



Public Health Protection with an Evolving Plumbing Code

City of Vancouver | May 14, 2024

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Any mention of trade names or commercial products does not constitute endorsement or recommendation for use.
Photo courtesy of Destination Vancouver.



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**Sustainability & Safety:
Avoiding Unintended Consequences**

Part 1: Water (potable water, sanitary sewage, drainage)

Part 2: Energy (hot water)

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Photo courtesy of Destination Vancouver.



Source: dailyhive.com/vancouver/oakridge-park-centre-mall-vancouver-luxury-retailers-jewellers



Source: senakw.com/vision



Source: syc.vancouver.ca/projects/jericho-lands/combined-cov-and-proponent-info-boards.pdf



38 billion litres (10 billion US gallons) of sewer overflows (2020)

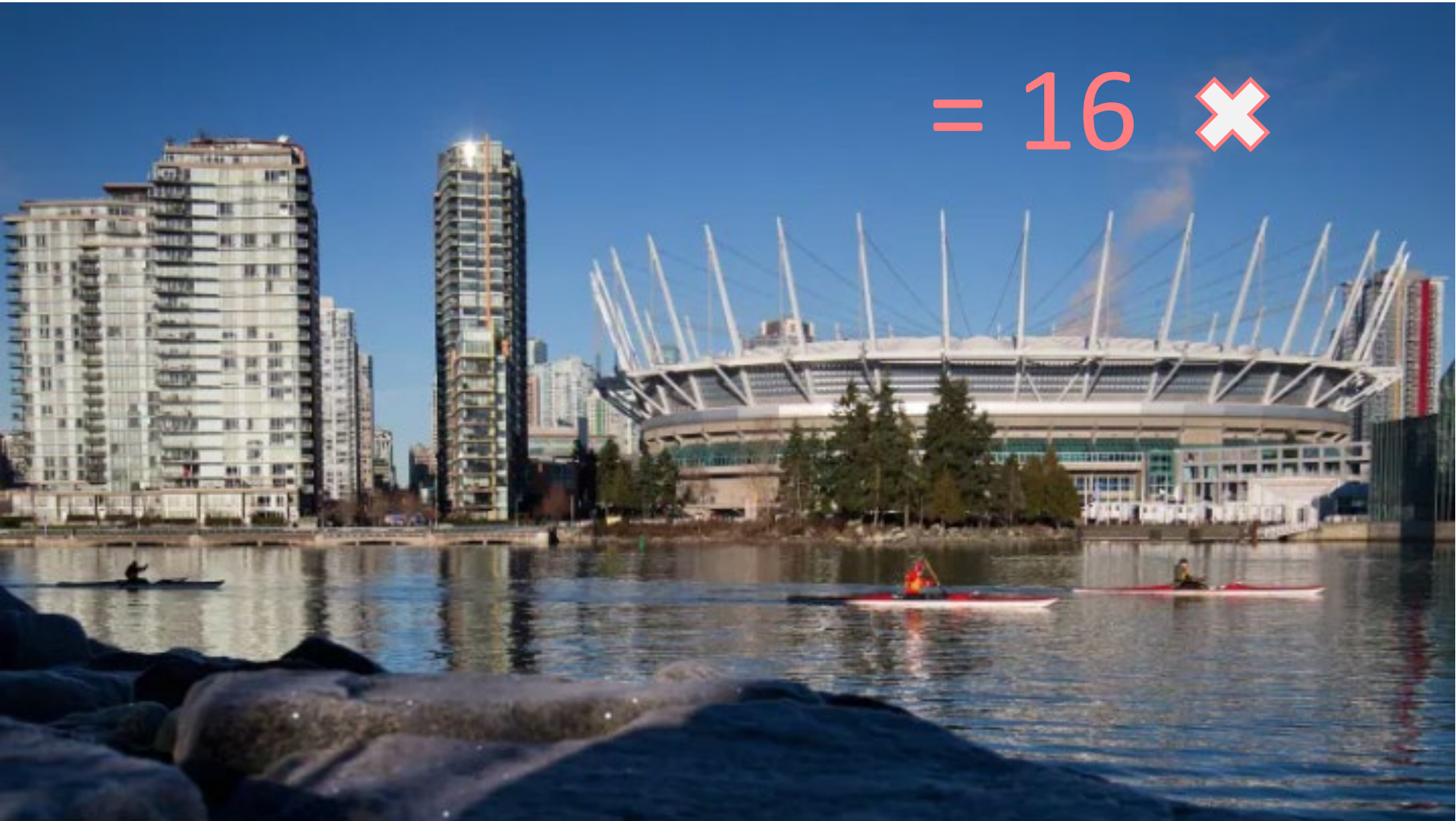


Source: council.vancouver.ca/20230613/documents/rr1.pdf

Photo source: cbc.ca/news/canada/british-columbia/bc-place-rename-1.5006138

38 billion litres (10 billion US gallons) of sewer overflows (2020)

= 16 ×



Source: council.vancouver.ca/20230613/documents/rr1.pdf

Photo source: cbc.ca/news/canada/british-columbia/bc-place-rename-1.5006138



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WATER SAFETY AND EFFICIENCY REQUIREMENTS*

EFFECTIVE JANUARY 23, 2024

Maximum flush cycle, maximum flow rate and other requirements summarized below.



SINGLE-PASS SYSTEMS, INCLUDING ONCE-THROUGH COOLING

Prohibited



TOILETS

4.8 L/flush.
Full flush on a dual-flush toilet shall not exceed 4.8 L



URINALS

1.9 L/flush



SHOWER HEADS**

7.6 L/minute



LAVATORY FAUCETS**

Private use 5.7 L/minute
Public use 1.9 L/minute +  self-closing



HOT WATER

Domestic hot water to be stored at a minimum of 60°C within a tank. A minimum of 49°C is required within a recirculation loop.



COOLING TOWERS AND EVAPORATIVE CONDENSERS

Operating permit required for new and existing systems. *Legionella pneumophila* reporting required at seasonal start-up and every month of operation.



DECORATIVE WATER FEATURES†

Operating permit required for new and existing systems. *Legionella pneumophila* reporting required every two months of operation.



