COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL COMMISSION

REGULATION NO. 84
RECLAIMED WATER CONTROL REGULATION

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DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Water Quality Control Commission

5 CCR 1002-84

RECLAIMED WATER CONTROL REGULATION

84.1 AUTHORITY

This regulation is promulgated pursuant to the Colorado Water Quality Control Act (CWQCA) section 25-8-101 through 25-8-703, C.R.S. In particular, it is promulgated under sections 25-8-202 and 25-8-205, C.R.S.

Materials incorporated by reference are available for public inspection during normal business hours, or copies may be obtained at reasonable cost, from the Administrator, Water Quality Control Commission, 4300 Cherry Creek Drive South, Denver, Colorado 80246. Unless expressly stated otherwise, materials incorporated by reference are those editions dated as referenced by date in the regulation or in existence as of the date this regulation is promulgated or revised by the Water Quality Control Commission and references do not include later amendments to or editions of the incorporated material. All material incorporated by reference may be examined at any state publications depository.

84.2 PURPOSE

The purpose of this regulation is to establish requirements, prohibitions, standards and concentration limits for the use of reclaimed water to protect public health and the environment while encouraging the use of reclaimed water.

84.3 SEVERABILITY

The provisions of this regulation are severable, and if any provisions or the application of the provisions to any circumstances is held invalid, the application of such provision to other circumstances, and the remainder of this regulation shall not be affected thereby.

84.4 APPLICABILITY

This regulation applies to the use of reclaimed water for landscape irrigation, fire protection, industrial, and commercial uses identified in section 84.8 of this regulation. This regulation does not apply to wastewater that has been treated and released to state waters prior to subsequent use or to wastewater that has been treated and used at a domestic wastewater treatment plant site for landscape irrigation or process uses. This regulation applies to individual treaters and users, as defined below, upon the issuance of a Notice of Authorization pursuant to section 84.6(C) herein by the Water Quality Control Division.

84.5 DEFINITIONS

The following definitions shall apply:

(1) Agronomic Rate means the rate of application of reclaimed water and associated nutrients to plants that is necessary to satisfy the plants' nutritional and watering requirements while strictly minimizing the amount of nutrients that run off to surface waters or which pass below the root zone of the plants.

(2) Closed Loop Cooling System means a cooling system that has negligible exposure potential to workers and, where applicable, to the public.

(3) Commercial User means a person who uses reclaimed water in the operation of a business patronized by the public, or who provides services to the public. Approved commercial uses are listed in Table A of section 84.8.

(4) Division means the Water Quality Control Division of the Colorado Department of Public Health and Environment.

(5) Dust Control means the wetting down or pre-watering of work surfaces, work areas, and roads to minimize the off-property transport of airborne particulate matter from activities such as construction, demolition, and sandblasting.

(6) Fire Protection -- Nonresidential means firefighting activities where water is made available at fire hydrants located in areas other than residential, from fire trucks, and in fire sprinkler and interior standpipe systems in buildings in commercial/industrial areas.

(7) Fire Protection -- Residential means firefighting activities where water is made available at fire hydrants in residential areas, from fire trucks, and in fire sprinkler and interior standpipe systems at any structure where the occupants do not have access to the plumbing for maintenance and repair.

(8) Industrial User means a person who uses reclaimed water for industrial processes or in the construction process. Approved industrial uses are listed in Table A of section 84.8.

(9) Irrigation System means the facilities, piping and other equipment used by a Landscape Irrigation User.

(10) Landscape Irrigation means irrigation of areas of grass, trees, and other vegetation that are accessible to the public, including, but not limited to, parks, greenbelts, golf courses, and common areas at apartments, townhouses, commercial/business parks, and other similar complexes.

(11) Landscape Irrigation User means a person who uses reclaimed water for the purpose of landscape irrigation.

(12) Person means an individual, corporation, partnership, association, state or political subdivision thereof, federal agency, state agency, municipality, commission, or interstate body.

(13) Point of Compliance means a point identified by the treater in the reclaimed water treatment or transmission system after all treatment has been completed and prior to dilution and blending.

(14) Reclaimed Water is domestic wastewater that has received secondary treatment by a domestic wastewater treatment works and such additional treatment as to enable the wastewater to meet the standards for approved uses.

(15) Resident-Controlled Landscape Irrigation means irrigation of areas of grass, trees and other vegetation located on the property of a single family or other residential occupancy where the occupant is the User and is responsible for the maintenance and/or operation of the irrigation system.

(16) Restricted Access means controlled and limited access to the areas where reclaimed water meeting Category 1 standards, as defined in section 84.7, is used.

(17) Transmission System means the treater's facilities that transport treated reclaimed water between the treater and users.

(18) Treater means a person who treats and provides reclaimed water to a user for the purpose of landscape irrigation, fire protection, commercial use or industrial use. The treater and the user may be the same entity.

(19) Unrestricted Access means uncontrolled access to the areas where reclaimed water meeting the Category 2 standards, as defined in section 84.7, is used.

(20) User means a person who uses reclaimed water for landscape irrigation, fire protection, commercial or industrial uses.

(21) User Plan to Comply means the information and documentation a user is required to submit to the treater under sections 84.9 of this regulation.

84.6 ADMINISTRATION

(A) Letters of Intent.

Treaters shall submit Letters of Intent to the Division and to the local health authority that shall include:

(1) Treater information including name of entity; legally responsible person's name, address, telephone number, and email address; and for each facility owned and/or operated by the treater where domestic wastewater is treated for transmission, the facility contact person's name, address, telephone number, and email address (if different than legally responsible person).

(2) Information demonstrating the treater's ability to comply with the applicable reclaimed water standards described in section 84.7 of this regulation, including an 8.5" x 11" or 11" x 17" schematic of the treatment process showing the location of the proposed point(s) of compliance. Include the point of compliance for demonstration that secondary treatment has been attained which may be the same or different than the point where attainment of reclaimed water standards will be demonstrated. Include either: a copy of the site application approval letter and the approval letter for the reclaimed water treatment facility plans and specifications; or evidence of submittal of a site application and plans and specifications to the Division.

(3) An analysis that demonstrates that reclaimed water used for landscape irrigation will be applied at or below agronomic rates. Landscape irrigation uses may also be subject to waste load allocations or limits as contained in a Total Maximum Daily Load (TMDL) or control regulation governing the watershed within which the irrigation occurs.

(4) A reuse system management plan which includes: a description of the proposed reclaimed water treatment and transmission systems; a description of the treater's program to inform and educate users on the requirements of this regulation; a description of the treater's plan to oversee the use of reclaimed water by users to ensure, to the maximum extent practicable, that users attain and maintain compliance with this regulation; and evidence of the treater's legal

ability (regulation, ordinance, contract, or other acceptable mechanism) to terminate service to a user if the user fails to comply with this regulation.

(5) A certification statement as per section 84.13 of this regulation.

(6) For each user, a "User Plan to Comply" developed in cooperation with the treater and meeting the requirements of section 84.9.

(7) Affirmation that the reuse of this water by the treater will not materially injure water rights.

(8) When reclaimed water is used for fire protection, the Letter of Intent shall also include a map indicating areas where reclaimed water is to be supplied for fire protection uses and identifying the fire protection authority(s) having jurisdiction. The Letter of Intent shall also include a letter from the fire protection authority(s) having jurisdiction indicating their approval of using reclaimed water for fire protection activities.

(9) Where the land application of reclaimed water is subject to limitations on concentration and/or loading of nitrogen or phosphorus pursuant to a control regulation adopted by the Water Quality Control Commission, a statement as to whether the treater intends to have such limitations included in the Notice of Authorization issued under this regulation or under a permit issued pursuant to Regulation No. 61.

(B) Division Review. The treater shall be notified in writing not more than thirty (30) calendar days after receipt of a Letter of Intent by the Division if, and in what respects, the Letter of Intent is incomplete. Upon the written agreement of the treater, the review period may be extended for a period mutually agreed to by the treater and the Division. Where information provided by a user is incomplete, the treater may amend the Letter of Intent to address the deficiency or to remove that user from the Letter of Intent.

(C) Issuance of Notices of Authorization. The Division shall either issue or deny the Notice of Authorization within thirty (30) calendar days of its determination that the Letter of Intent is complete. Upon the written agreement of the treater, the review period may be extended for a period mutually agreed to by the treater and the Division. The treater shall be notified in writing upon denial of the Notice of Authorization of such action and the reason(s) for the denial. The Division shall issue separate Notices of Authorization to the treater and to each user. Treaters and users planning to use reclaimed water shall have or obtain a Notice of Authorization from the Division prior to any use of reclaimed water.

