



Sent Via Electronic Mail

March 31, 2023

Kim Lebak  
N3B-Los Alamos  
[kim.lebak@em-la.doe.gov](mailto:kim.lebak@em-la.doe.gov)

Michael Mikolanis  
U.S. Department of Energy  
Environmental Management  
Los Alamos Field Office  
[michael.mikolanis@em.doe.gov](mailto:michael.mikolanis@em.doe.gov)

**Re: NMED Comments on Pajarito Plateau Site-Specific Water Quality Copper Criteria Demonstration**

Dear Kim Lebak and Michael Mikolanis,

On April 18, 2022, the New Mexico Environment Department (“Department” or “NMED”) Surface Water Quality Bureau (“SWQB”) received a “Response to New Mexico Environment Department Request for Additional Information and Comments for the Pajarito Plateau Site-Specific Water Quality Copper Criteria Demonstration” that was accompanied with a revised “Copper Site-Specific Water Quality Criteria the Pajarito Plateau: Demonstration Report, final draft” (“Demonstration”). Windward Environmental prepared the Demonstration on behalf of Newport News Nuclear BWXT Los Alamos (“N3B”), the contractor currently responsible for managing the Los Alamos National Laboratory (“LANL”) legacy cleanup contract for the U.S. Department of Energy (“DOE”).<sup>1</sup> N3B and Windward Environmental revised the Demonstration based on prior communications between N3B and the Department.

Given the technical complexity and implications for adopting site-specific aquatic life copper criteria for surface waters, the Department and the U.S. Environmental Protection Agency (“EPA”) Region 6 reviewed the Demonstration and have the following comments. Comments and suggestions on the revised Demonstration sent to the Department from EPA Region 6 are included as an attachment.

**General Comments and Acknowledgements:**

- In Section 2.4, the Department appreciates N3B’s expanded discussion on the current National Pollutant Discharge Elimination System (“NPDES”) Individual Permit (“IP”) target action levels, multi-sector general permit (“MSGP”) benchmarks, and water quality-based effluent limits (“WQBELs”) for copper applicable to LANL’s NPDES discharges, and any reported exceedances.
- In Section 3.4.1, the Department appreciates the additional information provided regarding sampling and how the Biotic Ligand Model (“BLM”) input values were determined. Additionally, the Department appreciates the explanation of how a combination of estimated and default values were used in the BLM, rather than using direct measurements.
- In Section 3.4.1, the Department appreciates the expanded explanation regarding sampling.
- In Section 5.4.2, the Department appreciates N3B’s inclusion of figures comparing chronic exceedance ratios in addition to acute.
- In Section 5.5, the Department appreciates the additional information provided by N3B comparing the current hardness-based acute and chronic criteria that provides some insight on the percentage of sampled waters that may have criteria less stringent than the current hardness-based criteria.

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<sup>1</sup> <https://n3b-la.com/>

- In Section 5.3, the Department appreciates that additional information in Table 5-3 and discussion of sensitivity. The Department recommends expanding further on the exclusion of potassium given the positive correlation with the model outputs.
  - In Section 5.1, the Department appreciates the inclusion of a table with sampling locations. The Department requests that this table provide latitude and longitude in decimal degrees rather than what appears to be National Marine Electronics Association (“NMEA”) Global Positioning System (“GPS”) Units, which must be converted manually to useable coordinates.
  - In Section 5.1, the Department appreciates the additions regarding Data Quality Objectives and Data Quality Assurances.
  - In Section 6.2 and Appendix A, the Department appreciates the inclusion of N3B’s proposed language in 20.6.4 NMAC and list of surface waters and designated uses. However, the Department requests the table in Appendix A, as well as narrative portions in the Demonstration, reflect the current references to 20.6.4 NMAC (effective date 09.24.2022).
  - In Appendix A, the Department appreciates the inclusion of the supporting data, which provides the extent of seasonality in the dataset used to develop the proposed copper criteria.
  - In Appendix C, Footnote 1 states that a draft work plan was provided to the Department on July 7, 2020; however, the Department was given an explicit request from N3B and Triad, during a meeting in July 2020, to refrain from reviewing until such a time that Triad had time to review and concur with the proposal. This permission was not provided to NMED until September 2020. Please change the date from July 7, 2020 to September 9, 2020.
  - In Table C1 of Appendix C, N3B states the responses to NMED and EPA’s comments on the work plan and the final draft Demonstration were sent on June 11, 2021 and August 20, 2021, respectively. However, both documents were provided to NMED on July 28, 2021. N3B later sent a corrected Demonstration to NMED/EPA on August 20, 2021. Additionally, N3B’s response to comments was dated April 18, 2022, not April 15, 2022, as provided in Table C1. The Department requests that N3B correct these dates referenced in Appendix C.
- **EPA’s 2007 BLM vs. MLR:** The Department urges N3B to clearly identify throughout the Demonstration that the proposed Site-Specific Water Quality Criteria (“SSWQC”) are not simply based on EPA 304(a) criteria<sup>2</sup>. The method described in the Demonstration is not EPA’s BLM and therefore is not the approach referenced in 20.6.4.10(F)(4)(c) NMAC. N3B is proposing a multiple linear regression (“MLR”) translation of EPA’s BLM approach. The Department does not find any issue with an alternative method to derive copper criteria if it is defensible and based on scientific evidence.

