

**STATE OF NEW MEXICO
ENVIRONMENT DEPARTMENT**

**NEW MEXICO ENVIRONMENT
DEPARTMENT,**

Complainant,

v.

**ADMINISTRATIVE ORDER
NO. WPCEB-26-01**

**UNITED STATES DEPARTMENT OF ENERGY
and NEWPORT NEWS NUCLEAR BWXT, LLC**

Respondents.

ADMINISTRATIVE COMPLIANCE ORDER

Pursuant to the New Mexico Water Quality Act (“WQA”), New Mexico Statutes Annotated (“NMSA”) 1978, §§ 74-6-1 to -17, and the Ground and Surface Water Protection regulations (“Regulations”), 20.6.2 New Mexico Administrative Code (“NMAC”), the Director of the Compliance and Enforcement Division of the New Mexico Environment Department (“NMED”) issues this Administrative Compliance Order (“Order”), on behalf of NMED’s Water Protection Compliance and Enforcement Bureau (“WPCEB”) in coordination with NMED’s Ground Water Quality Bureau (“GWQB”), to the U.S. Department of Energy (“DOE”), through its Office of Environmental Management, Los Alamos Field Office (“EM-LA”), and Newport News Nuclear BWXT (“N3B”), through its Los Alamos office (collectively “Respondents”). This Order requires that Respondents perform corrective actions to comply with the WQA and the NMAC and assesses civil penalties for violations of the WQA and the Discharge Permit requirements, as set forth below.

A. PARTIES AND LAW

1. Pursuant to the Department of Environment Act, NMSA 1978, §§ 9-7(A)-1 to-15, NMED is an agency of the executive branch within the government of the State of New Mexico.

2. NMED, through its WPCEB, is charged with administration and enforcement of the WQA.

3. The WQA, NMSA 1978, §74-6-4(D), directs the New Mexico Water Quality Control Commission (“WQCC”) to adopt water quality standards for ground waters of the state, including narrative standards and, as appropriate, the designated uses of waters and the water quality criteria necessary to protect such uses.

4. NMSA 1978, §74-6-4(E) directs the WQCC to adopt, promulgate, and publish regulations to prevent or abate water pollution in the state or in any specific geographic area, aquifer or watershed of the state or in any part thereof, or for any class of waters.

5. The purpose of the permitting regulations, 20.6.2.3101 NMAC through 20.6.2.3114 NMAC, is to protect all groundwater within the state of New Mexico for present and potential future use as domestic and agricultural water supply, and that if the existing concentration of any water contaminant in ground water exceeds the standard of 20.6.2.3103 NMAC, no degradation of the groundwater beyond the existing concentration will be allowed.

6. On August 31, 2016, NMED issued a Discharge Permit, DP-1835, to DOE (“Permittee”) and Los Alamos National Security, LLC (“LANS”) pursuant to 20.6.2.3109 NMAC. On April 24, 2018, LANS provided written notification to NMED that LANS was transferring its permit responsibilities under DP-1835 to N3B (“Permittee”), effective April 30, 2018. The notification stated that DOE would remain a co-permittee under DP-1835.

7. Los Alamos National Laboratory (“LANL”) is a national research laboratory located in Los Alamos County, New Mexico. LANL is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe, occupying approximately 36 square miles on the Pajarito Plateau. LANL started generating radioactive and hazardous waste during the

Manhattan Project. DOE owns LANL.

8. Respondent DOE is an executive agency of the United States Government. Respondent DOE is a “person” within the meaning of NMSA 1978, § 74-6-2(Q) of the WQA and 20.6.2.7(P)(2) NMAC.

9. DOE established EM-LA as a DOE field office. EM-LA is tasked with cleaning up and remediating legacy radioactive waste, hazardous waste, contaminated soil, and contaminated groundwater, and shipping radioactive and hazardous waste to offsite disposal locations.

10. Respondent N3B is a limited liability partnership registered in SAM.gov as a for-profit organization and a subsidiary of Huntington Ingalls Industries, Inc. Respondent N3B performs environmental remediation, waste management, and strategic planning services for DOE. Respondent N3B is a “person” within the meaning of NMSA 1978, § 74-6-2(Q) of the WQA and 20.6.2.7(P)(2) NMAC.

11. Pursuant to NMSA 1978, § 74-6-10 of the WQA, the Respondents are liable for a civil penalty of up to \$15,000.00 per day of noncompliance for each violation 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 \$10,000.00 per day for each violation of any other provision of the WQA, or any regulation, standard, or order adopted pursuant to such other provision.

12. If Respondents fail to comply in a timely manner with the Schedule of Required Corrective Actions (Section D, below), the Secretary may assess additional civil penalties of up to \$25,000.00 for each day of continued noncompliance pursuant to NMSA 1978, § 74-6-10(F) of the WQA.

B. WQA INVESTIGATION

13. Pursuant to 20.6.2.3104 NMAC, the Respondents submitted a groundwater discharge permit application¹ for the Chromium Plume Control Interim Measure and Plume-Center Characterization project on April 1, 2015. The discharge sites in the application are located at Los Alamos National Laboratory, which is comprised of approximately 36 square miles and is owned by DOE, located on the Pajarito Plateau in Los Alamos County in North Central New Mexico and located approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. This application requested approval of a system that consists of up to three ground water extraction wells, CrEX-1, CrEX-2 and CrEX-3, and up to six ground water injection wells, CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5 and CrIN-6. The proposal included five injection wells located around the perimeter of the perceived known plume extent. As stated by the *Drilling Work Plan for Chromium Plume Control Interim Measure and Plume-Center Characterization Injection Wells CrIN-1 through CrIN-6*², Respondents specified that two injection wells situated along the boundary west and east of monitoring well R-50, CrIN-4 and CrIN-5, had the specific role in helping to control chromium plume migration to the south by establishing a hydraulic barrier. Two injection wells at the plume edge west of monitoring well R-45, CrIN-1 and CrIN-2, were intended to address the potential advancement of the plume in the east. One injection well situated at the plume edge west of monitoring well R-44, CrIN-3, was intended to help ensure the plume does not advance to the southeast. And the final proposed injection location was in the plume centroid near monitoring well R-42 to provide additional disposition and to test how the injection of treated water may enhance diffusive processes of chromium in the aquifer.

¹ Attachment 1 – Groundwater Discharge Permit Application for the Chromium Plume Control Interim Measure and Plume-Center Characterization (April 1, 2015).

² Attachment 2 – Drilling Work Plan for Chromium Plume Control Interim Measure and Plume-Center Characterization Injection Wells CrIN-1 through CrIN-6 (December 15, 2015).

14. On October 8, 2015, Respondents provided material to support³ NMED review and issuance of a draft permit based on a verbal request for additional information made by GWQB staff on September 24, 2015. This supporting material included an updated injection well design schematic, which includes the normal and maximum operating pressures, the degree from vertical that the injection wells will be installed during angled drilling, and identification of the flow control valve.

15. On October 29, 2015, NMED issued the first draft of the Discharge Permit 1835 (“DP-1835”) to the Respondents. The draft DP-1835 included a description of the process, the monitoring required to ensure compliance with regulatory standards, conditions of operations aimed to protect the regional aquifer, and general conditions and terms.

16. Pursuant to 20.6.2.3108.H NMAC, NMED issued a public notice on October 30, 2015, and provided for a 30-day public comment period on the draft permit. On November 24, 2015, the Respondents submitted comments⁴ on the draft permit, which included a proposed redline revision of NMED’s draft document, and requested a public hearing on the draft permit pursuant to 20.6.2.3108.K NMAC.

17. On November 30, 2015, NMED received comments in opposition to the draft DP-1835 and a request for public hearing from Communities for Clean Water⁵.

18. The New Mexico Secretary of Environment granted the hearing requests and the

³ Attachment 3 – Response - Request for Additional Information, Class V Injection Control Wells, Discharge Permit Application DP-1835 (October 8, 2015).

⁴ Attachment 4 – Review Comments, Draft Discharge Permit DP-1835, Class V Underground Injection Control Wells (November 24, 2015).

⁵ Attachment 5 – Public Comments in Opposition to the draft Discharge Permit (DP) 1835 Class V Underground Injection Control (November 30, 2015).

parties were notified^{6,7} of the decision on March 18, 2016.

19. Concurrently with the permitting process with GWQB, Respondents continued seeking regulatory approval from the NMED Hazardous Waste Bureau (HWB), which is the regulatory agency tasked with remediation oversight of the chromium plume, for the work plans that proposed the installation locations of the injection well network. As part of the approval with modifications⁸ issued on January 22, 2016, NMED required the proposed injection well CrIN-6 be relocated to a more technically appropriate location, such as near regional monitoring well R-33 or east of monitoring well R-45. NMED cited that injection of treated water within the vicinity of the plume center will likely induce downward and lateral spreading of high concentrations of hexavalent chromium.