(D) Appeal of Issuance or Denial of Notice of Authorization. The treater or user, or any other person potentially adversely affected or aggrieved by Division issuance or denial of a Notice of Authorization, may submit a request, within thirty (30) days of the date of issuance or denial, to the Administrator of the Water Quality Control Commission ("Commission"), for a hearing.

(1) Such hearing shall be conducted pursuant to the requirements of the Procedural Regulations for all Proceedings before the Commission and the Division, Regulation No. 21, 5 CCR 1002-21.

(2) The person requesting the hearing shall have the burden of proof in all hearings held pursuant to this section.

(E) Terms and Conditions of Notices of Authorization. Notices of Authorization (NOAs) issued by the Division shall contain such terms, limitations, and conditions as are deemed necessary by the Division to ensure compliance with this regulation, except for those NOAs that contain a schedule of compliance as determined by the Division. At a minimum, all NOAs shall contain the following:

(1) Treater information including name of entity; legally responsible person's name, address, telephone number, and email address; and for each facility owned and/or operated by the treater where domestic wastewater is treated for distribution, the facility contact person's name, address, telephone number, and email address (if different than legally responsible person). For the treater NOA, a list of approved users and their associated uses shall be included;

(2) Issuance date;

(3) The approved uses as defined in Table A of section 84.8, including the category of reclaimed water and the associated numeric limit for each use from section 84.7;

(4) For User NOAs, the location(s) of use, a description of the approved use(s), and best management practices that meet the requirements of subsection 84.9(A) or (B), as applicable and 84.9(C);

(5) A requirement that the treater implement its reuse system management plan that meets the requirements of subsection 84.6(A)(4) to ensure user compliance with this regulation. For User NOAs, include a requirement that the user comply with the User Plan to Comply;

(6) Where the treater has so requested in the Letter of Intent per Section 84.6(A)(9), conditions defining limitations for concentration and loading of nitrogen and/or phosphorus pursuant to a control regulation adopted by the Water Quality Control Commission.

(7) A requirement to submit information to the Division requesting the amendment of a Letter of Intent prior to making any of the following significant changes:

(a) Adding an additional user or deleting a user;

(b) When a treater proposes any significant physical or operational changes;

(c) If reclaimed water is used for irrigation, when there is a significant change in the agronomic rate analysis; and

(d) When any user governed by an existing Notice of Authorization significantly modifies or changes its physical or operational use of reclaimed water, including, but not limited to, the addition of landscape area to be irrigated that is not contiguous to an existing approved area, addition of areas where reclaimed water is to be used for fire protection, addition of a new user or use in a new commercial or industrial process, or use in a new location.

Said request for amending the Letter of Intent shall be made at least thirty days prior to implementing a change described in subsections (a) or (c), above, and at least sixty days prior to implementing a change described by subsections (b) or (d), above.

(8) Terms for modification, revocation, or termination;

(9) Required monitoring, as is reasonably necessary, to be performed by the user;

(10) Reporting and record keeping requirements;

(11) Public access restrictions, if applicable; and

(12) A statement of applicable civil and criminal penalties.

84.7 RECLAIMED WATER CATEGORIES AND STANDARDS

(A) Category 1 Standards: Reclaimed water, for uses where Category 1 water is required, shall, at a minimum, receive secondary treatment with disinfection. The following reclaimed water standards shall apply at the point of compliance:

Parameter	Limit
E. coli/100 ml	126/100 ml monthly geometric mean and 235/100 ml single sample maximum.
Total Suspended Solids	30 mg/L as a daily maximum.

(B) Category 2 Standards: Reclaimed water, for uses where Category 2 water is required, shall, at a minimum, receive secondary treatment with filtration and disinfection. The following reclaimed water standards shall apply at the point of compliance:

Parameter	Limit
E. coli/100 ml	126/100 ml monthly geometric mean and 235/100 ml single sample maximum.
Turbidity, NTU	Not to exceed 3 NTU as a monthly average and not to exceed 5 NTU in more than 5 percent of the individual analytical results during any calendar month.

(C) Category 3 Standards: Reclaimed water for uses where Category 3 water is required shall, at a minimum, receive secondary treatment with filtration and disinfection. The following reclaimed water standards shall apply at the point of compliance:

Parameter	Limit
E. coli/100 ml	None detected in at least 75% of samples in a calendar month and 126/100 ml single sample maximum.
Turbidity, NTU	Not to exceed 3 NTU as a monthly average and not to exceed 5 NTU in more than 5 percent of the individual analytical results during any calendar month.

84.8 RECLAIMED WATER USES

Table A: Approved Uses of Reclaimed Water

Approved Uses	Category 1	Category 2	Category 3	Additional Conditions Required 84.8(A)
INDUSTRIAL				
Cooling Tower	Allowed	Allowed	Allowed	1
Concrete Mixing and Washout	Allowed	Allowed	Allowed	2
Dust Control	Allowed	Allowed	Allowed	3
Soil Compaction	Allowed	Allowed	Allowed	3
Closed Loop Cooling System	Allowed	Allowed	Allowed	
LANDSCAPE IRRIGATION				
Restricted Access	Allowed	Allowed	Allowed	
Unrestricted Access	Not Allowed	Allowed	Allowed	4
Resident-Controlled	Not Allowed	Not Allowed	Allowed	4,5
COMMERCIAL				
Mechanized Street Cleaning	Allowed	Allowed	Allowed	3
Zoo Operations	Allowed	Allowed	Allowed	
FIRE PROTECTION				
Nonresidential Fire Protection	Not Allowed	Allowed	Allowed	6
Residential Fire Protection	Not Allowed	Not Allowed	Allowed	6

(A) Additional Conditions Required. In addition to the conditions for use of reclaimed water listed in section 84.9, the Division will include the following best management practices in the Notices of Authorization for the associated uses listed in Table A:

(1) If there is a significant likelihood for aerosols to drift to public or worker areas, adequate signage is required. Consider supplemental disinfection and chlorine residual and/or public access restrictions.

(2) Category 1 water is allowed in the mixing process only; washing off trucks and using as truck supply water is prohibited. Category 2 water may be used for mixing, washing and truck supply water as long as the user complies with the requirements set forth in section 84.9 of this regulation. Mixing and washing activities must be contained (e.g., flow to lined pit or approved concrete washout area, or within enclosed equipment), as to prevent any off-site runoff or discharge to ground water. Truck drivers and workers shall be trained on the proper use and washout procedures when using reclaimed water.

(3) Application rates shall minimize ponding on or runoff from the area approved for application or use.

(4) No reclaimed water piping shall be extended to or supported from any residential structure and there shall be no accessible above grade outlets from the reclaimed water system at any residential structure. At least one exterior hose bib, supplied with potable water, shall be provided at each residential structure.

(5) The treater shall develop and implement a public education program to inform residents and plumbing contractors and inspectors who deal with the Resident-Controlled Landscape Irrigation systems about the need to: a) strictly prohibit cross-connections between the reclaimed water and potable water systems; b) clearly and distinctively identify the potable service lines and plumbing from the reclaimed water service lines and plumbing; and c) avoid contact with and strictly minimize ponding or runoff of the reclaimed water. The treater shall implement a cross-connection inspection program and shall have the authority to discontinue reclaimed water service to any resident who flagrantly or repeatedly misuses reclaimed water in a manner inconsistent with this regulation. The treater shall maintain a map indicating all areas where reclaimed water is provided for Resident-Controlled Landscape Irrigation.

(6) The user shall develop and implement a program, including notices in fire department newsletters and fire department preplans, to educate the public and firefighters that reclaimed water is used for fire protection. The user shall develop a program to educate plumbing and fire protection system contractors and inspectors expected to access the fire protection system about the need to confirm that cross-connections between the reclaimed water and potable water systems do not exist and about the requirement to clearly identify the potable and reclaimed water systems throughout the building. All personnel authorized to use the reclaimed water for fire protection shall be educated to avoid contact with and strictly minimize ponding or runoff of the reclaimed water during non-emergency testing or training. An annual cross-connection inspection shall be made at each structure to which reclaimed water piping is extended for fire protection to ensure that no cross-connection exists. The treater shall maintain a map indicating the location of all fire hydrants, sprinkler systems and standpipe systems provided with reclaimed water.

