

# **SECTION 309 REPORT**

**A study of Colorado water quality classification  
and standard issues under C.R.S. § 25-8-309**

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## CONTENTS

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<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>SECTION 309 STUDY FINAL REPORT .....</b>	<b>3</b>
<b>I. BACKGROUND .....</b>	<b>3</b>
A. Section 309 Study .....	3
B. Arid West Water Quality Research Project and Associated Efforts .....	4
1. Background .....	4
2. Definitions .....	4
3. AWWQRP Products .....	5
4. Habitat Characterization Study .....	5
5. Extant Criteria Evaluation Study .....	5
6. Conclusions .....	6
C. Section 309 Advisory Group .....	6
D. Aquatic Life Work Group .....	7
1. Background .....	7
2. Conclusions .....	8
<b>II. UNIQUE ATTRIBUTES OF COLORADO’S WATERBODIES .....</b>	<b>8</b>
A. Concerns .....	8
B. Distinguishing Features .....	9
C. Conclusion .....	10
<b>III. TREATMENT OF MAN-MADE [CONSTRUCTED] WATER CONVEYANCES AND STORAGE FACILITIES .....</b>	<b>10</b>
A. Concerns .....	10
B. Treatment of Ditches and Canals .....	10
C. The Talent Irrigation Decision .....	12
D. Conclusions .....	13
<b>IV. SUITABILITY OF CURRENT USE ATTAINABILITY ANALYSIS .....</b>	<b>13</b>
A. Concerns .....	13
B. Existing Situation .....	14
1. UAA Process .....	14
2. Colorado’s Implementation of the Process .....	14
3. EPA’s Role .....	15
C. Potential Modifications .....	15
<b>V. ADEQUACY OF THE CURRENT USE CLASSIFICATION SYSTEM .....</b>	<b>16</b>
A. Aquatic Life Classifications .....	16
1. Concerns .....	16
2. Current Situation and Potential Modifications .....	18
3. Potential Modifications .....	19
4. Strawman .....	20

## CONTENTS

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B. Agriculture .....	22
C. Recreation .....	22
D. Water Supply .....	25
E. Wetlands .....	25
<b>VI. RECOGNITION OF NET ENVIRONMENTAL BENEFIT .....</b>	<b>25</b>
A. Overview .....	25
B. What waters should this concept be applied to? .....	26
C. What criteria are appropriate for demonstrating a “net environmental benefit?” .....	26
D. If a “net environmental benefit” is demonstrated, what standards should apply? .....	27
<b>VII. CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>27</b>
A. Statutory Modifications .....	28
B. Regulatory Modifications .....	28
1. Recreation Classification .....	28
2. Agricultural Classifications .....	28
3. Water Supply Classifications .....	28
4. Wetlands Classifications .....	28
5. Aquatic Life Classifications .....	28
6. Use Attainability Analysis .....	28
7. Treatment of Constructed Conveyances .....	29
8. Net Environmental Benefit .....	29
<b>VIII. APPENDICES .....</b>	<b>30</b>
A. Water Quality Control Division’s Response to Public Comments .....	30
B. Arid West Water Quality Research Project (AWWQRP) Overview Brochures .....	30
C. Meeting Agendas and Summaries .....	30
D. “Proposed Aquatic Life Classification System and Potential Regulatory Implications” and Stakeholder Comments .....	31
E. Arid West “Habitat Characterization Study” Symposium .....	31
F. Arid West “Extant Criteria Evaluation Study” Symposium .....	31
G. Stakeholder Comments on Section 309 Study Draft Report .....	32
H. AWWQRP Reports [available at <a href="http://www.co.pima.az.us/www/wqrp">http://www.co.pima.az.us/www/wqrp</a> ] .....	32
I. Discussion Paper Addressing Water Quality Standards Issues Regarding Effluent Dependent and Effluent Dominated Waters [does not include the Appendices which are available upon request] .....	32

## EXECUTIVE SUMMARY

The Water Quality Control Division (Division), with substantial assistance from stakeholder interests, has completed its review of the state standards-setting and classification process, as mandated by C.R.S. § 25-8-309, with a focus upon whether regulatory or policy changes are warranted so as to better accommodate the unique attributes of Colorado waterbodies. The study took into account the results of the Arid West Water Quality Research Project, with specific reference to its Habitat Characterization Study and Extant Criteria Evaluation Study. In fact, the Division held separate symposiums upon each study report. Presentations from the study consultants and other experts in the field were a critical part of these meetings.

In addition, the Division sponsored an extensive series of stakeholder meetings attended by representatives of municipal, industrial, environmental and agricultural interests. The meetings were devoted to discussions and presentations upon each of the study topics identified in House Bill 02-1344 and set forth below:

- a. The physical, chemical, flow, and habitat characteristics associated with waterbodies, including the ephemeral or effluent dependent nature of many waterbodies;
- b. The potential need for refined designated uses and additional site-specific standards;
- c. The benefit of maintaining the functions of constructed water conveyance and storage facilities;
- d. The nature of the current use attainability analysis process and any necessary adjustments thereto; and
- e. The benefits associated with maintaining downstream ecosystems that are dependent, at least in part, upon the continuation of effluent discharges.

The study process identified a wide variety of distinguishing features of Colorado waterbodies, with particular focus upon natural and man-induced variations in the flow regimes, variabilities in habitat and biological diversity, and the impact of effluent returns on otherwise water short stream systems. However, it was acknowledged by many that the current state regulatory system is already designed in such a manner so as to allow for the accommodation of these attributes in the context of establishing classifications and standards.

The study work group members also recognized that Colorado water quality laws contain a number of provisions which ensure that the exercise of water rights and the operation of facilities associated with such rights is not unduly constrained. Further, there was little expressed dissatisfaction with the state use attainability analysis (UAA) process, with the exception of the need to perform a UAA in order to avoid application of the recreation class 1 “default” standards.

A significant amount of discussion surrounded the identification of potential “refined designated uses” under the state use classification system. Currently, with reference to aquatic life use classifications, the state employs only class 1 and class 2 warm and cold categories. Interest was expressed in adopting additional aquatic life use classifications so as to more accurately describe the actual use of stream systems and establish appropriate accompanying water quality standards. This was especially true in the case of effluent dependent or effluent dominated waterbodies or those that have experienced significant hydrologic modifications. Such a change in the classification system may also assist in avoiding needless “impairment” listings under the total maximum daily load (TMDL) program. No agreement was reached, however, concerning the appropriate final form of any such sub-classifications or their accompanying water quality standards.

Finally, the work group examined the various issues associated with the net environmental benefit concept, i.e., a potential relaxation of standards/effluent limitations on point sources discharging to water short stream systems in order to encourage the continued “beneficial” discharge of the ecosystem sustaining flows. Though there is merit to the use of this concept in arid environments, time did not allow the development of a final policy thereon.

Each of the various study topics are described in greater detail herein. Stakeholder comments and draft proposals, as well as summaries of the Arid West Water Quality Research Project work can be found in the appendices. Particular attention is called to Appendix A, the Division’s response to certain comments on the draft of this report.

This study initiative did not result in any recommended changes to state statutes. Further, the Division is recommending very few changes to state regulations or policies, with the notable exception of the instigation of a “pilot program” to explore refined designated aquatic life use categories. In addition, it is suggested that the Water Quality Control Commission (Commission) be afforded the opportunity to consider modifications to the recreation classifications, and that the Division continue its work with stakeholders to develop, by October of 2004, a state policy upon the potential use of the net environmental benefit concept.

The recreation classification modifications have already been brought before the Commission at the Issues Scoping Hearing for the Basic Standards Rulemaking Hearing in July of 2005. Regarding the net environmental benefit policy recommendation, if the interest is there, it could be developed over this next year and brought before the Commission at the same 2005 hearing. As to the pilot project recommendation, the triennial reviews of Colorado’s major river basins would provide ample opportunity to field test a variety of aquatic life classification modifications and bring them before the Commission at the Basic Standards Rulemaking Hearing in July of 2010.