20. At the request of NMED, the Respondents submitted additional information⁹ supporting the pending permit application due to the hearing for DP-1835 on May 12, 2016, which included the predicted geochemistry associated with the introduction of treated groundwater into the aquifer using injection wells and additional hydrologic information associated with the use of the injection wells. To this end, Respondents submitted a geochemical analysis of potential impacts of injecting treated ground water into the injection wells and submitted the *Interim Measures Work Plan for Chromium Plume Control*¹⁰, specifically citing the included modeling predictions for plume responses under different operational scenarios. Respondents first predicted the plume expansion that would occur over a five-year period without active pumping and injection, which

⁶ Attachment 6 - Respondents - Hearing Determination Request, DP-1835, Class V Underground Injection Control, Los Alamos National Laboratory (March 18, 2016).

⁷ Attachment 7 – CCW - Hearing Determination Request, DP-1835, Class V Underground Injection Control, Los Alamos National Laboratory (March 18, 2016).

⁸ Attachment 8 - Approval with Modifications, Drilling Work Plan for Chromium Plume Control Interim Measure and Plume-Center Characterization Injection Wells CrIN-1 through CrIN-6 (January 22, 2016).

⁹ Attachment 9 – Additional Information for Discharge Permit Application DP-1835 (May 12, 2016).

¹⁰ Attachment 10 – Interim Measures Work Plan for Chromium Plume Control (May 26, 2015).

showed contamination spreading laterally in the eastern and southern directions. Respondents then predicted plume responses under two different operational scenarios, one with injection occurring into CrIN-4 and CrIN-5, and the second with injection occurring in CrIN-1 and CrIN-2. Respondents' evaluation predicted significant recession of the plume extent of contamination boundary resulting from the use of the injection wells, both away from the Pueblo de San Ildefonso border and away from monitoring well R-45 in the eastern region of the plume.

21. The Respondents submitted an Amendment to Discharge Permit Application DP-1835¹¹ on May 25, 2016, which proposed adding perchlorate monitoring to the application's sampling plan. Respondents claimed that monitoring of perchlorate in the treated ground water would provide assurance of permit compliance and would inform treatment efficiency.

22. An administrative hearing on the matter was held on June 7, 2016, in Los Alamos, NM. During the public hearing, NMED cited technical disagreements with the Respondents regarding conditions that NMED believed should be in the permit before approval. Testimony from Respondents' staff during the public hearing included discussion that the nature and extent of the plume is well understood at the time, discussed the increasing concentration trends in monitoring wells R-50 and R-45, and cited that a final remedy is anticipated to be implemented within eight years from then. Respondents' testimony presented that the interim measures design is an intentional action with technical clarity behind it. Following the Hearing Officer's August 15, 2016, recommendation¹² to approve the discharge permit with conditions, the Secretary of the New Mexico Environment Department adopted the Hearing Officer's recommended finding of fact and conclusions of law and approved¹³ the groundwater discharge permit on August 19, 2016.

¹¹ Attachment 11 – Amendment to Discharge Permit Application DP-1835 (May 25, 2016).

¹² Attachment 12 - Hearing Officer's Report pursuant to 20.6.2.3110 (K) (August 15, 2016).

¹³ Attachment 13 - Final Decision Pursuant to 20.6.2.3110(L) NMAC (August 19, 2016).

23. NMED issued the Discharge Permit Number 1835 (“DP-1835”)¹⁴ to the Respondents on August 31, 2016, for underground injection control wells used in the remediation of a hexavalent chromium plume located in the regional aquifer beneath LANL. Contaminated groundwater was to be pumped from extraction wells installed in the regional aquifer, treated in ion exchange treatment systems to meet groundwater concentration limits set by 20.6.2.3103 NMAC, and injected into the regional aquifer through Class V Underground Injection Control (UIC) wells.

24. In an email correspondence from November 17, 2016, the Respondents requested confirmation from NMED that the pre-discharge requirements have been met and that the Respondents were authorized to proceed with the injection of treated groundwater from extraction well CrEX-1 into injection wells CrIN-4 and CrIN-5. NMED responded to the email request confirming that pre-discharge requirements had been met on November 22, 2016.¹⁵ NMED responded formally¹⁶ on December 7, 2016, by confirming that the submissions met the pre-injection requirements and that injection into CrIN-4 and CrIN-5 was approved.

25. Respondents began discharging treated groundwater from CrEX-1 into injection wells CrIN-4 and CrIN-5 on December 1, 2016.

26. The Respondents submitted the revised *Drilling Work Plan for Groundwater Injection Well CrIN-6*¹⁷ on December 13, 2016, to fulfill the approval with modification requirements. The Respondents proposed installing CrIN-6 northwest of R-45 and cited that additional plume control may be gained by having an injection well downgradient of the

¹⁴ Attachment 14 - NMED 2016. Discharge Permit Issuance, Los Alamos National Laboratory Underground Injection Control Wells, Discharge Permit 1835.

¹⁵ Attachment 15 – NMED Reply, Email Request for Confirmation of Compliance with DP-1835 Pre-Discharge Requirements (November 17, 2016).

¹⁶ Attachment 16 – Confirmation of Compliance with Discharge Permit 1835 Pre-Discharge Requirements, Los Alamos National Laboratory Underground Injection Control Wells (December 7, 2016).

¹⁷ Attachment 17 - Drilling Work Plan for Groundwater Injection Well CrIN-6 (December 13, 2016).

preferential migration pathway the modeling results indicate may be located north of CrEX-1 and south of monitoring well R-11. NMED HWB issued an approval¹⁸ of this revised location on January 4, 2017.

27. The installation of CrIN-6 was completed in July 2017 and the chromium concentrations at the conclusion of the aquifer testing significantly exceeded regulatory standards, contrary to anticipated results.

28. On September 1, 2017, GWQB responded to the *Drilling Work Plan for Groundwater Injection Well CrIN-6* submitted on December 13, 2016, with a *Notification to Temporarily Limit Injection into CrIN-1 and CrIN-6*.¹⁹ NMED required that the Respondents provide justification for the hydraulic control provided by the injection of treated groundwater into the proposed location for CrIN-6 prior to implementing injection activities in this area. NMED cited that Condition 2 of DP-1835 requires that the Respondents operate in a manner such that the standards in 20.6.2.3101 NMAC and 20.6.2.3103 NMAC are not violated and that, in-part, the purpose of 20.6.2.3000 NMAC through 20.6.2.3114 NMAC is to ensure that no degradation of the groundwater beyond the existing concentration will be allowed. NMED stated that any action that knowingly and intentionally causes the migration of groundwater contaminated above regulatory standards to an area with lesser concentrations to be a violation of the groundwater discharge permit. NMED noted that analytical results reveal that chromium concentrations in CrIN-6, which exceed the groundwater standards and were contrary to the expectations as depicted in the 2016 work plan, indicate a significant change in the understanding of groundwater flow and contaminant transport in the vicinity of CrIN-6. Further, NMED specifically noted concern for the injection of

¹⁸ Attachment 18 - Approval, Drilling Work Plan for Groundwater Injection Well CrIN-6 (January 4, 2017).

¹⁹ Attachment 19 - LANL, DP-1835, Notification to Temporarily Limit Injection into CrIN-1 and CrIN-6 (September 1, 2017).

treated groundwater into CrIN-1 and CrIN-6 having the potential to exacerbate the degradation of the groundwater by increasing the hydraulic gradient and accelerating eastward migration of the chromium plume, stated that injection may drive contamination downward to deeper non-impacted hydrostratigraphic units, and noted concern for the uncertainty in the lateral and vertical extents of contamination in the area. NMED required that the Respondents provide additional hydraulic and chemical data on the associated portion of the aquifer, specifying that the information should demonstrate that injection into these wells will not have an adverse impact on the vertical and downgradient horizontal extents of chromium contamination. The demonstration was required to include delineation of the eastern and vertical extents of contamination and sufficient hydrogeological and geochemical information to allow a reasonable and accurate prediction of the impact injection into CrIN-1 and CrIN-6 will have on the chromium plume.

29. On September 22, 2017, the Respondents submitted the Notification of Commencement of Injection at CrIN-6²⁰ following the requirements in Condition 4 of DP-1835 to perform a system-wide functional test of the injection wells. The Respondents indicated that the functional testing will be conducted for CrIN-6, which will not constitute full-scale injection of treated groundwater, and will have an estimated discharge volume limit of approximately 230,000 gallons.

30. NMED responded²¹ on September 25, 2017, by authorizing the function testing of the extraction-treatment-injection system and clarified that the proposed injection would not be contrary to the directives provided in the September 1, 2017, correspondence. NMED reiterated that following the functional testing, the Respondents must submit an operational and hydraulic

²⁰ Attachment 20 - Notification of Commencement of Injection at CrIN-6, Discharge Permit DP-1835, Class V Underground Injection Control Wells (September 22, 2017).

