

Interim Strategy for Minerals Permit Limits January 23, 2014

Minerals include chlorides, sulfates and total dissolved solids (“TDS”). Arkansas has adopted water quality criteria for minerals to protect domestic water supplies in Regulation 2.¹ Arkansas’ minerals criteria for domestic water supplies are the same as the secondary drinking water standards adopted by EPA under the federal Safe Drinking Water Act (250 mg/L for chlorides, 250 mg/L for sulfates and 500 mg/L for TDS).

Currently, Arkansas has issued **33 permits** with minerals limits. Most, if not all, of these permits contain effluent limitations (also known as “permit limits”) for minerals because site-specific minerals criteria were adopted to address the permitted discharge.² These site-specific criteria usually are adopted because in-stream water quality exceeds the secondary drinking water standards, the receiving stream is impaired due to minerals, or a total maximum daily load (“TMDL”) has been developed to address water quality impairment. If limits are going to be, or are, included in a permit, the regulated entity usually seeks to develop site-specific criteria that will establish in-stream minerals concentrations that will allow them to continue operating without having to install costly control measures. However, in order to develop such site-specific criteria, the regulated entity must first demonstrate that existing uses will be maintained and protected once the new criteria are adopted. This process can include conducting a two-year study of water quality and aquatic life at locations upstream and downstream of the permit holder’s discharge.

Regulation 2 Triennial Review

ADEQ proposes to make a number of changes to Regulation 2 to address minerals in the State’s water quality standards. The proposed changes include:

- Extending the compliance period for meeting new permit limits for more than three years for permittees completing site-specific criteria development (Reg. 2.104);
- Revising the critical flow definition (Reg. 2.106);
- Retaining the single asterisk in Reg. 2.511(A). This asterisk specifies which site-specific criteria were developed using 4 cfs. The asterisk and the critical flow definition will allow facilities that currently discharge to streams with an asterisk to continue using 4 cfs as the critical flow in calculating their permit limits for minerals; and
- Clarifying that ecoregion values are used to identify when site-specific criteria development should be considered and to make clear that ecoregion values are not used to evaluate attainment of the water quality standards for assessment purposes (Reg. 2.511(B)).

Other Measures

In addition to making these proposed changes to Regulation 2, ADEQ also has revised the 2014 Assessment Methodology to allow an exceedance of site-specific minerals criteria in 25% of the

¹ Reg. 2.511(C).

² See Reg. 2.511(A).

samples, rather than in 10% of the samples as previously provided. Finally, ADEQ is proceeding with an initial study to be funded by EPA to review existing mineral criteria and values and propose changes to the mineral provisions or to the process for developing site-specific criteria at concentrations below the secondary drinking water standards. Frequently, site-specific criteria are developed to establish allowable in-stream concentrations of minerals that are less than secondary drinking water standards. To facilitate these changes to water quality standards, ADEQ hopes that an expedited process can be developed that also ensures a stream's existing uses will be protected and maintained. It is not often necessary to develop site-specific mineral criteria that exceed the secondary drinking water standards. When that does occur, then the detailed study currently provided for in Reg. 2.306 must be followed to ensure that all existing uses will be protected and maintained where mineral concentrations greater than secondary drinking water standards are sought for a receiving waterbody.

Critical Flow Definition

The most controversial proposal has been the change in the definition of critical flow for minerals. Critical flow is the flow volume used as background dilution flow in calculating permit limits. The definition is being revised in this Triennial Review as follows:

Critical flows: The flow volume used as background dilution flows in calculating concentrations of pollutants from permitted discharges. These flows may be adjusted for mixing zones. The following critical flows are applicable:

For a seasonal fishery aquatic life - 1 cubic foot per second (cfs) minus the design flow of any point source discharge (may not be less than zero):

For human health criteria - harmonic mean flow or long term average flow;

For minerals criteria - harmonic mean flow or 4 cfs, except in those waters listed in Reg. 2.511. Those waters in Reg. 2.511 which are noted with an asterisk will have a critical flow of 4 cfs. (Also see minerals implementation procedure in CPP), except as follows:

- Reg. 2.511(A) Site Specific Mineral Criteria listed with an asterisk- 4 cubic feet per second.
- Reg. 2.511 (C) Domestic Water Supply: Q7-10; and

For all others metals and conventional pollutants - the critical flow will be Q7-10.