## SECTION 309 STUDY FINAL REPORT

### I. BACKGROUND

#### A. Section 309 Study

House Bill 02-1344 contained a provision creating Section 25-8-309 of the Colorado Water Quality Control Act. The essence of Section 309 is a directive to the Division that it conduct a study to determine the need for, and nature of, any modifications to the state use classification and standard-setting process in view of the “unique attributes” (distinguishing features) of Colorado’s waterbodies.

The text of Section 309 follows:

25-8-309 Study of classification and standard issues. (1) The division shall undertake a study to examine whether the state water quality control program standard-setting and classification process established under this article should be modified to reasonably accommodate the unique attributes of Colorado’s waterbodies. As part of such study, the division shall review and consider the results of the arid west water quality research project. In completing such study, the division shall take into account the following:

(f) The physical, chemical, flow, and habitat characteristics associated with waterbodies, including the ephemeral or effluent dependent nature of many waterbodies;

(g) The potential need for refined designated uses and additional site-specific standards;

(h) The benefit of maintaining the functions of constructed water conveyance and storage facilities;

(i) The nature of the current use attainability analysis process and any necessary adjustments thereto; and

(j) The benefits associated with maintaining downstream ecosystems that are dependent, at least in part, upon the continuation of effluent discharges.

(2) On or before December 1, 2003, the division shall prepare and submit to the general assembly a report that identifies its findings upon the topics identified in subsection (1) of this section and makes any recommendations for changes in state law, rules, or policy that it believes may be necessary to implement any modifications that the study determines are needed.

(3) The division shall inform and seek input from the commission at least once every six months on the study efforts. The study process shall be open to the public, with participation and comment to be solicited from all interested parties.

## **B. Arid West Water Quality Research Project (AWWQRP) and Associated Efforts**

### **1. Background**

The Arid West Water Quality Research Project emanated from discussions in the early 1990's by Western dischargers who had concerns over several issues:

- National water quality criteria are based on aquatic species and flow regimes not necessarily representative of western waters;
- The methods provided by EPA to modify national water quality criteria are not readily applicable;
- Ephemeral and effluent dependent stream systems may warrant different treatment in the classification and standard setting process.

These concerns led to efforts, primarily by the Western Coalition of Arid States (WESTCAS) to initiate a project which would evaluate the need for the development of standards and criteria applicable to the arid West, similar to regional programs established for the Great Lakes and coastal marine waters. (See Appendix B1)

In 1995, Congress appropriated funds for the creation of the AWWQRP which was implemented under an agreement between EPA and Pima County, Arizona. The project was designed to examine water quality criteria in the arid and semiarid West and, where appropriate, suggest alternatives for regulating water quality in these areas.

### **2. Definitions**

To develop a common understanding of some of the terms widely used in arid West water quality discussions among Western states, the Western States Water Council, which serves as a forum for discussing arid west issues, developed the following definitions:

- **Ephemeral Stream:**  
A stream channel that carries flow only during, and for a short duration as the result of, precipitation events, and that has a channel bottom which is always above the groundwater table. Example: a dry wash that only flows with water after a storm or for a limited time following snow melt.
- **Intermittent Stream:**  
A stream whose channel bottom is alternately above and below the groundwater table for different portions of the year. An intermittent stream does not maintain a perennial surface flow, although permanent pools of standing water may be present at points along the stream. Example: a stream that generally carries flow for the spring and summer months, but is mostly dry during portions of the fall and winter.



- **Effluent Dominated Stream:**  
A stream that would be intermittent or perennial without the presence of wastewater effluent, whose flow for the majority of the year is primarily attributable to the discharge of treated wastewater. Example: a stream that more than doubles its flow where treated wastewater is discharged.
- **Effluent Dependent Stream:**  
A stream that would be ephemeral without the presence of wastewater effluent, but which has continuous or periodic flows for all or a portion of its reach as the result of the discharge of treated wastewater. Example: a stream flow created and maintained by the discharge of water from an oil and gas operation.
- **Manmade [Constructed] Water Conveyance:**  
A water transport system constructed for the purpose of transporting water for agricultural purposes or municipal and industrial water supply purposes in a waterway that is not and never was a natural waterway. Example: an irrigation canal.

These definitions are useful in the context of understanding the Section 309 study issues.

### 3. AWWQRP Products

The emphasis of the AWWQRP was on developing a basis for refining water quality criteria that would balance the level of protection required to support aquatic life beneficial uses with natural and man-made habitat limitations commonly found in ephemeral and effluent dependent stream ecosystems. Two reports were generated by AWWQRP:

- Habitat Characterization Study; and
- Extant Criteria Evaluation Study.

### 4. Habitat Characterization Study

This study conducted a review of the characteristics of aquatic and riparian habitats at ten sites throughout the arid West where treated effluents were being discharged into normally dry streambeds or streams that had minimal flow during part of the year in the absence of effluent discharge, i.e., ephemeral or intermittent streams. The physical, chemical and biological characteristics of these habitats were documented upstream and downstream of the discharge points. Two of the study sites were in Colorado; Fountain Creek downstream of Colorado Springs and the South Platte River downstream of Denver. (See Appendices B-2 and H-1)

### 5. Extant Criteria Evaluation Study

Because federal Ambient Water Quality Criteria (AWQC) are developed on a national basis, one major difficulty in applying AWQC to waterbodies in the arid West is that they are derived from toxicity tests using aquatic species that may not be representative of indigenous aquatic biota. In addition, the physical and chemical characteristics of waterbodies in the arid West can differ from those in regions with more water. For example, water in some areas of the arid and

semiarid West can contain elevated concentrations of cations (e.g., calcium, magnesium) and anions (e.g., sulfates, nitrates). To evaluate AWQC for their effectiveness in the West, four constituents were modeled in the reference streams; copper, selenium, diazinon, and ammonia. (See Appendices B-3 and H-2)

The Colorado Section 309 study, as part of the Advisory Group effort, conducted a “symposium” on each study (in February and May 2003) so the stakeholder group could present their perspectives as to what elements of the AWWQRP study held merit for Colorado. (See Appendices E and F)

## **6. Conclusions**

Key conclusions drawn from the AWWQRP Reports, and relevant to Colorado, are the following:

- A “one size fits all” approach to water quality, as reflected in EPA’s national standards, may not provide the most accurate level of protection for aquatic life in the arid West;
- The focal point for individual state assessment would be their aquatic life use classifications to determine if they accurately reflect the expected conditions of that state;
- For effluent-dominated or ephemeral streams, a modification of standards might be appropriate if the value of maintaining the flow of treated effluent (versus the loss of flow) was considered an environmental benefit.

## **C. Section 309 Advisory Group**

Section 309 called for public input. To accomplish this, an Advisory Group was formed to assist the Division. The stakeholders were drawn from a broad range of constituencies; environmental groups, local and state agencies, and the regulated community. Meetings were open to all interested parties. Approximately thirty to forty stakeholders regularly attended the Advisory Group meetings. Participants are identified in the individual meeting summaries. (See Appendix C)

The schedule of Advisory Group meetings and associated topics follows:

Section 309 Study Advisory Group Meeting Schedule	
Date	Topic
July 2002	Section 309 Study Kickoff/Discussion
September	1. Arid West Water Quality Research Project (AWWQRP) presentation/discussion 2. Need to refine non-aquatic life use classifications
October	1. Unique waters presentation/discussion 2. Agriculture, recreation, water supply classifications (cont.)
November	1. Use Attainability Analysis process 2. Review of Arid West Symposium preliminary programs
January 2003	“Conceptual model report” for aquatic life use classification system
February	Arid West “Habitat Characterization” Study Symposium
March	1. “Conceptual model” for aquatic life use classification system 2. Other considerations: Benefit of maintaining the functions of constructed water conveyance and storage facilities
April	1. Other considerations (cont.): Maintaining downstream ecosystems that are effluent dependent 2. Discussion of “net ecological/environmental benefit” concept
May	1. Review of other state approaches 2. Overview and discussion of the remainder of the Section 309 Study process
June	Additional discussion of aquatic life use classification system
July	Arid West “Extant Criteria Evaluation” Study Symposium
August	Final Advisory Committee input on all topics
September 25	Draft Section 309 Study Report
October	Comment and discussion regarding draft Section 309 Study Report
December 1	Final Section 309 Study Report submitted to Legislature

## D. Aquatic Life Work Group

### 1. Background

Early in the planning stages of the Section 309 advisory process, it became apparent that the principal focus of the discussions surrounding refined designated uses would be on the current aquatic life use classification system. Because these discussions would be very technical in nature, it was decided to seek the help of the existing Aquatic Life Work Group. This work group is one of many that are associated with the Colorado Water Quality Forum. It has been dealing with the aquatic life assessment and monitoring issues for a number of years. To assist the Section 309 efforts, the work plan of the Aquatic Life Work Group was refocused so that its products would meet the timing requirements of the Section 309 schedule. The work group was tasked with developing a conceptual model and scientific approach for bio-assessment-based criteria that could become the basis for establishing refined aquatic life classifications and for assessing whether those classified uses have been attained.

