Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St. Paul, MN 55155-4344
www.dli.mn.gov
Email: DLI.ccldboards@state.mn.us

RFA.PB0215.MDH.Chapter 15.Rec'd 10.27.2025

Plumbing Board
Request for Action

PRINT IN INK or TYPE

NAME OF SUBMITTER	**PURPOSE OF REQUEST** (check all that apply): ☐ New Code
Anita Anderson and Tannie Eshenaur, MDH	✓ Code Amendment ☐ Repeal of an existing Rule

The Minnesota Plumbing Code (MN Rules, Chapter 4714) is available at https://epubs.iapmo.org/2020/MPC/

Specify the purpose of the proposal: If recommendation for code change for appurtenance or method (check all that apply)

☐ Appurtenance (e.g., water conditioning equipment) ☐ Test Method

✓ Other (describe) This request pertains to water quality and other requirements for alternate water source systems in Chapter 15 of the 2024 UPC.

Does your submission contain a Trade Secret? ☐ Yes ✓ No

If Yes, mark **"TRADE SECRET"** prominently on each page of your submission that you believe contains trade secret information. Minnesota Statutes, section 13.37, subdivision 1(b), defines "trade secret" as follows:

> "Trade secret information" means government data, including a formula, pattern, compilation, program, device, method, technique or process (1) that was supplied by the affected individual or organization, (2) that is the subject of efforts by the individual or organization that are reasonable under the circumstances to maintain its secrecy, and (3) that derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.

Note that, although "trade secret" information is generally not public, the Board and its committees may disclose "trade secret" information at a public meeting of the Board or committee if reasonably necessary for the Board or committee to conduct the business or agenda item before it (such as your request.) The record of the meeting will be public.

Describe the proposed change. The Minnesota Plumbing Code (Minnesota Rules Chapter 4714) is available here: https://epubs.iapmo.org/2020/MPC/

NOTE:
- Please review the Minnesota Plumbing Code and include all parts of the Code that require revision to accomplish your purpose.
- The proposed change, including suggested rule language, should be *specific*. If modifying existing rule language, underline new words and ~~strike through deleted words~~.

Please list all areas of the Minnesota Plumbing Code that would be affected.

Please See Attachment A

For Office/Committee Use Only Proposal received complete? ☐ Yes ☐ No

Date Proposer notified of gaps:	Mode of notification (e.g., e-mail)	Date returned to Proposer:	Date materials re-received:

Office Use Only

RFA File No.	Date Received by DLI	Dated Received by Committee	Date of Forwarded to Board
PB0215	10.27.2025	11.5.2025	TBD

Title of RFA
RFA.PB0215.MDH.Chapter 15.Rec'd 10.27.25

Committee Recommendation to the Board: ☐ Accept ☐ Reject ☐ Abstain

Board approved as submitted: ☐ Yes ☐ No Board approved as modified: ☐ Yes ☐ No

Need and Reasons For the Change. Thoroughly explain the need and why you believe it is reasonable to make this change. During a rulemaking process, the need and reasonableness of all proposed rule changes must be justified; therefore, a detailed explanation is necessary to ensure the Board thoroughly considers all aspects of the proposal.

Please See Attachment A

If your product/method standard(s) is not currently listed in a national code, your Request For Action will not be considered by the Board or its committees, however, you are welcome to present at any Board meeting during the Open Forum section of the Agenda.

The proposal must be accompanied by copies of any published standards, the results of testing, and copies of any product listings, as documentation of the health, sanitation and safety performance of any materials, methods, fixtures, and/or appurtenances. If none are available, please explain:

Updated-Risk-Based-Framework-for-Developing-Microbial-Treatment-Targets-for-Reuse.pdf

Please attach electronic scanned copies of any literature, standards and product approvals or listings. Printed or copyrighted materials, ***along with written permission from the publisher to distribute the materials at meetings***, and email to DLI.ccldboards@state.mn.us