The *existing* critical flow definition for minerals **uses harmonic mean flow** for calculating permit limits and 4 cfs. ADEQ views harmonic mean flow as an appropriate measure of long term flow data. Four cfs has been used in the past as a default value for small watershed streams where sufficient data was lacking to establish harmonic mean flow. This default value was derived in the 1980s from a review of the limited flow data available from small watersheds within each ecoregion, and, in the 1990s, based on this limited data set, a statewide median flow

of 4 cfs was selected to be used as a “critical flow” in place of harmonic mean flows where insufficient data existed to establish such flows.³

In this Triennial Review, ADEQ proposes to keep the definition of “critical flow” for determining mineral permit limits as harmonic mean flow and to allow 4 cfs to continue to be used only for calculating permit limits by those facilities that used 4 cfs to develop site-specific criteria for those designated stream segments indicated with an asterisk in Reg. 2.511(A). This allows existing facilities that relied on 4 cfs in the completion of site specific criteria development to continue using 4 cfs in calculating permit limits.

It is important to note that ADEQ and the public now have access to USGS’ StreamStats, which can provide mean flow and 7Q10 for streams *based on actual stream gauge data*. Using this data, a harmonic mean flow can be calculated for any stream in Arkansas. Consequently, for permit holders who will require permit limits for minerals in the future, the default value of 4 cfs value for small watershed streams is no longer needed or appropriate. The changes to the critical flow definition for minerals include removing 4 cfs as a default value for establishing permit limits (except for those facilities that discharge into stream segments marked with an asterisk). This change is included in this Triennial Review because a more appropriate critical flow is readily available for all waters in Arkansas. Harmonic mean flow has been and continues to be an appropriate measure of long term flow data. Nonetheless, removing 4 cfs from the critical flow definition raises concerns for existing permit holders that do not currently have permit limits for minerals. In order to address those concerns, if requested, ADEQ will administratively continue any existing permits which require new numeric effluent limitations to be added for minerals upon permit renewal. This temporary measure will be followed by ADEQ until the study of Statewide mineral criteria or values is completed and, as appropriate, any proposed changes to the mineral provisions or the process for establishing revised or new site-specific criteria have been adopted. The only exception to this strategy will apply to the fourteen permits submitted to EPA in accordance with the requirements of Act 954. EPA objected to each of those permits, and ADEQ must address EPA’s objections to avoid the permits being issued by EPA. Some of these permits may require new numeric effluent limits for minerals, which will have to be added to the permit before an alternate process for addressing minerals can be put into place. In addition and as appropriate ADEQ will issue permits which may otherwise require minerals limitations with 5 years of monitoring and reporting requirements only.

Conclusion

ADEQ will continue to work with EPA on completing the study to evaluate existing mineral criteria and values and propose changes to the criteria or to the process for developing site-specific criteria for mineral concentrations at or below the secondary drinking water standards or domestic water supply criteria. ADEQ also will provide periodic updates (at least quarterly) to the legislative committees and the public on the progress of the study and any revisions to minerals standards, assessment, or permitting. ADEQ also, upon request, will administratively continue any existing permits which require new numeric effluent limits to be added for minerals. Such permits will be administratively continued until the study of Statewide mineral

³ In addition to being used to calculate permit limits, 4 cfs also has been used in the past to develop site-specific mineral criteria for small streams. For a number of reasons, the Department does not believe that 4 cfs can continue to be used for developing site-specific criteria.

criteria and values is completed and, as appropriate, any proposed changes to the mineral provisions or the process for establishing revised or new site-specific criteria have been adopted.