



COLORADO

Water Quality
Control Commission

Department of Public Health & Environment

NOTICE OF PUBLIC RULEMAKING HEARING BEFORE THE COLORADO WATER QUALITY CONTROL COMMISSION

SUBJECT:

For consideration of the adoption of revisions to the Reclaimed Water Control Regulation, Regulation #84 (5 CCR 1002-84). Revisions proposed by Denver Water, along with a proposed Statement of Basis, Specific Statutory Authority and Purpose, are attached to this notice as Exhibit 1.

In these attachments, proposed new language is shown with double-underlining and proposed deletions are shown with ~~strikeouts~~. Any alternative proposals related to the subject of this hearing will also be considered.

SCHEDULE OF IMPORTANT DATES

Party status requests due	05/09/2018 5 pm	Additional information below.
Proponent's prehearing statement due	05/16/2018 5 pm	Additional information below.
Responsive prehearing statements due	06/13/2018 5 pm	Additional information below.
Rebuttal statements due	07/11/2018 5 pm	Additional information below.
Last date for submittal of motions	07/15/2018 5 pm	Additional information below.
Notify commission office if participating in prehearing conference by phone	07/16/2018 by noon	Send email to cdphe.wgcc@state.co.us with participant(s) name(s)
Prehearing Conference (mandatory for parties)	07/17/2018 1:00 pm	TBD (Sabin or Carson Conference Room) Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246 Call-in: 1-857-216-6700, Code: 425132
Rulemaking Hearing	08/06/2018 10:00 am	Florence Sabin Conference Room Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246

HEARING SUBMITTALS:

For this hearing, the commission will receive all submittals electronically. Submittals must be provided as PDF documents, except for raw data exhibits which may be provided as Excel

workbooks. Submittals may be emailed to cdphe.wgcc@state.co.us, provided via an FTP site, CD or flash drive, or otherwise conveyed to the commission office so as to be received no later than the specified date.

PARTY STATUS:

Party status requests must be in writing and must provide:

- the organization's name,
- one contact person,
- a mailing address,
- a phone number, and
- email addresses of all individuals associated with the party who wish to be notified when new submittals are available on the commission's website for review.

In accordance with section 25-8-104(2)(d), C.R.S., any person who believes that the actions proposed in this notice have the potential to cause material injury to his or her water rights is requested to so indicate, along with an explanation of the alleged harm, in their party status request.

PREHEARING AND REBUTTAL STATEMENTS:

Each party must submit a prehearing statement: parties that have proposed revisions attached as exhibits to the notice must submit a proponent's prehearing statement. All other parties must submit a responsive prehearing statement. Proponents may also submit responsive prehearing statements when there are multiple proposals attached to the notice.

Each prehearing and rebuttal statement must be provided as a separate PDF document from any accompanying written testimony or exhibits.

Following the rebuttal statement due date, no other written materials will be accepted from parties except for good cause shown.

Oral testimony at the hearing should primarily summarize written material previously submitted. The hearing will emphasize commission questioning of parties and other interested persons about their written prehearing submittals. Introduction of written material at the hearing by those with party status will not be permitted unless authorized by the commission.

PREHEARING CONFERENCE:

Attendance at the prehearing conference is mandatory for all persons requesting party status. Parties needing to participate by telephone are encouraged to notify the commission office prior to the prehearing conference. Remote participants can call 1-857-216-6700 and enter the conference code 425132.

Following the cut-off date for motions, no motions will be accepted, except for good cause shown.

PUBLIC PARTICIPATION ENCOURAGED:

The commission encourages input from non-parties, either orally at the hearing or in writing prior to the hearing. Written submissions should be emailed to cdphe.wqcc@state.co.us by July 25, 2018.

SPECIFIC STATUTORY AUTHORITY:

The provisions of sections 25-8-202(1)(a), (b), and (2); 25-8-203; 25-8-204; and 25-8-402, C.R.S., provide the specific statutory authority for consideration of the regulatory amendments proposed by this notice. Should the commission adopt the regulatory language as proposed in this notice or alternative amendments, it will also adopt, in compliance with section 24-4-103(4) C.R.S., an appropriate Statement of Basis, Specific Statutory Authority, and Purpose.

Dated this 9th day of April, 2018 at Denver, Colorado.

WATER QUALITY CONTROL COMMISSION

A handwritten signature in dark ink, appearing to read 'Trisha Oeth', written in a cursive style.

Trisha Oeth, Administrator

EXHIBIT 1 **DENVER WATER**

DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Water Quality Control Commission

REGULATION NO. 84 - RECLAIMED DOMESTIC WASTEWATER CONTROL

5 CCR 1002-84

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, agricultural irrigation, fire protection, industrial, ~~and commercial,~~ and toilet and urinal flushing uses identified in section 84.89 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 ~~N~~notice of ~~A~~authorization pursuant to section 84.6(C) herein by the Water Quality Control Division.

