



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Mr. Dennis M. Boal, Chair
Wyoming Environmental Quality Council
Herschler Building, Room 1714
122 W. 25th Street
Cheyenne, Wyoming 82002

Subject: EPA Comments on Proposed Revisions to
Chapter 1 of the Wyoming Water Quality Rules
and Regulations, Appendix H.

Dear Mr. Boal:

The U.S. Environmental Protection Agency Region 8 (EPA) is aware that the Wyoming Department of Environmental Quality (Department) announced in a press release on September 23, 2009 that it is removing from consideration its proposed Appendix H. Appendix H describes the procedure the Department must use to translate Wyoming's narrative water quality standard (WQS) for the protection of agricultural uses in Chapter 1, Section 20 into permit effluent limits. Based on conversations between EPA, the Department, and the Environmental Quality Council (Council), it is our understanding that the public comment period will be closed on September 30, 2009. EPA Region 8's Water Quality Unit (WQU) and Wastewater Unit offer the following comments for consideration as the State decides how to move forward.

EPA commends the State for developing implementation procedures to achieve consistent application of its narrative WQS and transparent decision-making. However, our position is that the implementation methods need improvement regardless of whether the Council decides to retain them as a policy or adopt them as a rule. Our major concerns include:

- Lack of clarity regarding whether irrigation uses are designated in the State WQS;
- Protection of existing uses as defined in federal regulation;
- Whether the proposed sulfate effluent limit is protective of livestock;
- The procedures for calculating effluent limits protective of irrigation, especially Tier 2; and
- Livestock and irrigation waivers.



Accordingly, our recommendation is that the proposed revisions to Chapter 1 should not be adopted as proposed. If the current version of Appendix H is adopted into rule, the WQU would consider most of the provisions to be new or revised WQS and EPA's expectation is that Appendix H would be submitted for review and action under Clean Water Act (CWA) § 303(c). In addition, several of the provisions do not appear to be consistent with the CWA and 40 CFR Part 131 and the WQU would recommend the Assistant Regional Administrator, Office of Ecosystems Protection and Remediation (ARAR), disapprove these provisions. Even if retained as a policy, EPA has significant concerns regarding whether its implementation is consistent with Wyoming's approved WQS.

The positions described in our comments, regarding both existing and proposed WQS, are preliminary and should not be interpreted as final EPA decisions under CWA § 303(c). EPA Region 8 approval/disapproval decisions will be made following adoption of new/revised WQS and submittal to EPA. Such decisions will be made considering all pertinent evidence available to the Region.

Background

The CWA § 303(a)-(c) direct states to establish WQS. WQS describe the desired condition of a waterbody and consist of three elements: (1) designated uses, such as public water supply, agriculture, or recreation; (2) narrative or numeric criteria that specify the amounts of various pollutants that may be present without impairing the designated uses; and (3) an antidegradation policy, providing for protection of existing water uses and limitations on degradation of high quality waters. CWA § 303(c)(2)(A) requires that states consider agricultural uses when establishing WQS.

EPA's WQS regulation requires adoption of water quality criteria sufficient to protect designated uses based on sound scientific rationale (40 CFR § 131.11(a)(1)), and allows adoption and implementation of both numeric and narrative water quality criteria. See 40 CFR § 131.11(b). Where narrative criteria have been adopted to protect designated uses, with certain exceptions,¹ states have discretion to adopt implementation methods as policy or rule.

Currently, Chapter 1 includes the following narrative WQS for agricultural uses:

- *Section 3. Water Uses. ...The objectives of the Wyoming program are to provide, wherever attainable, the highest possible water quality commensurate with the following uses:*
 - (a) *Agriculture. For purposes of water pollution control, agricultural uses include irrigation or stock watering.*

¹ An important exception is situations where adoption of numeric criteria is explicitly required (e.g., as for CWA 307(a) priority toxic pollutants under CWA § 303(c)(2)(B)).

- *Section 20. Agricultural Water Supply. All Wyoming surface waters which have the natural water quality potential for use as an agricultural water supply shall be maintained at a quality which allows continued use of such waters for agricultural purposes. Degradation of such waters shall not be of such an extent to cause a measurable decrease in crop or livestock production. Unless otherwise demonstrated, all Wyoming surface waters have the natural water quality potential for use as an agricultural water supply.*

Since 2006, Wyoming has implemented Section 20 through the *Agricultural Use Protection Policy*. The proposal before the Council is to adopt into rule (Chapter 1, Appendix H) specific methodologies for translating the Section 20 narrative criterion into appropriate permit effluent limits.

