



Colorado River District

75 Years

Protecting Western Colorado Water



MEMORANDUM

JANUARY 19, 2012

TO: BOARD OF DIRECTORS

CC: ERIC KUHN, DAN BIRCH

FROM: MICHAEL EYTEL – WATER RESOURCE SPECIALIST

SUBJECT: NUTRIENT CRITERIA – BASIC STANDARDS AND METHODOLOGIES FOR SURFACE WATER (REGULATION #31) AND NEW NUTRIENTS MANAGEMENT CONTROL (REGULATION #85)

Staff recommends the following:

1. *To participate in the Colorado Nutrient Coalition (“CNC”) in a supportive role.*
 - a. *To distinguish the River District from positions taken by the CNC if the CNC positions are inconsistent with River District policy statements or the direction provided in this motion.*

2. *To participate in the Water Quality Control Commission Nutrient Rulemaking Hearing to the extent necessary:*
 - a. *To seek practical solutions to nutrient control where there is a scientifically demonstrable benefit to the ecological health of West Slope rivers, lakes, and streams.*
 - b. *To support exemptions from proposed nutrient regulations, if such regulations would impose an unreasonable financial burden on RD constituents without a scientifically demonstrable benefit to the ecological health of West Slope rivers, lakes, and streams.*
 - c. *To ensure that any nonpoint source regulation remains voluntary.*
 - d. *To prevent threats from the federal government to the State of Colorado’s primacy in matters of water quality control.*

3. *To explore and support viable financial assistance for regulated entities.*

Background

The Environmental Protection Agency (EPA) has identified nutrients as a priority pollutant of national concern and a leading cause of impairment in lakes and coastal waters and the second leading cause of impairment of rivers and streams. EPA policy since 1998 has been that narrative standards are inadequate and should be replaced with numeric standards. Over the last 12 years the Water Quality Control Division (Division) and stakeholders have been working through the Water Quality Forum Nutrient Workgroup to develop numeric nutrient criteria. The Water Quality Control Commission (Commission) has noticed the Rulemaking Hearing for adoption of nutrient criteria in Regulation #31 Basic Standards and Methodologies for Surface Water and a New Nutrient management Control Regulation #85 on March 12, 2012. The River District staff has filed for Party Status.

The River District is a cooperator in the Colorado Nutrient Coalition (CNC) which now comprises 67 entities, mostly wastewater treatment facilities. Some notable members include Southwestern Water Conservation District, Grand Junction, Rifle, DeBeque, Rangeley, Colorado Stormwater Council, Aurora Water, and Colorado Springs Utilities. CNC has been very active in responding to the Division's proposals and effective in engaging upper management at the Division. Their input has been influential in the development of the Water & Power Authority's Cost-Benefit Compliance Study, proposed additions to Regulation #31 and the Control Regulation #85. The CNC has also filed for Party Status and will be addressing many of the critical technical issues through written and oral testimony utilizing at least three expert witnesses. Over the last two years the River District has contributed \$12,000 of the significant expenditures of the CNC for the necessary legal and technical analysis of the proposed regulations. While we recognize that this subject is a bit beyond the River District's area of interest, as we do not operate a waste water treatment plant, we believe that the financial impacts to our constituent communities' warrants our continued involvement in the process.

Although the State of Colorado has been working on developing numeric nutrient criteria for more than a decade, there is still a lot of uncertainty and opposition to the Commission adopting and implementing these two regulations. The River District along with Southwestern Water Conservation District, numerous water and sanitation districts, and many west slope entities recently sent a letter to Governor Hickenlooper requesting that he intervene to slow down this process. (Attached) There is also a Legislative Bill currently being drafted which would prohibit adoption of any numeric criteria regulations concerning phosphorus or nitrogen. (Chris will discuss under Legislative Affairs.)

In order to better understand the proposed regulations and possible ramifications of adoption, we should take a closer look at the results of the Cost-Benefit Compliance Study and the proposed Regulation #31 and New Control Regulation # 85.

A. Cost-Benefit Compliance Study

The Cost-Benefit study was commissioned by the Colorado Water Power and Development Authority and directed by the Division. The study was completed in October 2011 and updated in December 2011 utilizing the numeric nutrient effluent

limits currently proposed in Regulation #85. The current proposal to control discharge of nutrients relies largely on a technology-based control regulation which establishes technology based effluent limits for both total phosphorus (TP) and total inorganic nitrogen (TIN).

