nuclear watch new mexico

November 12, 2015

Mr. Lee Bishop
Document Manager
Department of Energy
Environmental Management Los Alamos Field Office
3747 West Jemez Road MS-A316
Los Alamos, New Mexico 87544

Email: CRProjectEA@em.doe.gov

Re: EA-2005: Draft Environmental Assessment, Chromium Plume Control Interim Measure and Plume-Center Characterization, Los Alamos National Laboratory, Los Alamos, NM

Dear Mr. Bishop,

We respectfully submit these comments for the Department of Energy's Draft Environmental Assessment for Chromium Plume Control Interim Measure and Plume-Center Characterization, Los Alamos National Laboratory, Los Alamos, NM.

Nuclear Watch New Mexico seeks to promote safety and environmental protection at nuclear facilities; mission diversification away from nuclear weapons programs; greater accountability and cleanup in the nation-wide nuclear weapons complex; and consistent U.S. leadership toward a world free of nuclear weapons.

General Comments

Nuclear Watch New Mexico continues to request that ALL reference documents for ALL National Environmental Policy Act (NEPA) actions be readily available online at the beginning of ANY comment period. Because of the lateness in which ALL the reference documents for this EA were received, NukeWatch reserves the right to submit supplemental comments in addition to these that we submit at this time.

NukeWatch recognizes Pueblo of San Ildefonso's sovereign nation-to-nation relationship with the US Government. We specifically note how this draft environmental assessment for chromium plume control interim measures may impact their community. We can only imagine how contamination from Los Alamos National Laboratory must weigh heavily on their concerns for future generations.

The suggestions in our comments are meant to complement not supplant any observations and recommendations from the Pueblo of San Ildefonso.

NukeWatch feels that this Chromium EA is premature and is missing important information. For instance, there is a new monitoring well on San Ildefonso land that is about to come online. To our knowledge, well SIMR-2 is complete and we are awaiting data. If chromium is found in this monitoring well, this whole EA may have to be reconsidered.

- Please explain the potential impact of finding chromium in this well and how that would change this EA.
- Please include data from this well in this EA.

Also, NMED recently approved with modifications the interim measures work plan for chromium plume control. NMED's October 15, 2015 letter states, "In NMED's opinion, at least one additional boundary extraction well and at least three boundary injection wells may be needed to achieve the Permittee's primary objective to control the migration of Cr offsite."

- Please include LANL's response to NMED in this EA.

This EA is highly speculative.

- What if the plan fails?
- What does success look like?
- When will the results be known?

Discharge Permit 1835 was filed with the Ground Water Quality Bureau.

- The information in this Permit must be included in this EA.

Monitoring well CrEX-1 is providing data, including hits for strontium-90. From IntellusNM –

Cr-Ex-15-91012	CrEX-1	11/19/2014	Strontium-90	1.96	pCi/L
Cr-Ex-15-91012	CrEX-1	11/19/2014	Strontium-90	0.0357	pCi/L

- Will the treatment remove all contaminants?
- What is the effect of land-applying 100 of millions of gallons of slightly contaminated water?
- Please include a table of ***ALL*** samples taken with ***ALL*** the contaminants found in the groundwater at that location.

Please analyze and include in this EA the cumulative effects of contaminant movement under the Lab of extracting such large amounts of water.

Please include a timeline of all proposed pumping

Perchlorate contamination should be treated at the same time as chromium contamination. DOE must explain whether it's technical feasible to simultaneously treat perchlorate contamination by the resin used to treat the chromium contamination.

- And if not, why not? Additionally, will all this pumping draw contaminants from other places? Is so, what will be done with it?

What and where is the final disposal site for extracted wastes and the resin? Is it appropriately permitted?

There seem to be inconsistencies between the draft EA and the NMED DP-1793 for land application of treated remediated water that was issued on July 27, 2015. DP-1793 does not allow land application in the floodplain. Nevertheless, DOE states in numerous places in the EA that land application would be done in the floodplain. See pp. 57, 61, 71 and 73.

- Please state if any discharge will be into any floodplain.

Because the draft EA deals with how DOE/LANS handle hazardous wastes, such as chromium and perchlorate, CCNS requests that DOE add the following documents to the references and the administrative record for the EA. These documents demonstrate a deficient pattern and practice of handling hazardous waste by DOE/LANL/LANS.

- a. "Notification of Anticipated Noncompliance with the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID No. NM890010515," letter to NMED on November 26, 2014, ENV-DO-14-0275, LA-UR 14-27144; and
- b. "Self-Disclosure of Non-Compliances Resulting from the Extent of Condition Review, Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA ID No. NM890010515," DOE/NNSA letter to NMED on August 31, 2015, DIR-15-127, LA-UR 15-26713.

The future chromium final remedy analysis should be an environmental impact statement. This extensive ground water remediation project, requiring permits from New Mexico state agencies, requires an environmental impact statement.

Specific Comments

The following specific comments include italicized block quotes from the EA followed by our comments and questions. Cited pages are PDF pages, not narrative pages.

