

March 2, 2023

**Re: Proposed Plumbing Requirements for New Buildings:
Rainwater Management and Public Health Protection Measures**

Greetings,

The City of Vancouver is considering plumbing-related updates for new construction which would affect new developments city-wide. This letter is to request your feedback. The proposals are expected to help simplify Development Permit issuance, relieve sewer system capacity constraints, and protect public health. This letter is divided into three sections, and you may choose to comment on one or more sections.

SECTION 1 - On-Site Rainwater Management (page 2)

Presently, in accordance with the Zoning and Development By-law (ZDBL), some new developments are required to provide a rainwater management plan. The proposal is to considerably simplify the existing process: With City Council approval, on January 1, 2024, rainwater requirements would transition out of the ZDBL into the Vancouver Building By-law, and would be applied to all new Part 3 (complex) buildings. Existing permit applications already submitted would be protected in the transition and would not be required to adhere to the new requirements.

SECTION 2 - Storm Water Use (page 5)

For new developments choosing to install a non-potable water system, the proposal allows for the use of storm water without an Alternative Solution application.

SECTION 3 - Hot Water Temperatures (page 6)

To lower the risk of *Legionella pneumophila* infections, minimum hot water temperatures are proposed, in alignment with best practices.

To provide your feedback, please submit written comments by April 3, 2023 by mail or e-mail to chris.radziminski@vancouver.ca. You are also invited to a free webinar on March 23, 2023 (covering Sections 1 and 2 above) to learn more about the proposals. Register [here](#).

Yours truly,

[sent electronically]

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SECTION 1 - On-Site Rainwater Management

Summary: Presently, rainwater management plans are required for rezoning applications, Cambie and Broadway corridor development permit applications, and any new development in an “area of concern” identified by Engineering Services. The time-consuming review process for developers and City staff involves multiple submissions at various permit stages, places holds on permits, and requires legal agreements (as described in the [Rainwater Management Bulletin](#)).

To simplify the issuing of development and building permits, our proposal is to transition rainwater management performance requirements into the Vancouver Building By-law on January 1, 2024. Rainwater management plans and associated legal agreements would no longer be required through the development permit or building permit process. Instead, a design package would be submitted at the Plumbing Permit application stage demonstrating how a new development will capture the first 24 mm of rainfall in 24 hours, and how the peak release rate will be no greater post-development than pre-development.

These rainwater management requirements would be expanded to apply city-wide to all new Part 3 (complex) buildings,¹ to help relieve sewer system capacity constraints and mitigate sewer overflows. Existing development and building permit applications which have not yet been issued would be sheltered from the new requirements in the transition, and would not be required to resubmit. The proposals would not affect Part 9 (simple) buildings.

Lastly, the proposal does not modify the separate groundwater management plan requirement or review process (as described in the [Groundwater Management Bulletin](#)). Furthermore, rezoning applications would continue to be subject to potentially additional requirements from Engineering Services to ensure adequate sewer servicing.

Why the proposed amendments? This proposal responds to City Council’s direction to streamline permit issuance and reduce wait times. Moreover, as the City of Vancouver densifies, as the area for rainwater to soak into shrinks, and as the sewage collection system suffers capacity constraints, new developments will need to do more to manage rainwater on site. In 2020, about 38 billion litres of combined sewage – a mixture of sanitary sewage and rainwater – was discharged without treatment into local waters, including the harbour, the Fraser River and False Creek, and about 10% of this volume was sanitary sewage. Additionally, the existing sewage collection system is deteriorating more rapidly than our investment in

¹ The two main types of buildings in the City of Vancouver are classified as either “Part 3” (complex) or “Part 9” (simple). The provincial government provides a concise summary of the difference here, on page 5: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/guides/buildingactguide_sectiona1_june2015_web.pdf
Note that in the City of Vancouver, there can be important differences from the provincial code in the details of Part 3 and Part 9 buildings.

renewal, increasing risks to public health through sewer back-ups and flooding.² A key goal of our proposed changes is to mitigate these risks by having all new Part 3 (complex) buildings capture the first 24 mm of rainfall and control the release rate, in tandem with intensifying efforts by the City of Vancouver to improve the sewer system.