The Study focused on three objectives:

- Estimate statewide aggregate costs resulting from the potential implementation of a range of statewide regulations to address nutrients and impacts from requirements for stormwater monitoring.
- Estimate the environmental benefit of implementation of proposed nutrient regulations.
- Estimate the benefit to drinking water quality and reduced treatment costs for drinking water.¹

The study evaluates costs and benefits of three tiers of technology-based effluent limits. Tier 1 is the lowest level of nutrient removal that meets the currently proposed effluent limits, basically biological nutrient removal (BNR) and would apply to most existing facilities. Tier 2 would apply to all new facilities and is essentially BNR with chemical addition which further reduces nutrients but at an additional cost. Tier 3 is the highest level of nutrient removal that is technologically available, equating to the use of reverse osmosis and advanced membrane filtration. In general all basins within the state, except for the Arkansas basin have a cost – benefit ratios of less than 1, which means that costs are greater than the benefits. Statewide the costs associated with the proposed Control Regulation #85 range from several billions of dollars to upwards of \$25 billion. The following updated tables from the study show the estimated costs and benefits for the 3 tiers of treatment for each river basin and aggregated statewide.²

¹ Nutrient Cost-Benefit Study Results and Conclusions, WQCD Prehearing Statement – Exhibit 5.

²Report: Cost/Benefit Study of the Impacts of Potential Nutrient Controls for Colorado Point Source Discharges, December 2011.

Table 1. Updated Aggregate Benefits and Costs by River Basin

Aggregate (River Basin or Statewide)	Component	Tier 1*	Tier 2*	Tier 3*
Arkansas	Benefits	\$679,062,000	\$808,956,000	\$1,056,414,000
	Costs	\$545,429,000	\$1,121,448,000	\$5,910,796,000
	Benefit-Cost Ratio	1.25 : 1	0.72 : 1	0.18 : 1
Colorado	Benefits	\$103,315,000	\$154,851,000	\$279,996,000
	Costs	\$226,322,000	\$393,719,000	\$2,840,746,000
	Benefit-Cost Ratio	0.46 : 1	0.39 : 1	0.1 : 1
Gunnison	Benefits	\$24,043,000	\$31,798,000	\$43,075,000
	Costs	\$46,947,000	\$96,172,000	\$447,136,000
	Benefit-Cost Ratio	0.51 : 1	0.33 : 1	0.1 : 1
Platte	Benefits	\$1,068,108,000	\$1,278,498,000	\$1,854,325,000
	Costs	\$1,473,367,000	\$3,152,796,000	\$14,286,950,000
	Benefit-Cost Ratio	0.72 : 1	0.41 : 1	0.13 : 1
Rio Grande	Benefits	\$10,561,000	\$12,206,000	\$16,980,000
	Costs	\$68,185,000	\$94,131,000	\$502,522,000
	Benefit-Cost Ratio	0.15 : 1	0.13 : 1	0.03 : 1
Southwestern	Benefits	\$22,418,000	\$33,428,000	\$55,024,000
	Costs	\$63,657,000	\$98,692,000	\$542,752,000
	Benefit-Cost Ratio	0.35 : 1	0.34 : 1	0.1 : 1
Yampa-White	Benefits	\$31,882,000	\$36,204,000	\$49,229,000
	Costs	\$40,990,000	\$77,461,000	\$461,614,000
	Benefit-Cost Ratio	0.78 : 1	0.47 : 1	0.11 : 1

* Expressed in Present Value 2010 Dollars

Table 2. Updated Aggregate Benefits and Costs Statewide

Aggregate (River Basin or Statewide)	Component	Tier 1*	Tier 2*	Tier 3*
Statewide Aggregate	Benefits	\$1,939,389,000	\$2,355,941,000	\$3,355,043,000
	Costs	\$2,464,897,000	\$5,034,419,000	\$24,992,516,000
	Benefit-Cost Ratio	0.79 : 1	0.47 : 1	0.13 : 1

* Expressed in Present Value 2010 Dollars

B. Regulation #85 – Nutrients Management Control Regulation

The Division is recommending the Commission adopt a Control Regulation as a means to implement effective phosphorus and nitrogen control. The Commission is authorized by section 25-8-205, C.R.S, to promulgate control regulations to describe prohibitions, standards, concentrations, and effluent limitations on the extent of specifically identified pollutants that any person may discharge into any specified class of state waters.³ This is not the first time the Commission has promulgated a control regulation in order to control nutrients. Currently there are 5 individual watershed control regulations designed to control phosphorus in the watersheds tributary to Dillon Reservoir, Chatfield Reservoir, Cherry Creek Reservoir, Bear Creek Reservoir, and Cheraw Lake. Adoption into the Statewide Surface Water Basic Standards would follow in August 2012 and then into