Primary reason for change: (check only one)	
✓ Protect public, health, safety, welfare, or security	☐ Mandated by legislature
☐ Lower construction costs	☐ Provide uniform application
☐ Encourage new methods and materials	✓ Clarify provisions
☐ Change made at national level	☐ Situation unique to Minnesota
☐ Other (describe)	

Anticipated benefits: (check all that apply)		
✓ Save lives/reduce injuries	☐ Provide more affordable construction	
✓ Improve uniform application	☐ Provide building property	
✓ Improve health of indoor environment	☐ Drinking water quality protection	
✓ Provide more construction alternatives	☐ Decrease cost of enforcement	
☐ Reduce regulation	☐ Other (describe)	

The Following Information is Optional. This Information can Assist in Evaluating a Request for Action and in Rulemaking and Should be Provided if Known.

Economic impact: (explain all answers marked "yes")

1. Does the proposed change increase or decrease the cost of enforcement? ☐ Yes ☐ No If yes, explain

2. Does the proposed change increase or decrease the cost of compliance? ☐ Yes ☐ No If yes, explain
Include the estimated cost increase or decrease, and who will bear the cost increase or experience the cost decrease:

3. Are there less costly or intrusive methods to achieve the proposed change? ☐ Yes ☐ No If yes, explain

4. Were alternative methods considered? ☐ Yes ☐ No If no, why not? If yes, explain what alternative methods were considered and why they were rejected.

5. If there is a fiscal impact, try to explain any benefit that will offset the cost of the change. If there is no impact, mark "N/A."

6. Provide a description of the classes of persons affected by a proposed change, who will bear the cost, and who will benefit.

7. Does the proposed rule affect farming operations? (Agricultural buildings are exempt from the Minnesota Building Code under Minnesota Statutes, Section 326B.121.) ☐ Yes ☐ No If yes, explain

Are there any existing Federal Standards? ☐ Yes ☐ No If yes, list:

Are there any differences between the proposed change and existing federal regulations? ☐ Yes ☐ No
☐ Not applicable ☐ Unknown If yes, describe each difference & explain why each difference is needed & reasonable.

Minnesota Statutes, section 14.127, requires the Board to determine if the cost of complying with proposed rule changes in the first year after the changes take effect will exceed $25,000 for any small business or small city. A small business is defined as a business (either for profit or nonprofit) with less than 50 full-time employees and a small city is defined as a city with less than ten full-time employees.

During the first year after the proposed changes go into effect, will it cost more than $25,000 for any small business or small city of comply with the change? ☐ Yes ☐ No If yes, identify by name the small business(es or small city(ies).

Will this proposed plumbing code amendment require any local government to adopt or amend an ordinance or other regulation in order to comply with the proposed plumbing code amendment? ☐ Yes ☐ No If yes, identify by name the government(s) and ordinances(s) that will need to be amended in order to comply with the proposed plumbing code amendment.

Additional supporting documentation may also be attached to this form. Are there any additional comments you feel the Committee/Board may need to consider? If so, please state them here:

Information regarding submitting this form:

- Submissions are received and heard by the Committee on an "as received" basis. **Any missing documentation will delay the process, and your proposal will be listed as the date it was received "Complete."**
- **Submit any supporting documentation to be considered,** such as manufacturer's literature, approvals by other states, and engineering data electronically to DLI.CCLDBOARDS@state.mn.us. Once your Request For Action form has been received, it will be assigned a file number. Please reference this file number on any correspondence and supplemental submissions.
- For copyrighted materials that must be purchased from publishers, such as published standards, product approvals or testing data, listings by agencies (IAPMO, ASSE, ASTM, etc.,) you may send (or email) two copies, *along with written permission from the publisher to distribute the materials at meetings*, via U.S. Mail to: Plumbing Board, c/o Department of Labor and Industry, 443 Lafayette Road No., St. Paul, MN 55155-4344.
- For materials that must be submitted by U.S. Mail, please include a copy of your "Request For Action" form originally submitted and reference your assigned RFA file number.