84.9 CONDITIONS FOR USE OF RECLAIMED WATER

(A) Landscape Irrigation Users shall include the following in a User Plan to Comply:

(1) User information including name of entity; legally responsible person's name; address; telephone number; email address; and site address where reuse water will be used;

(2) An 8.5" x 11" or an 11" x 17" map or schematic drawing indicating the specific area(s) where irrigation with reclaimed water will take place;

(3) A description of the best management practices the user intends to implement to ensure that direct and windblown spray and other means of human exposure from irrigation systems will be confined to the areas designated and approved in the Notice of Authorization;

(4) Best management practices the user intends to employ to ensure that application rates shall be controlled to strictly minimize ponding and runoff and to minimize the amount of applied water and associated pollutants that pass through the root zone of the plants to be irrigated (e.g., rain shutoff devices, application at evapotranspiration rates adjusted for irrigation efficiency, daily inspections, or other means); and

(5) If applicable, information demonstrating how the user will restrict access to landscaped areas where Category 1 reclaimed water is to be applied either by:

a) Irrigating only during periods approved in the Notice of Authorization so as to strictly minimize public contact with reclaimed water, or

b) Installing barriers to prevent public access to the site, as approved in the Notice of Authorization, restricting irrigation to times when the barriers are in place, and ceasing irrigation at least one hour prior to the barriers being totally or partially removed.

(6) For Resident-Controlled Landscape Irrigation, unless a homeowners' association or other entity acceptable to the Division assumes responsibility, the treater shall be responsible for all information required in the User Plan to Comply and shall act as the users' legal representative for purposes of certification pursuant to section 84.9(D) below.

(B) Commercial, industrial, and fire protection Users shall include the following in a User Plan to Comply:

(1) User information including name of entity; legally responsible person's name; address; telephone number; email address; and site address where reuse water will be used;

(2) A description of how reclaimed water is to be used;

(3) An 8.5" x 11" or 11" x 17' map or schematic showing where such use will occur;

(4) The potential for public contact with reclaimed water used in the commercial or industrial operation(s) or process(es);

(5) The fate of waste water streams from the commercial or industrial operation or process after use (e.g., discharge to sanitary sewer, lined evaporation/recovery pond, or other location);

(6) Best management practices the user intends to implement to prevent or minimize direct and windblown spray and other pathways of human exposure to reclaimed water;

(7) If applicable, information demonstrating how the user will restrict access to commercial or industrial areas, operations or processes where Category 1 reclaimed water is to be used; and

(8) Where reclaimed water is used to supply a fire sprinkler or standpipe system, information describing the user's cross-connection control, prevention and identification program that the user will implement to prevent any cross-connection between the reclaimed water and potable water systems.

(C) All users shall include information in their User Plan to Comply that demonstrates compliance with the following:

(1) Use of reclaimed water shall be confined to the authorized use area, operation, or process.

(2) Precautions shall be taken to ensure that reclaimed water will not be sprayed on any facility or area not designated for application such as occupied buildings, domestic drinking water facilities, or facilities where food is being prepared for human consumption.

(3) Notification shall be provided to inform the public that reclaimed water is being used and is not safe for drinking. The notification shall include posting of signs of sufficient size to be clearly read in all use areas, around impoundments, and on tanks, tank trucks and other equipment used for storage or distribution of reclaimed water, with appropriate wording in the dominant language(s) expected to be spoken at the site.

(4) All new, modified, or replaced piping, valves, controllers, outlets, and other appurtenances, including irrigation systems and any equipment used for fire protection or in a commercial or industrial operation or process, shall be marked to differentiate reclaimed water from potable water or other piping systems.

(5) An approved backflow prevention device or cross-connection control method shall be provided at all potable water service connections to reclaimed water use areas.

(6) Operation of the irrigation system, including valves, outlets, couplers, and sprinkler heads, and commercial or industrial facilities and equipment utilizing reclaimed water, shall be performed only by personnel authorized by the user and trained in accordance with subsection 84.9(C)(10).

(7) Supplementing reclaimed water with potable water by a user shall not be allowed except through an approved reduced pressure principle backflow prevention device or an air gap. Where a backflow prevention device is used it must be tested on an annual basis by a Certified Cross-Connection Control Technician, unless there is a physical separation (e.g., removal of the connecting pipe, etc.) between the potable and reuse distribution systems.

(8) Supplementing reclaimed water with water from irrigation wells or industrial wells shall not be allowed except through an approved reduced pressure principle backflow prevention device or an air gap.

(9) There shall be no impoundment or irrigation of reclaimed water within 100 feet of any well used for domestic supply unless:

(a) In the case of an impoundment, the impoundment is lined with a synthetic material with a permeability of 10^{-6} cm/sec or less; or

(b) In the case of irrigation, other precautions are implemented and included as a condition of the Notice of Authorization, to prevent contamination of the well.

(10) Workers shall be informed of the potential health hazards involved with contact or ingestion of reclaimed water and shall be educated regarding proper hygienic procedures to protect themselves.

(11) The additional conditions included in section 84.8, as applicable.

(D) Each User Plan to Comply shall include a statement signed by the user, or a legal representative of the user, that certifies:

(1) The user has been provided a copy of this regulation and agrees to comply with the applicable requirements of this regulation, in particular the Conditions for Use of Reclaimed Water described in sections 84.8 and 84.9, and, if applicable, the access restrictions when Category 1 reclaimed water is used. The user shall

submit a certification statement per section 84.13 of this regulation with the information provided in this item; and

(2) The user agrees to allow the treater or the Division reasonable access to the site to determine whether the user is in compliance with this regulation, and/or to perform monitoring and analysis as may be required in section 84.10.

84.10 <u>MONITORING, RECORD KEEPING AND REPORTING</u>

(A) Treaters and users operating pursuant to a Notice of Authorization shall be subject to such monitoring, record keeping, and reporting requirements as may be reasonably required by the Division to ensure compliance with the requirements of this regulation, including, but not limited to the following:

(1) For treaters: the quality of reclaimed water produced and delivered at the point(s) of compliance, inspections of a representative number and type of user sites to determine user compliance, and self-certifications submitted to the treater by users.

(2) For each user, the total volume of reclaimed water used per year. For Landscape Irrigation Users, each location with the associated acreage where reclaimed water was applied.

(3) For each user using Category 1 reclaimed water, confirmation that reclaimed water was used only during authorized use times (if applicable).

(B) Treaters shall provide an annual report to the Division for the previous year, by January 31st, that includes the following:

(1) Information demonstrating the treater's compliance with the reclaimed water standards, including applicable treatment requirements described in section 84.7 of this regulation.

(2) Confirmation that the treater conducted inspections pursuant to section 84.10(A)(1) above.

(3) Violations of this regulation by users pursuant to section 84.10(C)(1), below.

(4) A certification statement by the treater as per section 84.13 below regarding the information provided by the treater in subsections (1) and (2) above.

(5) Information supplied by users to the treater demonstrating compliance with the conditions applicable to each specific user included in the Notice of Authorization.

(6) Certification statements from each user as per section 84.13 below regarding the information provided in subsection (5) above.

(C) The treater and users shall report any violations as follows:

(1) Violations of this regulation and/or Notices of Authorization at their respective facilities in writing to the Division, within thirty days of becoming aware of the violation. Where the treater finds violations by a user, the thirty day period for reporting is waived for a period of up to thirty additional days, if the treater is working with the user to resolve the violation. If the violation is resolved, no

separate notice to the Division is required except that the violation is to be reported in the treater's annual report. If the violation is continuing after a total of sixty days from the time the treater became aware of the violation, the treater shall report the violation to the Division within five working days. Nothing in this section precludes a user from reporting violations by a treater to the Division.

(2) For more serious violations (including non-permitted discharges to surface waters, uncontrolled cross-connections, exceedences of the reclaimed water standards for *E. coli*, or other violations posing an immediate threat to public health or the environment): orally to the Division within 24 hours of becoming aware of the violation, followed up by a written report within five working days. The written report shall contain a description of the noncompliance, including exact dates and times; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

84.11 <u>VARIANCES</u>

The Division may grant a variance from any provision of this regulation, except that with respect to the *E.coli* standards in section 84.7, a variance may only be granted from the "235/100 ml single sample maximum" standard. The Division may grant a variance in a particular case where the treater or the user demonstrates that the benefits to public health or the environment that will be created by compliance with the subject provision do not bear a reasonable relationship to the costs required to achieve compliance.

84.12 <u>ENFORCEMENT</u>

Violations of this regulation by treaters and users shall be subject to enforcement by the Division pursuant to Part 6 of the CWQCA. A treater shall not be subject to enforcement for a violation by a user; a user shall be solely responsible for its compliance with the terms and conditions imposed upon users. However, if the treater was aware of a violation by a user and did not report it as required in subsection 84.10(C), the treater may be subject to an enforcement action for failure to report the violation. A user shall not be subject to enforcement for a violation by a treater; a treater shall be solely responsible for its compliance with the terms and conditions imposed upon treaters. However, if a user was aware of the violation and did not report it as required in subsection 84.10(C), the user may be subject to an enforcement action for failure to report the violation.