BUILDING WATER TREATMENT SYSTEMS††

Operating permit required for new and existing systems treating potable water.



ALTERNATE WATER SYSTEMS, INCLUDING RAINWATER HARVESTING††

Operating permit required for new and existing systems. Water quality reporting required every two months.

Daily water use per person:

December 2023: **341 L** (90 US gal)

Average 2023: **410 L** (108 US gal)



KITCHEN FAUCETS**

Residential use 6.8 L/minute
Non-residential use 8.3 L/minute



PRE-RINSE SPRAY VALVES

4.8 L/minute



DISHWASHERS



CLOTHES WASHERS



ICE MAKERS



COMMERCIAL STEAM COOKERS



COMBINATION OVENS



PIPE SIZING & MATERIALS

IAPMO Water Demand Calculator may be used.
New requirements for stainless steel.



GEOEXCHANGE SYSTEMS

Methanol use prohibited. Open-loop systems shall not discharge to sewer.



VEHICLE WASH FACILITIES

Automatic systems: recycle at least 60% of water.
Self-service: 11.4 L/minute for foam brushes and spray wands.



RESIDENTIAL LANDSCAPE IRRIGATION SYSTEMS

Pressure reducing valve may be required.
Fertigation and chemigation prohibited.



CROSS CONNECTION CONTROL

Backflow preventers shall be selected and installed in conformance with CSA B64.10.

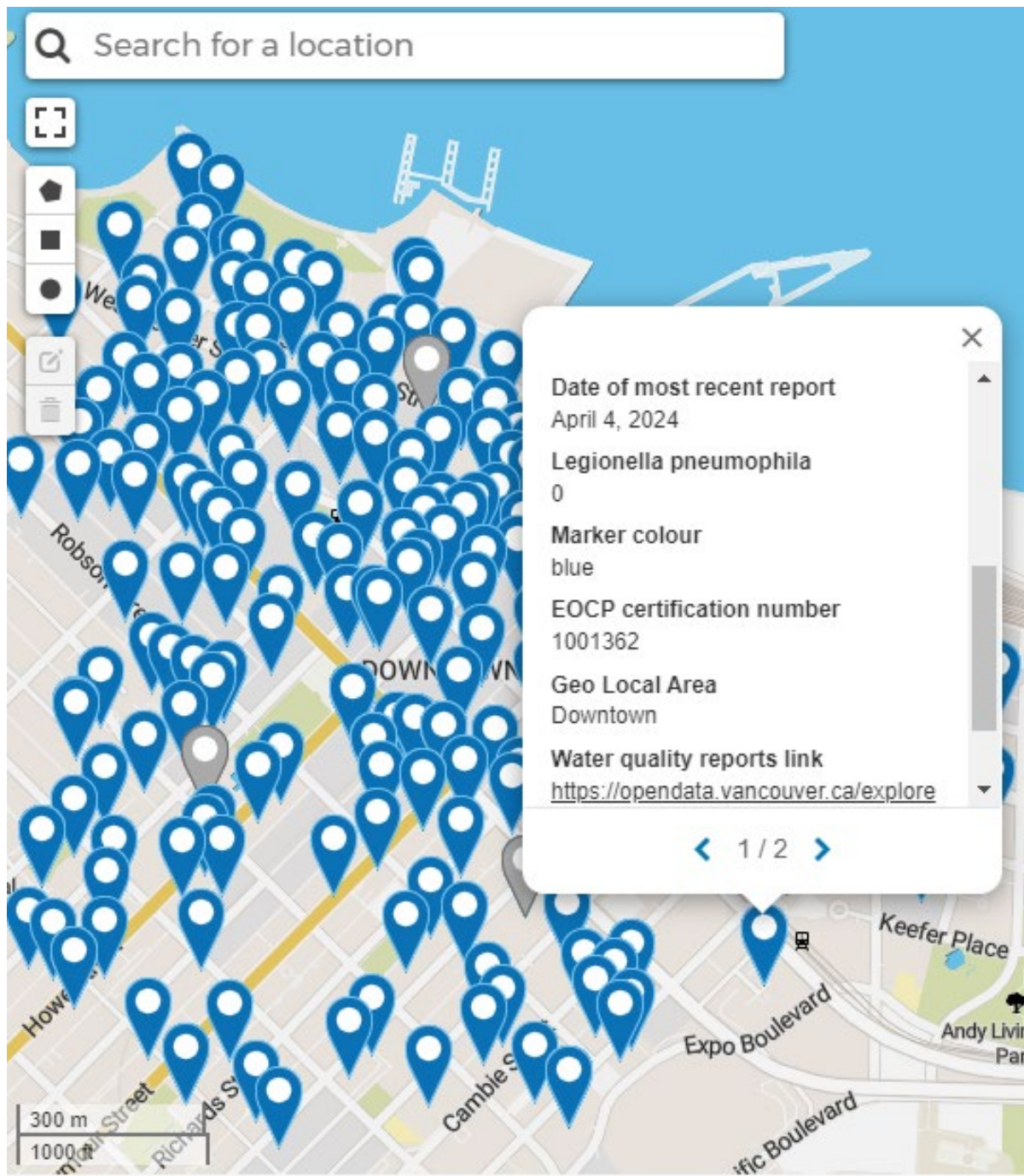
For more information visit:
vancouver.ca/operating-permit
vancouver.ca/building-bylaw



- * Summary does not include all applicable Vancouver Building By-law plumbing requirements.
- ** Exempt are fixtures within treatment and care (Group B) occupancies and those listed in a professional water management plan.
- † Exempt are systems for single-family homes and duplexes. Green walls, fish ponds, and natural bodies of water are also exempt.
- †† Exempt are systems for single-family homes and duplexes.



