

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

SUBJECT:

For consideration of the adoption of revisions to the Colorado Primary Drinking Water Regulations, Regulation #11 (5 CCR 1002-11). Revisions proposed by the Water Quality Control Division, 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

Proponent's prehearing statement due	7/13/2022 5:00 pm	Additional information below.
Party status requests due	7/20/2022 5 pm	Additional information below.
Responsive prehearing statements due	8/10/2022 5:00 pm	Additional information below.
Rebuttal statements due	9/7/2022 5:00 pm	Additional information below.
Last date for submittal of motions	9/16/2022 by noon	Additional information below.
<b>Prehearing Conference</b> (mandatory for parties)	9/23/2022 1:00 pm	<a href="#">Remote Via Zoom</a>
<b>Rulemaking Hearing</b>	10/11/2022 9:00 am	<a href="#">Remote Via Zoom</a>  Or 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.wqcc@state.co.us](mailto:cdphe.wqcc@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 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.** Following the deadline to request party status, a Zoom link to attend the prehearing conference will be provided to all those who request party status.

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](mailto:cdphe.wqcc@state.co.us) by September 28, 2022.

SPECIFIC STATUTORY AUTHORITY:

The provisions of sections 24-4-104, 24-4-105, 25-1.5-101, 25-1.5 Part 2, 25-1-109, 25-1-114, 25-1-114.1, and 25-8-202, 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 13<sup>rd</sup> day of June, 2022 at Denver, Colorado.

WATER QUALITY CONTROL COMMISSION



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Jeremy Neustifter, Administrator

**DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT**

**Water Quality Control Commission**

**REGULATION NO. 11 - COLORADO PRIMARY DRINKING WATER REGULATIONS**

**5 CCR 1002-11**

*[Editor's Notes follow the text of the rules at the end of this CCR Document.]*

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**11.1 AUTHORITY AND PURPOSE**

**11.1(1) Authority**

The Water Quality Control Commission has promulgated the *Colorado Primary Drinking Water Regulations* pursuant to sections 24-4-104, 24-4-105, 25-1.5-101, 25-1.5 Part 2, 25-1-109, 25-1-114, 25-1-114.1, and 25-8-202, Colorado Revised Statutes.

**11.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS**

(32) "FINISHED WATER" or "**FINISHED DRINKING WATER**" means water that is supplied to the distribution system of a public water system and intended for distribution and human consumption without further treatment, including disinfection contact time, except treatment as necessary to maintain water quality in the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

(84) "TOTAL ORGANIC CARBON" or "TOC" means a parameter measuring the total amount of carbon in water, present as organic molecules. It is used as a surrogate for disinfection byproduct precursors and as critical control point monitoring.

(85)(84) "TRANSIENT, NON-COMMUNITY WATER SYSTEM" means a non-community water system that serves a population of at least 25 people per day for at least 60 days per year and is not a non-transient, non-community water system or a community water system.

(86)(85) "TRANSIENT POPULATION" means the average number of individuals served per day during the year or annual operating period(s), who have an opportunity to consume water from the system, but who do not meet the definition of either resident population or non-transient population.

(87)(86) "TREATMENT TECHNIQUE REQUIREMENT" means a requirement that specifies a treatment technique(s) for a contaminant which leads to a sufficient reduction in the level of the contaminant to comply with the requirements of the Colorado Primary Drinking Water Regulations. A treatment technique may also be a requirement that is intended to prevent situations that have the potential to have serious adverse effects on human health.

(88)(87) "VIOLATION" means failure to comply with any requirement of the Colorado Primary Drinking Water Regulations.

(89)(88) "VIRUS" means a virus of fecal origin, which is infectious to humans by waterborne transmission.

- (90)(89) "WATERBORNE DISEASE OUTBREAK" means the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or State agency.
- (91)(90) "WATERWORKS" means the facilities that are directly involved in the production, treatment, or distribution of water for public water systems.
- (92)(91) "WATER QUALITY CONTROL COMMISSION" means the commission that has been created within the Colorado Department of Public Health and Environment pursuant to section 25-8-201, Colorado Revised Statutes.
- (93)(92) "WATER VENDING AND DISPENSING MACHINES" means any device which, upon payment dispenses water into a container.
- (94)(93) "WHOLESALE" means any person who owns or operates and is legally responsible for a wholesale system.
- (95)(94) "WHOLESALE SYSTEM" means a public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

## **11.14 DIRECT POTABLE REUSE RULE**

### **11.14(1) Applicability and Definitions**

- (a) For all public water systems that utilize direct potable reuse, the supplier must comply with the requirements specified in this rule.
- (b) Unless more stringent requirements are specified in this rule, the supplier must comply with requirements in Regulation 11 for a system defined in 11.3(83).
- (i) The requirements of this rule constitute the regulations for direct potable reuse in addition to surface water treatment requirements specified in 11.8, 11.9, and 11.10.
- (c) "ACTION LIMIT" means a limit at a critical control point that, when exceeded, triggers a response to prevent a potential human health hazard.
- (d) "ADVANCED OXIDATION PROCESS" means a set of chemical treatment processes whereby oxidation of organic contaminants occurs on a molecular level through reactions with hydroxyl radicals or similarly aggressive radical oxidant species. The process breaks down recalcitrant organic molecules into smaller oxidized organic fragments.
- (e) "ALERT LIMIT" means a limit at a critical control point that, when exceeded, alerts an operator that a potential problem may require a response.
- (f) "BYPASS" means, for the purposes of direct potable reuse, the intentional diversion of waste streams from any portion of a non-domestic source's treatment facility.

- (g) "CONSTITUENT(S) OF CONCERN" means potentially harmful or difficult to treat substances that could cause treatment interference, pass through, or a violation either of a treatment technique requirement or of an MCL specified in 11.45 in finished drinking water. Constituents of concern include target chemicals.
- (h) "CRITICAL CONTROL POINT" means a treatment process or a portion of a treatment process designed to reduce, prevent, or eliminate a human health hazard.
- (i) "CRITICAL CONTROL POINT MONITORING" means the approved parameters and methods used to monitor the effectiveness and status of treatment at each critical control point. Critical control point monitoring indicates whether the performance of the critical control point is achieving treatment goals. Action and alert limits must be associated with critical control point monitoring.
- (j) "CRITICAL CONTROL POINT MONITORING LOCATION" means an approved location where effectiveness and status of each critical control point is monitored. Each critical control point must have at least one approved critical control point monitoring location.
- (k) "DIRECT POTABLE REUSE" means using a series of processes that produce finished drinking water utilizing a source containing treated wastewater that has not passed through an environmental buffer.
- (l) "ENVIRONMENTAL BUFFER" means either a surface water or groundwater aquifer that causes adequate dilution or natural attenuation of pathogenic and chemical contaminants. Wastewater effluent from a permitted (e.g. Colorado Discharge Permit System) wastewater treatment plant that has been discharged to a surface water body is considered to have passed through an environmental buffer. For new waterworks, the Department shall determine if a source containing wastewater effluent passes through an environmental buffer during review of plans and specifications in 11.4.
- (m) "INDICATOR COMPOUND" means a chemical compound that has chemical properties that make it removable by some treatment processes but that may be recalcitrant to others. Indicator compounds are indicative of other compounds in that family of compounds and can be used to monitor the efficacy of removal of that group of compounds by a critical control point.
- (n) "INTERFERENCE" means a discharge from a non-domestic source which alone or in conjunction with a discharge or discharges from other sources that inhibits or disrupts the supplier's treatment processes or operations that has a significant potential to have serious adverse effects on public health or to cause a violation either of a treatment technique requirement or of an MCL specified in 11.45 in finished drinking water.
- (o) "METROPOLITAN SEWAGE DISPOSAL DISTRICT" means a district organized under Part 5,, Article 4 of Title 32, Colorado Revised Statutes. A Metropolitan Sewage Disposal District is a type of wastewater entity.
- (p) "NON-DOMESTIC SOURCE" means all industrial or commercial sources of wastewater to a wastewater treatment plant that are subject to National Pretreatment Standards and any other source that may adversely affect the waterwork's operation or has a significant potential to have serious adverse effects on public health or to cause a violation either of a treatment technique requirement or of an MCL specified in 11.45 in finished drinking water. Non-domestic source(s) that are determined to be Non-Significant pursuant to the criteria and procedures developed under 11.14(4)(a)(i)(B)(II) are exempt from individual permitting or other individual control mechanisms under the Enhanced Source Water Control Program.