What are the changes? These proposals have not been approved by City Council, and are subject to revision through this stakeholder consultation process. It is expected that the refined proposals will be presented to City Council in June/July 2023. If approved as drafted, the proposals would result in the following as of January 1, 2024:

- For new and existing Part 9 buildings, there would be no changes.
- For new Part 3 buildings that, under the current regulatory regime, would have been subject to the requirement for a rainwater management plan, the process would be considerably simplified, as described above.
- For new Part 3 buildings that, under the current regulatory regime, would not have been subject to the requirement for a rainwater management plan, there would be a new requirement to capture the first 24 mm of rainfall in 24 hours and ensure that the peak release rate would be no greater post-development than pre-development. Importantly, existing development and building permit applications submitted prior to January 1, 2024 which have not yet been issued, and which are not stagnant, would not be affected – similar to what occurred in the transition from the 2014 to 2019 Vancouver Building By-law.³
- For existing Part 3 buildings applying for a building permit for an alteration, there would be no changes.

If the proposals are approved, it is recognised that up until January 1, 2024, there will be development sites at various stages of the existing rainwater management plan review process, and new developments will be submitting permit applications subject to the current regulatory regime. These sites would continue through the current process. However, it is anticipated that some of these developers may request to switch to the new Vancouver Building By-law requirements. We have not yet defined the policy to accommodate those requests. If you envision that you may wish to change your in-stream development from the current regulatory regime to the new, proposed requirements in the Vancouver Building By-law (if approved by City Council), please let us know through your written feedback.

² References: “Update on the Development of a Sewage and Rainwater Management Plan for Vancouver” (January 12, 2023): <https://council.vancouver.ca/20230201/documents/cfsc1.pdf> and “2023 Annual Review of Sewer Rates - Sewer and Watercourse By-law” (November 29, 2022): <https://council.vancouver.ca/20221129/documents/spec1c.pdf>

³ Refer to the notes under the accordion menu “(2019) Building By-law 12511”: <https://vancouver.ca/your-government/vancouver-building-bylaw.aspx>

What future changes can be expected? To meet regulatory obligations and facilitate development, City of Vancouver staff are conducting long-term studies on sanitary sewage, rainwater, groundwater and local waterways. An example is the “[missing middle](#)” initiative, which envisions on-site rainwater management in Part 9 buildings to accommodate increased density. Evidence-based studies and stakeholder consultation will inform future “Phase 2” recommendations to City Council to both add to and update the rainwater management performance requirements proposed here in the Vancouver Building By-law.

Share your feedback! The proposed amendments delete requirements from the [Zoning and Development By-law](#) and insert requirements into the [Vancouver Building By-law](#).

For more details, please refer to Appendices A and B (page 7 and 9, respectively). A draft of the project summary form that would be included with the design package at the Plumbing Permit application stage is in **Appendix C** (page 13). We want to hear from you! Please share your feedback in writing (details on page 1).

[continued on next page ...]

SECTION 2 - Storm Water Use

Summary: Presently, developments may choose to install a system to capture rooftop rainwater and use it for toilets, cooling towers, and other applications. However, storm water – a term for rainwater discharged from surfaces, like a driveway – cannot be collected and used without an Alternative Solution application. This proposal protects public health and facilitates storm water use by introducing performance criteria for storm water treatment, and eliminates the need for the Alternative Solution process.

Why the proposed amendments? As described in Section 1, new developments are being asked to do more to manage rainwater on-site. Options are limited on dense sites. Furthermore, water and sewer rates are projected to increase dramatically in the coming years.⁴ Some developers may choose to install a non-potable water system to address their rainwater management requirements and simultaneously reduce water and sewer utility bills. Facilitating storm water use assists developers and owners in achieving these objectives. Eliminating an Alternative Solution application responds to City Council’s direction to streamline permit issuance and reduce wait times.