Source: City of Vancouver

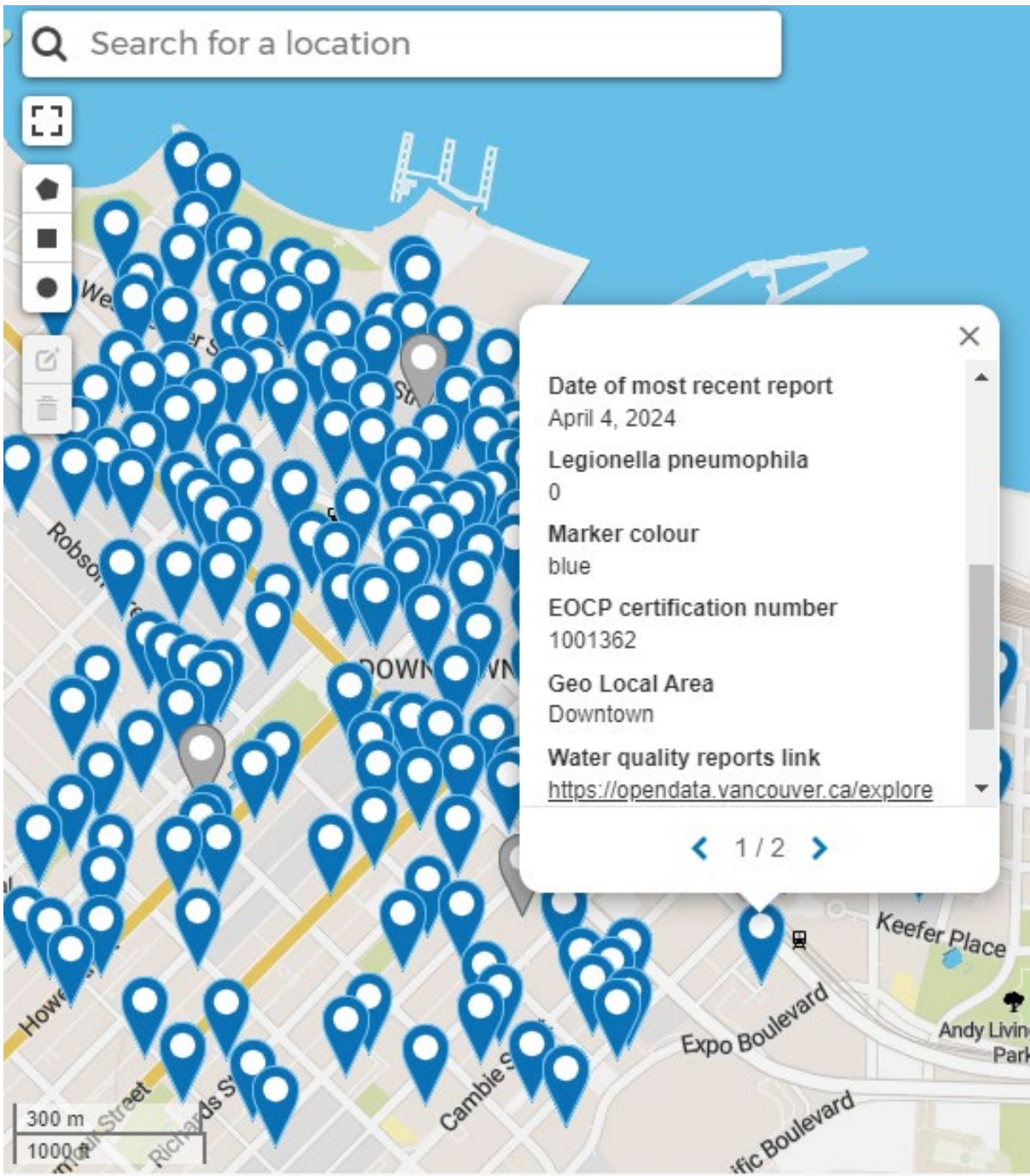


[vancouver.ca/
operating-permit](https://vancouver.ca/operating-permit)

Cooling towers 2022 & 2023 exceedances

Legionella pneumophila
Standard: < 10 CFU/mL

	2022	2023	2024
Total	184	91	
January	17	3	0
February	11	1	1
March	11	0	3
April	19	2	
May	5	8	
June	26	13	
July	20	15	
August	31	16	
September	23	12	
October	14	10	
November	5	10	
December	2	1	



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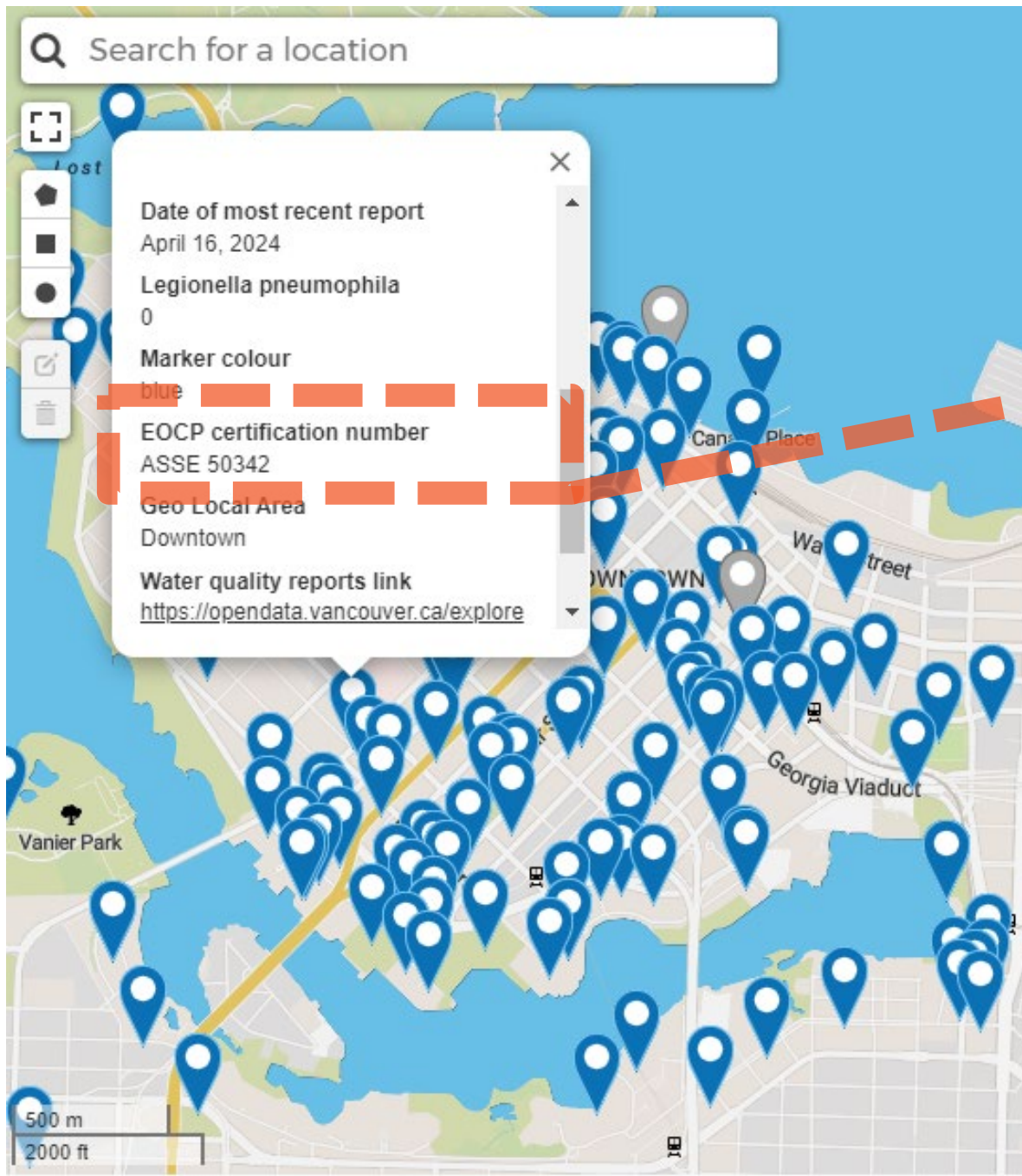
**Cooling towers
2022 & 2023 exceedances**