- (q) “OXIDIZED WASTEWATER” means wastewater in which the organic matter has been stabilized, is non-putrescible, and contains dissolved oxygen.
- (r) “PASS THROUGH” means a condition where a constituent of concern enters the waterworks in quantities or concentrations that have a significant potential to have serious adverse effects on public health or to cause a violation either of a treatment technique requirement or of an MCL in finished drinking water as specified in 11.45.
- (s) “RECALCITRANT TOTAL ORGANIC CARBON (rTOC)” means the total organic carbon (TOC) present in finished water that ultimately becomes treated wastewater. The recalcitrant TOC differs from anthropogenic TOC present in wastewater in that it may not be efficiently removed by the wastewater treatment plant and will be a component of the TOC in the treated wastewater.
- (t) “TARGET CHEMICAL” means any unregulated chemical causing a potential human health concern that may be present in the treated wastewater.
- (u) “TREATED WASTEWATER” means any water source from a wastewater treatment plant that has undergone a treated wastewater characterization for either enhanced wastewater treatment or secondary wastewater treatment as defined in the *Direct Potable Reuse Policy* and originates from a wastewater treatment plant that has liquid stream treatment processes that, at a minimum, are designed and operated to produce oxidized wastewater to achieve a defined source water quality for additional treatment by a supplier utilizing direct potable reuse.
- (v) “WASTEWATER TREATMENT PLANT” means an arrangement of devices and structures for collecting, treating, neutralizing, stabilizing, or disposing of domestic wastewater, industrial wastes, and biosolids. For purposes of direct potable reuse, a wastewater treatment plant does not include industrial wastewater treatment plants or complexes whose primary function is the treatment of industrial wastes, notwithstanding the fact that human wastes generated incidentally to the industrial process are treated therein.

**11.14(2) Prior Approval Requirements**

- (a) The supplier may not commence direct potable reuse without prior written Department approval of an application for direct potable reuse, a technical, managerial, and financial capacity assessment using the criteria found in the *New Public Water System Capacity Planning Manual*, and plans and specifications for construction of new waterworks.
- (b) The Supplier must submit an application for direct potable reuse for Department approval prior to submission of plans and specifications for construction of new waterworks in accordance with 11.4(1)(b) for the direct potable reuse treatment facility. The application must contain all of the following:
  - (i) A communications and outreach plan to inform consumers of the direct potable reuse project with all of the elements specified in 11.14(3).
    - (A) The supplier must submit a copy of the public notification of the intent to apply for direct potable reuse along with certification that states that the supplier has fully complied with the notification requirements in 11.14(3)(a)(ii).
  - (ii) An enhanced source water control plan with all of the elements specified in 11.14(4). The plan provided with the application must include a copy of any agreement(s) with a wastewater entity to implement the enhanced source water control program.

- (iii) A direct potable reuse operations plan with all of the elements specified in 11.14(5).
- (iv) At least one year of monitoring results of the treated wastewater specified in 11.14(6)(b)(i)-(ii).
- (c) Department written approval of an application for direct potable reuse shall specify conditions for the communications and public outreach program, the enhanced source water control program, and the direct potable reuse operations program.

**11.14(3) Communications and Public Outreach Program**

**(a) Requirements for a Communications and Public Outreach Program**

- (i) The supplier must develop a written plan for a communications and public outreach program. The communications and public outreach program must be conducted in a manner that allows for meaningful involvement and fair treatment of Disproportionately Impacted (DI) communities, as defined in C.R.S. 24-4-109(2)(b)(II), or as approved by the Department. The written communications and public outreach plan must include information the supplier intends to distribute that includes at least all of the following content in language that is understandable to those without a technical background in the subject matter:
  - (A) The name, business address, and phone number for the supplier or designee that the consumer may contact for additional information about the direct potable reuse project.
  - (B) An explanation of what direct potable reuse is and the reasons for the supplier's implementation of direct potable reuse.
  - (C) A description and/or depiction of the supplier's proposed direct potable reuse project, including:
    - (I) The critical control points utilized to reduce pathogens and chemicals in accordance with 11.14(5)(a)(i)(E) and 11.14(5)(a)(i)(G).
    - (II) The critical control point monitoring and critical control point monitoring locations utilized within the direct potable reuse treatment plant in accordance with 11.14(5)(a)(i)(F), (H), and (I). The description must include how sampling at these monitoring locations is used to demonstrate effective reduction of pathogens, indicator compounds, and target chemicals.
    - (III) The alert and action limits. For action limit exceedances, a description must be included of the procedures for process shutdown or diversion, including provisions for an automated response, and must specify the fate of any water sent to waste in accordance with 11.14(5)(a)(i)(K).
  - (D) Identification of the wastewater treatment plant that serves as the source for the direct potable reuse project.
  - (E) The service area(s) that will be supplied with finished water from the direct potable reuse project.
  - (F) A statement that direct potable reuse is regulated by the Department under Regulation 11 and information on how to access Regulation 11.

- (G) Other information as determined by the Department on a project-specific basis.
  - (ii) At least 60 calendar days prior to submitting an application for direct potable reuse, the supplier must notify by mail or by another Department-approved method all of its consumers of its intention to apply for and implement direct potable reuse. Prior to distribution of the notice, the supplier must make information specified in 11.14(3)(a)(i)(A-F) publicly available with the ability for consumers to provide public comment.
- (b) Distribution of Communication and Public Outreach Materials.
- (i) The supplier must deliver the information specified in 11.14(3)(a)(i) in all of the following methods:
    - (A) A local, publicly accessible repository that contains information including but not limited to the information required in 11.14(3)(a)(i) with a means for the public to submit questions and comments, obtain responses from the supplier and engage with the supplier. This repository must be active when the supplier complies with 11.14(3)(b)(i)(B).
    - (B) At least one notification by mail or by another Department-approved method to all of its consumers prior to the public meeting required by 11.14(3)(b)(i)(C).
    - (C) At least one public meeting must be held at least six months prior to serving finished water from direct potable reuse.
    - (D) At least one additional method as approved by the Department.
    - (E) For systems supplying a large proportion of non-English speaking consumers, as determined by the Department, for the information in 11.14(3)(a)(i)(A-G) that is distributed per 11.14(3)(b)(i)(A-D), the supplier must include either:
      - (I) Information in the appropriate language(s).
      - (II) A telephone number, email address or address where the consumer may contact the supplier to obtain a translated copy of written communication or request assistance in the appropriate language for written and oral communications.
- (c) Reporting Requirements for Communications and Public Outreach Materials
- (i) No later than 30 days before production of finished water from a direct potable reuse waterworks, the supplier must submit documentation to the Department that includes all of the following:
    - (A) A copy of the public outreach notices distributed in 11.14(3)(b)(i)(B) that meet the content requirements in 11.14(3)(a)(i).
    - (B) The date(s) and location(s) of public meeting(s).
    - (C) A description of the completed additional distribution method for public outreach approved by the Department in 11.14(3)(b)(i)(D).
    - (D) A description of how the supplier conducted outreach in a manner that allowed for meaningful involvement and fair treatment of Disproportionately Impacted (DI)

communities, including a summary of engagement and responses from DI communities, if applicable.

- (E) A certification that the supplier has fully complied with the communications and public outreach requirements.

(d) Violations for Communications and Public Outreach Program

- (i) The following constitute communications and public outreach program violations:

- (A) Failure to distribute materials as required in 11.14(3)(b).
- (B) Failure to report materials as required in 11.14(3)(c).

(e) Response to Violations for Communications and Public Outreach Program

- (i) In the event of a communications and public outreach program violation as specified in 11.14(3)(d), the supplier must:

- (A) Notify the Department no later than 48 hours after the violation occurs.
- (B) Distribute Tier 3 public notice as specified in 11.33.

