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Individual Stormwater Permit & Copper Site-Specific Water Quality Criteria

Amanda White

Program Manager for Watershed Monitoring and Technical Services

November 30, 2021



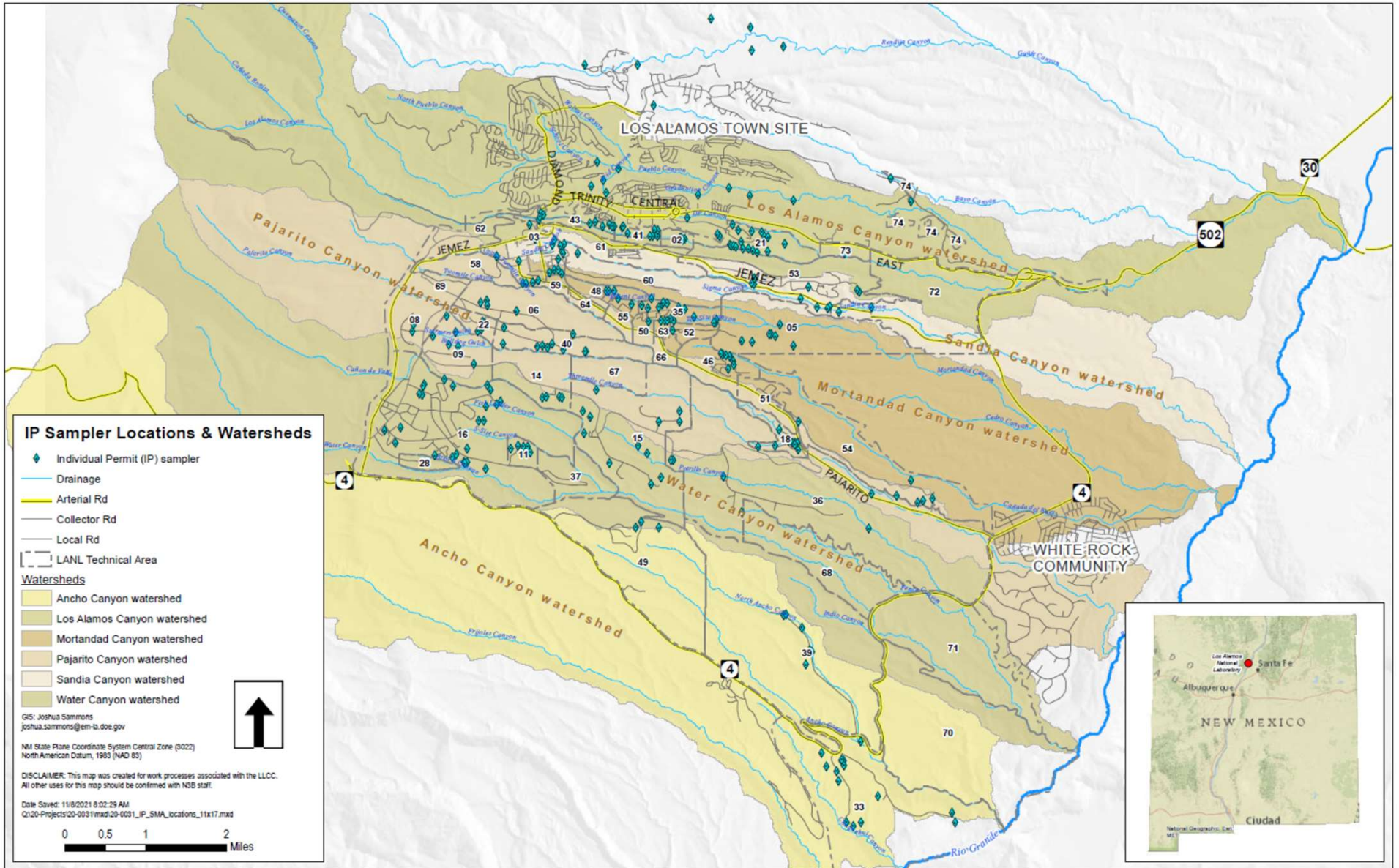
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- The NPDES Permit contains non-numeric technology-based effluent limitations, coupled with a comprehensive, coordinated monitoring program and corrective action where necessary, to minimize pollutants in Permittees' stormwater discharges.
- As used in this Permit, “minimize” means to reduce and/or eliminate discharges of pollutants in stormwater to the extent achievable using site-specific control measures that reflect best industry practice considering their technological availability, economic achievability and practicability.
- Permittees are required to implement site-specific control measures to address the non-numeric technology-based effluent limits contained in the Permit, followed by confirmation monitoring against New Mexico water-quality criteria-equivalent target action levels to determine the effectiveness of the measures.







