PLUMBING SAFETY VARIANCE

STANDATA

August 2015

VAR-P-15.01

Reclaimed Water Systems
Within a Single Property, Under 25 m^3 Capacity Per Day

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 there was no regulatory pathway in Alberta that allow for the use of reclaimed water for toilet or urinal flushing or subsurface irrigation. 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 National Plumbing Code (NPC).

CODE REQUIREMENTS: (NPC, Division B)

Subsection 2.1.2.1 (1) Every sanitary drainage system shall be connected to a public sanitary sewer, a public combined sewer or a private sewage disposal system."

Subsection 2.1.2.2 (1) Every storm drainage system shall be connected to a public storm sewer, a public combined sewer or a designated storm water disposal location."

Subsection 2.1.2.3 (1) Every water distribution system shall be connected to a public water main or a potable private water supply system."

VARIANCE:

This variance allows for 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 provided the identified conditions in this variance are met. This variance is applicable for jurisdictions where the municipal authority has accepted responsibility for ensuring that the required monitoring, operation and maintenance plans are in place. If the municipality chooses not to be involved in the operation, testing and reporting of reclaimed water re-use systems, then Var-P-15.01 cannot be used in that jurisdiction.

An owner must satisfy the following conditions in order to install and operate a reclaimed water system with a capacity of 25 m^3 per day or less that serves a single property:

1. Uncertified systems shall have engineered designs that are signed and sealed by a professional engineer.
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.

This VARIANCE applies throughout the province of Alberta.

Non-Compliance with the instructions contained in this variance is an offence under the Safety Codes Act.

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
*E. coli***	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.*

NOTE: 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 Variance.