Participation on the work group was open to anyone who was interested. A broad range of constituencies, including environmental groups, local and state agencies,

and the regulated community were represented on the group. The Division chaired the group which met on a monthly basis and engaged in lively and balanced discussions about how to classify and protect the aquatic life in surface waters given the current regulatory and political landscape in Colorado.

The group received considerable input, and based on this, delivered a set of possible conceptual models to the Section 309 Advisory Group in a report that was prepared jointly by the Division and the Aquatic Life Work Group entitled *An Examination of the Need To Revise the State of Colorado's Aquatic Life Classification System to Address Section 309 of the Water Quality Control Act - Preliminary Draft Report – January, 2003*. This report examined the current system for aquatic life classifications and grouped the many possible options for change into four different approaches to potential revisions.

## **2. Conclusions**

At this point in the Section 309 advisory study process, the Division developed a recommended conceptual approach for revising the aquatic life classification system based on the four options developed by the Aquatic Life Work Group. The recommendation is described in the report entitled *Proposed Aquatic Life Classification System and Potential Regulatory Implications – March 10, 2003*. This report, referred to as the “strawman,” was presented to the Section 309 Advisory Group for its review and comment. The strawman presents a detailed matrix for new categories of a revised aquatic life classification system and explores the possible regulatory/standards implications of using these new categories.

The Division provided additional oral feedback to work group members who submitted comments on the strawman. As noted below, the strawman represents a departure point for additional discussions and may be modified as the refined designated use discussion progresses. It is not the basis for any proposed regulatory modifications. The Aquatic Life Work Group has returned to its original task of developing methods for biological assessment, with a priority to develop the methods for establishing the “expected condition” for aquatic life in streams. This is a critical component which must be further explored before any potential modifications to the use classification system can be adopted.

## **II. UNIQUE ATTRIBUTES OF COLORADO'S WATERBODIES**

### **A. Concerns**

Colorado's waterbodies have distinguishing natural features that may not be adequately reflected in the use classification system. To facilitate the Advisory Group's discussion on “unique attributes of Colorado waterbodies,” a focus question was proposed for discussion:



“What distinguishing features of Colorado’s waters need to be taken into account when considering whether to modify the current classifications and standard system?”

## **B. Distinguishing Features**

The Advisory Group identified the following distinguishing features (See Appendix C-4), which the Division has organized into groups:

Geography/Geology-related:

- Headwaters state;
- Unique geological features, i.e., marine shale (naturally elevated in selenium).

Water Quality-related:

- Different chemical composition of streams, specifically hardness, alkalinity and total dissolved solids (TDS);
- Regional temperature differences;
- Naturally occurring nutrients, i.e., natural background levels typically elevated over eastern streams (e.g., selenium from surficial soils/rocks).

Flow-related:

- Large seasonal variations in flow (man-made and naturally occurring);
- Variations in flow based on location and precipitation (man-made and naturally occurring);
- Different source waters, i.e. snow melt versus spring fed;
- Non-native flow from transbasin and non-tributary waters;
- Difference between free flowing streams and regulated streams;
- Bank storage dependent streams;
- Ephemeral/intermittent streams;
- Hydrologic modifications:
  - o Diversions
  - o Augmentations
  - o Dams

Biology-related:

- Significant variations in aquatic and riparian habitat, i.e., by season and location;
- Variability in biological diversity;
- Receiving streams that can be toxic to aquatic life per whole effluent toxicity (WET) testing criteria because of elevated TDS levels.

Anthropogenic-related:

- Effluent dominated or dependent waters;
- Irrigation runoff dependent streams in addition to effluent dependent streams.

Event-related:

- Drought/fire/flood are common.

The Advisory Group took those attributes into account in its discussion of the remaining issues surrounding appropriate use classifications and standards. However, it should be noted that at least one stakeholder was of the opinion that the identified attributes are, in fact, not unique, at least in comparison to conditions found across the arid West. Hence, they arguably are not a legitimate basis for at least certain potential changes in the use classifications system.

### **C. Conclusion**

Because of Colorado being an arid, geologically diverse, headwaters state, physical, chemical, biological and flow conditions are highly variable, such that national-level approaches may need to be modified.

## **III. TREATMENT OF MAN-MADE [CONSTRUCTED] WATER CONVEYANCES AND STORAGE FACILITIES**

### **A. Concerns**

Section 309 of the Colorado Water Quality Control Act, C.R.S. § 25-8-309, indicates that the Division, in its study of the state water quality control program standard-setting and classification process, is to take into account “the benefit of maintaining the functions of constructed water conveyance and storage facilities.” In other words, there was a desire to examine how the current classification and standards system either promotes or interferes with the beneficial uses for which these structures were built, i.e., the delivery and storage of water to meet agricultural, domestic, industrial or piscatorial water supply demands. In particular, it is the understanding of the Division that this directive was intended to address two specific topics: (1) the propriety of the treatment of constructed water conveyance and storage facilities under the current Colorado classification and standards system, with specific reference to the need for any adjustments thereto so as to ensure the continued viability of such structures for their originally intended purpose; and (2) the potential impact, in Colorado, of the Ninth Circuit decision in *Oregon Natural Resources Council v. Talent Irrigation District*, 243 F3d 526 (9th Cir. 2001). The Ninth Circuit’s decision stands for the proposition that a point source discharge permit is arguably necessary prior to the application of herbicides or other chemicals to ditches or canals for weed control purposes or even the application of water treatment chemicals, such as copper sulfate, to water storage vessels prior to conveyance of the water to municipal or industrial intakes. Each of these topics is briefly discussed, in turn, below. (Also see Appendix C-8)

### **B. Treatment of Ditches and Canals**

The Division acknowledges the benefits which accompany the construction and operation of constructed water conveyances, including an enhanced ability to supply water for those beneficial uses identified above. In addition, such facilities may be instrumental in the maintenance of base flow regimes and may provide those additional flows necessary to support robust fisheries as, for example, may occur below reservoir outlets. At other times, such conveyances may deplete stream flows.

Colorado's definition of "state waters" is very broad and encompasses "any and all surface and subsurface waters which are contained in or flow in or through this state, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed." C.R.S. § 25-8-103(19). Discharges of pollutants from point sources into state waters are prohibited without first obtaining a permit from the Division. C.R.S. § 25-8-501. Though the potential reach of state regulation is therefore quite extensive, Colorado has had a long-standing policy of protecting state water rights and water supply facilities. In particular, C.R.S. § 25-8-104(1) provides, in part, that:

"No provision of this article shall be interpreted so as to supercede, abrogate, or impair rights to divert water and apply water to beneficial uses ..." nor "shall [it] be construed, enforced, or applied so as to cause result in material injury to water rights."

Paragraph (2) of this same statutory section prohibits any Commission or Division mandated instream flow levels and requires consultation with the State Engineers Office and Colorado Water Conservation Board where Division or Commission decisions or rules may potentially injure water rights.

...

With specific reference to the classification of waters found in ditches and canals, C.R.S. § 25-8-203(2)(f) states:

...Waters in ditches and other man-made conveyance structures **shall not be classified, and water quality standards shall not be applied** to them but may be utilized for purposes of discharge permits. (emphasis added)

In view of the aforementioned broad definition of state waters and given the mention of ditches and other man-made conveyance structures in the above referenced use classification provision, water in ditches and canals arguably qualifies as "state waters" in the state regulatory scheme. An early opinion of the state Attorney General's Office found this to be the case. However, the regulatory provisions applicable thereto are closely circumscribed. Cf: C.R.S. § 25-8-501(1) ("no person shall discharge into a ditch or man-made conveyance for the purpose of evading the requirement to obtain a permit under this article.") As referenced in C.R.S. § 25-8-503(6), discharges into ditches or other such structures are subject to those permit limits found necessary to protect the agricultural, municipal or industrial uses of entities who have a pre-existing right to the use of the ditch water.

