MICHELLE LUJAN GRISHAM
GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

NOTICE OF VIOLATION

Certified Mail - Return Receipt Requested

June 6, 2022

Joseph Murdock, Program Manager
Environmental, Safety and Health
N3B-Los Alamos
1200 Trinity Drive, Suite 150
Los Alamos, New Mexico 87544

Arturo Q. Duran
Office of Quality and Regulatory Compliance
U.S. Department of Energy
Environmental Management
Los Alamos Field Office
1200 Trinity Drive, Suite 400
Los Alamos, New Mexico 87544

RE: Notice of Violation, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835

Dear Joseph Murdock and Arturo Duran:

On August 31, 2016, the New Mexico Environment Department (NMED) issued a Discharge Permit, DP-1835, (Discharge Permit; copy enclosed) to the United States Department of Energy (DOE) and Los Alamos National Security, LLC (LANS) (collectively the Permittees) pursuant to Section 20.6.2.3109 NMAC of the Water Quality Control Commission (WQCC) Regulations (20.6.2 NMAC). On April 24, 2018, LANS provided written notification to NMED that LANS was transferring its permit responsibilities under DP-1835 to Newport News Nuclear BWXT-Los Alamos, LLC (N3B) effective April 30, 2018. The notification stated that DOE would remain a co-permittee under DP-1835. Section 20.6.2.3104 NMAC requires the permittee to comply with the terms and conditions of this Discharge Permit.

The discharge is located approximately 3 miles southeast of Los Alamos in Sections 24 and 25, Township 19N, Range 06E, in Los Alamos County.

On April 28, 2022, NMED issued a Notice of Non-Compliance for exceedances of the 20.6.2.3103 NMAC groundwater standard for chromium and required the Permittees to submit to NMED a Corrective Action Plan within 30 days of the date of the letter. On May 27, 2022, the Permittees provided NMED with a response, disagreeing with NMED's assertion that the Permittees are not in compliance with the terms and conditions of DP-1835 for the following reasons (NMED response follows):

- "There has been no demonstration that there has been a significant increase in concentration of an analyte or toxic pollutant present in a groundwater sample."

Concentrations of total dissolved chromium (III, VI) at regional aquifer well R-45 screen 2 initially exceeded the 20.6.2.3103 NMAC groundwater standard of 0.050 mg/L in a groundwater sample collected on December 16, 2020, and have increased since injection of treated water in CrIN-1 starting in November 2019. Nineteen out of 28 groundwater samples collected from R-45 screen 2, from December 16, 2020, to April 7, 2022, exceed the 20.6.2.3103 NMAC groundwater standard of 0.050 mg/L for total dissolved chromium. This frequency of exceedances represents 68 percent of the total number of groundwater samples collected during this period.

- "There has been no demonstration that such an increase is attributable to a discharge under DP-1835."

Concentrations of total dissolved chromium have increased since injection of treated water in CrIN-1 starting in November 2019. This injection well is located hydraulically upgradient of regional aquifer monitoring well R-45. The rate of increase of chromium concentrations at R-45 screen 2 is greater after the initial operation of CrIN-1 compared to pre-injection conditions, which clearly demonstrates adverse mobilization and expansion of the chromium plume at R-45 caused by injection at CrIN-1. The burden of proof that injection has not resulted in expansion of the chromium plume at R-45 screen 2 is on the Permittees and will require robust technical and regulatorily defensible arguments based on accurate and relevant data and information.

- "There is no exceedance in the discharged water, which is the purpose of DP-1835, …"

As stated in the introduction of DP-1835, "NMED's purpose in issuing this Discharge Permit, and in imposing the requirements and conditions specified herein, is to control the discharge of water contaminants from the injection of treated groundwater into the regional aquifer beneath Los Alamos National Laboratory (LANL), *so as to protect and preserve ground and surface waters for present and future uses and to protect human health*." The adverse mobilization and expansion of the chromium plume via injection fails to preserve groundwaters for present and future uses.

In the May 27, 2022, letter, the Permittees quote part of Dr. Patrick Longmire's testimony on aqueous geochemistry relevant to DP-1835 that he delivered in 2016. Dr. Longmire's 2016 testimony emphasized the geochemical compatibility between the injectate water and regional aquifer groundwater in the chromium plume that included similar pH, oxic water containing five to eight mg/L of dissolved oxygen, and comparable major ion chemistry. The testimony supported geochemical compatibility, and that biogeochemical fouling of the injection well screens were not likely to occur under similar geochemical conditions. The Permittees have misapplied Dr. Longmire's geochemical testimony to the observed expansion of the chromium plume as a consequence of hydraulic injection within the chromium plume.

