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NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau
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September 1, 2017

John C. Bretzke, Division Leader
Environmental and Compliance Division
Los Alamos National Laboratory
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Los Alamos, NM 87545

Cheryl L. Rodriguez, Program Manager,
FPD-II
Environmental Management
Los Alamos Field Office
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Los Alamos, NM 87544

RE: LANL, DP-1835, Notification to Temporarily Limit Injection into CrIN-1 and CrIN-6

Dear Mr. Bretzke and Ms. Rodriguez,

On December 13, 2016, the United States Department of Energy (DOE) and Los Alamos National Security, LLC (LANS) (collectively the Permittees) submitted the *Drilling Work Plan for Groundwater Injection Well CrIN-6* (Work Plan), proposing a new location for CrIN-6 with the stated purpose of achieving hydraulic control of off-site plume migration. Prior to implementing this Work Plan by injecting treated groundwater in to CrIN-6, the New Mexico Environment Department (NMED) requires the Permittees provide justification for this action by addressing, at a minimum, recent NMED sampling results collected at CrIN-6 indicating chromium contamination at 270 µg/L and the potential that injection into CrIN-6, in conjunction with injection at the nearby injection well CrIN-1, would accelerate the uncontrolled migration of chromium contamination in the regional drinking-water aquifer.

The Permittees' method of achieving hydraulic control of the chromium plume is to strategically pump groundwater from an extraction well and to inject treated groundwater into injection wells located along the downgradient margin of the plume as defined by the 50 µg/L New Mexico groundwater standard for the constituent.

On August 31, 2016, NMED issued Discharge Permit 1835 (DP-1835) to the Permittees. NMED's purpose in issuing DP-1835 is to control injection of effluent via six Class V Underground Injection Control (UIC) wells into the regional aquifer beneath Los Alamos National Laboratory (LANL) to protect and preserve groundwater. Condition 2 states that the Permittees shall operate in a manner such that the standards and requirements of Sections 20.6.2.3101 and 20.6.2.3103

NMAC are not violated. Subsection A(2) of 20.6.2.3101 NMAC states in-part that the purpose of Sections 20.6.2.3000 through 20.6.2.3114 NMAC is to ensure that no degradation of the groundwater beyond the existing concentration will be allowed.

NMED would consider any action that knowingly and intentionally causes the migration of groundwater contaminated above New Mexico groundwater standards to an area with lesser concentrations to be a violation of the Permittees' groundwater discharge permit.

Recent analytical results obtained by NMED and data provided by the Permittees for CrIN-6 indicate a significant change in the understanding of groundwater flow and contaminant transport in the vicinity of CrIN-6. The NMED analytical results reveal that the chromium concentration associated with the CrIN-6 at the time of sampling was 270 µg/L, significantly exceeding 20.6.2.3103 NMAC groundwater standards and contrary to expectations as depicted in the Permittees' 2016 Work Plan.

NMED is concerned that injection of treated groundwater into CrIN-6 has the potential to exacerbate the degradation of groundwaters in violation of DP-1835. NMED considers it probable that the increased hydraulic gradient resulting from the injection into CrIN-6 will result in an accelerated eastward migration of the chromium plume and may drive contamination downward to deeper non-impacted hydrostratigraphic units within the regional aquifer. Another concern is that the vertical and lateral extent of chromium contamination surrounding CrIN-6 is unknown. NMED has similar concerns regarding injection into CrIN-1 located less than 500 feet south-southwest of CrIN-6.

Prior to full-scale injection of treated water into CrIN-1 and CrIN-6, NMED requires that the Permittees provide additional hydraulic and chemical data on the associated portion of the regional aquifer, and information demonstrating that injection into these wells will not have an adverse impact on the vertical and downgradient horizontal extents of chromium contamination. The demonstration shall include a delineation of the eastern and vertical extents of the 50 µg/L chromium concentration within the plume and sufficient hydrogeological and geochemical information to allow a reasonably accurate prediction of the impact that injection into CrIN-6 and CrIN-1 will have on the chromium plume. Initial discharge related to the functional testing of CrIN-1 is permissible.

Please contact Steve Pullen at (505) 827-2962 if you require any additional information.

Sincerely,

Michelle Hunter, Chief
Ground Water Quality Bureau

MH:SP

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DP-1835 file