Information for presentation to the Committee and/or Board:

- Limit presentations to 5 minutes or less.
- Be prepared to answer questions regarding the proposal and any documentation.

Information regarding Committee and/or Board function:

- The Plumbing Board or designated Committee.

I understand that any action is a recommendation to the Plumbing Board and is not to be considered final action.

Submitter's Name	Submitter's Email Address	Submitter's Firm Name
Anita Anderson & Tannie Eshenaur	anita.c.anderson@state.mn.us and tannie.eshenaur@state.mn.us	MN Dept. of Health

Presenter's name, phone, and email if different

Submitter's Mailing Street Address	City	State	Zip Code
11 East Superior Street Suite 290	Duluth	MN	55802

Submitter's Phone	Submitter's Signature (original, electronic or typed)	Date
218-301-6143	Anita C. Anderson Tannie Eshenaur	10/27/25

For Assistance or questions on completing this form, contact Mike Westemeier, Department of Labor and Industry at michael.westemeier@state.mn.us or by phone 651-284-5898.

Attachment A: RFA.PB0215

Overall Description of the proposed changes:

- Alternate water source systems can provide value in protecting water resources. The Minnesota Department of Health supports the implementation of water reuse in Minnesota with assurances that public health and safety are protected.
- While some alternate water source systems are currently in use in Minnesota, the support system for ensuring the safe, successful long-term implementation of these systems is still developing and implementers have stated the need for more detailed guidance, such as:
    - design guidelines (such as exist for subsurface sewage treatment systems in Minnesota Rules, chapter 7080),
    - risk management strategies,
    - funding mechanisms,
    - operator training,
    - maintenance manuals,
    - technical assistance, and
    - oversight and monitoring.
- Having a plumbing code that allows the safe integration of alternate source systems into building plumbing is one piece to the puzzle. In addition, as is the case for public water supplies, septic systems, and wastewater treatment plants, the Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Health (MDH) also play roles that may include guidance, regulation, risk assessment and technical assistance.
- The authority over alternate water use systems in Minnesota is not clear. While the Uniform Plumbing Code (UPC) includes code for plumbing of alternate water systems, the systems also have components of waste treatment and handling that require public health protection usually overseen by the MPCA and MDH. Because the plumbing code is overseen by Department of Labor and Industry (DLI) and other public health protections are overseen by MPCA and MDH, authority and capacity for ongoing monitoring and oversight of alternative water systems needs to be determined.
- The proposed changes in this RFA set water quality requirements for alternate source water systems and incorporate other elements aimed at safe and successful implementation. Requirements include verification of acceptable water quality, as

is customary for other water and wastewater treatment systems, through practices such as:

    - Installation of validated treatment technologies to remove pathogens and other contaminants
    - Documented attainment of:
        - established performance standards
        - endpoint water quality requirements

- Ongoing parameter monitoring to ensure the treatment is effective
- MDH may have further recommendations if this Chapter moves on to rulemaking.

Proposed Change #1:

1501.1.1 Allowable Use of Alternate Water. Where approved or required by the Authority Having Jurisdiction, alternate water sources [reclaimed (recycled) water~~, gray water,~~ and on-site treated nonpotable water] shall be permitted to be used instead of potable water for the applications identified in this chapter. On-site treated nonpotable water for outdoor use is not allowed for single family dwellings.

Need/Reason for Proposed Change #1:

Gray water is crossed out here because the gray water specific sections (1503.0 to 1504.11) appear to conflict with Minnesota Rules, chapter 7080. MDH is not currently supportive of alternate source systems for outdoor use in single family dwelling settings. A family can make a choice for themselves to use an alternate source but should not be allowed to impose this decision on neighbors who maybe be exposed to outdoor uses. For indoor uses, the safety for renters or guests could also be concerning, and adequate signage should still be required.

