MICHELLE LUJAN GRISHAM
GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

VIA EMAIL

November 18, 2025

Jessica Kunkle
Manager
U.S. Department of Energy
Environmental Management
Los Alamos Field Office
1200 Trinity Drive, Suite 400
Los Alamos, New Mexico 87544
jessica.kunkle@em.doe.gov

Brian Harcek
Designated Agency Manager
Environmental Management
U.S. Department of Energy
Los Alamos Field Office
1200 Trinity Drive, Suite 400
Los Alamos, NM 87544
brian.harcek@em.doe.gov

RE: Withdrawal of the Temporary Authorization for Partial Operation of Discharge Permit 1835 (DP-1835)

Dear Jessica Kunkle and Brian Harcek:

The New Mexico Environment Department (NMED) is requiring the U.S. Department of Energy (DOE) to immediately cease all injection operations associated with DP-1835, due to recent analytical results showing the sole source regional aquifer beneath the Pueblo de San Ildefonso exhibits hexavalent chromium concentrations exceeding the regulatory standards set forth in the New Mexico Administrative Code (NMAC) § 20.6.2.3103. NMED is directing DOE to immediately cease all injection operations effective as of the date of this letter.

The injection operations were pursuant to Chromium Plume Control Interim Measures (IM) DOE developed in 2015 to implement a corrective action remedy to treat the hexavalent chromium plume in groundwater and to mitigate off-site migration. The IM was approved by NMED based on the investigation data, modeling, and justifications that DOE presented. The IM consisted of extraction of groundwater, ex-situ treatment, and reinjection of the treated groundwater. The theory was that the reinjected groundwater would provide hydraulic control, preventing off-site migration of contamination. NMED agreed to implementation of the IM, pending monitoring data demonstrating the efficacy of the IM and the implementation of a final remedy.

However, actual monitoring data has shown the IM is not protective and is not mitigating off-site migration, as evidenced by data showing horizontal and vertical migration of contamination. Since at least 2021, NMED has communicated to DOE that the effects of the injection activities under DP-1835 indicated increasing trends in hexavalent chromium in a downgradient monitoring well in the eastern portion of the plume. Additionally, in 2019, a monitoring well installed farther east in the plume showed hexavalent chromium concentrations deeper than expected, which was a discovery that did not align with the conceptual site model DOE used to justify the injection well locations. This 2019 monitoring data also did not align with the predictions from the groundwater modeling DOE

performed to justify the IM injection approach. Due to these increasing horizontal and vertical contaminant trends, on December 12, 2022, NMED issued an order to cease injections.

In February 2023, in an effort to convince NMED to reauthorize injection, DOE submitted the Initial Five-Year Evaluation of the Interim Measures for Chromium Plume Control with an Assessment of Potential Modifications to Operations (Five-Year Evaluation). In the Five-Year Evaluation, DOE reevaluated the groundwater modeling and again asserted to NMED that continued operation of the injection wells is critical to the extraction and treatment of contaminated groundwater. DOE used its groundwater modeling to provide a predictive analysis of different operational scenarios and illustrate the potential spread of contamination resulting from such scenarios. To summarize the primary conclusions, DOE stated in the Five-Year Evaluation (p. 34) that:

> "Although there is still uncertainty with respect to the vertical distribution of the chromium plume in the plume centroid and northeastern region of the plume, the evidence to date indicates that IM operations have effectively contained the plume. Therefore, the IM system should continue to be operated at full capacity to maximize the benefits of the IM."
>
> "Simulations predict that full IM operations is the only scenario that reduces chromium concentrations to below the NMAC standard of 50 ppb. Reverting to full IM operation will confirm or refute this result and provide important new information on plume behavior that will aid in final remedy design."

Based on DOE's representation of the plume behavior without injection resumption and assurances that injection resumption would be most protective for the groundwater contamination risk to the Pueblo de San Ildefonso, NMED authorized partial operation of underground injection control wells CrIN-3, CrIN-4, and CrIN-5 in May 2024. NMED indicated that authorization of partial operation of underground injection control wells was conditional, and a reevaluation of the temporary authorization would be necessary if the ongoing hexavalent chromium concentrations in monitoring wells along the periphery of the current known plume extent, both upgradient and downgradient of injection operations, indicated concerning contaminant trends. NMED also clarified that operation of injection wells causing any violation of the conditions in the underground injection control discharge permit (DP-1835) may be subject to civil penalties pursuant to New Mexico Water Quality Act, Sections 74-6-10(C) and 74-6-10.1 NMSA 1978.

Although DOE emphasized that it was incumbent upon NMED to authorize resumed injection operations to protect the regional aquifer, DOE refused to agree to modify the IM to be truly protective. Additionally, DOE refuted the need to complete additional corrective actions or to evaluate alternative remedies to ensure the protection of the regional aquifer.

Between September 2023 and March 2024, NMED repeatedly attempted to engage in collaborative communication with DOE to ensure that the regulatory requirements were met and to find a solution to contain the hexavalent chromium plume and prevent its further migration. NMED repeatedly urged DOE to expand and modify the IM treatment system, either to find a solution for the negative impacts that injection caused on contaminant migration or to optimize the pump and treat system

to adequately suppress migration of the deeper contamination. However, DOE refused to comply with NMED's regulatory directives and cited disagreement with the technical justifications NMED provided. DOE challenged whether NMED had the authority to require an expansion of the IM prior to the final remedy evaluation and selection.

