab sample from the inactive Construction Office Building (COB) well. As we have stated previously, Vermont Yankee remains fully committed to protecting the health and safety of the public. However, we continue to be concerned that grab sampling the COB well will not add meaningful new information regarding the nature and extent of tritium in the groundwater or add to the understanding of groundwater movement under the site. We also are concerned that such testing could produce inconclusive and potentially misleading results that may lead to public confusion about the nature and extent of tritium contamination of groundwater at the site. Nevertheless, given the State's public insistence that grab sample testing of the COB well be conducted despite these concerns, Vermont Yankee will collect a grab sample in accordance with a sampling plan prepared by GZA GeoEnvironmental, Inc. (GZA).

The COB well was drilled in December 1984 to a depth of 364 feet and operated until February 25, 2010, at which time Vermont Yankee took the well out of service as a precautionary measure after the discovery of tritium in the groundwater. Tritium never was detected in this well during its operation, and it was sampled on essentially a daily basis between mid-January 2010, when tritium was first detected in groundwater at the site, and late February 2010, when the COB well was taken out of service. After the

COB well was taken off-line, GZA conducted a geophysical survey of the well, along with five other active and inactive water supply wells in the area. The purpose of this survey was to better characterize the bedrock under the site. The results of the COB well geophysical survey revealed a primary water-bearing zone at a depth of approximately 312 feet below ground surface (bgs), as well as a number of other potential water-bearing zones of lesser hydraulic significance in the shallower portions of the bedrock.

In September and October 2010, packer testing was performed within the COB well to assess the hydraulic properties at five targeted bedrock intervals (based on the results of the geophysical testing results). During this work, groundwater samples were collected from two test intervals within the COB well: one spanning the primary water-bearing zone at 312 feet bgs, and a second from a shallower test zone. The groundwater sample from the primary water-bearing zone did not reveal the presence of tritium in the deep-water aquifer. However, the groundwater sample from the shallower zone showed a very low level of tritium (1,806 pCi/L). Vermont Yankee reported the results of this test on October 8, 2010. A second sample was collected from the shallower zone on October 10, 2010, which again showed a very low level of tritium at 1,380 pCi/L.

It should be noted that this shallower zone did not readily transmit water and that these tests were conducted using standard sampling methods that require purging of the test zone before the sample is taken. Because of the relatively low capacity of the bedrock to transmit water, such sampling can induce vertical migration of groundwater in the nearby bedrock fractures and produce results that do not reflect groundwater migration under normal conditions. Thus, these results should be viewed as overly conservative (biased high) and not indicative of actual results at the depth of the test zone.

As summarized in GZA's Hydrogeologic Investigation of Tritium in Groundwater Report dated May 5, 2012, groundwater at Vermont Yankee migrates west to east to the Connecticut River, with the overburden soils serving as the primary migration pathway for shallow releases in the plant area. This understanding serves as the basis for the Conceptual Site Model (CSM) that was developed for the site and approved by the Nuclear Regulatory Commission (NRC) (with USGS technical support). Consistent with the CSM, tritium released from the AOG pipe tunnel (the source) is expected to migrate through the porous sandy overburden soils in an easterly pattern to the river, rather than vertically into the deeper bedrock zones. This expectation is supported by the fact that active bedrock wells on site immediately upgradient of the area of impact continue to operate with no tritium being detected. In addition, other bedrock wells in the area also

continue to be routinely sampled with no tritium being detected. Prior to eliminating the source, the highest levels detected were in the overburden (shallower) wells in the area of impact and eastward toward the river. Since the leak was corrected in mid-February 2010, the plume has followed a predictable pattern and attenuated as predicted. The CSM does include some secondary tritium movement through the upper part of the bedrock as groundwater travels to the ultimate regional discharge point – the Connecticut River. Very low-level detections in the COB well during the fall of 2010 are consistent with this expectation.

Our overriding concern with further testing of the COB well is that standard sampling methods, such as those used in October 2010, require purging the test zone of the well before a sample is drawn, which could cause inadvertent contamination of the deep bedrock aquifer. Grab sampling, which your March 27 letter proposes as an alternative to minimize that risk, has its own deficiencies. Due to vertical mixing within the column of water in the well, potentially exacerbated by the insertion of the grab sampling equipment, a grab sample may not accurately reflect water quality at the location where the sample is taken under normal conditions. Therefore, a grab sample may yield unreliable information and even a false positive result.

Despite these concerns, after receiving your March 27, 2012 letter, representatives from Vermont Yankee met with representatives from Environmental Protection Agency (EPA) and the State on June 1, 2012 to discuss the history of the site and the State's request for further sampling of the COB well. At this meeting, Mr. Honnellio, EPA's Radiation Program Manager, asked why the COB well had not been decommissioned in order to prevent any risk of cross contamination of the deep bedrock aquifer. When the State's representative objected to this action, the discussion turned to possible sampling methods. Mr. Honnellio said that the area of primary concern with regard to drinking water was the deep (312 foot) level of the well and that a clean sample from such levels could resolve any concerns with drinking water.

Accordingly, Vermont Yankee and GZA have developed a sampling plan for the COB well that, consistent with the guidance provided by EPA, should satisfy the State that the deep bedrock aquifer remains safe. Specifically, Vermont Yankee will take a grab sample from the 312' zone, which represents the primary water bearing zone of the COB well. The sample will be collected as a grab sample using a submersible pump lowered to the target zone.

We are willing to conduct this additional test to provide further assurance that the deep bedrock aquifer below the site has not been contaminated. After the sample is collected and analyzed, we will determine the appropriate next steps.

We trust that this plan will satisfy your concerns. Please feel free to contact me with any questions or concerns.

Sincerely,

Christopher J. Wamser

cc: Anthony Honnellio, EPA Region 2