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P-17-01-NPC15

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**Subject: Reclaimed Water Systems within a Single Property**

## ISSUE:

The growing need for water conservation and more efficient use of water resources in Alberta has resulted in the utilization of systems that use reclaimed water for toilet or urinal flushing and subsurface irrigation systems.

## BACKGROUND:

In the past Alberta had no standards that allowed for the use of reclaimed water for toilet, urinal flushing or subsurface irrigation. The National Plumbing Code of Canada (NPC) now enables owners and users of plumbing systems to design water reuse systems. Alternative solutions proposals are reviewed considering the prescriptive requirements, objectives and intent of the plumbing code. In order to receive a variance, an alternative solution proposal shall demonstrate an equivalent or greater level of performance as required by Division B in the NPC.

## CODE REQUIREMENTS: (NPC, Division B)

**A-2.7.4.1. Non-potable water system design.** There is a growing interest in Canada for the use of non-potable water supplies in place of potable ones for selected purposes, such as flushing toilets and irrigating lawns and gardens. Article 2.7.4.1. applies to non-potable water systems and the non-potable water must meet applicable water quality standards as determined by an authority having jurisdiction.

This information bulletin provides guidance for the authority having jurisdiction (AHJ) regarding clause A. 2.7.4.1 in the notes section of the NPC. The installation of uncertified and B128.3-12 Class A Certified non-potable water re-use systems for toilet and urinal flushing and subsurface irrigation is acceptable, provided the identified conditions in this bulletin are met. These requirements are applicable to jurisdictions where the municipal authority, as the authority who can identify water quality standards, has accepted responsibility for ensuring that the required monitoring, operation and maintenance plans are in place. If the municipality chooses not to direct or identify third parties to oversee the operation, testing and reporting by the owner of reclaimed water re-use systems, water reuse as identified by 2.7.4.1 of the national plumbing code of Canada cannot be used in that jurisdiction.

An owner must satisfy the following conditions in order to install and operate a reclaimed water system that serves a single property:

1. Uncertified systems shall have engineered designs that are signed and imprinted with a seal or stamp by a professional engineer.

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Issue of this STANDATA is authorized by  
the Chief Plumbing Administrator

*[Original Signed]*  
Sidney Manning



Alberta  
Government



2. Uncertified systems shall conform to B128.3 Class “A” water quality guidelines (Table 1) or the *Canadian Guidelines for Domestic Reclaimed Water for Use in Toilet and Urinal Flushing*.
3. A monitoring and maintenance plan shall be submitted to a safety codes officer for all reclaimed water systems.
4. The owner shall ensure that testing of the reclaimed water quality is completed by an accredited laboratory.
5. Sampling procedures shall be followed as required by the monitoring and maintenance plan. Handling of the sample(s) shall follow procedures established by the accredited laboratory.
6. Frequency of water sampling shall meet requirements set out in municipal bylaw and/or policy.
7. A contracted organization may be used to act on behalf of the municipality if deemed acceptable by said municipality.
8. All documentation, including reclaimed water test reports and owner’s manual, shall be maintained onsite with the system and be provided upon request.
9. All reclaimed water systems shall have back flow protection as required by the NPC.
10. Discharge of overflow from reclaimed water systems shall be connected to a public sanitary sewer, public combined sewer or private sewage disposal system.
11. Installation of non-potable distribution systems shall be subject to the requirements of 2.7.4. of the NPC.
12. The installation of a reclaimed water system is subject to the Permit Regulation and a permit in the plumbing discipline.

**Table 1: B128.3-12 Performance of Non-potable Water Reuse Systems  
Reclaimed Water Quality Requirements: Class A**

Parameter	Unit	Median*	Maximum**
BOD <sub>5</sub>	mg/L	≤ 10	≤ 20
TSS	mg/L	≤ 10	≤ 20
Turbidity	NTU	≤ 2	≤ 5
<i>E. coli</i> **	CFU/100 ml	Non-detect	≤ 200
Fecal coliforms**	CFU/100 ml	Non-detect	≤ 200
Total chlorine residual***	mg/L	Between 0.5 and 2	N/A
Colour	-	Measured and reported only	Measured and reported only
Odour	-	Non-offensive	Non-offensive
Oily film and foam	-	Non-detect	Non-detect

\*The median is calculated as the median of all parameter analyses collected for the sampling program.



*\*\*The maximum is the maximum analytical value for any single sample collected during the testing program, including samples collected immediately after any stress event.*

*\*\*\*A maximum total chlorine residual of 2 is specified to address the potential negative effects of excessive chlorine on certain applications (e.g., subsurface irrigation). A minimum total chlorine residual of 0.5 is required to protect against potential regrowth in the distribution and storage system.*

NOTES:

- Any changes to the original monitoring and maintenance plan are to be submitted for re-examination and approval by the local Authority Having Jurisdiction to ensure they meet the intent of this bulletin prior to change.
- Non-potable water supplied to a plumbing system from municipal infrastructure does not need to be approved as identified above, but needs to meet all of the requirements of section 2.7 of the NPC.
- Any water reuse application for use other than toilets, urinals or subsurface irrigation will require a site-specific variance for a properly supported alternate solution request to meet the intent of the NPC.

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