What are the changes? All non-potable water systems in the City currently require an Operating Permit.⁵ This requires tests of the treated water for *Legionella pneumophila*, *Escherichia coli*, turbidity and temperature every two months. If approved by City Council, the proposals presented here would require buildings wishing to use storm water to complete five additional water quality tests every two months to verify compliance with defined standards. These tests are: benzene (< 0.005 mg/L), ethylbenzene (< 0.0016 mg/L), toluene (< 0.024 mg/L), xylenes (total) (< 0.02 mg/L) and total suspended solids (< 20 mg/L). Any test result that is higher than the allowed limit would require corrective actions. The laboratory cost would be about \$60 - \$240 more each reporting period.⁶

Share your feedback! The proposed amendments affect the [Vancouver Building By-law](#). For more details, please refer to Appendix D (page 14). We want to hear from you! Please share your feedback in writing (details on page 1).

⁴ The sewer and water utility rate outlook for 2023-2027 forecasts year-over-year increases as follows: for sewers - 15.0%, 15.0%, 15.0%, 15.0% and 15.0%; for water - 3.0%, 8.0%, 8.0%, 9.0% and 10.0% (Table 2 at <https://council.vancouver.ca/20221129/documents/spec1c.pdf#page=6> and Table 2 at <https://council.vancouver.ca/20221129/documents/spec1b.pdf#page=6>). Sewer charges are typically calculated by multiplying 85% of potable water consumption by the sewer rate (see <https://vancouver.ca/home-property-development/water-and-sewer-bill.aspx>).

⁵ See vancouver.ca/operating-permit

⁶ Standards were developed with Vancouver Coastal Health. Reference for laboratory costs: Government of Canada, “Average costs for the laboratory analysis of a sample”. https://gost.tpsgc-pwgsc.gc.ca/fld_cst.aspx?lang=eng

SECTION 3 - Hot Water Temperatures

Summary: Water temperature is a key factor affecting the growth of bacteria from the *Legionella* species. Presently in the City of Vancouver, hot water must be stored at 60 °C or greater as a preventative measure. However, no minimum temperature in the hot water distribution system is defined, and to address this gap, a 49 °C minimum is proposed.

Why the proposed amendments? “Legionnaires’ disease afflicts and kills more people in the United States than any other reportable waterborne disease,” with 52,000 to 70,000 estimated cases annually.⁷ These bacteria are transmitted by breathing in water droplets contaminated with *Legionella*, but not by ingestion of water. The disease is preventable by reducing bacterial growth. As *Legionella* can proliferate in lukewarm, stagnant water, this proposal helps to protect public health by defining minimum hot water temperatures.

What are the changes? These proposals have not been approved by City Council, and are subject to revision through this stakeholder consultation process. If approved as drafted, the proposals would result in the following as of the by-law enactment date:

- A required minimum temperature of 49 °C in the hot water distribution system, in alignment with domestic and international best practices.⁸
- A requirement that water heated by drain water heat recovery units can only be directed to service water heaters, similar to requirements in the Province of Quebec.⁹
- Resolution of a conflict in the Vancouver Building By-law between energy efficiency requirements cited in a third-party standard and the minimum hot water storage temperature requirement.¹⁰

No changes are proposed at the point of use, where presently, to prevent scalding, water discharging through a shower head or into a bathtub cannot exceed 49 °C.

Share your feedback! The proposed amendments affect the [Vancouver Building By-law](#). For more details, please refer to Appendix E (page 17). We want to hear from you! Please share your feedback in writing (details on page 1).

⁷ National Academies of Sciences, Engineering and Medicine (NASEM) (2020). “Management of Legionella in Water Systems.” Washington, DC: The National Academies Press, doi.org/10.17226/25474

⁸ As examples, refer to [Public Services and Procurement Canada](#), the U.S. [Centers for Disease Control and Prevention](#), ASHRAE Guideline 12-2020, and a review of international standards (Table 1) in a draft document published by the [American Society of Plumbing Engineers](#) (ASPE).

