
STANDATA bulletin 20-PCB-009

Plumbing

Reclaimed water systems within a single property

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Purpose

This bulletin provides guidance on the requirements of systems that use reclaimed water for water closets, urinals, traps seal primers and directly connected underground irrigation systems.

Discussion

As there is a growing interest in and need for water conservation and more efficient use of water resources in Alberta, guidance is needed around the use of reclaimed water systems. In the past, Alberta had no standards that allowed for the use of reclaimed water for water closets, urinal flushing or directly connected underground irrigation systems. The National Plumbing Code of Canada (NPC) 2020 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 NPC 2020. To receive a variance, an alternative solution proposal must demonstrate an equivalent or greater level of performance as required by Division B in the NPC 2020.

Code References

NPC A-2.7.1 Code Requirements (NPC, Division B)

A-2.7.1.1. Non-potable water system design. There is a growing interest in Canada in using available non-potable water supplies in place of potable ones for selected purposes, such as flushing water closets and irrigating lawns and gardens. Article 2.7.1.1. applies to non-potable water systems, regardless of the origin of the water. The non-potable water must meet applicable water quality standards as determined by an authority having jurisdiction.

Unless stated otherwise, all Code references in this STANDATA are to the National Plumbing Code of Canada 2020

Issued by the Provincial Plumbing Administrator

[Original signed]

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This information bulletin provides guidance for the authority having jurisdiction (AHJ) regarding clause **A. 2.7.1.1** in the notes section of the NPC 2020. The installation of non-certified and B128.3-12 Class A certified non-potable water re-use systems for water closets, urinals, traps seal primers and directly connected underground irrigation systems 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 systems, then water reuse as identified by **2.7.1.1** of the NPC 2020 cannot be used in that jurisdiction.

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

1. Non-certified systems must have engineered designs that are signed and imprinted with a seal or stamp by a professional engineer.
2. Non-certified systems must 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. All water reuse systems must meet the requirements identified in the public health guidelines for water reuse and stormwater use.

<https://open.alberta.ca/publications/public-health-guidelines-water-reuse-stormwater-use>

4. A monitoring and maintenance plan must be submitted to a safety codes officer for all reclaimed water systems.
5. The owner must ensure testing of the reclaimed water quality is completed by an accredited laboratory.
6. Sampling procedures must be followed as required by the monitoring and maintenance plan. Handling of the sample(s) must follow procedures established by the accredited laboratory.
7. Frequency of water sampling must meet requirements set out in municipal bylaw and/or policy.
8. A contracted organization may be used to act on behalf of the municipality if deemed acceptable by said municipality.
9. All documentation, including reclaimed water test reports and owner’s manual, must be maintained onsite with the system and be provided upon request.
10. All reclaimed water systems must have back flow protection as required by the NPC 2020.
11. Discharge of overflow from reclaimed water systems must be connected to a public sanitary sewer, public combined sewer, or private sewage disposal system.
12. Installation of non-potable distribution systems must be subject to the requirements of **2.7.1.** of the NPC 2020.
13. 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 ₅	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 AHJ 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.
- Additional information is available through Notice: Alternate Solutions Guide for Small Systems Water Reuse and Stormwater Use.

<https://open.alberta.ca/dataset/fb416ece-3341-431b-909e-f4875bd5a34b/resource/12161b11-2350-4728-be60-2a6276caa5d1/download/ma-notice-alternative-solutions-guide-small-system-water-reuse-stormwater-use-2021-01.pdf>

Any water reuse application other than water closets, urinals, trap seal primers and directly connected underground irrigation systems will require a site-specific variance for a properly supported alternate solution request to meet the intent of the NPC.