The Demonstration begins with a simplified version of the BLM (not EPA recommended), includes stormwater data (vs. only ambient data as described in EPA’s 2007 BLM), and derives copper criteria using a MLR (not a BLM). The Department recognizes that EPA is working towards MLR-derived criteria for some metals, including copper, but until these have been adopted as recommended CWA 304(a) criteria. Any proposed site-specific criteria using MLR requires an independent demonstration of defensibility based on scientific evidence. The continued iteration throughout the Demonstration that N3B is using EPA’s 2007 BLM is a misrepresentation of the method and analysis.

- **Dissolved Organic Carbon (“DOC”) and Total Organic Carbon (“TOC”):** The Department has found the Demonstration’s references for estimating the percent humic acid from DOC satisfactory. The Department recognizes that EPA’s 2007 BLM discusses that the conversion of TOC to DOC can be done using a conversion factor based on a DOC:TOC ratio. In the Demonstration, N3B and Windward Environmental

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<sup>2</sup> EPA. 2007. Recommended Aquatic Life Ambient Freshwater Quality Criteria for Copper using a Biotic Ligand Model (“BLM”).

note that a total of 124 DOC values were estimated from available TOC data because DOC data were not collected during these sampling events.

However, the Department has concerns regarding data quality of the underlying TOC and DOC datasets and estimating DOC from available TOC data as described in the Demonstration. N3B and Windward Environmental note that “...more than one-half of the available data indicate that DOC exceeds TOC, which is conceptually impossible” (N3B response page B-4). Therefore, N3B and Windward Environmental removed these data from the calculation of the DOC:TOC ratio and conversion factor, but did not remove these data from the entire MLR development process. The Department questions why these suspect DOC and TOC values were not rejected during the data verification and validation process and completely removed from all analyses related to this demonstration. N3B and Windward Environmental note that “[t]his appears to be a consistent analytical uncertainty” but do not provide any information from the analytical laboratory to support this statement. To fully address these DOC and TOC data quality concerns, the Department recommends using verified and validated DOC data only where DOC values are less than TOC values.

- **Use of stormwater data to develop the criteria:** It is the Department’s understanding that the EPA 2007 BLM guidance was primarily intended for use in perennial streams under stable conditions (i.e., equilibrium). Given 73% of the data used for the development of these site-specific criteria are from storm events, it is important to understand if the use of stormwater data in the models may skew the proposed criteria. N3B commented that, “EPA’s BLM-based criteria apply regardless of flow conditions or hydrologic regimes.” The Department requests N3B include supporting evidence in the Demonstration to support the appropriateness of using stormwater data to develop the proposed criteria.
- **Appendix C Public Involvement Plan**  
To improve the Public Involvement Plan, the Department recommends N3B consider the following:
  - Provide additional outreach with Tribes and Stakeholders prior to public notice under this Public Involvement Plan given that Tribes and Stakeholders have added investment and potential impact from an action amending state water quality standards.
  - Identify which local newspaper(s) will be used to distribute notification of the draft Demonstration.
  - Notify the public of the Demonstration through a listserv (or equivalent) distribution mechanism given the general public will not be aware, unless through reading the newspaper, that there is a draft technical demonstration posing to amend state water quality standards.