Legionella pneumophila
Standard: < 10 CFU/mL

<i>L. pneumophila</i>	2022	2023
> 10 CFU/mL	184	91
Including:		
> 1000 CFU/mL	14	7



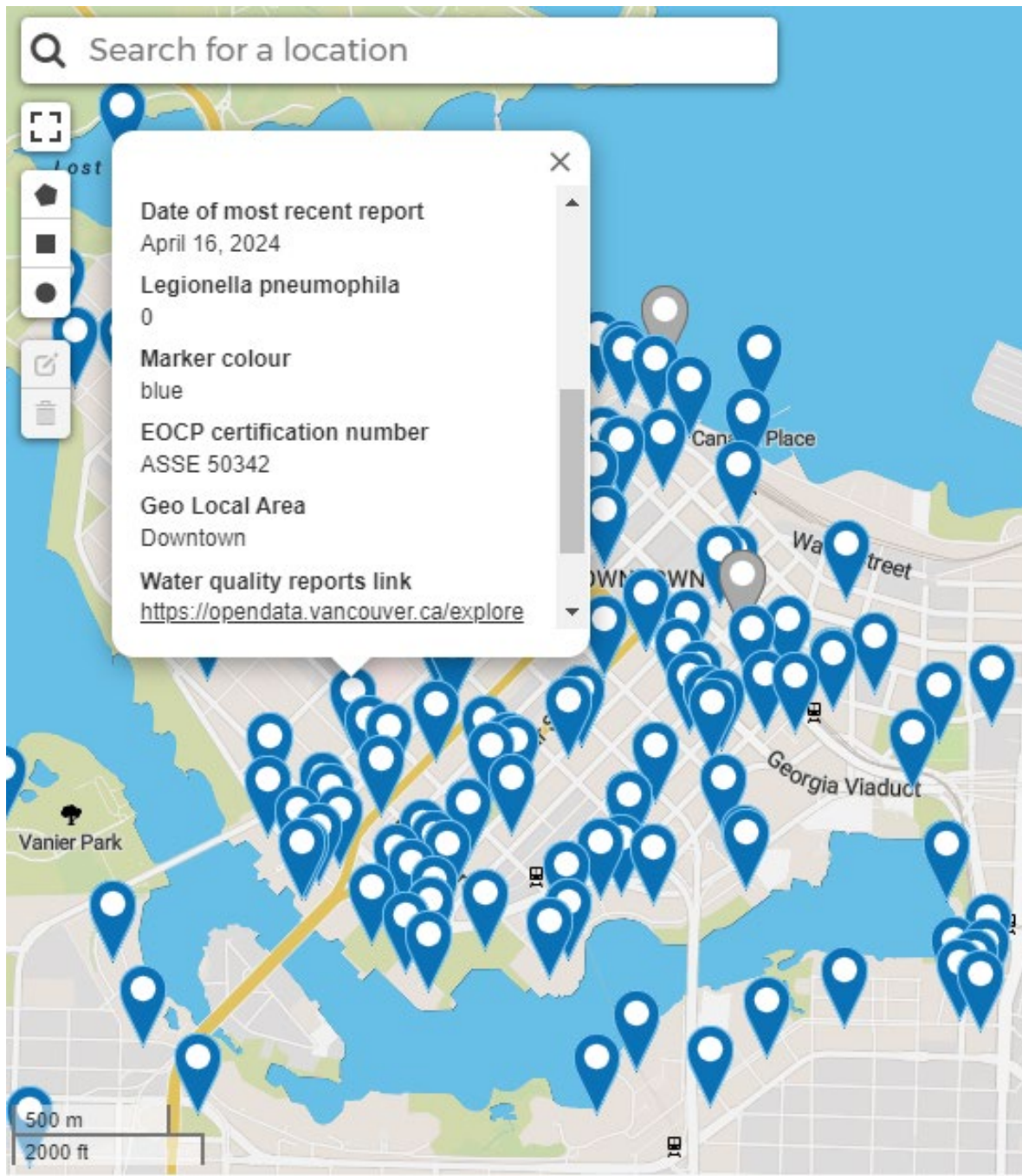
Source: City of Vancouver



[vancouver.ca/
operating-permit](https://vancouver.ca/operating-permit)

**ASSE / IAPMO /
ANSI 12080**

Professional
Qualifications Standard
for *Legionella* Water
Safety and Management
Personnel



[vancouver.ca/
operating-permit](https://vancouver.ca/operating-permit)