²¹ Attachment 21 - NMED Response – Notification of Commencement of Injection at CrIN-6, Discharge Permit DP-1835, Class V Underground Injection Control Wells (September 25, 2017).

test work plan that will fully describe how the testing furthers the understanding of the characteristics of injection wells and informs an overall technical and operational path forward that will adequately address key technical uncertainties. NMED again emphasized the concern that full-scale injection into wells CrIN-1 and CrIN-6 could exacerbate the degradation of groundwater quality.

31. The Respondents provided a *Path Forward in Response to NMED's September 1, 2017 Notification to Temporarily Limit Injection into CrIN-1 and CrIN-6, Discharge Permit DP-1835*²² on October 19, 2017, which stated agreement with the requirement that a thorough technical evaluation be conducted prior to full-scale injection of treated groundwater into CrIN-6.

32. NMED issued a response²³ on November 21, 2017, which stated postponing operation injection testing at CrIN-6 was the most responsible path forward given the uncertainties in the vertical and lateral extent of contamination and the lack of adequate knowledge concerning groundwater flow in the area. NMED requested an updated model be submitted for review no later than March 30, 2018, which would include: 1) all numerical modeling input parameters, including the technical defensibility of uncertainties, modeling predictions that reflect data from CrIN-1 and CrIN-6; 2) model based particle tracking analyses results specific to short-duration hydraulic flooding at CrIN-6; and 3) capture-zone delineations for CrIN-6.

33. The Respondents submitted the *Evaluation of Chromium Plume Control Interim Measure Operational Alternatives for Injection Well CrIN-6*²⁴ on April 26, 2018. Respondents conducted groundwater modeling of alternative operational configurations for CrIN-6 while

²² Attachment 22 - Path Forward in Response to NMED's September 1, 2017 Notification to Temporarily Limit Injection into CrIN-1 and CrIN-6, Discharge Permit DP-1835 (October 19, 2017).

²³ Attachment 23 – Path Forward in Response to NMED's September 1, 2017 Notification to Temporarily Limit Injection into CrIN-1 and CrIN-6, Discharge Permit DP-1835 (November 21, 2017).

²⁴ Attachment 24 - Evaluation of Chromium Plume Control Interim Measure Operational Alternatives for Injection Well CrIN-6 (April 26, 2018).

maintaining the hydraulic control approach underway in the southern edge of the chromium plume. The operational configurations included using CrIN-6 as a monitoring location, as an injection well, or as an extraction well. The modeling analysis provided for the utilization of CrIN-6 as an injection well predicted that injection pushes chromium contamination to the north, effectively expanding the lateral footprint of the plume, and pushes contamination towards Los Alamos County production well (PM-3) with increases in sentinel well R-35b. The analysis for extraction occurring at CrIN-6 discussed that extraction does not push the plume footprint to the north and doesn't drive increases in chromium concentration at R-35b, but stated that extraction diminishes hydraulic control due to water recirculation between injection in CrIN-1 and extraction from CrIN-6 and that extraction is not as effective as injection at reducing the plume footprint to achieve a smaller final remediation target because extraction keeps higher concentrations near CrIN-6. Respondents recommended that extraction at CrIN-6, rather than injection, provides the highest probability that the IM objectives for the eastern portion of the plume will be met. Respondents also recommended that a monitoring well be installed downgradient of CrIN-6 to verify the interim measures actions were successful at meeting the objectives of hydraulic control.

34. NMED responded²⁵ on June 6, 2018, by stating that the Respondents requested an expedited response from NMED so the Respondents could proceed with preparing the administrative and infrastructure changes necessary to convert CrIN-6 from an injection well into an extraction well. NMED approved the conversion of CrIN-6 to an extraction well based on the IM objective of controlling plume migration and reducing the potential to increase chromium mass migration towards Los Alamos County production well, PM-3. However, NMED noted that a comprehensive review of the voluminous document, including the modeling information provided,

²⁵ Attachment 25 – NMED Response, Evaluation of Chromium Plume Control Interim Measure Operational Alternatives for Injection Well CrIN-6 (June 6, 2018).

would be completed at a later date.

35. On April 1, 2019, NMED issued a second response²⁶ to the evaluation of alternatives for CrIN-6 submission. NMED noted that the location for CrIN-6 was intended to be approximately 300 feet downgradient of the depicted plume boundary of contamination, as depicted in the drilling work plan. The correspondence stated that, regardless of the multiple reiterations that were made by both GWQB and HWB on the importance of providing the information requested in NMED's November 21, 2017, letter, Respondents were deficient in their submittal. NMED asserted that Respondents failed to provide the modeling information requested and that NMED has not conducted a comprehensive review, nor will NMED conduct a review of reports that include recommendations based on modeling results that do not provide supporting documentation of input parameters.

36. Construction on regional aquifer monitoring well R-70, which was proposed to satisfy the monitoring well recommendation set forth in the CrIN-6 evaluation document, was completed on May 17, 2019. The objectives for R-70 were to monitor plume response to extraction occurring at the former CrIN-6, now renamed CrEX-5, in a timely manner to guide adaptive management of the interim measures operational approach in that area and to further characterize the lateral and vertical extent of chromium contamination in the northeastern portion of the plume. The location was selected based on modeling results and was the closest location to the modeling run location P-2 described in the CrIN-6 evaluation report, which was a location predicted by the model to have chromium concentrations drop to below regulatory standards over different time periods depending on the operational scenario and, thus, can be used to monitor the actual plume responses. The analytical results from the screened intervals in R-70 indicated that contamination

²⁶ Attachment 26 – Evaluation of Chromium Plume Control Interim Measure Operational Alternatives for Injection Well CrIN-6 (April 1, 2019).

exceeding regulatory standards resided deeper in the regional aquifer in that area than anticipated and changed the perception of the conceptual site model used to design the interim measures pump-and-treat system.

37. On December 16, 2019, the Respondents submitted the *Assessment Work Plan for the Evaluation of Conditions in the Regional Aquifer Around R-70*,²⁷ in which Respondents proposed activities associated with evaluating existing and newly acquired information on the condition of the regional groundwater and the need to install two additional groundwater monitoring wells, R-35c and R-73, in the eastern region of the plume to ensure the protection of Los Alamos County production well, PM-3. Respondents noted that the assessment will provide an opportunity to consider how the interim measures' operations, specifically extraction at CrEX-5 and injection into CrIN-1 and CrIN-2, impact the need for additional wells. NMED approved²⁸ the actions proposed in the work plan on April 14, 2020, and the deadline to submit the report presenting the results of the work plan was due to NMED no later than June 17, 2020.

38. Respondents submitted the *Assessment Report for the Evaluation of Conditions in the Regional Aquifer Around Well R-70*²⁹ document on June 30, 2021. Respondents evaluated the data in the R-70 monitoring well area and recommended that a new monitoring well, R-73, be installed with the objective of characterizing the vertical extent of contamination. Respondents also provided justification for the recommendation to not install the required monitoring well R-35c, which was required by NMED to evaluate the deeper contamination and the concern for a preferential pathway leading towards PM-3 that is affected by the presence of the Puye pumiceous

²⁷ Attachment 27 – Assessment Work Plan for the Evaluation of Conditions in the Regional Aquifer Around Well R-70 (December 16, 2019).

²⁸ Attachment 28 – Approval, Assessment Work Plan for the Evaluation of Conditions in the Regional Aquifer Around Well R-70 (April 14, 2020).

²⁹ Attachment 29 - Assessment Report for the Evaluation of Conditions in the Regional Aquifer Around Well R-70 (June 30, 2021).

unit and by water-supply pumping occurring at PM-3. Respondents stated that there was no evidence of significant hydraulic influences that would impact chromium migration at depths between the two screened intervals of R-35a and R-35b. Respondents also did not conduct the required modeling, as described in the approved work plan, and cited variability in chromium concentrations from samples collected between August 2020 and March 2021 as preventing Respondents' ability to produce model predictions that incorporate the data from monitoring well R-70.

39. NMED responded to the submission³⁰ on December 20, 2021, by stating that Respondents did not adhere to the work plan or the commitments made in the June 2020 extension request justifying the need for additional time to complete the requirements. Except for agreement with the recommendation to install R-73, NMED did not concur with the submission and noted many instances where the document lacked viable scientific data and information to support the recommendations provided. NMED noted that the calibration of the groundwater model, as described in the work plan, was a critical component to the data gap analysis to properly evaluate the need for monitoring well R-35c. To this end, NMED provided a series of comments on the deficiency of the report and also provided comments from an independent third-party review of the document that was solicited to satisfy technical disagreements between the parties on the analysis provided for the monitoring well R-70 region.

40. The Respondent submitted an application for renewal and modification of DP-1835³¹ on July 9, 2021, which proposed an increase in the quantity of treated groundwater discharged. The renewal and modification proposed an increase in the quantity of treated

³⁰ Attachment 30 – Review, Assessment Report for the Evaluation of Conditions in the Regional Aquifer Around Well R-70 (December 20, 2021).