NMED has determined that the above referenced facility is operating in violation of the conditions of the Discharge Permit, the WQCC Regulations and the Water Quality Act (WQA). NMED requires prompt action as described herein.

A summary of the events resulting in the determination of violations at this facility follows:

On February 26, 2021, NMED received analytical results of groundwater samples collected from onsite monitoring well R-45 screen interval 2, at the above referenced facility. The analytical results, and subsequent quarterly reporting submitted through 2021 and 2022, have confirmed the exceedance of or more of the groundwater standards identified in Section 20.6.2.3103 NMAC. The analytical results presented in the following table confirm that the Permittee has violated the ground water standards for total dissolved chromium.

Chemical Constituent	**12/16/2020 Sampling Results**	**WQCC Groundwater Standard [20.6.2.3103 NMAC]**
chromium (Cr)	0.055 mg/l	0.05 mg/l

The requirements of the Discharge Permit and the WQCC Regulations (20.6.2 NMAC), and the resultant violations and associated action(s) necessary to correct the violations, are identified below:

Groundwater at this facility shall meet the standards of Section 20.6.2.3103 NMAC. In the event of an exceedance of one or more of the standards, Condition 19 of the Discharge Permit requires the submission of a Corrective Action Plan to address the groundwater contamination within 30 days of confirmation.

Section 20.6.2.3103 NMAC has been violated because analytical results submitted to NMED have confirmed that a ground water standard or allowable limit has been exceeded. Furthermore, the Discharge Permit has been violated because, to date, NMED has not received a Corrective Action Plan.

To correct these violations, the Permittees shall **submit a Corrective Action Plan to NMED by July 6, 2022**. The Corrective Action Plan shall propose measures to mitigate damage from the discharge including, at a minimum, source control measures and an implementation schedule to address the groundwater contamination.

NMED may require additional corrective actions if the corrective actions proposed or taken are inadequate in addressing source control. In the event the corrective action plan does not result in compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC within 180 days of confirmation of groundwater contamination, NMED may require the Permittee to abate water pollution pursuant to Sections 20.6.2.4000 through 20.6.2.4115 NMAC.

Pursuant to NMSA 1978, Section 74-6-5(M), NMED has the authority to terminate or modify the Discharge Permit prior to its date of expiration for any violation of any condition of the permit; any violation of any applicable regulations or water quality standards; or any change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

Failure to comply with this Notice of Violation may result in NMED's issuance of a compliance order that assesses a civil penalty pursuant to Section 74-6-10 of the WQA. NMED may also assess civil penalties up to $15,000 per day for each violation of Section 74-6-5 of the WQA, any regulation promulgated pursuant to that section, or any permit issued pursuant to that section. NMED may assess civil penalties of up to $10,000 per day for each violation of any other provision of the WQA, or any regulation, standard, or order adopted pursuant to such other provision.

As an alternative to the remedies described above, NMED may commence an action in district court for appropriate relief, including injunctive relief.

Nothing in this letter shall be construed as relieving the permittee of the obligation to comply with all requirements of the Discharge Permit, the WQCC Regulations, the WQA, and other applicable federal, state, and local laws, regulations, permits or orders. This letter is intended to obtain voluntary compliance in addressing violations of certain requirements of the Discharge Permit and may not address all violations. It is the responsibility of the permittee to be familiar with and comply with the Discharge Permit.

Pursuant to the NMED Delegation Order dated May 24, 2021, the Cabinet Secretary has delegated the authority to sign a Notice of Violation under the WQA to the Chief of the Ground Water Quality Bureau. If you have any questions regarding this matter, please contact Jason Herman, Acting Program Manager of the Ground Water Pollution Prevention Section, at (575) 649-3871 or Andrew Romero at (505) 660-8624.

Sincerely,

Justin Ball Digitally signed by Justin Ball
Date: 2022.06.06 08:56:51 -06'00'

Justin D. Ball, Chief
Ground Water Quality Bureau

JB:AR

enc: Discharge Permit, DP-1835, dated August 31, 2016

cc: J. Rhoderick, NMED-WPD
J. Herman, NMED-GWQB
W. Chavez, EHB District II
M. Sandoval, NMED-GWQB
P. Longmire, NMED-GWQB
C. Catechis, NMED-RPD
R. Shean, NMED-HWB

N. Dhawan, NMED-HWB
C. Krambis, NMED-HWB
S. Yanicak, NMED-HWB
L. King, US EPA R6
J. Payne, LANL
S. Hoffman, NA-LA
C. Rodriguez, EM-LA
C. Maupin, N3B