

### **ATTACHMENT 3**

**Comments received for proposed amendments to R317-2 published in the June 1, 2015 *Utah Bulletin* No. 39397. Only written comments were received. No comments were received at the Public Hearing July 6, 2015.**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8**

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July 1, 2015

Ref:

Mr. Christopher Bittner  
Division of Water Quality  
Utah Department of Environmental Quality  
P.O. Box 144870  
Salt Lake City, Utah  
84114-4870

Re: Proposed revisions to R317-2

Dear Mr. Bittner:

This letter provides the comments of the U.S. EPA Region 8 Water Quality Unit (WQU) on the proposed revisions to R317-2 that were published for public comment on June 1, 2015 in the Utah State Bulletin (Volume 2015, No. 11). The Utah Department of Environmental Quality (UDEQ), Division of Water Quality (Division) proposes the following water quality standards (WQS) revisions:

- a natural background provision;
- revised site-specific total dissolved solids (TDS) criteria for Blue Creek, Box Elder County, Utah;
- changing the gross alpha aquatic life criterion to a pollution indicator;
- deletion of the hydrogen sulfide aquatic life criteria footnote; and
- typographical corrections to the hardness-based metals criteria.

The WQU reviewed the proposal and supporting information that was provided at the water quality standards workgroup on March 23, 2015.<sup>1</sup> The WQU has substantial concerns with the proposed natural background provision and the methods that were used to derive the maximum criterion for Blue Creek. We generally do not oppose adoption of the remaining WQS revisions in the proposal.

Please note that the positions described in our comments, regarding both existing and proposed water quality standards, are preliminary in nature and should not be interpreted as final decisions under the Clean Water Act § 303(c). The EPA approval/disapproval decisions will be made after adoption of water quality standards revisions and submittal to the EPA, and will consider all pertinent evidence including information submitted during the rulemaking process.

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<sup>1</sup> <http://www.deq.utah.gov/ProgramsServices/programs/water/wqmanagement/standards/workgroup.htm>



## Natural Background

The Division's proposal includes the addition of the following sentence to the existing site-specific standards provision (R317-2-7.1):

*c. Site-specific standards may be adopted by rulemaking where biomonitoring data, bioassays, or other scientific analyses indicate that the statewide criterion is over or under protective of the designated uses or where natural or un-alterable conditions or other factors as defined in 40 CFR 131.10(g) prevent the attainment of the statewide criteria as prescribed in Subsections R317-2-7.2, and R317-2-7.3, and Section R317-2-14. When it is determined that natural background level of a pollutant is less stringent than the otherwise applicable criterion, the water quality criterion will be equal to the natural background concentration.*

The Division further explains in the summary of the proposed rule that the change is “per USEPA Guidance and is intended to allow Utah to delist or not list water where the exceedance of criteria is determined to be caused by natural conditions.” The proposed language would allow UT to disregard the numeric criteria when making assessment decisions, and since the language does not limit the application to assessment decision, it could also be used to supplant the numeric criteria with a value that reflects the natural background when issuing UPDES permits.

The WQU agrees that it may be appropriate to consider naturally occurring pollutant concentrations when establishing water quality criteria for a specific waterbody; however, the WQU disagrees with the Division that the proposed approach for considering natural background concentrations is consistent with EPA guidance. The 1997 EPA memorandum *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background* provides the national policy that natural background may be taken into consideration when deriving site-specific numeric aquatic life criteria.<sup>2</sup> The memo also states that policy does not apply to human health uses. In 2015, the EPA issued additional guidance on natural background in *A Framework for Defining and Documenting Natural Conditions for Development of Site-specific Natural Background Aquatic Life Criteria for Temperature, Dissolved Oxygen, and pH: Interim Document*.<sup>3</sup> The interim framework is provided to assist states and tribes in developing a consistent, transparent, and scientifically-defensible approach for identifying natural conditions for temperature, dissolved oxygen, and pH, which can support the development of site-specific aquatic life criteria.

The 1997 memorandum recommends that the state WQS should include the following when adopting site-specific standards set to natural background:

- 1) A definition of natural background that only includes non-anthropogenic sources;
- 2) A provision that site-specific criteria may be set equal to natural background; and
- 3) A procedure for determining natural background, or alternatively, a reference in their WQS to another document describing the binding procedure that will be used.

