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MEMORANDUM

September 5, 2012

TO: Members of the Water Resources Review Committee

FROM: David Beaujon, Senior Analyst, 303-866-4781

SUBJECT: Implementation of the Final Water Quality Regulations on Nutrients

This memorandum provides information related to the nutrient regulations that were adopted by the Water Quality Control Commission on June 12, 2012. This issue will be discussed at the September 6, 2012, meeting of the Water Resources Review Committee. The memorandum includes several changes to the September 4, 2012 draft to reflect additional information received by staff. Specifically, this memorandum:

- summarizes major state and federal water quality control policies pertaining to nutrients;
- describes the major provisions of the new Section 17 of Regulation 31 that establishes interim numeric values for phosphorus, nitrogen and chlorophyll;
- describes the new Regulation 85 that establishes numerical effluent limitations for domestic wastewater treatment plants and other wastewater dischargers;
- summarizes the rule review process of the Colorado General Assembly; and
- describes the U.S. Environmental Protection Agency's (EPA) review process for new water quality standards.

Overview of Federal and State Water Quality Control Policies

Federal Clean Water Act. The federal Clean Water Act requires states to develop water quality standards and review and update these standards every three years.¹ Unlike toxic pollutant water quality standards, which must be numeric if possible, the act does not specifically require states to develop *numeric* nutrient water quality standards, giving states the discretion to use either narrative or numeric standards. Numeric criteria establish specific limitations on pollutants, such as nitrogen and phosphorus, in waterbodies, while narrative standards use descriptive language to convey an unacceptable water quality condition.

EPA guidance concerning nutrients. High levels of nitrogen and phosphorus in waters can produce algal blooms that result in "dead zones" in water bodies where dissolved oxygen levels are so low that most aquatic life cannot survive. According to the EPA, over the last 50 years, the

¹33 U.S.C. Section 1313 (c).

amount of nitrogen and phosphorus pollution entering waters has escalated dramatically. The EPA has been encouraging states to develop numeric nutrient criteria for nitrogen and phosphorus since 1998 through a series of policy memorandum. The most recent memorandum from March 2011 includes a framework for states to consider as they develop the water quality criteria. Policy memoranda and other guidance documents from the EPA are not regulations or mandates. States retain discretion to adopt water quality standards that may differ from the EPA recommendations, although the standards must ultimately be approved by the EPA. The EPA requires that Colorado work toward the adoption of nutrient criteria for fresh waters as a condition of receiving federal grant moneys. These moneys, called Performance Partnership Grants, are paid to the Colorado Department of Public Health and the Environment for establishing and maintaining adequate measures for the prevention and control of surface and ground water pollution from both point and nonpoint sources.² Under this agreement, the Water Quality Control Division is scheduled to receive \$4,012,316 in FY 2011-12.

Colorado Water Quality Control Act. The Colorado Water Quality Control Act requires that the Water Quality Control Commission (WQCC) in the Colorado Department of Health and Environment ". . . develop and maintain a comprehensive and effective program for prevention, control, and abatement of water pollution and for water quality protection throughout the entire state and, to ensure provision of continuously safe drinking water by public water systems." This law also authorizes the WQCC to promulgate rules for water quality standards for phosphates, nitrates, and other dissolved nutrients, among other pollutants.³ State law also authorizes the WQCC 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 specific class of state waters."⁴ The division has been developing numeric nutrient criteria for nitrogen and phosphorus since the EPA first encouraged states to do so in 1998. At its June 12, 2012, rulemaking hearing, the WQCC adopted regulations to address current and potential future nutrient pollution of Colorado surface waters. A brief summary of these rules follows.

Final Water Nutrient Rules

Overview. At its June 12, 2012, rulemaking hearing, the WQCC amended its regulation concerning basic standards and methodologies for surface water to address nutrients. It also adopted a new nutrients management control regulation (Regulation 85) that establishes numerical effluent limitations for domestic wastewater treatment plants and other wastewater dischargers that use active treatment and are likely to have significant levels of nutrients in their discharges. Regulation 85 also describes steps to be taken by other point source dischargers and nonpoint sources to address nutrients. Finally, it established monitoring requirements for point source dischargers and a program aimed at monitoring surface waters for nutrients and related parameters. According to the WQCC, nutrient control in Colorado will proceed faster and more expeditiously by focusing the primary control efforts over the next decade on the technology-based approach set forth in Regulation 85

²Colorado Environmental Performance Partnership Agreement FY 2011-2012, October 2011

³Section 25-8-204 (2)(e), C.R.S.

