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**Tritium in Groundwater Monitoring at
Pilgrim Nuclear Power Station, Plymouth, MA
January- June 2023**

This report provides data from the ongoing monitoring of tritium in groundwater and surface water at the Pilgrim Nuclear Power Station (PNPS) located in Plymouth, MA. The history of the investigation, which began in 2010, and previous update reports, are available online¹.

Summary

- Monitoring results for January-June 2023 indicate that tritium levels do not present a health risk.
- No detectable tritium was measured in either surface water samples or in 20 of 23 routinely sampled groundwater wells. Tritium levels in the single well where tritium was detected decreased during the first six months of 2023.
- All measured levels of tritium in groundwater are less than the US EPA drinking water standard for tritium of 20,000 picocuries per liter (pCi/L).

Background

Holtec, the current owner of Pilgrim for purposes of decommissioning, collects samples at 23 groundwater wells and one surface water location on-site at PNPS. The sampling interval for the first six months of 2023 was quarterly. Well and surface water samples were sent to an independent analytical lab, Teledyne, with duplicate (or “split”) samples provided to the Massachusetts Department of Public Health (DPH) for analysis at the Massachusetts Environmental Radiation Lab (MERL). Holtec regularly reports the Teledyne results to DPH, the Massachusetts Emergency Management Agency (MEMA), and the Nuclear Regulatory Commission (NRC). Summaries of both laboratory results are then provided on the DPH website².

¹ Previous PNPS Tritium in Groundwater Investigation Updates are available here:

<https://www.mass.gov/lists/environmental-monitoring-data-for-tritium-in-groundwater-at-pilgrim-nuclear-power-station>

Results are compared to a conservative, health-protective screening level of 3,000 pCi/L, or 1/10th the NRC-approved level of 30,000 pCi/L of tritium in non-drinking water sources, as well as to the US Environmental Protection Agency (EPA) drinking water standard for tritium of 20,000 pCi/L. As the closest municipal drinking water wells are 2.5 miles from PNPS, municipal water is not expected to be impacted by the tritium on-site at PNPS.

Results and Discussion

Groundwater monitoring results for the first six months of 2023 showed stabilization or reduction of tritium to levels below method detection limits (MDLs). There was no detectable tritium activity in surface water samples or in 20 of the 23 on-site groundwater wells that are routinely monitored, at MDLs ranging from 300 –535 pCi/L. Tritium levels in the wells where tritium was detected were all less than 1000 pCi/L².

Figure 1 shows sampling results for MW-216, MW-218, and MW-219, where tritium levels have historically exceeded the screening level of 3,000 pCi/L. For the first six months of 2023, tritium levels at MW-216 were 416 and 467 pCi/L for the first and second quarterly samples, respectively. Tritium levels at MW-218 were 585 pCi/L for the first quarterly sample, and below the limit of detection for the second quarterly sample. At MW-219, tritium levels were below the detection limit for the first quarterly sample, and 307 pCi/L for the second quarterly sample³.

Tritium levels in groundwater wells at PNPS for the first six months of 2023 do not present a health risk.

² Summary tables of groundwater and surface water monitoring results are on the DPH website: <https://www.mass.gov/lists/environmental-monitoring-data-for-tritium-in-groundwater-at-pilgrim-nuclear-power-station#summaries---results->

³ Reported tritium levels are the maximum of the Holtec and MERL samples.