Proposed Change #2:

1501.2 System Design. Alternate water source systems shall be designed in accordance with this chapter by a ~~licensed plumbing contractor or a registered design professional.~~ registered professional engineer. An engineering report that specifies necessary operating conditions and identifies surrogate parameters requiring continuous or periodic monitoring to demonstrate treatment effectiveness must be submitted along with the plumbing plans. The engineering report must show that required log reduction targets listed in Table 1501.7

are achieved by the treatment process(es). Components, piping, and fittings used in any alternate water source system shall be listed.

~~**Exceptions:**~~

~~(1) A registered design professional is not required to design gray water systems having a maximum discharge capacity of 250 gallons per day (gal/d) (0.011 L/s) for single family and multi-family dwellings.~~

~~(2) A registered design professional is not required to design an on-site treated nonpotable water system for single-family dwellings having a maximum discharge capacity of 250 gallons per day (gal/d) (0.011 L/s).~~

Need/Reason for Proposed Change #2:

The requirement for design by a professional engineer is included because in addition to the installation of plumbing and treatment components, alternate source water systems require specialized design to meet health-based water quality requirements and outline ongoing monitoring and maintenance. This design work extends beyond the scope of plumbing. The engineering report is needed to document requirements for a particular system since the design is not prescriptive.

The Exceptions are removed because they appear to conflict with Minnesota Rules, chapter 7080.

Proposed Change #3:

1501.3 Operating Permit. ~~It shall be unlawful for a person to construct, install, alter or cause to be constructed, installed, or altered an alternate water source system in a building or on a premise without first obtaining a permit to do such work from the Authority Having Jurisdiction.~~ The building owner must have an operating permit issued by the Authority Having Jurisdiction before operating an on-site treated nonpotable water system. The operating permit must include system-specific conditions authorizing and controlling the storage, treatment, distribution and permitted end uses of the treated nonpotable water in a manner that protects public health and the environment. The owner must notify the Authority Having Jurisdiction of any change in ownership.

Need/Reason for Proposed Change #3:

An operating permit would allow for a clear delineation of expectations for the alternate water source system and allow tracking of operation for both safety and learning purposes.

When changes in ownership occur, the Authority Having Jurisdiction can make sure the new owner understands documented expectations.

Proposed Change #4:

1501.5.1 Frequency. Alternate water source systems and components shall be inspected and maintained in accordance with Table 1501.5 unless more frequent inspection and maintenance are required by the manufacturer, designer, or the Authority Having Jurisdiction.

Need/Reason for Change #4:

Maintenance and inspections are key to successful implementation of alternate water source systems and the designer or Authority Having Jurisdiction may have requirements above those recommended by the manufacturer.

Proposed Change #5:

1501.5.2 Maintenance Log. A maintenance log for ~~gray water and~~ on-site treated nonpotable water systems is required ~~to have a permit in accordance with Section 1501.3~~ and shall be maintained by the property owner and be available for inspection. The property owner or designated appointee shall ensure that a record of testing, inspection, and maintenance in accordance with Table 1501.5 and any requirements of the manufacturer, designer or the Authority Having Jurisdiction is maintained in the log. The log will indicate the frequency of inspection and maintenance for each system.

Need/Reason for Proposed Change #5:

As for proposed change #4, maintenance and inspections are key to successful implementation of alternate water source systems and the designer or Authority Having Jurisdiction may have requirements above those recommended by the manufacturer.

Proposed Change #6:

Table 1501.5

MINIMUM ALTERNATE WATER SOURCE TESTING,

INSPECTION, AND MAINTENANCE FREQUENCY

DESCRIPTION	MINIMUM FREQUENCY
Inspect and clean debris filters and screens, and replace (where necessary).	Every 3 months
~~Inspect and verify that disinfection, filters, and water quality treatment devices and systems are operational and maintaining minimum water quality requirements as determined by the Authority Having Jurisdiction.~~	~~In accordance with manufacturer's instructions and the Authority Having Jurisdiction.~~
Inspect pumps and verify operation.	After initial installation and ~~every 12 months~~ daily thereafter
Inspect valves and verify operation.	After initial installation and every ~~12~~ 3 months thereafter
Inspect pressure tanks and verify operation.	After initial installation and every ~~12~~ 3 months thereafter
Clear debris from, clean and inspect storage tanks, locking devices, and verify operation.	After initial installation and every ~~12~~ 3 months thereafter
Inspect caution labels and marking.	After initial installation and every ~~12~~ 3 months thereafter
~~Inspect and maintain mulch basins for gray water irrigation systems.~~	~~As needed to maintain mulch depth and prevent ponding and runoff.~~
Cross-connection inspection and test*	After initial installation and every 12 months thereafter