³¹ Attachment 31 - DP-1835 Permit Renewal Application and modification (July 9, 2021).

groundwater discharged from 648,000 gallons per day (gpd) to 1,500,000 gpd.

41. NMED deemed the application administratively complete³² on August 2, 2021, and responded to the DP-1835 application on January 10, 2022, by requesting additional information³³ to support analysis of the proposed expansion be submitted within 45 days.

42. The Respondent submitted a letter³⁴ on February 24, 2022, which cited the need to capture the requested information within the NMED HWB's Chromium Interim Measures and Characterization Work Plan, and requested an extension on that deadline to September 30, 2022. NMED did not approve the extension request.

43. On April 28, 2022, NMED issued a Notice of Non-Compliance³⁵ for exceedances of the 20.6.2.3103 NMAC groundwater standard for chromium in a downgradient monitoring well R-45 and required that Respondents submit a Corrective Action Plan within 30 days pursuant to Condition 19 of DP-1835 that requires the submission of a corrective action plan to address an exceedance of a groundwater standard within 30 days of confirmation.

44. Respondents responded with a letter³⁶ on May 27, 2022, which stated disagreement with NMED's assertion that Respondents are not in compliance with the terms and conditions set forth in DP-1835. Respondents stated that no violation of Condition 19 of DP-1835 occurred, and therefore, did not agree to submit a corrective action plan. Instead, Respondents offered to submit an action plan discussing the exceedance in the monitoring well to further optimize the chromium

³² Attachment 32 – Administrative Completeness Determination and Applicant's Public Notice Requirements, DP-1835 (August 2, 2021).

³³ Attachment 33 - NMED Request for Additional Information for Los Alamos National Laboratory Underground Injection Control Wells, Discharge Permit 1835 (January 10, 2022).

³⁴ Attachment 34 - Respondents Response to New Mexico Environment Department Ground Water Quality Bureau Request for Additional Information for Los Alamos National Laboratory Underground Injection Control Wells, Discharge Permit 1835 (February 24, 2022).

³⁵ Attachment 35 - Notice of Non-Compliance, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (April 28, 2022).

³⁶ Attachment 36 - Response to New Mexico Environment Department Ground Water Quality Bureau Notice of Non-Compliance, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (May 27, 2022).

interim measures. Respondents noted that the deadline set forth by NMED in the Notice of Non-Compliance would not be reached by the May 30, 2022, timeline required, and that the intention was to submit an action plan by September 30, 2022.

45. On June 6, 2022, NMED issued a Notice of Violation³⁷ to the Respondents, which specified that the Facility is operating in violation of the conditions of DP-1835 and the WQA. The Notice of Violation asserted that the requirements of 20.6.2.3103 NMAC have been violated due to the groundwater at the Facility exceeding the regulatory standards in areas downgradient of the contaminant plume that were previously uncontaminated, and that the requirements of DP-1835 were violated when a Corrective Action Plan to address the groundwater contamination was not received within 30 days of confirmation. To correct the violations, NMED required a Corrective Action Plan be submitted no later than July 6, 2022, which required to propose measures to mitigate damage from the discharge, including at a minimum, source control measures and an implementation schedule.

46. On July 5, 2022, Respondents responded to the Notice of Violation with a letter³⁸ that did not include the required Corrective Action Plan. Instead, Respondents agreed to submit an action plan to NMED to advance collaborative efforts and further optimize the interim measures. Respondents requested approval to submit the action plan by September 30, 2022.

47. On July 6, 2022, Respondents submitted a correspondence³⁹ to supersede the response submitted on July 5, 2022. This letter did not include the required Corrective Action Plan, included a proposal to submit an action plan, and requested approval to submit the action plan by

³⁷ Attachment 37 - Notice of Violation, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (June 6, 2022).

³⁸ Attachment 38 - Response to Notice of Violation, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (July 5, 2022).

³⁹ Attachment 39 - Superseding Correspondence Submitted on July 5, 2022: Response to Notice of Violation, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (July 6, 2022).

September 30, 2022, using the exact language as the first submission. However, this revised letter included a discussion on the Respondents' plan to meet with the Pueblo de San Ildefonso Tribal Council in August 2022 and stated that Respondents will provide NMED with an update on the status of the action plan by August 31, 2022, which would include a potential list of proposed actions.

48. Concurrently with the regulatory correspondences, the installation of monitoring well R-73 failed⁴⁰ when the drive casing downhole broke as the casing was being removed during the placement of the annular fill. The New Mexico Office of the State Engineer ("OSE") required the plugging and abandonment of the monitoring well after determining that completing that well following regulatory requirements would not be possible. Respondents have not yet prioritized a replacement well for the failure at monitoring well R-73 and the extent of contamination requirements set forth in the *Assessment Report for the Evaluation of Conditions in the Regional Aquifer Around Well R-70* have still not been satisfied.

49. NMED issued a response to the request for additional time⁴¹ to submit the Corrective Action Plan on August 4, 2022. NMED approved the extension request for the submission of the Corrective Action Plan contingent upon the submission of the draft Corrective Action Plan to NMED for approval by August 15, 2022, which was intended to coincide with the path forward discussions with the Pueblo de San Ildefonso. The final Corrective Action Plan remained due to NMED by September 30, 2022.

50. NMED did not receive the required draft of the Corrective Action Plan by August

⁴⁰ Attachment 40 - Request for Extension for Fiscal Year 2022 Appendix B Milestone #7, Letter Report Documenting Completion of R-73 and Collection of First Samples due to Force Majeure and Unanticipated Breakage of Lines of Pipe (August 11, 2022).

⁴¹ Attachment 41 - Request for Additional Time for the Submittal of a Corrective Action Plan, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (August 4, 2022).

15, 2022. However, on September 30, 2022, the Respondents submitted the *Regional Aquifer Monitoring Well R-45 Action Plan*⁴² (“R-45 Action Plan”), which only mentioned the portion of the Notice of Violation regarding the exceedance of 20.6.2.3103 NMAC regulatory standards in the downgradient monitoring well, and did not address NMED’s assertion that the conditions in DP-1835 which required the submission of a Corrective Action Plan following the exceedance were violated. The R-45 Action Plan included a proposal for the installation of two new regional aquifer monitoring wells, qualitative and quantitative analyses examining the cause for the concentration increases, and a simulation plan for identifying alternative extraction or injection rates to decrease chromium concentrations below the regulatory standards. The proposed action plan did not meet the requirements set forth in condition 19 of DP-1835 by not including a description of the proposed action to control the source and did not include an associated completion schedule for the proposed activities.

51. NMED issued a response⁴³ to the R-45 Action Plan on December 12, 2022, which stated that the information submitted in the R-45 Action Plan partially satisfies the requirements for a Corrective Action Plan following the requirements in the condition of DP-1835, but also stated that the Respondents did not identify actions that will be taken to control the cause and prevent the further migration of chromium contamination. Therefore, NMED required additional corrective actions to meet the requirement for a Corrective Action Plan to propose actions to control the cause of the contamination migration and prevent future migration from occurring, and consequently, required the cessation of injections authorized under DP-1835 no later than April 1, 2023, to prevent any further migration from occurring. The response specified that the cessation

⁴² Attachment 42 - Submittal of the Regional Aquifer Monitoring Well R-45 Action Plan (September 30, 2022).

⁴³ Attachment 43 - Corrective Action Plan Response and Further Action Required, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (December 12, 2022).

of injection is required until Respondents complete the action proposed in the R-45 Action Plan and can prove to NMED that further migration is not occurring. NMED also clarified that additional corrective actions may be required if information becomes available indicating that the actions proposed are inadequate and/or groundwater contamination occurs as a result of the described discharge.

52. After no response was received following the directive to cease injections authorized under DP-1835, NMED issued a follow-up letter⁴⁴ dated February 2, 2023, requesting confirmation of the notice to cease and the alternative plan for disposal of treated water by February 12, 2023.

53. On February 28, 2023, Respondents submitted the *Initial Five-Year Evaluation of the Interim Measures for Chromium Plume Control with an Assessment of Potential Modifications to Operations*⁴⁵ (“Five-Year Evaluation”). Respondents stated that reaching compliance with NMED’s regulatory direction to complete the proposed actions in the R-45 Action Plan or cease injections authorized under DP-1835 by April 1, 2023, cannot be reasonably completed. However, Respondents provided an initial assessment of the interim measures treatment system using a predictive assessment of the potential impacts of injection under a series of four operational configurations. Respondents asserted that the results of this analysis were used to indicate that the groundwater at monitoring well R-45 was captured by the extraction wells in the vicinity, and thus, adequately addressed NMED directives to control the cause of the contamination migration and prevent further migration of the plume. Respondents recommended that the injection system be operated at full capacity, the installation of the monitoring wells required by the R-45 Action Plan

⁴⁴ Attachment 44 - NMED Follow-up on Corrective Action Plan Response and Further Action Required, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (February 2, 2023).