³ Colorado Revised Statutes 25-8-205 Control Regulations.

each individual basin through the triennial review process. The regulation would apply to point and nonpoint sources, primarily holders of discharge permits. Specific numeric nutrient limitations would be implemented through the Colorado Discharge Permits System (CDPS) and would affect the following dischargers:

- Domestic Wastewater Treatment Works (DWTW)
- Non-Domestic Wastewater Treatment Works (NDWTW) (e.g. industrial)
- Municipal Separate Stormwater Permits (MS4)
- Nonpoint Source Discharges

There are a number of additional factors directly related to the proposed Control Regulation #85 worth mentioning. First, since nonpoint source discharges are currently not regulated under the Clean Water Act, compliance would be accomplished through implementation of **voluntary** Best Management Practices (BMPs). If BMPs measures are determined to be inadequate for control of agricultural nonpoint source nutrients by March 2022, the Commission in consultation with the Commissioner of Agriculture may adopt control regulations specific to agricultural and silvicultural practices.

Another factor which resonates loudly for our rural west slope constituents is exemptions from the proposed technology based effluent limits. Currently the Division is proposing three exemptions:

1. Small lagoon systems with a design capacity of 1 MGD or less.
2. Disadvantaged communities, defined as those with a population of less than 5,000 and an average household income of less than 80% of the State median household income.
3. Domestic mechanical facilities with a design capacity of 0.5 MGD or less.⁴

These exemptions are of particular concern for environmental groups, who would like the effluent limits to apply to all dischargers of nutrients. The environmental groups would like to see all facilities subject to the proposed effluent limits and have filed an alternate proposal seeking a more stringent definition for “significant” point source discharger of nutrients.⁵ This is in contrast to rural communities who could be financially burdened by being required to upgrade to a BNR facility.

Another significant component of Regulation #85 establishes monitoring requirements. All DWTW, NDWTW, MS4’s would be required to establish and implement Nutrient Monitoring Programs by March 2014. The Commission recognizes state water conservation, water conservancy, and special irrigation districts are entities which currently monitor and assess surface water quality and would like to encourage these agencies to make this data public for nonpoint source management efforts. This could have a direct impact on the River District as our constituents may look to us for financial

⁴ Proponents Prehearing Statement of the Water Quality Control Commission, Regulation #31 and New Nutrient Management Control Regulation #85.

⁵ Conservation Groups Proponents Prehearing Statement, Regulation #31 and Control Regulation #85, December 2011.

assistance with the required monitoring. How this will interface with our USGS water quality and stream monitoring program has yet to be determined.

Lastly, Regulation #85 proposes allowing trading to fully or partially comply. The Division is proposing to allow trading between point sources to point source and nonpoint source to point source. In 2004 the Division and stakeholders approved the Colorado Pollutant Trading Policy as a guide for future trading initiatives within the state. This policy along with the proposed Regulation #85 could allow for more cost effective and innovative approaches to reduce costs and establish incentives for nonpoint sources to aid in nutrient reductions.⁶

C. Regulation #31 – Basic Standards and Methodologies for Surface Water

There are a number of proposed additions to Regulation #31 Basic Standards and Methodologies for Surface Water. The Division is proposing to adopt interim numeric values for phosphorus, nitrogen, and chlorophyll a. These interim values may be applied in limited circumstances. The following tables represent the current proposed numeric values:

<u>Table 1 Interim Phosphorus Values</u>	
<u>Lakes and Reservoirs, cold, >25 acres</u>	<u>20 ug/L¹</u>
<u>Lakes and Reservoirs, warm > 25 acres</u>	<u>80 ug/L¹</u>
<u>Lakes and Reservoirs, <=25 acres</u>	<u>RESERVED</u>
<u>Rivers and Streams – cold</u>	<u>110 ug/L²</u>
<u>Rivers and Streams - warm</u>	<u>170 ug/L²</u>
<u>¹ summer (July 1-September 30) average Total Phosphorus (ug/L) in the mixed layer of lakes (median of multiple depths), allowable exceedance frequency 1-in-5 years.</u>	
<u>² annual median Total Phosphorus (ug/L), allowable exceedance frequency 1-in-5 years.</u>	

