



2025 ANNUAL DRINKING WATER QUALITY REPORT

UTILITIES DEPARTMENT

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EXECUTIVE SUMMARY

This report is the 24th *Annual Drinking Water Quality Report* prepared by the District of North Vancouver. It provides water consumers with information about the quality of the potable water and the programs that support drinking water quality. Submission of this report to the Office of the Medical Health Officer for North Shore Vancouver Coastal Health fulfills regulatory obligations of the Drinking Water Protection Act, the British Columbia Drinking Water Protection Regulation and our application to the Medical Health Officer for an annual Drinking Water System Permit to operate a potable water system. This report adheres to Metro Vancouver’s “Water Quality Monitoring and Reporting Plan for the Greater Vancouver Water District (GVWD) and Member Municipalities” template.

The Greater Vancouver Water District and the District of North Vancouver employ a multi-barrier, science-based approach that encompasses water from the source to the point of delivery. This approach ensures consistent delivery of a reliable supply of safe drinking water. All potable water supplied to the District of North Vancouver is treated at the Seymour Capilano Filtration Plant. In 2025, the District of North Vancouver’s scheduled water sampling consistently met or exceeded regulatory requirements. The combined efforts of the Greater Vancouver Water District and the District of North Vancouver once again resulted in excellent water quality for our customers.

1 SOURCE WATER

All water supplied to the District of North Vancouver (DNV) by the Greater Vancouver Water District (GVWD or Metro) comes from the Capilano or Seymour surface water reservoirs, followed by secondary treatment at the Seymour Capilano Filtration Plant (SCFP). Metro uses multiple barriers to protect, treat and supply safe drinking water, including watershed protection, water treatment, source quality testing, transmission point quality testing and ongoing operation and maintenance of the water systems.

Before 2009, Metro’s treatment of both the Capilano and Seymour sources was primary disinfection, including chlorine. In 2010, Seymour source water was treated at the SCFP, which incorporates multiple disinfection processes, including filtration, ultraviolet radiation disinfection and chlorine. In 2015, tunnels were commissioned that linked the Capilano source water to the SCFP, marking a significant water treatment and quality milestone for the DNV and the region.

Metro analyzes source water for bacteriological, chemical and physical parameters according to the “BC Drinking Water Protection Regulation.” The “Greater Vancouver Water District 2025 Water Quality Annual Report - Volume 1 & 2” summarizes water quality for the Metro Vancouver service area and is available on its website www.metrovancouver.org. The report will demonstrate that drinking water supplied by Metro to DNV met or exceeded all water quality standards and guidelines in 2025.

2 DNV DISTRIBUTION SYSTEM & QUALITY ASSURANCE TESTING

2.1 General

The DNV water distribution system delivers potable water to its customers through a waterworks system incorporating 363 kilometres (km) of watermains, seven water pumping stations, 12 water storage reservoirs, and 35 pressure reducing stations. A population of approximately 97,845 is served through 21,232 service connections.

In 2025, Metro measured 18.4 million cubic metres of water delivered to the DNV distribution system through 18 metered connections. A map of the overall water distribution pipe system showing the 36 sampling stations and the 26 pressure zones is in Appendix A. Sampling and testing is performed in three scheduled categories according to the requirement of the British Columbia Drinking Water Protection Regulation (the Regulation):

1. **Weekly** (Bacteriological, chemical and physical parameters)
2. **Quarterly** (Disinfection by-products)
3. **Semi-Annually** (Metals)

Health Canada’s Guideline for Drinking Water Quality (the Guideline) sets category parameter limits on peer-reviewed scientific-based research as either maximum acceptable concentrations, aesthetic objectives or operational guidance values.

- Maximum Acceptable Concentrations (MAC) are set for parameters that are known to detrimentally affect human health.
- Aesthetic Objectives (AO) are set for parameters on which consumers base opinions about the drinkability of water.
- Operational Guidelines (OG) are set for parameters that could detrimentally affect water quality in the distribution system.

Apart from temperature and free chlorine residual, which are analyzed and recorded by DNV staff at the time of sampling, all other parameters are analyzed and reported by the accredited Lake City Metro lab after being collected and transported by DNV operators.

2.1.1 Scheduled Weekly Sampling

In 2025, DNV staff collected 1,239 regular scheduled samples from 36 sample sites or an average of 103 samples per month. This meets the Regulation’s population-based sample requirement for DNV of 36 sites and 91 samples per month. Sample collection is scheduled weekly on a rotating basis using a strategic grouping of sample sites distributed across the system. Generally, 12 samples are collected twice weekly for a total of 24 samples per week.

Locations of weekly sample points are distributed according to the regulation recommendations as follows:

- 18% of sampling points at “source” (supply points from Metro transmission mains)
- 33% of sampling points at locations with medium flow
- 36% of sampling points at locations with low flow
- 13% of sampling points at system dead-ends (very low flow)

Scheduled weekly analysis can be grouped into two categories: bacteriological and chemical or physical parameters. Standards for water distribution systems are dictated by the requirements of the Regulation and Health Canada’s Guidelines for Canadian Drinking Water Quality. The guidelines provide either a maximum allowable concentration (MAC), an aesthetic objective (AO) or an operational guidance (OG) value.

- Bacteriological parameters guidelines are:
 - Escherichia coli (E coli): MAC none detectable per 100mL
 - Total coliform: MAC none detectable in 100mL
 - Heterotrophic plate count (HPC): OG less than or equal to 500 CFU/mL¹
 - Turbidity: OG less than or equal to 1.0 NTU
- Chemical or physical parameter guidelines are:
 - Chlorine: OG between 0.04 – 2.0 mg/L

¹ OG taken from *Guidance on the Use of Heterotrophic Plate Counts in Canadian Drinking Water Supplies*. Health Canada has replaced this guideline with *Monitoring the Biological Stability of Drinking Water in Distribution Systems (2022)* but has not provided an updated OG for HPC. DNV continues to sample HPC for comparison with the old guideline.

- Temperature: AO less than or equal to 15°C
- pH: OG between 7.0 and 10.5

Figure 1 below shows the number of scheduled weekly samples collected and analyzed in 2025 monthly.

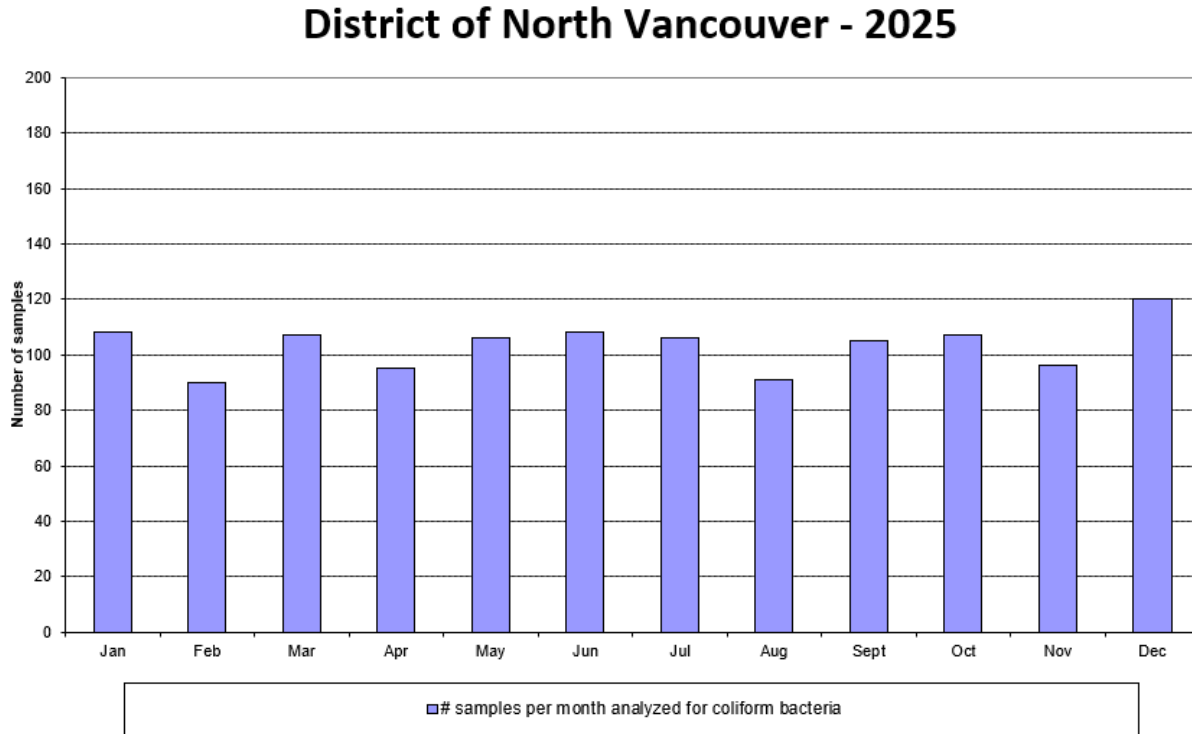


Figure 1. Number of Scheduled Weekly Samples Collected

2.1.2 Quarterly Disinfection By-Products Sampling

Haloacetic acids (HAA) and Trihalomethanes (THM) are groups of compounds that can form as by-products when water is treated with chlorine. The Guideline maximum allowable concentrations for the running quarterly averages are 80 parts per billion (ppb) for HAA and 100 ppb for THM, with the added recommendation that they be kept as low as reasonably achievable (ALARA) without compromising disinfection.

In conformance with the regulation, DNV staff collected 16 samples for HAA and THM disinfection by-product analysis.

2.1.3 pH

A measurement of pH in the distribution system is made at the same time as the disinfection by-products at one of the four locations on a quarterly basis. The Guideline does not provide a required value but sets a target range of 7.0-10.5 and is primarily for corrosion control. Metro controls and stabilizes pH at the source.

2.1.4 Metal Semi-Annual Sampling

In 2025, DNV staff collected eight samples for analysis at four locations for metal testing in conformance with the regulation.

2.1.5 Unscheduled Sampling

In addition to the scheduled weekly, quarterly and semi-annual samples, additional samples are collected and analyzed when warranted for water quality complaints, operational concerns or maintenance activities. All water quality complaints are investigated immediately. Most water quality complaints received are about discoloured water. The cause of discoloured water in the DNV tend to fall into one of two categories:

1. An unintentional consequence of DNV or private activities (watermain flushing, hydrant flow testing, structure fire response, construction activities or watermain breaks). Planned and unexpected work is performed in a manner that limits the impact on water quality; however, sometimes impacts still occur.
2. Spontaneous degradation of cast iron pipe. Cast iron pipe naturally breaks down and can release corrosion products that can, in sufficient concentration, make water appear discoloured— typically orange or brown in colour.

In 2025, 73 unscheduled samples were collected and analyzed for the following activities:

1. New watermain construction – 43 samples
2. Watermain breaks – 14 samples
3. Water Quality Complaints – 16 samples

3 RESULTS

The DNV water sampling program meets the regulatory requirements for sample location, frequency and quantity. Analytical results are provided by Metro to DNV on a weekly basis and reviewed internally upon receipt. The five-year summary of scheduled weekly sample results (free chlorine residual, total Coliform, HPC, E-coli and turbidity) for each sample site are presented in Appendix B. A summary of the results by parameter is provided below.

3.1 Scheduled Weekly Bacteriological Parameter Results

Bacteriological standards for water distribution systems are dictated by the requirements of the Regulation and by Health Canada's Guidelines for Canadian Drinking Water Quality, which provide the following criteria:

- **E. coli:** Escherichia coli is an indicator of potential micro bacteriological contamination and possible pathogens. Some strains of E. coli are pathogenic. The Guideline states that the MAC is zero detectable E. coli per 100 mL sample.
- **Total Coliform:** Coliforms occur naturally in water sources and alone are not pathogenic but indicate the potential presence of pathogens. The Guideline states that the MAC is 10 or less

total coliform per 100 mL sample and that 90% or more of the samples for a given month must have zero detectable total coliform per 100 mL sample.

- **HPC:** Heterotrophic plate count is used to monitor general bacteriological quality. The Guideline does not provide an allowable level but instead offers the OG that increases in HPC concentrations above a baseline level of 500 CFU/mL are undesirable.
- **Turbidity:** Particles in drinking water can inhibit treatment and indicate potential quality concerns. The Guideline suggests an OG of supply water turbidity target of < 1 Nephelometric Turbidity Unit (NTU) or “best possible” and should not exceed 5.0 in distribution systems.

The scheduled samples collected in 2025 met the guidelines for safe potable water. There were no occurrences of detectable E. coli nor Total Coliform. There were also no occurrences of turbidity levels over 5.0 NTU. The annual DNV average HPC and turbidity for the last five years are presented below.