84.5 DEFINITIONS

The following definitions shall apply:

- (1) Agricultural Irrigation means use of reclaimed water for the irrigation of crops and trees, excluding crops produced for direct human consumption, (except marijuana), crops where lactating dairy animals forage, and trees that produce nuts or fruit intended for human consumption.
- (2) Agricultural Irrigation User means a person who uses reclaimed water for the purpose of agricultural irrigation.
- (3) 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.
- (4) Automated Vehicle Washing means the cleaning of vehicles and associated equipment, such as trailers, where automated equipment is used to apply spray water, cleaning products, and/or rinse water, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- (5) Cannabis means hemp and marijuana as defined herein.
- ~~(56)~~ Certified Cross-Connection Control Technician has the same meaning as the term "certified cross-connection control technician" as defined in section 11.39(2)(h) of 5 CCR 1002-11 (Regulation #11).
- ~~(7)~~ Certified Operator has the same meaning as the term "certified operator" as defined in section 100.2(3) of Regulation 5 CCR 1003-2 (Regulation #100).
- ~~(8)~~ Commercial Laundry means a facility that uses water to clean clothing and other textile products where only laundry workers operate the washing machines and cleaning equipment, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- ~~(69)~~ Commercial User means a person who uses reclaimed water in the operation of a business listed in Table A of section 84.~~89~~.
- ~~(710)~~ Division means the Water Quality Control Division of the Colorado Department of Public Health and Environment.
- ~~(811)~~ Evaporative Industrial Processes means the use of water in an industrial process where the benefit of such use requires the evaporation of water, requiring additional make-up water, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- ~~(912)~~ 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.
- ~~(1013)~~ 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.
- ~~(14)~~ Hemp means a plant of the genus cannabis and any part of the plant, whether growing or not, containing a delta-9 tetrahydrocannabinol (THC) concentration of no more than three-tenths of one percent (0.3%) on a dry weight basis.

- ~~(15)~~ Indoor Cannabis Cultivation means the act of growing cannabis indoors and in greenhouses in accordance with state statutes and rules and regulations promulgated by the Marijuana Enforcement Division of the Colorado Department of Revenue. The Marijuana Enforcement Division holds the ultimate authority to authorize the use of reclaimed water for cannabis irrigation under the standards and conditions set forth in Regulation #84.
- ~~(1416)~~ 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 84.89.
- ~~(14217)~~ Irrigation System means the facilities, piping and other equipment used by a ~~L~~andscape ~~I~~rrigation ~~u~~User or an ~~a~~Agricultural ~~i~~rrigation ~~u~~User.
- ~~(14318)~~ 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.
- ~~(14419)~~ Landscape Irrigation User means a person who uses reclaimed water for the purpose of landscape irrigation.
- ~~(14520)~~ Manual Non-Public Vehicle Washing means the cleaning of vehicles and associated equipment, such as trailers, where any or all of the following are applied manually in the cleaning process: spray water, cleaning products, and/or rinse water; where there is no public access to the vehicle washing facility and only limited and controlled contact with reclaimed water by trained workers,
- ~~(21)~~ Marijuana means all parts of the plant of the genus cannabis whether growing or not, including the seeds thereof.
- ~~(14622)~~ Non-Discharging Construction and Road Maintenance means the use of reclaimed water for nonpotable applications where water is required for cooling, wetting, dust suppression, or other construction and road maintenance activities, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- ~~(14723)~~ Non-Evaporative Industrial Processes means the use of water in an industrial process where water is not evaporated in the process and is used within a contained system, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- ~~(14824)~~ Person means an individual, corporation, partnership, association, state or political subdivision thereof, federal agency, state agency, municipality, commission, or interstate body.
- ~~(14925)~~ 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. Additional points of compliance may be identified by the user as necessary to comply with the disinfection residual monitoring requirements under section 84.10(D)(5) below.
- ~~(2026)~~ 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.
- ~~(2427)~~ 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 uUser and is responsible for the maintenance and/or operation of the irrigation system.

(~~2228~~) 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.

(29) Toilet and Urinal Flushing means the use of reclaimed water to flush toilets and urinals.

(~~2330~~) Trained Worker means a person employed at the site where reclaimed water is used, who has been provided with the information specific to the additional conditions specified in section 84.~~89~~ that are applicable to that site's approved use(s) of reclaimed water.

(~~2431~~) Transmission System means the treater's facilities that transport treated reclaimed water between the treater and users.

(~~2532~~) Treater means a person who treats and provides reclaimed water to a user for the purpose of landscape irrigation, agricultural irrigation, fire protection, commercial use or industrial use. The treater and the user may be the same entity.

(~~2633~~) Unrestricted Access means uncontrolled access to the areas where reclaimed water meeting the Category 2 standards, as defined in section 84.7, is used.

(~~2734~~) User means a person who uses reclaimed water for landscape irrigation, agricultural irrigation, fire protection, commercial or industrial uses.

(~~2835~~) User Pplan to Ccomply means the information and documentation a user is required to submit to the treater under section 84.~~910~~ of this regulation.

(~~2936~~) Washwater Applications means water used in washing of miscellaneous construction/maintenance equipment, as well as concrete washout, mineral processing, and other similar uses where reclaimed water is used to remove material from equipment or a desired product, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.

84.6 ADMINISTRATION

(A) Letters of Intent.