*The cross-connection test shall be performed in the presence of the Authority Having Jurisdiction in accordance with the requirements of this chapter.

Need/Reason for Change #6:

Verification that disinfection, filters, and water quality treatment devices and systems are operational and maintaining minimum water quality requirements is better covered under the water quality requirements sections. Other inspections need to be conducted more frequently than every 12 months (even at a minimum) for a system to dependably provide nonpotable water.

Proposed Change #7:

1501.6 Operation and Maintenance Manual. An operation and maintenance manual for ~~gray water and~~ on-site treated water systems ~~required to have a permit in accordance with Section 1501.3~~ shall be supplied to the building owner by the system designer. The building owner must keep the manual on the premises in one or more locations specified in the O&M manual. The owners must review the manual annually and update it as appropriate and/or upon request by the Authority Having Jurisdiction. The operation and maintenance manual must include the following:

(1) Detailed diagram of the entire system and the location of system components~~.~~ including: location of approved air gaps, other approved backflow prevention assemblies, flow meters, treatment components, sample ports, and diversion location(s); makeup water source and; public access restrictions in place to minimize human contact with treated nonpotable water.

(2) Instructions for operating and maintaining the system~~.~~, including: treatment process operations, instruments and alarms, and any chemicals used; equipment and instrument product manufacturer literature that specifically addresses product installation, recommendations, and maintenance; and end use water management plan;

(3) Details on maintaining the required water quality for on-site nonpotable systems~~.~~, including: a compliance monitoring plan including treatment system monitoring, pathogen reduction compliance, and water quality sampling; and provisions for monitoring and managing failure of treatment unit processes.

(4) Details on deactivating the system for maintenance, repair, or other purposes.

(5) Applicable testing, inspection, and maintenance frequencies in accordance with Table 1501.5 and any requirements of the manufacturer, designer or the Authority Having Jurisdiction.

(6) A method of contacting the manufacturer(s)~~.~~, key personnel, qualified operator(s), the installer and designer of the primary treatment system.

(7) For district-scale projects, a copy of the district-scale agreement. The agreement must be an executed, enforceable, legal agreement defining the roles and responsibilities of each property owner or entity in relation to the maintenance and use of the system.

(8) Any additional information or changes needed to protect public health and the environment that the Authority Having Jurisdiction or the commissioner of health may require.

Need/Reason for Proposed Change #7:

MDH has heard from implementers and operators of alternate source systems that a detailed operation and maintenance manual is key to the success of the system. Building owners and operators change, and having the detailed documentation needed to operate the system is necessary during these transitions.

Proposed Change #8:

1501.7 Minimum Water Quality Requirements. ~~The minimum water quality for alternate water source systems shall~~ Reclaimed (recycled) water systems shall meet the applicable water quality requirements ~~for the intended application~~ as determined by the Minnesota Pollution Control Agency for the intended application. ~~Authority Having Jurisdiction~~. On-site treated nonpotable water systems must have a treatment process design that achieves the log reduction targets for pathogens and water quality limits listed in Table 1501.7. Treated nonpotable water must continuously achieve the log reduction targets and any inadequately treated nonpotable water not meeting log reduction targets or water quality limits in Table 1501.7 must divert to sanitary or storm sewer as appropriate for the source of inadequately treated water. ~~In the absence of water quality requirements, for on-site treated nonpotable systems, the water quality requirements of IAPMO IGC 324 or NSF/ANSI 350 shall apply.~~