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Timeline of Individual Permit

- November 2010: Original (administratively continued permit) issued
- March 2015: EPA issued draft permit
- July 2015: NMED issued state certification; no final permit was issued by EPA
- July 2019: Permittees submitted a permit application renewal
- November 19, 2019: EPA issued draft permit
 - January 2020: Original Public Meeting/Hearing was scheduled
 - March 31, 2020: Original comment due date; 3 extension periods were issued by EPA during COVID
 - November 2, 2020: Permittees submitted comments on draft permit
- November 30, 2020: NMED issued state certification
 - December 30, 2020: Permittees submitted a petition for review of the state certification
 - November 2021: This matter remains pending



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Questions?



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Proposal to Update New Mexico Water Quality Standards: Copper Site-Specific Water Quality Criteria for the Pajarito Plateau

Barry Fulton

Windward Environmental, LLC

November 30, 2021



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Objective

Develop a proposal for the New Mexico Water Quality Control Commission to adopt EPA's 2007 recommended copper ambient water quality criteria.

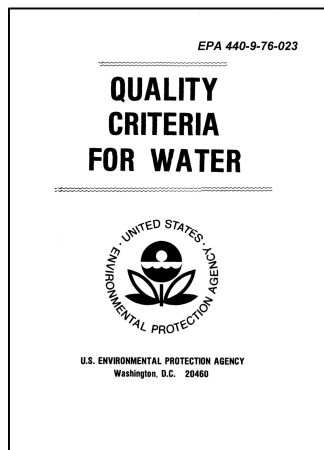


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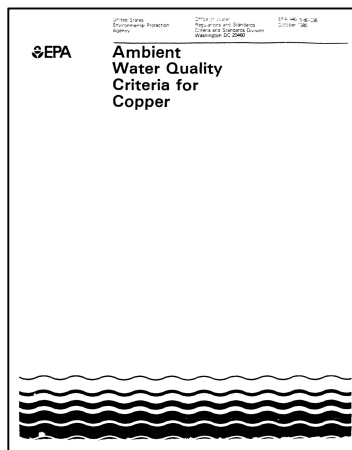


History of U.S. EPA National Recommended Aquatic Life Criteria for Copper

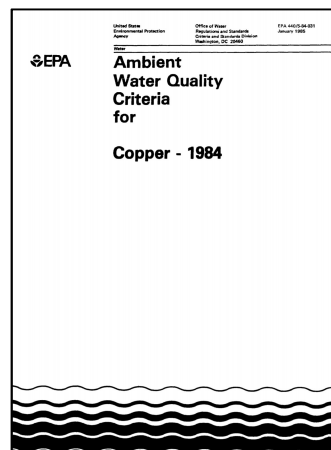
1976 "Red Book"