Decorative water features
No exceedances in 2023

1 exceedance in 2022

Legionella pneumophila
Standard: < 10 CFU/mL
• >500 CFU/mL (Sep 22)

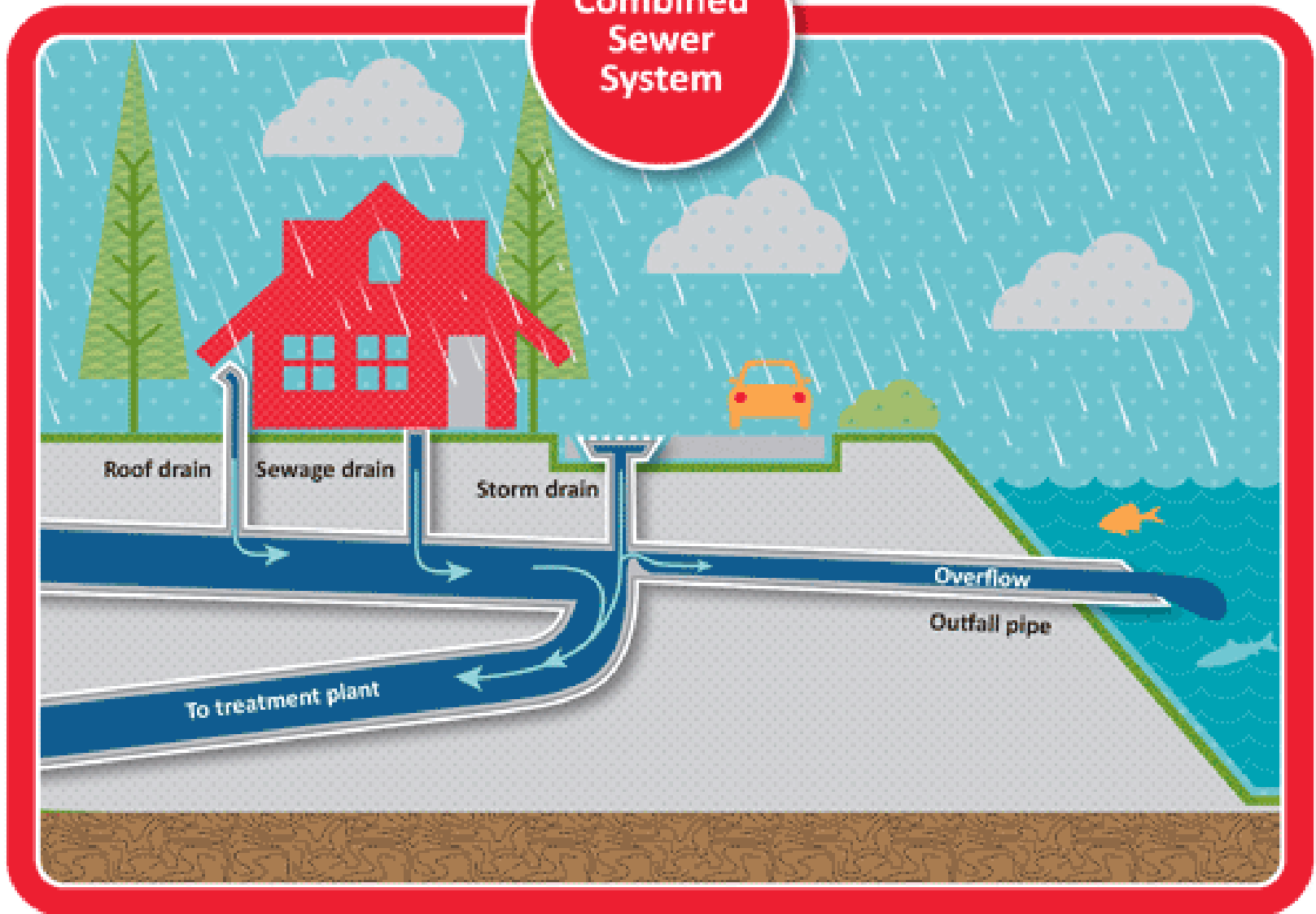


Source: City of Vancouver



Source: Capital Regional District

Combined Sewer System