~~**Exception:** Water treatment is not required for gray water used for subsurface irrigation.~~

TABLE 1501.7 PATHOGEN LOG_{10} REDUCTION TARGETS (LRT) AND WATER QUALITY LIMITS FOR ON-SITE TREATED NONPOTABLE WATER SYSTEMS

PATHOGEN LOG_{10} REDUCTION TARGETS (LRT) FOR INDOOR USE[1]			
Source Water	Virus	Protozoa	Bacteria
Untreated Onsite Wastewater[2]	10.0	6.5	5.5
Gray Water[2]	7.5	4.0	3.5
Stormwater (.1% Wastewater)[2]	6.0	4.0	3.5
Foundation Drainage[3]	5.0	3.0	2.5
AC Condensate[4]	N/A	N/A	3.5
PATHOGEN LOG_{10} REDUCTION TARGETS (LRT) FOR OUTDOOR USE[5]			
Source Water[2]	Virus	Protozoa	Bacteria
Untreated Onsite Wastewater[2]	8.5	6.5	5.5
Gray Water[2]	6.5	4.0	3.0

Stormwater (.1% Wastewater)[2]	5.5	3.0	2.5
Foundation Drainage[3]	4.5	2.0	1.5
AC Condensate[4]	0.0	0.0	3.5
WATER QUALITY LIMITS			
	Parameter	Limit	
All	pH	6.0 – 9.0	
Gray Water and On-site Wastewater	5-day Biological Oxygen Demand (BOD_5)	30 mg/L	

[1] Indoor use includes toilet flushing, clothes washing, decorative fountains, trap primers for floor drains and floor sinks, and fire suppression.

[2] U.S. Environmental Protection Agency. 2025. Risk-Based Framework for Developing Microbial Treatment Targets for Water Reuse. U.S. Environmental Protection Agency, Office of Research and Development, EPA/600/R-25/009, p. 39.

[3] The LRTs for foundation drainage are based on the assumption that foundation drainage will be of similar quality to stormwater containing a small amount of wastewater (.01% dilution).

[4] The LRTs for AC Condensate are assumed to be the same as for rainwater.

[5] Outdoor use includes unrestricted spray irrigation of ornamental or non-food plants, vehicle washing, dust suppression, and fire suppression.

Need/Reason for Proposed Change #8:

The EPA Risk-Based Framework for Developing Microbial Treatment Targets for Water Reuse provides the science for the LRTs. The primary public health concern with nonpotable water applications is human exposure to pathogens. The LRTs set requirements specific to the source of alternate water and the end use application. Data on Minnesota stormwater supports the EPA LRTs for stormwater as outlined in the "Reuse of Stormwater and Rainwater in Minnesota: A Public Health Perspective" white paper: Reuse of Stormwater and Rainwater in Minnesota (https://www.health.state.mn.us/communities/environment/water/docs/cwf/wpwaterreuse.pdf).

Proposed Change #9:

1501.11 Operator Qualifications and Duties. The alternate water system owner must directly employ or maintain a service contract with a qualified operator who will be in charge of the daily and ongoing operations and maintenance of the alternate water source system.

Need/Reason for Proposed Change #9:

The operator of an alternate water source system needs to be knowledgeable about pumps, storage, treatment, public health requirements and overall operations. Operator training and certification programs have been developed at the national level and could be used directly or adapted for Minnesota.

Proposed Change #10:

1502.3 Annual Cross-Connection and Water Quality Inspection and Testing. An initial and subsequent annual inspection and test shall be performed on both the potable and alternate water source systems. The potable and alternate water source system shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection in accordance with Section 1502.3.1 through Section 1502.3.4. An initial and subsequent annual inspection and test shall be performed to determine compliance with the log reduction targets for pathogens and applicable water quality limits in accordance with Section 1502.3.5.

1502.3.5 Water Quality Inspection. A property served by on-site treated nonpotable water is subject to inspection by the Authority Having Jurisdiction and the commissioner of health. An inspection to verify compliance with the log reduction targets for pathogens and applicable water quality limits must be conducted a minimum of annually by the Authority Having Jurisdiction or the commissioner of health.