**11.14(4) Enhanced Source Water Control Program**

(a) Requirements for an Enhanced Source Water Control Program

- (i) The supplier must develop and maintain a written enhanced source water control program in accordance with the *Enhanced Source Water Control Program Policy*. The program must demonstrate how the supplier will reduce, eliminate, or alter the nature of constituents of concern including target chemicals in treated wastewater sufficient to meet the criteria for the critical control point monitoring ranges for direct potable reuse through the characterization of sources contributing to the influent of a wastewater treatment plant. At a minimum, the written enhanced source water control program must include all of the following information:

- (A) The supplier's legal authority through written agreements, including applicable interagency agreements between the supplier and the wastewater entity to implement the enhanced source water control program; ordinances; and/or permits to ensure implementation of the enhanced source water control program, including an enforcement response plan and guide.

- (B) The criteria and procedure(s) that will be used to:

- (I) Develop and implement prohibitions, standards, and limits to protect the waterworks from interference, bypass, and pass through.
- (II) Determine that a non-domestic source or group of non-domestic sources is "Non-Significant" upon a finding that the non-domestic source will not adversely affect operation of the waterworks, including pass through or interference, or has no significant potential to have serious adverse effects on public health or to cause a violation either of a treatment technique requirement or of an MCL specified in 11.45 in finished drinking water. Where a non-domestic source or group of non-domestic

sources is determined to be “Non-Significant,” the procedure must include documentation of agreement of the determination between the supplier and the wastewater treatment plant or metropolitan disposal district.

- (C) Recordkeeping requirements for the wastewater treatment plant and non-domestic sources in addition to the Department's requirements.
  - (D) Legal authority to inspect, perform investigatory sampling, and access and copy relevant records of the wastewater treatment plant providing the treated wastewater, the non-domestic sources, and hauled wastes within or to the service area of the wastewater treatment plant.
  - (E) The process that will be used to identify and track contaminants of concern including a non-domestic source inventory, a chemical inventory, and a review of the wastewater treatment plant's hauled waste program. The process shall include tracking of monitoring, inspection and enforcement activities used to control sources of contaminants of concern.
  - (F) A legally enforceable response plan for source water quality deviations.
  - (G) Where applicable, a description of how the enhanced source water control program will be implemented by the wastewater entity through its approved pretreatment program or equivalent NPDES or CDPS discharge permit program, as set forth in 11.14(4)(a)(ii)(A-B).
  - (H) Where applicable, a description of the specific procedures, including required timeframes, for the wastewater entity implementing the enhanced source water control program to provide the supplier with notifications of new or substantially changed pollutants from non-domestic sources as set forth in 11.14(4)(a)(vi).
- (ii) The supplier must ensure the enhanced source water control program is properly implemented and specify to the Department the entity that will implement each element of the program in accordance with the *Enhanced Source Water Control Program Policy*. Implementation will depend upon the wastewater treatment plant or metropolitan sewage disposal district that provides treated wastewater for direct potable reuse. The supplier must specify in the enhanced source water control program how the program will be implemented based on the criteria below.
- (A) If the wastewater treatment plant or metropolitan sewage disposal district that provides treated wastewater has an approved national pretreatment program that meets the requirements of 40 CFR Part 403 (General Pretreatment Regulations for Existing and New Sources of Pollution), the supplier must ensure that the wastewater entity or metropolitan sewage disposal district implements the enhanced source water control program in conjunction with its approved pretreatment program. Agreements must be provided to the Department specifying how the wastewater treatment plant or metropolitan sewage disposal district will implement enhanced source water control on behalf of the supplier, including identifying elements of the approved pretreatment program that will be used for enhanced source water control.
  - (B) If the wastewater treatment plant or metropolitan sewage disposal district that provides treated wastewater has a NPDES or CDPS discharge permit, but does not have an approved national pretreatment program that meets the requirements of 40 CFR Part 403 (General Pretreatment Regulations for Existing

and New Sources of Pollution), then the supplier must ensure that the enhanced source water control program is implemented by the permit holder in coordination with the supplier and contains equivalent components to an approved national pretreatment program as applicable to enhanced source water control. The supplier shall confirm that the discharge permit includes required prohibited discharges and categorical pretreatment standards from 40 CFR Part 403 (General Pretreatment Regulations for Existing and New Sources of Pollution).

- (C) If the wastewater treatment plant or metropolitan sewage disposal district that provides treated wastewater does not have a NPDES or CDPS discharge permit, then the supplier must establish and implement the enhanced source water control program in its entirety. The supplier shall ensure that the enhanced source water control program contains equivalent components to an approved national pretreatment program under 40 CFR Part 403 (General Pretreatment Regulations for Existing and New Sources of Pollution) as applicable to enhanced source water control, including prohibited discharges and categorical pretreatment standards.
- (iii) The supplier must submit for Department review and approval any significant modifications to the previously approved enhanced source water control program prior to implementing such modifications.
- (iv) At a minimum, the supplier must review and update the written enhanced source water control program at least every three years, or on a frequency determined by the Department based on changes within the service area of the wastewater treatment plant or the presence of contaminants of concern not adequately addressed in the existing program. The enhanced source water control program must be signed and dated by the authorized signatories of the supplier and the wastewater entity or metropolitan sewage disposal district.
- (v) The Department may request, review, or require revisions to the supplier's written enhanced source water control program. The supplier must demonstrate that the written enhanced source water control program is being implemented by maintaining legal authority to direct, access and maintain records of all activities necessary for implementation of the written enhanced source water control program.
- (vi) The supplier shall require all non-domestic sources that are subject to the enhanced source water control program to notify the entity implementing the enhanced source water control program of any new introductions of pollutants by new or existing non-domestic sources or any substantial change in pollutants from any non-domestic sources no later than 30 calendar days before the introduction or change. Such notice must identify:
  - (A) Any substantial change in the volume or character of pollutants being introduced into the wastewater collection system by any non-domestic source.
  - (B) The identity of the non-domestic source.
  - (C) The nature and concentration of pollutants in the discharge that could cause pass through or interference.
  - (D) The average and maximum flow of the discharge to be introduced into the wastewater collection system.

- (E) The supplier must document any anticipated impact of the change on the quantity or quality of treated wastewater to be received by the waterworks.
- (vii) The supplier must submit an annual enhanced source water control program report documenting program status and activities during the previous calendar year by no later than May 1st of each calendar year. The report must include all of the following:
  - (A) A summary of the status of non-domestic source compliance during the reporting period.
  - (B) A summary of compliance and enforcement activities, including inspections, conducted by the supplier during the reporting period.
  - (C) A current inventory of non-domestic sources that contribute to constituents of concern.
- (b) Violations for Enhanced Source Water Control
  - (i) The following constitute enhanced source water control program violations:
    - (A) Failure to maintain or implement the approved enhanced source water control program.
    - (B) Failure to submit an enhanced source water control program report as specified in 11.14(4)(a)(vii).
- (c) Response to Violations for Enhanced Source Water Control
  - (i) In the event of an enhanced source water control program violation as specified in 11.14(4)(b), the supplier must:
    - (A) Notify the Department no later than 48 hours after the violation occurs.
    - (B) Distribute Tier 3 public notice as specified in 11.33.

**11.14(5) Direct Potable Reuse Operations Program**

- (a) Requirements for a Direct Potable Reuse Operations Program
  - (i) The supplier must develop a written plan for a direct potable reuse operations program that demonstrates how the supplier or wastewater entity will operate wastewater treatment processes and direct potable reuse to deliver finished water that meets the pathogen and chemical reduction treatment technique requirements in 11.14(7) and 11.14(8). At a minimum, the direct potable reuse operations program must include all of the following:
    - (A) Certification that the water and wastewater systems are operated by certified operators at the appropriate certification levels for each facility.
    - (B) A communications plan describing the schedule and method for communications between water and wastewater operators.
    - (C) A preliminary operations manual that details standard operating protocols at the wastewater system, water treatment system, and water distribution system.