84.13 <u>CERTIFICATION</u>

Persons who are required to make submittals pursuant to subsections 84.6(A)(5), 84.9(D), and 84.10(B) of this regulation, shall include the following certification statement:

"I certify, under penalty of law, that the information I am providing in this submittal is true, accurate, and correct. This determination has been made under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

84.14 - 84.20 <u>Reserved</u>

84.21 <u>STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY, AND PURPOSE</u>

The provisions of sections 25-8-205(1) and 25-8-308(1)(h) C.R.S., provide the specific statutory authority for the Reclaimed Domestic Wastewater Reuse Control Regulation adopted by the

Commission. The Commission has also adopted, in compliance with section 24-4-203(4), C.R.S., the following statement of basis, specific statutory authority, and purpose.

BASIS AND PURPOSE

A. Background

In March of 1998 the Commission requested that a subcommittee of the Water Quality Forum be convened to consider potential statutory changes to the Colorado Water Quality Control Act ("Act") to address reuse of reclaimed domestic wastewater for landscape irrigation. The joint reuse committee of the American Waterworks Association and the Water Environment Association ("AWWA/WEA") suggested this approach to the Commission in a February 1998 presentation.

In the fall of 1999 the Forum subcommittee made a recommendation that the Colorado Water Quality Control Act be amended to provide the Commission with the authority to promulgate control regulations for the oversight of reuse and to provide the Division with the authority to implement a reuse program. In March of 2000 the general assembly adopted changes to the Act consistent with the subcommittee's recommendations and those changes became effective on July 1, 2000. The subcommittee had been concurrently working on a proposed control regulation that is patterned after the Commission's Biosolids Regulation.

B. Regulatory System Overview

It is the intent of the Commission that this regulation further promote reuse of reclaimed domestic wastewater by providing a comprehensive framework which, when followed, will assure responsible management of operations and a product of a quality compatible with the state's goals of protecting the public health and the environment. The Commission concludes that the provisions of this regulation are economically reasonable considering the economic, environmental and public health costs and impacts of the program.

The Commission, in adopting these regulatory provisions, has limited the scope of the regulation to reuse of reclaimed domestic wastewater for landscape irrigation. The statutory changes do not, on their face, appear to limit the adoption of control regulations to this type of reuse. However, the Commission finds that it is appropriate to limit the scope of the regulation to this aspect of reuse based on the AWWA/WEA recommendation that landscape irrigation should be addressed first as the vast majority of reclaimed domestic wastewater in Colorado is used for this purpose. The Commission will consider regulatory proposals for other types of reuse, such as industrial and agricultural, in future rulemaking hearings where recommendations from a broad spectrum of interests are brought forward. This regulation is not intended for single family residential areas, unless the landscape irrigation areas are commonly owned or otherwise subject to reasonable controls by a neighborhood association to assure application is consistent with the "Conditions for Application" requirements.

The Commission has adopted provisions for the application of reclaimed domestic wastewater at "agronomic rates" with the intent that, once conforming changes are made to the Colorado Discharge Permit System ("CDPS") Regulations, reuse of reclaimed domestic wastewater in accordance with the provisions of this regulation will not be required to obtain a CDPS ground water discharge permit. The Commission does not intend that these regulations be used to limit flexibility to apply additional nutrients to landscaping being irrigated with reclaimed domestic wastewater. The Commission does expect that treaters will, as part of their overall program, inform applicators of the nutrient content of the reclaimed domestic wastewater.

The Commission has found that the use of an approach similar to that defined in the Biosolids Regulation will provide the appropriate level of oversight of reuse operations yet will not unduly burden the entities that are treating and applying reclaimed domestic wastewater to landscape.

The Commission expects that the amount of available information both on the health effects of reclaimed domestic wastewater and on the monitoring of pathogens will increase over the next several years. As a result, the Commission anticipates that the standards may be adjusted as new information becomes available. In the triennial review of this regulation, the Commission will consider any new information that is brought to it concerning pathogenic microorganisms and indicators of the presence or absence of such microorganisms in reclaimed domestic wastewater.

C. Letters of Intent

In order to facilitate the use of reclaimed domestic wastewater the "treater" is required to submit a Letter of Intent for each "applicator" to which it will be supplying reclaimed domestic wastewater. This will add a marginal burden to the treater, the entity that is most knowledgeable of the operational and regulatory requirements of the regulation, and will facilitate the responsible use of reclaimed domestic wastewater by entities that are interested in obtaining a viable product. At the same time, the Commission recognizes that the applicator must take responsibility for the proper use of reclaimed domestic wastewater by requiring the applicator to acknowledge receipt of the regulation and their intent to comply therewith. The treater must submit a description of an educational program that, in combination with a proposed plan to oversee the applicator's operation, will provide reasonable assurance of compliance.

The Commission has allowed existing treatment and land application facilities until December 31, 2001, to submit Letters of Intent as they will continue to be regulated under an existing discharge permit. This will give these systems ample time to obtain the required information from their applicators and to develop any additional information on their own facilities. New operations are required to submit Letters of Intent at least 30 days prior to the use of reclaimed domestic wastewater for landscape irrigation. This difference in timing is appropriate as existing facilities have been operating under a different set of regulatory requirements while new operators will be made aware of the requirements of these regulations through the site application approval process for domestic wastewater treatment works.

The Commission has established a 30-day period during which the Division must notify the applicant if the Letter of Intent is incomplete. This period is long enough to allow the Division to complete its review of the application and will not unreasonably delay approval of new systems or the addition of new applicators to existing systems.

D. Notices of Authorization

The Division has an additional 30 days from the time that the Letter of Intent is determined to be complete to issue the Notice of Authorization. This Commission finds this to be reasonable amount of time as the treater will have already received approval of the site application for the treatment facilities such that a substantial amount of information regarding the system will have already been provided to the Division. The Commission has required a Notice of Authorization to be issued to the treater and each applicator as a means of ensuring that the burden of compliance with the regulations is fairly distributed between the entity providing the reclaimed domestic wastewater and the entity that is putting that water to use.

The Commission has provided the opportunity for the treater, an applicator, or any other aggrieved party to appeal the Division's decision to issue or deny a Notice of Authorization in accordance with the Commission's procedural regulations.

The Commission has not limited the effective period of the Notice of Authorization since changes other than the addition or removal of applicators are expected to be relatively infrequent. This will reduce the burden that renewing Notices of Authorization would have on both the treater/applicator and the Division.

Notices of Authorization will include appropriate monitoring and reporting requirements, reclaimed domestic wastewater standards, and other necessary conditions to ensure the protection of the environment and public health.

E. Reclaimed Domestic Wastewater Standards

Treatment Requirements and Technology-Based Limits

The public health risk of contracting disease from pathogenic microorganisms via exposure to reclaimed domestic water is mitigated by treating wastewater so as to minimize the number of viable pathogenic microorganisms: bacteria, viruses and protozoans. Acceptable public health risk is determined based on an absence of acute gastrointestinal disorders [the most likely type of disease manifestation] in those persons casually exposed to reclaimed domestic wastewater as it is used for surface irrigation of landscaping. Bacterial protection is ensured through the imposition of limits on E.coli, a surrogate organism for determining the potential presence of bacterial pathogens. Viral and protozoan (meaning specifically enteroviruses, and giardia/cryptosporidia parasites) protection is ensured by the imposition of limits for turbidity or total suspended solids, as appropriate.

The Commission has determined that, for unrestricted use of reclaimed domestic wastewater, which has a higher level of public contact, an additional barrier is appropriate to ensure the physical removal of pathogenic organisms that may potentially be present in the wastewater. Therefore, filtration, with associated turbidity limits to ensure the proper operation of the filtration facilities, is required for treaters practicing unrestricted use. Dilution after the filtration process will not provide a positive barrier to pathogenic organisms and is not allowed to be used as a means of complying with limits unless a variance has been obtained. Restricted use, with its much lower potential for public contact, will not require filtration; however, total suspended solids limits consistent with a well-operated secondary treatment system will be required.