⁴⁵ Attachment 45 – Submittal of Initial Five-Year Evaluation of the Interim Measures for Chromium Plume Control with an Assessment of Potential Modifications to Operations (February 28, 2023).

should be prioritized, and that the highest priority extraction should occur at extraction well CrEX-5. Furthermore, Respondents specified that alternative disposition of the treated groundwater was not feasible given the constraints in the land application Discharge Permit 1793 and that deep extraction to address the deeper contamination observed at monitoring well R-45 was not necessary at that time.

54. On March 30, 2023, Respondents requested a 45-day extension⁴⁶ to continue injections past the April 1, 2023, deadline for the cessation of injection authorized under DP-1835. In this request, Respondents cited decreasing concentration trends noted at monitoring well R-45 due to the reduced operational activities that had been necessitated by maintenance issues beginning in November 2022. Respondents noted that extraction wells CrEX-1, CrEX-2 and CrEX-3 were turned off awaiting maintenance activities, which resulted in the concomitant shutdown of injection wells CrIN-1, CrIN-2 and CrIN-3 in the eastern region of the plume near monitoring well R-45. Respondents cited the lack of injections occurring in the eastern portion of the plume and the extraction occurring in the eastern-most extraction well as resulting in compliance with the regulatory requirement to control the source of contaminant migration occurring in the downgradient monitoring well, which was not Respondents' typical operational scenario nor how NMED authorized the injection activities in DP-1835, and thus, provided adequate evidentiary support to allow continued full scale operations. Respondents stated the extension would enable the additional collection and interpretation of the data to drive decision making and would allow time for NMED and the Pueblo de San Ildefonso to conduct a meeting scheduled for April 11, 2023.

55. NMED did not approve of the extension request and on April 3, 2023, Respondents

⁴⁶ Attachment 46 - Request for 45-Day Extension Regarding Notification of Cessation of Injection Activities, Los Alamos National Laboratory Underground Injection Control Wells, Discharge Permit 1835 (March 30, 2023).

submitted a notification⁴⁷ of cessation of injection activities. This notification specified that the injections authorized under DP-1835 ceased on March 31, 2023, and noted that Respondents reserve the right to challenge this direction from NMED.

56. Respondents and NMED presented at the Radioactive and Hazardous Materials Interim Committee legislative meeting held on August 21, 2023, to discuss the trends identified in the periphery of the contamination plume since the cessation of injection occurred in March 2023. Recommendations from the legislative members encouraged seeking resolution of the differences in technical positions between Respondents and NMED through a collaborative approach towards finding a path forward and by jointly seeking an independent expert review to provide recommendations on the points of contention. To this end, NMED issued a letter⁴⁸ on September 7, 2023, that included a proposal to allow for a 12-month temporary partial operation of the injection wells associated with DP-1835 following Respondents' submission of a revised Corrective Action Plan that included implementation of actions proposed in an appendix to the letter that included: (1) the installation of an alternative high-capacity disposal location for injection of treated groundwater; (2) temporary injection authorized in CrIN-3 and CrIN-4 contingent on the installation and sampling of a regional aquifer monitoring well south of the injection wells (SIMR-3) and located on Pueblo de San Ildefonso lands, stating that cessation would be required if detections in SIMR-3 indicate evidence of contamination exceeding background values; and (3) install monitoring well R-80 to provide information on contaminant migration east of monitoring well R-45 prior to reconsideration for authorization of injection into CrIN-1 and CrIN-2.

⁴⁷ Attachment 47 – Notification of Cessation of Injection Activities as Required per the Corrective Action Plan Response and Further Action Required, Los Alamos National Laboratory Underground Injection Control Wells, DP-1835 (April 3, 2023).

⁴⁸ Attachment 48 – Corrective action under DP-1835 associated with the chromium plume (September 7, 2023).

57. Respondents responded on December 5, 2023,⁴⁹ by stating disagreement with the conditions in NMED's proposal to allow for the resumption of injection activities and stated the urgent need to resume operation of the interim measure based on Respondents' technical evaluation and analysis. Respondents cited that increasing chromium concentrations were being measured in the extraction wells since the cessation of injection and stated that a prolonged shutdown of the interim measures, or implementing substantive operational changes, poses potential contamination risks to the regional aquifer under the Pueblo de San Ildefonso. However, the Respondents agreed to initiate an independent review of the differing technical positions and proposed to task the review team with evaluating the technical basis for NMED's proposed corrective actions and to evaluate if sufficient data is available to conduct a final remedy evaluation for the plume. Respondents reiterated the gravity and environmental impacts of a prolonged system shutdown and requested approval to resume partial operation of the interim measures, including the use of injection wells CrIN-2, CrIN-3, CrIN-4 and CrIN-5, during the independent review.

58. On February 6, 2024,⁵⁰ NMED did not approve of the request to resume partial operation of the interim measures system. NMED noted that action towards resumption could have been approved, following Respondents' agreement to implement the necessary protective measures proposed by NMED, and that no proposals to satisfy the regulatory requirements set forth have been made by Respondents to move towards a resumption of the injection authorization. NMED offered another proposal for corrective actions that would address regulatory concerns regarding the efficacy of the treatment system, while allowing for partial operation during the

⁴⁹ Attachment 49 – Response to New Mexico Environment Department September 6, 2023, Letter, “*Corrective action under DP-1835 associated with the chromium plume*” (December 5, 2023).

⁵⁰ Attachment 50 – Response to Respondents December 5, 2023 Letter, Response to New Mexico Environment Department September 6, 2023, Letter, “*Corrective action under DP-1835 associated with the chromium plume*” (February 6, 2024).

approval and implementation process. NMED agreed to participate in the independent technical review, using the mechanism proposed by Respondents, but noted that Respondents immediate action is critical to protect the groundwater and prevent potential contamination risks.

59. Respondents again refuted the need to implement the corrective actions proposed by NMED in correspondence⁵¹ dated April 10, 2024. Respondents asserted the importance of resuming the interim measures to address increasing concentration in some wells around the plume. Again, Respondents discussed that the interim measures were designed to provide hydraulic control of the plume by operating injection wells along the downgradient edge and extraction wells within the plume. The Respondents stated commitment to incorporating the results of the independent technical review, including conditions from NMED which the expert review determines are appropriate. However, Respondents again stated disagreement with the revised conditions proposed by NMED in the February 6, 2024, correspondence. This time Respondents stated that NMED's proposal (1) was not protective of the regional aquifer; (2) does not consider the purpose and design of the interim measures; and (3) is not consistent with the purpose of an interim measure under the 2016 Compliance Order on Consent, the regulatory document guiding the remediation. Furthermore, Respondents stated that NMED's decision to have the resumption of the injection operations be contingent on agreement towards the protective measures set forth in the conditions was premature. Respondents specified disagreement with the requirement to propose an alternative injection location for the disposition of treated water, which HWB has required since 2022 as an adaptive management approach to alleviate NMED concerns for injection occurring upgradient of contamination exceeding regulatory standards, by stating that the conditions proposed are arbitrary conditions without scientific basis. Respondents, again, did not

⁵¹ Attachment 51 – Response to New Mexico Environment Letter of February 6, 2024, Regarding Resumption of Interim Measures Associated with the Chromium Plume (April 10, 2024).

propose any concessions towards reaching a path forward to achieve the regulatory directives and again requested NMED approval to resume partial operations of the interim measures during the expert technical review by allowing injection to occur in CrIN-2, CrIN-3, CrIN-4 and CrIN-5, prioritizing the southern boundary injection wells near monitoring well R-50 to prevent migration of the plume onto Pueblo de San Ildefonso lands.

60. On May 29, 2024, NMED authorized⁵² partial operation of injection wells CrIN-3, CrIN-4, and CrIN-5 under DP-1835. NMED cited the need to pursue Respondents' compliance with the regulatory requirements but concluded that the potential risks to groundwater safety of the sole source aquifer and the contamination risk to the Pueblo de San Ildefonso resulting from a lack of action outweighed the deadlock reached. NMED stated that if chromium concentration data in monitoring wells along the periphery of the current known plume extent, both upgradient and downgradient of injection operations, indicate concerning trends, NMED will reevaluate this authorization. Furthermore, operation of the injection wells causing any violation of the conditions in DP-1835 may be subject to civil penalties pursuant to New Mexico Water Quality Act 74-6-10(C) and 74-6-10.1.

61. NMED and Respondents received a draft of the *Independent Review of the Chromium Interim Measures Remediation System in Mortandad Canyon Los Alamos, New Mexico* ("IRT Report") in September 2024 with the opportunity to comment on factual accuracy. The review team was tasked with answering a series of questions jointly posed by NMED and Respondents regarding the ability of the interim measures operating as originally approved to hydraulically control the plume, if adverse impact from injection locations caused increasing

⁵² Attachment 52 – Response to Respondents April 10, 2024, Letter Response to New Mexico Environment Letter of February 6, 2024, Regarding Resumption of Interim Measures Associated with the Chromium Plume (May 29, 2024).

concentration trends, the state of the groundwater modeling, NMED's proposed acceptable corrective actions in the series of correspondence, well design, and the efficacy of moving the process towards a corrective measures evaluation of the final remedy alternatives with the information currently available.

