



Public Services and Procurement Canada (PSPC) Building Water Systems Minimum Requirements – (COVID-19) Updated June 2022

In response to COVID-19, many client departments have reduced the number of employees who are present in the office. The resulting reduced building occupancy may increase risks associated with water systems and the use of the potable water system for the remaining employees. While Health Canada guidance at this time is that it is highly unlikely that drinking water is a route of transmission for COVID-19 (the disease) or SARS-CoV-2 (the virus), there are other issues to be considered.

As fewer people use the building water systems, there is increased potential for water stagnation. Stagnant water conditions increase the risk for bacterial growth including *Legionella*. In potable water systems, stagnant water conditions can also cause a loss of disinfectant residual and increase risks for the presence of lead. This document establishes minimum requirements to reduce risks associated with building water systems during periods of reduced occupancy, after a period of reduced occupancy, and under normal operating conditions. Site specific conditions may require additional measures. Refer to Annex B for definitions and Annex C for a summary of key measures.

The following requirements have been established by Technical Services Service Line and the Property Facility Management Service Line within PSPC Real Property Services in consultation with Health Canada to address risks to building water systems. These requirements, which apply to PSPC crown-owned buildings will be reviewed and updated as required. For leases, it is required to have a discussion with the landlord to ensure that similar measures are being implemented prior to re-occupancy of leased spaces.

Communications Requirements

For PSPC to successfully complete the required actions and testing to meet the minimum requirements prior to re-occupancy and to assist clients in their employer role, client departments need to provide sufficient advance notice (minimum 2 weeks) of their intention to re-occupy a space that they have vacated. The amount of advance notice required will depend on a variety of factors (e.g., regional capacity, localized demand, and remoteness of buildings). Communication is key to the success of re-occupancy; it is therefore important that clients be informed ahead of time



of the planned actions and testing. It is equally important that the client departments be informed of actions completed and of the testing results.

A. Minimum Requirements for Potable (Cold) Water Systems and Building Hot Water Systems

A1. Buildings affected:

Buildings with reduced occupancy or unoccupied due to COVID-19. Occupancy levels are likely to vary depending on guidance from the [Public Service Occupational Health Program \(PSOHP\)](#).

A2. Existing operational requirements for hot water:

Ensure that storage temperatures are maintained and that stagnant water conditions are avoided in accordance with the PSPC building's Legionella Bacteria Control Management Program (LBCMP).

A3. Periodic flushing:

During periods of reduced occupancy or no occupancy related to COVID-19, it is required to do a periodic flush in accordance with the following steps (For buildings that are scheduled to return to greater occupancy, see Section D for additional requirements):

1. Remove aerators before flushing. Thoroughly clean aerator before re-installation.
2. A flush of **at least thirty (30) minutes** is to be conducted **at least every three (3) days** for each of the hot and cold water risers or main distribution pipes in the building. The flush is to be conducted from the point(s) of consumption (e.g., a kitchen faucet) furthest from the water entry on the top floor of the building (or the longest run furthest from the water entry for single storey sites) until:
 - a. the flushing time is completed and;
 - b. the measured temperature is stable for one minute (hot flush) and the presence of residual disinfectant is measured at the fixture (cold flush).
3. Flush (zone by zone) for **at least two (2) minutes on a weekly basis** all water fixtures that are directly connected to the building water system starting at the water fixture closest to the water entry. Examples include, kitchen faucets (cold then hot), drinking fountains, washroom faucets (cold then hot), showers (cold then hot) and equipment that is directly connected to the building water system, such as ice machines, coffee machines and eyewash stations.
4. It is important to open outlets slowly to avoid splashing and the creation of aerosols. Appropriate Personal Protective Equipment (PPE) should be worn. Consult your employer for requirements.
5. It is required to maintain a log of the flushing that is completed. As such, please use the following [template](#) to track flushing activities. This template is to be kept at the building level and available upon request.

If the building is not on a municipal supply system, ensure that the flushing program implemented does not exceed the capacity of your water source.

Daycare Requirements:

For buildings with an operating daycare, it is required to have a discussion with the daycare operator to recommend that daily flushes (5 minutes) be performed by the daycare operator at each of the points of consumption prior to the children's arrival.

Signage:

It is recommended that the following notice be installed at each point of consumption in the building (e.g., at each drinking fountain and kitchen faucets):

“PSPC has implemented additional flushing during this period of reduced occupancy to ensure the continued safety of the potable water system in the building.

How you can help:

- Let the water run for two (2) minutes before consuming it.
- When washing your hands (min twenty (20) sec), let the water run to help with flushing the system.”