Treaters shall submit ~~Letters~~ a letter of ~~i~~ntent 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, and section 84.8 of this regulation (for localized reclaimed water treatment systems with indoor uses), 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 or agricultural irrigation will be applied at or below agronomic rates. Landscape irrigation and agricultural 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)~~ For localized reclaimed water treatment systems, a field verification and commissioning plan shall be submitted with the letter of intent. The need for, duration, and extent of the field verification procedure will depend on the characteristics of the treatment system. The procedure will specify the number of samples, duration of phase, parameters to test, which unit processes to test and targets for treatment metrics.
 - ~~(56)~~ A certification statement as per section 84.1~~43~~ of this regulation.
 - ~~(67)~~ For each user, a "User Plan~~user plan~~ to C~~comply~~" developed in cooperation with the treater and meeting the requirements of section 84.~~910~~.
 - ~~(78)~~ Affirmation that the reuse of this water by the treater will not materially injure water rights.
 - ~~(89)~~ When reclaimed water is used for fire protection, the L~~l~~etter of i~~i~~ntent 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 L~~l~~etter of i~~i~~ntent shall also include a letter from the fire protection authority(s) having jurisdiction indicating their approval of using reclaimed water for fire protection activities.
 - ~~(910)~~ 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 N~~n~~otice of A~~a~~uthorization issued under this regulation or under a permit issued pursuant to Regulation No. #~~61~~.
- (B) Field Verification and Commissioning Report and Inspection. For localized reclaimed water treatment systems, following completion of field verification and commissioning, the treater shall provide the Division a field verification and commissioning report and an operations and monitoring plan. The Division may conduct an inspection of the localized reclaimed water treatment system.
- (C) Division Review. The treater shall be notified in writing not more than thirty (30) calendar days after receipt of a Letter of Intent~~letter of intent (for centralized reclaimed water treatment systems)~~

or not more than thirty (30) calendar days after receipt of a field verification and commissioning report and operations and monitoring plan (for localized reclaimed water treatment systems) by the Division if, and in what respects, the ~~Letter of Intent is incomplete.~~letter of intent (for centralized reclaimed water treatment systems) or field verification and commissioning report and operations and monitoring plan (for localized reclaimed water treatment systems) are 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.~~

- (GD) Issuance of Notices of Authorization. The Division shall either issue or deny the ~~Notice of Authorization~~authorization (NOA) within thirty (30) calendar days of its determination that the ~~Letter of Intent is~~letter of intent (for centralized reclaimed water treatment systems) or field verification and commissioning report and operations and monitoring plan (for localized reclaimed water treatment systems) are 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~~NOA of such action and the reason(s) for the denial. ~~The Division shall issue separate Notices of Authorization~~NOAs to the treater and to each user. Treater and users planning to use reclaimed water shall have or obtain a ~~Notice of Authorization~~NOA from the Division prior to any use of reclaimed water.
- (DE) Appeal of Issuance or Denial of ~~Notice of Authorization.~~NOA. The treater or user, or any other person potentially adversely affected or aggrieved by Division issuance or denial of a ~~Notice of Authorization~~NOA, 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~~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.
- (EF) Terms and Conditions of ~~Notices of Authorization.~~Notices of Authorization (NOA. 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 84.89, including the category of reclaimed water ~~and~~, the associated numeric limit for each use and requirements from section 84.7; and 84.8.

- (4) For uUser 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), 10 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 uUser NOAs, include a requirement that the user comply with the User Plan ~~user plan~~ to Ccomply;
- (6) Where the treater has so requested in the Letter of Intent per Section 84.6(A)(911), 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 NOA 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 FOR CENTRALIZED RECLAIMED WATER TREATMENT SYSTEMS

(A) Applicability and Definitions:

- (1) Reclaimed water treated by centralized reclaimed water treatment systems as defined in section 84.7(A)(2) must comply with the standards in this rule and the applicable conditions set forth in section 84.9.

(2) Centralized reclaimed water treatment system means a system that receives wastewater from a domestic wastewater treatment works serving more than one neighborhood or campus for treatment and beneficial use as reclaimed water.

(AB) 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:

<u>Parameter</u>	<u>Limit</u>
<i>E. coli</i> /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.

(BC) 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:

<u>Parameter</u>	<u>Limit</u>
<i>E. coli</i> /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.

(CD) 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:

<u>Parameter</u>	<u>Limit</u>
<i>E. coli</i> /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 REQUIREMENTS FOR LOCALIZED RECLAIMED WATER TREATMENT SYSTEMS TREATING RECLAIMED WATER FOR NON-POTABLE USES WITHIN OCCUPIED STRUCTURES

(A) Applicability and Definitions.

(1) Reclaimed water treated by localized reclaimed water treatment systems as defined in section 84.8(A)(2) must comply with the standards set forth in this rule, the standards set forth in section 84.7, and the applicable conditions set forth in section 84.9 and 84.10.

(a) If the reclaimed water treated by a localized reclaimed water treatment system will not be used for indoor uses within an occupied structure, the localized reclaimed water treatment system is not required to comply with this rule. Such

systems need only comply with section 84.7 and applicable conditions set forth in section 84.9 and 84.10.

(2) Localized reclaimed water treatment system means a system designed to treat domestic wastewater generated from a building, neighborhood, or campus for beneficial use as reclaimed water. The domestic wastewater treated by a localized reclaimed water treatment system must have little to no dilution from non-domestic wastewater sources and receive domestic wastewater from no more than one neighborhood or campus.

