

Missing Data and Cover-ups: Final Environmental Impact Statement Issued for Monticello Reactor

By Lindsay Potter and the Coalition for a Nuclear-Free Mississippi River

The Nuclear Regulatory Commission has released its Final Environmental Impact Statement for Xcel Energy’s current 20-year license extension application for its Monticello nuclear reactor.

The Monticello reactor is now 54 years old — among the oldest in the U.S. — and Xcel wants to run it until 2050, when it will be 80 years old, or twice its designed lifespan. No nuclear reactor has been run so long. In addition to amassing new mountains of radioactive waste on the banks of the Mississippi River, within its floodplain, with no long-term storage option, 25 more years of operating such an old reactor means an ever-greater likelihood of accidents and leaks due to corroded infrastructure.

On Nov. 21, 2022, a sample from a monitoring well below the reactor building recorded a tritium concentration of 5,020,000 picocuries per liter (pCi/L). It took Xcel a month to find the location of the leak. In January 2023, Xcel implemented a system to begin pumping contaminated groundwater and to contain the leaking radioactive water. On March 23, 2023, sampling results indicated the catchment system had failed. On March 25, 2023, the reactor was fully shut down and the corroded pipe responsible for the initial leak was removed and replaced. This pipe is a small section among a large network of pipes inspected only once every 10 years.

Finally, 13 months after the initial leak, Xcel told the Nuclear Regulatory Commission (NRC) in response to a letter requesting further information on a separate issue, that the leak was now estimated to be 829,000 gallons with a total radioactive concentration of 14 curies (1 curie is 1 trillion picocuries). That is more than twice the volume of Xcel’s initial estimate, which it failed to report to the public and media until four months after the leak was first discovered.

Xcel continued to insist it had identified no impact to the health and safety of the public or reactor personnel and that it continued to work to minimize the discharge of tritiated groundwater to the Mississippi River. However, the groundwater cannot be stopped.

Despite constant assertion that the radioactive water could not reach the river, the NRC’s Draft Environmental Impact Statement acknowledged that tritiated water likely had reached the river —a fact Xcel continues to deny on their website. NRC personnel were pushed to apologize for this “miscommunication” publicly at their hearing in May 2024. But Xcel and the NRC continue to insist that no harm has been done.

Water — the Monticello Reactor and the Mississippi River

The Monticello reactor, the Mississippi River, and the local groundwater are all connected. The reactor relies on the river water to operate. What happens to the groundwater beneath the reactor naturally effects the river and life downstream.

The Mississippi River is the second longest river in North America, flowing approximately 2,300 miles and supplying over 20 million people with drinking water. The Minneapolis Water Works Reservoir is supplied from the Mississippi River 37 miles downstream of Monticello.

The Environmental Impact Statement (EIS) states: “Under normal site hydraulic conditions, groundwater flow is toward the Mississippi River ... groundwater is hydraulically connected to the river.” When the river level is high, for example during snow melt, the groundwater flow reverses, sending river water to mingle with the groundwater below the Monticello reactor. This water then returns to the river as the high water recedes.

According to the NRC, there are approximately 178 registered groundwater wells within a two-mile radius of the Monticello reactor, and the nearest registered well to Monticello is a domestic water well

0.6 miles southwest of the center of the site.

Monticello is permitted to withdraw 20 million gallons of groundwater per year. In addition, according to page 2-4 of the EIS, “Monticello is permitted to withdraw a maximum of 645 cubic feet per second (cfs) of water from the Mississippi River when the river flow is greater than 860 cfs.” Though, on average, Monticello pumps between 4-11% of the Mississippi River volume through its cooling system.

Despite the events of the last two years, “NRC staff did not identify any new and significant information regarding the surface water affected environment during the site audit, the scoping process, or as the result of its review of available information as cited in the EIS,” according to the EIS page 3-27.

Eight pumping wells for tritium extraction have been installed since the detection of the leak. A storage pond was constructed for tritium-contaminated groundwater and a second pond for additional storage capacity is planned before the end of 2024. Approximately eight million gallons of tritium-contaminated groundwater has been pumped from onsite.

Xcel is currently pumping in excess of 100 gallons per minute from groundwater under the site — groundwater which typically feeds the Mississippi River. Xcel has stated that it will continue pumping until tritium in all onsite groundwater monitoring wells is below the EPA’s drinking water contaminant limit of 20,000 pCi/L. It is unknown how long this process will take, and the NRC estimates that pumping and groundwater contamination will persist into the license extension period, or beyond 2030.

Licensing and Lying

The State of Minnesota and the Minnesota Pollution Control Agency, operating on behalf of the EPA, also found nothing warranting changes in their licensing of the Monticello reactor.

According to the EIS, NRC licensees must meet state water quality certification requirements. Since 1974, the state of Minnesota has been responsible for issuing water permits. The Minnesota Pollution Control Agency reissued Monticello’s five-year permit in May 2023. The EIS says: “Based on its review, NRC staff did not identify any substantial changes in the 2023 permit conditions as compared to the previous issuance.”

The NRC stands poised to issue Xcel its license extension by the end of the year. The Minnesota Public Utilities Commission can prevent Monticello from continuing to operate until 2050 by declining Xcel’s preferred plan for energy generation now under consideration. The public hearing on this Integrated Resource Plan will be held in February 2025.