Analysis of Whether Provisions of Appendix H Constitute WQS

The following analysis assumes that the Appendix H provisions would be adopted in rule, as proposed, rather than remain a policy. In general, any regulatory provision that affects uses, criteria, or the antidegradation policy is a WQS.

Table 1. Provisions that Are Potentially New or Revised WQS

Sections	Rationale
(a) Purpose, paragraph 3	EPA's preliminary conclusion is that these provisions further define the agricultural uses to be protected.
(b) and (c)(i)-(vi)	Describe how the narrative WQS must be translated in permits by establishing a numeric water-quality based effluent limit associated with protecting the designated use and implicitly, if not explicitly, identify the ambient condition.
(c)(vii) Irrigation Waiver	Grants an exemption from the narrative criteria and allows degradation of the existing use.

Table 2. Provisions that Are Likely Not New or Revised WQS

Sections	Rationale
(a) Purpose, Paragraph 1	Restates existing sections of Chapter 1.
(a) Purpose, Paragraphs 2 and 4, and (c)(vi) Irrigation	Introductory statements with no regulatory effect.

Sections	Rationale
(a) Purpose, Paragraph 5	EPA's understanding is that pre-1998 discharges are exempt from the effluent limits in Appendix H, but are still subject to Section 20. If EPA's understanding is correct, EPA would not consider this provision a WQS because the procedure describing how the pre-1998 discharges will meet Section 20 would not be in rule.
(c)(vi)(B)(III) Irrigation	Describes the minimum data that must be included in the Soil Report (e.g., map of sample sites, summary table of analytical results). These provisions simply summarize the information collected under (c)(vi)(B)(II)(1)-(4).

Potential Disapproval Issues

Existing and Designated Uses

Wyoming's interpretation of Section 20 and implementation of this provision in Appendix H appears to be inconsistent with federal regulations because: (1) presently occurring irrigation uses are not designated consistent with 40 CFR § 131.10(i), and (2) existing irrigation uses, in the federal definition of that term, are not protected consistent with 40 CFR § 131.12(a)(1).

Federal Requirements

EPA's regulation defines existing uses as "those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." 40 CFR § 131.3(e). Existing uses are relevant to two provisions in the federal regulation -- 40 CFR 131.10(g), designated uses, and 40 CFR § 131.12(a)(1), antidegradation. Overall, these provisions:

- Prohibit removal of a designated use that would also remove an existing use; and
- Require the maintenance and protection of existing instream water uses and the level of water quality necessary to protect existing uses when implementing a state's or tribe's antidegradation policy.

These two provisions define the absolute "floor" or minimum use and necessary level of water quality achieved that must be maintained and protected in a waterbody.² EPA considers the phrase "existing uses are those uses actually attained" to mean the use and water quality necessary to support the use that have been achieved in the waterbody on or after November 28, 1975. Where a use (i.e., some degree of use related to aquatic life, wildlife, and human activity) has actually been achieved on or after November 28, 1975, the existing use is the highest degree of use and the water quality that has been achieved and is necessary to support the use. "Highest

² See the preamble to EPA's WQS regulations at 48 Fed. Reg. 51,500, 51,403 (Nov. 8, 1983).

degree of uses" generally means the degree of use closest to those supported by minimally impacted conditions, which usually is associated with the highest level of water quality.

Although EPA interprets the definition of "existing use" to require consideration of the available data and information on both actual use and water quality, all the necessary data may not be available. In these circumstances, a state or tribe may choose, in implementing its WQS program, to determine an existing use based on the strength of evidence that a use has actually been achieved. In other words, where data may be limited or inconclusive, EPA expects states and tribes to consider the quantity, quality, and reliability of the different types of available data to describe the existing use as accurately and completely as possible.

In an Advance Notice of Proposed Rulemaking (ANPRM) published on July 7 1998, EPA provided its thinking regarding the flexibility available to states regarding the specificity with which existing uses may be established.

Traditionally, when establishing designated uses, States and Tribes tend to define uses in terms of broad classes, such as warm water fishery or secondary contact recreation. Inherent in each of the broad use categories are specific uses that may be affected by a change in water quality. For example, a warm water fishery designated use may include the existing use of large mouth bass fishery. Many people would be upset if the warm water fishery designated use was protected in such a way as to allow a decline in the bass population. The central question faced by States and Tribes in determining whether or not a proposed action will impact existing uses is whether each specific use within a use class must be maintained (each individual type of species), or whether only the use class itself must be maintained (allow changes in species composition, but maintain a fishery). State and Tribal interpretations of this requirement vary considerably and are often tied to the degree of precision the State or Tribe achieves in defining designated uses.