Need/Reason for Proposed Change #10:

In addition to an annual cross-connection test, an annual inspection to verify water quality requirements are met will help ensure public health is protected over the life of the system. Any operator questions can be answered, and ideally information can also be gathered as to what is working or not working about the system. This information can be shared to help other implementers.

Proposed Change #11:

1502.5 Abandonment. Alternate water source systems that are no longer in use or fail to be maintained in accordance with Section 1501.5 shall be abandoned. Abandonment shall comply with Section 1502.5.1 and Section 1502.5.2. Written notice of the abandonment must be made to the Authority Having Jurisdiction.

Need/Reason for Proposed Change #11:

Notification of abandonment is necessary so that the Authority Having Jurisdiction knows that annual inspections are no longer needed.

Proposed Change #12:

1506.1 General. The provisions of this section shall apply to the installation, construction, alteration, and repair of on-site treated nonpotable water systems intended to supply uses such as water closets, urinals, clothes washers, trap primers for floor drains and floor sinks, above ~~and below~~ground irrigation, dust suppression, decorative fountains, vehicle washing, fire suppression, and other uses approved by the Authority Having Jurisdiction and the commissioner of health.

Need/Reason for Proposed Change #12:

The log reduction targets cover the uses listed in Proposed Change #12 and are based on public health protection. EPA and other researchers continue to develop exposure estimates for other end uses, and other uses may be able to be approved on a case-by-case basis. Log reduction targets are calculated in part on the volume of exposure for each end use. Scientific consensus has been reached on the exposure volumes for the end uses listed above. For below ground irrigation, the public health concern is minimal, but there may be environmental concerns or regulations that apply, depending on the source of alternate water.

Proposed Change #13:

1506.8 On-Site Treated Nonpotable Water Devices and Systems. Devices or equipment used to treat on-site treated nonpotable water to maintain the minimum water quality requirements in Section 1501.7 ~~determined by the Authority Having Jurisdiction~~ shall be listed and labeled (third-party certified) by a listing agency (accredited conformity assessment body) or approved for the intended application. ~~Devices or equipment used to~~

~~treat on-site treated nonpotable water for use in the water closet and urinal flushing, surface irrigation, and similar applications shall comply with IAPMO IGC 324, NSF/ANSI 350 or approved by the Authority Having Jurisdiction.~~

Need/Reason for Proposed Change #13:

Compliance with IAPMO IGC 324 or NSF/ANSI 350 is replaced by the log reduction targets listed in Section 1501.7.

Proposed Change #14:

1506.10.1 Listing Terms and Installation Instructions. On-site treated nonpotable water system~~s~~ components shall be installed in accordance with the terms of ~~its~~ their listing and the manufacturer's installation instructions.

Need/Reason for Proposed Change #14:

Alternate water systems may be comprised of multiple components from multiple manufacturers.

Proposed Change #15:

1506.10.2 ~~Minimum Water Quality~~ Disinfection Required. On-site treated nonpotable water supplied to toilets or urinals or for other uses in which it is sprayed or exposed to the public shall carry a free or total chlorine residual. A free chlorine residual of 0.2 mg/L or a total chlorine residual of 0.5 mg/L must be maintained at all points of the distribution system. ~~be disinfected. Acceptable disinfection methods shall include chlorination, ultraviolet sterilization, ozone, or other methods as approved by the Authority Having Jurisdiction. The minimum water quality for on-site treated nonpotable water systems shall meet the applicable water quality requirements for the intended applications as determined by the public health Authority Having Jurisdiction~~.

Need/Reason for Proposed Change #15:

The log reduction targets in Table 1501.7are designed to protect primarily against enteric (gut) bacteria that may be present in alternate sources of water. Other pathogens, including *Legionella* bacteria, may also be present. These organisms tend to thrive in biofilms and can grow in distribution piping. They are a health concern when they are inhaled through aerosolized droplets. To provide public health protection against pathogenic biofilm

bacteria, a disinfectant residual must be maintained to the point of use, in addition to the treatment provided to meet the log reduction targets.