⁹ <https://www.rbq.gouv.qc.ca/domaines-dintervention/plomberie/interpretations-et-directives-techniques/branchement-des-systemes-de-recuperation-de-chaleur-des-eaux-de-drainage-attention-aux-legionelles/> [in French].

¹⁰ ASHRAE Standard 90.1 Article 7.4.4. contains the conflicting requirements for service water-heating system controls. See VBBL Book I, Division B, Article 10.2.2.2., here: <https://free.bcpublications.ca/civix/document/id/public/vbbl2019/564929486>.

**APPENDIX A - On-Site Rainwater Management
Draft Amendments to the Zoning and Development By-law**

1. This by-law amends the indicated provisions of the [Zoning and Development By-law](#).
2. In section 2, Council strikes out the following definitions in their entirety:
 - (a) rainwater;
 - (b) rainwater drainage;
 - (c) rainwater management plan; and
 - (d) rainwater management system.
3. Council strikes out section 4.3.4 and substitutes the following:

“4.3.4 In making a determination regarding the adequacy of drainage under section 4.3.3(d) of this by-law, the Director of Planning or Development Permit Board may require any development permit applicant to submit a hydrogeological study and an impact assessment, and may consider drainage to be inadequate if the proposed development will result in any groundwater discharge from the site into the City collection system.”.
4. Council strikes out section 4.3.5 and substitutes the following:

“4.3.5 In order to address the inadequacy of drainage the Director of Planning or Development Permit Board may impose conditions on development requiring the applicant to develop the proposed site in accordance with a groundwater management plan designed to prevent groundwater discharge into the City collection system and limit or reduce environmental impacts, including stricter targets if the development is below the water table.”.
5. Council strikes out section 4.3.6. and substitutes the following:

“4.3.6 In order to ensure compliance with a groundwater management plan, the Director of Planning or Development Permit Board may refuse to issue the development permit until the property owner has entered into a groundwater management agreement, to the satisfaction of the Director of Legal Services and the City Engineer, to:

 - (a) construct a groundwater management system on the site that is designed and certified by a professional engineer to prevent groundwater discharge from entering the City’s collection system;
 - (b) maintain the groundwater management system at the expense of the owner;

- (c) grant a statutory right of way and equitable charge to the City; and
- (d) release and indemnify the City from all liability related to the installation, operation and maintenance of the groundwater management system.”.

6. Council strikes out in its entirety Schedule I: Rainfall intensity-duration frequency curves.

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**APPENDIX B - On-Site Rainwater Management
Draft Amendments to the Vancouver Building By-law**

1. This by-law amends the indicated provisions of [Building By-law No. 12511](#).

2. In Article 11.2.1.1. of Book I, Division B, Council adds the following new Sentence:

“2) An *alteration* to an *existing building* shall not trigger upgrading of the *existing building* to meet the *rainwater* management requirements described in Article 2.4.2.5. of Division B of Book II (Plumbing Systems) of this By-law.”

3. In Sentence 1.4.1.2.(1) of Book II, Division A, Council adds the following new definition in the correct alphabetical order:

“Rainwater means rainfall and other natural precipitation, and includes *storm water*.”.

4. In Sentence 1.4.2.1.(1) of Book II, Division A, Council adds the following to the list of symbols and other abbreviations in the correct alphabetical order:

“IDF Intensity-Duration-Frequency”.

5. In Table 1.3.1.2. of Book II, Division B, Council adds the following new row in the correct alphabetical order:

“

CoV		Engineering Design Manual ⁽⁴⁾	2.4.2.5.(3)
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”.

6. In Section 2.2 of Book II, Division B, Council:

a) adds the following new Article:

“2.2.1.9. Operating Manuals

- 1) When an operating manual is required by Book II (Plumbing Systems) of this By-law, it shall include
 - a) the address and location of the system or equipment for which the operating manual is required,
 - b) contact details for the system or equipment designer,
 - c) a simplified process flow diagram,

- d) a schematic of the system or equipment showing the locations of all substantial components,
- e) instructions on operating, maintaining, and inspecting the system or equipment,
- f) required frequency of maintenance and inspections,
- g) instructions on deactivating and restarting the system or equipment for repair or other purposes,
- h) safety data sheets, and
- i) for *alternate water source systems*, details on the corrective action that shall be taken if the water quality fails to meet the standards set out in Table 2.7.7.1.