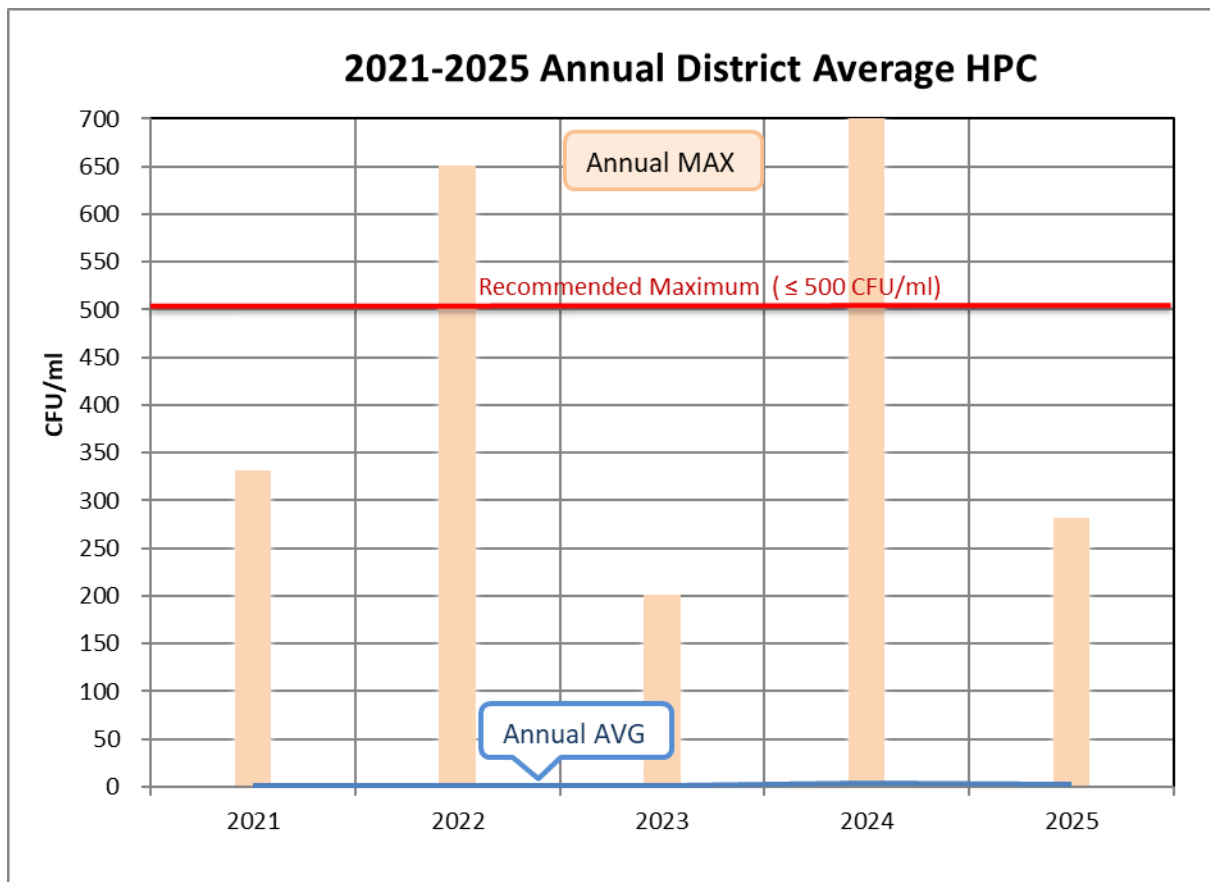


Figure 2. HPC Five-Year Annual Average and Maximum Values.

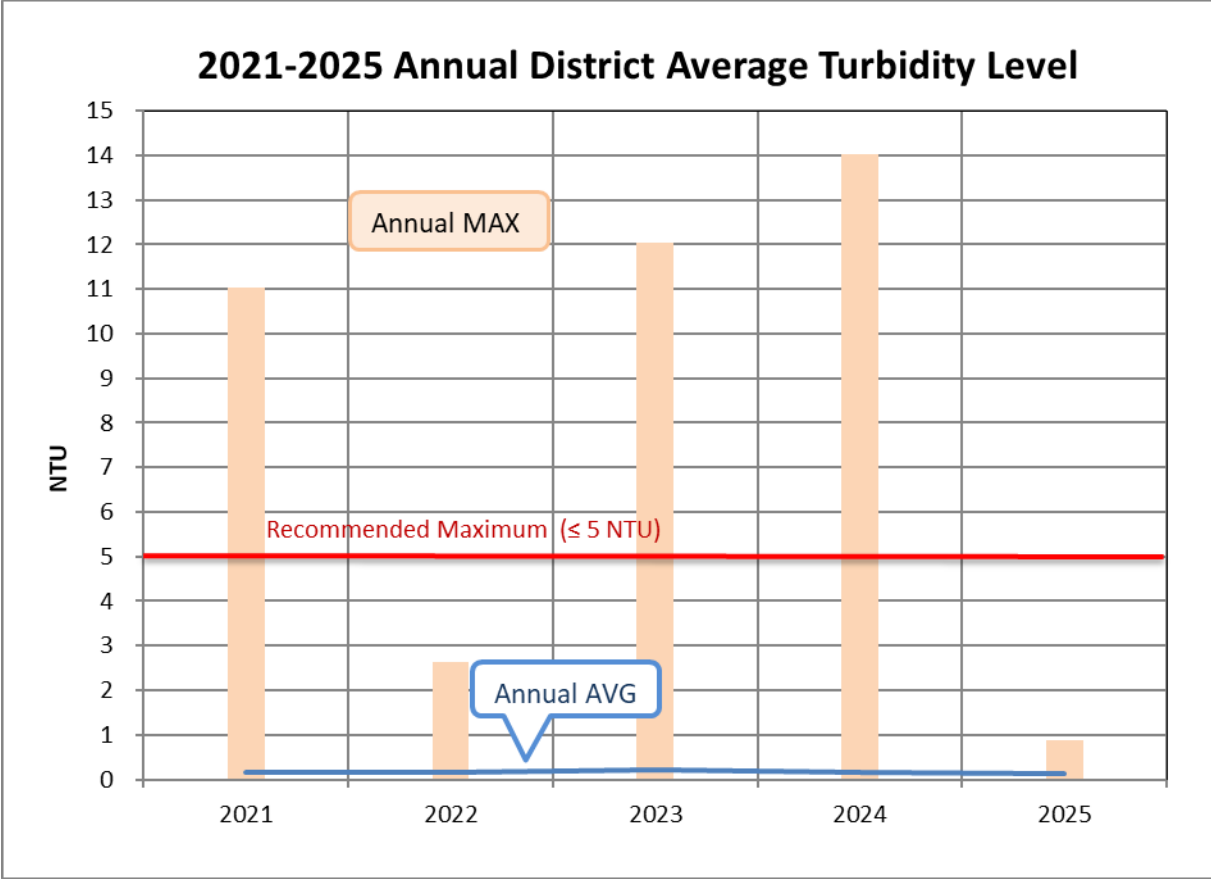


Figure 3. Turbidity Five-Year Annual Average and Maximum Values.

3.2 Scheduled Weekly Chemical and Physical Parameter Results

Chemical and physical parameters, chlorine, temperature and pH results for 2025 are summarized below:

- Chlorine:** Chlorine is used in the disinfection process, and a residual amount in the distribution system is desirable to maintain potable water quality. In 2025, all samples were within the OG range for residual chlorine, 0.04-2.0 mg/L and above the OG of 0.2 mg/L. The average system-wide chlorine residual was 0.74 mg/L. The minimum recorded chlorine residual was 0.21 mg/L. The maximum recorded chlorine residual was 1.1 mg/L. The annual DNV average free chlorine for the past five years is presented below in Figure 4.
- Temperature:** The temperature of drinking water can impact water quality and is an aesthetic parameter. The guidelines provide an AO for water temperature at less than or equal to 15°C. In 2025, 160 samples or 13% were above 15°C and occurred primarily during July, August and September. The highest temperature recorded was 21 °C, the lowest temperature recorded was 1 °C and the annual system average was 10 °C.
- pH:** pH is a measure of acidity/basicity and can impact corrosion rates of the distribution systems. The operational guideline is 7.0-10.5 in drinking water, and the average pH for our system in 2025 was 8.0.

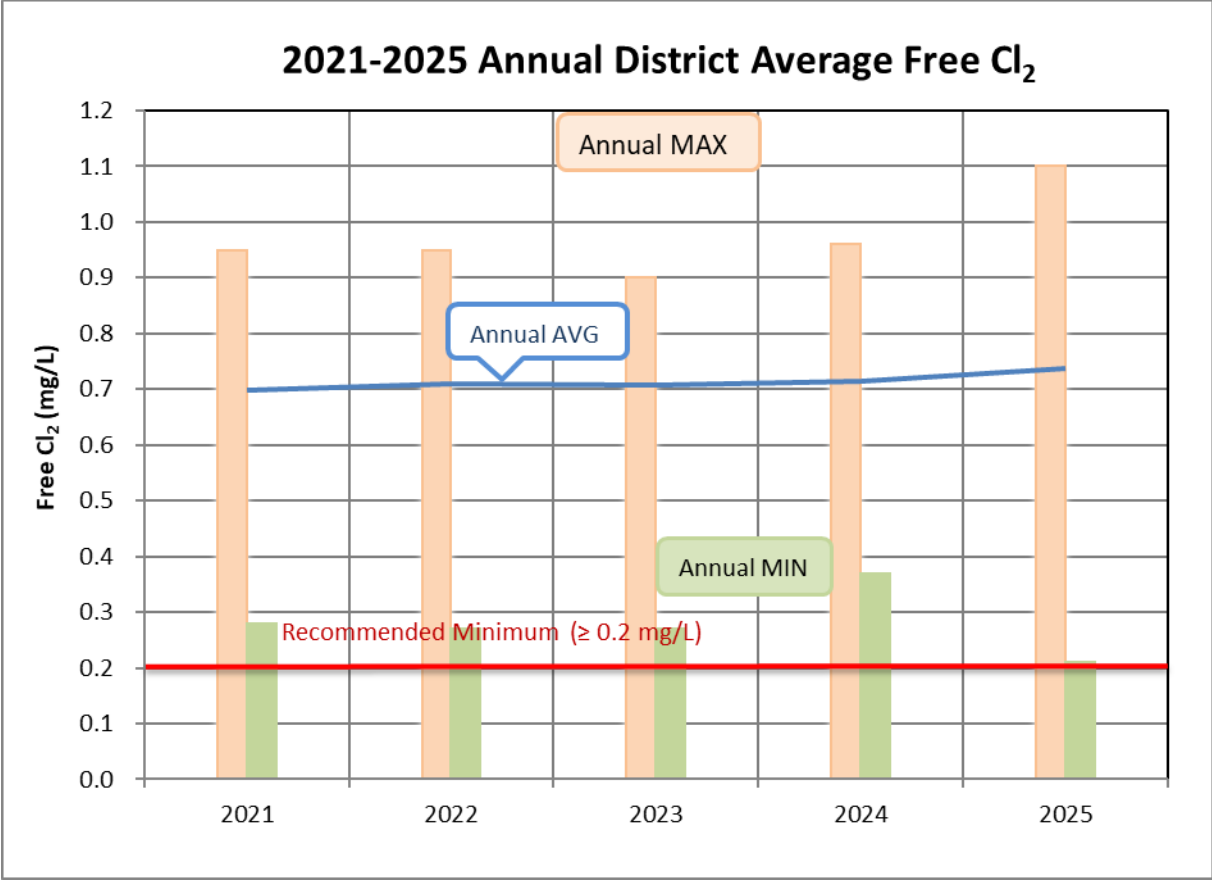


Figure 4. Free Cl₂ Five-Year Annual Minimum, Average and Maximum Values.

3.3 Quarterly Disinfection By-Products Results

Quarterly disinfection by-products tested were well below guideline limits and are presented below in Table 1.

Sample	Date Sampled	THM (ppb)						HAA (ppb)						
		Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroform	Total Trihalomethanes	Total THM Quarterly Average (Guideline Limit 100 ppb)	Dibromoacetic Acid	Dichloroacetic Acid	Monobromoacetic Acid	Monochloroacetic Acid	Trichloroacetic Acid	Total Haloacetic Acid	Total HAA Quarterly Average (Guideline Limit 80 ppb)
DNV-727	30-Jan-25	<1	<1	<1	23	24	28	<0.5	12	<0.5	<0.5	7.4	19	18
DNV-727	8-Apr-25	<1	<1	<1	25	26	28	<0.5	12	<0.5	<0.5	8.6	21	19
DNV-727	10-Sep-25	<1	<1	<1	20	20	25	<0.5	6.9	<0.5	<5.0	3	9.8	18
DNV-727	18-Nov-25	<1	<1	<1	25	26	23	<0.5	14	<0.5	<5.0	6.2	20	17
DNV-733	30-Jan-25	<1	<1	<1	20	21	24	<0.5	11	<0.5	<0.5	5.6	16	16
DNV-733	8-Apr-25	<1	<1	<1	25	25	24	<0.5	12	<0.5	<0.5	7.5	20	18
DNV-733	10-Sep-25	<1	<1	<1	23	23	23	<0.5	7.1	<0.5	<5.0	3.5	11	18
DNV-733	18-Nov-25	<1	<1	<1	33	34	23	<0.5	15	<0.5	<5.0	8.9	24	16
DNV-734	30-Jan-25	<1	<1	<1	21	22	25	<0.5	11	<0.5	<0.5	6.8	18	16
DNV-734	8-Apr-25	<1	<1	<1	26	26	25	<0.5	13	<0.5	<0.5	9.2	22	18
DNV-734	10-Sep-25	<1	<1	<1	22	22	24	<0.5	7.3	<0.5	<5.0	3.4	11	18
DNV-734	18-Nov-25	<1	<1	<1	33	34	23	<0.5	15	<0.5	<5.0	9.1	24	17
DNV-736	30-Jan-25	<1	<1	<1	24	25	28	<0.5	12	<0.5	<0.5	8.8	21	18
DNV-736	8-Apr-25	<1	<1	<1	28	28	29	<0.5	14	<0.5	<0.5	10	24	19
DNV-736	10-Sep-25	<1	<1	<1	26	27	28	<0.5	6.2	<0.5	<5.0	4.1	10	19
DNV-736	18-Nov-25	<1	<1	<1	31	32	27	<0.5	11	<0.5	<5.0	8.3	19	18

Table 1. Quarterly Disinfection By-products 2025 Results

3.4 Scheduled Semi-Annual Metal Results

A total of eight samples from four locations were analyzed for metals, including copper, lead and zinc. Sample sites, results, and maximum concentrations are given in Table 2 below. All samples tested for metals were below the maximum acceptable concentration guidelines for Canadian Drinking Water Quality. Where the guideline limit is 'none,' Health Canada has determined that there is currently no

scientific evidence of aesthetic or detrimental health effects for that parameter at the levels typically found in drinking water.