(B) Localized Reclaimed Water Treatment System Standards.

(1) Localized reclaimed water treatment systems are subject to design requirements for treatment.

(a) The Division will develop policy governing the design requirements, which will include logarithmic “log” reduction of pathogens, based on quantitative microbial risk assessment using a risk target no more stringent than 10⁻² infections per person per year.

(b) The design requirements will be built on the assumption that the wastewater has little to no dilution from non-municipal sources. The policy will include provisions for a variance in log reduction targets if wastewater is found to have higher dilution from non-municipal sources or if treaters conduct their own quantitative microbial risk assessment.

(2) Localized reclaimed water treatment systems shall include a flow meter on the localized reclaimed water treatment system and a flow meter on the potable make-up water pipeline to the distribution system.

(3) Localized reclaimed water treatment systems must be equipped with features that result in a controlled and non-hazardous automatic shutdown of the process in the event of a malfunction. Localized reclaimed water treatment systems must maintain overflow connections to a domestic wastewater treatment works to allow for disposal of off-specification treated reclaimed water or to allow disposal of untreated wastewater during maintenance of the treatment system. Overflow connections will include an air gap or other approved backflow prevention device.

(4) Localized reclaimed water treatment systems must be operated under the direct supervision of a Certified Operator in Responsible Charge, who meet all applicable requirements of Regulation 100.

84.9 RECLAIMED WATER USES FOR CENTRALIZED AND LOCALIZED RECLAIMED WATER TREATMENT SYSTEMS

Table A: Approved Uses of Reclaimed Water

Note: If reclaimed water is supplied by a localized reclaimed water treatment system for non-potable use within an occupied structure, the provisions of section 84.8 of this regulation apply in addition to the requirements in Table A. If reclaimed water is supplied by a centralized reclaimed water treatment system, the provisions of Table A apply.

Approved Uses	Category	Category	Category	Additional Conditions
---------------	----------	----------	----------	-----------------------

	1	2	3	Required 84.89(A)
INDUSTRIAL				
Evaporative Industrial Processes	Allowed	Allowed	Allowed	1
Washwater Applications	Not Allowed	Allowed	Allowed	2,3,7
Non-Discharging Construction and Road Maintenance	Allowed	Allowed	Allowed	3,7
Non-Evaporative Industrial Processes	Allowed	Allowed	Allowed	7
LANDSCAPE IRRIGATION				
Restricted Access	Allowed	Allowed	Allowed	
Unrestricted Access	Not Allowed	Allowed	Allowed	3,4
Resident-Controlled	Not Allowed	Not Allowed	Allowed	3,4,5
COMMERCIAL				
Zoo Operations	Allowed	Allowed	Allowed	
Commercial Laundries	Not Allowed	Allowed	Allowed	7
Automated Vehicle Washing	Not Allowed	Allowed	Allowed	3,8
Manual Non-Public Vehicle Washing	Not Allowed	Allowed	Allowed	3,8
FIRE PROTECTION				
Nonresidential Fire Protection	Not Allowed	Allowed	Allowed	6
Residential Fire Protection	Not Allowed	Not Allowed	Allowed	6
AGRICULTURAL IRRIGATION				
Non-Food Crop Irrigation and Silviculture	Allowed	Allowed	Allowed	3
<u>Indoor cannabis cultivation</u>	<u>Not</u>	<u>Allowed</u>	<u>Allowed</u>	<u>5, 9, 10, 11</u>

	<u>allowed</u>			
<u>TOILET AND URINAL FLUSHING</u>				
<u>Toilet and urinal flushing</u>	<u>Not Allowed</u>	<u>Not Allowed</u>	<u>Allowed</u>	<u>5, 12</u>

(A) Additional Conditions Required. In addition to the conditions for use of reclaimed water listed in section 84.910, the Division will include the following best management practices in the Notices of Authorization/NOA 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 disinfectant residual and/or public access restrictions.
- (2) 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. Workers shall be trained on the proper use and washing procedures when using reclaimed water.
- (3) Application rates or other measures shall be employed to 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 workers, plumbing contractors and inspectors who deal with the Resident-Controlled Landscape Irrigation, toilet and urinal flushing, or indoor cannabis cultivation 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 or worker 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, toilet and urinal flushing, or indoor cannabis cultivation systems.
- (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.