- (D) A characterization of the treated wastewater based on monitoring under 11.14(6)(b) to identify alert and action limits prior to the water treatment plant.
- (E) Identification of each critical control point for pathogen reduction to comply with 11.14(7).
- (F) Identification of critical control point monitoring and critical control point monitoring locations to be monitored to evaluate the effectiveness of critical control points for pathogen reduction.
- (G) Identification of each critical control point for chemical reduction to comply with 11.14(8).
- (H) The identification of indicator compounds, critical control point monitoring, and critical control point monitoring locations that indicate whether treatment goals at each critical control point for chemical reduction are being met.
- (I) Identification of target chemicals that are present in treated wastewater and targeted for removal or reduction. The supplier must specify targeted removal rates to be removed at each critical control point.
- (J) Identification of critical control point monitoring and critical control point monitoring locations to be monitored to evaluate the effectiveness of critical control points for chemical reduction.
- (K) Identification of alert limits and action limits at each critical control point with an associated action plan with deadlines for addressing alert limit and action limit exceedances. For action limit exceedances, procedures must include but not be limited to provisions for process shutdown or diversion, including provisions for an automated response, and must specify the fate of any water sent to waste.
- (L) A direct potable reuse process schematic that identifies each critical control point for pathogen and chemical reduction and the critical control point for treated wastewater within the wastewater treatment plant.
- (M) Identification of a critical control point dashboard that allows for online monitoring for display to the supplier's wastewater and water treatment operator(s).
- (N) A communications plan describing how the supplier will maintain the following forms of communication with the public:
  - (I) The local, publicly accessible repository of information required in 11.14(3)(b)(i)(A).
  - (II) The methods and frequency for continued communications with the public about direct potable reuse operations, status, and water quality, including situations requiring public notice under 11.33.
- (ii) The supplier may develop a microbial risk assessment of its treated wastewater based on pathogen monitoring as defined in the *Direct Potable Reuse Policy*. After completion of the assessment, the Department may approve treatment technique requirements for pathogen reduction less than those specified in 11.14(7)(b)(ii) but not less than those specified in 11.14(7)(b)(iii).

- (iii) The supplier must submit for Department review and approval any significant modifications to the previously approved direct potable reuse operations program prior to initiating such modifications.
  - (iv) The Department may request, review, or require revisions to the supplier's written direct potable reuse operations program.
- (b) Violations for Direct Potable Reuse Operations Program
- (i) The following constitutes direct potable reuse operations program violations:
    - (A) Failure to maintain or implement the direct potable reuse operations program.
- (c) Response to Violations for Direct Potable Reuse Operations Program
- (i) In the event of a direct potable reuse operations program violation as specified in 11.14(5)(b)(i), the supplier must:
    - (A) Notify the Department no later than 48 hours after the violation occurs.
    - (B) Distribute Tier 3 public notice as specified in 11.33.

**11.14(6) Treated Wastewater Control**

- (a) Requirements for Treated Wastewater Control
- (i) The supplier must regularly verify that the treated wastewater is within Department-approved action limits or that corresponding corrective actions are taken within the approved timeframe.
- (b) Monitoring Requirements for Treated Wastewater Control
- (i) Prior to submitting an application for direct potable reuse, the supplier must ensure monitoring occurs at a critical control point monitoring location. The supplier and wastewater entity can determine through agreement how the parties will effectuate the monitoring requirements. The monitoring must occur at a critical control point representing treated wastewater for all of the following:
    - (A) Continuously monitor and record the monitoring results at least every 15 minutes for the following parameters for 12 consecutive months.
      - (I) Ammonia.
      - (II) Conductivity.
      - (III) pH and temperature.
      - (IV) Turbidity.
      - (V) Ultraviolet absorption, in 1/m, at a wavelength of 254 nm (i.e., UV254) that has been correlated with Total Organic Carbon (TOC).
      - (VI) Flow rate of treated wastewater.

- (B) Monitor at least one sample each month for 12 consecutive months for the following parameters:
  - (I) Nitrate and nitrite.
  - (II) Inorganic chemicals specified in 11.19(2).
  - (III) Organic chemicals specified in 11.21(2).
  - (IV) Radionuclides specified in 11.22(2).
  - (V) Disinfection byproducts specified in 11.25(1).
  - (VI) Lead and copper.
- (ii) Prior to submitting an application for direct potable reuse, the supplier must monitor within the distribution system at locations defined in the *Direct Potable Reuse Policy* once per month for 12 consecutive months for TOC in order to determine the recalcitrant total organic carbon (rTOC).
- (iii) While operating direct potable reuse, the supplier must ensure monitoring occurs at an approved critical control point monitoring location. The supplier and wastewater entity can determine through agreement how the parties will effectuate the monitoring requirements. The monitoring must occur at a critical control point representing treated wastewater for all of the following:
  - (A) Continuously monitor and record the monitoring results at least every 15 minutes for the following parameters:
    - (I) Ammonia.
    - (II) Conductivity.
    - (III) pH.
    - (IV) Turbidity.
    - (V) UV254 that has been correlated with TOC.
    - (VI) Flow rate of treated wastewater.
    - (VII) Other parameters, as determined by the Department.
  - (B) Monitor at least one sample each month for the following parameters:
    - (I) Nitrate and nitrite.
    - (II) Other parameters, as determined by the Department.
  - (C) Monitor at least one sample each year for parameters as determined by the Department based on the monitoring results in 11.14(6)(b)(i)(B).
- (iv) While operating direct potable reuse, the supplier must monitor in the distribution system once per month for TOC at Department-approved locations in order to verify the recalcitrant TOC.

(c) Violations for Treated Wastewater Control

- (i) The following constitutes treatment technique violations of the treated wastewater control:
  - (A) Production of finished water through direct potable reuse when an action limit is exceeded at the treated wastewater critical control point for more than the Department-approved corrective action timeframe.

(d) Response to Violations for Treated Wastewater

- (i) In the event of a treated wastewater treatment technique violation as specified in 11.14(6)(c)(i), the supplier must:
  - (A) Notify the Department no later than the end of the next business day.
  - (B) Distribute Tier 2 public notice as specified in 11.33.

(e) Reporting Requirements for Treated Wastewater Critical Control Point

- (i) No later than the 10th of the month following the end of each month, the supplier must submit the following:
  - (A) Action limit exceedances and corrective action taken within the approved timeframe.
  - (B) Alert limit exceedances and corrective action taken within the approved timeframe.
- (ii) No later than the 10th of the month following the end of each calendar year, the supplier must submit the following:
  - (A) A summary of results of continuously monitored parameters, including median, mean, and 25<sup>th</sup> and 75<sup>th</sup> percentiles compiled on a monthly basis for each parameter under 11.14(6)(b)(iii)(A).
  - (B) All sample results monitored during the calendar year under 11.14(6)(b)(iii)(B-C).

**11.14(7) Treatment Technique Requirements for Pathogen Reduction**

(a) Applicability for Treatment Technique Requirements for Pathogen Reduction

- (i) For all public water systems that utilize direct potable reuse, the supplier must comply with the treatment technique requirements at critical control points for pathogen reduction, and entry point and distribution residual disinfectant concentrations specified in this section, 11.14(7).

(b) Treatment Technique Requirements for Pathogen Reduction

- (i) The supplier must utilize a minimum of three separate critical control points for pathogen reduction. Two of the critical control points for pathogen reduction must consist of one disinfection critical control point and one filtration critical control point from the following:

- (A) A disinfection critical control point consisting of UV or ozone.
- (B) A filtration critical control point consisting of one of the following:
  - (I) Reverse osmosis.
  - (II) Conventional or direct filtration in accordance with criteria specified in the *Direct Potable Reuse Policy* and Policy DW-005. Ozone/biofiltration is considered direct or conventional filtration.
  - (III) A Department-approved alternative filtration in accordance with criteria specified in the *Direct Potable Reuse Policy*, Policy DW-004, DW-005 and 11.10(5).
- (ii) Unless the Department has approved alternative treatment requirements based on treated wastewater characterization in 11.14(5)(a)(ii), the sum of the log reduction values across the pathogen critical control points specified in 11.14(7) must reliably be at least:
  - (A) 10-log treatment of *Cryptosporidium*.
  - (B) 10-log treatment of *Giardia lamblia*.
  - (C) 12-log treatment of viruses.
- (iii) If the Department has approved alternative treatment requirements based on treated wastewater characterization in 11.14(5)(a)(ii), the sum of the log reduction values across the pathogen critical control points specified in 11.14(7) shall not be less than:
  - (A) 5.5-log treatment of *Cryptosporidium*.
  - (B) 6-log treatment of *Giardia lamblia*.
  - (C) 8-log treatment of viruses.
- (iv) The Department shall approve log reduction credits for each pathogen critical control point in accordance with criteria specified in 11.10(5) and Policy DW-004 and DW-005.
  - (A) Each filtration critical control point shall receive no more than 6-log treatment removal credit for viruses, *Giardia lamblia*, or *Cryptosporidium*.
- (v) The maximum demonstrated log inactivation for viruses, *Giardia lamblia*, or *Cryptosporidium* is 6-log inactivation at each disinfection critical control point.
- (vi) The supplier must meet the filtration treatment technique requirements specified in 11.8(2)(b).
- (vii) The supplier must meet the entry point and distribution system disinfection treatment technique requirements specified in 11.8(3)(b)(i)(B).
- (c) Monitoring Requirements for Pathogen Reduction
  - (i) To determine compliance with the treatment technique requirements for critical control points for pathogen reduction, the supplier must comply with the sampling requirements specified in this section, 11.14(7)(c).
    - (A) For systems using conventional or direct filtration:

- (I) To determine compliance with the combined filter effluent treatment technique requirements specified in 11.8(2)(c)(i) the supplier must monitor turbidity continuously at a location(s) representative of the combined filter effluent and validate the continuous monitoring equipment for accuracy at a Department-approved frequency and using a Department-approved method.
  - (II) The supplier must monitor turbidity continuously at locations representative of each individual filter effluent as specified in 11.8(2)(g).
- (B) For systems using membrane or reverse osmosis filtration, the supplier must measure the following:
- (I) To determine compliance with the combined filter effluent treatment technique requirements specified in 11.8(2)(c)(i) the supplier must monitor turbidity continuously at a location(s) representative of the combined filter effluent and validate the continuous monitoring equipment for accuracy at a Department-approved frequency and using a Department-approved method.
  - (II) The supplier must monitor its membrane filtration as specified in 11.10(5)(j).
- (C) To determine compliance with the disinfection treatment technique requirements at each critical control point for pathogen reduction, the supplier must monitor the following:
- (I) For systems using chlorine, chlorine dioxide, or ozone, the supplier must monitor parameters to summarize or validate the achieved log inactivation at each pathogen critical control point at least every four hours.
  - (II) For systems using UV, the supplier must continuously monitor all of the following:
    - (a) UV intensity as measured by a UV sensor.
      - (i) The supplier must verify the calibration of UV sensors and must recalibrate sensors in accordance with a Department-approved protocol.
    - (b) UV transmittance.
    - (c) Lamp status.
    - (d) Flow rate.
    - (e) Other parameters the Department designates based on UV reactor operation.
  - (III) At each entry point, the supplier must continuously monitor the residual disinfectant concentration.
    - (a) The supplier must record the lowest monitoring result each day.

- (b) If there is a failure of the continuous monitoring equipment, the supplier must monitor the residual disinfectant concentration by collecting a grab sample no later than four hours after the equipment failure and continue collecting grab samples every four hours until the continuous monitoring equipment is returned to service.
        - (i) The supplier must resume continuous residual disinfectant concentration monitoring no later than five working days after the equipment failure.
    - (IV) The supplier must monitor residual disinfectant concentration in the distribution system according to 11.8(3)(c)(i)(B).
- (d) Treatment Technique Violations for Pathogen Reduction
  - (i) The following constitute pathogen reduction treatment technique violations:
    - (A) Violations for combined filter effluent as specified in 11.8(2)(d)(i)(A).
    - (B) Violations for disinfection as specified in 11.8(3)(d)(i).
    - (C) Production of finished water through direct potable reuse when an action limit is exceeded at a critical control point for pathogen reduction for more than a Department-approved corrective action timeframe.
    - (D) At the entry point, based on the total pathogen reduction and inactivation treatment, the required log reduction credit for *Cryptosporidium*, *Giardia lamblia*, or viruses is not met for more than four hours.
    - (E) Violations for combined filter effluent as specified in 11.8(2)(d)(i)(B).
- (e) Response to Treatment Technique Violations for Pathogen Reduction
  - (i) In the event of a pathogen reduction treatment technique violation, as specified in 11.14(7)(d)(i)(A-C), the supplier must:
    - (A) Notify the Department no later than the end of the next business day.
    - (B) Distribute Tier 2 public notice as specified in 11.33.
  - (ii) In the event of a pathogen treatment technique violation, as specified in 11.14(7)(d)(i)(D), the supplier must:
    - (A) Notify the Department as soon as possible but no later than 24 hours after the violation occurs.
    - (B) Distribute Tier 1 public notice as specified in 11.33.

- (iii) In the event of a maximum combined filter effluent turbidity limit treatment technique violation, as specified in 11.14(7)(d)(i)(E), the supplier must consult with the Department as soon as possible but no later than 24 hours after the violation occurs.
  - (A) The Department shall determine from the consultation whether Tier 1 or Tier 2 public notice is required to protect public health. The supplier must distribute public notice as specified by the Department.
  - (B) If the supplier fails to consult with the Department within 24 hours, the supplier must distribute Tier 1 public notice, as specified in 11.33, for the violation.
  
- (f) Reporting Requirements for Pathogen Reduction
  - (i) If at any time the pathogen reduction values are less than the required levels, the supplier must notify the Department as soon as possible, but no later than the end of the next business day after the supplier learns of the situation.
    - (A) The supplier must also report, no later than the end of the next business day, whether the log removal and inactivation treatment was restored to at least required levels within four hours.
  
  - (ii) The supplier must submit all of the following monitoring results required under 11.14(7)(c) or calculations no later than the 10th of the following month:
    - (A) For combined filter effluent turbidity monitoring results, the supplier must submit the following information:
      - (I) Number of combined filter effluent turbidity monitoring results recorded during the month.
      - (II) Number and percentage of combined filter effluent turbidity monitoring results recorded during the month that were greater than (>) the 95th percentile turbidity limit specified in 11.8(2)(b).
      - (III) The date and value of any combined filter effluent turbidity monitoring results collected during the month which were greater than (>) the maximum turbidity limit.
      - (IV) The value of the highest combined filter effluent turbidity monitoring result during each four hour period and day during the month.
  
    - (B) For systems using membrane or reverse osmosis filtration, the supplier must submit a monthly report summarizing direct and indirect integrity tests as specified in 11.10(5)(j)(iii-iv).
  
    - (C) For systems using chlorine dioxide, the calculated daily chlorine dioxide CT values as specified in 11.10(5)(m)(i) using Table 11.10-VI to determine the *Cryptosporidium* treatment log credit achieved by chlorine dioxide for the applicable water temperature.

- (D) For systems using ozone treatment, the calculated daily ozone CT values as specified in 11.10(5)(m)(i) and Table 11.10-VII to determine the *Cryptosporidium* treatment log credit achieved by the ozone treatment for the applicable water temperature.
  - (E) For systems using UV reactors, the percent of water supplied to the public during the month that was treated by a UV disinfection process within validated operating conditions for the required UV dose.
  - (F) For each entry point, the lowest daily residual disinfectant concentration result in mg/L.
  - (G) For each disinfection pathogen critical control point, the supplier must report the lowest achieved log reduction for *Cryptosporidium*, *Giardia lamblia*, and viruses for each four hour period and day during the month
  - (H) For each entry point, the supplier must report the lowest total achieved log reduction for *Cryptosporidium*, *Giardia lamblia*, and viruses for each four hour period and day during the month.
  - (I) Action limit exceedances and corrective action taken within the approved timeframe.
  - (J) Alert limit exceedances and corrective action taken within the approved timeframe.
- (iii) The supplier must submit all of the following documentation no later than the 10th of the following month:
- (A) Documentation that the individual filter effluent turbidity monitoring was conducted.
  - (B) The date and duration of each period when the entry point residual disinfectant concentration fell below 0.2 mg/L and when the Department was notified of the occurrence.
  - (C) For distribution system residual disinfectant concentration samples:
    - (I) The number of sample results that were less than (<) 0.2 mg/L.
    - (II) The percentage of sample results that were less than (<) 0.2 mg/L for each of the last two months.