Parameter	Canadian Guideline Limit	DNV-721	DNV-730	DNV-734	DNV-747	DNV-721	DNV-730	DNV-734	DNV-747
		2838 Panorama Dr.	Braemar Reservoir	1181 West 22nd	1231 Lennox St. PRV	2838 Panorama Dr.	Braemar Reservoir	1181 West 22nd	1231 Lennox St. PRV
		06/17/2025	06/17/2025	06/17/2025	06/17/2025	12/09/2025	12/09/2025	12/09/2025	12/09/2025
Aluminium Total (µg/L)	2900 (MAC) 100 (OG)	20	19	18	19	32	35	35	35
Antimony Total (µg/L)	6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Arsenic Total (µg/L)	10 (ALARA)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium Total (µg/L)	2000	3.7	2.8	2.8	2.6	3.8	3.1	3.4	3.1
Boron Total (µg/L)	5000	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium Total (µg/L)	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium Total (µg/L)	none	8350	7730	8000	7810	9470	8870	9240	9190
Chromium Total (µg/L)	50	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cobalt Total (µg/L)	none	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper Total (µg/L)	2000	1.4	1	2.6	<0.5	1.2	0.8	2.3	<0.5
Iron Total (µg/L)	≤ 100	6	<5	<5	<5	7	<5	6	6
Lead Total (µg/L)	5 (ALARA)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Magnesium Total (µg/L)	None	185	163	162	157	183	182	185	183
Manganese Total (µg/L)	120	1.5	1.6	1.6	1.8	2.1	2	2.3	3.5
Mercury Total (µg/L)	1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum Total (µg/L)	none	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel Total (µg/L)	none	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Potassium Total (µg/L)	none	163	157	161	155	161	161	162	159
Selenium Total (µg/L)	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	none	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sodium Total (µg/L)	≤ 200,000	1390	1370	1370	1340	1570	1600	1590	1620
Zinc Total (µg/L)	≤ 5000	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

Table 2. 2025 Semi Annual Metal parameter, Guideline Limits and Results

3.4.1 Lead

Lead, along with 21 other metals, is one of the parameters analyzed semi-annually at the four locations listed above. Our lead levels are consistently less than 0.5 µg/L; the Canadian Guideline Limit is 5.0 µg/L. Metro Vancouver samples and tests our source water. Metro Vancouver's results show lead levels <0.5 µg/L.

In March 2019, the Canadian Drinking Water Guideline limits for maximum allowable concentration (MAC) of lead in drinking water was reduced from 10 µg/L to 5 µg/L or as low as reasonably achievable (ALARA). Based on a Government of Canada news release, Health Canada lowered the limit to safeguard the health of Canadians. The previous limit of 10 µg/L was set in 1992. Since then, lead levels in Canada have fallen dramatically due to strong actions taken by the Government of Canada to reduce exposure to lead. The revised limits reflect the changed risk levels and were developed in collaboration with the provinces, territories, and other federal departments.

The primary source of lead in drinking water is leaching from distribution and plumbing system parts. The District does not currently use nor has ever used lead pipes in our drinking water distribution system, including services. Lead was historically used in private plumbing for the service lines that connect a home or business to the municipal water service and in plumbing fittings and solders. Until 1975, lead was an acceptable material in pipes based on the National Plumbing Code of Canada, so it is more likely to be found in older homes and neighbourhoods. The best approach to minimize lead exposure is the removal of private lead services. Vancouver Coastal Health also recommends flushing whenever a faucet has not been used for six hours or longer. Details of this recommendation are included in Appendix C. The District of North Vancouver does not have jurisdiction and is not required, to test private property.

3.5 Unscheduled Results

In addition to scheduled samples, 73 unscheduled samples were collected and analyzed in 2025. All results for the unscheduled samples were within the guideline-recommended limits.

4 OPERATIONS, MAINTENANCE & CAPITAL PROGRAMS

4.1 Water System Scheduled Maintenance

Scheduled annual system maintenance programs that support water quality include watermain flushing, reservoir cleaning and scheduled water facility inspections. We follow the AWWA flushing program standards. In 2025, the DNV flushed 15 kilometres of watermain which is 4% of the entire watermain network. Appendix D shows the watermains that were flushed in 2025.

The DNV uses permanent flushing stations or regularly scheduled flushing to maintain water quality in areas with chronic aesthetic issues related to cast iron pipe. We are eliminating the flushing stations by upgrading cast iron pipes to our standard watermain material, cement-lined ductile iron. Two permanent flushing stations remain in our system at the following locations:

- 4011 Lions Avenue: Dead end 4-inch cast iron main
- 3248 Milton Avenue: 6-inch ductile iron main (downstream of chronic cast iron mains)

The DNV uses an integrated SCADA (Supervisory Control and Data Acquisition) system to optimize pumping, reservoir filling and retention time to support water turnover and quality.

4.2 Capital Upgrades

The DNV has a fully funded watermain replacement program that uses a risk-based protocol with 17 weighted hazard and consequence criteria. The DNV's watermain replacement program takes into consideration multiple parameters to prioritize the annual replacement schedule. The DNV standard replacement watermain is ANSI/AWWA C151 & C140 special class 50 cement-lined ductile iron pipe and specified in our Design Guidelines of our Development Servicing Bylaw. In 2018, we began using TR Flex Restraint Joint Pipe wrapped in polyethylene for all our installations.

Our prioritization protocol heavily weighs the potential of failure, consequence of failure, and water quality. In 2025, DNV construction crews completed the replacement of 4,231 metres of pipe and 5,135 metres of pipe is planned for replacement in 2026. The DNV has submitted the replacement plan to Vancouver Coastal Health as part of the Construction Permit Streamlined Application Process for Metro Vancouver Municipalities.

The primary focus of the watermain replacement program is the replacement of asbestos cement pipe. The high consequence of failure and resulting cost and impact (such as property damage, sidewalk and road damage) has driven the large percentage of asbestos cement watermain replacements. The DNV estimates that most - if not all - of the asbestos cement pipe in our network will be replaced by 2035 as we continue to follow our replacement program. The Federal Government (Health Canada) provides additional information about asbestos and drinking water on its website:

<https://www.canada.ca/en/health-canada/services/publications/healthy-living/asbestos-drinking-water-infographic-2021.html>

4.3 Operator Training & Qualification

The DNV's distribution system is Environmental Operators Certification Program (EOCP) classified as a Level 2 system. The DNV currently has distribution system operators with Level 2 operator's certification from the EOCP, keeping the DNV fully compliant with current requirements.

5 ISSUES, INCIDENTS & RESPONSE PLANS

5.1 Boil Water Advisory

A precautionary boil water advisory is issued when, in consultation with Vancouver Coastal Health, a situation exists that increases the risk of possible contamination. No precautionary boil water advisories were issued in 2025.

5.2 Customer Complaints

We recorded 16 customer complaints for either colour, taste or odour. The DNV investigates all water quality complaints from customers. For complaints stemming from known operational activities (watermain breaks, firefighting, watermain flushing), customers may be advised to run outside taps until the water clears up.

In September and October of 2025, the DNV experienced two separate but simultaneous series of taste complaints with the following common descriptors: 1) 'Musty' and 2) 'Mothballs'. These complaints were investigated in collaboration with Metro and Vancouver Coastal Health. The results of these investigations are provided in Metro's 2025 Annual Water Quality Report (available at metrovancover.org) and are summarized below:

- 1) Geosmin: Metro's report documents occurrences of geosmin, a naturally occurring compound that can cause earthy or musty taste and odour in drinking water. While geosmin can affect aesthetic water quality, it does not pose a health risk and was managed through operational responses (Greater Vancouver Water District 2025 Water Quality Annual Report, Vol. 1, pp. iv, 7, 28).
- 2) Naphthalene: The report also notes a naphthalene-related water quality issue affecting the DNV. Metro implemented monitoring and response measures, and the water supply continued to meet applicable health-based guidelines (Greater Vancouver Water District 2025 Water Quality Annual Report, Vol. 1, pp. iv, 26, 29). Metro's sampling confirmed Naphthalene concentrations of 3.79 ug/L (0.004 ppm). There are no Health Canada drinking water guidelines for Naphthalene but the United States Environmental Protection Agency's drinking water guidance for naphthalene includes limits of 0.5 ppm for short-term child exposure and 0.1 ppm for lifetime exposure (Agency for Toxic Substances and Disease Registry, 2005, pp. 7–8). Follow-up samples taken by Metro 7 days after the original samples confirmed Naphthalene concentrations had dropped to near detection limits (Greater Vancouver Water District 2025 Water Quality Annual Report, Vol. 1, pp. iv, 26, 29).

5.3 Ductile Iron Supply & Storage

In 2018, we had an incident that resulted in repeat total coliform detected in new ductile iron pipe not yet tied into the system. This led us to investigate and change our pipe storage and purchase practices. As a result, pipe stored in our secondary area (Beach Yard) is elevated on skids. This practice continued in 2025.

5.4 Security

DNV water storage reservoirs and pumping facilities have signage, secured access, intrusion detection linked to the automated SCADA alarm system and designed fail-safe valve operation to inhibit or reduce the impact of security threats. In addition, each facility is attended frequently for inspection and routine operation and maintenance.

5.5 Watermain Breaks

We responded to 16 emergency watermain breaks in 2025. Watermain break response protocol includes maintaining positive pressure to protect the water system from potential contamination. The recent historical trend of watermain breaks by material is shown in Figure 5.

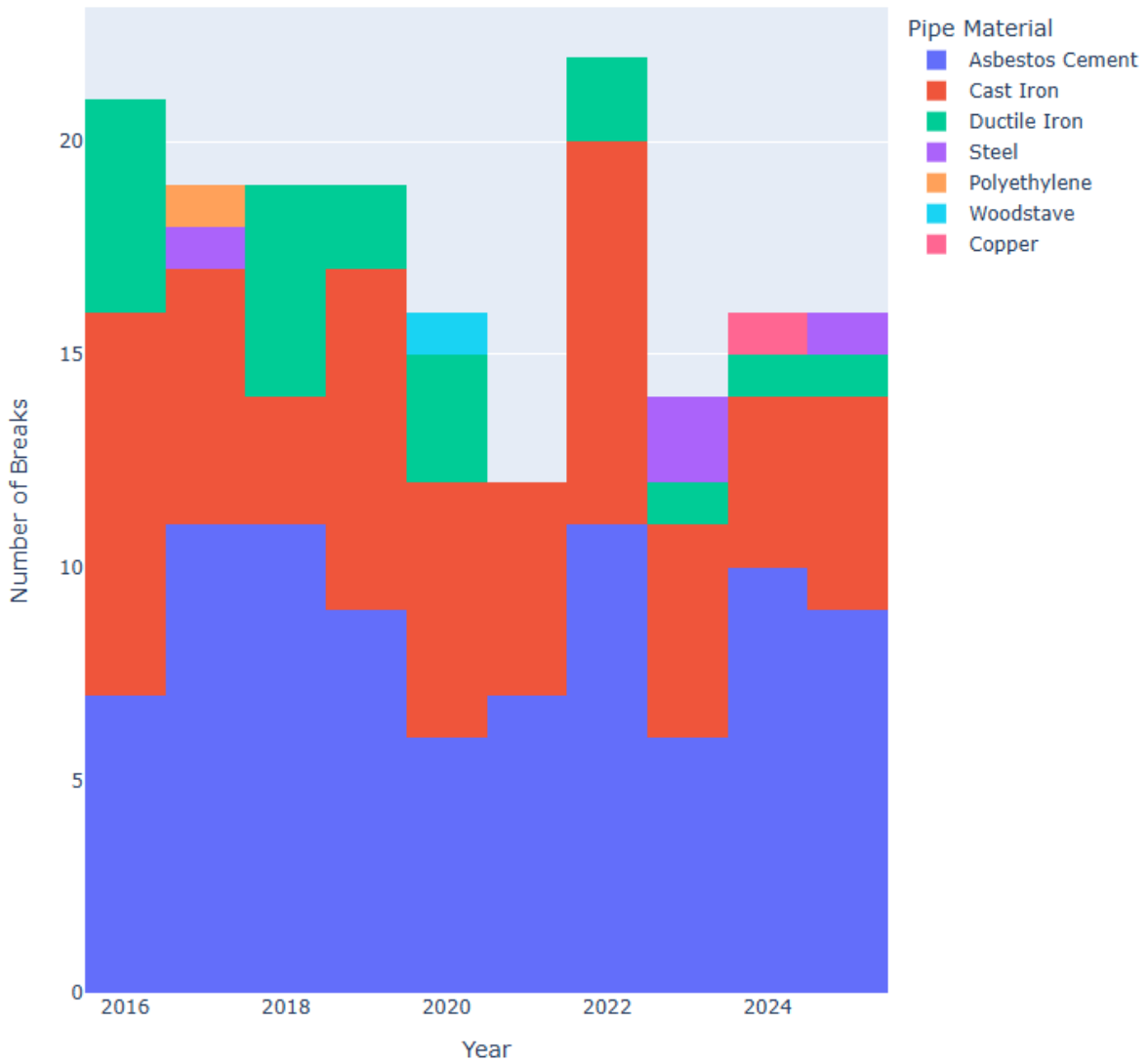


Figure 5. 10-Year Watermain Break Summary

5.6 Notification & Emergency Response

The table below outlines our notification process for unusual situations that could potentially affect water quality and notification is required.

NOTIFICATION FOR UNUSUAL SITUATIONS POTENTIALLY AFFECTING WATER QUALITY			
Situation	Notifying Agency	Agency Notified	Time Frame for Notification
<i>E. coli</i> -positive sample	GVWD	DNV and Vancouver Coastal Health (North Shore)	Immediate
Chemical contamination	GVWD DNV	Vancouver Coastal Health (North Shore)	Immediate
Turbidity > 5 NTU (Coquitlam Reservoir only)	GVWD	DNV and Vancouver Coastal Health (North Shore)	Immediate
GVRD Source treatment failure	GVWD	DNV and Vancouver Coastal Health (North Shore)	Immediate in any situation in which water quality guidelines may not be met
Loss of pressure	GVWD DNV	GVWD Operations and Vancouver Coastal Health (North Shore)	Immediate
Watermain break with contamination suspected	DNV	Vancouver Coastal Health (North Shore) PEP	Immediate
Watermain break with no suspect contamination	DNV	Vancouver Coastal Health (North Shore) Provincial Emergency Program (PEP)	As required by Health Authority. PEP as soon as possible

Table 3. Water Quality Notification

5.7 Response Plans

The flow diagram below illustrates the process that has been put in place for response to incidents that could potentially affect water quality during a loss of system integrity. Additional or cascading response protocols are outlined after the chart.