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<sup>2</sup> [http://water.epa.gov/scitech/swguidance/standards/upload/2009\\_01\\_29\\_criteria\\_naturalback.pdf](http://water.epa.gov/scitech/swguidance/standards/upload/2009_01_29_criteria_naturalback.pdf)

<sup>3</sup> [http://water.epa.gov/scitech/swguidance/standards/library/upload/natural\\_conditions\\_framework.pdf](http://water.epa.gov/scitech/swguidance/standards/library/upload/natural_conditions_framework.pdf)

Utah's proposal only addresses one of the three recommendations. Regulations R317-1 and R317-2 do not provide a definition of natural background and UDEQ does not have an existing procedure for identifying natural conditions to support the proposed narrative approach. Without including provisions to address these recommendations, it is not clear how the proposed natural background provision will be implemented by the state. Additionally, since the provision is written so broadly, it could be used in situations beyond its original intent (e.g., to establish permit limits that exceed criteria to protect designated uses, include sources that are not truly natural, applied to parameters with human health concern, etc.). Considering natural sources of pollutants for the purposes of WQS at the time of assessment or when issuing permits would remove the public comment process and public hearing that is required by the CWA and the EPA's implementing regulations at 40 CFR Parts 25 and 131. Furthermore, the Division's proposed narrative approach to allow the background level of a pollutant to become the applicable water quality criterion if the background level is less stringent than the otherwise applicable water quality criterion constitutes a revision to the WQS and as such, the state is required to submit the new/revised WQS to EPA for review and action consistent with CWA 303(c)(2)(A).

It is possible that Division misinterpreted the EPA's integrated report (IR) guidance, which addresses CWA 303(d), 305(b) and 314 requirements as recommendations for state WQS. Several states requested that EPA clarify how to make a 303(d) listing decision for waterbody segments with natural background levels of a pollutant. The EPA responded by adding a discussion of natural background in the IR guidance, which states that applicable water quality standards are the basis for determining whether a waterbody must be included on a State's Section 303(d) list. For some states, this includes an EPA-approved natural conditions provision. In the absence of an EPA-approved natural background provision in state WQS, or site-specific criteria based on natural background, the otherwise applicable criteria would be the basis for determining whether a waterbody is impaired.<sup>4</sup> The clarification on natural conditions in the IR guidance is not an EPA recommendation that states should adopt a natural conditions provision into state water quality standards.

For these reasons, the WQU would recommend disapproval of the natural background provision if it is adopted by the Water Quality Board. Moving forward, we recommend UDEQ remove the revised language and instead include language that explicitly states that all site-specific criteria based on natural background shall be noticed for public comment and subjected to other applicable public participation requirements prior to being adopted by the state and submitted to EPA for review and action. We also recommend UDEQ include a definition for natural background due *only* to non-anthropogenic sources and a procedure for determining natural background consistent with the 1997 EPA memorandum.

### Blue Creek Site-specific TDS Criteria

#### *Background*

The Water Quality Board adopted new site-specific criteria for Blue Creek and Blue Creek Reservoir in 2014. The EPA provided public comments on the Division's proposed approach in a letter dated 4/4/14. In these comments, the WQU generally supported the adoption of site-specific criteria for Blue Creek and Blue Creek Reservoir; yet had several questions and concerns with the criteria derivation

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<sup>4</sup><http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/2014-memo.cfm#recommendations>

methodology and implementation, including the following.

- The methods used to derive the upper bound criteria combined with UT's default 10% exceedance frequency for assessment decisions may not protect the existing water quality and allow for substantial degradation prior to making an impairment decision.
- The WQU expressed concerns with data requirements to implement the 30-day average criterion and that expressing the criterion as a 30-day average could result in unnecessary listing since the criterion was set to the average of a two year dataset.
- We suggested that the Division use of a more robust dataset to characterize the annual variability of mean TDS concentrations and true range of expected TDS concentrations in Blue Creek.

In the response to comments, the Division acknowledged that the proposed duration restricted the state's ability to assess the criteria and deleted the 1-hour and 30-day requirements from the proposal. Our other concerns with the maximum criteria and the limited dataset used to derive the criteria were not addressed in the final WQS that were adopted by the Board in 2014. The site-specific criteria were submitted to Region 8 for review in a letter dated 8/18/2014. The Region has not acted on the submission knowing that the Division was considering additional revisions to the site-specific criteria.