With specific reference to agricultural practices, C.R.S. § 25-8-205(5) addresses the nature of agricultural nonpoint source controls to the extent such may impact water rights, and also speaks of the need for the agricultural community to be involved in the total maximum daily load (TMDL) process. These provisions do not directly impact the use or treatment of water conveyance facilities.

Finally, the state Act also states that:

Activities such as **diversion, carriage, and exchange of water** from or into streams, lakes, reservoirs, or conveyance structures, or storage of water in or the release of water from lakes, reservoirs, or conveyance structures, in the exercise of water rights **shall not be considered to be point source discharges of pollution under this article**. Water quality standards may apply to discharges from such activities only if the Commission has adopted appropriate control regulations pursuant to section 25-8-205. Nothing in this article shall supercede the provisions of Articles 80 to 93 of title 37, C.R.S. (emphasis added)

C.R.S. § 25-8-503(5). Thus, the discharge of waters from conveyance structures to natural waterbodies is not to be treated as a point source discharge for permitting purposes under state law unless the Commission specifically adopts control regulations governing such structures.

### C. The Talent Irrigation Decision

In *Oregon Natural Resources Council v. Talent Irrigation District*, 243 F3d 526 (9<sup>th</sup> Cir 2001), the court ruled that the discharge of a herbicide into a canal for weed control purposes constituted a point source discharge of pollutants for which a permit would be required. The court felt that this result was warranted even if the product was applied for a beneficial purpose (weed control) and in full compliance with label directions as required by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). The Court was of the belief that the residual left in the canal after the application qualified as a waste product.

Though not the law of all circuits, the *Talent* decision has raised concerns in the agricultural and pesticide/insecticide control communities. For example, under the *Talent* reasoning, even pesticide application for mosquito control purposes in furtherance of public health would require a discharge permit. See: *League of Wilderness Defenders v. Forsgren*, 309 F. 3d 1181 (9<sup>th</sup> Cir. 2002) (aerial spraying of pesticides in National Forest requires NPDES permit).

In response to *Talent*, in May 2001, EPA headquarters issued a clarifying memorandum. The memo reinforced EPA's commitment to what is known as the "irrigation return flow exemption" under the Federal Clean Water Act. See e.g. 33 U.S.C. § 1342 (1). In other words, irrigation return flow is not subject to point source permit requirements. However, in the *Talent* case, the point source was the applicator which introduced the chemical to the ditch, not the ditch discharge to the river. Therefore, the clarification was of minimal assistance in resolving the underlying dispute. However, on July 11, 2003, EPA issued a further "interim clarification memorandum" of benefit to states outside the Ninth Circuit in which it indicated that NPDES permits would not be required for the application of pesticides if such chemicals were applied in a manner consistent with all relevant requirements of FIFRA. Time will tell whether the "interim" statement of position becomes final and



how the memo will be interpreted if the chemicals in use have not gone through the FIFRA approval process.

#### **D. Conclusions**

Though the water in ditches and other conveyance structures may be considered “state waters,” use classifications and water quality standards do not generally apply to these structures. Nevertheless, traditional beneficial uses of the ditch water are protected from point source discharges to the ditch. In addition, although discharges arising in the context of the conveyance of water rights through such facilities are not in and of themselves regulated point sources, the Commission can adopt control regulations treating them as such if individual circumstances so warrant.<sup>1</sup>

During the Section 309 study stakeholder meeting process, there were very few concerns expressed regarding the current statutory/regulatory scheme as it relates to conveyance structures and the benefits associated therewith. No concrete proposals for change were offered for consideration. Consistent with the tenor of these discussions, the Division does not see, at this time, any need for statutory modifications or any alteration in its treatment of ditches and canals in the context of the standards and classifications system.

Furthermore, at the current time, the Division does not require point source discharge permits for the application of beneficial treatment chemicals to ditches and reservoirs. It is assumed that these applications will be made in a manner consistent with label directions under FIFRA. Nothing has been raised in the context of the Section 309 study to the contrary and the new EPA interim interpretive memo would counsel in favor of maintaining the status quo. Hence, no statutory modifications are being proposed.

The Division recognizes the importance of maintaining water conveyance and storage structures and does not intend to interpret its statutory and regulatory mandates in such a manner so as to unnecessarily impede their operation. Nevertheless, the Division will fulfill its statutory responsibilities as referenced above, and to the extent a Section 404 permit or other federal approval is required in the context of facility repair, replacement or construction, the state will meet its Section 401 certification responsibilities.

### **IV. SUITABILITY OF CURRENT USE ATTAINABILITY ANALYSIS**

#### **A. Concerns**

In the recent past, concerns have been raised that the processes for making modifications to a waterbody’s use classification or numeric standards is too difficult and costly. When coupled with the perception that the standards and classification

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<sup>1</sup> Relative to water storage facilities, i.e. reservoirs, these are treated as “state” waters and hence subject to the same regulatory scheme as is applied to natural streams and lakes. However, as discussed elsewhere herein, consideration is being given to the potential adoption of “refined designated uses” for such man-made waterbodies.

system does not adequately represent the natural and water management attributes of Colorado waterbodies, the concern was that the system could become over protective and burdensome and create un-necessary costs for dischargers. On top of that, EPA's role is often times viewed as unclear.

The processes by which uses can be downgraded depend on the performance of a Use Attainability Analysis (UAA). A UAA is defined in Regulation 31, [\*Basic Standards and Methodologies for Surface Water\*](#), as "an assessment of the factors affecting the attainment of aquatic life uses or other beneficial uses, which may include physical, chemical, biological, and economic factors." 5 C.C.R. § 1002-31, § 31.5 (30). In many states, the UAA process is difficult and costly. Stakeholders have also emphasized the need for EPA and the state to be actively involved early on in the UAA process so as to avoid unproductive last minute disputes over the propriety of either the UAA study design or the UAA results.

Section 309 of the Colorado Water Quality Control Act, C.R.S. § 25-8-309, indicates that the Division, in its study of the state water quality control program standard-setting and classification process, is to take into account "the suitability of the current use attainability process." The Division has developed a document entitled *The Nature of the Current Use Attainability Analysis Process*. (See Appendix C-5) The following section summarizes information found in that report.

## **B. Existing Situation**

### **1. UAA Process**

In Colorado, a UAA is required in order to justify the omission of an aquatic life class 1 or 2 classification or a recreation class 1 classification 31.6(3)(a)(iii). A UAA is also one of the methods that can be used to support adoption of a site-specific criteria-based standard that differs from the table value standard. § 31.7(1)(b)(iii)

For aquatic life UAAs, Colorado has relied upon federal regulation and guidance when performing or participating in UAA development. For instance, the [\*EPA Water Quality Standards Handbook\*](#), Section 2.9, provides guidance on techniques for the evaluation of fish, aquatic life, and wildlife uses. EPA Region 8 also prepared guidance for Use Attainability Analyses for Aquatic Life Uses to respond to a number of policy and technical questions commonly associated with UAAs.

For recreational UAAs, Colorado has developed its own guidance in a work group process. This "Recreational Use Classification Guidance" is designed as a framework to provide a documented methodology and promote statewide consistency in the assessment of recreational uses.

### **2. Colorado's Implementation of the Process**

Colorado has implemented the legal and regulatory framework in a variety of ways, depending upon the attributes of the waterbody segment that is under

consideration. Documents that are formally entitled “UAA” have been completed in only a limited number of circumstances where fishable/swimmable uses or table value standards have not been assigned. UAAs to support a recreation class 2 uses are on file for fifty-seven segments around the state. EPA has approved standards and classification for all but five instances. In addition, UAAs to support a lack of aquatic life use or to support adoption of a subset of aquatic life use are on file for eleven segments. EPA has accepted all of these.