Proposed Change #16:

1506.14 Monitoring and Sampling. An operator must monitor water quality parameters at the locations and frequencies outlined in the engineering report to ensure compliance with the log reduction targets for pathogens and any water quality limits. The operator must also monitor any parameters required by the Authority Having Jurisdiction.

Need/Reason for Change #16:

Ongoing monitoring of surrogate parameters is needed to ensure the treatment provided to meet log reduction targets remains functional over time. For example, the surrogate parameter for filtration is typically turbidity. Turbidity limits for many filtration technologies are established, and these should be listed in the engineering report. Each system will have a unique set of monitoring parameters based on the technologies utilized.

Proposed Change #17:

1506.15 Reporting. The owner must notify the Authority Having Jurisdiction and building users within 24 hours when inadequately treated nonpotable water enters the treated nonpotable water distribution system.

Need/Reason for Proposed Change #17:

Requiring notification of treatment issues allows the Authority Having Jurisdiction to require any actions necessary to protect public health. Tracking treatment issues would also provide valuable information to implementers.

Proposed Changes #18:

Addition to 203.0

Air conditioning condensate (AC condensate). Water extracted from atmospheric water vapor due to the operation of air conditioning or refrigeration.

Addition to 205.0

Continuous monitoring. Ongoing confirmation of system performance with the use of sensors, analyzers, meters, and other instrumentation, no less than once every 15 minutes for the continuous observation of selected parameters, including surrogate parameters correlated with pathogen log reduction targets.

Additions to 206.0

Disability adjusted life years (DALYs). The measure of the health burden of a disease, calculated as the sum of years of life lost (YLL) due to premature death and years of life lived with disability (YLD) from illness (DALY=YLL+YLD).

District-scale project. A single project at the time of design consisting of two or more commercial, multifamily residential, or mixed-use buildings on one or more parcels near the point of treatment or use and sharing an on-site treated nonpotable water system.

Addition to 207.0

Engineering report. A technical document prepared under the direction, and bearing the seal, date, and signature of a professional engineer, describing an on-site treated nonpotable water system.

Addition to 208.0

Foundation drainage. Shallow groundwater collected from the drainage around building foundations or sumps. Foundation drainage does not include nonpotable groundwater extracted for beneficial use.

Addition to 209.0

Gray water. Liquid effluent collected from sources such as bathroom sinks, showers, bathtubs, clothes washers, and laundry sinks. Gray water does not include flow from toilets or urinals and does not include liquid effluent from kitchen sinks or dishwashers.

Additions to 214.0

Log reduction. The reduction in the concentration of infective pathogens or surrogate parameters through a treatment process expressed in $\log_{10}$ units. For example, a 1-log reduction equates to 90-percent removal, 2-log reduction to 99-percent removal, and 3-log reduction to 99.9-percent removal.

Log reduction target (LRT). The required degree of pathogen reduction needed to achieve a risk of 10-6 DALYs per person per year (PPY) through exposure to treated nonpotable water.

Additions to 221.0

Source water. Untreated on-site wastewater, gray water, stormwater, foundation drainage, or AC condensate that is captured for treatment and nonpotable end uses on-site or nearby.

Stormwater. Precipitation runoff from rain or snowmelt events that flows over land or impervious surfaces, for example streets and parking lots, and does not soak into the ground.

Additions to 222.0

Treatment process. A combination of treatment unit processes, also known as a treatment train.

Treatment unit process. A physical, chemical, or biological system intended to improve water quality. Examples include filtration, oxidation, adsorption, disinfection, and membrane separation.

Addition to 223.0

Untreated on-site wastewater. Water-carried domestic human waste from toilets or urinals including liquid effluent from kitchen sinks or dishwashers.

Need/Reason for Proposed Changes #18:

The above definitions are provided to explain terms used elsewhere in the proposed changes.