62. The final IRT Report⁵³ was provided to the Parties on December 30, 2024. The IRT Report determined that the current interim measures, even at full operations, will not contain all chromium migration and stated that the existing interim measures system will need to be modified, reconfigured, and possibly expanded with at least one additional extraction well in the vicinity of R-70. The IRT Report stated that the data is not sufficient to conclude if the interim measure operation has hydraulically controlled the plume, but that predictive modeling conducted using the Finite Element Heat and Mass ("FEHM") transport groundwater model shows that the plume was not hydraulically controlled and that the vertical containment by the interim measure requires further evaluation. The IRT Report specified that it is more likely than not that the injection occurring into CrIN-1 and CrIN-2 adversely impacted R-45 screen 2 and could have caused enhanced downward migration of the chromium contamination. To maintain hydraulic control, the IRT Report recommended accelerating in-depth modeling, restarting limited interim measures operations by using CrEX-4, CrEX-5, CrIN-4 and CrIN-5, converting CrIN-1 into an extraction well to enhance capture at the leading edge, and potentially adding an additional extraction well further east based on the data collected from data gap wells R-73 redrill and R-79 upon installation. The evaluation of the groundwater modeling indicated that the current parameterization does not adequately reflect site data and discussed that technical concerns warranting model improvement

⁵³ Attachment 53 – Independent Technical Review Chromium Interim Measures Remediation System in Mortandad Canyon Los Alamos, New Mexico (December 30, 2024).

include the representation of aquifer parameters, responses to supply well pumping, and data gaps regarding the lateral and vertical extents of contamination. The IRT Report recommended mitigating the concerns for the uncertainty in predictive modeling conducted by Respondents by converting the current FEHM groundwater model to the MODFLOW family of codes and to reevaluate the representation of key parameters, as presented throughout the document. The IRT Report evaluated the multiple lists of acceptable corrective actions proposed in the correspondences aimed at authorizing partial injection operations to resolve the dispute. The review team concurred that the conditions proposed by NMED should be implemented and the increased injection capacity would greatly simplify hydraulic control of the plume and recommended a partial restart of the interim measures while Respondents locate, design, and construct this new alternative cleaned water return system at the earliest practical date. The IRT Report discussed that the chromium concentration data collected at SIMR-3, a regional aquifer monitoring well south of injection locations and on Pueblo de San Ildefonso lands, can guide the future decisions regarding continued operations at CrIN-5. Further, the IRT Report stated that containment of the chromium plume is not contingent on injection wells providing hydraulic control and that containment of the region east of CrEX-5 and R-70 might be achieved with extraction wells only and a high volume alternative cleaned water return system with a capacity of 300+ gallons per minute to increase extraction flow rates in existing wells and/or converting some of the injection wells to extraction wells. For implementation of an alternative cleaned water return system, the IRT Report recommended repurposing water supply well PM-3 into an injection well or constructing a deep injection well located 1000 to 2000 feet below ground surface. Finally, the IRT Report determined that the site investigations have not provided sufficient information to propose and evaluate remedial alternatives, stated that data gap uncertainties have not been

resolved enough to design a final remedy system, and concluded that the investigation and remediation should continue as interim measures using an adaptive management approach to fill the data gaps quickly and effectively.

63. Respondents began construction on a regional aquifer monitoring well located on Pueblo de San Ildefonso tribal lands (SIMR-3) in June 2025 aimed to define the nature and extent of contamination of hexavalent chromium.

64. Screening level sampling of the regional aquifer, conducted through a series of samples collected from temporary, discrete screened intervals within the borehole during the construction of SIMR-3, occurred throughout October 2025 to inform the presence of contamination extending beyond the Facility property. Analytical results indicate that chromium contamination is present within the deepest intervals, extending between 1039-1049 feet below ground surface, at concentrations up to 70 ppb, which are levels that exceed the regulatory standards set forth in 20.6.2.3103 NMAC. This data indicates that the chromium contamination within the regional aquifer has migrated beyond the Facility and that contamination exists within the water beneath the Pueblo de San Ildefonso lands at levels that exceed the regulatory standards.

65. In response to this newly identified exceedance of groundwater quality standards, both offsite downgradient of injection operations, NMED withdrew the temporary authorization⁵⁴ for partial operation of DP-1835 on November 18, 2025. NMED discussed that the Respondents have not complied with the regulatory directives and have not taken appropriate steps to ensure that contamination does not migrate further in the regional aquifer or offsite, as evidenced by the exceedance above regulatory standards on the Pueblo de San Ildefonso lands. NMED noted that this newly identified contamination is contrary to the assertions made by Respondents

⁵⁴ Attachment 54 - Withdrawal of the Temporary Authorization for Partial Operation of Discharge Permit 1835 (DP-1835) (November 18, 2025).

throughout the operation of the interim measures, in which Respondents continuously asserted that the interim measures are successfully achieving the principle objective to achieve and maintain downgradient plume edge within the LANL boundary.

66. On November 18, 2025, NMED received an email⁵⁵ from Respondents to confirm receipt of the directive and stated that the operation of the extraction, treatment, and injection operations associated with the hexavalent chromium interim measures have been ceased.

67. NMED conducted a site visit on November 20, 2025, to confirm that the operation of injection operations ceased.

68. Respondents formally responded⁵⁶ to NMED's directive to cease injection on November 21, 2025. Respondents asserted that operations of the entire interim measures are contingent on the injection authorization, including the extraction and treatment, based on the design of the interim measures and the limitation of alternative water discharge options, and therefore, the cessation of injection drives the cessation of interim measures remediation. Respondents mentioned the need to complete the installation of SIMR-3 and stated that the screening results were surprising. Again, Respondents requested authorization to resume injection operations, stating that restarting the interim measures will avoid increasing chromium concentrations at performance monitoring locations near the Pueblo de San Ildefonso boundary.

C. VIOLATIONS

69. **Violation 1.** Failure to meet the standards of 20.6.2.3103 NMAC.

The analytical results provided by the Respondents confirm that the groundwater

⁵⁵ Attachment 55 – Respondents Response, Withdrawal of the Temporary Authorization for Partial Operation of Discharge Permit 1835 (DP-1835) (November 18, 2025).

⁵⁶ Attachment 56 – Respondents Response, Notification of Withdrawal of the Temporary Authorization for Partial Operation of Discharge Permit 1835 (November 21, 2025).

standard for the allowable limit for chromium has been exceeded. The WQA groundwater standard for chromium is 0.05 mg/L, as set forth in 20.6.2.3103 NMAC. The exceedances identified in monitoring well R-45, which were detected in samples ranging up to almost 0.07 mg/L, were the first instance of non-compliance with the regulatory standards in a monitoring well located downgradient of injection operations, which necessitated the initial Notice of Violation in July 2022. On January 14, 2025, the Respondent sampled monitoring well R-45 and the results were below the groundwater standard for chromium. However, the analytical results from sampling conducted in October 2025 confirm that contamination is present on Pueblo de San Ildefonso lands, in regional aquifer monitoring well SIMR-3, at levels exceeding 0.07 mg/L. This demonstrates a second instance of non-compliance with the regulatory requirements set forth in 20.6.2.3103 NMAC identified in a monitoring well located downgradient from injection occurring through DP-1835. Detections of contaminants exceeding regulatory standards in monitoring wells located downgradient of the injection operations in two distinct areas of the plume indicate that the DP-1835 injection activities do not align with the assurances made by Respondents since 2021 that state injection is critical to maintaining plume control and preventing further migration of contamination.

70. Respondents' failure to meet the ground water standards constitutes a violation of 20.6.2.3103 NMAC.

71. **Violation 2.** Failure to meet the requirements of DP-1835 Permit Condition 19.