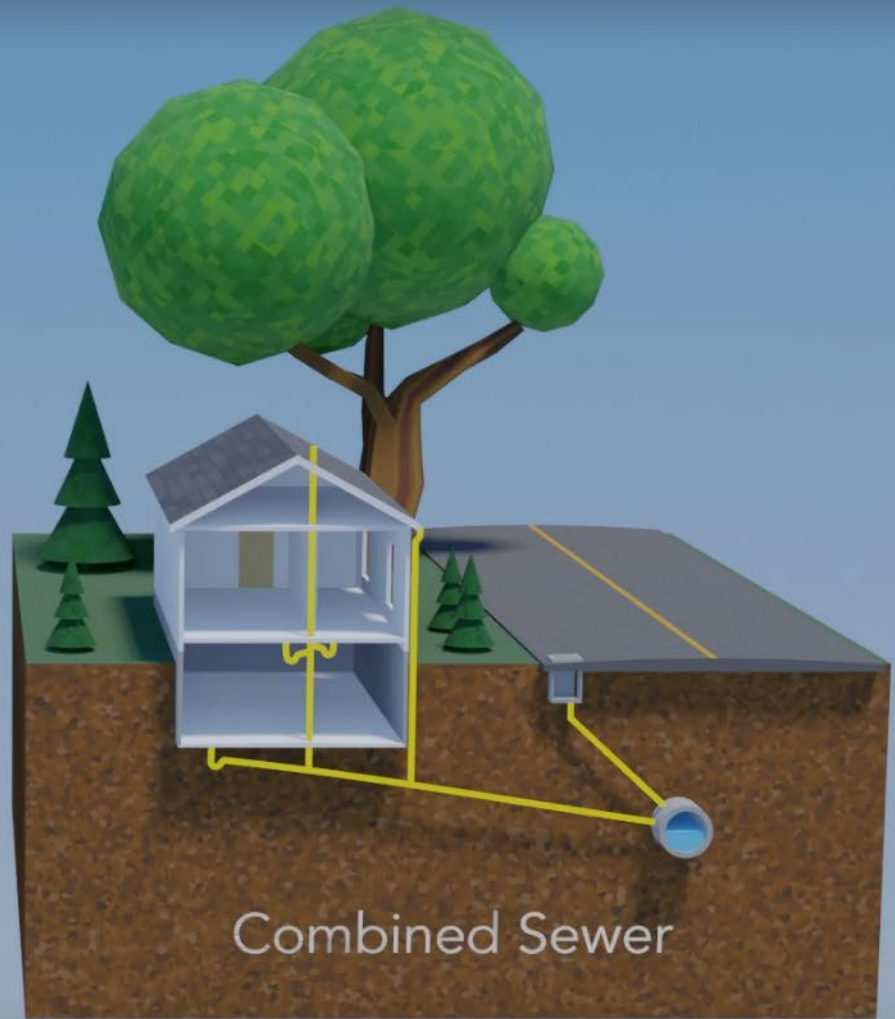
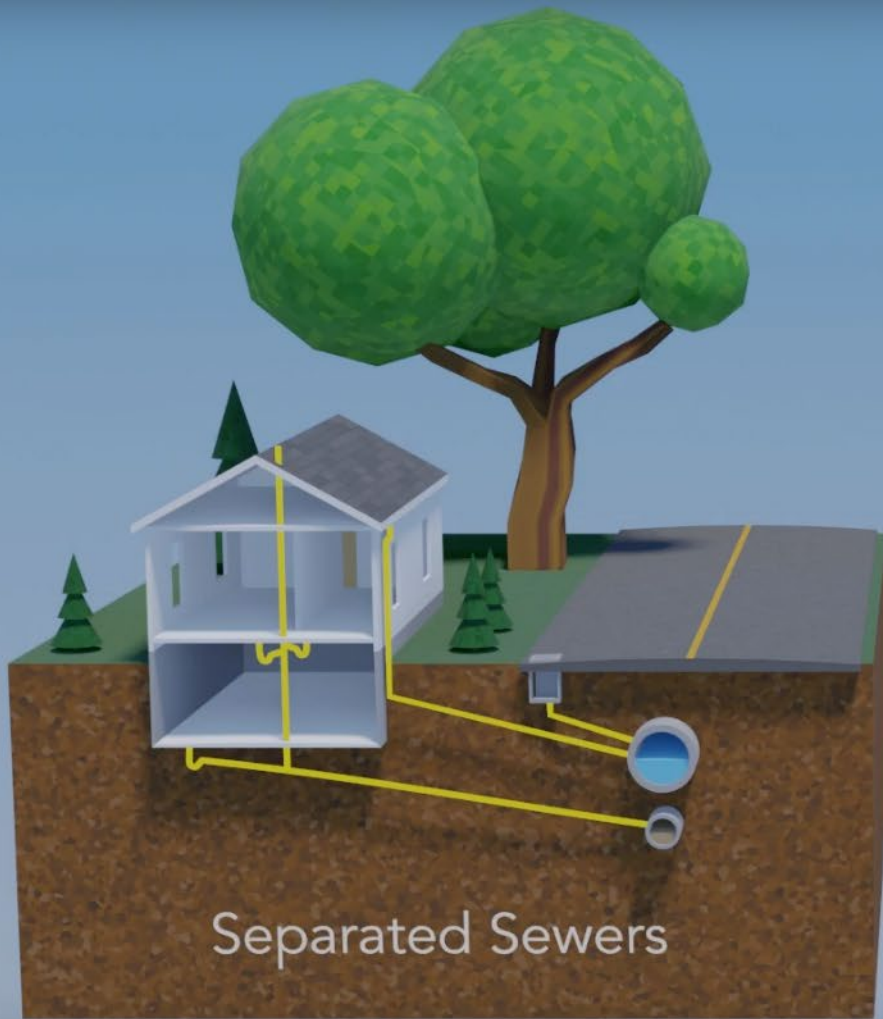
Source: Metro Vancouver



Source: City of Vancouver



East King Edward Avenue & Glen Drive, Vancouver
Source: [youtube.com/watch?v=5LCloopx6ks](https://www.youtube.com/watch?v=5LCloopx6ks)