⁴Section 25-8-205 (1)(a), C.R.S.

rather than by applying the numerical standards to the state's water bodies.⁵ The WQCC submitted the changes to Regulation 31 to the EPA for approval as required by the Federal Clean Water Act. It did not submit Regulation 85 to the EPA for its approval because the rule is a control regulation authorized by Colorado law, not a water-quality standard or regulation required by the Federal Clean Water Act.

Basic Standards and Methodologies for Surface Water Regulation 31. The new Section 17 of Regulation 31 establishes interim numeric values for phosphorus, nitrogen and chlorophyll a, and also sets forth provisions regarding the use of these numeric values for the adoption of water quality standards.⁶ Numerical standards set the maximum acceptable concentration of nutrients, such as phosphorus, in streams, lakes, and reservoirs. These standards seek to protect recognized uses of a water body, such as for recreation, aquatic life, agriculture, water supply, and wetlands. For example, the new nutrient standard seeks to protect lakes and reservoirs that are used to deliver surface water directly to a drinking water treatment plant that treats and disinfects raw water. The standards also seek to protect recreation and aquatic life.

The interim nutrient values for phosphorus and chlorophyll will not be used for the adoption of water quality standards for most water bodies in Colorado prior to May 31, 2022. However, the regulation allows for the adoption of standards for waters located in headwater areas above permitted domestic wastewater facilities discharging prior to May 31, 2012, or with preliminary effluent limitations requested prior to May 31, 2012, regardless of whether they are subject to effluent limits in the new Regulation 85. It also applies to water bodies located above any nondomestic facility (industrial dischargers) subject to Regulation 85 effluent limits and discharging prior to May 31, 2012. The nutrient values may also be used to adopt standards for protected water supply lakes and reservoirs, or if the WQCC determines that Regulation 85 will not result in adequate control of the pollutants.⁷

The interim nutrient values for nitrogen will not be used for the adoption of water quality standards for specific water bodies in Colorado prior to May 31, 2017.

Nutrient Management Control Regulation 85. According to the WQCC, the most significant current nutrient impacts occur in highly urbanized areas such as the Front Range and in or downstream of the most urbanized areas of the West Slope. Also of concern are areas where existing water quality is good, and there are existing population centers that are predicted to experience significant growth.⁸ The new Regulation 85 establishes numerical effluent limitations for domestic wastewater treatment plants (DWWTW) and other wastewater dischargers that use active treatment and are likely to have significant levels of nutrients in their discharges.⁹ According

⁵Statement of Basis, Specific Statutory Authority, and Purpose for Rule #31.50. Section 24-4-103 (4), C.R.S., requires the WQCC to prepare a basis and purpose statement for each new regulation that identifies the statutory authority for the regulation, as well as provide a concise general statement about the purpose of the regulation.

⁶5 CCR 1002-31.17

⁷5 CCR 1002-31.17 (e)

⁸Statement of Basis, Specific Statutory Authority, and Purpose for Rule 85.

⁹5 CCR 1002-85

to the WQCC, the effluent limits apply to approximately 26 percent of the domestic facilities in the state, but will control 90 percent of the design flow for the state.¹⁰ The new regulation does not apply to DWWTW with a design capacity of up to 1.0 million gallons per day (mgd). It also does not apply to such facilities owned by disadvantaged communities that have a population of 5,000 or less with a median household income that is 80 percent or less of the statewide median household income.¹¹ The regulation also provides a 10-year delay (starting May 31, 2022) in the application of the effluent limits for low priority watersheds and for facilities smaller than 2.0 mgd.¹²

Discharges from DWWTW and certain industrial facilities cannot contain concentrations of total phosphorus and total inorganic nitrogen that are in excess of the effluent limits the WQCC has established through the control regulation. For existing facilities, the new effluent limits for total phosphorus and total inorganic nitrogen were set based on “first level” biological nutrient removal (BNR) that would typically consist of a three-stage process (single stages of anaerobic, anoxic, and aerobic zones). For new facilities, total phosphorus and total inorganic nitrogen effluent limits were based on enhanced BNR that would typically consist of a four-or-five stage process (multiple stages of anaerobic, anoxic, and/or aerobic zones).