- (7) Where there is the reasonable potential for worker or public exposure to aerosols generated in the use, users of Category 1 Reclaimed Water (if allowed for the use per Table A) or Category 2 Reclaimed Water shall employ measures to prevent the frequent exposure of workers and the public to aerosols generated in the use of reclaimed water. Measures shall include at least one of the following: minimum setback distance of 100 feet between the nearest source of aerosol generation and areas where workers or the public are normally present; physical barriers between aerosol sources and humans; personal protective equipment to prevent aerosol inhalation; functionally equivalent measures approved by a qualified individual (e.g., a certified industrial hygienist); or other means approved by the Division. Given the higher level of treatment provided for Category 3 Reclaimed Water, additional measures to address exposure of workers or the public to aerosols are not required.
- (8) Where there is the potential for worker or public exposure to aerosols generated in the use, users of Category 2 Reclaimed Water shall employ measures to prevent the inhalation of aerosols from reclaimed water by workers and the public. Measures shall include at least one of the following: personal protective equipment documented to prevent aerosol inhalation; or functionally equivalent measures approved by a qualified individual (e.g., a certified industrial hygienist) and documented to prevent aerosol inhalation.
- (9) Reclaimed water may be used for indoor cannabis cultivation, provided that the user adopts and follows best management practices (BMPs) to minimize growth of and worker exposure to Legionella and other premise plumbing opportunistic pathogens. BMPs shall be specified in a site-specific operation and maintenance plan as described in Section 84.10(C). The Division shall develop policy to define water age requirements and flushing requirements after stagnation.
- (10) Potable water must be available for hand-washing, cleaning surfaces and tools that come into contact with finished products, and other hygiene needs. Reclaimed water may not be applied in any manner that directly contacts cannabis after post-harvesting or for workers' hygiene or consumption. Reclaimed water may not be used in processing of marijuana concentrates or other derivatives.
- (11) Plumbing modifications shall only be conducted by licensed plumbers. Signage shall indicate that plumbing modifications can only be done by authorized personnel. Signage shall be located next to all spigots within a cannabis cultivation facility or in the case of toilet flushing, where plumbing is accessible.
- (12) Users receiving reclaimed water for use within an occupied premises for toilet flushing, or other uses which cannot be interrupted without jeopardizing public health and safety, must include a backup potable water connection capable of supplying potable water to fixtures via an air gap should the localized reclaimed water treatment system fail or the reclaimed water is found to be unsuitable or insufficient in volume.

84.910 CONDITIONS FOR USE OF RECLAIMED WATER

- (A) Landscape ~~Irrigation Users and Agricultural Irrigation Users~~ irrigation users and agricultural irrigation users shall include the following in a ~~User Plan~~ user plan to ~~C~~ comply:

- (1) User information including name of entity; legally responsible person's name; address; telephone number; email address; and site address where reclaimed 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 Nnotice 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 Nnotice 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 Nnotice 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~~ 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 user plan to Comply and shall act as the users' legal representative for purposes of certification pursuant to section 84.9(~~D~~10(F)) below.
- (B) Commercial, industrial, and fire protection uUsers shall include the following in a User Plan 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 reclaimed 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, subsequent permitted discharge, 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) Indoor cannabis cultivation 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 reclaimed 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 water system and where use of reclaimed water will occur;
- (4) Provide description of water systems/flow diagrams, including the potable and non-potable water systems within the building;
- (5) Control measures – determine locations where control measures must be applied and maintained in order to control worker exposure to reclaimed water; and
- (6) An operation and maintenance plan included as an appendix to the user plan to comply, which shall reflect current conditions, be kept on site, and be available for review by the Division upon request. The Division will develop policy requirements for elements of the operation and maintenance Plan. The operation and maintenance plan will include training requirements for potentially exposed workers and maintenance staff.

(D) Toilet and urinal flushing 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 reclaimed 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 water system and where use of reclaimed water will occur;
- (4) Provide description of water systems/flow diagrams, including the potable and non-potable water systems within the building;
- (5) An operation and maintenance plan included as an appendix to the user plan to comply, which shall reflect current conditions, be kept on site, and be available for review by the Division upon request. The Division will develop policy requirements for elements of the operation and maintenance plan.
- (6) Reclaimed water supplied for toilet and urinal flushing shall require a residual of ≥ 0.2 mg/L (applies as residual free chlorine or monochloramine) near point of use or another disinfection approach with equivalent residual protection against premise plumbing pathogens. This may require chlorine "boosting" at the point that reclaimed water enters a structure. Sampling sites shall be representative point(s) in the facility non-potable

distribution system (e.g. near the toilets). The monitoring frequency, exact monitoring locations, and other compliance terms, will be determined in site-specific water quality monitoring plan submitted with user plan to comply. The site-specific water quality monitoring plan will be kept current and available.

- (~~CE~~) All users shall include information in their ~~User Plan~~user plan to ~~C~~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 reclaimed water distribution or irrigation system, including valves, outlets, couplers, and sprinkler heads, and residential, 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(D)(11).
 - (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. When potable water is used to supplement reclaimed water, the potable water provider must be notified.
 - ~~(8)~~ For indoor uses of reclaimed water, testing shall be completed to detect uncontrolled cross connections by a Certified Cross-Connection Control Technician prior to initial operation of the system and at intervals thereafter as mandated in the notice of authorization. The user must maintain a current diagram of the structure's potable and reclaimed water plumbing.
 - ~~(89)~~ Supplementing reclaimed water with water from irrigation wells or industrial wells other non-potable supplies shall not be allowed except through an approved reduced pressure principle backflow prevention device ~~or an air gap, air gap, or other cross-connection control method.~~ An approved cross-connection device or method shall be provided at all service connections between reclaimed water and other non-potable water sources including but not limited to water from irrigation wells, industrial wells, or graywater.

~~(910)~~ 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 ~~N~~notice of ~~A~~authorization, to prevent contamination of the well.

~~(11)~~ Reclaimed water shall not be used for indoor non-potable uses if, after treatment, it is stored in an outdoor storage facility exposed to the open atmosphere.

~~(4012)~~ 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.

~~(4113)~~ The additional conditions included in section 84.~~89~~, as applicable.