Condition 19 of DP-1835 requires that a Corrective Action Plan be submitted to NMED within 30 days of receipt of the data confirming that groundwater monitoring in the vicinity of the discharge conducted under the permit indicates that a significant increase in concentration of an analyte identified in 20.6.2.3103 NMAC or a toxic pollutant defined in 20.6.2.7(T)(2) NMAC

is present in groundwater that is attributable to a discharge conducted under DP-1835. After disagreeing with NMED's assertion that a corrective action plan is required based on the increased concentration trends identified in monitoring well R-45, which NMED determined were attributable to the discharge, Respondents submitted an action plan but did not agree to submit a corrective action plan following the requirements of Condition 19. The actions proposed in the R-45 Action Plan did not satisfy the requirements of DP-1835 Condition 19, which states that Respondents shall propose measures to ensure that the exceedance of the standard will be mitigated by submitting a Corrective Action Plan that includes a description of the proposed actions to control the source and an associated completion schedule. NMED has formally notified Respondents on multiple occasions that the proposed actions in the R-45 Action Plan did not satisfy the requirements for the Corrective Action Plan and proposed specific actions to be included in a revised Corrective Action Plan to meet the requirements of DP-1835. NMED facilitated input through the independent technical review team to evaluate the technical defensibility of NMED's requirements for the Corrective Action Plan. The independent technical review team issued a final report on December 30, 2024. NMED has not yet received a Corrective Action Plan that satisfies the regulatory requirements in Condition 19 of DP-1835, which incorporates the requirements in 20.6.2.3107(A)(10) NMAC to ensure that discharge permits include contingency plans to cope with failure of the discharge permit or system. Furthermore, Respondents have not met the requirement to provide an associated completion schedule for the activities necessary to achieve compliance with the DP-1835 conditions. NMED notes that the implementation of the proposed actions in the R-45 Action Plan, including the installation of the two regional aquifer monitoring wells necessary to evaluate the impact of the discharge operations, have not been completed.

72. Respondents' failure to comply with the regulatory requirement to propose corrective actions that successfully achieve the goals set forth in Condition 19 of DP-1835 constitutes a violation of that section and of 20.6.2.3107(A)(10) NMAC.

D. COMPLIANCE ORDER

73. Based upon the foregoing findings and conclusions, the Respondents are hereby ordered to complete the following actions. No later than 60 calendar days from the date this Order is signed by NMED, Respondents shall submit to NMED the following:

- a. Pursuant to 20.6.2.3107(A)(11) NMAC and Condition 19 of DP-1835, a Corrective Action Plan that appropriately identifies actions that will be taken to monitor further migration, control the cause and prevent the further migration of chromium contamination, including at a minimum, source control measures and an implementation schedule. The plan must include a proposal for the remediation of the contamination that has migrated beyond the Facility boundary onto Pueblo de San Ildefonso land.
- b. The Respondents shall submit a revised permit application that includes the information from NMED's 2022 request, which is required to conduct an effective permit application review. NMED has significant concerns regarding the capability of the injection locations proposed in the permit renewal application for DP-1835, submitted on July 9, 2021, to not only achieve the interim measure objectives to hydraulically control plume migration, but also concerns with the capability of the interim measures, as designed, to ensure the protection of human health can be maintained until the final remedy is implemented. NMED is requiring that a revised discharge permit application be submitted that proposes an alternative injection location outside the boundary of

contamination to ensure that the disposition of treated groundwater does not result in adverse contaminant migration within the regional aquifer before authorization of the use of underground injection control wells will be provided. This revised permit application must update the conceptual site model to adequately address the newly discovered contamination on the Pueblo de San Ildefonso lands and must provide a technically defensible, conservative approach to evaluating the potential impacts an alternative injection location may have on contaminant migration within the regional aquifer. To this end, for consistency with NMED's previous requests, NMED requires the conversion of the current Finite Element Heat and Mass Transfer ("FEHM") groundwater model into the industry standard MODFLOW family of codes, and the permit application must include: 1) all numerical modeling input parameters, including the technical defensibility of uncertainties, modeling predictions that reflect data from SIMR-3; 2) model based particle tracking analyses results for the proposed discharges for NMED consideration in the revised permit application; and 3) capture-zone delineations for any discharges proposed by Respondents for NMED consideration in the permit application. Authorizing groundwater injection occurring into the current injection well network is an action that NMED cannot ensure will be protective of the regional aquifer, and therefore, NMED will not consider the issuance of a discharge permit until an application meeting the regulatory requirements included herein are submitted for NMED review. NMED would require the Respondent address the concerning trends in data and to modify the operational configuration in the DP-1835 permit application to provide a proposal for remediation that will achieve interim

measure objectives and ensure that contamination does not continue to migrate closer to downgradient receptors.

74. Ongoing Requirements:

- a. NMED requests periodic status, at a minimum of quarterly, updates on Respondents' implementation of the recommendations provided by the independent technical review, including estimated completion timelines.

75. Failure to comply may subject the Respondent to additional civil penalties. NMSA 1978, § 74-6-10(F) of the Act authorizes the additional assessment of \$25,000.00 for each day of continued noncompliance if the Respondents fail to submit the plan or evidence of hardship as required by this Order.

E. CIVIL PENALTY

76. NMSA 1978, § 74-6-10(C)(1) of the Act authorizes a civil penalty of up to \$15,000.00 per day for each violation of a provision of the Act based in NMSA 1978, § 74-6-5 including a regulation adopted or a permit issued pursuant to that section.

77. NMED hereby assesses a civil penalty for Violation 1 in the amount of \$6,776,250.00 for violations set forth in Paragraphs 69 and 70.

78. NMED hereby assesses a civil penalty for Violation 2 in the amount of \$2,988,375.00 for violations set forth in Paragraphs 71 and 72.

79. The total civil penalty amount for Violations 1 and 2 is \$9,764,625.00. See Exhibit 1.

80. Additionally, NMED assesses administrative compliance costs in the amount of \$19,878.65, calculated to cover personnel costs incurred by NMED to create this Order. Payment of the civil penalties is due no later than 30 calendar days after this Order becomes final. The

Respondents shall make the payment by certified or cashier's check payable to the State of New Mexico and mailed (certified) or by pre-arranged hand delivery to WPCEB at the following address:

Avery Young, Bureau Chief
Water Protection Compliance and Enforcement Bureau
New Mexico Environment Department
1190 St. Francis Dr., Suite N-2250
Santa Fe, NM 87505
Telephone: 505-699-8564

Written notification of the payment shall also be emailed to the following address:

Raymond Romero, Office Manager and Senior Paralegal
Office of General Counsel
New Mexico Environment Department
Email: ray.romero@env.nm.gov

F. RIGHT TO ANSWER AND REQUEST A HEARING

81. Pursuant to NMSA 1978, § 74-6-10(G) of the Water Quality Act, the Respondents have the right to answer this Order and to request a public hearing.

82. If the Respondents: (a) contest any material or legal matter upon which the Order is based; (b) contend that the amount of the penalties proposed in the Order are inappropriate; (c) contend that the Respondents are entitled to prevail as a matter of law; or (d) otherwise contest the appropriateness of the Order, Respondents may email a written Request for a Public Hearing and Answer to the Order to the WQCC, at the following address:

Hearing Clerks
New Mexico Environment Department
luis.lopez@env.nm.gov
pamela.jones@env.nm.gov

83. Respondents must file the Request for a Public Hearing and Answer to the Order within 30 days after Respondents' receipt of the Order.

84. Respondents must attach a copy of this Order to its Request for a Public Hearing

and Answer to the Order.

85. Respondents also must serve a copy of the Request for Hearing on Ray Romero, Office Manager and Paralegal, Office of General Counsel, New Mexico Environment Department, ray.romero@env.nm.gov.

86. The Respondents' Answer shall clearly and directly admit, deny, or explain each of the factual allegations contained in the Order of which Respondents have any knowledge. Where Respondents have no knowledge of a particular factual allegation, Respondents should so state, and Respondents may deny the allegation on that basis. Any allegation of the Order not specifically denied shall be deemed admitted. Respondents' Answer shall also include any affirmative defenses upon which Respondents intend to rely. Any affirmative defense not asserted in the Answer, except a defense asserting lack of subject matter jurisdiction, shall be deemed waived.

87. The Water Quality Control Commission's Adjudicatory Procedures, 20.1.3 NMAC, shall govern the public hearing if Respondents request a public hearing.

G. FINALITY OF ORDER

This Order shall become final unless Respondents file a Request for Hearing and Answer with the WQCC within 30 days after the date of receipt of this Order pursuant to NMSA 1978, § 74- 6-10(G).

H. COMPLIANCE WITH OTHER LAWS

Compliance with the requirements of this Order does not remove the obligation to comply with all other applicable laws and regulations.

I. TERMINATION

This Order shall terminate when Respondents certify that all requirements of this Order have been met and the Department has approved such certification, or when the Secretary of the Environment approves a settlement agreement and signs a stipulated final order.

DocuSigned by:



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DATE: 2/11/2026

Bruce Baizel, Director
New Mexico Environment Department
Compliance and Enforcement Division

CERTIFICATE OF SERVICE

I hereby certify that on 2/11/2026, a true and accurate copy of the Administrative Compliance Order Requiring Compliance and Assessing a Civil Penalty was served by certified mail and email on Respondents at the following addresses:

Theodore Wyka
Field Office Manager
NNSA
3747 W. Jemez Road, MS A316
Los Alamos, NM 87544
theodore.wyka@nnsa.doe.gov

Jessica Kunkle
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Laboratory Director
Triad National Security, LLC
P.O. Box 1663, MS M969
Los Alamos, NM 87545
masont@lanl.gov

DocuSigned by:

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Raymond R. Romero, Senior Paralegal
New Mexico Environment Department

**PENALTY CALCULATIONS
FOR
WPCEB 26-01 ACO**

EXHIBIT 1

FIRST VIOLATION

20.6.2.3103 NMAC – Failure to Meet Standards

1. Gravity Based Penalty

a. Potential for Harm

The potential for harm is major.