**11.14(8) Treatment Technique Requirements for Chemical Reduction**

(a) Applicability for Treatment Technique Requirements for Chemical Reduction

- (i) For all public water systems that utilize direct potable reuse, the supplier must comply with the treatment technique requirements for chemical critical control points specified in this section, 11.14(8).

(b) Treatment Technique Requirements for Chemical Reduction

- (i) The supplier must utilize chemical critical control points. At a minimum, the supplier must utilize the following:
  - (A) An advanced oxidation process, combined with at least one of the following:
    - (I) Reverse osmosis.
    - (II) Two different critical control points consisting of an adsorption process (e.g. granular activated carbon) and an additional critical control point as approved by the Department .
- (ii) At each critical control point monitoring location for chemical reduction, the supplier must demonstrate that specified removal rates for Department-specified indicator compounds have been achieved.
  - (A) The Department may require additional demonstration of adequate reduction of Department-specified chemicals present in treated wastewater in accordance with Department approval.
- (iii) The supplier must take the appropriate corrective action within a Department-approved timeframe when an alert limit or action limit is exceeded at a chemical critical control point.
- (iv) At the final critical control point monitoring location for chemical reduction, the supplier must determine if an alert limit or action limit exceedance for TOC has occurred.
  - (A) The supplier may use UV254 in lieu of TOC for determining if an alert limit or action limit exceedance for TOC has occurred.
  - (B) The TOC alert limit is the 75th percentile of recalcitrant TOC.
    - (I) When an alert limit for TOC is exceeded, the supplier must initiate alert limit protocols in their direct potable reuse operations program to investigate the cause.
  - (C) The TOC action limit is 1.5 times the 95th percentile of recalcitrant TOC.
    - (I) When an action limit for TOC is exceeded, the supplier must initiate action limit protocols within 72 hours specified in their direct potable reuse operations plan to investigate the cause and complete necessary actions to resolve the situation.

(c) Monitoring Requirements for Chemical Reduction

- (i) For systems that meet the applicability of this rule, the supplier must comply with the sampling requirements to determine compliance with the MCLs as specified in 11.18, 11.19, 11.21, 11.22.
- (ii) At each critical control point monitoring location for chemical reduction, the supplier must continuously monitor for the following and record the monitoring results at least every 15 minutes:

- (A) Critical control point monitoring identified in the supplier's written direct potable reuse operations plan.
- (B) Instantaneous flow rate.
- (iii) To determine compliance with the chemical reduction treatment technique requirements, the supplier must monitor the following:
  - (A) The supplier must sample for one or more indicator compounds required in 11.14(5)(a)(i)(H) as approved by the Department at each critical control point monitoring location for chemical reduction each month for 12 consecutive months.
    - (I) The Department may reduce the sampling frequency to once per quarter after the first year of operation.
  - (B) Downstream of the final chemical critical control point, the supplier must monitor the TOC concentration at least every four hours.
    - (I) The supplier must record the median TOC value during each month.
    - (II) The supplier may monitor UV254 in lieu of TOC as approved by the Department.
- (d) Treatment Technique Violations for Chemical Reduction
  - (i) The following constitute chemical reduction treatment technique violations:
    - (A) The supplier exceeds an action limit for indicator compounds and has not completed corrective action at the critical control point within 90 days or by a Department-approved deadline.
    - (B) The supplier does not achieve approved critical control point monitoring set points and has not completed corrective action at the critical control point within 90 days or by a Department-approved deadline.
    - (C) Failure to initiate action limit protocols specified in the supplier's direct potable reuse operations plan to investigate the cause or complete necessary actions to resolve the recalcitrant TOC removal by a Department-approved deadline.
- (e) Response to Treatment Technique Violations for Chemical Reduction
  - (i) In the event of a chemical reduction treatment technique violation as specified in 11.14(8)(d), the supplier must:
    - (A) Notify the Department no later than 48 hours after the violation occurs.
    - (B) Distribute Tier 2 public notice as specified in 11.33.
- (f) Reporting Requirements for Chemical Reduction

(i) For chemical reduction monitoring results collected under 11.14(8)(c), the supplier must submit the following information no later than the 10<sup>th</sup> of the month following the end of each monitoring period:

(A) Action limit exceedances and corrective action taken within the approved timeframe.

(B) Alert limit exceedances and corrective action taken within the approved timeframe.

**11.24 DISINFECTION BYPRODUCT PRECURSORS RULE**

11.24(1) Applicability and Definitions for Disinfection Byproduct Precursors

~~(g) "TOTAL ORGANIC CARBON" or TOC means a parameter measuring the total amount of carbon in water, present as organic molecules. It is used as a surrogate for disinfection byproduct precursors~~

**11.33(7) Public Notice Reporting Requirements**

TABLE 11.33-V TABLE OF CPDWR VIOLATIONS AND OTHER SITUATIONS REQUIRING PUBLIC NOTICE <sup>1</sup>				
Contaminant	MCL/MRDL/TT violations		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
<i>Violations of Colorado Primary Drinking Water Regulations<sup>2</sup></i>				
<b>Other Situations Requiring Public Notification</b>				
Direct Potable Reuse Rule violations	1, 2	11.14	3	11.14
Other situations as determined by the Department	1, 2, 3 <sup>16</sup>	N/A	N/A	N/A

TABLE 11.33-VI TABLE OF STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION			
Contaminant	MCLG-mg/L	MCL mg/L	
<i>Colorado Primary Drinking Water Regulations</i>			
<b>Direct Potable Reuse Rule</b>			
Critical control point for pathogen reduction of <i>Cryptosporidium</i> , <i>Giardia lamblia</i> , and/or viruses	None	TT	Inadequately treated water from direct potable reuse may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches

Critical control point for chemical reduction	None	TT	<p>The direct potable reuse processes are intended to remove or reduce the following list of compounds (Target chemicals list from application). Inadequately treated water from direct potable reuse may contain elevated levels of the compounds above. These compounds can cause adverse health effects including (Target chemical health effects language as defined in the <i>Direct Potable Reuse Policy</i> and included in department approval).</p> <p>Inadequately treated water from direct potable reuse may also contain elevated levels of unknown compounds that may be present in treated wastewater. Because these chemicals are not identified, the health effects for these compounds are unknown.</p>
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**11.34(2)(d)**

- (C) Unregulated detected contaminants in finished water that the supplier must monitor for under 11.14

**11.34(2)(e)**

- (xvii) If the supplier is subject to the requirements specified in 11.14, the supplier must include the following information:
  - (A) A description of direct potable reuse.
  - (B) A description of the supplier's direct potable reuse pathogen and chemical critical control points.
  - (C) A description or depiction of the service area that is supplied with finished water from the direct potable reuse project.
- (xviii) The supplier may include additional information necessary for public education consistent with, and not detracting from, the purpose of the CCR.



11.62 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: October 11, 2022 rulemaking; Final Action <INSERT DATE>; Effective Date <INSERT DATE>

The following sections were affected by this rulemaking hearing: Adoption of 11.14 - Direct Potable Reuse Rule with amendments to Sections 11.1, 11.3(32) and (84), 11.24(1), 11.33(7), 11.34(2)(d), and 11.34(2)(e). The provisions of the Colorado Revised Statutes (CRS), section 25-1.5-202, provide specific statutory authority for adoption of these regulatory amendments. The Commission also adopted, in compliance with section 24-4-103(4), CRS, the following statement of basis and purpose.