There are other instances where the Clean Water Act Section 101(a)(2) uses (fishable and swimmable) are lacking or where site-specific standards have been adopted for which no formal UAA was prepared. The evidence that supports the Commission’s adoption of these classifications and standards is documented in rulemaking hearing records and correspondence with EPA. In most instances, such documentation has been accepted by EPA, and such decisions by the Commission have not been disapproved.

In general, the practice has been to produce UAAs or UAA equivalents that are detailed enough to answer the basic question: “What use, or subcategory of use is attainable at the site, and what standards are necessary to protect that use?”

### **3. EPA’s Role**

EPA has an oversight and approval role when it comes to water quality standards. The Clean Water Act requires that states submit their water quality standards to EPA for review and approval (§ 303 (c)). If EPA finds that the state’s standards are not adequate, the standards do not become effective. Contrary to reports from other states and regions, in Colorado, EPA has been an active participant in UAA development and particularly in Colorado’s effort to develop recreational classification guidance. It has been particularly helpful to all proponents of a UAA-based standards or classification change to have EPA and other stakeholders actively engaged in the planning stage of the UAA. Often when stakeholders are not involved until late in the process, the opportunity to address their concerns has already passed. This practice of involving EPA early in the UAA process has avoided many problems that seem to have arisen in other states.

### **C. Potential Modifications**

As a part of the Section 309 Study Advisory Group process, the Division developed a document entitled *The Nature of the Current Use Attainability Analysis Process*. During the meetings when this report was presented and discussed, the following themes were raised:

- The current Colorado system is flexible and provides a balance. Other states do not have our flexibility.
- The process is not impossible, but it is also not simple. It is difficult and can be expensive.
- Changing the use or standards to provide less protection should be difficult.
- Categorical UAAs for classes of waters could make matching the levels of protection to the actual attainable use more efficient.

- Net environmental benefit should be considered as part of the UAA process to support changing classification and site-specific standards.

In addition, a concern has been expressed over the propriety of applying a recreation class 1 classification as a “default” condition in the absence of a UAA supporting a contrary determination. However, this approach represents the outcome of a prior work group effort and any modification thereto would run a significant risk of EPA disapproval based upon its interpretation of federal requirements.

No concrete proposals for change, with the one exception noted above, were offered for consideration. The current system does not preclude categorical UAAs. Net environmental benefit considerations are addressed below.

## **V. ADEQUACY OF THE CURRENT USE CLASSIFICATION SYSTEM**

### **A. Aquatic Life Classifications**

#### **1. Concerns**

As mentioned earlier in this report, the Aquatic Life Work Group was tasked with examining the existing aquatic life classification system and developing a conceptual model or models for revising this system to establish improved classifications and to allow better assessment of aquatic life use attainment. The Aquatic Life Work Group started the process by revisiting the general concerns about the current aquatic life use classification system that it had already identified prior to the mandated Section 309 review. These concerns or needs were used as a starting point in work group discussions.

- Refine the definitions of class 1 and class 2 in the current system in order to clarify the categories and more accurately reflect existing or attainable conditions;
- Develop a better method and a uniform approach to determine whether a waterbody has attained its aquatic use classification;
- Address EPA’s request that states incorporate biocriteria into their standards and classifications.

At the outset of the Section 309 process, stakeholders at the Aquatic Life Work Group meetings expressed concerns similar to those noted above that ranged from a need to make only minor changes to the current classification system to a need or interest in making extensive modifications.

During the next stage of the discussions, when potential modifications were examined, it became apparent that much of the debate about classification systems or approaches was really a debate about the underlying needs and expectations of each stakeholder as they relate to aquatic life classifications. Because of this, it was necessary to develop a set of “guiding principles” that provided a framework for discussing aquatic life classifications. These principles clarified the stakeholders concerns and expectations about the intended purpose, regulatory requirements and results of any classification system. Having a generally agreed



upon set of principles facilitated the discussions and allowed the group to more readily explore specific models for revising the current system. These principles are listed below and a detailed explanation of each is provided. (See Appendix C-6)

- The aquatic life classification system will be consistent with the Colorado Water Quality Control Act and the Federal Clean Water Act.
- Aquatic life classifications will be based on biological, physical habitat, and water chemistry information.
- Aquatic life classifications will be descriptive in nature and minimize the influence of subjective factors.
- Aquatic life classifications will apply to all surface waters of the state as defined in Regulation Number 31.
- No impaired aquatic life classification will exist. However, classifications may have a modifier or sub-classification to reflect impacts to aquatic life due to natural or irreversible, human caused effects.
- Aquatic life classifications will be supplemented with sufficient descriptive information to accurately describe existing and expected aquatic life uses for each classification.
- Each aquatic life classification may or may not have specific regulatory or administrative implications.
- The number of aquatic life classifications will be practical and manageable within the existing regulatory framework.
- The legal exercise of water rights (i.e., changes in water levels or flows) that are of sufficient magnitude and/or duration to positively or negatively impact aquatic life may be identified by adding a modifier to the aquatic life classification or represented by a sub-classification.
- Segments that are dependent on effluent discharges that are of sufficient magnitude and/or duration to positively or negatively impact aquatic life may be identified by adding a modifier to the aquatic life classification or represented by a sub-classification [if required, based on Section 309 study].
- Any new aquatic life classification system will be as consistent as possible with the current segmentation approach used by the Commission.

Though it is not possible to determine if every party was totally satisfied with every principle as eventually enunciated, the principles reflect the outcome of an iterative process and were finalized only after extensive discussions with the stakeholders.

Two additional general concerns that capture the wide range of perspectives of the stakeholders emerged from these discussions. At one end of the spectrum were those who are basically comfortable with the current system and see it mostly as a means to set numeric criteria. At the other end were those who see a need to change the system so that in addition to setting numeric standards, the system should be able to describe the different aquatic life classes and provide a basis for

assessing use attainment, independent of the numeric standards. This set the stage for developing recommended models.

## **2. Current Situation and Potential Modifications**

Aquatic life classifications are described in Section 31.13, State Use Classifications of Regulation Number 31, *Basic Standards and Methodologies for Surface Water* (Table 1). Pursuant to section 31.13, waters are classified according to the uses for which they are presently suitable or intended to become suitable. In addition to the classifications, one or more of the qualifying designations described in section 31.13(2), may be appended. Classifications may be established for any state surface water, except that water in ditches and other manmade conveyance structures shall not be classified. The pertinent subsections of this section are provided below:

(1)(c) Aquatic Life. These surface waters presently support aquatic life uses as described below, or such uses may reasonably be expected in the future due to the suitability of present conditions, or the waters are intended to become suitable for uses as a goal.

(i) Class 1 – Cold Water Aquatic Life. These are waters that (1) currently are capable of sustaining a wide variety of cold water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Water shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species.

(ii) Class 1 – Warm Water Aquatic Life. These are waters that (1) currently are capable of sustaining a wide variety of warm water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Water shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species.

(iii) Class 2 – Cold and Warm Water Aquatic Life. These waters are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.

The table below provides a summary of the current classifications and associated numeric standards:

Existing Aquatic Life Classification System		
Classification <sup>1</sup>	Category	Numeric Standards <sup>2</sup>
Class 1	Cold	Table Value Standards (including trout numbers)
	Warm	Table Value Standards
Class 2	Cold	Table Value Standards; different values for some parameters
		pH and DO only
	Warm	Table Value Standards; different values for some parameters
		pH and DO only
Notes:		
<div><div>1.</div><div>The antidegradation Use Designation for Class 1 waters is typically “reviewable” and occasionally “outstanding waters”; the Use Designation for Class 2 waters is typically “use-protected waters” and occasionally “reviewable”.</div></div>		
<div><div>2.</div><div>See the Basic Standards for more detailed information on Table Value Standards associated with these aquatic life classifications.</div></div>		

### 3. Potential Modifications

The Division identified four conceptual models or options that could be considered for revising the aquatic life classification system used by the State of Colorado. These options were identified as a result of extensive consultation with stakeholders as part of the Aquatic Life Work Group meetings. These options represent the various positions of the stakeholders and range from no change in the classification system to a complete revision of the existing system. Information on each option is provided below.