~~(DE)~~ Each ~~User Plan~~user plan to ~~C~~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.~~89~~ and 84.~~910~~, and, if applicable, the access restrictions when Category 1 reclaimed water is used. The user shall submit a certification statement per section 84.~~4314~~ 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.~~4011~~.

~~(G)~~ Users from localized reclaimed water treatment systems shall include the following in a user plan to comply:

- (1) Protocol to divert the alternate water source to the sanitary sewer system upon receipt of the results of any water quality test sample that does not meet the water quality requirements of the NOA or indication of a process malfunction based on continuous monitoring. Systems required to divert to the sanitary sewer may resume normal operation after the Division receives and approves documentation of three (3) consecutive days of full compliance along with a letter explaining why the performance was compromised and what actions were taken to prevent it from reoccurring.

~~84.4011~~ **MONITORING, RECORD KEEPING AND REPORTING**

Sections 84.11(A) through (C) apply to centralized reclaimed water treatment systems and localized reclaimed water treatment systems. Section 84.11 (D) applies only to localized reclaimed water treatment systems.

(A) Treaters and users operating pursuant to a ~~N~~notice of ~~A~~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~~landscape irrigation users and ~~Agricultural Irrigation Users~~agricultural 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 March 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.~~4011~~4011(A)(1) above.
 - (3) Violations of this regulation by users pursuant to section 84.~~4011~~4011(C)(1), below.
 - (4) A certification statement by the treater as per section 84.~~4314~~4314 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 ~~N~~nnotice of ~~A~~authorization.
 - (6) Certification statements from each user as per section 84.~~4314~~4314 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 ~~N~~notices of ~~A~~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, exceed~~e~~ances 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.

(D) Localized reclaimed water treatment systems must be continuously monitored (e.g. turbidimeter) to demonstrate that systems designed to comply with pathogenic microorganism control are functioning properly. The choice of the type of continuous monitoring technologies to be utilized will be tailored for an individual system and will be included in an operations and monitoring plan.

84.1412 VARIANCES

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.

84.1213 ENFORCEMENT

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 84.4011(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 84.4011(C), the user may be subject to an enforcement action for failure to report the violation.

84.1314 CERTIFICATION

Persons who are required to make submittals pursuant to subsections 84.6(A)(~~57~~), 84.9(~~D10~~)(F), and 84.4011(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."

84.1415 - 84.20 Reserved

84.26 STATEMENT OF BASIS SPECIFIC STATUTORY AUTHORITY AND PURPOSE: AUGUST 6, 2018 RULEMAKING; EFFECTIVE SEPTEMBER 6, 2018

The provisions of sections 25-8-202, 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

A. Background

The commission approved the addition of a new use category, “fixture flushing” which includes toilet and urinal flushing; and the addition of a new “agricultural irrigation” use in the form of indoor irrigation of cannabis for human consumption. The commission found that authorization of these new uses is consistent with the intent of the original authorization of Regulation # 84, and presents no increase in the potential risk to human health or the environment with respect to prior approved uses. The commission also found that adding these new uses, with appropriate conditions placed on their implementation will further facilitate the safe and efficient use of Colorado’s limited water resources.

In addition, the commission indicated that Regulation # 84 should be modified to identify and define different types of reclaimed water treatment systems to promote the use of reclaimed water while protecting public health. The commission, therefore, adopts a framework for localized reclaimed water treatment systems, as defined in Section 84.8., while continuing to regulate centralized reclaimed water treatment systems under the water quality categories in Section 84.7 and conditions set forth in Table A of Regulation # 84.

B. Definitions of Centralized and Localized Reclaimed Water Treatment Systems

The commission finds that it is appropriate to adopt definitions of centralized and localized reclaimed water treatment systems and different regulatory regimes for each type of system under Regulation # 84. Localized reclaimed water treatment systems receive domestic wastewater through privately owned sanitary plumbing and are located relatively close to the area or structure where reclaimed water is used. Centralized reclaimed water treatment systems, in contrast, receive domestic wastewater through domestic wastewater treatment works.

Localized Reclaimed Water Treatment Systems and the WERF Framework

The following characteristics are unique to localized reclaimed water treatment systems:

- Cannot depend on extensive operator oversight onsite
- Less frequent sampling to monitor water quality; reliance on automated monitoring and process verification
- Less dilution of domestic wastewater sources from inflow and infiltration (I&I) from rain as well as from commercial and industrial flows, potentially making the pathogens in localized reclaimed water more concentrated

- Higher maximum pathogen concentrations from sick individuals in close proximity during periodic outbreaks (less dilution from non-infected individuals); long periods of no pathogens present between spikes in concentrations.

The commission adopted a new regulatory framework for localized reclaimed water treatment systems providing reclaimed water for indoor uses because of the higher risk of cross-connections and the nature of such systems as described above. This treatment based framework only applies to localized reclaimed water systems that serve reclaimed water for indoor uses. Treatment systems that meet the definition of localized systems, but only apply reclaimed water to outdoor uses need only meet the water quality based standards for centralized reclaimed water treatment systems under subsection 84.8(A)(1)(a).