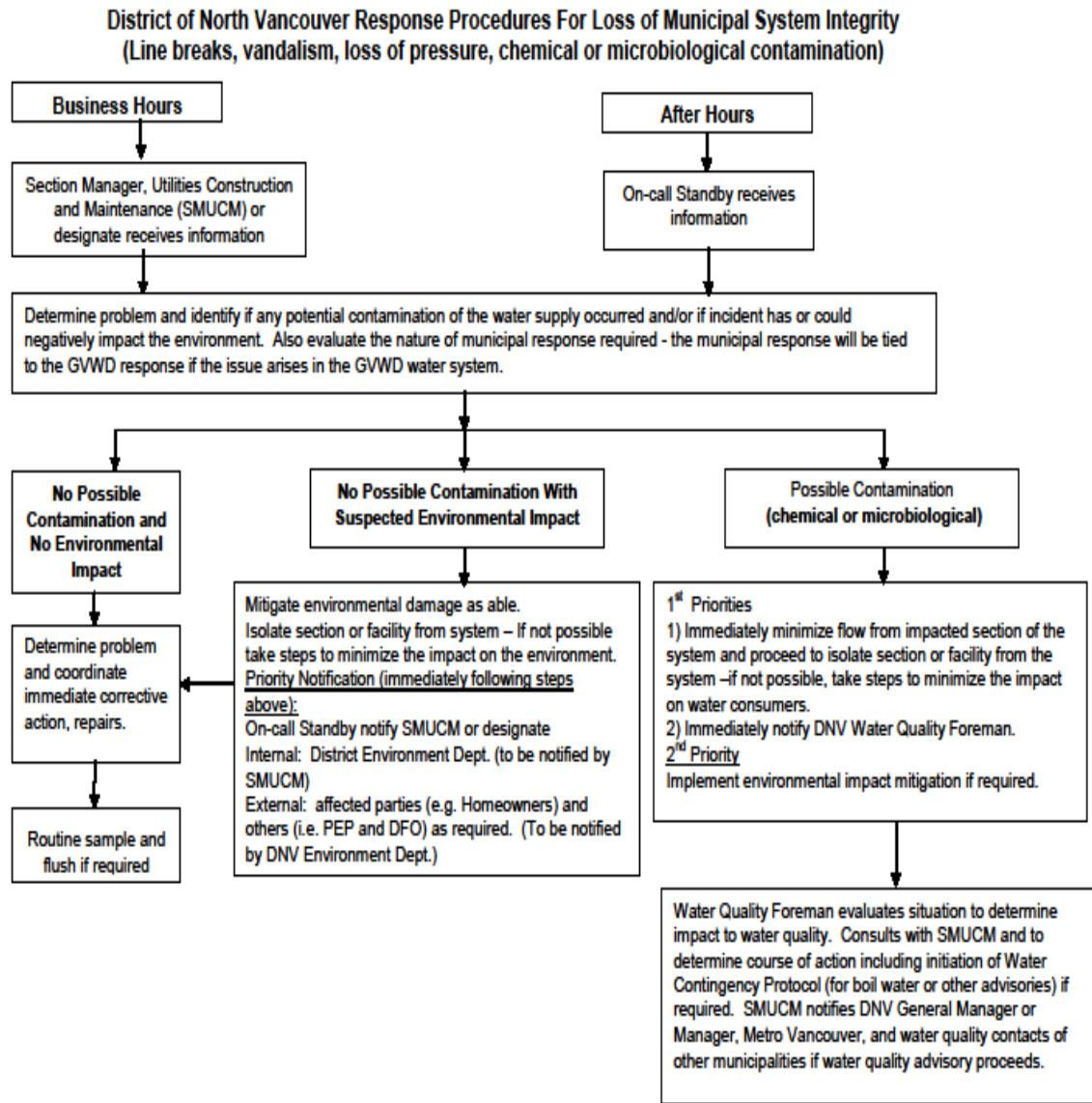


Figure 6. Loss of System Integrity Response

- **Watermain Breaks**

Watermain breaks pose an increased risk for potential contamination. Response procedure and repair practices are in place to reduce the risk of contamination. In instances where contamination of the system is suspected, DNV Utilities crews make adjustments to isolate the section or facility from the system. The DNV immediately consults with Vancouver Coastal Health (North Shore) regarding further

actions, and all water quality complaints from the public will be immediately and thoroughly investigated for potential contamination.

Following all watermain breaks, water samples are analyzed from the vicinity of the break and tested for bacteriological, chemical and physical parameters.

- *Turbidity Events*

Turbidity in the DNV water distribution system is monitored on a regular basis through the water sampling program. Water sampling results yielding readings greater than 1 NTU are scrutinized. All areas from which turbidity results > 5 NTU are flushed and re-sampled for free chlorine and turbidity. Flushing in areas with turbidity < 5NTU is at the operator's discretion.

- *Loss of Pressure Due to High Demand*

In the event of adverse pressure loss due to high demand, DNV Utilities crews make adjustments to the system to isolate the section or facility and then take measures to supplement pressure in the affected area. The DNV immediately consults with GVWD and Vancouver Coastal Health (North Shore) regarding further actions and all water quality complaints from the public are immediately investigated.

- *Positive E-coli Results*

If a sample submitted from DNV and analyzed by the Metro Vancouver laboratory or the BC Centre for Disease Control tests positive for E. coli, the following response plan will be put into action:

- i) Results of interim samples, if any, from the site will be examined by the lab. Interim samples are any samples that may have been taken from the site in the period between when the E. coli -positive sample was taken and when it was determined to be positive.
- ii) The chlorine residual noted on the sampler's field sheet will be reviewed by the lab and compared to previous readings to determine if there had been a localized loss of disinfectant residual.
- iii) The DNV Section Manager of Utilities Construction and Maintenance (SMUCM) or designate and Vancouver Coastal Health (North Shore) will be notified immediately by the laboratory.
- iv) Arrangements will be made for the immediate collection of a repeat sample (including, where possible, samples from upstream and downstream of the positive sample location).
- v) Vancouver Coastal Health (North Shore) will be contacted and the need for a "boil water" advisory will be evaluated.
- vi) If a "boil water" advisory is warranted, the public notification process as outlined in the Water Quality Monitoring And Reporting Plan For The GVRD and Member Municipalities will be followed.

- vii) The lab will contact the DNV with repeat sample results and the results of the species identification tests. The DNV will contact Vancouver Coastal Health (North Shore) to evaluate these results and to determine whether the advisory can be lifted.

- ***Chemical Contamination***

In the event of chemical contamination in the DNV water distribution system, Vancouver Coastal Health (North Shore) will be immediately notified. Immediate steps will be taken to isolate the contaminated area, and the level of contamination will be determined through water sampling and testing. The chemical will be identified, and any public health risk factors associated with the chemical presence will be determined. Through consultation with Vancouver Coastal Health (North Shore), a public advisory will be carried out.

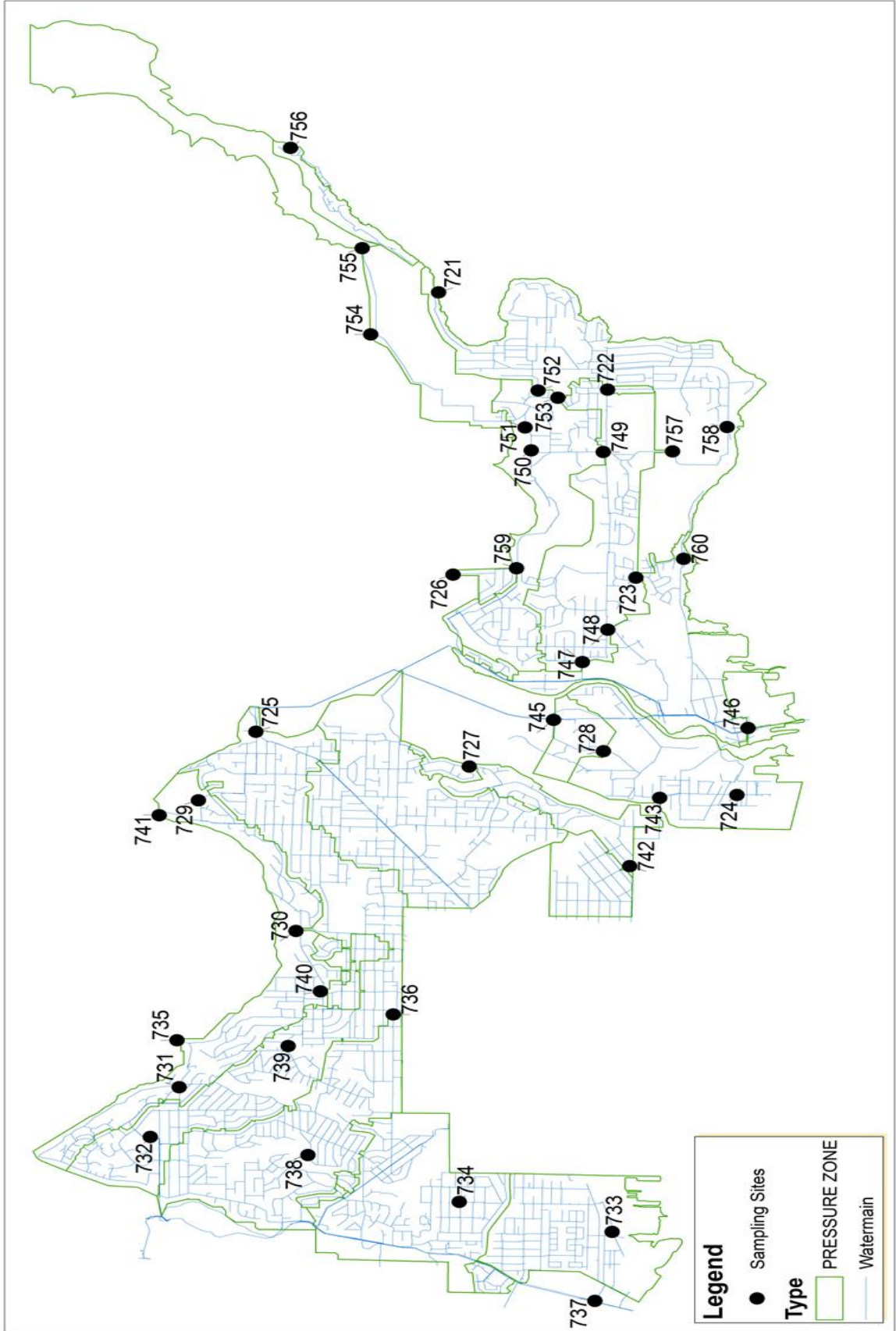
- ***Source Water Event***

In 2007, a task force comprised of Metro Vancouver, Vancouver Coastal Health, Fraser Health and member municipalities developed a communications template for source water major turbidity events. The template outlines the responsibilities of Metro Vancouver, the Health Authorities, and municipalities for notification and communications to each other and the public.

- ***GVRD Disinfection Failure***

Upon notification by GVWD Operations that an interruption in disinfection has occurred, DNV Water Quality personnel will immediately commence monitoring free chlorine residual levels at strategic locations and will contact the Vancouver Coastal Health (North Shore) if continued loss of residual is observed.