## **BASIS AND PURPOSE**

### **Background**

All suppliers of drinking water in Colorado are subject to regulations adopted by the U.S. Environmental Protection Agency (EPA) under the Safe Drinking Water Act, (42 U.S.C. 300f et seq.) as well as regulations adopted by the Water Quality Control Commission. Colorado, with the Colorado Department of Public Health and Environment (the Department) as the administering agency, has been granted primary enforcement responsibility (primacy) for the public water system supervision program under the federal Safe Drinking Water Act. The Water Quality Control Division (Division) is part of the Department and is responsible for implementing and enforcing the drinking water regulations that are adopted by the Commission and applicable regulations adopted by the Board of Health. In order to maintain primacy from the EPA, states must also promulgate new federal regulations that are no less stringent than those adopted by the federal government. In considering Direct Potable Reuse (DPR) regulations, it is important to recognize that the federal government does not specifically regulate DPR. Rather, the Safe Drinking Water Act regulates groundwater, surface water, and groundwater under the direct influence of surface water as three types of water sources with distinct treatment techniques associated with each source type. Further, the Commission has used its broad statutory authority to require disinfection and treatment of drinking water to adopt the treatment technique of continuous chemical disinfection (usually chlorination). Regarding the practice of Direct Potable Reuse, the EPA has stated in its [2017 Potable Reuse Compendium](#) that while the Safe Drinking Water Act and the Clean Water Act federally present a framework to make water reuse safe, specific regulation for the practice of Direct Potable Reuse will remain at the authority of the individual states. The EPA feels the local needs of each state and water uses should drive the reuse of water and therefore a national regulation may be too prescriptive and not feasible. In this rulemaking the Commission adopted a specific rule for Direct Potable Reuse for Colorado which ensures production of finished drinking water of a quality that is no less stringent than the federally-mandated Safe Drinking Water Act. By retaining primacy, the Department is able to protect the public health by ensuring that public water systems provide safe drinking water to Colorado citizens and visitors.

This rulemaking was comprised of Colorado-specific requirements for suppliers of water seeking to practice Direct Potable Reuse (DPR). The Commission adopted these revisions to address the inevitability of DPR being practiced in Colorado due to growth and limited water supply. In considering whether to explicitly set requirements for DPR, it is important to recognize that, as of this hearing date, Regulation 11 and the Safe Drinking Water Act do not explicitly prohibit DPR. Also, there are several utilities actively planning to begin DPR as soon as the mid-2020s to the extent that the water treatment facilities have already been built to provide the advanced treatment necessary to utilize treated wastewater as their source. Thus, this rulemaking was timely in that it helped to ensure that all suppliers of water planning to practice DPR utilize proper public communication, source water protections, wastewater and drinking water operations and coordination, and execution of all necessary treatment techniques in order to ensure DPR is practiced safely. In order to successfully implement DPR, the supplier will need to demonstrate to the department that it has the technical, managerial, and financial capacity (TMF Capacity) to properly plan for, manage, and operate the following six categories of DPR:

- Communication and Public Outreach Program
- Enhanced Source Water Control Program
- Direct Potable Reuse Operations Program

- Treated Wastewater Control
- Treatment Techniques for Pathogen Reduction
- Treatment Techniques for Chemical Reduction

The Commission recognized that the Division may need additional resources to oversee DPR implementation and expects that the Division would not act on projects that it cannot effectively oversee.

## **Policies, Handbooks and Guidance and Regulation 11**

The Division originally adopted WQCD Policy Number 1, *Implementation Policy Framework* (Policy 1) in November 2010 and the associated *Procedure 1* in August 2012; both were prepared in accordance with the Colorado Administrative Procedures Act, Article 4, Title 24 of the CRS. The Commission adopts regulations that create binding norms or legal obligations of the Department or regulated entities. The Department may develop implementation policies and guidance/handbooks where implementation of Regulation 11 may require interpretation, decision-making flexibility, or a stream-lined approach for meeting compliance requirements. These amendments to Regulation 11 include references to policy documents that the Department developed as part of DPR Stakeholder work and were included as exhibits in the rulemaking.

Policy 1 specifically states that implementation policies and associated procedures are not binding regulations and are not to be applied as such. The referenced policies in these amendments are not independent requirements. Violations or other notices of non-compliance cannot be issued against a policy. Violations or other notices of non-compliance can, and will, only be issued for a failure to comply with Regulation 11 or an applicable statute (law) included in the CRS. Implementation policies have no independent compliance expectation and will continue to be updated in accordance with WQCD Policy Number 1 as implementation of the DPR rule is ongoing.

## **Communications and Public Outreach Program**

The Commission included the requirement that the supplier of water inform and involve the public in the decision to use DPR for a community in a timely manner. Previous DPR efforts in other states have struggled or failed due to the fact that a robust communication and public outreach program was not executed.

Protection of public health when it comes to drinking water requires public confidence in their drinking water system. Thus, various existing requirements in Regulation 11 and federal Safe Drinking Water Act require public water systems to produce and distribute a consumer confidence report and provide other information to the public about their drinking water. Because DPR is a new technology and uses new source water that has distinct public perception issues, requiring enhanced outreach and communication beyond those existing requirements will promote public health.

The Commission determined that suppliers must submit a communications and outreach plan to the division with their application to be approved by the division prior to execution of the plan. The communications and outreach plan will inform the division on how the supplier intends to comply with the requirements in the Communications and Public Outreach Program in 11.14(3). The division has authority to deny projects, and/or require modifications to the plan prior to approving the DPR project.

The Commission recognized the importance of informing the public about the DPR project during early stages of development. Therefore the Commission required that suppliers inform the public of their intention to apply for the DPR project. Then, upon division approval of the communications and outreach plan, there are several distribution mechanisms in which suppliers are required to educate, inform and involve the public about the DPR project [Section 11.14(3)(b)]. These include at least one public meeting, a direct mail or other department approved method, an informative repository with engagement and feedback capability and one other department approved method of informational distribution. The Commission also required minimum educational requirements (e.g. information that suppliers must provide during outreach) [Section 11.14(3)(i)(A-G)]. The Commission required that suppliers provide the education and outreach prior to delivering water to customers to allow for ample time for the public to consider and respond to the DPR project.

The Commission required suppliers to report results of their Communications and Public Outreach Program to hold them accountable for compliance with the requirements [Section 11.14(3)(c)]. The Commission concluded that failure to report the results, and failure to conduct the communications and outreach plan in accordance with this rule would be considered violations of Regulation 11 [Sections 11.14(3)(d-e)].

The Commission required enhanced outreach and opportunities to involve Disproportionately Impacted communities, and requirements to ensure communications from suppliers are provided in other languages spoken by a large proportion of their customers. Due to the highly technical and complex nature of DPR processes, the Commission also required suppliers to disseminate information in a way that is understandable to those without a technical background in the subject matter. The Commission found these enhanced outreach requirements to be equitable, inclusive and appropriate in achieving the goal of meaningful involvement and fair treatment of all customers in a supplier's given service area. Also, the Commission acknowledged that industry best practices recommend assessing community members' opinions about DPR prior to conducting communications and outreach. This can be conducted through surveys, focus groups and other means to collect and assimilate data on attributes of individuals and groups and their perceptions and opinions of DPR. Consequently, this information can be used to target communications and outreach efforts to address concerns and leverage support based on the supplier's local community's perceptions and preferences. In addition, local governments, elected officials, and local public health authorities should be included in communications and outreach. These key community representatives need to be aware of and have an understanding of the DPR project.

### **Enhanced Source Water Control Program**

The Commission included the requirement that the supplier of water develop and implement an Enhanced Source Water Control Program (ESWCP). The ESWCP identifies the responsibilities of the supplier to work with Federal, State, and local government, wastewater utilities, non-domestic wastewater sources, and the public to ensure implementation of source controls to prevent or control constituents of concern including target chemicals which can pass through or interfere with advanced drinking water treatment processes for the production of finished water.

The ESWCP focuses on the wastewater collection and treatment of the raw source water. The DPR rule considers the treated effluent (treated wastewater) from domestic publicly or privately owned treatment works as a source water for suppliers of finished drinking water. Consistent water quality from the source is essential for the supplier to produce finished water. The supplier must be able to ensure that all aspects of the Enhanced Source Water Control Program are implemented in a manner that does not create pass through, interference, or upsets of the advanced drinking water treatment processes and does not inhibit the facility's ability to produce and deliver finished tap water to its customers in accordance with all Regulation 11 requirements.

While the supplier is ultimately responsible for implementing the Enhanced Source Water Control Program, the intent of the regulation is to allow a traditional federal Clean Water Act National Pretreatment Program (as set forth in 40 CFR Part 403), overseen by the wastewater treatment entity, to be a significant or sole component of the Enhanced Source Water Control Program, if deemed sufficient to address constituents of concern including target chemicals for the DPR water treatment facility. When the supplier and wastewater treatment entity are independent operators, the two entities must have a legally binding agreement that establishes specific roles and responsibilities and criteria that must be met to satisfy the supplier's Enhanced Source Water Control Program requirement. For situations where the National Pretreatment Program is not directly applicable, Regulation 11 still requires an Enhanced Source Water Control Program and the pretreatment requirements may be relevant and appropriate components as determined during the risk assessment of the wastewater source(s).