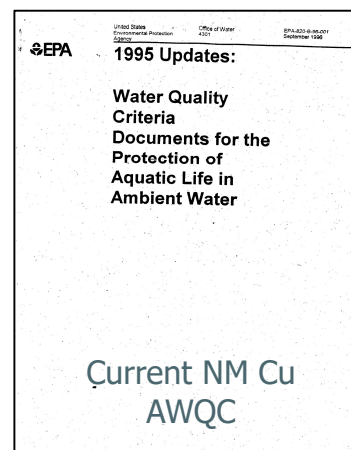
1980



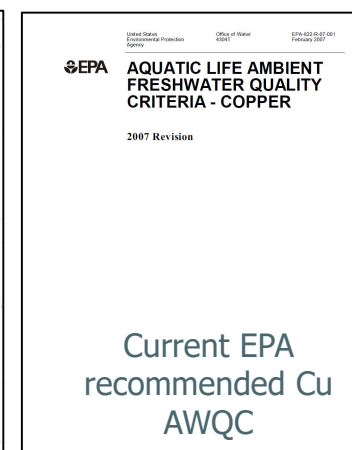
1984



1995

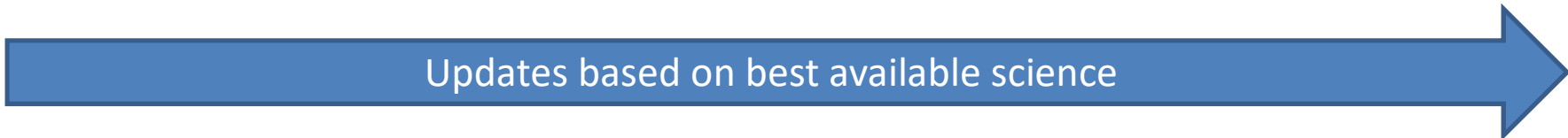


2007 "Cu BLM"



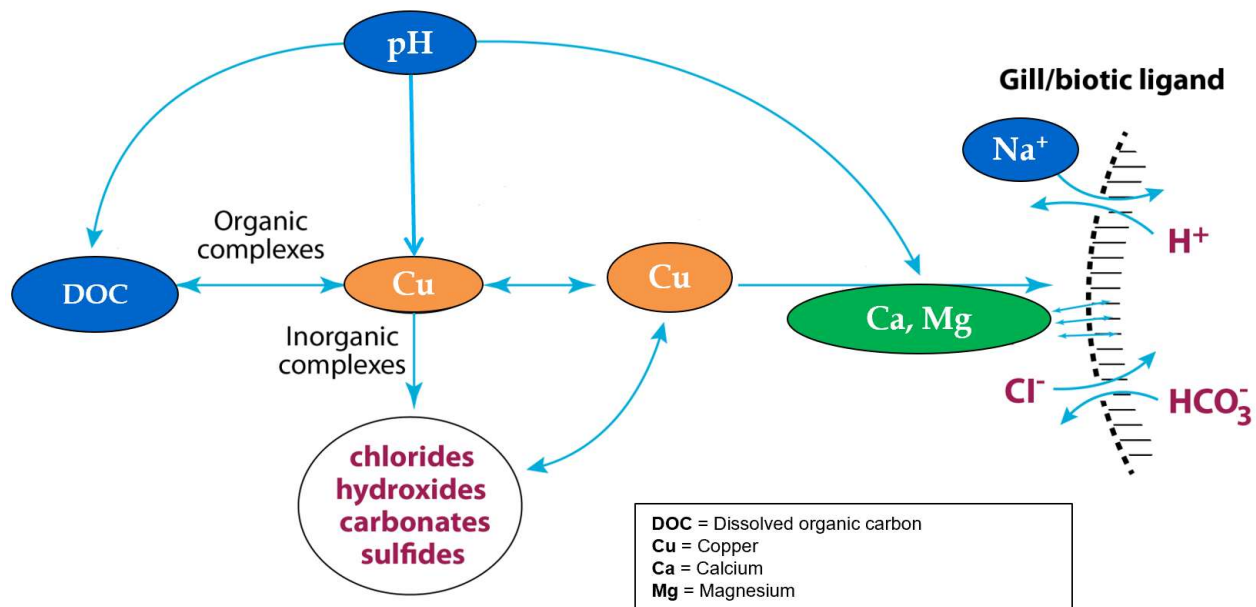
Hardness-Based Criteria

Basis of SSWQC proposal





- A software tool used in aquatic toxicology that examines the bioavailability of metals in the aquatic environment and the affinity of these metals to accumulate in aquatic organisms
- Best available science
- Basis for national recommended criteria



Green indicates only parameters used in hardness-based AWQC

Blue indicates additional parameters used in BLM-based AWQC





Overview of Proposed Cu Site-Specific Water Quality Criteria (SSWQC)

- **Current NM Cu Water Quality Criteria (WQC):**
 - Based on EPA (1996) hardness equation
- **Current EPA (§304a) Cu WQC:**
 - Based on EPA (2007) biotic ligand model (BLM)
- **Approach for Cu SSWQC for the Pajarito Plateau:**
 - Build an equation (like the hardness equation) with other water chemistry parameters as needed to accurately generate BLM-based criteria
 - Called a Multiple Linear Regression (MLR) equation