APPENDIX A: Water System, Sample Sites and Sample Schedule



Published: June 15, 2011
 Date: 11/1/2009

District of North Vancouver Water Quality Sampling Sites

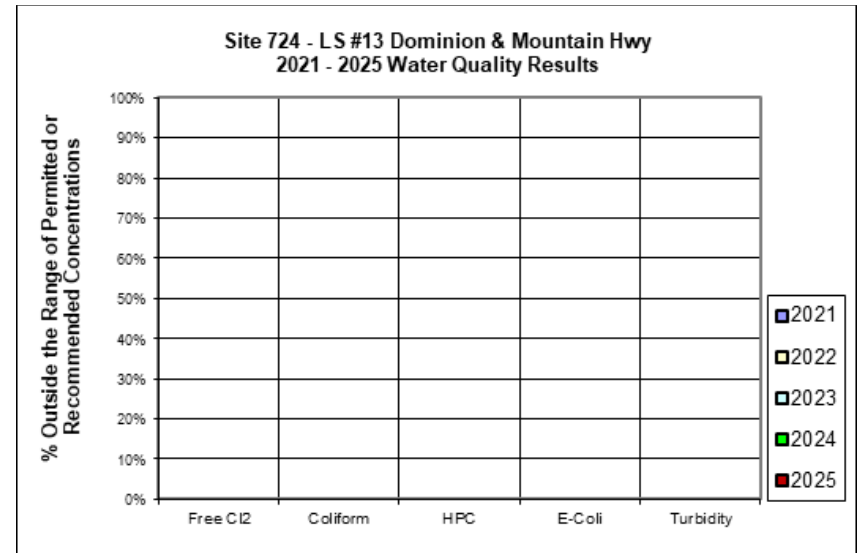
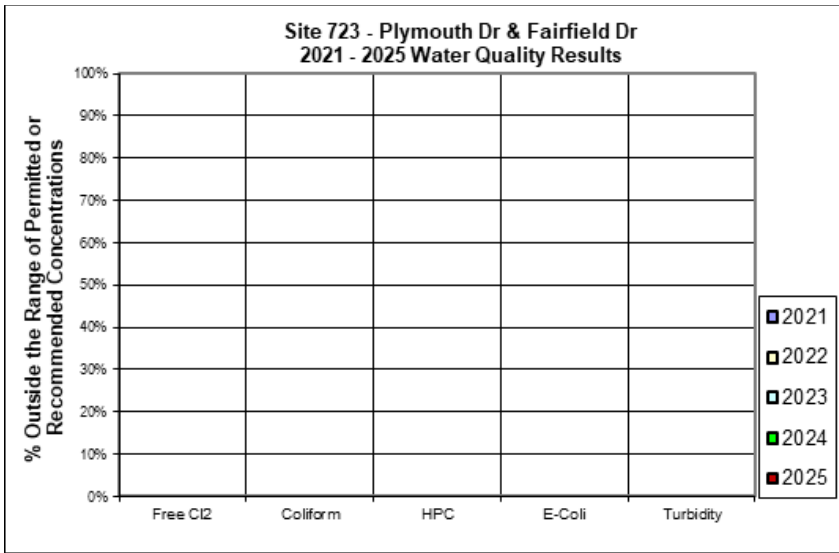
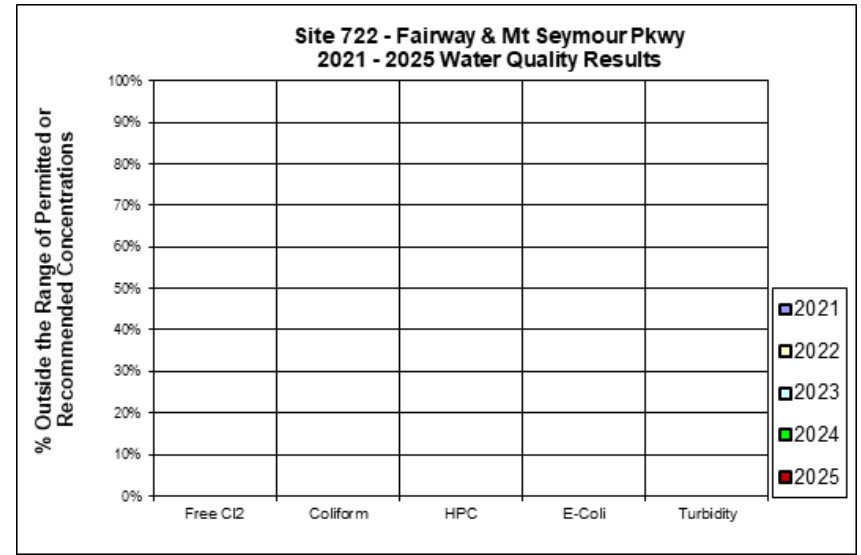
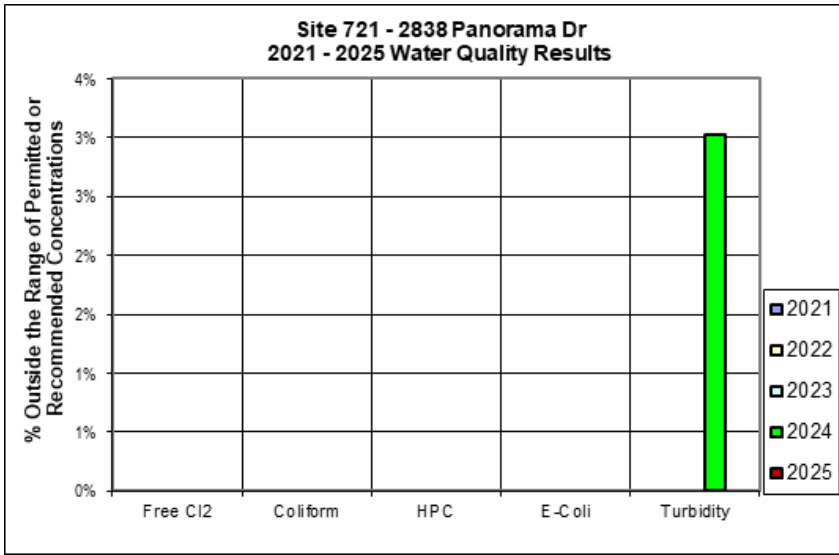
GIS DEPARTMENT
 GEOSPATIAL INFORMATION SYSTEMS
 1000-1015
 1000-1015

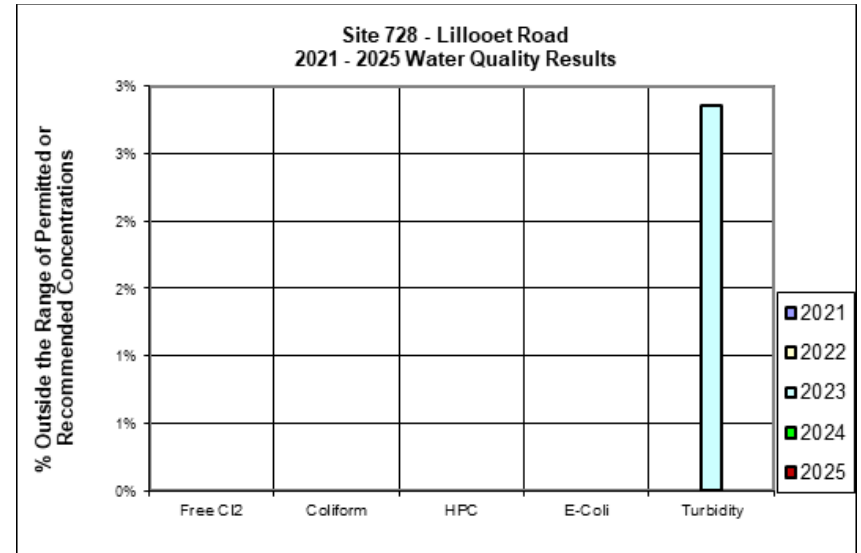
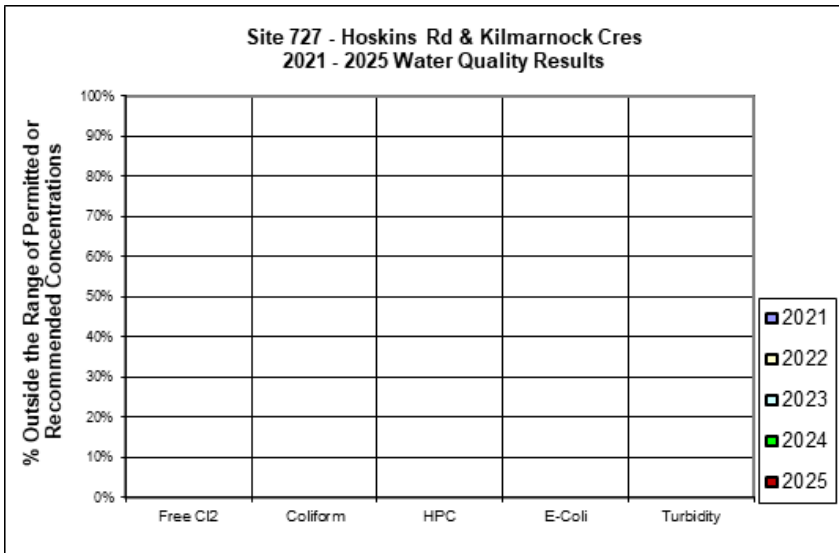
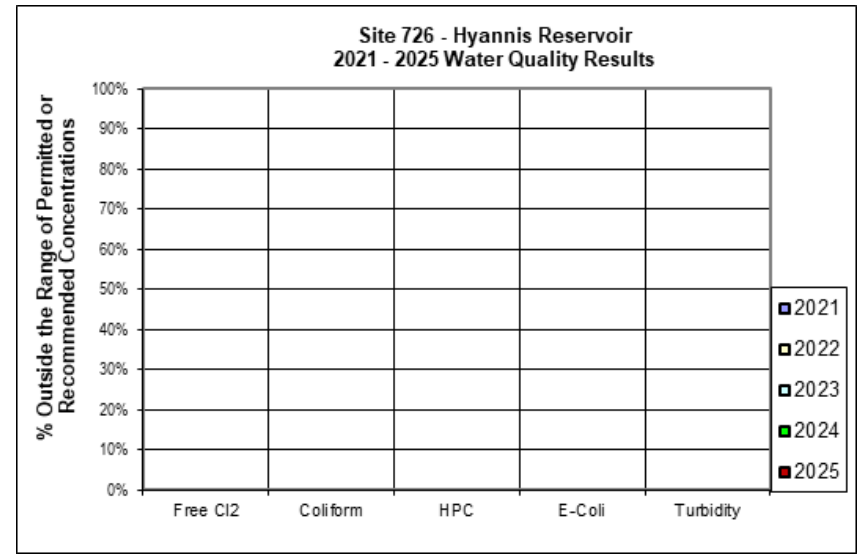
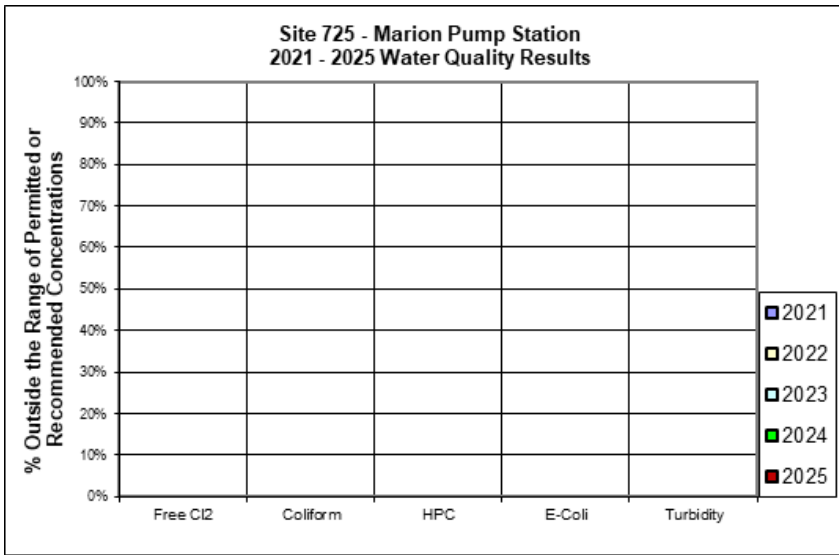
Site I.D.	Lab No.	Sample Site Location	Flow Rate
1	721	2838 Panorama Dr.	Dead End
2	722	Fairway & Mt Seymour Pkwy.	Medium
3	723	Plymouth Dr & Fairfield Dr.	Medium
4	724	LS #13 Dominion & Mountain Hwy.	Low
5	725	Marion Pump Station	Source
6	726	Hyannis Reservoir	Low
7	727	Hoskins Rd & Kilmarnock Cres.	Medium
8	728	Lillooet Road	Low
9	729	Ramsay Pump Station	Medium
10	730	Braemar Reservoir	Low
11	731	Skyline Pump Station	Medium
12	732	Sarita Pump Station	Source
13	733	McKeen Ave & Phillip Ave.	Dead End
14	734	Pemberton Heights	Low
15	735	Prospect Reservoir	Low
16	736	PRV #4 (W Queens Rd. & Lonsdale Ave.)	Low
17	737	N. of BC Rail Tracks just East of Lower Cap. Rd.	Source
18	738	3906 Sunnycrest Dr.	Medium
19	739	376 Cartelier Rd.	Medium
20	740	PRV #5 (190 E. Braemar Rd.)	Medium
21	741	Mountain Hwy Reservoir (North up access Rd., N. of Mountain Hwy.)	Low
22	742	PRV # 11 (Across from 1086 Cloverly St.)	Source
	743	Not in Use	
	744	Not in use	
23	745	PRV # 13 (N. of 1388 Monashee Drive (Capilano College))	Source
24	746	PRV #17 (60 Riverside Dr.)	Source
25	747	PRV # 19 (1231 Lennox St.)	Source
26	748	PRV # 16 (2592 Bendale Rd.)	Low
27	749	PRV # 18 (3728 Mt. Seymour Parkway)	Medium
	750	Not in Use	Medium
	751	Not in Use	Low
28	752	PRV # 25 (4068 Deane Pl.)	Medium
29	753	PRV # 20 (1501 Theta Ct.)	Low
30	754	Woodlands reservoir (2.1 km N. of Hixon Rd. on Indian River Dr.)	Low
31	755	PRV # 26 3.7 km NE of Hixon Rd. on Indian River Dr.	Low
32	756	End of Fire Lane # 7 (Firelane #7 is 3.6 km from Hixon Rd.)	Dead End
33	757	PRV 200 m south of 879 Roche Point Dr.	Medium
34	758	3860 Dollarton Hwy.	Medium
35	759	Hyannis Pump Station (1919 Hyannis drive)	Low
36	760	3000 Block Dollarton Hwy.	Dead End

**DISTRICT OF NORTH VANCOUVER
WATER QUALITY SAMPLING AND REPORTING
CALENDAR - 2025**

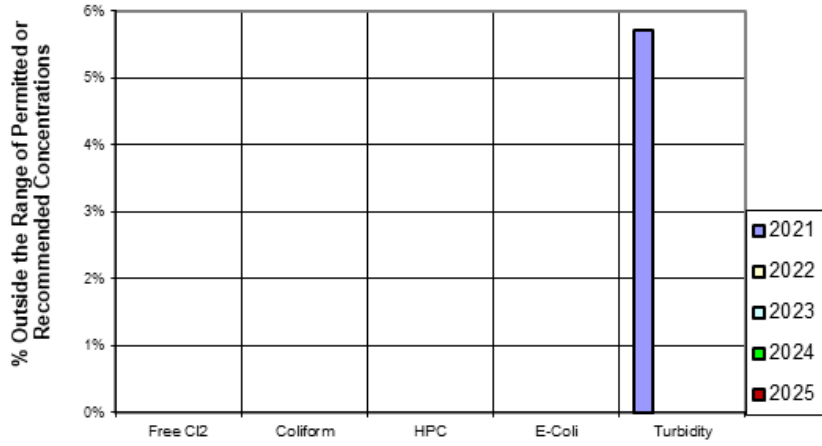
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<u>DISTRIBUTION SYSTEM SAMPLING</u>												
bacteria, turbidity, chlorine, temperature (twice weekly)	xx xx	xx xx	xx xx	xx xx	xx xx	xx xx	xx xx	xx xx	xx xx	xx xx	xx xx	xx xx
HAA's, THM's, pH (quarterly)	X			X				X			X	
metals - copper, lead, zinc (semi-annually)						X						X
<u>NOTIFICATION</u>												
Annual Report:												
Annual report send to MHO					X							
MHO responds						X						
Staff notification to Council						X						
Post on dnv.org						X						