The regulatory framework for localized reclaimed water treatment systems for indoor uses adopted by the commission is structured around treatment performance criteria. Where reclaimed water provided from localized reclaimed water treatment systems is used for indoor uses there is a greater risk of cross connections with potable systems. It is appropriate to take additional precautions, by adopting the treatment-based approach to regulating such systems. A treatment-based approach for localized reclaimed water treatment systems serving indoor uses helps ensure that systems are designed properly, that public health will be protected despite less frequent sampling and higher degrees of automation, and helps streamline permitting of multiple small systems throughout the state.

The treatment based approach utilizes treatment performance-based logarithmic reduction targets (LRTs) for the treatment of pathogens in localized reclaimed water treatment systems to meet various risk thresholds. The commission considered whether to adopt LRTs for two different risk targets – (a) 1 infection per 100 individuals annually (i.e., 10^{-2} risk), which is a conservative interpretation of the risk threshold used in U.S. EPA's Recreational Water Quality Criteria for full body contact recreation (which is 36 NEEAR gastroenteritis illnesses per 1,000 bathers per exposure) and (b) the acceptable risk threshold used by U.S. EPA in setting drinking water standards under the Safe Drinking Water Act of 1 infection per 10,000 individuals annually (i.e., 10^{-4} risk). Based upon the evidence presented, the commission finds that the 10^{-2} risk level is sufficiently conservative for non-potable uses of reclaimed water and recommends that the division develop policy for treatment requirements for localized reclaimed water treatment systems for indoor uses no higher than this (10^{-2}) risk level.

The commission finds that localized reclaimed water treatment systems should be continuously monitored to ensure that treatment is performing as expected. The type of continuous monitoring should be selected on a system-by-system basis and be verified during the field verification and commissioning study. The monitoring approach will be included in the operations and monitoring plan. The commission finds that continuous monitoring of real-time logarithmic reduction of pathogens is not necessary for public health to be protected.

Centralized Reclaimed Water Treatment Systems

The commission finds that reclaimed water served by centralized reclaimed water systems for indoor uses under the categories and water quality standards set forth in Table A is protective of public health if the centralized reclaimed water treatment system meets the additional disinfection requirements described in Section 84.26.C. below. The evidence shows that, with few exceptions, most reclaimed water treatment systems in the State of Colorado fall into the category of centralized reclaimed water treatment systems. The commission recognizes that because of this fact, there is the potential to undermine the use of reclaimed water served by these systems if the commission were to transition from a water quality standards based approach (Table A) to a treatment technology based framework for centralized reclaimed water treatment systems. The existing water quality standards based approach for centralized reclaimed water treatment systems is protective of public health and appropriate for permitting these types of systems, along with localized reclaimed water treatment systems that provide reclaimed water only to outdoor irrigation uses.

C. Toilet Flushing

The commission finds, based on the evidence presented, “fixture flushing” should be allowed for category 3 reclaimed water, subject to the inclusion of additional restrictions described below.

The primary theoretical risks to public health from use of reclaimed water for toilet flushing are potential exposure to enteric pathogens (due to potential cross-connections with potable water), and potential exposure to *Legionella* or other premise-plumbing pathogens that can be transmitted via aerosols.

The commission finds that a disinfection residual of 0.2 mg/L residual free chlorine or monochloramine maintained in Category 3 reclaimed water near the location of use will minimize the risk of exposure from *Legionella* and other opportunistic premise plumbing pathogens when reclaimed water is used for toilet flushing. This is consistent with Regulation #11, which requires a disinfectant residual of 0.2 mg/L free or total chlorine in drinking water. The commission finds specifying monochloramine in reclaimed water (rather than total chlorine) is important because chlorinating reclaimed water containing organic nitrogen and other compounds may result in the formation of organochloramines that are measured as total chlorine residual but may not have equivalent disinfectant properties as monochloramine, which has been demonstrated to be very effective at *Legionella* control.

The disinfection residual may be maintained in two ways:

1. A reclaimed water treater may maintain the disinfection within the reclaimed water distribution system, including through chlorine boosting along the reclaimed water distribution system if necessary.
2. Alternatively, if the treater does not maintain a disinfection level of 0.2 mg/L residual free chlorine or monochloramine within its distribution system, the user must boost the residual at or near the location of delivery to the structure receiving reclaimed water so as to achieve a level of 0.2 mg/L residual free chlorine or monochloramine at the beginning of the structure’s interior plumbing.

The option to allow boosting of the disinfection residual under the second option set forth above promotes reclaimed water use and provides flexibility to treaters who have irrigation customers. It is important to note that higher disinfectant doses required to maintain residuals in long water age systems may contribute additional dissolved solids that are undesirable for use of reclaimed water for irrigation.

Inhalation, ingestion, or dermal exposure to disinfection byproducts do not pose excess risk when using reclaimed water for toilet or urinal flushing. Relative to toilet or urinal flushing with reclaimed water, showering with warm potable water poses a higher (but *de minimis*) risk of exposure to disinfection byproducts. The evidence presented also shows that contaminants of emerging concern do not pose a risk when reclaimed water is used for toilet flushing because of the extremely low levels of estimates of exposure.

The commission requested that the letter of intent for toilet flushing uses include the submission of an operations and monitoring plan and site-specific water quality monitoring plan for the structure where reclaimed water will be used, regardless of whether the reclaimed water is produced by a centralized or localized treater. The plans will be required as an appendix to the user plan to comply and be kept current. The user plan to comply must also identify the program team, provide a diagram and description of the water treatment system and conveyance system, identify hazardous conditions within the system, control measures to minimize any hazardous conditions, and reporting procedures.