#### **Option 1: No Change in Classification System**

The existing aquatic life classification system has sufficient flexibility to address the issues identified in Section 309 of the Act. The existing definitions provide sufficient clarity for the Commission to accurately assign and evaluate attainment of aquatic life uses.

#### **Option 2: No Change in Classification System**

##### Revise Definitions for Classifications

The existing aquatic life classification system has sufficient flexibility to address the issues identified in Section 309 of the Act. However, the existing definitions need to be revised since they are potentially confusing and may interfere with the ability of the Commission to accurately assign and evaluate attainment of aquatic life uses.

#### **Option 3: Minor Changes to Classification System**

##### Revise Definitions for Classifications

The existing aquatic life classification system is unable to address the issues identified in Section 309 of the Act. However, minor changes to the

classification system will be sufficient to correct these limitations. This may be addressed by simply adding a third classification to reflect ephemeral systems or an aquatic life other than fish category. Effluent dominated or effluent dependent systems can be addressed with site-specific criteria if justified and supported with sufficient data. In addition, the existing definitions need to be revised since they are potentially confusing and may interfere with the ability of the Commission to accurately assign and evaluate attainment of aquatic life uses.

#### **Option 4: Major Changes to Classification System**

##### **Revise Definitions for Classifications**

The existing aquatic life classification system is unable to address the issues identified in Section 309 of the Act and will require major changes to correct these limitations. This can be addressed by establishing a habitat and biologically based classification system that takes advantage of classifications, sub-classifications, and qualifiers. Multiple conceptual models have been proposed but all contain certain elements in common. In addition, the existing definitions need to be revised since they are potentially confusing and may interfere with the ability of the Commission to accurately assign and evaluate attainment and classification of aquatic life uses.

Based on the four possible options above, the Division prepared a report entitled *Proposed Aquatic Life Classification System and Potential Regulatory Implications – March 10, 2003* that contained a recommended option for revising the aquatic life use classification system. (See Appendix C-8) This recommended approach, also referred to as the “strawman” was offered in the interest of furthering the discussions and to obtain a more in depth understanding of the concerns and possible ways of dealing with these concerns. It is subject to future modification. The report describes the current process, presents a possible new approach for classifying aquatic life in surface waters and examines a new aspect of the discussion - the effect that modifying the current system would have on other subsequent regulatory processes such as setting numeric criteria, antidegradation designation, and WET testing requirements in permits. The following discussion repeats some of the essential information found in that report and tries to capture some of the key issues that were identified.

#### **4. Strawman**

The proposed draft aquatic life classification system centers on providing a set of refined use classification options. The goal is to identify categorical elements and group them into a logical and viable classification system; not to capture all of the potential site-specific elements that may exist. The proposal is based on a matrix of classification and sub-classification categories.

The principal function of this system is to better describe and categorize the nature of the aquatic life use and is intended to protect aquatic life uses in individual waterbody segments in Colorado. Compared to the current system, the



proposed system provides additional, more refined classification and sub-classification options. Because these new options are based more directly on identifying the biological conditions associated with each category, it is anticipated that these options will be more useful in defining and assessing attainment of the aquatic life use in individual waterbodies than those provided by the current system.

The strawman report provides several tables with explanations that describe the proposed aquatic life classification model. It also identifies areas of potential regulatory impact (numeric standards, antidegradation, WET testing) for each classification/sub-classification combination. The proposed aquatic life use classification system is based on a three-by-three matrix that provides nine principal use classifications. The horizontal axis lists three broad categories of aquatic life: Cold Water Aquatic Life (such as trout); Warm Water Aquatic Life (such as bass, suckers and minnows); and Transition Zone Aquatic Life (where a combination of cold water and warm water species are present). While these categories often will correspond to certain ecological zones or land elevations, the intent is that individual water segments would be categorized along this axis based on which types of aquatic life are present or expected for the particular water segment. The vertical axis of the matrix differentiates distinct flow and habitat conditions that correlate with different types of aquatic life being present: lakes and reservoirs; streams with adequate flow to support fish; and streams without adequate flow to support fish, but which support other aquatic life. In addition to these principal classification categories, the vertical axis of the matrix includes several potential sub-classifications (which result in a three-by-eight matrix). “Effluent Dependent” and “Effluent Dominated” sub-classifications are proposed.

In addition to these sub-classifications based on the presence of wastewater effluent discharges, each of the three principal classification categories on the vertical axis provides a potential sub-classification based on “Significant Hydrology or Habitat Modifications”. This sub-classification is intended to apply where irreversible human impacts (potentially including the exercise of water rights, stormwater flows from urban areas, and agricultural or other return flows from the use of water rights) are significant enough that the resulting expected conditions differ from those associated with the principal classification category. In this way, the proposed classification system provides a mechanism to identify segments with natural -- and minimally influenced -- flow regimes and segments with modified flow regimes. The following table shows the overall matrix of classification categories.

The strawman was successful in eliciting from stakeholders a much larger list of specific concerns and issues about the strawman itself and about modifications to the current system in general. A more thorough discussion of some of these concerns can be found in Appendices C-11 and D-1 through D-12 to this report, with a focus upon antidegradation and WET testing impacts. These concerns will

be addressed in continuing efforts to develop a better aquatic life classification system. The Division has recommended that rather than bring the strawman model forward as a rulemaking proposal to be adopted in the Basic Standards, that the concept be further evaluated and refined. This would happen through testing the concept with pilot projects to be conducted by proponents on selected segments during the next round of basin triennial reviews, and through the continued work of the Aquatic Life Work Group, as they provide the technical foundation for determining expected conditions and assessment methods for aquatic life. The Division acknowledges the need to further explore the nature and extent of any modifications to numeric criteria that would accompany the sub-classifications. This would include an assessment of whether stream reaches containing threatened or endangered species, which are adequately protected under the current regulatory regime, are in need of any modified classification/standards approach.

Many of the identified specific remaining issues, such as those most recently identified by the Colorado Water Congress special committee (see Appendix D-12), would be addressed either in the course of finalizing a guidance document, i.e., a strawman-like matrix, that would accompany the minor regulatory changes to be proposed by the Division as part of the July, 2005 Basic Standards hearing, or in the context of further proposed modifications to the use classifications/standards system as part of the Commission's 2010 Basic Standards hearing, i.e., after experience with the pilot projects. It is not the intention of the Division that existing regulatory principles or approaches to use classifications and accompanying standards, including antidegradation designations, temporary modifications, seasonal uses/standards and site specific standards be set aside or modified as this exploration of a refined approach proceeds forward, except as may be allowed, to the benefit of volunteer participants, under the pilot studies.

## **B. Agriculture**

Colorado's agriculture use classification states:

"These surface waters are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock."

The standards include selected physical, inorganic and metal parameters. The adequacy of the standards was reviewed from the viewpoint of worker safety, crop irrigation, livestock watering, soil quality, agricultural reservoirs and ditches, and irrigation equipment. In addition, various Irrigation Guidelines and Livestock Guidelines were reviewed. No recommendations for change were made by the Advisory Group or Colorado State University. (See Appendices C-4 and C-5)

## **C. Recreation**

Current framework:

Colorado's recreation classification is divided into primary and secondary recreation. The primary contact recreation classification is further divided into

two sub-categories: “class 1a” for waters with existing primary contact uses and “class 1b” for potential primary contact uses. Class 2 is secondary contact. The Basic Standards, at 31.13, states:

(a) Recreation

(i) Class 1 - Primary Contact

These surface waters are suitable or intended to become suitable for recreational activities in or on the water when the ingestion of small quantities of water is likely to occur. Such waters include but are not limited to those used for swimming, rafting, kayaking, tubing, windsurfing and water-skiing. Waters shall be presumed to be suitable for Class 1 uses and shall be assigned a class 1a or class 1b classification unless a use attainability analysis demonstrates that there is not a reasonable potential for primary contact uses to occur in the water segment(s) in question within the next 20-year period.

(1) Class 1a - Existing Primary Contact: Class 1a waters are those in which primary contact uses have been documented or are presumed to be present. Waters for which no use attainability analysis has been performed demonstrating that a recreation class 2 classification is appropriate shall be assigned a class 1a classification, unless a reasonable level of inquiry has failed to identify any existing class 1 uses of the water segment.