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Estimates of the amount of hexavalent chromium (chromium) released during those years range from 31,000 to 72,000 kilograms. Approximately 25 to 40 percent of the chromium was quickly converted to stable trivalent chromium in a several-acre effluent-supported wetland downstream of the outfall in Sandia Canyon.

- What is the citation for these numbers?
- How long is "quickly"?

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1.3 PURPOSE AND NEED

The purpose and need for DOE's action is to limit downgradient migration of the chromium plume edge in the regional aquifer. Recent data indicate that, in the absence of any action, plume migration will continue toward the boundary LANL shares with Pueblo de San Ildefonso. DOE therefore needs to employ a measure that can be quickly operational with rapid effect on plume migration. DOE also needs to evaluate the effectiveness and feasibility of implementing a final remedy for the chromium plume by conducting field-scale studies to further characterize the plume center.

The chromium was discovered in 2005 and the plume has been increasing all along. Crossing the boundary must have been a possibility from the beginning.

- What "recent data" indicated the plume was growing?
- When was "a measure that can be quickly operational with rapid effect on plume migration" first considered as necessary?

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This EA does not include an analysis of a final remedy addressing the chromium groundwater plume. The proposed action consists of activities associated with the plume control interim measure or plume-center characterization and does not involve the specific selection or implementation of a final remedy. Rather, evaluations and analyses performed during proposed action implementation would contribute to recommendations of a final remedy. Through the corrective measures evaluation (CME) process, those recommendations would be presented to NMED. NMED would then select a remedy or remedies. The interim measure would control downgradient migration of the plume while a final remedy is selected and implemented. When NMED has selected the final remedy, DOE would perform a NEPA evaluation.

- What is the timeline for the corrective measures evaluation?

2.2 PROPOSED ACTION ALTERNATIVE

DOE proposes to implement project activities to begin addressing and further evaluating chromium contamination in groundwater beneath Mortandad Canyon. This proposed action alternative consists of two

activities: chromium plume control (interim measure) and plume- center characterization.

- Why is the plume-center characterization so important? How will this help?
- Isn't the plume boundary the important part?

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The first activity, the chromium plume control interim measure, would be implemented to control the migration of the chromium plume near the LANL boundary. Plume control would be achieved using extraction and injection wells to hydraulically control groundwater flow.

- Please provide an example where a measure similar to this was used.
- Provide info on how pump and treat was used to keep a plume from crossing a boundary line.

Operation of this system would continue until a final remedy is proposed, selected, and implemented. It is anticipated it will take up to 8 years for this process, as DOE will need to (1) collect and evaluate data from both the interim measure and the plume-center characterization; (2) prepare and submit a CME report that recommends a final remedy, for NMED selection of a final remedy, and for the public to comment on the final remedy; (3) prepare a final design; and (4) implement the final remedy.

- What are the effects of budget on this schedule?
- This date (Fall 2023) should be formally incorporated into the upcoming revised Consent Order.
- This would be 18 years since discovery. Explain why this is taking so long.

The second activity, plume-center characterization, would be implemented to evaluate various longer-term actions to fully remediate the chromium plume.

- Why is plume center so important?

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Until injection wells are operational, treated water would be land-applied or evaporated as a means of disposition. Once injection wells are operational, a small portion of the treated water would continue to be land-applied via a spray irrigation/evaporation system, used for dust control on unpaved roads, and/or evaporated using mechanical evaporators.

- When will injection wells be operational?

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2.2.2 PLUME-CENTER CHARACTERIZATION

The plume-center characterization activity would involve a series of field tests to collect detailed information on processes within the aquifer that would guide

the approach for full remediation of the plume. Field tests would be conducted using existing infrastructure as well as new infrastructure described below.

- Why is plume center so important?

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2.2.3 GROUNDWATER EXTRACTION VOLUMES

During the chromium plume control interim measure and plume-center characterization, groundwater extraction would occur from multiple wells. The total groundwater extraction volume would be up to 230 million gallons (707 acre-feet) annually over the approximately 8-year duration of the project.

- Please include the annual totals and the 8-year project totals.

2.2.4 INJECTION WELLS

Under the proposed action alternative, underground injection control wells (injection wells) would be installed to contribute to hydraulic control of the downgradient plume. The wells would inject treated groundwater into the aquifer in the same area and at similar depths from which the water was extracted. Groundwater modeling indicates that injection of treated water along the plume edge would facilitate hydraulic control near the injection wells (LANL 2015a). In addition to hydraulic control, injection of treated water supports groundwater resource conservation.

- Please include a summary of the groundwater modeling used including computer software used and paramenters.

Operation of these injection wells would require a discharge permit (DP-1835) from the NMED Ground Water Quality Bureau. Treated water would flow from the portable storage tanks to the injection wells through single-walled piping. Water quality would be monitored post-treatment to ensure water injected into the aquifer meets permit standards. Injection wells would each have an injection capacity of approximately 75 gpm, with the system permitted to inject up to 648,000 gallons of water per day, or approximately 230 million gallons per year, with continuous system operation. Flow rates, pressures, and water levels for the injection wells would be remotely monitored and controlled. Injection would operate though gravity using a valve at the bottom of the injection well column pipe to control the release of the water into the well; water would fill the well and flow into the aquifer.

