



Department of Energy
Washington, DC 20585

June 1, 2015

Mr. Eric Rich, Senior Hydrologist
Navajo Nation Environmental Protection Agency
Water Quality Program
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Subject: U.S. Department of Energy Response to Navajo Nation Environmental Protection Agency letter dated March 13, 2015, Regarding Sampling and Analysis of Filtered and Unfiltered Samples

Dear Mr. Rich:

This letter addresses the suggestions and issues indicated in your letter dated March 13, 2015, regarding filtration of water samples collected by the U.S. Department of Energy (DOE) at Navajo Nation sites.

The sampling protocols that DOE follows for routine monitoring at Navajo Nation sites (Shiprock, New Mexico, Monument Valley, Arizona and Tuba City, Arizona) are specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (SAP). This document is frequently updated, and the most recent version is always posted and available to the public on the DOE Office of Legacy Management website at <http://energy.gov/lm/downloads/sampling-and-analysis-plan-us-department-energy-office-legacy-management-sites>.

Following sample analysis, DOE prepares a Data Validation Package (DVP) to provide a timely review of the sampling event and associated analytical data, document that established field and laboratory protocols were followed, and identify anomalous or unusable data. Your letter requested that the revisions made to the SAP in 2007, specifying the procedure for when samples are filtered and not filtered, be included in every DVP as well as all other site documents. However, that information is outside the scope of those documents.

The Sampling Event Summary of each DVP documents that the sampling and analyses were conducted according to the SAP. Since 2007, this would include the collection of unfiltered samples for locations with turbidity values less than 10 nephelometric turbidity units (NTUs). DOE continued the practice of filtering samples when turbidity is high (>10 NTUs) to provide consistency with historical practices and a consistent data set, to normalize effects of excessive turbidity (well/sampling artifacts or precipitation runoff in surface water) on water chemistry, and to provide comparability within a sampling network that has wells or surface locations with high turbidity. Additionally, any deviations in following the specified procedures (including those related to filtering samples) are documented in the DVP in both the Trip Report and in the Field Activities Verification Checklist sections. The result tables in the Data Presentation section of the DVP include sample identification codes that denote samples that are filtered and unfiltered, as defined by the qualifiers listed on the last page of each section. Again, the standard



DOE protocol is to collect unfiltered water samples, thus representing the water quality that could be expected at a domestic-use water tap. The exception in the sampling protocol is to filter samples with obvious turbidity.

DVPs are not intended to provide a comprehensive evaluation or interpretation of remedy performance in meeting established water quality compliance goals. The adequacy of sampling protocols in meeting the data requirements for each site is more appropriately addressed in the planning documents or remedy performance evaluation documents for each site.

Consideration of sampling protocols as they may affect a risk management decision is essential. However, your request to explain specific aspects of sampling protocols (i.e., filtering samples), both old and new, as related to every text, table, graph, and map in every document that presents data would not add value commensurate with the level of effort. In some documents, discussion of the impacts of the sampling and analytical process may be appropriate, but that discussion is not necessary in every report.

DOE conducts much of the current sampling at Navajo Nation sites to determine the extent and magnitude of contamination and to track the effectiveness of remedial actions. DOE understands that the sampling protocols for determining risk, ensuring protectiveness of human health and the environment, and demonstrating compliance have different data objectives. However, remedial actions at the Navajo Nation sites have not currently progressed to the point where DOE is trying to demonstrate that compliance with EPA "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings" (40 CFR 192) concentration limits has been achieved. Therefore, the issue of contaminant concentrations in filtered samples versus those in unfiltered samples in a risk evaluation or a comparison to regulatory limits is not yet relevant.

The protocols followed in sample collection and analysis should be considered in light of the intended use of the data. DOE does not believe that explaining the implications of modifications to sampling protocols in 2007, for all data presentations in every document, increases the protection of human health and the environment. DOE believes that the current protocols for sampling provide a valid and technically defensible understanding of current site conditions.

DOE agrees that using the total concentrations of constituents in groundwater is appropriate when considering the risk of human ingestion. Moreover, total concentrations may be appropriate to demonstrate compliance with concentration limits; although 40 CFR 192 Table 1 "Characterization of the Costs and Benefits of 40 CFR Part 192, Subpart F" does not define the concentration limits as total or dissolved (nor does it define the limits as drinking water standards).

DOE is not aware of any case at Navajo Nation sites where milling-related, contaminated groundwater is being used for human consumption. If such circumstances do exist, DOE will ensure that the sampling team follows the appropriate sampling and analytical procedures to determine total concentration values for assessing risk.

Mr. Eric Rich

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DOE appreciates the Navajo Nation Environmental Protection Agency's insight into the causes of turbidity in wells. The current filtration criteria results in a relatively small percentage of filtered samples. For example, since 2013 at the three Navajo Nation sites (Monument Valley, Shiprock, and Tuba City), only 153 out of 1,099 samples were filtered. In general, wells that do not meet the <10 NTU turbidity criterion are redeveloped prior to the next sampling event.

Therefore, DOE will continue with the current protocol for field filtration of water samples that do not meet the <10 NTU turbidity criterion. This protocol does not violate current data use objectives and affects only a minority of samples collected. Altering the protocol at this time will not enhance the overall understanding of site conditions or alter a risk management decision point, but instead may add unnecessary complexity in implementing standard practices and data interpretation.

Please call me at (970) 248-6073 if you have any questions. Please address any correspondence to:

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Sincerely,



Richard P. Bush
UMTRCA Program Manager

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