Selection of turbidity as a surrogate measure of microbial purity for reclaimed domestic water is valid as an inexpensive means of determining microbial purity with regard to viruses and parasites. There is an absence of data to absolutely define a turbidity at or below which viruses will be absent. Actual turbidity vis-a-vis virus density data illustrate that, when combined with adequate disinfection, an absence of virus plaque forming units can be achieved up to turbidity levels of six NTU (nephelometric turbidity units). (D'Angelo, et al. Pilot Testing to Evaluate Virus Removal and Deactivation, Proceedings of the 1984 Specialty Conference on Environmental Engineering, ASCE/Los Angeles, California, June 25-27, 1984). Similarly, from 1984 to 1991, comprehensive virus testing by Dr. Gerba at the University of Arizona recovered only one plaque forming unit (virus) from the Tucson Water Department's recycled water facility which was operating with a five NTU limit with an actual turbidity averaging between 3.5 and 4.0 NTU. In addition, there are four turbidity levels used among several states that permit the use of reclaimed domestic wastewater for irrigation. A two NTU limit is used in California, Missouri, and Oregon, a three NTU limit is used in Nevada and Texas (30-day average in TX, only), and a five NTU limit is used in Tucson, Arizona. In some cases concomitant virus and parasite (specifically Ascaris lumbricoides) monitoring is required; in other cases virus or parasite monitoring is required with no attention paid to turbidity; and in one case total suspended solids limits are used instead of turbidity limits. There is no consensus among the several states as to the appropriate turbidity limit. Accordingly, the Commission has selected a middle ground for unrestricted use application of reclaimed domestic wastewater. For these systems, calendar-month-average and maximum limits will be set at three NTU and five NTU (not to be exceeded in more than 5% of samples), respectively. No turbidity limits are required for restricted use sites, however, a total suspended

solids limit of 30 mg/l is required as a daily maximum. This is deemed a somewhat conservative health risk-based standard given the low potential for contact with reclaimed domestic wastewater in this circumstance. This standard is technologically achievable and the Commission finds it to be appropriate to maintain public confidence in reclaimed domestic wastewater.

Indicator Organism and Limits

The Commission finds that E.coli is the appropriate surrogate indicator organism for determining the potential presence of bacterial pathogens in reclaimed domestic wastewater. The use of E. coli is appropriate primarily based on contemporary research presented in EPA documents summarizing the scientific studies. The most recent scientific data is contained in EPA 440/5-84-002 (Ambient Water Quality Criteria for Bacteria – 1986), and Dufour's USEPA study (Dufour, A.P., 1984, Health effects criteria for fresh recreational waters: EPA 600/1-84-004). The evidence demonstrates that E.coli is the best possible indicator organism because the ratio between pathogens of fecal origin to indicator organisms is most valid for E.coli. Furthermore, E.coli does not regrow once it is released into the ambient environment, where it only survives for about 110 hours.

This is similar to pathogen survival. These criteria do not hold for the traditional indicator organisms such as total and fecal coliforms. (Cabelli, V.J., 1982, Microbial Indicator Systems for Assessing Water Quality, Antonie van Leeuwenhoek, 48:613). In August 1998 US EPA's Office of Science and Technology, on the advice of 14 experts, strongly agreed that E.coli was the only appropriate indicator of fecal contamination.

E. coli also more closely meets and fulfills the traditional and long standing requirements of a surrogate indicator organism for pathogens. These criteria are that an indicator must be a biotype that is prevalent in sewage and excreted by humans and warm blooded animals. It should be present in greater abundance than pathogenic bacteria and the indicator should not be readily capable of proliferation. Ideally the indicator will be more resistant to disinfectants than pathogenic bacteria but will otherwise have a similar ambient survival time with them; and, the indicator should be quantifiable by simple, inexpensive, and rapid laboratory procedures. (Kott, Y., Current Concepts of Indicator Bacteria, BACTERIAL INDICATORS/HEALTH HAZARDS ASSOCIATED WITH WATER, ASTM STP 635, A. W. Hoadley and B. J. Dutka, Eds. American Society for Testing and Materials, 1977, pp 3-13.) E. coli satisfies more of these than any other indicator microorganism recommended by health professionals for fresh water.

There are few epidemiological studies that evaluate the risk of contact with reclaimed domestic wastewater. The Commission has set the limits for E. coli at a level equivalent to that recommended by EPA for swimming beaches in Ambient Water Quality Criteria for Bacteria – 1996 which recently was reaffirmed by EPA in Draft Implementation Guidance for Ambient Water Quality Criteria for Bacteria 1996 (January 2000). While these uses do not directly correlate, the Commission has found this to be an acceptable level of risk particularly when considering that, in establishing the limit for swim beaches, it was assumed that 100 ml of water was ingested. It is reasonable to expect that criteria established to protect swimmers will be more protective of individuals casually exposed to irrigation spray of reclaimed domestic wastewater.

F. Additional Conditions

The Commission is establishing a number of conditions for the application of reclaimed domestic wastewater that are intended to provide additional assurance that the health of the public will be protected by minimizing exposure to pathogenic organisms and that runoff from reuse sites will not leave the application site or enter state waters in appreciable amounts. In response to concerns raised regarding how the restricted use conditions of the regulation may be applied to use of reclaimed domestic wastewater for irrigation of golf courses, the Commission anticipates that golf course irrigation that occurs before and after normal operating hours on golf courses that

restrict public access during such times will typically satisfy the requirements of subsection 84.8(A) of the regulation.

G. Monitoring and Reporting

The Commission finds that compliance oversight of the applicators should be shared by both the Division and the treater. The treater, based on its relationship with the applicator, is in a better position to oversee the operations of the applicator and can generally resolve violations without Division intervention as part of their routine program activities. If these efforts fail to return the applicator to compliance, then the Division will assume the lead role in the compliance oversight efforts.

Due to the limited part of the year during which irrigation takes place, the Commission finds that it is appropriate to limit the submittal of reported information to an annual report. The annual report must include the confirmation that the treater conducted inspections at a representative number of applicator sites as part of the treater's overall compliance assurance program.

H. Variances

The Commission is establishing a provision for variances from any aspect of the regulation but notes that the burden is on the treater to demonstrate that compliance with the regulations is unreasonable in light of the costs to comply.

The Commission recognizes that several reclaimed domestic wastewater systems were constructed and operated prior to the adoption of this regulation. This regulation is not intended to force existing systems to make capital improvements solely for assuring standardization if they accomplish the objectives of this regulation.

PARTIES TO THE RULEMAKING HEARING

1. Spring Valley Sanitation District
2. The City of Thornton
3. The City and County of Denver, Board of Water Commissioners
4. The City of Westminster
5. Roxborough Park Metropolitan District
6. Plum Creek Wastewater Authority
7. The City of Broomfield
8. The Farmers Reservoir and Irrigation Company
9. Colorado Water Conservation District
10. Colorado Springs Utilities
11. The Town of Hotchkiss
12. Spring Valley Development, Inc.
13. The City of Aurora
14. Chatfield Watershed Authority
15. The City of Blackhawk
16. Public Service Company of Colorado

84.22 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY, AND PURPOSE (April 2004 Hearing)

The provisions of sections 25-8-205(1) and 25-8-308(1)(h) C.R.S. provide the specific statutory authority for adoption of amendments to the Reclaimed Domestic Wastewater Reuse Control Regulation. The Commission also adopted, in compliance with section 24-4-203(4), C.R.S., the following statement of basis and purpose.

Basis and Purpose

When the Commission adopted Regulation 84 in October 2000, it limited its scope to use of reclaimed domestic wastewater for landscape irrigation. On October 8, 2003, the Water Quality Control Division and the Joint Water Reuse Committee of the Rocky Mountain Section American Water Works Association and Rocky Mountain Water Environment Association ("RMSAWWA/RMWEA") requested that the Commission review Regulation 84 for the purpose of considering industrial and commercial uses of reclaimed domestic wastewater. On April 12, 2004, the Commission held a rulemaking hearing during which several modifications and additions to the regulation were adopted. The Commission modified section 84.4 of the regulation to clarify that reuse of reclaimed wastewater for the uses identified in section 84.8 of the regulation is prohibited except where authorized pursuant to a Notice of Authorization. This change was made to clarify the Commission's intent that regulation 84 does not preclude the Division from authorizing uses of reclaimed wastewater that fall outside of the current scope of Regulation 84, where the Division is legally authorized to do so.

As a result of this rulemaking, the Commission amended Regulation 84 to further promote the use of reclaimed domestic wastewater, by allowing such water to be used in industrial and commercial applications as well as landscape irrigation. The Commission finds that the industrial and commercial uses contemplated by these amendments will create no greater risk to public health or the environment than the landscape irrigation uses authorized before the amendments.

The regulation, as amended, provides a framework that assures these additional uses are consistent with the Commission's goals of protecting the public health and the environment, by requiring reclaimed domestic wastewater to meet minimum standards, and requiring treaters and users of such water to employ appropriate best management practices and oversee its use.

The Commission adopted provisions requiring treaters to provide the Division with a "User Plan to Comply" for each user, prior to receiving authorization to provide reclaimed domestic wastewater. The plan shall describe the intended use and the best management practices the user will employ, and demonstrate how these practices ensure the proposed landscape irrigation, industrial or commercial use will be protective of public health and the environment.

The Commission also revised the regulation for clarity by renumbering sections, revising language, and reorganizing the regulation.