APPENDIX B: Five Year Results by Water Quality Sample Site 2021 - 2025

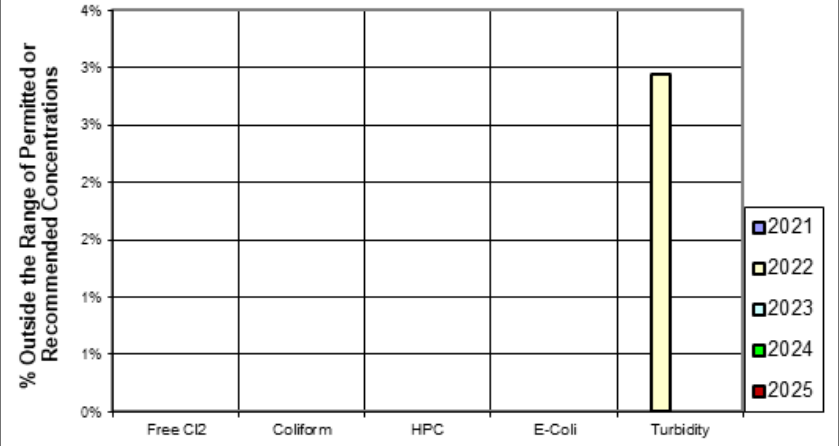




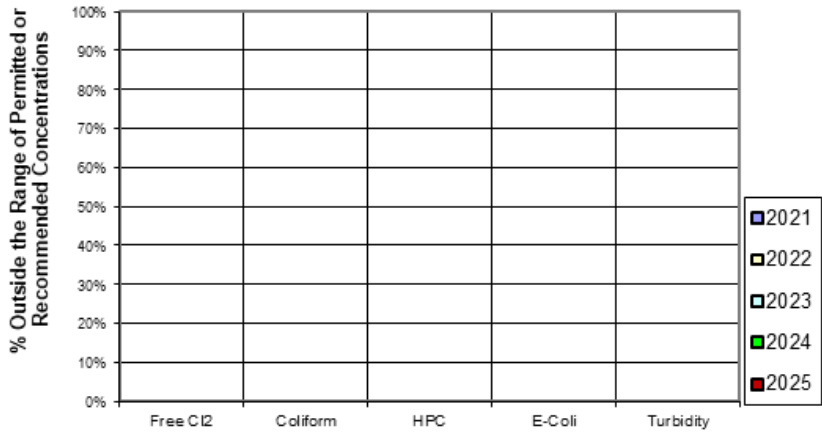
**Site 729 - Ramsay Pump Station
2021 - 2025 Water Quality Results**



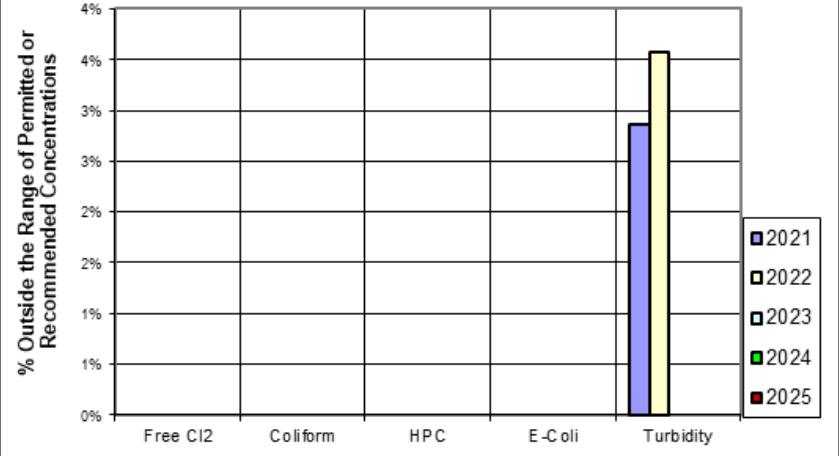
**Site 730 - Braemar Reservoir
2021 - 2025 Water Quality Results**



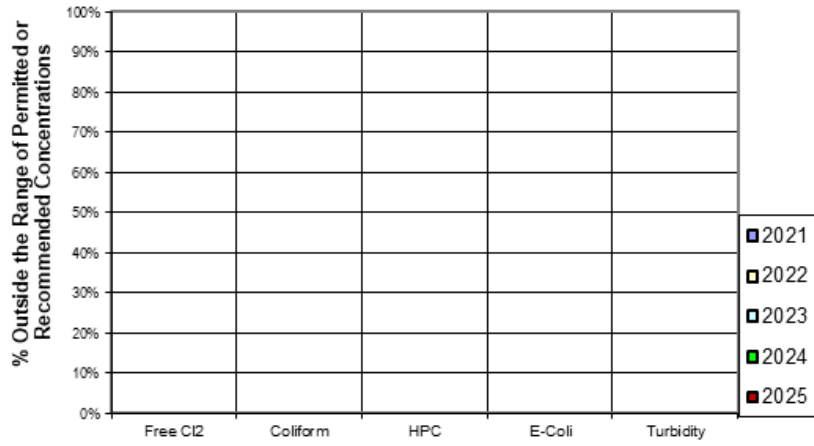
**Site 731 - Skyline Pump Station
2021 - 2025 Water Quality Results**



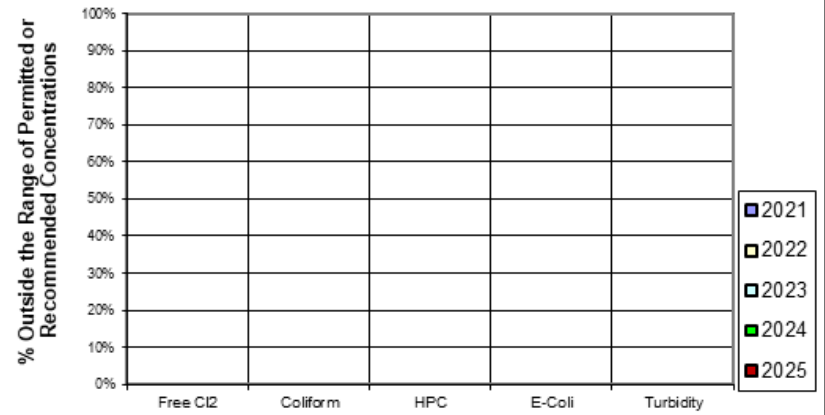
**Site 732 - Sarita Pump Station
2021 - 2025 Water Quality Results**



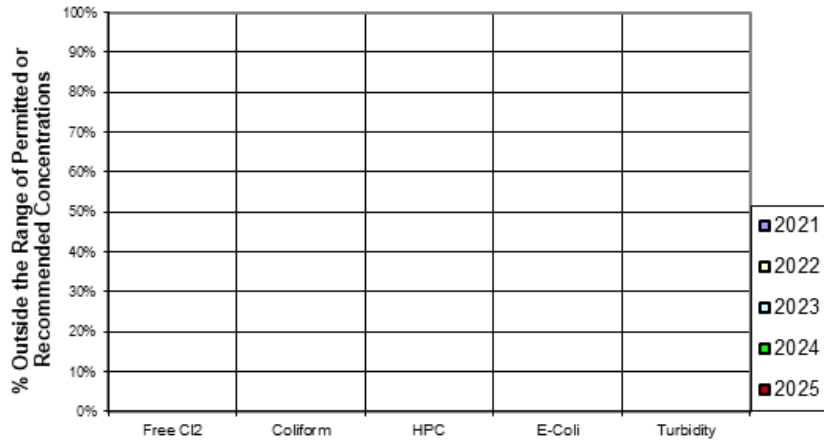
Site 733 - McKeen Ave & Phillip Ave
2021 - 2025 Water Quality Results



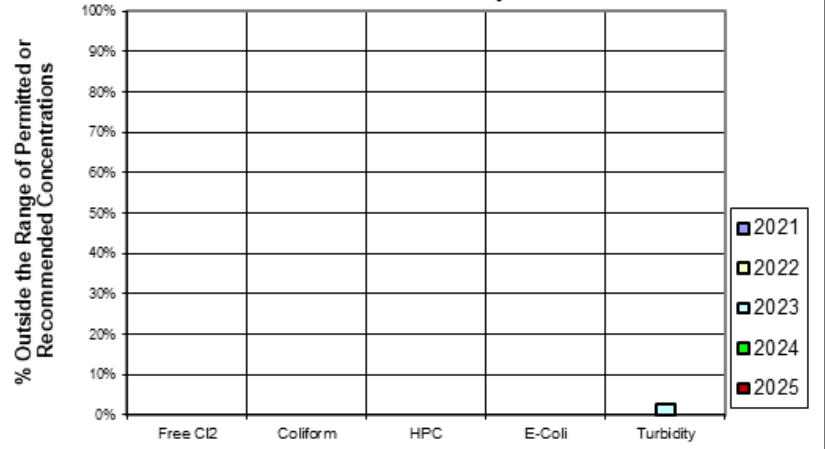
Site 734 - Pemberton Heights
2021 - 2025 Water Quality Results



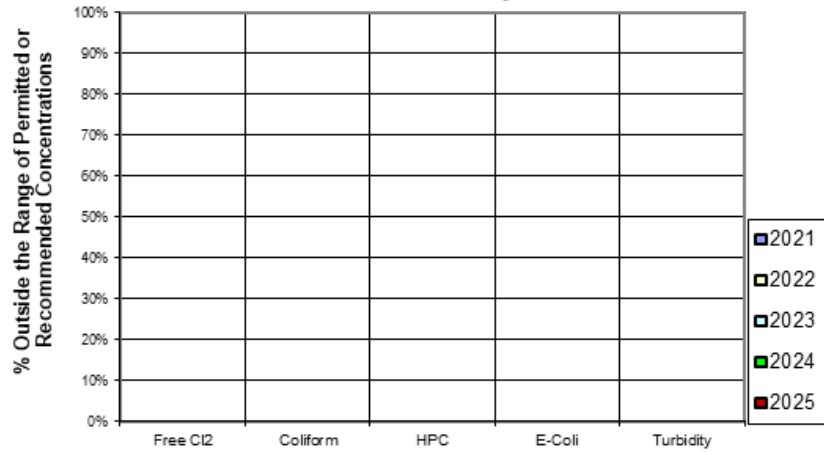
Site 735 - Prospect Reservoir
2021 - 2025 Water Quality Results



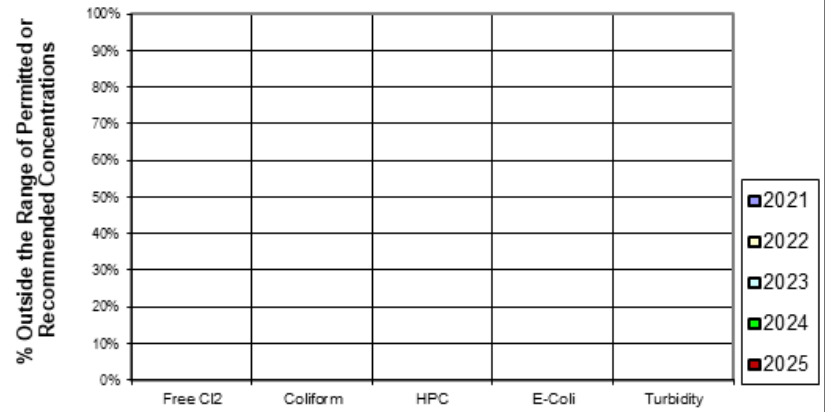
Site 736 - W Queens Rd & Lonsdale Ave
2021 - 2025 Water Quality Results



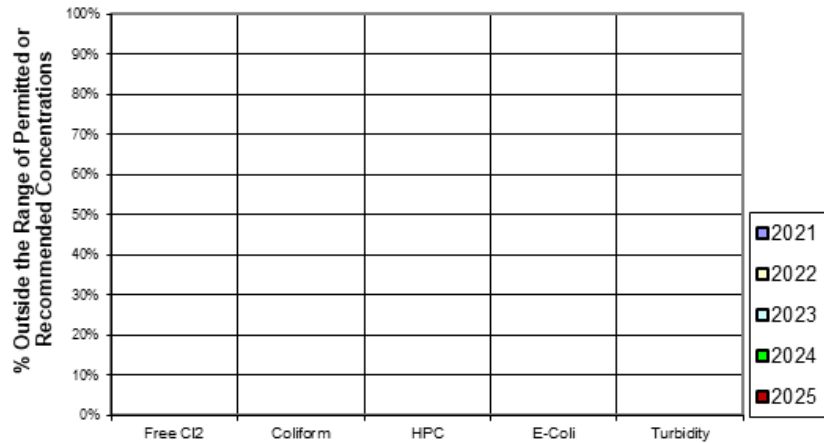
**Site 737 - N. of BC Rail Tracks on Lower Cap. Rd
2021 - 2025 Water Quality Results**



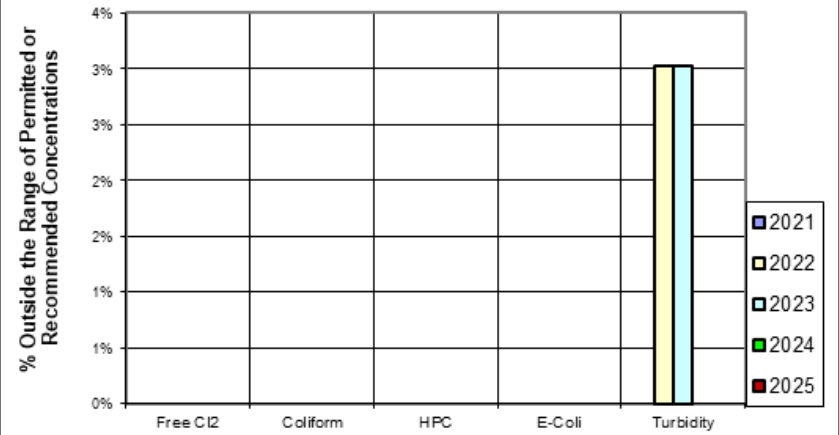
**Site 738 - 3906 Sunnycrest Dr
2021 - 2025 Water Quality Results**