The EIS insists that between November 2022 and August 2023 there was a “downward trend in tritium activity for the groundwater most impacted by the release.” It is true that for well 9A, directly below the leaking pipe, where a concentration of over five million pCi/L of tritium was detected, a significant amount of that tritium has moved elsewhere in the groundwater (or has been pumped into holding ponds that are now evaporating over the surrounding area.) However, in that time period, measurements of tritium in wells close to the Mississippi River have greatly increased.

The EIS says tritium levels measured in river samples collected from January to December 2023 indicated no detectable increase in tritium activity in the downstream samples. However, Xcel’s reports indicate otherwise, and the EIS also admits that an estimated 167 billion picocuries (0.167 curies) of tritium was leaked to the Mississippi River between

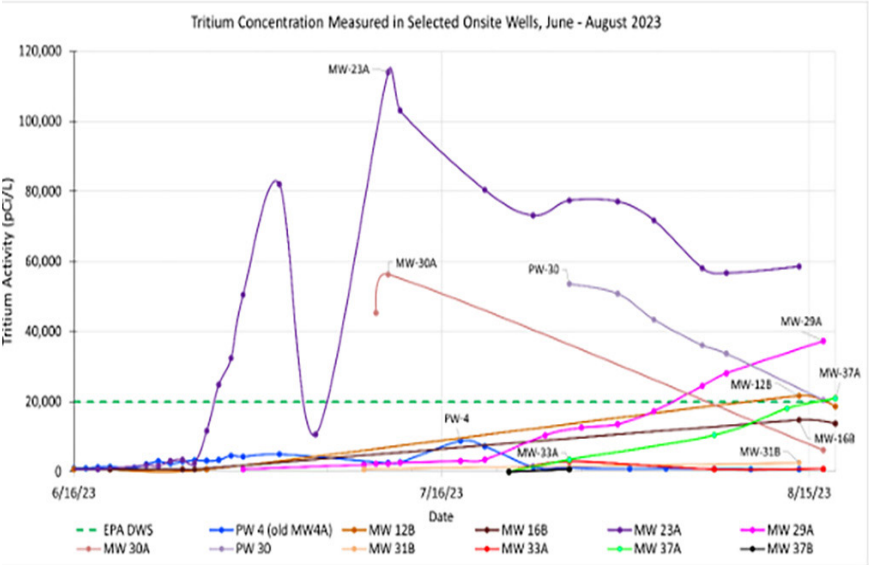


Figure 3-14 Measured Tritium Activities in Selected Onsite Wells (Xcel 2023-TN9609) Chart from the Environmental Impact Statement showing levels of radioactive tritium in monitoring wells close to the Mississippi River rising on August 15, 2023, as the NRC ends its scoping period. Photo: Xcel Energy.

July and December 2023. (EIS page 3-48.) This is based on modeling done by Xcel, extrapolating from the activity in one monitoring well.

Where’s the Data?

Xcel says that it has sampled the City of Minneapolis drinking water supply and Mississippi River water within 1,000 feet upstream and downstream of the reactor and that all tests indicate tritium concentrations at these locations are well below the EPA’s drinking water standard of 20,000 pCi/L. These samples “are collected weekly and composited into quarterly samples for analysis which are then reported annually,” according to Xcel. These additional samples were sent to a specialized laboratory which could detect down to about 14 pCi/L of tritium. Although Xcel continues to refer the public to Xcel’s website, which insists tritium-contaminated water has not reached the Mississippi River, charts published in the Final EIS (Figure 3-15, p.3-49) show that levels of tritium in the river remained elevated throughout the late summer of 2023. No complete record of the water and well test data has been published publicly.

The EIS says: “Tritium detections in wells near the Mississippi Riverbank (i.e., MW-29A, MW-33A, MW-37A, and MW-48A) in 2023 indicate tritium-impacted groundwater likely discharged to the river,” and “From available sampling data tritium activity in wells MW-29A and MW-37A was above 20,000 pCi/L and trending in an upward direction as of August 2023.” The NRC did not consider data collected after August 18 for its 2023 environmental assessment, despite several indications of rising tritium levels nearest the river occurring at that time.

Well 37A, close to the river, surpassed the EPA’s tritium contamination limit of 20,000 pCi/L on Aug. 18, 2023 after rising six-fold in the previous three weeks. And well 29A, also close to the river, was at 37,300 pCi/L on Aug. 18, 2023, though it first surpassed the EPA limit on August 7 and had been steadily rising since the end of June.

Xcel insists that data from September through December 2023 shows that radioactive tritium levels in wells nearest the river have fallen greatly, but given its modeling of groundwater movement, this clearly means the tritiated water flowed into the river.

In its Annual Radioactive Effluent Release Report (ARERR), rather than provide a comprehensive list of all of the data collected over the last year, Xcel compiles data into snapshots, publishing the minimum data required.

In the 2023 ARERR, Xcel “concluded that tritium had the potential to reach the river. This determination was made after [tritium] was detected in Monitoring Wells 33A & 37A on July 27, 2023.” So Xcel and the NRC knew the tritiated water had reached the river by July 2023, no doubt prompting its decision in August to build an underground sheet pile wall to try to keep more tritium from reaching the river.