- 2) The operating manual described in Sentence (1) shall be
 - a) sealed by a *registered professional of record*,
 - b) supplied to the *owner* or representative of the *owner*, and
 - c) made available on such request to the *Chief Building Official.*”; and

- b) in Article 2.4.2.4, strikes out the phrase “rainwater or *storm water*” wherever it appears, and replaces it with “*rainwater*”.

7. In Section 2.4 of Book II, Division B, Council adds the following new Article:

“2.4.2.5. Rainwater Management

- 1) This Article shall apply to all *buildings*, except
 - a) *float homes*,
 - b) *marinas*, and
 - c) those to which Part 9 applies, as described in Sentence 1.3.3.3.(1) of Division A of Book I (General) of this By-law.
- 2) The first 24 mm of *rainwater* in a 24 hour period from the site area shall be detained, and the detention volume requirement
 - a) shall be calculated as 24 mm multiplied by the site area, and
 - b) may be reduced by any combination of the retention or other practices listed in Table 2.4.2.5., by the amounts in Column C of Table 2.4.2.5.

**Table 2.4.2.5.
Permitted Reductions to the Detention Volume Requirement
Forming Part of Sentence 2.4.2.5.(2)**

Retention or Other Practice	Reduction to the Detention Volume Requirement		
	Maximum Permitted Reduction Column A	Limit to Permitted Reduction Column B	Permitted Reduction Column C
Landscape feature ⁽¹⁾	Area of, and area routed to, the landscape feature multiplied by 24 mm	<i>Rainwater</i> capture potential, calculated as <i>rainwater</i> storage potential in the growing medium (%) multiplied by the growing medium volume, plus as applicable the storage volume within a subsurface reservoir layer and the volume infiltrated into the subgrade during a 24 hour period. ⁽³⁾	The lesser of Columns A and B
Green roof ⁽²⁾	Area of, and area routed to, the green roof multiplied by 24 mm		The lesser of Columns A and B ⁽⁴⁾
<i>Alternate water source system</i>	Area routed to the <i>alternate water source system</i> multiplied by 24 mm	Storage volume of the <i>alternate water source system</i>	The lesser of Columns A and B

Notes to Table 2.4.2.5.:

- (1) Or other *acceptable* ground-level based practice, such as permeable pavement.
- (2) Or other *acceptable* roof-top based practice. For green roofs, see Article 3.1.14.4. of Division B of Book I (General) of this By-law.
- (3) "*Rainwater* storage potential in the growing medium", "volume infiltrated into the subgrade during a 24 hour period" and "storage volume within a subsurface reservoir layer" shall be demonstrated by *acceptable* data or references.
- (4) For a green roof from which the runoff is directed to an *alternate water source system*, the permitted reduction in the volume requirement shall equal Column A.

- 3) The peak flow rate discharged to the sewer under post-development conditions shall not be greater than the peak flow rate discharged to the sewer under pre-development conditions, and shall be calculated using
 - a) the Rational Method,
 - b) the IDF curves in the City of Vancouver Engineering Design Manual, applying
 - i) for pre-development, the IDF curve prepared for pre-development estimates with a 5 year return period,
 - ii) for post-development, the 2100 IDF curve with a 10 year return period, and
 - iii) an inlet time of 10 minutes unless otherwise specified in the IDF curve referred to in Subclause (i) or (ii), and
 - c) a composite runoff based on the percentages of different surfaces on the site, applying the runoff coefficients from the City of Vancouver Engineering Design Manual.

- 4) An operating manual conforming to Article 2.2.1.9. is required for each of the *rainwater* management practices employed to satisfy the requirements of Sentences (2) and (3).”.