The Department appreciates the opportunity and time to provide comments on this extensive and technically complex demonstration. If you have any questions regarding these comments or the process, please contact Lynette Guevara by email at [lynette.guevara@env.nm.gov](mailto:lynette.guevara@env.nm.gov) or by phone at 505.629.8811.

Sincerely,

**Shelly Lemon** Digitally signed by Shelly Lemon  
Date: 2023.03.31 15:26:19 -06'00'

Shelly Lemon, Chief  
Surface Water Quality Bureau

Attachment: 2022-08-17 – EPA Comments on Pajarito Plateau Site-Specific Copper Study

Cc: Russell Nelson, Water Quality Division, EPA Region 6 ([nelson.russell@epa.gov](mailto:nelson.russell@epa.gov))  
Jasmin Lopez-Diaz, Water Quality Division, EPA Region 6 ([DiazLopez.Jasmin@epa.gov](mailto:DiazLopez.Jasmin@epa.gov))  
Christal Weatherly, NMED Office of General Counsel ([Christal.Weatherly@env.nm.gov](mailto:Christal.Weatherly@env.nm.gov))

John Rhoderick, NMED, Water Resource Protection Division ([John.Rhoderick@env.nm.gov](mailto:John.Rhoderick@env.nm.gov))

Susan Lucas Kamat, NMED-SWQB ([susan.lucaskamat@env.nm.gov](mailto:susan.lucaskamat@env.nm.gov))

Lynette Guevara, NMED-SWQB ([lynette.guevara@env.nm.gov](mailto:lynette.guevara@env.nm.gov))

William Alexander, N3B ([william.alexander@em-la.doe.gov](mailto:william.alexander@em-la.doe.gov))

Joseph Legare, N3B ([joseph.legare@em-la.doe.gov](mailto:joseph.legare@em-la.doe.gov))

Dana Lindsay, N3B ([dana.lindsay@em-la.doe.gov](mailto:dana.lindsay@em-la.doe.gov))

Robert Macfarlane, N3B ([robert.macfarlane@em-la.doe.gov](mailto:robert.macfarlane@em-la.doe.gov))

Karly Rodriguez ([karly.rodriguez@em-la.doe.gov](mailto:karly.rodriguez@em-la.doe.gov))

Joseph Sena, N3B ([joseph.sena@em-la.doe.gov](mailto:joseph.sena@em-la.doe.gov))

Amanda White, N3B ([amanda.white@em-la.doe.gov](mailto:amanda.white@em-la.doe.gov))

M. Lee Bishop, DOE EM-LA ([lee.bishop@em.doe.gov](mailto:lee.bishop@em.doe.gov))

David Nickless, DOE EM-LA ([david.nickless@em.doe.gov](mailto:david.nickless@em.doe.gov))

Cheryl Rodriguez, DOE EM-LA ([cheryl.rodriguez@em.doe.gov](mailto:cheryl.rodriguez@em.doe.gov))

Sarah Holcomb, Triad EPC-CP ([sholcomb@lanl.gov](mailto:sholcomb@lanl.gov))



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

REGION 6  
1201 ELM STREET, SUITE 500  
DALLAS, TEXAS 75270

August 17, 2022

Ms. Jennifer Fullam  
Standards, Planning & Reporting Team Leader  
Surface Water Quality Bureau  
New Mexico Environment Department  
1190 S. St. Francis Drive  
Santa Fe, NM 87505

Re: Pajarito Plateau Site-Specific Copper Study

Dear Ms. Fullam:

Thank you for the opportunity to review the final draft of the Site-Specific Copper Study surface waters of the Pajarito Plateau in Los Alamos County (LAC), New Mexico prepared by Newport News Nuclear BWXT Los Alamos (N3B), Windward Environmental LLC (Windward). As NMED understands its own regulations best, EPA is deferring to NMED regarding whether the draft site-specific criteria meet the requirements of state regulation. EPA offers the following general comments:

The biotic ligand model (BLM) has been EPA's nationally recommended freshwater aquatic life criteria for copper under Clean Water Act Section 304(a) since 2007.<sup>1</sup> The BLM reflects the latest scientific knowledge on copper bioavailability and toxicity with which to develop protective copper criteria. EPA recommends that states adopt the BLM as statewide copper criteria, but also supports site-specific application on a case-by-case basis.