With respect to regulatory and environmental harm, Section 74-6-4 of the WQA requires the WQCC to adopt water quality standards, set forth in 20.6.2.3103 NMAC, to protect public health and to consider the use and value of the water for future use. Section 74-6-5 provides for the issuance of a permit for the discharge of any water contaminant to ensure compliance with the WQA considering site-specific conditions. The Ground and Surface Water Protection Regulations (20.6.2 NMAC) require a discharge permit for the operation of underground injection control wells and require that discharges conducted under the discharge permit meet the standards of 20.6.2.3103 NMAC, and the monitoring of regional groundwater monitoring wells to evaluate compliance with that requirement. In this case, the Respondent was issued a discharge permit to operate underground injection control wells for the purposes of facilitating accelerated groundwater remediation of a hexavalent chromium contamination plume located in the regional aquifer and to achieve an interim measure goal of hydraulically controlling the plume migration to prevent contamination extending off-site on to the neighboring Pueblo de San Ildefonso lands or to Los Alamos County domestic water supply wells. Monitoring data collected as a condition of the discharge permit indicated that the operation of the underground injection control wells is causing adverse contaminant migration, both vertically and laterally, and that the migration of the contaminant plume is not controlled. The lack of success achieving hydraulic control over the plume has resulted in off-site migration of contamination into the regional aquifer beneath the Pueblo de San Ildefonso and has caused increasing concern for the potential impact to the drinking water supply wells located downgradient of the plume.

The potential for harm resulting from the violation was based on the risk to human health and the environment, the potential seriousness of the contamination and the harm to the water quality protection program. The analytical detections of chromium contamination in groundwater exceeding water quality standards for human health set forth in 20.6.2.3103 NMAC of 0.05 mg/L, both in downgradient monitoring wells and extending beyond the Facility boundaries, indicates that the violation has created the potential threat to public health, welfare, environment or property. Hexavalent chromium is a toxic form of chromium and is a known human carcinogen that increases risk of stomach, lung, and intestinal cancers, can potentially cause kidney and liver damage, and reproductive harm. See <https://iris.epa.gov/static/pdfs/0144tr.pdf>. Furthermore, the lack of action taken by the Respondents' to achieve compliance with the conditions of the discharge permit may have a substantial adverse effect on the continued integrity of the regulatory program and the water quality protection program's ability to implement the WQA and WQCC Regulations.

b. Extent of Deviation

The extent of deviation is major. The Department previously issued a notice of violation in July 2022, to the Respondent for the same issue, and the Respondent has yet to comply with the requirement to modify the treatment system to address the issues.

c. Gravity Based Penalty Assessed

The failure to enact a contingency condition for a system failure violates a regulation adopted pursuant to the WQA, §74-6-5, and is punishable by a civil penalty not to exceed \$15,000 per day. Using the appropriate gravity-based penalty matrix, this violation is assessed with a civil penalty of \$15,000.

d. Multi-Day Penalty

NMED issued a NOV for the chromium exceedances to the Respondent on July 5, 2022 for chromium exceedances in R-45. On January 14, 2025, the Respondent sampled monitoring well R-45 and the results were below the groundwater standard for chromium. Therefore, the Respondent was out of compliance for 924 days between July 5, 2022 to January 14, 2025. Mid-point of \$5,625 for 924 days is assessed a civil penalty of \$6,776,250.

2. Adjustment Factors

The Department made an adjustment of 30% upward for the lack of good faith efforts to comply, willfulness and negligence of the discharge, and the history of noncompliance. A continued discharge of water into the regional aquifer following notification of the contaminant trends in downgradient monitoring wells, lack of action to modify the discharge permit to address NMED concerns for the impact of injection on contaminant migration, and the history of noncompliance with the discharge permit requirements provide justification for the upward adjustment factor of 30%.

3. Economic Benefit

The economic benefit gained from noncompliance is the amount that the Respondent would have spent in order to comply with the discharge permit requirement, including the installation of additional infrastructure wells and monitoring wells. The Department did not calculate economic benefit of the noncompliance.

4. Total Penalty for Violation 1

Gravity Based Penalty	\$15,000
Multi-Day Penalty	\$5,197,500
Total Prior to Adjustments	\$5,212,500
Adjustment Factors (+30%)	\$1,563,750
<u>Economic Benefit</u>	<u>\$0</u>
Total	\$6,776,250

SECOND VIOLATION

20.6.2.3107(E) NMAC – Failure to Meet Contingency Plan Requirements

1. Gravity Based Penalty

c. Potential for Harm

The potential for harm is major.

With respect to regulatory and environmental harm, Section 74-6-4 of the WQA requires the WQCC to adopt water quality standards, set forth in 20.6.2.3103 NMAC, to protect public health and to protect the use and value of the water for future use. Section 74-6-5 provides for the issuance of a permit for the discharge of any water contaminant to ensure compliance with the WQA considering site-specific conditions. The Ground and Surface Water Protection Regulations (20.6.2 NMAC) require a discharge permit for the operation of underground injection control wells and require the discharge permit contain contingency plans to cope with failure of the discharge permit or system. In this case, the Respondent was issued a discharge permit to operate underground injection control wells for the purposes of facilitating accelerated groundwater remediation of a hexavalent chromium contamination plume located in the regional aquifer and to achieve an interim measure goal of hydraulically controlling the plume migration to prevent contamination extending off-site on the neighboring Pueblo de San Ildefonso lands or to Los Alamos County domestic water supply wells. Monitoring data collected as a condition of the discharge permit indicated that the operation of the underground injection control wells are causing adverse contaminant migration, both vertically and laterally, and that the migration of the contaminant plume is not controlled. Discharge permit condition 19, which incorporates NMAC 20.6.2.3107(E), requires a corrective action plan when groundwater standard is exceeded. NMED notified the Respondents of the analytical results that indicate a violation of water quality standards and a failure of the discharge system and required the submission of a contingency plan to address the violation. The Respondents have not complied with the requirement to propose activities necessary to achieve compliance with the discharge permit conditions and to address the increased plume migration resulting from injection operations.

The potential for harm resulting from the violation was based on the risk to human health and the environment, the potential seriousness of the contamination and the harm to the water quality protection program. The analytical detections of contamination in groundwater exceeding water quality standards for human health set forth in 20.6.2.3103 NMAC, both in downgradient monitoring wells and extending beyond the Facility boundaries, indicates that the violation has created the potential threat to public health, welfare, environment or property. Furthermore, the lack of action taken by the Respondent's to achieve compliance with the conditions of the discharge permit may have a substantial adverse effect on the continued integrity of the regulatory program and the water quality protection program's ability to implement the WQA and WQCC Regulations.

d. Extent of Deviation

The extent of deviation is major. The Department previously issued a notice of violation to the Respondent for the same issue, and the Respondent has yet to comply with the requirements for the contingency plans to propose measures to ensure that the exceedance of the standard will be mitigated. In addition, the Respondent submitted an action plan instead of a corrective action plan as an intentional rebuff of the regulatory requirement due to their disagreement to fulfill the requirement.

c. Gravity Based Penalty Assessed

The failure to enact a contingency condition for a system failure violates a regulation adopted pursuant to the WQA, §74-6-5, and is punishable by a civil penalty not to exceed \$15,000 per day. Using the appropriate gravity-based penalty matrix, this violation is assessed with a civil penalty of \$15,000.

d. Multi-Day Penalty

NMED facilitated input through the independent technical review team to evaluate the technical defensibility of NMED's requirements for the Corrective Action Plan. The independent technical review team issued a final report on December 30, 2024. There are 406 days between December 30, 2024 and February 9, 2026. Mid-point of \$5,625 for 406 days is assessed a civil penalty of \$2,988,375.

2. Adjustment Factors

The Department made an adjustment of 30% upward for the lack of good faith efforts to comply, willfulness and negligence of the discharge, and the history of noncompliance. A continued discharge of water into the regional aquifer following notification of the contaminant trends in downgradient monitoring wells, lack of action to modify the discharge permit to address NMED concerns for the impact of injection on contaminant migration, and the history of noncompliance with the discharge permit requirements provide justification for the upward adjustment factor of 30%.

5. Economic Benefit

The economic benefit gained from noncompliance is the amount that the Respondent would have spent in order to comply with the discharge permit requirement, including the installation of additional infrastructure wells and monitoring wells. The Department did not calculate economic benefit of the noncompliance.

6. Total Penalty for Violation 2

Gravity Based Penalty	\$15,000
Multi-Day Penalty	\$2,283,750
Total Prior to Adjustments	\$2,298,750
Adjustment Factors (+30%)	\$689,625
<u>Economic Benefit</u>	<u>\$0</u>
Total	\$2,988,375