Moreover, DOE defended its use of its groundwater model for predictive purposes, despite the increasing contaminant trends. However, since DOE's IM model was not calibrated and was not optimized with sufficient site hydrogeological data, DOE's IM model could not adequately simulate the complexity of groundwater and contaminant pathways in both the horizontal and vertical gradients. As DOE indicated in "Fracture Characterization of the Bandelier Tuff in OU-1098 (TA-2 and TA-41)", published by Los Alamos National Laboratory (LANL) in 1998), the complexities in the geology, marked by crosscutting, steeply dipping fractures, especially in the Bandelier Tuff, allow for direct and immediate infiltration of water to the subsurface, which mobilizes and transports hexavalent chromium into the regional aquifer. However, DOE did not demonstrate to NMED how DOE's predictive model would account for discrete fracture patterns and secondary porosity as a path of hexavalent chromium migration to the regional aquifer. These inadequacies became evident with more groundwater data showing plume migration. For the IM model to be accurate, additional site characterization data would have been needed to refine the three-dimensional flow of groundwater and simulate more realistic conditions.

In March 2024, NMED and DOE jointly asked an independent technical review team (ITR) to evaluate the technical differences regarding the hexavalent chromium plume IM and to issue a report containing recommendations ("Report"). During the time in which the ITR team was conducting their analysis, DOE rebuffed the regulatory requirement to propose corrective actions that would contain the chromium plume and prevent its further migration. On multiple occasions, DOE refused to reach an agreement to implement multiple corrective actions proposed by NMED. Three quarters of a year later, in December 2024, the ITR team issued its Report containing independent analysis and recommendations for containing the hexavalent chromium plume. The recommendations included: (1) statements that the current IM system at full operations would not contain all chromium migration and that the IM will likely need to be modified, reconfigured, and expanded; (2) emphasis on the need to reanalyze the groundwater model to account for uncertainties specified in the report and support for the need to convert the current model to MODFLOW, a model with more widespread use; (3) support for NMED's determination that IM injection has adversely impacted chromium concentrations in monitoring wells; (4) support for NMED's requirement to install an alternative injection location for treated water and encouraged a partial restart of IM operations conditional on the data collected in SIMR-3; and (5) recommendations that the modifications to the treatment system should not wait until final remedy selection and that the IM should be modified using an adaptive management approach. The recommendations in the Report aligned with the proposals and regulatory directives NMED had urged all along, and that DOE had refused to implement.

After the Report was issued, in July 2025, DOE began installing a regional aquifer monitoring well, SIMR-3, located on the Pueblo de San Ildefonso sovereign land to inform the boundary of contamination south of injection wells CrIN-3, CrIN-4 and CrIN-5. Following the zonal sampling of the groundwater from SIMR-3, analytical results received in October 2025 confirmed that hexavalent chromium contamination is present within the sole source regional aquifer beneath the Pueblo de San Ildefonso at concentrations that exceed the regulatory standards set forth in NMAC 20.6.2.3103. This data shows that the treated hexavalent chromium injections at CrIN-3, CrIN-4 and CrIN-5 have resulted in adverse migration of contamination, both offsite and downgradient of the reach of the current interim measures treatment system. Despite DOE's repeated insistence on the efficacy of the injection design for hydraulic control, the IM has clearly failed to contain the hexavalent chromium plume.

DOE has repeatedly stated that the remediation of the hexavalent chromium plume is the highest priority action for DOE, yet DOE has not made adequate progress towards regulatory compliance with the requirements to modify and expand the IM treatment system. DOE has not complied with the regulatory requirements and directives to expand and modify the IM pump-and-treat system to meet the goals of interim measures. DOE challenged NMED's authority to require implementation of necessary actions under interim measures, disagreed with the technical reasoning for the need to modify the IM, and squandered critical time justifying a position that was not protective of human health and the environment, instead of solving the problem. DOE's disregard for regulatory directives has allowed the chromium plume to spread further into previously uncontaminated areas.

Since 2021, DOE has neither complied with NMED's regulatory directives nor made substantial progress towards ensuring the protection of the regional aquifer. The latest sampling results from SIMR-3 prove that DOE's refusal to take appropriate steps to ensure that contamination does not migrate further in the regional aquifer or offsite has created the harm to the environment that NMED sought to prevent. DOE's actions, as well as its inactions, in ignoring NMED's years-long insistence that DOE comply with regulations, look at the alarming contaminant trends, and take actions to reduce and reverse the contaminant trends, show that DOE apparently does not value preservation of the sole source regional aquifer, and instead prioritizes cost and effort minimization to the detriment of the environment and human health.

In light of this, NMED will utilize all available authority and options to require DOE to comply with all regulatory requirements in a timely manner to mitigate and contain contamination that has resulted from DOE's lack of sufficient cleanup of legacy waste. NMED will continue to uphold the protection of human health and the environment and will pursue enforcement actions against DOE to require the implementation of corrective actions.

The NMED Cabinet Secretary has delegated the authority to sign discharge permit letters to the Chief of the Ground Water Quality Bureau. Please note that nothing in this letter shall be construed as relieving the Permittees of the obligation to comply with all requirements of DP-1835 and all applicable state and federal laws, regulations, orders, and other permits.

Sincerely,

Justin Ball Digitally signed by Justin Ball
Date: 2025.11.18 14:56:30
-07'00'

Justin D. Ball, Chief
Groundwater Quality Bureau

cc: Rep. Joanne J. Ferrary
Sen. Jeff Steinborn
Sen. Elizabeth Stephanics
Rep. Matthew McQueen
S. Gilbertson, EM-LA
R. Martinez, EM-LA
T. McCrory, EM-LA
R. Edwards, N3B
C. Maupin, N3B
L. Rodriguez, N3B
W. Alexander, N3B
Gov. Moquino, Pueblo de San Ildefonso
Lt. Gov. Martinez, Pueblo de San Ildefonso
A. Young, NMED
K. Staggs, NMED
J. Nance, NMED
J. Herman, NMED
C. Martinez, NMED
emla.docs@em.doe.gov
regdocs@em-la.doe.gov