Many States and some Tribes have addressed these questions by using the same degree of precision for both designated and existing uses. EPA's current thinking is that this is an acceptable approach as long as the State's or Tribe's designated uses and criteria applicable to those uses are adequate to ensure that existing uses are maintained under the federal antidegradation provisions.³

Designated uses express the state/tribal objectives (i.e., highest attainable uses) for a waterbody or set of waterbodies. The designated use may or may not have actually been attained in the waterbody. In the ANPRM, EPA stated that "Designated uses focus on the attainable

³ 63 Fed. Reg. 36,781-36,782 (July 7, 1998).

condition while existing uses focus on the past or present condition.” The CWA and 40 CFR § 131.10(a) require states “take into consideration the use and value of water” for agricultural purposes when designating uses. Therefore, states have broad discretion when it comes to designating agricultural uses. However, at a minimum, states must designate agricultural uses that are “presently being attained” (40 CFR § 131.10(i)).

Wyoming's Designated Agricultural Uses

Section 20 states “Unless otherwise demonstrated, all Wyoming surface waters have the natural water quality potential for use as an agricultural water supply.” Section 3 states agricultural uses include irrigation or livestock watering. The Department interprets these Sections to mean that livestock watering is protected in all waters unless a Use Attainability Analysis (UAA) is conducted to remove that use, and irrigation uses occur on some waters, but which waters is not determined until the time of permitting.⁴ Therefore, although not apparent from a plain reading of Section 20, livestock watering and irrigation are not treated the same, as illustrated by the language in Appendix H:

For livestock watering purposes, a pre-existing use will always be assumed. For irrigation purposes, there needs to be either a current irrigation structure or mechanism in place for diverting water from the stream channel, or a substantial acreage of naturally sub-irrigated pasture within a stream floodplain. Where neither of these conditions exist, there can be no irrigation use, nor loss in crop production attributable to water quality. (Section (a))

Designated uses establish goals for a waterbody by identifying a function of, or an activity in, waters of the U.S. that require a specific level of water quality to support it. Designated uses are adopted into state WQS, after an opportunity for public participation as stated in 40 CFR § 131.10(e) and § 131.20(b). By clearly identifying the designated uses, the permitting process can then ensure that effluent limits are protective of the designated uses. By defining agricultural uses as livestock watering or irrigation, there is significant uncertainty as to what the designated agricultural uses are for a specific water. In practice, the State is treating livestock watering as a separate designated use. It is unclear what irrigation uses are designated, if any. No one can go to the State WQS and identify which waters are designated for irrigation.

Appendix H allows the permit writer to decide which irrigation uses to protect based on factual circumstances that may change from one permit cycle to the next. This essentially creates a conditional use designation that is protected if certain criteria are met at some future time. Notably, that decision will be made by the permit writer, outside the context of a WQS rulemaking. Nothing in the CWA or federal regulation suggests that uses can be designated at the time of permitting. Deciding what uses require protection at the time of permitting is counter to the concept of designated uses.

⁴ See transcript of the August 2, 2006 Advisory Board meeting (page 7)

Furthermore, the proposed use designation system allows individual landowners to define designated uses rather than the State, and could easily lead to less protection. For example, under the proposed rule, a discharger could purchase land and remove the "current irrigation structure or mechanism in place for diverting water from the stream channel" so as not to be subject to effluent limits protective of irrigation. Delaying the designation of irrigation uses until the time of permitting would also be problematic in the situation where a landowner added an irrigation structure to a segment where one did not previously exist. As EPA understands the proposed rule, that segment would go unprotected for that irrigation use until a new discharge was proposed or existing ones were scheduled for renewal.

This use designation system burdens the landowner or grower with commenting during the public comment period for specific permits to ensure their uses are protected. When irrigation uses are designated in advance through the WQS rulemaking process, landowners and growers know that these uses will be protected without further action on their part and if a change is proposed to that designated use, that would be public noticed as part of the State's UAA process.