The Commission concludes that the amendments to this regulation are economically reasonable considering the economic, environmental, and public health costs and impacts of the reuse program.

Section 84.2 was modified to clarify the Commission's intent that the regulations protect the environment as well as public health. Section 84.4 was revised to expand Regulation 84's applicability for reclaimed domestic wastewater and to remove obsolete references. Section 84.4 was also revised to replace the term "direct reuse" with "reuse," as the exceptions provisions in section 84.4 already exempt waters discharged to state waters from coverage under Regulation 84. Language was also added to section 84.4 to clarify that treaters and landscape irrigation users who are operating under already existing Notices of Authorization do not need to resubmit Letters of Intent upon promulgation of these regulatory amendments. The Division will issue amended Notices of Authorization to the existing treaters and landscape irrigation users as routine amendments are made to their user information and Letters of Intent, or by June 30, 2006, whichever comes first. However, treaters and users who had implemented programs for use of reclaimed water prior to the effective date of the regulation for any use other than landscape irrigation must submit new Letters of Intent for such use(s) to the Division no later than August 31, 2004.

The Commission adopted amendments adding, deleting, and modifying definitions used in Regulation 84. The following definitions were modified or deleted to increase clarity or to achieve consistency with other revisions: “Point of Compliance,” “Reclaimed Domestic Wastewater,” “Restricted Use,” and “Treater.” The definition of “Direct Reuse” was deleted consistent with the change to section 84.4 noted above. The definition for “Applicator” was deleted and replaced with a more generic definition of “User” to include all types of users of reclaimed domestic wastewater. The following definitions were added: “Commercial User” describes a new type of user; “Industrial User” describes a new type of user; “Irrigation System” reduces confusion by differentiating between a user’s irrigation system and a treater’s treatment and transmission facilities; “Landscape Irrigation User” aids in differentiating between types of users; “Restricted Access” is used in place of “restricted use” for clarity; “Transmission System” reduces confusion by differentiating between a treater’s facilities and a user’s irrigation system; “Unrestricted Access” is used in place of “Unrestricted Use” for clarity; “User” describes the characteristics of users; and “User Plan to Comply” refers to the plan a user is required to submit to show compliance with Regulation 84.

The Commission reorganized and edited section 84.6(a) [formerly 84.5(A)] regarding letters of intent, for clarity, completeness, and consistency with other revisions. Treaters must still submit a Letter of Intent to the Division, but the Letter of Intent requirements differ, depending on the intended uses for the reclaimed domestic wastewater. In addition, the Commission recognizes that to facilitate new or expanded uses for reclaimed domestic wastewater and timely approval of projects, the Division must have some flexibility in administering the Letter of Intent process. For instance, the revisions would allow a treater to submit a Letter of Intent concurrently with a pending site application and/or facility plans and specifications.

The Commission amended subsection 84.6(A)(3) [formerly 84.5(A)(3)], to clarify that treaters are required to provide information demonstrating that reclaimed domestic wastewater applied to landscapes by landscape irrigation users will be applied at or below agronomic rates or, where application at agronomic rates is not or will not be achieved, that land application is being done pursuant to a CDPS permit. The Commission is aware that some entities may have been land applying in excess of agronomic rates, and that they have incorporated the return rates to ground water into their discharge permits and into augmentation plans. The Commission adopted this change to provide flexibility to entities practicing landscape irrigation so that they can maintain their current application practice, and associated credits under their augmentation plan, while applying reclaimed water in excess of agronomic rates pursuant to a CDPS permit. The Commission added language indicating that land application may also be subject to waste load allocations or limits as contained in a TMDL or control regulation governing the watershed within which the land application occurs, to clarify that Regulation 84 acts in tandem with these regulatory requirements. The agronomic application rate requirement does not apply to commercial and industrial users.

The Commission reorganized subsection 84.6(A)(6) [formerly 84.5(A)(6)] by moving existing requirements for users into modified sections 84.9 and 84.10, which contain the required content of a “User Plan to Comply” for each different type of use. The purpose of the User Plan to Comply is to provide the Division with information from each user that demonstrates that the proposed landscape irrigation, industrial or commercial use will be protective of public health and the environment.

The Commission amended subsection 84.6(A)(7) [formerly 84.5(A)(7)] to simplify the Letter of Intent process while, at the same time, fulfilling the Commission’s responsibility under C.R.S. 25-8-104 to determine if any decision it makes has the potential to cause material injury to water rights.

The Commission moved the requirement that a treater must update and modify its Letter of Intent under certain circumstances to subsection 84.6(E)(7) [formerly 84.5(A)(8)] under Terms and Conditions of Notices of Authorization. The Commission inserted a requirement for the treater to

include a letter from the fire protection authority indicating its approval for use of reclaimed domestic wastewater for fire protection activities. This requirement assures that the fire protection authority has been solicited. This section 84.6(E) [formerly 84.5(E)] regarding Notices of Authorizations was revised for clarity, completeness, and consistency with other revisions.

In this rulemaking, the Commission established category-based standards for reclaimed domestic wastewater quality in section 84.7 [formerly 84.6]. Category 1 standards apply to water previously designated for "restricted use," and Category 2 standards apply to water previously designated for "unrestricted use." The category framework allows the Commission to identify with more precision the appropriate uses for various qualities of reclaimed domestic wastewaters, while the terms "restricted use" and "unrestricted use" were found to be incompatible with the diverse industrial and commercial settings where reclaimed domestic wastewater is now authorized to be used. The category-based framework also will facilitate the Commission's future review of proposed uses for reclaimed domestic wastewater that may require different water quality.

The Commission found no reason to reassess the treatment standards adopted for reclaimed domestic wastewater. The Commission, in the 2000 rulemaking, found those standards to be appropriate for the use of reclaimed domestic wastewater for landscape irrigation and the Commission finds them to be sufficiently protective of public health and the environment for the additional approved industrial and commercial uses when best management practices are employed.

The Commission modified the treatment requirements for reclaimed domestic wastewater by replacing the term "oxidized" with "secondary treatment." Secondary treatment is generally accepted in the wastewater industry to mean that wastewater has been biologically treated to remove at least 85% of BOD and total suspended solids.

The Commission established a new section 84.8 to identify different approved uses for reclaimed domestic wastewater. A table is provided detailing the landscape irrigation, industrial and commercial uses approved by the Commission if such use is conducted in accordance with a Notice of Authorization under Regulation 84. Each new use is addressed below:

<u>Cooling Tower</u>: The Commission approved the use of reclaimed domestic wastewater in cooling towers, based on findings that indicate the quality of the source (make-up) water used in cooling towers is not of great concern. When best management practices typically applied at cooling towers are employed, the quality of the source water does not increase any risk to public health or the environment. Cooling towers are not accessible to the public and are maintained in a fashion that the water quality inside the cooling tower is controlled to standards that protect human health, regardless of the make-up water quality.

<u>Concrete Mixing and Washout</u>: The Commission approved the use of Category 1 reclaimed domestic wastewater in concrete batching processes where the water is mechanically dispensed into the truck mixer drum through a metal chute. This use of reclaimed domestic wastewater is protective of public health and the environment due to the fact that the water is dispensed by computer operated equipment, preventing worker contact, and the high pH of batched concrete would not allow the growth of microorganisms. Additionally, the water is entrained in the concrete and, therefore, is not discharged to surface or groundwater. Due to the potential for public and worker exposure, Category 1 reclaimed domestic wastewater may not be used for purposes other than mixing of the concrete. The Commission approved using Category 2 reclaimed domestic wastewater for batching concrete, for truck wash-down purposes at the plant, as an on-truck water supply to use for maintaining and adjusting concrete slump, and for wash-out purposes at the site. The Commission realizes that when proper BMPs are implemented, this use is protective of public health and the environment.

Dust Control/Soil Compaction/Mechanized Street Sweeping: The Commission approved the use of reclaimed domestic wastewater to wet down or pre-water work surfaces, for construction and demolition activities, sandblasting, soil compaction, and mechanized street washing. Approval is conditional on the user demonstrating that the application rate for these uses will not result in ponding or runoff into waters of the state, and that off-property transport of airborne particulate matter will be minimized. These uses are deemed protective of public health and the environment because the potential for public exposure for these activities when best management practices are implemented is minimal.

Closed Loop Cooling System: The Commission approved the use of reclaimed domestic wastewater in closed loop cooling systems where water circulates only within a contained system. This use results in no public exposure to reclaimed domestic wastewater, and only very limited and controlled contact by workers. Environmental risk from this use is also minimal when proper treatment and best management practices associated with the cooling processes are employed. Allowing the use pursuant to the best management practices, including discharging wastewater from the cooling process to the sanitary sewer system or other approved disposal mechanism, required by the regulation creates no greater risk to public health and the environment than using potable water in the cooling system.