The DP-1835 discharge permit is not yet completed.

- What is the timeline for DP-1835?
- How will any delay in DP-1835 affect this Chromium EA?

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2.4 ALTERNATIVES CONSIDERED BUT NOT EVALUATED

Other alternatives were considered in the development of potential actions to address the Mortandad Canyon chromium plume; however, these alternatives were eliminated from further consideration once it was determined they would not meet

DOE's stated purpose and need. Further evaluation of these alternatives is not provided in this EA.

The other alternatives considered were as follows:

• Monitored natural attenuation—This approach relies on natural physical, chemical, or biological processes to reduce concentrations, toxicity, or mobility of chromium.

• In situ treatment—This approach involves the introduction of amendments directly into the aquifer to either favorably reduce the concentration or toxicity of the contaminants or to enhance naturally occurring biological processes that favorably reduce the concentration or toxicity of groundwater contaminants.

• Proposed action alternative with treated effluent pipeline option—Under this variant of the proposed action alternative, some or all treated groundwater would be pumped from the project area for reuse within LANL or for discharge to surface water. Treated water discharged to the surface could potentially be amended to enhance chromium reduction as it infiltrates into the aquifer.

- Please analyze pumping the treated effluent to the head of Sandia Canyon. Please state if billion gallons of treated water could be sent uphill to flush contaminants
- If not, why not?

DOE has determined that monitored natural attenuation alone would be insufficient to control plume advancement and maintain the 50-ppb-and-greater chromium-contamination levels within the LANL boundary, based on current concentrations and continued plume migration. Several existing monitoring wells, including one near the Pueblo de San Ildefonso boundary, have shown steadily increasing chromium concentrations for several years (LANL 2015c). Left unaddressed, the plume may expand beyond the LANL boundary, potentially complicating future remediation activities and increasing remediation cost. The specific rate of chromium migration is generally slower than that of groundwater flow and is not yet quantified at the plume edge; however, increasing concentrations at downgradient well R-50 provide clear evidence of plume migration.

The last chromium was discharged in 1972. Forty plus years of natural attenuation were not enough.

- Please give examples of where natural attenuation has worked at Los Alamos Laboratory.

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The regional aquifer below Mortandad and Sandia Canyons is part of an extensive system of highly compartmentalized aquifers within the Española Basin (Keating et al. 2005).

This statement is erroneous and misleading. It may be at best a misquotation, at

worst a misrepresentation to shield LANL from responsibility for groundwater contamination. Keating et al. 2005 is titled, "Development and application of numerical models to estimate fluxes through the regional aquifer beneath the Pajarito Plateau". This article is all about computer models describing theoretical flow of water through ***the*** regional aquifer. There is nothing about "highly compartmentalized" aquifers in Keating et al. 2005 and if there was, it would theoretical.

- Please provide detailed justification and scientific basis for the claim that the Espanola Basin has highly compartmentalized aquifers. Has that claim been peer reviewed?
- If that claim is true, is LANL then implying that contaminant migration from one "compartment" to another would be limited or nonexistent? What is the proof for that? What are the regulatory implications? Has NMED concurred that the Espanola Basis is highly compartmentalized?
- If this claim cannot be adequately supported in this environmental assessment (EA) we demand that it be lease formally withdraw so that it cannot be cited as false fact or circular justification ("because we said so") in other documents and NEPA processes. We are reminded of the last half of the 1990's when LANL was still claiming that groundwater contamination was impossible because the overlying tuff was "impermeable", even going so far as to ask NMED for a waiver for having to do any groundwater monitoring at all. We find it very strange that LANL as an institution that so prides itself on its scientific prowess could so blatantly overlook how widely fractured the Pajarito Plateau is, creating natural contaminate pathways to the aquifer. Thus, we need to see some solid peer-reviewed evidence to support the claim that "*The regional aquifer below Mortandad and Sandia Canyons is part of an extensive system of highly compartmentalized aquifers within the Española Basin"*

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Subsequent discharges must be consistent with the requirements of a discharge permit. A discharge-permit application (DP-1835) for injection of treated groundwater was submitted to the NMED Ground Water Quality Bureau on April 9, 2015; the NMED Ground Water Quality Bureau is in the process of drafting the permit. The discharge permit (DP-1793) for the land application of treated groundwater was issued on July 27, 2015 (NMED 2015b). This LANL-wide permit required a project-specific work plan to be submitted to NMED for approval prior to operation. The work plan was submitted to the NMED Ground Water Quality Bureau on September 3, 2015, and requires a 30-day public review period.

- Will this DP impact the EA?

Sincerely,

Scott Kovac
Operations Director

Jay Coghlan
Executive Director