



2025 Groundwater Radiological Monitoring Results Associated with the Materials and Fuels Complex Industrial Waste Pond

February 2026



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Associated with the Materials and Fuels Complex
Industrial Waste Pond**

February 2026

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ABSTRACT

This report summarizes radiological monitoring results from groundwater wells associated with the current Reuse Permit I-160-02, Modification 6, for the Idaho National Laboratory Materials and Fuels Complex Industrial Waste Pond. The radiological monitoring was performed to fulfill Department of Energy requirements under the Atomic Energy Act.

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ACRONYMS

AEA	Atomic Energy Act
DEQ	Department of Environmental Quality
DOE	Department of Energy
DOE-ID	Department of Energy – Idaho Operations Office
INL	Idaho National Laboratory
IWP	Industrial Waste Pond
MFC	Materials and Fuels Complex
pCi/L	picocuries per liter

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1. BACKGROUND

The radiological monitoring information presented in this report is provided based upon an agreement between the Idaho Department of Environmental Quality (DEQ) and the Department of Energy (DOE) Idaho Operations Office. This report fulfills the agreement documented in the current Reuse Permit (I-160-02), Modification 6 (Saffle 2025).

Section 2, “Facility Information,” of the reuse permit states, “The Permittee agrees to provide to DEQ the results of ground water radiological monitoring with respect to INL MFC Industrial Waste Pond that is performed to fulfill Department of Energy requirements under the AEA. The permittee agrees to provide the results at the same time as the annual report.” This report fulfills the terms of that agreement.

2. REPORTING PERIOD

Section 4.5 of the permit states the reporting year runs from November 1 through October 31. This report covers the 2025 reporting year, which runs from November 1, 2024, through October 31, 2025. A minor modification, Modification 6, was issued July 24, 2025, to update the authorized representative (Saffle 2025). This modification did not change groundwater monitoring or the reporting period.

3. GROUNDWATER SAMPLE RESULTS

Section 5.2.2 of the permit requires groundwater monitoring to be conducted twice annually in April/May and September/October at GW-16001 (ANL-MON-A-012), GW-16002 (ANL-MON-A-013), and GW-16003 (ANL-MON-A-014). Samples for radiological analyses are collected at these locations at the same time as the permit required constituents. Samples were collected to satisfy the release objectives of DOE Order 458.1, Radiological Protection of the Public and the Environment.

Groundwater samples were collected from aquifer wells ANL-MON-A-012, ANL-MON-A-013, and ANL-MON-A-014 in April and September 2025. The samples were shipped under full chain of custody to GEL Laboratories in Charleston, South Carolina, and analyzed for gross alpha, gross beta, tritium, gamma spectrometry, and alpha spectroscopy. A field duplicate sample was collected from ANL-MON-A-012 on April 16th, 2025.

The results of these analyses that meet the criteria of a positive detection (i.e., measurements exceeding the instrument’s minimum detection level and greater than three times the uncertainty) are reported in Table 1.

Table 1. Positive detections in groundwater samples collected in 2025 from the monitoring wells sampled for the Materials and Fuels Complex Industrial Waste Pond Reuse Permit.

Monitoring Well	Sample Date	Parameter	Sample Result ^{a,b} (pCi/L)
ANL-MON-A-012 (upgradient)	4/16/2025	Gross Beta	3.84 (±0.237) [5.26 (±0.316)]
		Uranium-233/234	1.45 (±0.285) [0.998 (±0.276)]
		Uranium-238	0.59 (±0.17) [ND] ^c
	9/22/2025	Gross Alpha	0.811 (±0.178)
		Gross Beta	3.79 (±0.237)
		Uranium-233/234	1.25 (±0.189)
		Uranium-238	0.591 (±0.12)
	ANL-MON-A-013 (downgradient)	4/21/2025	Gross Alpha
Gross Beta			2.9 (±0.22)
Uranium-233/234			1.03 (±0.146)
Uranium-238			0.484 (±0.0915)
9/23/2025		Gross Alpha	0.639 (±0.187)
		Gross Beta	3.35 (±0.237)
		Uranium-233/234	1.46 (±0.171)
		Uranium-238	0.607 (±0.0993)
ANL-MON-A-014 (downgradient)	4/21/2025	Gross Beta	3.98 (±0.273)
		Uranium-233/234	1.3 (±0.171)
		Uranium-238	0.685 (±0.115)
	9/23/2025	Gross Alpha	0.985 (±0.202)
		Gross Beta	3.97 (±0.258)
		Uranium-233/234	1.19 (±0.167)
		Uranium-238	0.605 (±0.112)
a. One sigma uncertainty shown in parentheses.			
b. Analytical result from field duplicate sample collected on April 16, 2025, from ANL-MON-A-012. Results shown in brackets.			
c. ND – non-detect.			

4. REFERENCES

42 USC § 2011–2259, “Atomic Energy Act of 1954,” United States Code.

DOE Order 458.1, “Radiation Protection of the Public and the Environment,” U.S. Department of Energy, September 15, 2020.

Saffle, T., DEQ to M. J. McAnulty, DOE-ID, July 24th, 2025, “I-161-02 INL Materials and Fuels Complex (MFC), Reuse Permit Modification 6,” CCN 258649