B. Additional Water System Considerations

Trap Seals: Trap seals may not be maintained if water system use has been reduced. Ensure that trap seals are maintained to keep sewer gases from entering the building. Pour water into floor drains and flush each sanitary fixture (i.e., toilet, urinal) **once a week** to maintain trap seals.

If regular maintenance activities are reduced, drain building water systems that are not being used (e.g., landscape irrigation, water reuse, decorative water features) to avoid stagnant water conditions. Ensure that the requirements of the building's LBCMP are followed. Follow start-up procedures, manufacturer recommendations and requirements of LBCMP when re-starting systems.

C. Sampling programs

The annual potable water sampling program and the Legionella testing requirements established in the facilities LBCMP are to be conducted this year and should be coordinated with re-occupancy plans. Testing should be done as soon as possible for buildings that have implemented periodic flushing detailed in section A above. Test results, despite partial occupancy of the buildings, will allow us to assess the water quality and evaluate the effectiveness of the periodic flushing. Test results will inform the need to adjust the building's periodic flushing program or implement additional corrective measures. Consult your regional technical center of expertise for assistance flushing program requirements, interpreting testing results, and implementing correctives measures.

The annual potable water sampling program must include the following minimum parameters:

- microbiological (E. coli, Total Coliforms)
- metals (e.g., lead)
- residual disinfectant (e.g., chlorinated or chloraminated system)
- any site-specific parameters

D. Return to occupancy/Increasing Occupancy

The lack of occupancy or reduction in occupancy of certain space(s) may last for extended periods. Before unoccupied space(s) can be re-occupied, the following steps must be completed for the space(s) that are being re-occupied.

Ongoing communication is required with the building's tenants to determine their occupancy levels. A one week averaging period should be utilized to determine the level of occupancy.

Prior to re-occupancy of a space the property facility manager must complete the **water systems return to occupancy checklist** in Annex A. This checklist is to be kept at the building level and available upon request.

Please consult with your regional technical centre of expertise for support in implementing these requirements.

D1. For buildings that have implemented the periodic flushing detailed in Section A for at least a month prior to occupancy

D1a Risers:

Continue to flush the riser three (3) times per week as per Section A3 until all zones in the building achieve pre-pandemic occupancy levels or a minimum of 50% design occupancy, as reported by the client(s).

1. Consider adjusting riser flushing to once per week if current water usage levels are within 10 % of pre-pandemic usage levels. This adjustment would not be applicable to buildings which have a history of bacteriological or metals exceedances associated with the annual potable water sampling program. Consultation is required between facility management and technical specialists.

Once all zones in the building achieve pre-pandemic occupancy levels or 50% of design occupancy, as reported by the client(s), **and are not anticipated to drop below this level,** return to normal operations (see Section E).

D1b Zones:

Continue zone flushing as per Section A3 until occupancy in the zone achieves pre-pandemic occupancy levels or a minimum of 50% occupancy of design capacity, as reported by the client(s), **and are not anticipated to drop below this level.**

D2. For buildings that have NOT implemented the periodic flushing detailed in Section A for at least a month prior to occupancy

For buildings that have **NOT** implemented periodic flushing detailed in Section A for at least a month, additional measures must be taken prior to occupancy to minimize the risk from water stagnation in the building systems. This includes flushing and may also require a shock chlorination of all building piping to properly disinfect and sanitize any biofilms that may have formed (see section F).

Before unoccupied space(s) can be re-occupied, the following steps must be completed:

1. Inspect accessible plumbing network components for suitability of operation. E.g.
 - i. Water supply wells and building feeder mains
 - ii. Cisterns and water holding tanks
 - iii. Main water distribution room (typically inclusive of water meter, backflow preventer, and other similar components)
 - iv. Cold water pressure tanks
 - v. Hot water tanks
 - vi. Risers
 - vii. Plumbing Fixtures
2. Once inspected and any identified issues are resolved, implement flushing as per section A3 except with a minimum of 5 minutes of flushing at each fixture. The flushing is to be sequential in the order in which components are located within the plumbing network from the point of entry or riser supply for the particular zone being occupied.
3. After a minimum of 1 week of flushing, sample and analyze the potable water in accordance with the requirements of Section C, above. Note that it may take several days for testing results. Check with your laboratory for expected delays in obtaining results, as the COVID-19 situation could delay laboratory operations.
4. Provide an alternative source of drinking water until sampling results demonstrate that the drinking water quality meets the [Guidelines for Canadian Drinking Water Quality](#).
5. In the event of non-compliant testing results, the following actions are required in the space(s) that is being re-occupied:
 - a. Evaluate the need for space-specific measures (e.g., fixture replacement, filters for lead, disinfection – See sections E and F)
 - b. Re-testing for the non-compliant parameters

D3. Third party tenants (e.g., commercial tenants)

For third party tenants, it is required to have a discussion with the tenant to remind them to follow recommendations from their jurisdiction related to water quality and to recommend that the tenant flush (cold then hot) all their water fixtures for at least 5 minutes prior to re-occupancy. The PSPC flushing program is designed to support the provision of water that meets federal requirements up to the entry to the third party tenant space.