Zoo Operations: The Commission approved the use of reclaimed domestic wastewater in zoo operations, including the care of captive animals. The Animal and Plant Health Inspection Service of the U.S. Department of Agriculture enforces the Animal Welfare Act, which governs the humane care and treatment of warm blooded and marine animals held in zoos. These entities must be licensed to operate, and must comply with the care and treatment standards provided by federal law. Category 2 reclaimed domestic wastewater meets or exceeds the water quality standards for zoo animals provided by federal law. Environmental and public health risk from this use is also minimal when proper best management practices associated with zoo management practices are employed. Such practices include discharging animal wastewater to the sanitary sewer system or other approved disposal mechanism, limited public access to water used for animal holding areas and habitat wash-down.

Fire Protection: The Commission determined that providing fire protection (interior sprinkler and exterior hydrants) with reclaimed water meeting Category 2 standards for commercial/industrial buildings is protective of public health when appropriate best management practices are implemented. The exposure to reclaimed water by building occupants during a fire is expected to be of short or no duration. This, coupled with the quality of Category 2 water, will not present a significantly greater risk than exposure to reclaimed water in a park or other landscape irrigation setting. Risks to fire fighters will be further mitigated due to their use of personal protective equipment and the requirement that they be educated in proper use of reclaimed water. Due to an increased risk of cross connection and potentially greater risk to public health, the Commission is not at this time specifically permitting the use of reclaimed water for hydrants in residential neighborhoods or for fire sprinkler systems at any residential structure. However, the Commission understands that the ability to use reclaimed water for such residential firefighting uses may have ramifications for both the costs associated with the construction of, and the need for, “potable” water facilities. The Commission believes, however, that such concerns can be addressed through the use of the variance provisions at section 84.12, whereby the Division can allow such uses on a case-by-case basis, subject to the proponent providing a quality of reclaimed water better than Category 2, and implementing additional BMPs that ensure the impact to public health and the environment are appropriately limited.

Where reclaimed water is used at interior sprinklers, with numerous fire protection outlets, there are increased risks of public exposure to reclaimed water during non-emergencies and for cross connections between the reclaimed water and potable water systems. The Commission is requiring that the additional conditions listed in section 84.8(A)(7) be implemented to strictly minimize these risks.

Water used for firefighting typically becomes polluted during its use. The Commission finds that there is little increased environmental risk associated with the reclaimed water source versus a potable water source for the firefighting water. Due to the emergency nature and low frequency of occurrence, discharges from firefighting activities are exempt from NPDES permitting requirements for non-storm water discharges (40CFR Part 122, §122.26) and shall likewise be exempt from the 'no discharge to waters of the State' provision in section 84.4 of this Regulation.

The Commission reorganized and edited section 84.9 [formerly 84.7] to address conditions for each different type of use of reclaimed domestic wastewater. Users must address each condition in a "User Plan to Comply" which varies for each type of use. (Under section 84.6, a treater must submit a User Plan to Comply for each of its users, certify that it will implement its Reuse Management Plan, and monitor the user's compliance with the User Plan to Comply and the requirements of Regulation 84.) Industrial and commercial users must submit a User Plan to Comply that describes the industrial or commercial operation or process using reclaimed domestic wastewater, an analysis of the specific use's potential risks to public health and the environment, and best management practices the user will employ to minimize such potential risks. The User Plan to Comply also includes a certification by the user that its use of reclaimed domestic wastewater is consistent with Regulation 84's purpose of protecting public health and the environment.

Modifications to this section include the following:

- 84.9(A) sets forth the conditions for the application of reclaimed domestic wastewater for landscape irrigation.

- 84.9(B) is a new section setting forth the conditions for industrial and commercial users.

- 84.9(C) sets forth conditions for use applicable to all users, regardless of type. Each of these conditions previously applied only to landscape irrigation users. [formerly 84.7(A)(1), 84.7(A)(2), 84.7(A)(3), 84.7(A)(4), 84.7(C), 84.7(E), 84.7(F), 84.7(G), 84.7(H), 84.7(I), 84.7(J), 84.7(L) and 84.7(M).]

- Former Section 84.7(D) required users to comply with the piping design guidelines contained in AWWA Manual M-24, Dual Water Systems, (AWWA, Denver, CO 1994). This reference was eliminated because the referenced guidelines are not applicable to users' irrigation, industrial and commercial piping systems. Section 84.6(A)(2) of the amended regulation requires the treater to submit proof it has obtained site application approval and design approvals pursuant to the requirements of Regulation No. 22. Treaters' location and design plans and specifications are reviewed by the Division pursuant to Regulation No. 22. It is the intent of the Water Quality Control Division to use AWWA Manual M-24 as guidance during this review.

Section 84.10 [formerly 84.8], which establishes additional conditions for the use of Category 1 reclaimed domestic wastewater, was revised for clarity, completeness, and consistency with other revisions.

The Commission revised section 84.11 [formerly 84.9] to account for industrial and commercial uses, and to eliminate previous monitoring requirements that were impractical and burdensome for treaters and users. Users of Category 1 reclaimed domestic wastewater for landscape irrigation must confirm that application occurred during authorized times instead of requiring the keeping of records showing the actual dates and times that restricted use water was used. This requirement saves time for the treaters, users and the Division while maintaining the original intent.

Section 84.12 [formerly 84.10] was revised for clarity, completeness, and consistency with other revisions. Section 84.13 [formerly 84.11] regarding enforcement was revised for clarity, completeness, and consistency with other revisions.

PARTIES TO THE RULEMAKING HEARING

1. Rangeview Metropolitan District
2. Colorado Wastewater Utility Council
3. The City and County of Denver, Board of Water Commissioners
4. The City of Westminster
5. Airpark Metropolitan District
6. Parker Water and Sanitation District
7. RG Consulting Engineers
8. Xcel Energy
9. Colorado Rock Products Association

84.23 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY, AND PURPOSE (AUGUST, 2005 HEARING, ADOPTED OCTOBER 11, 2005 AND EFFECTIVE NOVEMBER 30, 2005)

The provisions of sections 25-8-205(1) and 25-8-308(1)(h) C.R.S. provide the specific statutory authority for adoption of amendments to this regulation. The Commission also adopted, in compliance with section 24-4-203(4), C.R.S., the following statement of basis and purpose.

Basis and Purpose

On February 14, 2005, the Water Quality Control Division and the Joint Water Reuse Committee of the Rocky Mountain Section American Water Works Association and Rocky Mountain Water Environment Association ("Joint Committee") requested that the Commission review Regulation No. 84 for the purpose of considering additional uses of reclaimed water and other changes to the regulation. On August 8, 2005, the Commission held a rulemaking hearing during which several modifications and additions to the regulation were adopted.

As a result of this rulemaking, the Commission amended Regulation No. 84 to continue to promote the use of reclaimed water. The regulation, as amended, extends its framework to include additional uses or reclaimed water and accompanying requirements to ensure protection of public health and the environment. Specifically, the Commission is requiring reclaimed water to meet minimum standards commensurate with the risks associated with the new uses. Also, treaters and users are required to employ appropriate best management practices and to oversee the use of reclaimed water for such uses.

The Commission concludes that these amendments to Regulation No. 84 are reasonable considering the economic, environmental, and public health costs, benefits and impacts of the water reuse program.

The term "reclaimed domestic wastewater" was changed to "reclaimed water" throughout the Regulation. "Reclaimed water" is the term used in the water reuse regulations of most other states and is also used in EPA's 2004 Guidelines for Water Reuse. It is desirable to use a common term for this highly treated water as this will assist with public education efforts.

The Commission modified section 84.4 to delete provisions that are no longer applicable and relocated the exemption for irrigation at wastewater treatment facilities to the definition of Landscape Irrigation. The Commission also added, deleted, and modified definitions to increase clarity and to achieve consistency with earlier revisions to this regulation and with other regulations. The definition of "Agricultural Use" was deleted since the regulation does not

address this use at this time. The definition of “Agronomic Rate” was expanded to include watering requirements of plants in order to reinforce the Commission’s intent that passage of nutrients below the root zone be strictly minimized. This change operates in conjunction with revisions to sections 84.6(A)(3) and 84.9(A)(4). Specific uses such as Closed Loop Cooling System, Dust Control, and Fire Protection – Non Residential were deleted from section 84.8(A) and are now defined in section 84.5. The definition of “Closed Loop Cooling System” added to Section 84.5 parallels the language currently found in section 84.8(A)(5) of the rule. It is the Commission’s intent that all types of closed loop cooling systems falling within this definition are authorized to use reclaimed water. This includes re-circulating evaporative cooling systems and associated cooling water storage facilities that may be employed in the electric generation industry where public access is not allowed such as the use that has been in place at Platte River Power Authority since 1981. Definitions for “Resident-Controlled Landscape Irrigation” and “Fire Protection – Residential” were also added. For purposes of this regulation, residential areas are land use planning areas zoned for residential use, or otherwise designated for residential use by the applicable local land use planning authority.