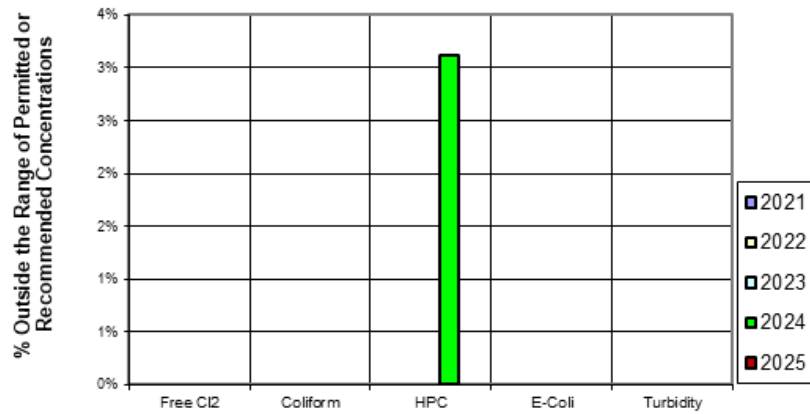
**Site 739 - 376 Cartelier Rd.
2021 - 2025 Water Quality Results**



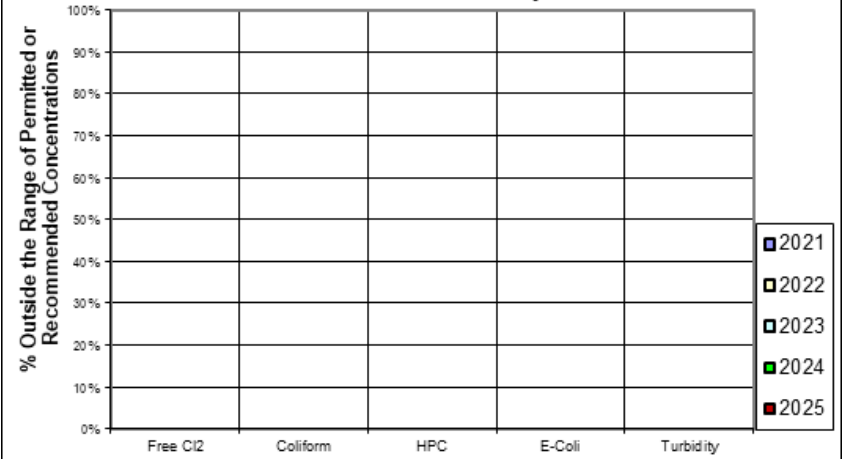
**Site 740 - PRV #5 (190 E. Braemar Rd.)
2021 - 2025 Water Quality Results**



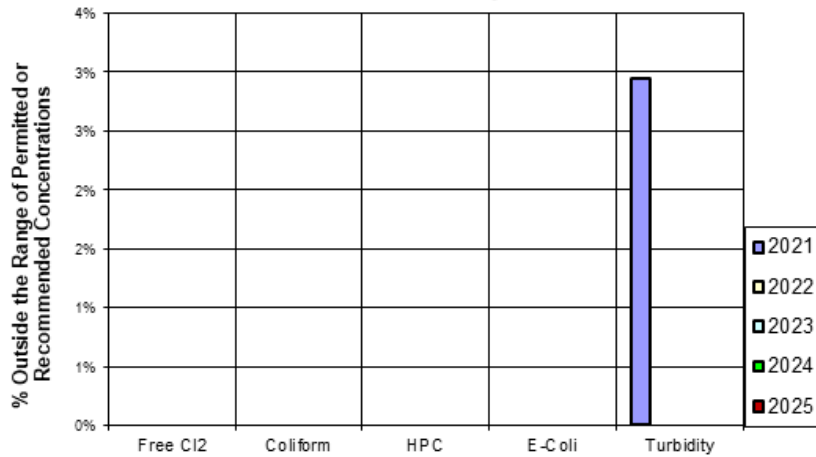
Site 741 - Mountain Hwy Reservoir, North of Mountain Hwy
2021 - 2025 Water Quality Results



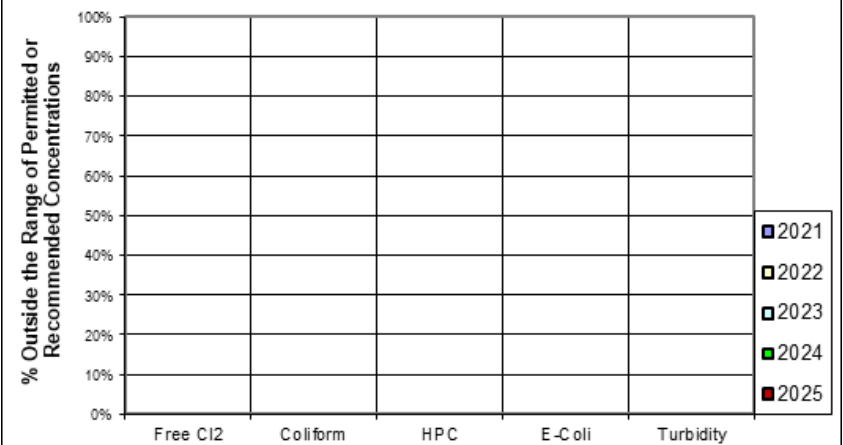
Site 742 - PRV # 11 (Across from 1086 Cloverly St.)
2021 - 2025 Water Quality Results



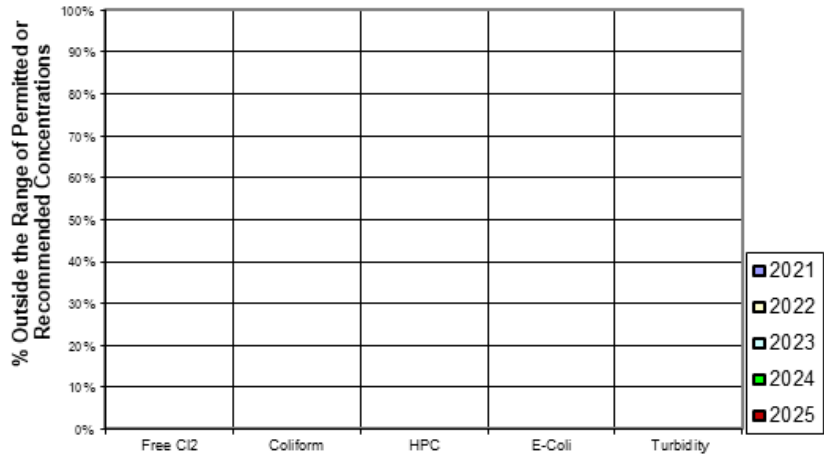
Site 745 - PRV # 13 (N. of 1388 Monashee Dr, Cap College)
2021 - 2025 Water Quality Results



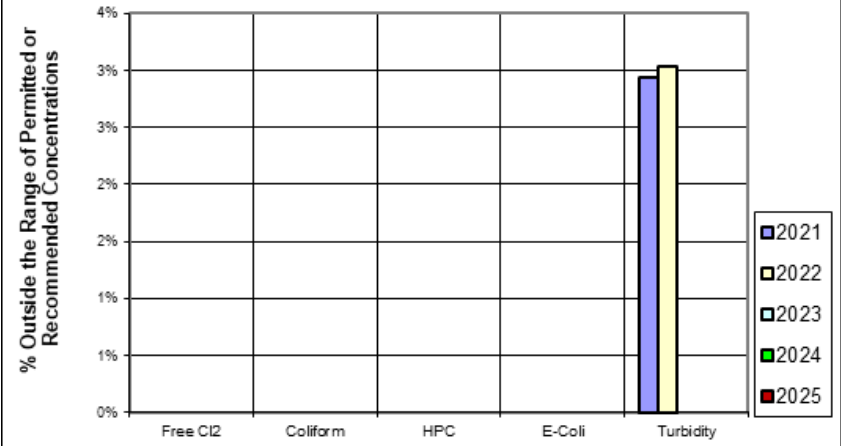
Site 746 - PRV #17 (60 Riverside Dr.)
2021 - 2025 Water Quality Results



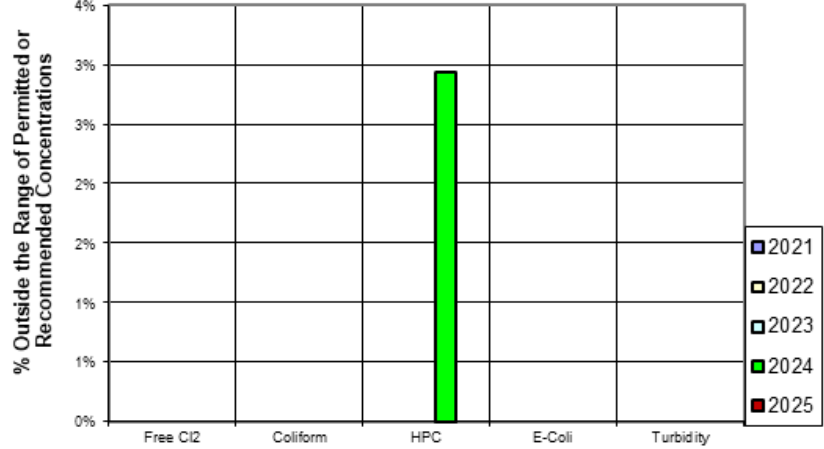
Site 747 - PRV # 19 (1231 Lennox St.)
2021 - 2025 Water Quality Results



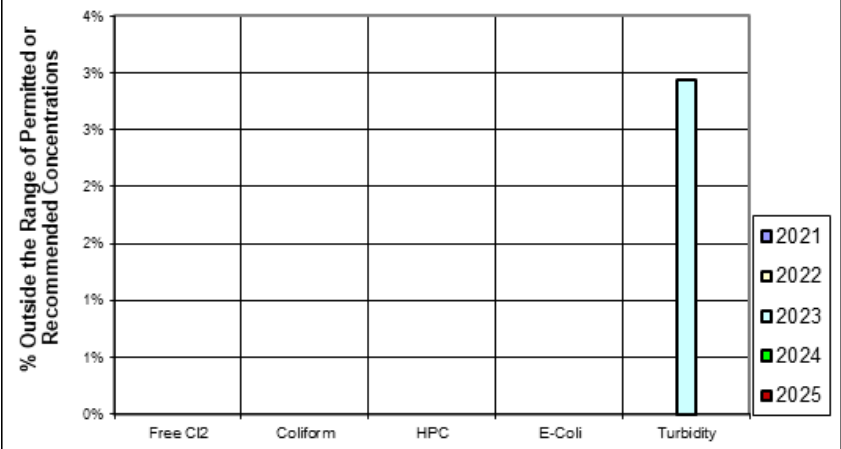
Site 748 - PRV # 16 (2592 Bendale Rd)
2021 - 2025 Water Quality Results



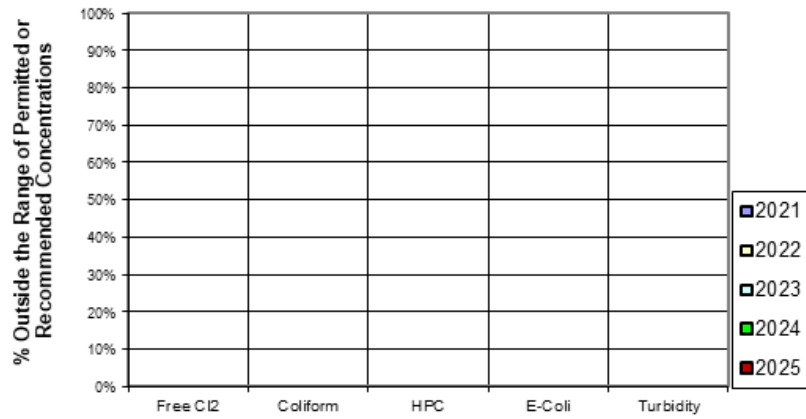
Site 749 - PRV # 18 (3728 Mt. Seymour Parkway)
2021 - 2025 Water Quality Results



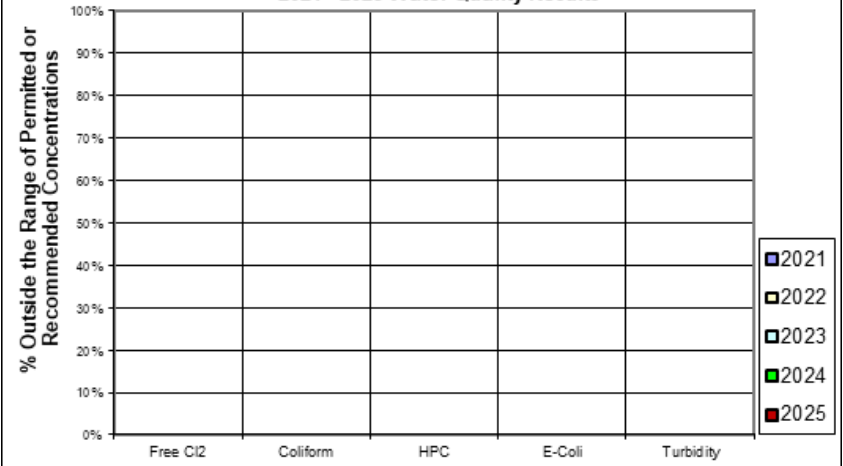
Site 752 - PRV # 25 (4068 Deane Pl.)
2021 - 2025 Water Quality Results



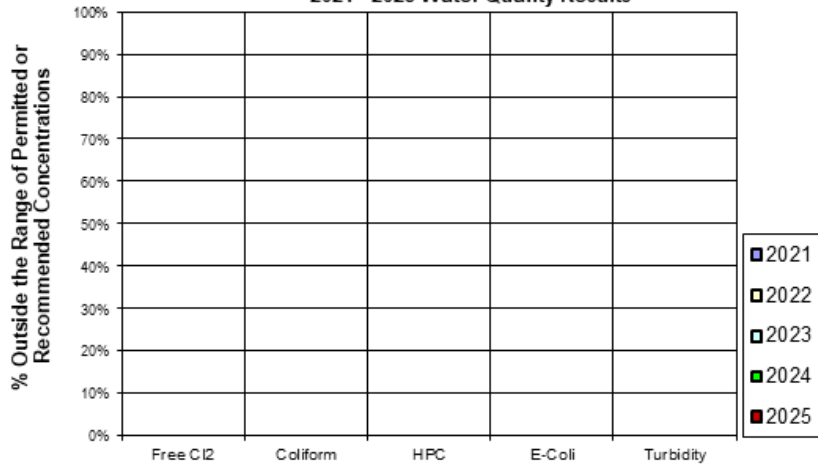
**Site 753 - PRV # 20 (1501 Theta Ct.)
2021 - 2025 Water Quality Results**