#### *Summary of proposed revisions*

In this notice, UDEQ proposes the following revisions the site-specific TDS criteria for Blue Creek that were adopted in 2014:

*Blue Creek and tributaries, Box Elder County, from ~~Gunnison~~ Bear River Bay, Great Salt Lake to Blue Creek Reservoir: ~~maximum 6,300 mg/l and an average of 3,900~~ March through October daily maximum 7,200 and an average of 3,800 mg/l; November through February daily maximum 7,500 mg/l and an average of 4,700 mg/l. Assessments will be based on TDS concentrations measured at the location of STORET 4960740. At least 10 samples are required to assess compliance with the mean criteria. If the sample mean for samples collected in March through October is equal to or less than 4,100 mg/l and the sample mean for samples collected November through February is equal to or less than 5,300 mg/l, the average criteria are being met. Alternative scientifically defensible assessment methods may be applied for assessing the average criteria.*

The proposed criteria were derived from a robust dataset (1989-2010; N=349) and protect the conditions when TDS is generally lower (i.e., summer). The revisions also include implementation details for criteria that are expressed as an average. The summer and winter average criteria are set to the mean seasonal concentration (summer N = 235; winter N = 113). The maximum criteria are set to a statistical upper limit that is greater than the maximum concentration observed in that season. For summer the maximum criterion is set to the 95% upper simultaneous limit (USL95). For winter the maximum criterion is set to the 95% upper tolerance limit with 99% coverage (UTL95-99). All calculations were conducted with the EPA ProUCL software Version 5.0.

The WQU has the following comments on the proposed revisions to the Blue Creek site-specific criteria:

1. We thank UDEQ for using a more robust dataset and support the proposed seasonal approach.
2. We continue to support the Division's intent to adopt site-specific criteria that will protect both the average and maximum concentrations when the parameter of concern exhibits high seasonal variability. This tiered approach is an improvement over previous approaches to set site-specific standards since it protects the high quality conditions with an average, in addition to limiting the maximum concentrations that will be allowed.
3. We continue to have significant concerns with the methods used to derive the maximum criterion when R317-2-7.1 allows for a 10% exceedance of maximum TDS criteria when making assessment decisions. The Division's approach to deriving site-specific maximum criteria is to evaluate a wide range of upper percentile values that are intended to approximate the maximum. The Division has set maximum criteria to three different upper limit statistics. The criteria adopted in 2014 (Blue Creek and Blue Creek Reservoir) were set to the 95 % upper prediction limits (UPL95) for the next 5 observations. The revised seasonal maximum criteria for Blue Creek are set to the USL95 and UTL95-99 for summer and winter, respectively. The ProUCL 5.0 Technical Guide provides the following descriptions of these statistics (emphasis added):<sup>5</sup>

Upper Prediction Limit (UPL): The upper boundary of a prediction interval for an independently obtained observation (or an independent future observation). Based upon an established background data set, a 95% UPL (UPL95) represents that statistic such that an independently collected new/future observation from the target population (e.g., background, comparable to background) will be less than or equal to the UPL95 with CC of 0.95. **We are 95% sure that a single future value from the background population will be less than the UPL95** with CC= 0.95. A parametric UPL takes data variability into account.