(2) Class 1b - Potential Primary Contact: This classification shall be assigned to water segments for which no use attainability analysis has been performed demonstrating that a recreation class 2 classification is appropriate, if a reasonable level of inquiry has failed to identify any existing class 1 uses of the water segment.

(ii) Class 2 - Secondary Contact

These surface waters are not suitable or intended to become suitable for primary contact recreation uses, but are suitable or intended to become suitable for recreational uses on or about the water which are not included in the primary contact subcategory, including but not limited to wading, fishing and other streamside or lakeside recreation.

Where a UAA that supports a recreation class 2 classification has not been developed, class 1a is the default classification, unless a reasonable level of inquiry has failed to identify any existing primary contact uses. Where the reasonable level of inquiry does not identify existing primary contact uses, a

recreation 1b classification may be assigned. A guidance document was developed by the Division in a work group process that provides guidance regarding the assignment of recreational use classes based on current regulations and recent Commission decisions. The guidance is available at [http://www.cdphe.state.co.us/wq/Assessment/assessment\\_practices\\_and\\_methods.htm](http://www.cdphe.state.co.us/wq/Assessment/assessment_practices_and_methods.htm). As previously noted, a concern has been expressed over the use of the “default” classification. However, for the identified reasons, no modification is proposed at this time.

The following table presents the numerical standard for protection of recreational use classifications in Colorado.

Numerical Standard for Recreation Use Classifications			
Parameter	Class 1a Existing Primary Contact Use or Default	Class 1b Potential Primary Contact Use	Class 2 Primary Contact Use is Not Attainable
E. coli*	126	205	630
Fecal coliform*	200	325	2000
Dissolved Oxygen (mg/L)	3.0	--	3.0
pH (std units)	6.5 - 9.0	--	--
* organisms per 100 ml, geometric mean			

Potential modifications:

Through the Advisory Group process (See Appendix C-4) as well as the basin hearing process, several potential modifications have been identified:

- Should there be a separate sub-category or some indication for those waters where a class 1a has been assigned by default, as opposed to because evidence of actual primary contact has been presented?
- Should there be a separate category for those waters to have a recreation class 2 classification along with numerical standards associated with recreation class 1a classification (the class 2/200 option)?
- Should dissolved oxygen and pH numeric standards be added to class 1b?
- Should there be numeric clarity and narrative odor standards added to class 1a and 1b to better define “visibly poor water quality” as used in the guidance.
- How could the existing sub-categories be modified or additional sub-categories added to address the unlikelihood that primary contact recreation takes place in the winter months?
- Does the current system adequately address recreation classifications and standards relative to stormwater runoff events?
- What is the relationship between recreation classifications and the Board of Health’s Swim Beach regulations?

An explanation of how the Division proposes to address those modifications can be found in the “Conclusions and Recommendations” section below.

#### **D. Water Supply**

Colorado’s water supply use classification states: “These surface waters are suitable or intended to become suitable for potable water supplies. After receiving standard treatment (defined as coagulation, flocculation, sedimentation, filtration, and disinfection with chlorine or its equivalent) these waters will meet Colorado drinking water regulations and any revisions, amendments, or supplements thereto.” The standards include selected physical and biological, inorganic and metal parameters. A variety of issues surround water supply, e.g., the issue of appropriate standards for upstream dischargers relative to downstream public water systems. However, the Advisory Group recommended that this topic be addressed by the “Impacted Water Supply Work Group,” a group which has already been engaged in examining a number of those questions. (See Appendices C-4 and C-5) An exception to this approach may be the need to further define, through guidance or otherwise, what currently constitutes “standard treatment.”

#### **E. Wetlands**

Colorado’s Basic Standards define wetlands as “...those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” The Basic Standards make provision for tributary wetlands, created wetlands, and compensatory wetlands. Standards can be either ambient, the same as the tributary of the surface water segment to which the wetland is most directly hydrologically connected, created (inadvertently created by human activities), compensatory (developed for mitigation of adverse impacts to other wetlands), or site-specific. Standards can be narrative or numeric. No recommendations for change were made by the Advisory Group. (See Appendix C-4)

### **VI. RECOGNITION OF NET ENVIRONMENTAL BENEFIT**

#### **A. Overview**

There can be a “net environmental benefit” from adding effluent flow to a stream in an arid environment, even if the aquatic life uses attained and the water quality level achieved are less than would be expected for naturally intermittent or perennial streams. For example, an ongoing discharge of treated municipal effluent to an otherwise ephemeral stream that did not previously support fish can expand both the instream and riparian values supported by that waterbody. In such circumstances, if the adoption of water quality standards that are not economically attainable leads the discharger to implement wastewater reuse or other alternatives that lead to discontinuation of the effluent flows, this net benefit may be lost.

To date, Colorado’s water quality classification and standards system does not explicitly address the concept of “net environmental benefit” or how it might be



applied in Colorado. Therefore, one of the statutory directives for the Section 309 study is that the Division “take into account ... the benefits associated with maintaining downstream ecosystems that are dependent, at least in part, upon the continuation of effluent discharges.” C.R.S. § 25-8-309.

Although this concept has received considerable discussion over the last decade, no western states appear to have significant experience with implementation of the net environmental benefit concept. The concept has been most completely developed by EPA Region 9, in Interim Final “Guidance for Modifying Water Quality Standards and Protecting Effluent-Dependent Ecosystems” issued in 1992. The EPA Guidance and the net environmental benefit concept are discussed in greater detail in a Discussion Addressing Water Quality Standard Issues Regarding Effluent Dependent and Effluent Dominated Waters, which was prepared by a work group of western states and EPA representatives. (See Appendix I)

**B. What waters should this concept be applied to?**

One threshold issue with respect to the net environmental benefit concept is to identify the universe of situations where the concept may be applicable. The case for applying a net environmental benefit concept is strongest for effluent dependent streams. These are waterbodies that would be ephemeral, and therefore lack continuous flow, without the presence of treated effluent. For example, effluent dependent streams will typically support fish, and fish would not be supported by such streams in the absence of the discharge. Because effluent dominated waterbodies would be intermittent or perennial without a wastewater discharge, the addition of the treated effluent will not generally result in the same quantum change in attainable aquatic life (e.g., moving from no fish to supporting fish). However, the Division notes the desire of some to nevertheless apply the net environmental benefit concept to effluent “dominated” waterbodies, as well as the concern expressed by others that naturally low flow or intermittent stream systems have their own unique ecological attributes which should be protected.

In its March 10, 2003 Draft “Proposed Aquatic Life Classification System and Potential Regulatory Implications”, the Division proposed that for effluent dependent waters if a net environmental benefit is demonstrated, a set of default table value criteria with a somewhat relaxed risk level could be applied. This proposal also suggested that net environmental benefit could be one factor in adopting site-specific standards for effluent dominated waters.

**C. What criteria are appropriate for demonstrating a “net environmental benefit?”**

The Division’s March 10 draft proposal noted the importance of developing appropriate criteria for determining when a “net environmental benefit” has been demonstrated. The Region 9 Guidance noted above establishes the following criteria for a use attainability analysis to demonstrate a net ecological benefit:

- The waterbody is in a primarily arid area such that aquatic resources are limited and ecologically valuable. The waterbody supports an ecologically desirable aquatic, wetland, or riparian ecosystem and supports native plant species and

wildlife. For new discharges, the waterbody must have the potential to support such ecosystems.

- Effluent discharges do not produce or contribute to concentrations of pollutants in tissues of aquatic organisms or wildlife that are likely to be harmful to humans or wildlife through food chain concentration.
- The discharger documents that a feasible plan to remove the discharge is under consideration.
- The analysis demonstrates that a continued discharge to the waterbody has not created and is not likely to cause or contribute to violations of downstream water quality standards or degradation of groundwater basins.
- All practicable pollution prevention programs, such as pretreatment and source reduction, are in operation. The discharger verifies that it has responded appropriately to previous and on-going compliance actions.
- In order to preserve the net ecological benefits associated with the discharge, it is recommended that the discharger commit to providing effluent to the stream that is sufficient to protect and maintain the ecological benefit as determined by EPA, and state and federal wildlife agencies.