The WQCC provided exceptions to the requirement to meet the nutrient effluent limits for several situations where the discharge from a treatment facility is not presumed to have a significant impact on nutrient loads in the receiving waters or downstream reservoirs. For example, it provided an exception for facility owners that demonstrate that the discharge from the wastewater treatment plant (i.e., without additional nutrient removal) will not cause the receiving water to exceed the interim numeric nutrient values for total nitrogen and or total phosphorus in Regulation 31. This demonstration would have to be made based on a mass balance analysis using specified inputs.¹³

Nutrient regulations and nonpoint source dischargers. Nonpoint source pollution is diffuse, rather than coming from a fixed location, such as a pipe. Nonpoint sources include runoff from forest lands, undeveloped areas, and agricultural lands. In general, nonpoint source dischargers are exempt from the nutrient regulations. However, the nutrient regulations encourage nonpoint source dischargers to adopt best management practices (BMPs) to reduce nonpoint source discharges. For example, agricultural operations that apply supplemental nutrients as part of crop production activities are encouraged to develop and implement nutrient management plans to the maximum extent practicable to reduce nutrient loads from such sources. The regulation further states that “. . . nutrient planning should be based on current soil, manure, and plant tissue test results developed in accordance with guidance or industry practice, such as that developed or recognized by Colorado State University.”¹⁴ According to the new regulations, the WQCC may consider the adoption of prohibitions or precautionary measures to further limit nutrient concentrations if voluntary nonpoint source BMPs are not effective in managing nutrients by May 31, 2022.¹⁵

¹⁰Statement of Basis, Specific Statutory Authority, and Purpose for Rule 85.

¹¹5 CCR 1002-85.5 (1)(a)(i)

¹²5 CCR 1002-85.5 (1)(a)(ii)

¹³5 CCR 1002-85.5 (3)(b)(i)

¹⁴5 CCR 1002-85.5 (5)(a)(ii)

¹⁵5 CCR 1002-85.5 (5)(c)(ii)

Nutrient pollution trading. The new regulation authorizes trading of nutrients to help regulated dischargers meet the water quality standards in a more cost-effective manner.¹⁶ According to the regulation, the numerical effluent limitations may be modified for individual discharge permits pursuant to a trade of nitrogen or phosphorus between point sources where the Water Quality Control Division (WQCD) determines that the trade will result in equal or better instream water quality for that parameter at all locations and at all times. The numeric limitations may also be modified for individual discharge permits pursuant to a trade of nitrogen or phosphorus credits from a nonpoint source to a point source on a stream segment or watershed basis where the WQCD has determined that the trade achieves a net water quality or environmental benefit and does not cause adverse localized impacts. Also, the nonpoint source to point source trades must be based on a minimum 2:1 ratio, but may be revised based on site-specific data that demonstrates a lower ratio achieves the nutrient criteria.¹⁷

State and Federal Review of the Nutrient Regulations

Legislative rule review. Under state law, all rules adopted or amended during any one-year period expire on the following May 15 unless the General Assembly acts by bill to postpone the expiration.¹⁸ The rule-making agency is required to submit every newly adopted or amended rule to the Office of Legislative Legal Services (OLLS), where a staff member reviews it to determine whether the rule is within the agency's rule-making authority and is consistent with law. On June 14, 2012, the Water Quality Control Commission submitted Regulation 31 and Regulation 85 to the OLLS for its review. On June 28, 2012, the OLLS notified the WQCC that the regulations had been reviewed by staff and that no objections were made. This review does not constitute approval of the rules or preclude later review by the Committee on Legal Services. Any legislator may request that the Committee on Legal Services determine whether a rule lacks statutory authority.

If requested by a legislator, OLLS prepares a memorandum and makes a presentation to the Committee on Legal Services at a public meeting explaining whether a rule lacks statutory authority, exceeds statutory authority, or conflicts with law.¹⁹ At the same meeting, the agency is given an opportunity to present its position about whether the rule is within its statutory authority or is consistent with law. After the hearing, the committee votes on whether the agency has exceeded its statutory rule-making authority or whether the rule conflicts with other laws. If it determined that a rule exceeded statutory authority, a bill is drafted that allows the rule's expiration.

¹⁶5 CCR 1002-85.5 (3)(d)

¹⁷5 CCR 1002-85.5 (3)(d)(ii)

¹⁸Section 24-4-103 (8)(c)(I), C.R.S.

¹⁹Section 24-4-103 (8)(d), C.R.S.

EPA review of nutrient regulation. Pursuant to federal law,²⁰ the WQCC submitted the changes to Regulation 31 to the EPA for approval. Federal law requires the EPA to approve or disapprove standards within 90 days of submittal by a state. If the EPA finds that a state's proposal for one or more criteria is inadequate, it must notify the state, which then has 90 days to revise its standards in response to EPA's concerns. If the state does not do so, the EPA may propose a federal standard that will apply to that state.

²⁰33 U.S.C. Section 1313 (c).