8. In Table 2.8.1.1. of Book II, Division B, Council adds in correct numerical order the following new rows:

- “**2.4.2.5. Rainwater Management**
- (2) [F40,F62,F80,F81-OP5,OE1.2]
- (3) [F40,F62,F80,F81-OP5]
- (4) [F80,F81,F82-OP5,OS3.4]”

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**APPENDIX C - On-Site Rainwater Management
Draft "Rainwater Management Project Summary Form"**

This form would summarise conformance to Vancouver Building By-law Book II, Division B, Article 2.4.2.5. Rainwater Management (if approved by Council), and would be submitted at the Plumbing Permit application stage with supporting documentation including calculations.

Site Information

Line 1. Project address: _____, Vancouver, BC

Line 2. Building permit number: _____

Line 3. Form completed by: _____

Capture Requirement

Line 4. Volume to be detained and/or retained: 24 mm x _____ = _____ m³
(site area)

Line 5. Total permitted reductions to detention volume requirement = _____ m³
(Line 5 is the sum of Column C values in the Table below)

Table for Line 5: Reductions to detention volume requirement (reference: Table 2.4.2.5.)

Retention or other practice	Maximum permitted reduction (Column A), m ³	Limit to permitted reduction (Column B), m ³	Permitted reduction (Column C), m ³
Landscape feature (describe: _____)			
Green roof			
<i>Alternate water source system</i>			

Line 6. Detention specifications:

- a) Working capacity: _____ m³ (Line 6a must be ≥ Line 4 minus Line 5)
- b) Detention tank location: _____
- c) Confirm overflow operates by gravity: YES / NO
- d) Any orifice < 50 mm: YES / NO. If YES, summary of anti-clogging measures: _____
- e) Draw-down time when at capacity: _____ h

Release Rate Requirement

Line 7. Peak flow release rate, pre-development: _____ L/s

Line 8. Max. allowable peak flow release rate, post-development: _____ L/s (Line 8 must be ≤ Line 7)

Line 9. Design (controlled) release rate, post-development: _____ L/s (Line 9 must be ≤ Line 8)

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APPENDIX D - Storm Water Use
Draft Amendments to the Vancouver Building By-law

1. This by-law amends the indicated provisions of [Building By-law No. 12511](#).
2. In Sentence 1.4.1.2.(1) of Book II, Division A, Council adds the following new definition in the correct alphabetical order:

“Rainwater means rainfall and other natural precipitation, and includes *storm water*.”
3. In Section 2.7 of Book II, Division B, Council strikes out Article 2.7.1.2. and substitutes:

“2.7.1.2. Non-Potable Water Sources

 - 1) Except as prohibited by Sentence (2), a non-*potable water system* shall collect only
 - a) *rainwater*,
 - b) *clear-water waste*, or
 - c) a combination thereof.
 - 2) A non-*potable water system* shall not collect
 - a) runoff from a public road,
 - b) runoff from an area on which fertilizer is used or stored,
 - c) *groundwater*,
 - d) *perimeter drainage water*,
 - e) *greywater*, or
 - f) *blackwater*.”.
4. In Table 2.7.1.3. of Book II, Division B, Council:
 - (a) strikes out “Rainwater as specified by Clause 2.7.1.2.(1)(a)” and substitutes “*Rainwater*”; and
 - (b) deletes the row for “*Storm water*”.
5. In Article 2.7.1.3. of Book II, Division B, Council:
 - (a) in Sentence (1) strikes out “Except as provided in Sentence (2)” and substitutes “Except as provided in Sentences (2) and (5)”; and
 - (b) adds the following new Sentence:

“5) Non-*potable water systems* shall not be used to supply *fixtures* in healthcare facilities.”.

6. In Article 2.7.5.1. of Book II, Division B, Council adds the following new Sentences:

“2) After an *alternate water source system* has been commissioned, the requirements of Subsections 2.7.7. and 2.7.8. shall be met.

3) An *alternate water source system* shall be considered commissioned on the date that the final water sample was collected to fulfill the requirements of Article 2.7.5.2.”.