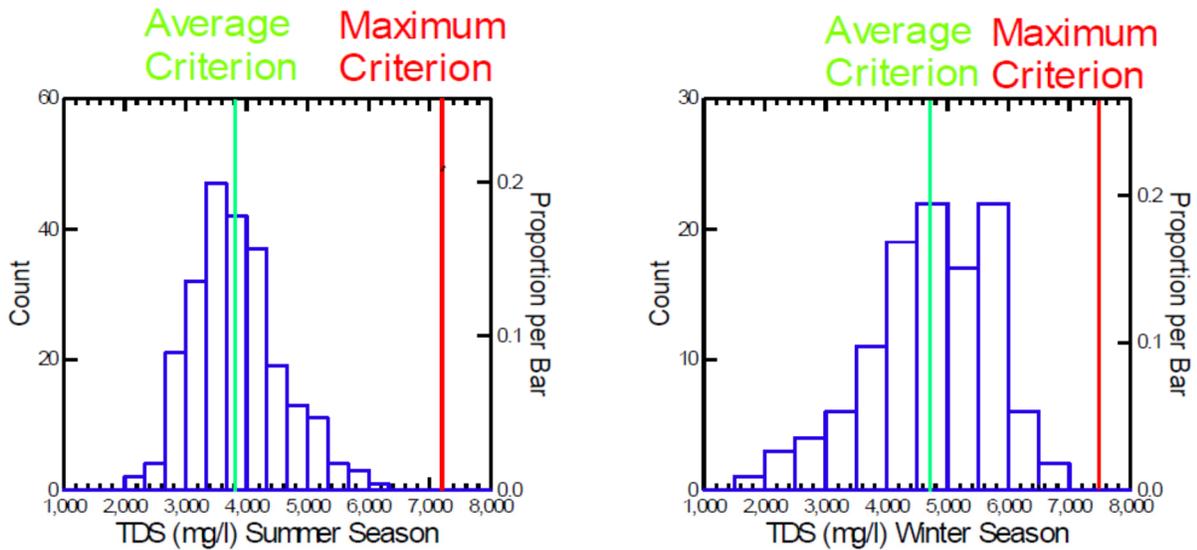
Upper Tolerance Limit (UTL): A confidence limit on a percentile of the population rather than a confidence limit on the mean. For example, a 95 % one-sided UTL for 95 % coverage represents the value below which 95 % of the population values are expected to fall with 95 % confidence. In other words, **a 95% UTL with coverage coefficient 95% represents a 95% UCL for the 95th percentile.**

Upper Simultaneous Limit (USL): The upper boundary of the largest value. Based upon an established background data set free of outliers and representing a single statistical population, a USL95 represents that statistic such that all observations from the "established" background data set are less than or equal to the USL95 with a CC of 0.95. A parametric USL takes the data variability into account. It is expected that **all current or future observations coming from the background population (comparable to background population, unimpacted site locations) will be less than or equal to the USL95** with CC, 0.95.

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<sup>5</sup> [http://www2.epa.gov/sites/production/files/2015-03/documents/proucl\\_v5.0\\_tech.pdf](http://www2.epa.gov/sites/production/files/2015-03/documents/proucl_v5.0_tech.pdf)

These statistics either provide high confidence that future samples will be less than the limit (i.e., UPLs and UTL – both with a low false positive rate) or are statistics that are typically used to estimate the true maximum of a given distribution (i.e., USL). Figure 7 from the Division’s support document clearly shows that the proposed maximum criteria are greater than what has been observed in Blue Creek over the last 20+ years. We question why the Division is interested in setting the criterion to an estimate of the true maximum, rather than a percentile of the distribution? Estimating a true maximum is a challenging task that inflates the limit and results in less protective criteria. It is also worthy to note the statistical outlier in the dataset (7,180 mg/L, not presented in these figures) is less than the proposed maximum criteria. Use of the proposed maximum criteria to establish permit limit or when making assessment decisions, which allows for a 10% exceedance, will not protect the existing water quality conditions in Blue Creek.



**Figure 7. Histograms of Blue Creek summer and winter seasons total dissolved solids concentrations with proposed average and maximum criteria**

To resolve our concerns with the proposed approach, we suggest that the Division consider adding an additional statement to the site-specific standard that when making assessment decisions, the 10% exceedance frequency in R317-2-7.1 does not apply to the maximum criteria. This approach would only address the concerns with assessment decisions and does not address the implementation in UPDES permits; however, it is likely that permit limits derived using the average criteria will control effluent concentrations such that the maximum criterion will never be observed.

Alternatively, the Division could consider an approach similar to what is proposed for the average criteria where the statistical uncertainty with the dataset is taken into consideration in the assessment thresholds, rather than the water quality criterion. The UPL/UTL/USL limits are

more akin to the assessment thresholds than values that are expected to protect the existing water quality of Blue Creek. The maximum criterion could then be set to a more protective limit that is compatible with R317-2-7.1 (e.g., 90<sup>th</sup> percentile or potentially maximum observed, depending on the robustness of the dataset).

We recommend that the Division address our concerns with the proposed natural conditions provision and the maximum TDS criteria for Blue Creek prior to presenting the proposal to the Water Quality Board for adoption. We appreciate the efforts of the Division to coordinate with the WQU when developing proposed revisions to state WQS. If there are questions concerning our comment, please contact me at (303) 312-6947 or Lareina Guenzel at (303) 312-6610.

Sincerely,

A handwritten signature in cursive script, appearing to read "Sandra Spence".

Sandra Spence, Chief  
Water Quality Unit