Although Wyoming has designated agricultural uses, the State is interpreting its existing rule in a way that postpones a decision about whether to protect irrigation uses. At a minimum, Wyoming must designate the irrigation uses that are presently attained consistent with 40 CFR § 131.10(i). One option to address this requirement is that the State could revise Appendix H to treat irrigation the same as livestock watering and require effluent limits protective of irrigation unless a site-specific change in designated use is adopted and approved by EPA (e.g., based on a UAA). Such a revision would be consistent with the plain language of Sections 3 and 20. This option follows how most states normally protect agricultural uses. Another option would be to revise Section 20 to designate the presently attained irrigation uses statewide. We urge the State to clearly identify what is and is not a designated irrigation use in its WQS.

Existing Uses

The antidegradation-based existing use provision (40 CFR § 131.12(a)(1)) guarantees that individual activities on individual waters will be examined to ensure those activities will not eliminate existing uses, whether or not those uses are currently recognized in the state WQS.⁵ The Appendix H procedures for calculating effluent limits protective of irrigation address the presently attained uses, but do not take into consideration irrigation uses that may have existed since November 28, 1975 but are not presently occurring (i.e., existing uses).

There are two scenarios of concern: (1) waters where current irrigation uses consist of target crops less sensitive than those previously grown (on or after November 28, 1975), and (2) waters where irrigation uses have been attained since November 28, 1975 but are not currently occurring (i.e., currently no crops are being grown). Wyoming's proposed approach handles the first scenario by requiring effluent limits where there is "a current irrigation structure or mechanism in place for diverting water from the stream channel, or a substantial acreage of

⁵ 63 Fed. Reg. 36,752 (July 7, 1998).

naturally sub-irrigated pasture within a floodplain.” Effluent requirements would not be imposed to protect more sensitive crops previously grown on or after November 28, 1975. As discussed in the ANPRM, a central existing use protection question is whether each specific use within a use class must be maintained and protected (e.g., protection of the most sensitive crop grown since November 28, 1975), or whether only a more broadly defined use class must be maintained and protected (e.g., protection of irrigation). Because the federal regulation is ambiguous, we think Wyoming has discretion to require protection of only those crops presently being irrigated, because this approach would ensure ongoing protection of the irrigation use. However, it is clear that targeting the most sensitive crop grown since November 28, 1975 could also be justified, and would better maintain ambient water quality for future irrigation uses.

The second scenario is more problematic because under Wyoming’s proposed approach only effluent limits to protect livestock watering (and not irrigation) would be developed. Because irrigation uses attained on or after November 28, 1975 are existing uses that must be protected, the proposed approach would be inconsistent with the approved Wyoming antidegradation policy, which is subject to the requirements at 40 CFR § 131.12(a)(1). Accordingly, revisions need to be made to the proposed procedure, at a minimum, to ensure protection of existing uses in situations described by the second scenario.

Effluent Limits for Protection of Livestock Watering and Irrigation

The provisions in Appendix H, Section (b) and (c) describe how the narrative WQS must be translated in permits and implicitly, if not explicitly, identify the required ambient condition. EPA is concerned that these Sections are not based on a sound scientific rationale that protects the most sensitive designated uses consistent with 40 CFR § 131.11(a)(1), and also do not protect existing uses consistent with 40 CFR § 131.12(a)(1). If adopted as proposed, the WQU would recommend the ARA disapprove these provisions. Even if retained as a policy, EPA has significant concerns regarding whether its implementation is consistent with Wyoming’s approved WQS.

Livestock Watering

Section (b) incorporates end-of-pipe effluent limits for Total Dissolved Solids, Sulfate and Chloride for the protection of livestock watering that are currently required under the WYPDES permitting regulations in Chapter 2. During the course of the Appendix H rulemaking, the Department funded research by The University of Wyoming, which resulted in publication of the study *Water Quality for Wyoming Livestock and Wildlife - A Review of the Literature Pertaining to Health Effects of Inorganic Contaminants* in 2007 (UW Report).⁶ EPA commends the Department for funding research to update the available science in this area. However, based on our review of some of the scientific literature relevant to protection of livestock, we question whether the proposed sulfate effluent limit of 3,000 mg/L is protective. For example, the UW Report states that concentrations as low as 2,000 mg/L have caused blindness and/or death in

⁶ See <http://ces.uwyo.edu/PUBS/B1183.pdf>.

cattle (page 47). Many other studies from western states and Canadian provinces consider water sulfate concentrations of 1,500 mg/L as acceptable for beef cattle eating a varied diet contain a maximum tolerable level of sulfate (for combined water and feed) of 0.4%.⁷