### **Direct Potable Reuse Operations Program**

The Commission included the requirement that the supplier of water develop and implement a Direct Potable Reuse Operations Program. The DPR Operations Program is a critical component of the DPR application process and is the supplier's opportunity to demonstrate to the department that it has the technical, managerial, and financial capacity (TMF Capacity) to properly operate DPR safely and sustainably. While only new community or non-transient, non-community public water systems must submit a TMF review per Regulation 11, 11.4(1)(a), the operations plan is the opportunity for all systems that are proposing DPR to demonstrate that adequate TMF Capacity exists to successfully implement DPR. The elements listed in the regulation for inclusion in the operations plan should be considered by applicants as minimum standards of care and not a comprehensive list for successful implementation of DPR.

The DPR Operations Program is also where the supplier will identify and fully describe the required critical control points used to produce safe drinking water from treated wastewater. Within the DPR rule, the Commission included the term Critical Control Point which is defined as "a treatment process or a portion of a treatment process designed to reduce, prevent, or eliminate a human health hazard." Critical Control Point methodology has been identified as a key

component of the DPR framework in establishing the proper number of barriers as well as monitoring and control of those barriers to ensure the production of safe drinking water.

### Treated Wastewater Control

The Commission included the requirement that the wastewater treatment plant be identified as a Critical Control Point. Each wastewater treatment plant that provides treated wastewater to a Direct Potable Reuse facility must characterize the treated wastewater for at least one year prior to implementation of DPR. That characterization will then lead to operational limits which will govern whether that source can be sent for further treatment and ultimately to the public. Also, the Commission allowed suppliers of water to further characterize the treated wastewater in order to determine whether lower pathogen reduction goals were appropriate based on a specific treated wastewater quality.

The Commission also required that the supplier of water adequately demonstrate that operations staff at the wastewater treatment facility and the drinking water treatment facility have proper water quality monitoring, communications, and process controls to ensure that the drinking water treatment facility only accepts water that the drinking water treatment facility is capable of treating to drinking water standards.

### Treatment Techniques for Pathogen Reduction

The Commission included the requirement that at least three separate critical control points for pathogen reduction be identified. The Commission also included the requirement that the pathogen reductions across all critical control points must achieve specific log reduction based on pathogens: 10-log treatment for *Cryptosporidium*, 10-log treatment for *Giardia lamblia*, and 12-log treatment for viruses.

The Commission recognized that the above treatment requirements are derived from a quantitative microbial risk assessment (QMRA). QMRA is a process used to evaluate exposure risks and adverse health outcomes in various applications. The QMRA methodology is complex. However, the Commission acknowledged that the bulk of the analysis has already been completed by the US EPA and others in establishing dose-response relationships for the key pathogens of concern in direct potable reuse. These efforts have established acceptable microbial target concentrations in drinking water that would result in less than 1 in 10,000 illnesses associated with each organism on an annual basis, as shown below:

Giardia =	$6.8 \times 10^{-6}$ cysts/L (Source: Regli et al, 1991)
Cryptosporidium =	$3.0 \times 10^{-5}$ oocysts/L (Messner et al, 2001)
Viruses =	$2.2 \times 10^{-7}$ MPN/L (Source: Regli et al, 1991)

The Commission recognized that the treated wastewater coming from a wastewater treatment plant that produces consistent, “oxidized wastewater” will have pathogen concentrations lower than the above published values based on the bulk of potable reuse research. The term “oxidized wastewater” describes the basic wastewater treatment level beyond simple removal of floating and suspended solids, and is generally described as secondary treatment. Secondary treatment is expected to employ biological methods to reduce chemical and biological loadings to the environment. This level of treatment has the ability to meet the technology-based limits of Biochemical Oxygen Demand or Carbonaceous Biological Oxygen Demand, Total Suspended Solids, and pH established by the Water Quality Control Commission in Regulation 62, Regulations for Effluent Limitations. The Commission also recognized that certain wastewater treatment facilities will produce pathogen levels that are consistently far lower than referenced above. In such cases, and with the approval of the Division, lower pathogen reduction targets could be established provided that the DPR facility always achieves at least the following levels of treatment: 5.5-log treatment for *Cryptosporidium*, 6.0-log treatment for *Giardia lamblia*, and 8.0-log treatment for viruses.

The Commission acknowledged that the Division will utilize processes and procedures to approve existing pathogen reduction technologies as part of Regulation 11.8, Surface Water Treatment Rule, and 11.10, Surface Water Treatment Rule: Enhanced Treatment for *Cryptosporidium* with higher pathogen reduction targets.

### Treatment Techniques for Chemical Reduction

The Commission included in the rule a requirement to identify critical control points for chemical reduction. The Commission acknowledged from previous potable reuse work in the United States that a cornerstone of successful DPR both from a public acceptance perspective as well as a reliability perspective is chemical reduction. To confidently provide water that is equally or more safe than existing supplies, suppliers must demonstrate high removal of a wide variety of chemicals, not just known toxins.

The Commission acknowledged that there are thousands of chemical compounds both known and unknown and that monitoring for all of them would be impossible. Therefore, establishing multiple, robust critical control points for chemical reduction will ensure that a wide range of chemicals are reduced to acceptable levels in the finished water.

As stated above, the Commission required one year of treated wastewater characterization for each DPR installation. During this same one year period, the Commission also required that the supplier of water identify target chemicals and indicator compounds present in the treated wastewater. Target chemicals and indicator compounds are defined as follows:

1. **Target Chemicals** are any unregulated chemical causing a potential human health concern that may be present in the treated wastewater. For example: 1,4-dioxane, per and poly fluorinated alkyl substances (PFAS), N-nitrosodimethylamine (NDMA) would be considered target chemicals. Target chemicals must be reduced by one or more chemical critical control points if present in the treated wastewater.
2. **Indicator Compounds** are chemical indicators chosen to monitor treatment performance in the treated wastewater and finished water.

Target chemicals and indicator compounds will be regularly monitored to verify critical control point integrity. Target chemicals are any unregulated chemical causing a potential human health concern that may be present in the treated wastewater. Some of these chemicals are considered contaminants of emerging concern. For example: 1,4-dioxane, per and poly fluorinated alkyl substances (PFAS), and N-nitrosodimethylamine (NDMA) are considered target chemicals. Target chemicals must be removed or reduced by one or more chemical critical control points if present in the treated wastewater. The critical control point must consistently and reliably reduce or remove the target chemical to safe levels (e.g. below the threshold for human health concerns). Indicator compounds are chemical indicators chosen to monitor treatment performance in the treated wastewater and finished water.

The Commission established that an advanced oxidation process will be used at all DPR facilities as the primary chemical reduction treatment technique because in all documented DPR scenarios, advanced oxidation is necessary for reduction of target chemicals present in treated wastewater. The supplier of water may then choose additional critical control points for chemical reduction as approved by the Division in accordance with policy.

### **Additional Amendments**

The DPR rule affects several other sections of Regulation 11. The Commission made the following amendments to be consistent with the DPR rule Department practices, to add clarity, or update requirements:

- 11.1 - Addition of statute referencing Disproportionately Impacted (DI) Communities
- 11.3(32) and (84) - Definitions moved from previous locations within a specific rule to the general definitions section as they apply to DPR as well.
- 11.24(1) - Removal of TOC definition from the Disinfection Byproduct Rule specifically
- 11.33(7) - Addition of DPR Treatment Technique and Monitoring and Testing procedure violations to the public notification tables of the Public Notice rule.
- 11.34(2) (d) and (e) - Consumer Confidence Rule content updates to include mandatory public reporting for DPR.
- Typographical errors, renumbering, and updated cross references were revised as necessary throughout Regulation 11.

PARTIES TO THE RULEMAKING

1. United State Environmental Protection Agency
2. XX
3. XX
4. xX