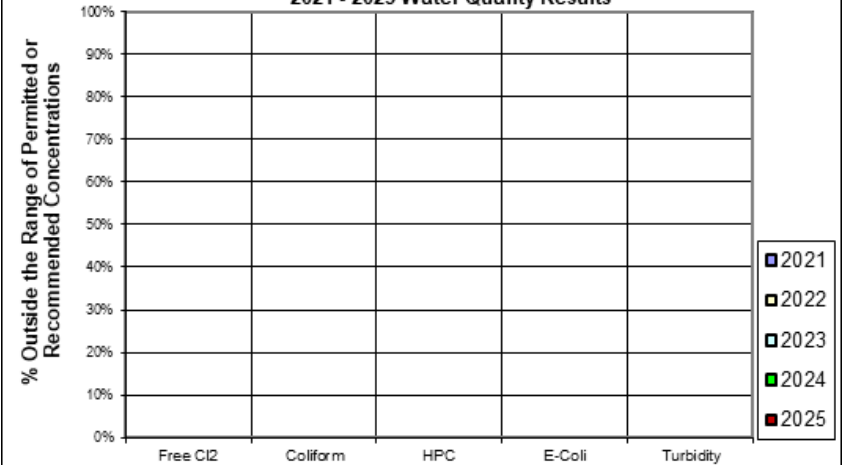
**Site 754 - Woodlands Res, 2.1 km N. Hixon Rd on Indian River Dr
2021 - 2025 Water Quality Results**

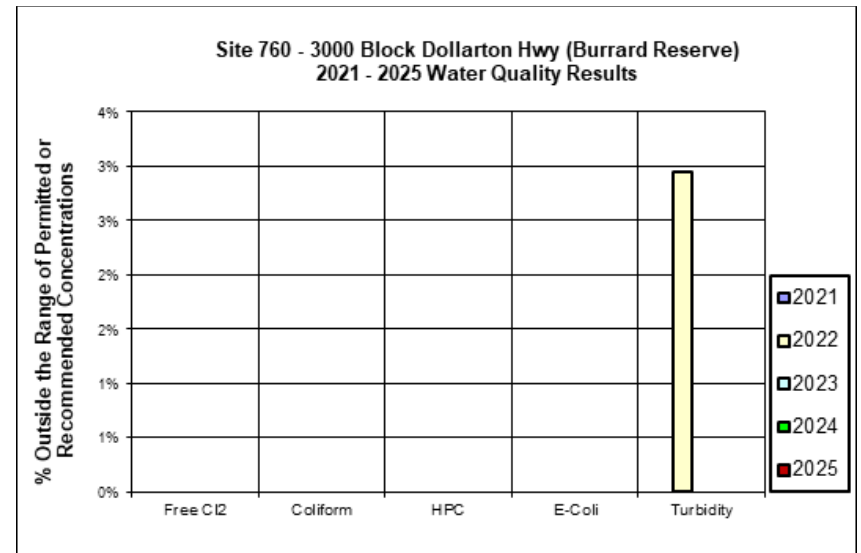
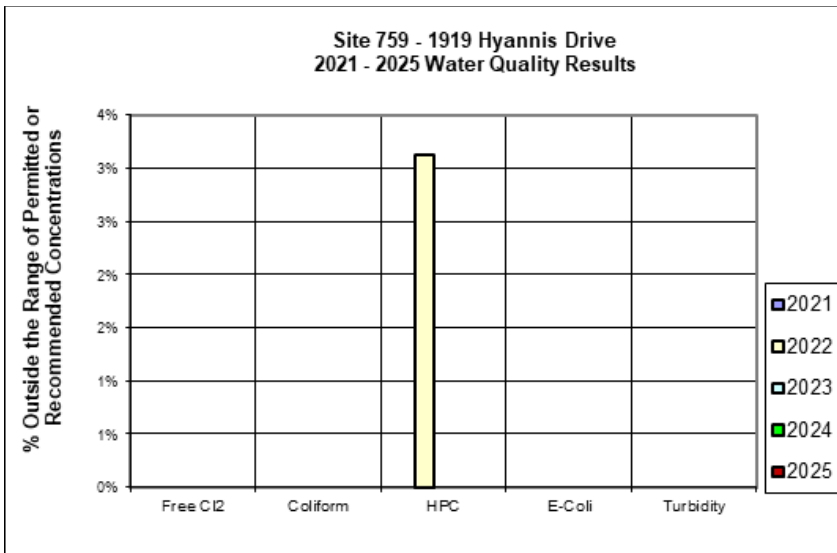
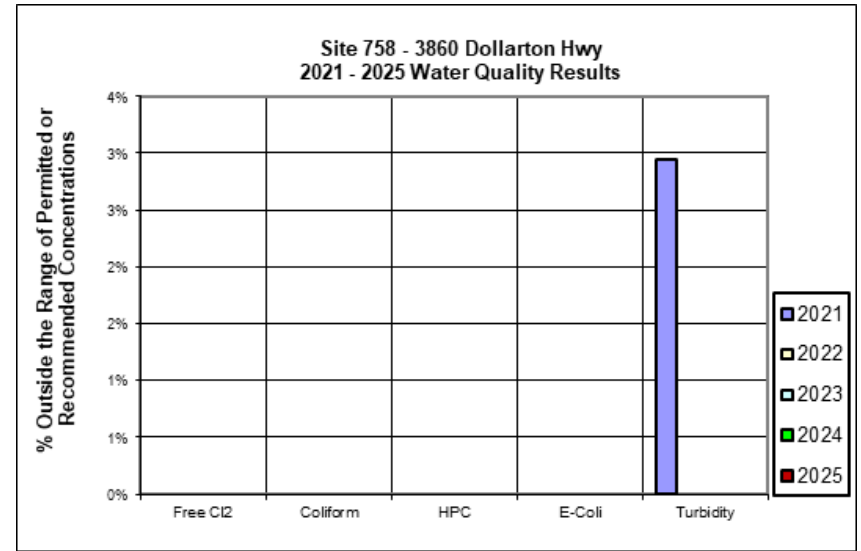
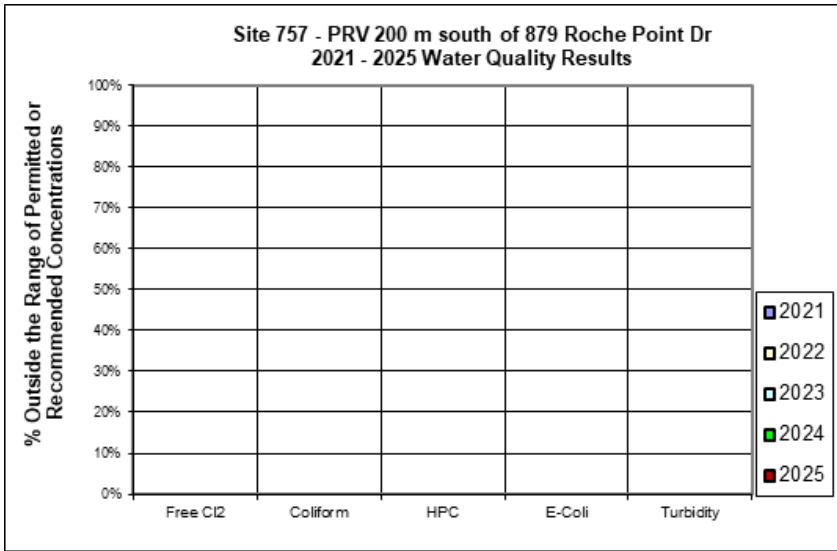


**Site 755 - PRV # 26 3.7 km NE of Hixon Rd. on Indian River Dr.
2021 - 2025 Water Quality Results**



**Site 756 - End of Fire Lane # 7, Firelane #7 - 3.6 km from Hixon Rd.
2021 - 2025 Water Quality Results**





APPENDIX C: Vancouver Coastal Health Recommendations on Flushing of Faucets



Vancouver Coastal Health
800 – 601 West Broadway
Vancouver, BC V5Z 4C2

May 12th, 2022

Water System Operators

Re: Metals in Drinking Water – “Flush” Message in Annual Reports

Vancouver Coastal Health (VCH) is requiring all water systems to include the following health message with your next annual reports to your users:

Contamination of drinking water with Lead can have health impacts over time, and in BC the source is most likely to be plumbing fixtures within a building. Anytime the water in a particular faucet has not been used for six hours or longer, “flush” your cold-water pipes by running the water until you notice a change in temperature. This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer. The more time water has been sitting in your home’s pipes, the more Lead it may contain.

Use only water from the cold-tap for drinking cooking, and especially making baby formula. Hot water is likely to contain higher levels of Lead.

The two actions recommended above are very important to the health of your family. They will probably be effective in reducing Lead levels because most of the Lead in household water usually comes from the plumbing in your house, not from the local water supply.

Conserving water is still important. Rather than just running the water down the drain you could use the water for things such as watering your plants.

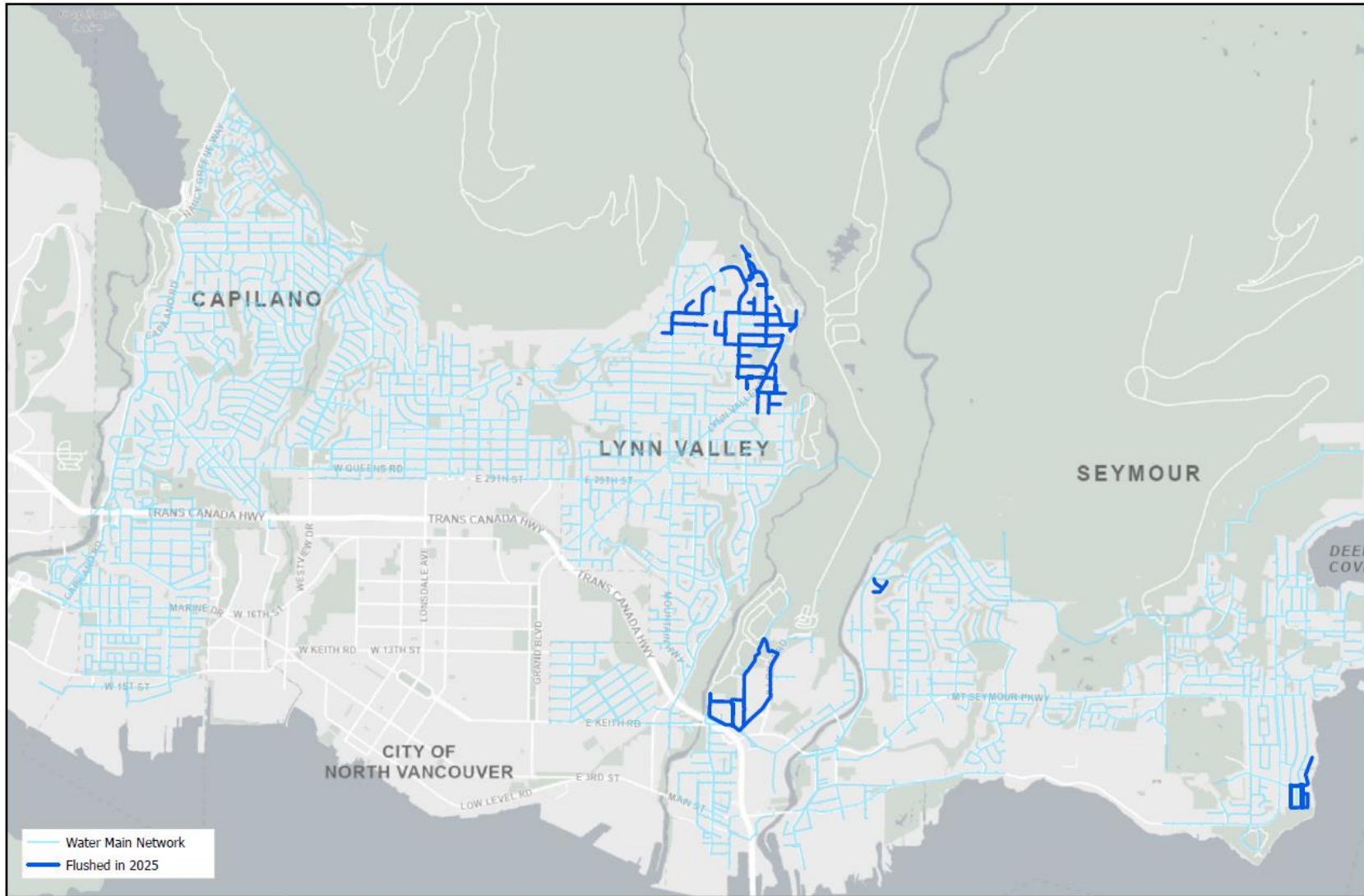
If you have any questions, please contact you closest Drinking Water Officer noted below.

Sincerely,

Dr. Michael Schwandt
Medical Health Officer
Vancouver Coastal Health

- (604) 983-8793 Central Coast
- (604) 983-8793 North Shore
- (604) 485-3310 Powell River
- (604) 233-3147 Richmond
- (604) 885-5164 Sechelt
- (604) 892-2293 Squamish
- (604) 675-3800 Vancouver
- (604) 932-3202 Whistler

APPENDIX D: Flushed Watermains in 2025

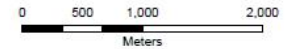


— Water Main Network
— Flushed in 2025



WATERMAIN FLUSHING 2025

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Scale - 1:52,000



Published: April 29, 2026

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