The development of appropriate criteria for use in Colorado will be a critical first step in moving forward with potential implementation of the net environmental benefit concept in Colorado.

**D. If a “net environmental benefit” is demonstrated, what standards should apply?**

As noted above, once a conclusion is reached that a discharge of treated effluent results in a “net environmental benefit”, that conclusion implies that the “normal” water quality standards are not appropriate for the waterbody in question. However, that conclusion does not provide any specific answer to the question as to what water quality standards should apply.

If numerical standards are to be relaxed, how much should they be relaxed? Should there be a set of default or “table value” standards that apply whenever a net environmental benefit is demonstrated, or should the selection of appropriate alternative standards be determined on a site-specific basis, perhaps pursuant to some general criteria? These questions need to be considered further and resolved in order to move forward with implementation of the net environmental benefit concept as part of Colorado’s water quality classifications and standards system.

## **VII. CONCLUSIONS AND RECOMMENDATIONS**

As can be seen from the above discussion, the Section 309 study issues as identified by the Legislature were intensively investigated by the Division and numerous stakeholders. The Division has taken into account all comments received during the course of the study as well as those on the *Draft Report*. (See Appendix A) Though consensus was not reached on all study topics, the Division believes that the following recommendations are a fair reflection of the viewpoints expressed.

**A. Statutory Modifications**

No specific statutory modifications were tendered by the Advisory Group members and none are proposed by the Division.

**B. Regulatory Modifications**

**1. Recreation Classification:**

Modify the current state recreation classification language so as to address:

- (i) Placement of an indicator in the tables distinguishing class 1a assigned by default as opposed to class 1a based upon actual primary contact;
- (ii) Creation of a recreation class 2 classification with numeric standards associated with class 1a classifications; and
- (iii) Adoption of numeric clarity and narrative odor standards for class 1a and 1b so as to better define “visibly poor water quality.”

This can be done in the context of the Water Quality Control Commission’s July, 2005 hearing on basic standards revisions.

**2. Agricultural Classifications:**

No recommended modifications.

**3. Water Supply Classifications:**

No recommended modifications.

**4. Wetlands Classifications:**

No recommended modifications.

**5. Aquatic Life Classifications:**

The Division would propose some minor modifications to the state regulations governing aquatic life use classifications and the adoption of site-specific standards so as to endorse, on a voluntary basis and as part of a pilot project initiative, the utilization of refined designated uses and accompanying water quality standards. These refined designated uses and standards would be based on a classification matrix as further refined in the Advisory Group process prior to the Commission’s July, 2005 Basic Standards hearing. The Division and other interested parties would petition, as part of the pilot effort, to utilize the new classification categories as segments of interest came before the Commission in the course of the ordinary Triennial Review hearing process. Absent such a petition, the existing regulatory provisions would continue to apply. The Division, upon consideration of input from the Advisory Group, would develop guidance for the selection of the pilots and the minimum performance standards governing execution of each pilot study. The Commission would reassess its approach to classifications and standards, taking into account lessons learned from the pilots, at its 2010 basic standards hearing.

**6. Use Attainability Analysis:**

No recommended modifications.

**7. Treatment of Constructed Conveyances:**

No recommended modifications.

**8. Net Environmental Benefit:**

The Division does not propose a regulatory modification at this time. However, given the potentially positive aspects of this approach to environmental protection, the Division would suggest that the Advisory Group continue to discuss the various aspects of this concept and attempt to reach some level of agreement on key points. The proposal, if there is to be one, must be formulated by October, 2004 such that proposed regulatory modifications, incorporating the net environmental benefit concept, can be put before the Commission at the time of the Issues Formulation Hearing on the basic standards in November, 2004.

## VIII. APPENDICES

*Note: Appendices B-G and Appendix I will be provided in hard copy in the reports to the Legislature. Other readers can find the referenced materials on the Water Quality Control Commission's Web site at*

*<http://www.cdphe.state.co.us/op/wqcc/SpecialTopics/309/wq309.htm>.*

*Appendix H (AWWQRP Reports on CD) can be found on the AWWQRP Web site identified below.*

### A. Water Quality Control Division's Response to Public Comments

### B. Arid West Water Quality Research Project (AWWQRP) Overview Brochures

1. Project Overview
2. Habitat Characterization Study
3. Extant Criteria Evaluation Study
4. Discharger Survey

### C. Meeting Agendas and Summaries

1. July 10, 2002 Memo Regarding First Meeting of the Section 309 Study Advisory Group.
2. July 24, 2002 Agenda and Meeting Summary (*Overview and discussion of Section 309 Study*).
3. September 23, 2002 Agenda and Meeting Summary (*Presentation and discussion on AWWQRP; overview and discussion of recreational use classifications*).
4. October 28, 2002 Agenda and Meeting Summary (*Discussion of "unique attributes" of Colorado waterbodies; overview and discussion of agricultural, recreation, water supply and wetland use classifications*).
5. November 25, 2002 Agenda and Meeting Summary (*Presentations and discussion of agricultural and water supply use classifications; overview and discussion of Use Attainability Analysis*).
6. January 27, 2003 Agenda and Meeting Summary (*Presentation and discussion of current aquatic life use classification system*).
7. February 24, 2003 Agenda for "Arid West Habitat Characterization Study Symposium" (*Presentations and discussion on AWWQRP's "Habitat Characterization Study" and its applicability to Colorado*); Symposium Proceedings included as Appendix E.



8. March 24, 2003 [Agenda](#) and [Meeting Summary](#) (*Overview and discussion of proposed new aquatic life use classification system (the “aquatic life strawman”); presentations and discussion on constructed water conveyance and storage facilities*).
9. April 28, 2003 [Agenda](#) and [Meeting Summary](#) (*Presentations and discussion on “net environmental benefit” and maintaining downstream ecosystems that are effluent dependent*).
10. May 19, 2003 [Agenda](#) and [Meeting Summary](#) (*Presentations and discussion on other state approaches*).
11. June 23, 2003 [Agenda](#) and [Meeting Summary](#) (*Discussion of aquatic life use classification “strawman”*).
12. July 28, 2003 [Meeting](#): “Arid West Extant Criteria Evaluation Study Symposium” (*Presentations and discussion on AWWQRP’s “Extant Criteria Evaluation Study” and its applicability to Colorado*). Symposium Proceedings as [Appendix H](#).
13. August 12, 2003 [Meeting Summary](#) (*Final input from Advisory Group on all Section 309 Study issues*).
14. October 27, 2003 [Meeting Summary](#) (*Open forum for comment and discussion of Draft Section 309 Study Report*).

**D. [“Proposed Aquatic Life Classification System and Potential Regulatory Implications;”](#) and Stakeholder Comments from:**

1. [Colorado Division of Wildlife](#)
2. [Northern Colorado Water Conservancy District](#)
3. [Trout Unlimited](#)
4. [Southwestern Water Conservation District](#)
5. [Applied Hydrology Associates, Inc.](#)
6. [City of Pueblo](#)
7. [Northwest Colorado Council of Governments](#)
8. [U.S. Environmental Protection Agency, Region VIII](#)
9. [Metro Wastewater Reclamation District](#)
10. [Chadwick Ecological Consultants, Inc.](#)
11. [City of Grand Junction](#)
12. [Colorado Water Congress](#)

**E. [Arid West “Habitat Characterization Study” Symposium](#)**

**F. [Arid West “Extant Criteria Evaluation Study” Symposium](#)**

**G. Stakeholder Comments on Section 309 Study Draft Report from:**

1. [Farmers Reservoir and Irrigation Company](#)
2. [Cache La Poudre Water Users Association and Thompson Water Users Association](#)
3. [Colorado Water Congress](#)
4. [Southwestern Water Conservation District](#)
5. [Northern Colorado Water Conservancy District](#)
6. [Trout Unlimited](#)

**H. Complete AWWQRP Reports on CD. These can be found on the Pima County, AZ Web site at <http://www.co.pima.az.us/www/wqrp>.**

1. AWWQRP Habitat Characterization Study Final Report
2. AWWQRP Extant Criteria Evaluation Final Report

**I. Discussion Paper Addressing Water Quality Standards Issues Regarding Effluent Dependent and Effluent Dominated Waters** [Does not include the Appendices which are available upon request]