E. Normal operations

Once occupancy levels have achieved pre-pandemic occupancy levels or 50% of design occupancy, as reported by the client(s), building managers must determine if there is a need to continue with site specific flushing to maintain water quality at the site.

Buildings that have experienced recurring water quality issues that can be associated with periods of water stagnation (e.g. bacterial, lead) require a site specific flushing program be developed and implemented to maintain water quality until the root cause of the issue is resolved . The site specific flushing program is to be developed and approved by a qualified person. The development of the site specific flushing program must include a review of available documentation such as the building's sanitary survey and the building documentation of the plumbing network to identify:

- Risk factors associated with poor water quality.
- The presence of service lines containing lead and/or building plumbing or fixtures containing lead that may cause unacceptable lead concentrations in the building's potable water
- Dead legs or infrequently used sections of plumbing that may cause stagnation and a decrease in water quality.
- Current and historic rates of water usage based on utility bills, metering and occupancy.

The development of the site specific flushing program should be optimized taking into consideration the Department's sustainability goals.

Once the need and extent of flushing is determined by a qualified person, flushing measures are to be implemented in accordance with the procedures developed by the qualified person considering the content of Sections A3 and D.

Optimizing water quality under normal operations

Right sizing of flushing and measures to control stagnation can be aided by the use of technologies to facilitate water circulation and monitoring. Among the technologies and measures that should be considered are:

- Automated flushing valves
- Point of use (POU) water metering devices
- Communication efforts with the client/occupant to encourage the use of all fixtures along with information on the associated beneficial effect on potable water quality.

F. Disinfection of water system

Disinfection of a portion of the building's water system may become necessary depending on site conditions. Implementing periodic flushing reduces the risk of bacterial growth. The results of the annual potable sampling program or Legionella testing may demonstrate a need to disinfect a portion of the building water system to address water quality issues.

If disinfection is required, a site-specific procedure must be developed and implemented. The procedure shall be:

1. Developed by a qualified professional
2. Meet applicable federal, provincial/territorial or municipal regulatory requirements (e.g., wastewater)
3. Consider the characteristics of the building's water system such as:
 - a. type of disinfectant (e.g., chlorinated or chloraminated) used by the municipality,
 - b. materials of piping, fittings and fixtures
 - c. age and condition of the system

Following the disinfection of the building's water system:

1. Flush the system until residual disinfectant levels are at an acceptable level and do not exceed the Maximum Acceptable Concentrations established in the [Guidelines for Canadian Drinking Water Quality](#).
2. Complete re-sampling and analysis for the non-compliant testing parameters.
3. Provide alternate sources of drinking water until testing results indicate that the quality of the drinking water meets the [Guidelines for Canadian Drinking Water Quality](#).

Key Contacts

Please consult with your regional technical center of expertise for support implementing these requirements.

Technical enquiries related to this document should be directed to Senior Director Environment, Health and Safety, Technical Services Service Line, Real Property Services.

Facility Management enquiries related to this document should be directed to Senior Director Property and Facility Management Services Directorate, Property Facility Management Service Line, Real Property Services.

Annex A – Checklist

Building Water Systems Return to Occupancy Checklist

Building Name:				
Building Address:				
Area Being re-occupied:				
Date Completed:				
Checklist completed by:				
Name:				
Email:				
Telephone:				
Element	Yes	No	Comments	
1	Periodic flushing completed and log available (Refer to Section A3)			
2	Signage posted at each point of consumption (Refer to Section A3)			
3	Trap seals maintained (Refer to Section B)			
4	Sampling programs (Refer to Section C)			
5	Return to occupancy for buildings that have implemented the periodic flushing procedure completed (Refer to Section D)			
6	Return to occupancy for buildings that have NOT implemented the periodic flushing procedure completed (Refer to Section D)			
7	Alternate source of drinking water provided (if applicable) (Refer to Section D)			
8	Disinfection of water system completed (if applicable) (Refer to Section F)			

Annex B – Definitions

Point of entry – The location where the building water supply connects to the service connection. For the purposes of sampling, the point of entry can be considered either the entry point or an outlet closest to the point of entry, where sampling the entry point is not feasible.

Qualified Person: a person who:

- has the required knowledge, training and experience to organize the work and its performance;
- is familiar with all legislation and regulations that apply to the work; and
- has knowledge of any potential or actual danger to health or safety in the workplace.