7. In Table 2.7.7.1. of Book II, Division B, Council adds the following new rows to the bottom of the table:

“

<i>Rainwater</i> from surfaces that allow the passage of vehicular traffic or where hydrocarbon-based fuels or hazardous materials are stored	Benzene	< 0.005 mg/L	1 sample tested every 2 calendar months with not more than 63 days between samples	All laboratory tests
	Toluene	< 0.024 mg/L		
	Ethylbenzene	< 0.0016 mg/L		
	Xylenes (total)	< 0.02 mg/L		
	Total suspended solids	< 20 mg/L		

”

8. In Table 2.7.7.3. of Book II, Division B, Council:

(a) adds the following new row immediately above the row for “*E. coli*”:

“

Total suspended solids	Between 20 and 45 mg/L	Take the appropriate corrective action as set out in the operating manual.
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”; and

(b) adds the following new rows to the bottom of the table:

Benzene	> 0.005 mg/L	1. Immediately, supply the <i>alternate water source system</i> with <i>potable</i> water only;
Toluene	> 0.024 mg/L	2. Within 24 hours, give notice to the <i>Chief Building Official</i> and the <i>owner</i> ;
Ethylbenzene	> 0.0016 mg/L	3. Take the appropriate corrective action as set out in the operating manual; and
Xylenes (total)	> 0.02 mg/L	4. Within 3 days of the corrective action, perform a test for benzene, toluene, ethylbenzene and xylenes (total).
Total suspended solids	> 45 mg/L	1. Immediately, supply the <i>alternate water source system</i> with <i>potable</i> water only; 2. Within 24 hours, give notice to the <i>Chief Building Official</i> and the <i>owner</i> ; 3. Take the appropriate corrective action as set out in the operating manual; and 4. Within 3 days of the corrective action, perform a test for total suspended solids.

9. In Section 2.7 of Book II, Division B, Council strikes out Article 2.7.8.1. and substitutes:

“2.7.8.1. Operating Manual

1) An operating manual conforming to Article 2.2.1.9. is required for an *alternate water source system*.”.

10. In Table 2.8.1.1. of Book II, Division B, Council adds in correct numerical order:

(a) under “2.7.1.3. Non-*potable* Water Uses” the following new row:
“(5) [F40-OH2.2]”; and

(b) under “2.7.5.1. Occupancy” the following new row:
“(2) [F46,F81,F82,F130-OS3.4,OH2.1,OH2.2,OH5,OE1.2]”.

* * * * *

APPENDIX E - Hot Water Temperatures
Draft Amendments to the Vancouver Building By-law

1. This by-law amends the indicated provisions of [Building By-law No. 12511](#).
2. In Article 10.2.2.2. of Book I, Division B, Council:
 - a) strikes out from Clause 2(f) the word “and”;
 - b) replaces in Clause 2(g) the words “Appendix G.” with “Appendix G, and”; and
 - c) inserts a new Clause 2(h) as follows:

“h) no requirement to comply with Service Water-Heating System Controls, per ASHRAE 90.1, Article 7.4.4. (See Article 2.6.1.12. of Division B of Book II (Plumbing Systems) of this By-law.)”
3. In Article 2.6.1.1. of Book II, Division B, Council adds the following new Sentences in the correct numerical order:

“**3**) In a hot *water distribution system* with a recirculation loop, the temperature of the water being recirculated shall not be less than 49°C at any point of the system.

4) The recirculation loop described in Sentence (3) may be replaced by a self-regulating heat tracing system.”.
4. In Article 2.6.1.12. of Book II, Division B, Council adds the following new Sentence in the correct numerical order:

“**2**) Drain water heat recovery units shall only be used to supply *service water heaters*.”
5. In Table 2.8.1.1. of Book II, Division B, Council adds in correct numerical order:
 - (a) under “2.6.1.1. Design” the following new rows:

“(3) [F40-OH1.1]
(4) [F40-OH1.1]”;
 - (b) under “2.6.1.12. Service Water Heaters” the following new row:

“(2) [F30,F31-OS3.1,OS3.2] [F46-OH1.1,OH2.2]”;

* * * * *