<u>Table 2 Interim Total Nitrogen Values</u>	
<u>Lakes and Reservoirs, cold, >25 acres</u>	<u>410 426 ug/L¹</u>
<u>Lakes and Reservoirs, warm, > 25 acres</u>	<u>850 910 ug/L¹</u>
<u>Lakes and Reservoirs, <=25 acres</u>	<u>RESERVED</u>
<u>Rivers and Streams – cold</u>	<u>1,250 ug/L²</u>
<u>Rivers and Streams - warm</u>	<u>2,010 ug/L²</u>
<u>¹ summer (July 1–September 30) Nitrogen (ug/L) in the mixed layer of lakes (median of multiple depths), allowable exceedance frequency 1-in-5 years.</u>	
<u>² annual median Total Nitrogen (ug/L), allowable exceedance frequency 1-in-5 years.</u>	

⁶ Proponents Prehearing Statement of the Water Quality Control Division, December 2011.

<u>Table 3 Interim Chlorophyll a Values</u>		
<u>Waterbody type</u>		<u>DUWS</u>
<u>Lakes and Reservoirs, cold, >25 acres</u>	<u>8 ug/L^b</u>	<u>5 ug/L^c</u>
<u>Lakes and Reservoirs, warm, > 25 acres</u>	<u>20 ug/L^b</u>	
<u>Lakes and Reservoirs, <=25 acres</u>	<u>RESERVED</u>	
<u>Rivers and Streams - recreation</u>	<u>150 mg/m²^a</u>	
<u>^a mg/m² chlorophyll a of attached algae, not to exceed.</u>		
<u>^b summer (July 1- Sept 30) average chlorophyll a in the mixed layer of lakes (median of multiple depths).</u>		
<u>^c March-November average chlorophyll a (ug/L) in the mixed layer of lakes (median of multiple depths), allowable exceedance frequency 1-in-5 years..</u>		

The Division is proposing the interim values for phosphorus and chlorophyll a would not be adopted as water quality standards for specific water bodies in Colorado prior to May 31, 2022, except in limited circumstances upstream of significant point source discharges. The interim values for nitrogen would not be adopted for specific water bodies prior to May 31, 2017 and also only in limited circumstances upstream of significant point source discharges.

The Division is also proposing to add a new sub-classification, **Direct Use Water Supply Lakes and Reservoirs (DUWS)** to the current Domestic Water Supply classification in Regulation #31. It would apply to lakes and reservoirs with a raw water intake which delivers water directly to a treatment facility or to a man made conveyance structure which terminates at a direct use reservoir. The Division is proposing adopting more stringent numeric criteria for Nitrogen, Phosphorus, and Chlorophyll for these reservoirs. The primary purpose is to protect human health against “disinfection by-products.” These are formed when chlorine or other disinfectants react with naturally occurring organic and inorganic matter (i.e., decaying vegetation) in the water. Some of the most common disinfection byproducts are Trihalomethanes, Haloacetic Acids, Bromate, and Chlorite.

River District staff is monitoring the development of this proposal as it relates directly to Wolford Mountain Reservoir specifically and River District constituents broadly. The River District operates a Public Water System at Wolford Mountain Reservoir which has a direct intake and treatment plant that serves water to the campground and facilities.

Conclusion

The currently proposed Regulation #31 and #85 are an innovative approach to nutrient controls. The question is: are they right for Colorado at this time? In light of EPA’s actions in Florida, is Colorado next on the EPA’s list? If Colorado does not adopt satisfactory numeric criteria at this time, the EPA could set their own numeric nutrient criteria and risk the state’s primacy over water quality matters related to the CWA. While the River District’s Water Quality Policy supports measures which protect water quality and district residents’ ability to use water beneficially, these proposed regulations could impose unreasonable financial burdens on water users throughout Colorado.

Recommendation

At this time, we believe the best course of action is for the River District to:

- 1. To participate in the Colorado Nutrient Coalition (“CNC”) in a supportive role.**
 - a. To distinguish the River District from positions taken by the CNC if the CNC positions are inconsistent with River District policy statements or the direction in this motion.**

- 2. To participate in the Water Quality Control Commission Nutrient Rulemaking Hearing to the extent necessary:**
 - a. To seek practical solutions to nutrient control where there is a scientifically demonstrable benefit to the ecological health of West Slope rivers, lakes, and streams.**
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 - d. To prevent threats from the federal government to the State of Colorado’s primacy in matters of water quality control.**

- 3. To explore and support viable financial assistance for regulated entities.**