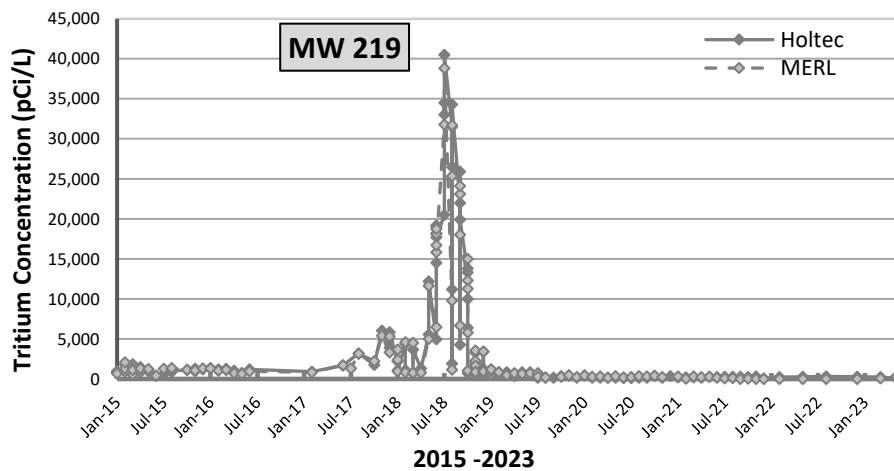
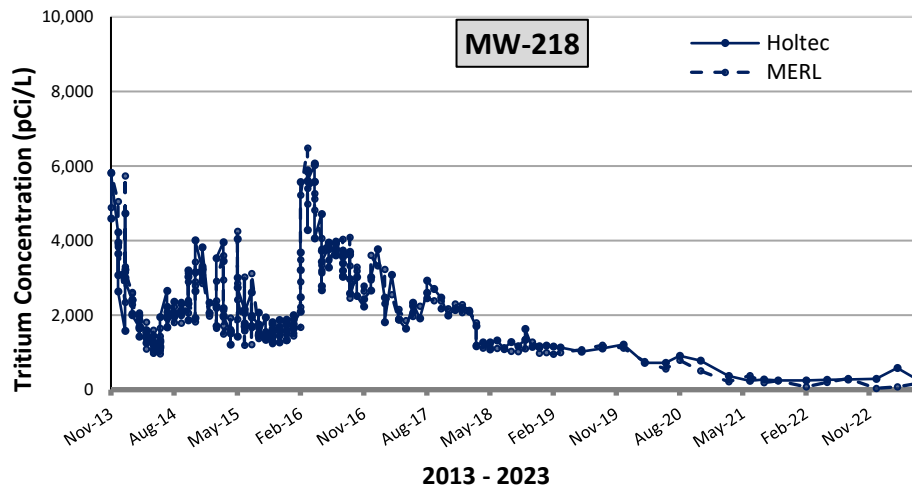
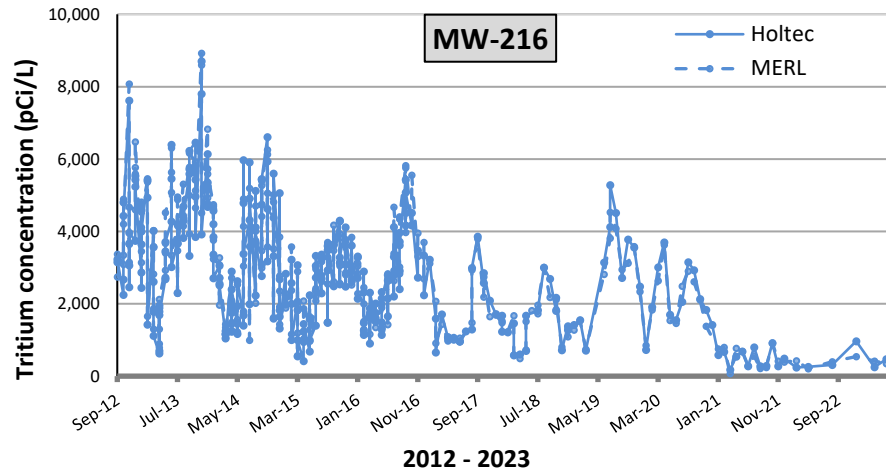


Figure 1. Results for tritium in groundwater samples collected from Pilgrim Nuclear Power Station (PNPS), at monitoring wells where tritium levels have historically exceeded 3,000 pCi/L. Data are plotted separately based on PNPS operator (solid lines) or DPH (dotted lines) produced results. Values below detection limit (DL) plotted as DL/2.

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