EPA's water quality standards regulations at 40 CFR 131.11 provide that states should establish numeric criteria based on "(i) 304(a) Guidance; or (ii) 304(a) Guidance modified to reflect site-specific conditions; or (iii) Other scientifically defensible methods." Because the BLM reflects the latest scientific knowledge on copper bioavailability and toxicity, EPA uses the copper BLM to evaluate the protectiveness of copper criteria, including site-specific criteria, that are developed based on 131.11(b)(1)(iii) "other scientifically defensible methods."

Data gathered to support development of alternative copper criteria at a site using a method like the copper BLM that accounts for site-specific characteristics should consider special circumstances that may affect copper toxicity throughout the expected range of receiving water conditions, considering both spatial and temporal variability. In this instance, since water chemistry data from a subset of the waterbodies to which the draft copper criteria are proposed to apply was used to develop the criteria, the supporting information for the criteria should clearly

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<sup>1</sup> The BLM version used as the basis for EPA's 2007 copper criteria was version 2.2.3.

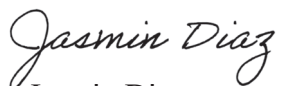
demonstrate that water chemistry data used to develop the criteria capture the full range of spatial variability in water chemistry of all waterbodies in the proposed action area. The supporting documentation should also demonstrate that data used to develop the proposed criteria are representative of the full range of temporal variability in receiving water chemistry conditions in these waterbodies, including both stormwater and, where applicable, baseflow conditions.

Accurate characterization of the input variables is also crucial to ensuring the resulting copper criteria protect aquatic life. Dissolved organic carbon (DOC) and pH have the greatest effect on the BLM results. When only total organic carbon (TOC) data are available, the proportion of organic carbon expected to be dissolved in surface waters should be estimated and used to scale the measured TOC value to DOC. The selected TOC to DOC conversion must be based on a scientifically sound rationale that should be explained in the public record for the criteria revision. A number of scientifically defensible options are available for the conversion, including using data from USGS' National Stream Quality Accounting Network (NASQAN) or Appendix C-2 of EPA's 2007 criteria document. The most conservative approach would likely be to select the ratio resulting in the lowest DOC values, since lower DOC values result in lower (i.e. more stringent) BLM model outputs. EPA most recently addressed this issue of TOC to DOC conversions in its [\*Draft Technical Support Document: Implementing the 2018 Recommended Aquatic Life Water Quality Criteria for Aluminum\*](#).

In 2017 EPA entered into a Cooperative Research and Development Agreement (CRADA) with eight metals associations to collaborate in developing a simplified modeling approach that can predict the bioavailability and toxicity of metals, including copper, in the aquatic environment using the most current science. In its Phase 1 report<sup>2</sup>, EPA found that the empirically-based multiple linear regression (MLR) models performed at least as well as the mechanistically-based BLM and stated that EPA intends to use MLR models as the overarching metals bioavailability-modeling approach with pH, hardness, and DOC as the core set of toxicity modifying factors to consider in model development. EPA is beginning work on development of MLR-based nationally recommended criteria for metals, including copper. Criteria development is expected to take several years. At this time, the copper BLM continues to reflect the best available science for protecting aquatic life from the toxic effects of copper, and EPA will continue to use the copper BLM to evaluate the protectiveness of submitted copper criteria.

If you have any questions concerning my comments, please call me at (214) 665-2733 or contact me through [diazlopez.jasmin@epa.gov](mailto:diazlopez.jasmin@epa.gov).

Sincerely,



Jasmin Diaz  
Water Quality Standards

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<sup>2</sup> <https://www.epa.gov/wqc/metals-crada-phase-1-report>