To protect public health, the commission determined that users of reclaimed water for toilet flushing must maintain a backup potable water supply connection in the event of upsets or a failure of a localized reclaimed water treatment system or centralized reclaimed water treatment system. Only licensed plumbers may perform maintenance or make modifications to plumbing within structures that use reclaimed water for toilet flushing. Structures using reclaimed water for toilet flushing must maintain signage providing notice that modifications may be performed only by licensed plumbers.

The commission determined that structures that use reclaimed water indoors must have a backflow prevention device to prevent contamination of potable water distribution systems also serving the structures. In addition, the owner of the structure using reclaimed water for toilet or urinal flushing must conduct testing to detect uncontrolled cross connections by a certified cross-connection control technician prior to initial operation of the system and at intervals thereafter as mandated in the notice of authorization. Additionally, where reclaimed water is used indoors and could be cross connected with other non-potable water supplies, devices must be installed at service connections to protect the higher quality water from accidental contamination from the lower quality water source.

The user must maintain a current diagram of the structure's potable and reclaimed water plumbing. The public should not have access to the plumbing within structures that use reclaimed water indoors. Structures using reclaimed water for toilet flushing must be in compliance with the State Plumbing Code promulgated by the Colorado State Plumbing Board.

D. Indoor Cannabis Irrigation

The commission approves the use of reclaimed water Categories 2 and 3 for growing cannabis indoors (including in greenhouses) for human consumption subject to the conditions described below.

The commission finds that Categories 2 and 3 reclaimed water is suitable for use in indoor cannabis irrigation.

Definitions of Hemp and Marijuana

Cannabis includes hemp and marijuana, which are edible crops. The definition of hemp is based on the definition of industrial hemp set forth in Article 18 § 16(2)(d) of the Colorado State Constitution. The definition of marijuana is partially based on the definition set forth in Article 18 § 16(2)(f) of the Colorado State Constitution, but excludes references to the "resin extracted from any part of the plant, and every compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds, or its resin, including marijuana concentrate," as reclaimed water is not approved for the purposes of processing these byproducts. In addition, a definition of cannabis was added, which collectively refers to hemp and marijuana as both reclaimed water is approved for indoor irrigation of both types of plants for edible and non-edible purposes.

Microbial, Chemical and Metal Risks

The commission considered whether there is a risk to public health posed by the uptake of microbial pathogens, chemicals and heavy metals in cannabis plants. The evidence presented shows that microbial pathogens and heavy metals are not taken up in plants irrigated with Categories 2 and 3 reclaimed water. In addition, the evidence demonstrated that Categories 2 and 3 reclaimed water do not contain contaminants of emerging concern, including chemicals. The commission also notes that in Colorado, the marijuana enforcement division has adopted strict controls on microbial contamination, metals and chemicals in marijuana products to assure the safety of end products.

Exposure Pathways to Reclaimed Water in Cannabis Grow Facilities

While the irrigation of cannabis with Category 2 and 3 reclaimed water does not present a public health risk to consumers or workers related metals and chemicals, exposure from premise plumbing pathogens such as *Legionella* can present a risk to workers in grow facilities, if water used for irrigation is not properly managed.

Because cannabis grow facilities have restricted public access, the population exposed to ambient reclaimed water are workers within the facilities. The primary pathways of exposure to reclaimed water are dermal, inhalation, and ingestion from an accidental cross connection or aerosol. Workers will be

trained on proper handling of reclaimed water to avoid exposure. To minimize risk of *Legionella* exposure from reclaimed water used in cannabis grow facilities, the commission finds that users of reclaimed water should be required to follow best management practices (BMPs) to minimize growth of *Legionella* and other premise plumbing opportunistic pathogens and to minimize worker exposure to aerosols. The commission did not find that maintenance of a disinfectant residual in cannabis grow facility plumbing was necessary to protect public health if BMPs are followed which result in acceptable *Legionella* concentrations in premise plumbing, as recommended by OSHA (OSHA, 2016), or if aerosols can be entirely avoided. Relevant BMPs that address premise plumbing pathogen growth and aerosolization are included in the following national directives for the management and control of *Legionella* exposure, including but not limited to:

- American Industrial Hygiene Association (AIHA): LEGG15-781, Recognition, Evaluation, and Control of Legionella in Building Water Systems
- American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE): 188-2015, Legionellosis: Risk Management for Building Water Systems

Other Regulations

The marijuana enforcement division promulgates rules and regulations for growing and processing of marijuana. The use of reclaimed water for indoor cannabis irrigation must be in accordance with rules and regulations promulgated by marijuana enforcement division. In addition, the plumbing board's rules and regulations for use of non-potable and reclaimed water also apply to plumbing for reclaimed water within cannabis grow facilities.

E. Prohibition on Use of Reclaimed Water for Indoor Uses after Storage in Open-air Outdoor Storage Structures.

The commission adopted a rule clarifying that use of reclaimed water for indoor uses is prohibited if after treatment reclaimed water is stored in an outdoor open-air storage structure.