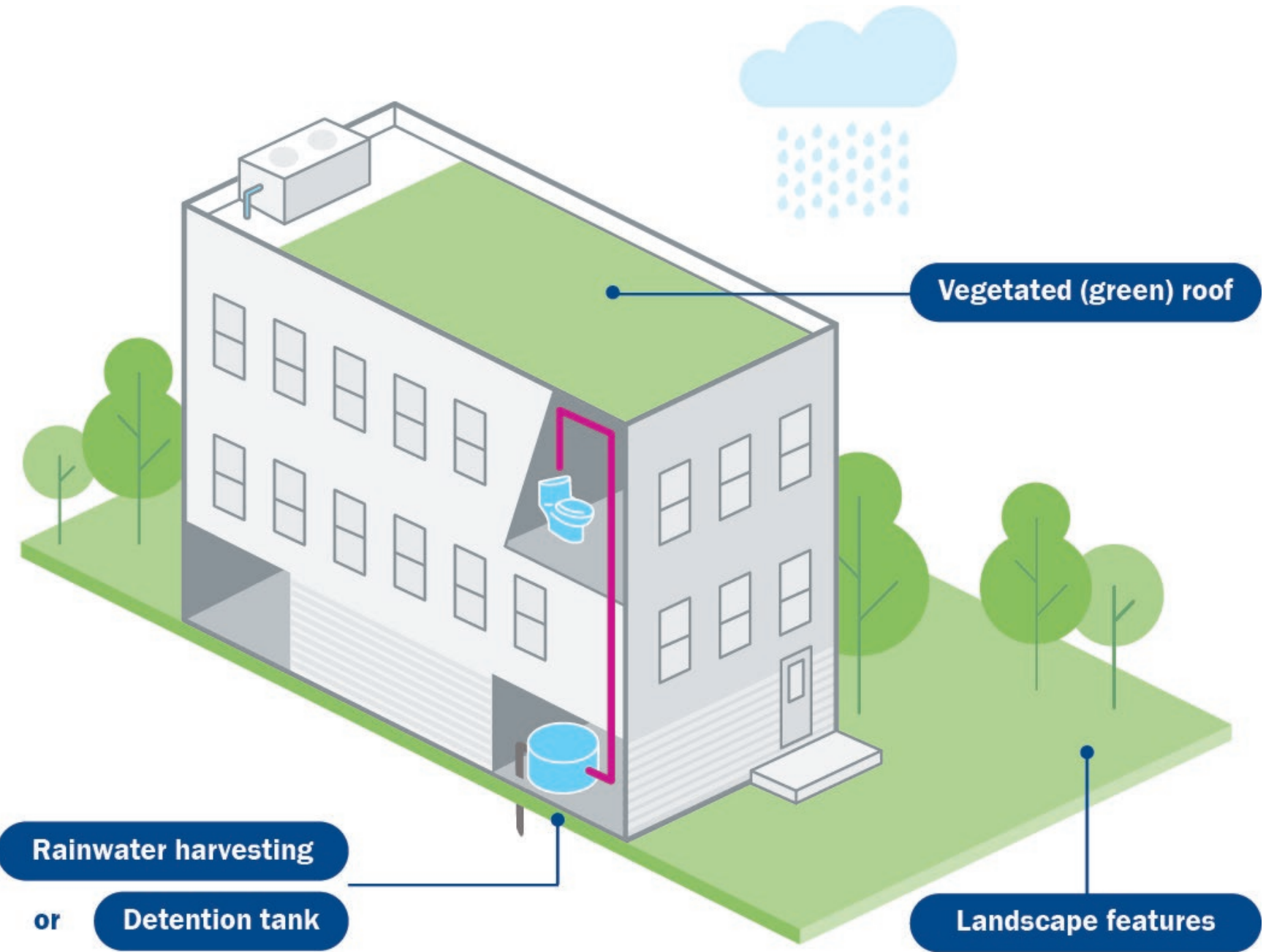


Source: City of Hamilton, ON
[youtube.com/watch?v=iewH6iJMtS0](https://www.youtube.com/watch?v=iewH6iJMtS0)



New Brighton Beach Park, Vancouver

Source: [youtube.com/watch?v=De8j9bVwnJw](https://www.youtube.com/watch?v=De8j9bVwnJw)





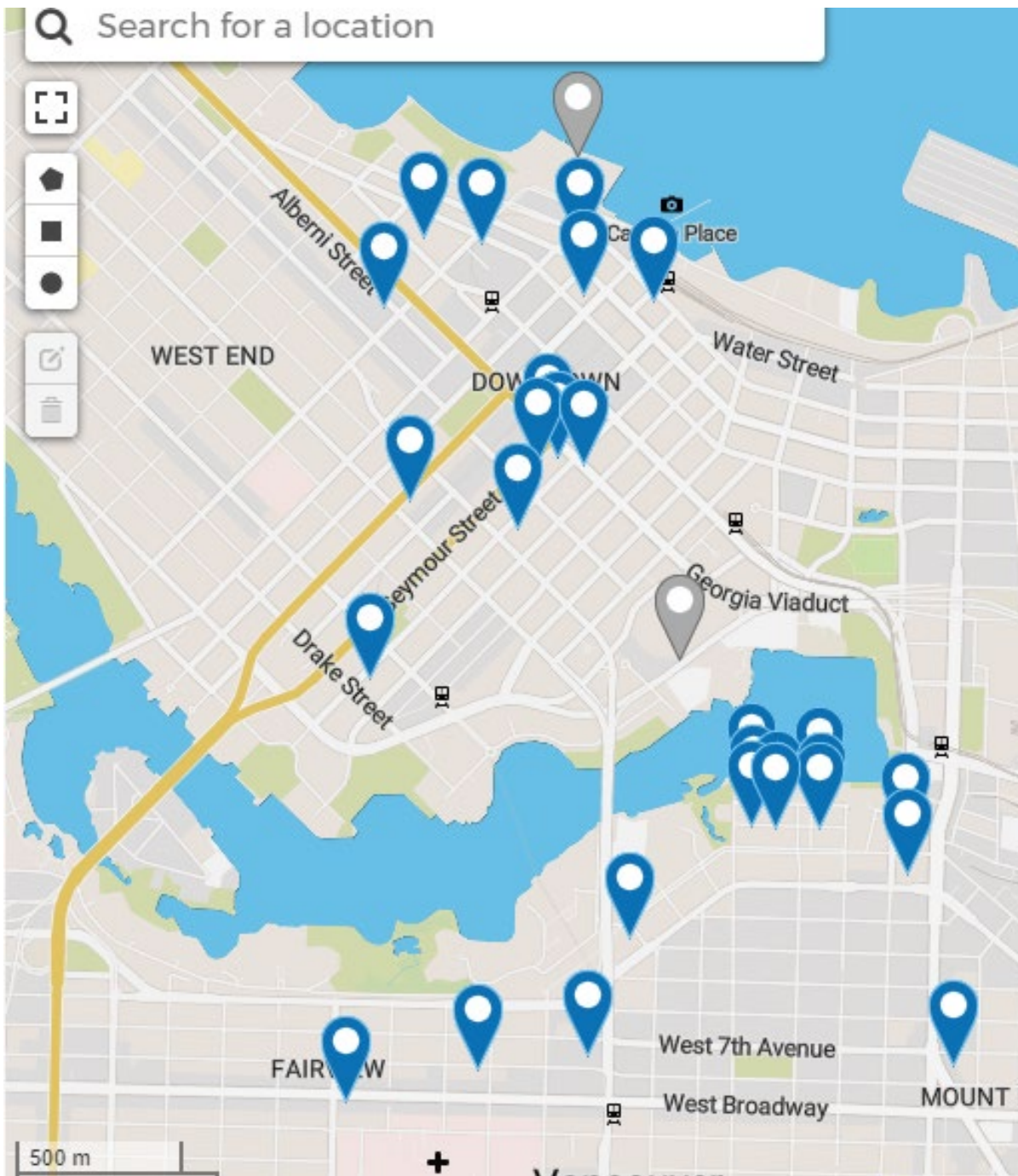
Source: City of Vancouver



Source: City of Vancouver



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Non-potable water systems 2023 exceedances

Legionella pneumophila

Standard: < 10 CFU/mL

- 40 CFU/mL (Jan 16)
- 10 CFU/mL (Aug 10)

E. coli

Standard: < 100 CFU/100 mL

- 130 CFU/100 mL (Oct 19)

Turbidity

Standard: < 10 NTU

- 210 NTU (Jan 25)
- 187 NTU (Aug 18)
- 129 NTU (Jan 12)
- 93 NTU (Nov 14)
- 39 NTU (Aug 4)



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Hot water: Storage

CDC *Legionella* Toolkit

Store hot water at temperatures **above 140°F (60°C)** and ensure hot water in circulation does not fall below 120°F (49°C). Recirculate hot water continuously, if possible.