Irrigation

Section (c) requires effluent limits for Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR) whenever a discharge will reach artificially or naturally irrigated lands. Irrigation is highly dynamic, with numerous variables affecting crop production, including soil parameters (e.g., texture, clay type), crop requirements (e.g., crop type, crop age, fertilization rates), climate (e.g., temperature, precipitation, evaporation), and irrigation management practices. Presently attained irrigation uses in Wyoming include a spectrum of irrigation management systems ranging from highly managed (meaning many variables affecting crop production are monitored and adjusted for) to unmanaged (e.g., naturally irrigated pasture within a floodplain). For waterbodies that have both artificial and natural irrigation, the effluent limits must protect the most sensitive use to satisfy 40 CFR § 131.11(a)(1), and existing uses consistent with 40 CFR § 131.12(a)(1).

EPA is most concerned with the Tier 2 procedures for calculating effluent limits. Tier 2 states that "If sufficient data is available to demonstrate or calculate that the pre-existing background water quality at the point(s) of diversion is worse than the effluent quality, EC and SAR effluent limits may be based upon those background conditions rather than the tolerance values for the most sensitive crop." Under Tier 2, background water quality can be established using ambient data, or where not available due to low-flow conditions, calculated from soil samples. The two major problems are: (1) neither of these procedures demonstrates that the ambient condition is protective of the designated irrigation use as required by 40 CFR § 131.11(a)(1); and (2) the "Calculated Background" procedure may identify the level of EC in the soil at one point in time, but there is no scientific basis for concluding that the soil EC value, or the water EC value conversion, is representative of the ambient water quality. Also of concern is that the Tier 2 procedure does not require a demonstration that the existing background water quality conditions are the highest attainable. EPA Region 8 has approved site-specific criteria based on existing conditions, but adoption of such criteria is appropriate only where there is no anthropogenic influence, or the anthropogenic influence is irreversible. It would not be appropriate for the Tier 2 procedure to sanction and protect an existing degraded condition.

In order to demonstrate that the most sensitive designated irrigation uses are protected, the State could identify the most sensitive crop, soil type, and irrigation management practice on a statewide, watershed, or site-specific basis. The Tier 1 procedure is closest to achieving this in that the effluent limits are based on the most sensitive crop. However, even this procedure may not be protective of all irrigation uses. For example, use of the 1.5 factor to convert soil EC to

⁷ For example: (1) National Research Council (2005). *Mineral Tolerance of Animals*. 2nd Revised Ed., Committee on Minerals and Toxic Substances in diets and Water for Animals, The National Academies Press, Washington, D.C.; and (2) Olkowski, Andrew A. (2009). *Livestock Water Quality: A Field Guide for Cattle, Horses, Poultry and Swine*. University of Saskatchewan, for the Minister of Agriculture and Agri-Food Canada.

Conclusion

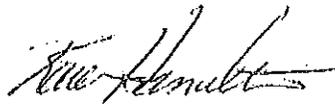
EPA is concerned with multiple provisions in the proposed Appendix H. Our position is that the implementation methods need improvement regardless of whether the Council decides to keep them an implementation policy or adopt them as a rule. If the provisions discussed above are adopted in rule (regardless of whether they are placed in Chapter 1 or 2), EPA would consider them to be WQS and EPA's expectation is that they would be submitted for review and action under CWA Section 303(c). As discussed above, several of the provisions do not appear to be consistent with the CWA and 40 CFR Part 131 and the WQU would recommend the ARA disapprove those WQS. Accordingly, our recommendation is that revisions to Chapter 1 should not be adopted as proposed. Even if retained as a policy, EPA has significant concerns regarding whether its implementation is consistent with Wyoming's approved WQS.

EPA commends the State for developing implementation methods to achieve transparent decision-making and consistent application of the narrative WQS for protection of agricultural uses. EPA would like to continue to work with the State to improve the methods and ensure protection of agricultural uses.

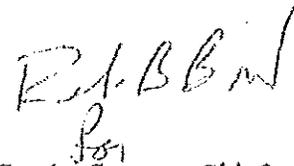
The positions described in our comments are preliminary and should not be interpreted as final EPA decisions under CWA Section 303(c). EPA Region 8 approval/disapproval decisions will be made following adoption of new/revised water quality standards and submittal to EPA. Such decisions will be made considering all pertinent evidence available to the Region.

If you have questions concerning this letter, the most knowledgeable people are Tonya Fish (WQU), who can be reached at 303-312-6832 or Colleen Gillespie (Wastewater Unit) at 303-312-6133.

Sincerely,



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Water Quality Unit



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