Reduced Occupancy – Occupancy that is reduced due to non-normal operating conditions (e.g. pandemic, partial building closure) and which results in levels of occupancy below 50% of the design capacity.

Residual disinfectant – the amount of disinfectant (free chlorine or monochloramine) that is present to minimize bacterial regrowth and act as a sentinel for water quality changes. For chloraminated systems, the residual can be measured as the difference between total and free chlorine (i.e., combined chlorine). However, this method has limitations and it is recommended that monochloramine (i.e., the active disinfectant in combined chlorine) be measured directly using the indophenol method.

Riser – Water pipes that extend through at least one full story and convey water to a group of fixtures or premise plumbing lateral lines/branches.

Sanitary Survey – A survey to gather and report on the building's existing plumbing network components, operation, maintenance, monitoring and compliance, in order to evaluate the adequacy of the system in providing safe potable water.

Zone – A group of water fixtures (e.g., faucets, showers) and equipment (e.g., ice machine, coffee machine) served by a common premise plumbing lateral line/branch.

Annex C – Summary of Key Measures

Reference Section	Measure Description	Level of Occupancy Achieved	Summary of measures – Riser(s)	Summary of measures – Zone(s)	Summary of measures-testing
A3	Periodic flushing	During periods of reduced occupancy or no occupancy related to COVID-19	A flush of at least thirty (30) minutes is to be conducted at least every three (3) days for each of the hot and cold water risers or main distribution pipes in the building. The flush is to be conducted from the point(s) of consumption (e.g., a kitchen faucet) furthest from the water entry on the top floor of the building (or the longest run furthest from the water entry for single storey sites) until: a. the flushing time is completed and; b. the measured temperature is stable for one minute (hot flush) and the presence of residual disinfectant is measured at the fixture (cold flush).	Flush (zone by zone) for at least two (2) minutes on a weekly basis all water fixtures that are directly connected to the building water system starting at the water fixture closest to the water entry.	Test as part of annual potable water sampling program.
D1	For buildings that have implemented the periodic flushing detailed in Section A for at least a month prior to occupancy	Increasing occupancy levels up to pre-pandemic occupancy levels or a minimum of 50% design occupancy as reported by the client(s) A one week averaging period should be utilized to determine the level of occupancy.	Flush the riser three (3) times per week as per section A3 until all zones in the building achieve pre-pandemic occupancy levels or a minimum of 50% design occupancy, as reported by the client(s). If it is determined that current levels of water usage are not less than 5 % below pre-pandemic levels (one week averaging), then consider adjusting riser flushing to once per week. This adjustment would not be applicable to buildings which have a history of bacteriological or metals exceedances associated with the annual potable water sampling program. Consultation is required between facility management and technical specialists. Once all zones in the building achieve pre-pandemic occupancy levels or 50% of design occupancy, as reported by the client(s), and are not anticipated to drop below this level, return to normal operations (see Section E).	Continue zone flushing as per section A3 until occupancy in the zone achieves pre-pandemic occupancy levels or a minimum of 50% occupancy of design capacity, as reported by the client(s), and are not anticipated to drop below this level.	Test as part of annual potable water sampling program.
D2	For buildings that have NOT implemented the periodic flushing detailed in Section A for at least a month prior to occupancy	Increasing occupancy levels up to pre-pandemic occupancy levels or a minimum of 50% design occupancy as reported by the client(s) A one week averaging period should be utilized to determine the level of occupancy.	1. Inspect accessible plumbing network components for suitability of operation. 2. Implement flushing as per section A3 except with a minimum of 5 minutes of flushing at each fixture. 3. After a minimum of 1 week of flushing, sample and analyze the potable water in accordance with the requirements of Section C 4. Provide an alternative source of drinking water until sampling results demonstrate that the drinking water quality meets the Guidelines for Canadian Drinking Water Quality 5. In the event of non-compliant testing results, the following actions are required in the space(s) that is being re-occupied: a. Evaluate the need for space-specific measures (e.g., fixture replacement, filters for lead, disinfection – See Sections E and F) b. Re-testing for the non-compliant parameters		Potable water testing results required prior to consumption.
E	Normal Operations	Pre-pandemic occupancy levels or a minimum of 50% occupancy of design capacity as reported by the client(s).A one week averaging period should be utilized to determine the level of occupancy.	Buildings that have experienced recurring water quality issues that can be associated with periods of water stagnation (e.g. bacterial, lead) require a site specific flushing program be developed and implemented to maintain water quality until the root cause of the issue is resolved . The site specific flushing program is to be developed and approved by a qualified person.		Test as part of annual potable water sampling program.