Current NM Cu WQC

$$\text{Cu WQC} = \text{Exp} [\text{Intercept} + f(\text{hardness})]$$

EPA Reference

EPA (1996)

Proposed SSWQC for Pajarito Plateau

$$\text{Cu WQC} = \text{Exp} [\text{Intercept} + f(\text{pH}) + f(\text{DOC}) + f(\text{hardness})]$$

EPA (2007)



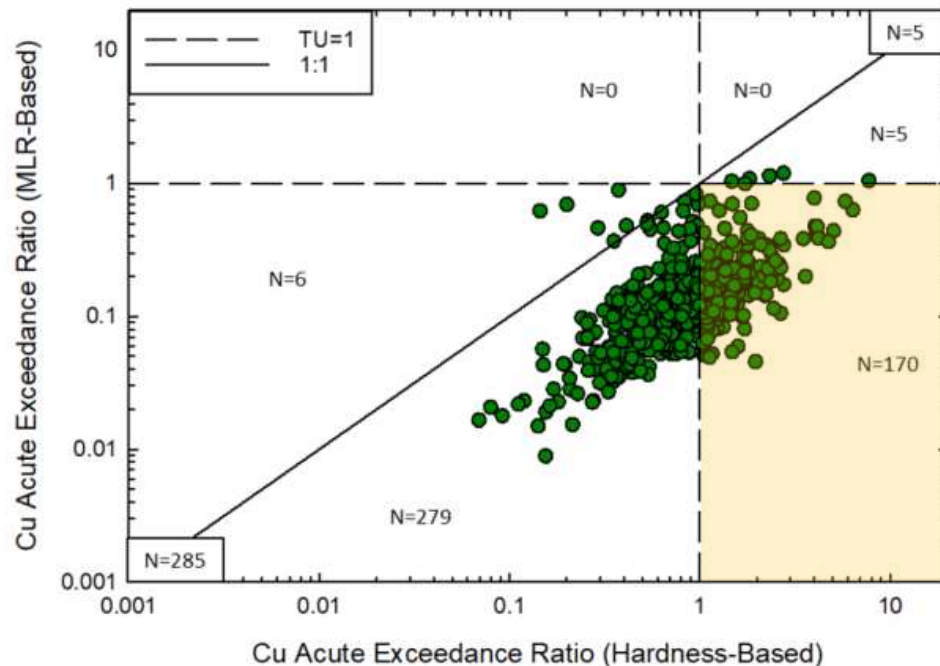


$$SSWQC_{acute} = \exp(-22.912 + 1.017 \cdot \ln(DOC) + 0.045 \cdot \ln(hardness) + 5.176 \cdot pH - 0.261 \cdot pH^2)$$

$$SSWQC_{chronic} = \exp(-23.382 + 1.017 \cdot \ln(DOC) + 0.045 \cdot \ln(hardness) + 5.174 \cdot pH - 0.261 \cdot pH^2)$$

- Works well across ephemeral, intermittent, perennial streams
 - Applicable to any waterbody on the Pajarito Plateau





Note: excludes samples with Cu detection limits > BLM or hardness-based criteria

Exceedance Ratio = Cu concentration / criterion

- 175 exceedances of current hardness-based criteria
- 5 exceedances of proposed hardness, pH & DOC-based criteria
- Every point in the shaded lower right-hand quadrant represents a false positive exceedance
 - 170 false positives
 - 5 true positives
 - 285 true negatives





Demonstration
Report

Agency
Review

Stakeholder &
Public Review

Petition &
Rulemaking

1. Demonstration Report

- Presents and justifies derivation of copper SSWQC pursuant to 20.6.4.10 NMAC requirements

2. Agency Review

- NMED & EPA review and comments on Demonstration Report

3. Stakeholder & Public Review

- Targeting Winter 2021/22 for public review of Demonstration Report
- Written comments will be solicited
- Public meetings will be held

4. Petition & Rulemaking

- A petition for copper SSWQC will be developed based on (1) conclusions presented in the final Demonstration Report, (2) NMED and EPA comments, and (3) comments from other potential stakeholders, tribes, and the general public





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