ASHRAE Guideline 12 (sec. 5.3.1)

Storage water heaters and hot-water storage tanks should be adjusted or maintained so they deliver water consistently **at or above 140°F (60°C)** unless other compensating control measures are used.

ASHRAE Standard 90.1 (sec. 7.4.4)

Temperature *controls* shall be provided that allow for storage temperature adjustment from **120°F or lower** to a maximum temperature compatible with the intended use.

Hot water: Circulation

CDC *Legionella* Toolkit

Store hot water at temperatures above 140°F (60°C) and **ensure hot water in circulation does not fall below 120°F (49°C)**.
Recirculate hot water continuously, if possible.

ASHRAE Guideline 12 (sec. 5.3.1)

... hot water should be **maintained consistently at or above 120°F (49°C)** throughout the hot-water system, including water for delivery to the points of use and in the hot-water return.

ASHRAE Standard 90.1 (sec. 7.4.4)

Systems designed to maintain usage temperatures in hot-water pipes, such as recirculating hot-water *systems* or *heat trace*, shall be equipped with *automatic* time switches or other *controls* that can be set to **switch off the usage temperature maintenance system** during extended periods when hot water is not required.

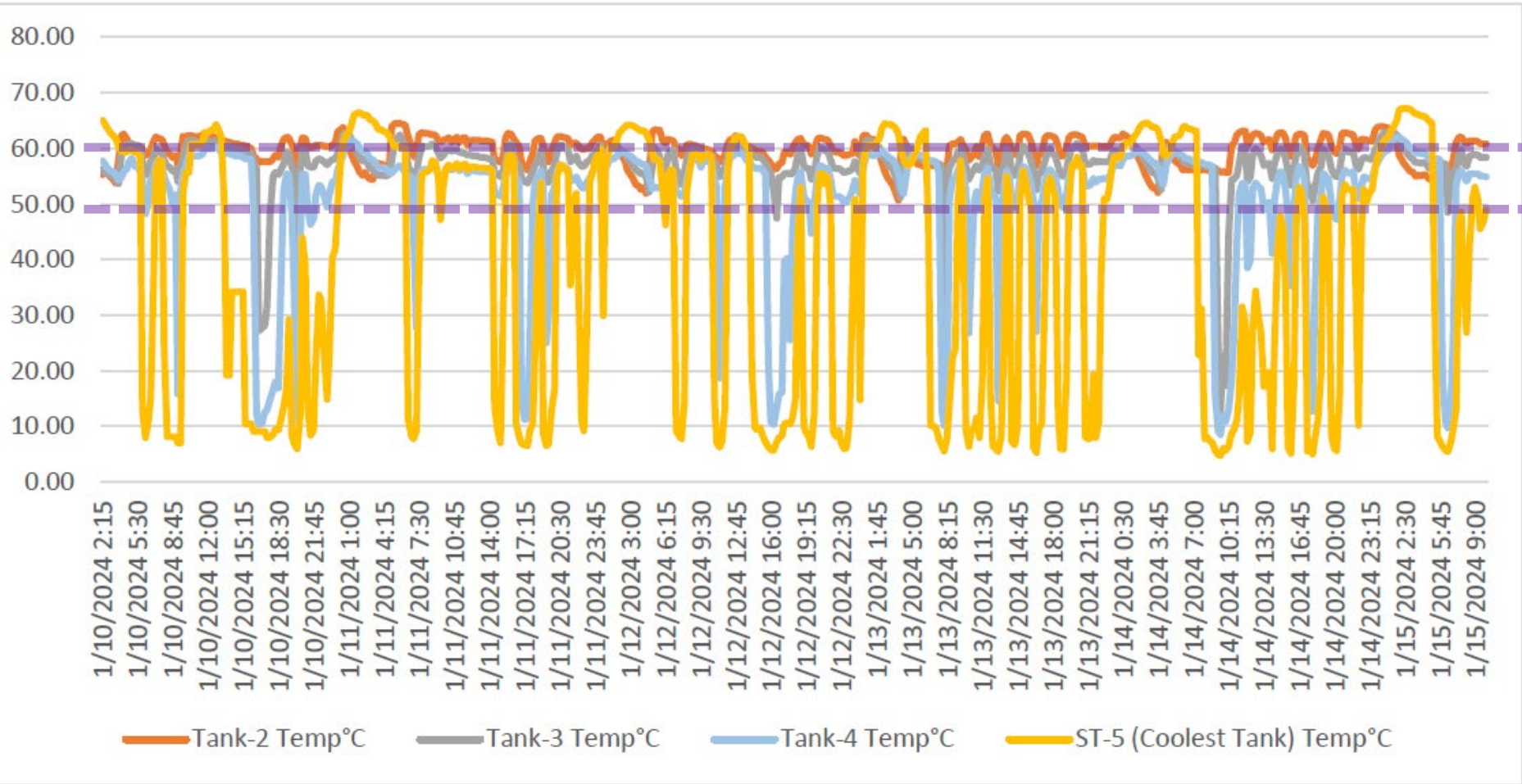


Source: City of Vancouver



Source: City of Vancouver

Hot water: Heat pumps



Contact & Questions

vancouver.ca/[operating-permit](#)

vancouver.ca/[mechanical-permit](#)

vancouver.ca/[rainwater](#)

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