The Commission revised section 84.6(A)(3) to require a specific analysis, prior to issuance of a Notice of Authorization, to demonstrate that reclaimed water will be applied at agronomic rates. This was done to ensure that land application done under Regulation No. 84 is protective of ground water quality in light of the Commission’s adoption of revisions to Regulation No. 61 that provide an exemption from the requirement to obtain a discharge permit, in such situations. Similarly, the Commission revised the best management practice at section 84.9(A)(4) to add additional protections for ground water.

In situations where there are applicable limitations on concentration or loading of phosphorus or nitrogen under a control regulation or TMDL, the Commission modified sections 84.6(A)(9) and 84.6(E)(6) to provide an option, at the request of the treater, to have such limitations addressed in the Notice of Authorization. Otherwise, such limitations must be included in a discharge permit issued pursuant to Regulation No. 61.

The Commission refined section 84.6(E)(7) regarding the requirement for a treater to request an amendment to the Notice of Authorization.

The Commission adopted standards and other requirements for Category 3 reclaimed water to apply to two newly authorized uses of reclaimed water. Specific Category 3 uses authorized include the use of reclaimed water for fire protection in residential areas and for landscape irrigation where a single-family resident has control of the plumbing and/or the time of irrigation. When compared with those uses where Category 1 or Category 2 reclaimed water is allowed, uses requiring Category 3 water may present an increased risk of consumption of reclaimed water due to the fact that the number of entities (e.g., single family residents) who control connections after initial construction will significantly increase and these individuals will also control the time and manner in which irrigation takes place. This increases both the possibility of a cross-connection between the reclaimed water and potable water systems and the risk of public contact with reclaimed water. Given this increased risk, the Commission adopted a standard for Category 3 reclaimed water that requires that *E. coli* not be detected in 75% of samples collected in any 30-day period, with a single-sample maximum for *E. coli* of 126 colony forming units (cfu) per 100 milliliters (ml) or a most probable number (MPN) of 126 per 100 ml, depending upon the analytical enumeration method used. This standard recognizes that it is not practical to meet a no detect standard for an indicator organism at all times and is consistent with regulatory requirements used in other states (e.g. Florida) and with the recommendations of the EPA. The rationale for selecting 126 cfu (or MPN) per 100 ml as the single sample maximum standard is consistent with the rationale supporting the *E. coli* standard for Category 1 and 2 reclaimed water. The Commission found that the *E. coli* standard is protective of the public health and environment where Category 3 reclaimed water is used in a manner compliant with the other requirements contained in the regulation.

The Commission exercised its discretion, pursuant to Citizens for Free Enterprise v. Department of Revenue, 649 P.2d 1054 (Col. 1982) to adopt these requirements based upon policy considerations about the possible increased risks to public health associated with the Category 3 uses as opposed to specific scientific evidence to that effect.

In addition to compliance with the *E. coli* standard, treaters and users of Category 3 reclaimed water are required to develop and implement appropriate additional best management practices, including public education, to strictly reduce the risk of cross-connections between the reclaimed water and potable water systems. Additional conditions required for Category 3 uses are listed in sections 84.8(A) and 84.9(A).

As revised, section 84.8(A) requires that at a minimum, the numbered conditions indicated in the last column of Table A are required for the corresponding uses. In addition, in accordance with the authority provided in section 84.6(E), the Division may require additional conditions listed in section 84.8(A) for individual reuse activities as it determines appropriate.

The Commission decided not to include specific requirements for continuous disinfection of Category 3 reclaimed water but notes that the requirements for monitoring to determine the quality of all categories of reclaimed water should include frequent determinations to assure that disinfection is being provided prior to use.

The Commission deleted section 84.10 and added provisions to section 84.9(A)(5) regarding the mechanisms that users of Category 1 reclaimed water must employ to restrict access to areas when irrigation is taking place.

In order to avoid the need to commit an excessive amount of Division resources for regulatory oversight when Category 3 reclaimed water is used, section 84.9(A)(6) requires the treater to assume responsibility for the numerous residential users inherent when reclaimed water is used for resident-controlled landscape irrigation and there is not an acceptable entity (e.g., homeowners' association) to assume said responsibility.

The Commission moved the provisions of section 84.11(C) to subsection (B) of new section 84.10 and also added a specific requirement to report violations pursuant to new section 84.10(C)(1).

At the time the Commission initially adopted the Variance provision in Section 84.12, it excluded authorization to the Division to provide a variance for the *E. coli* standards. The Commission now concludes that it is appropriate to provide a variance from the "235/100 ml single sample maximum"standard on a case-by-case basis. For example, testimony was received from the City of Fort Collins and the Platte River Power Authority concerning a use that has been in effect since 1981 without incident. Some of the effluent from the city's Drake facility is pumped 27 miles in an underground pipeline for ultimate addition to Platte River's 16,000 acre foot, 500 surface acre long term carryover storage reservoir for recirculating cooling water use at the Rawhide energy station. There is no public access to any part of the process and as a result, there is no public exposure to reclaimed water and potential worker exposure is adequately limited and controlled with safety procedures and best management practices. To avoid the necessity for capital and operational costs for investments associated with meeting the single sample maximum standard in the regulation, Fort Collins and Platte River requested a limited change in the Division's authority to grant a variance from this aspect of the *E.coli* standard. When Regulation 84 was adopted in 2000, the Commission noted in its Statement of Basis that reclaimed domestic wastewater systems had been constructed and been in operation prior to the adoption of the regulation. It was emphasized that this regulation is not intended to force existing systems to make capital improvements solely for assuring standardization if they accomplish the objectives of this regulation. The Commission has determined it is appropriate to provide authority to the Division to grant a variance from the single sample maximum standard when it concludes that the cost of compliance does not bear a reasonable relationship to the environmental or public health benefits.

As noted in the Statement of Basis when the Commission added *E.coli* to the Basic Standards for Surface Waters in 2000, there is great variability in individual bacteriological samples because bacteria are not uniformly distributed in water samples. A single sample may give a false impression of potential risk of violation of a standard based on a geometric mean. In cases where there is limited or no public exposure and potential worker exposure is controlled by best management work place standards, the resulting lower risk warrants the option for the Division to consider a variance from the single sample maximum standard.

The Commission also corrected references to "E coli" in Regulation No. 84 to the italicized *E coli*.

PARTIES TO THE RULEMAKING HEARING

1. RMWEA/RMSAWWA Water Reuse Joint Committee
2. Platte River Power Authority
3. Plum Creek Wastewater Authority
4. Dominion Water & Sanitation District
5. Eastern Adams County Metropolitan District
6. The City of Aurora
7. Xcel Energy

84.24 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY, AND PURPOSE (August, 2007 Hearing)

The provisions of sections 25-8-205(1) and 25-8-308(1)(h) C.R.S. provide the specific statutory authority for adoption of amendments to this regulation. The Commission also adopted, in compliance with section 24-4-203(4), C.R.S., the following statement of basis and purpose.

Basis and Purpose:

Regulation 84.4 was amended to state that wastewater that has been treated and is used at a domestic wastewater treatment plant (DWWTP) site for landscape or process uses is not subject to Regulation 84. Landscape irrigation with treated effluent at a DWWTP was previously excluded in the definition of landscape irrigation. Section 84.5(10). This exclusion was deleted from the definitions section and moved to the applicability section 84.4, together with a new exclusion dealing with process waters used at a DWWTP site. The Commission believes it is more logical to include these exclusions in the section dealing with applicability.

The Commission found that it is appropriate to exclude process water used at a DWWTP site because process water uses are restricted to the DWWTP site and access to these sites is restricted and not open to the public. The use of process water is limited and controlled by DWWTP staff who are trained in the handling and use of process water. It is the Commission's intention that after the process use is completed, the process water will be captured and returned to the wastewater treatment process and not discharged separately to waters of the state.

The Commission deleted the provision in section 84.6(A)(3) that allowed landscape irrigation to be done above agronomic rates where the treater or user, as appropriate, had obtained a CDPS ground water discharge permit. The Commission understands that there are no entities currently making use of this provision and found it to be inconsistent with the original intent of Regulation 84 which was to address the use of reclaimed water under a single regulation. In addition the Commission finds, based on the typical nutrient content of treated wastewater and the watering needs of landscape plants, that application of reclaimed water at agronomic rates is achievable under normal circumstances.