

Sticks Allison Water System

2025 Annual Report



Introduction

This report provides a summary of the Sticks Allison Water Service for 2025 and includes a description of the service, summary of the water supply, demand and production, drinking water quality, operations highlights, capital project updates and financial report.

Service Description

The community of Sticks Allison is a rural residential development located on the north side of Galiano Island in the Southern Gulf Islands Electoral Area which was originally serviced by a private water utility. In 1996 the service converted to the Capital Regional District (CRD). The Sticks Allison water service (Figure 1) is made up of 38 parcels encompassing a total area of approximately 23 hectares. Of the 38 parcels, 37 were customers connected to the water system in 2025.

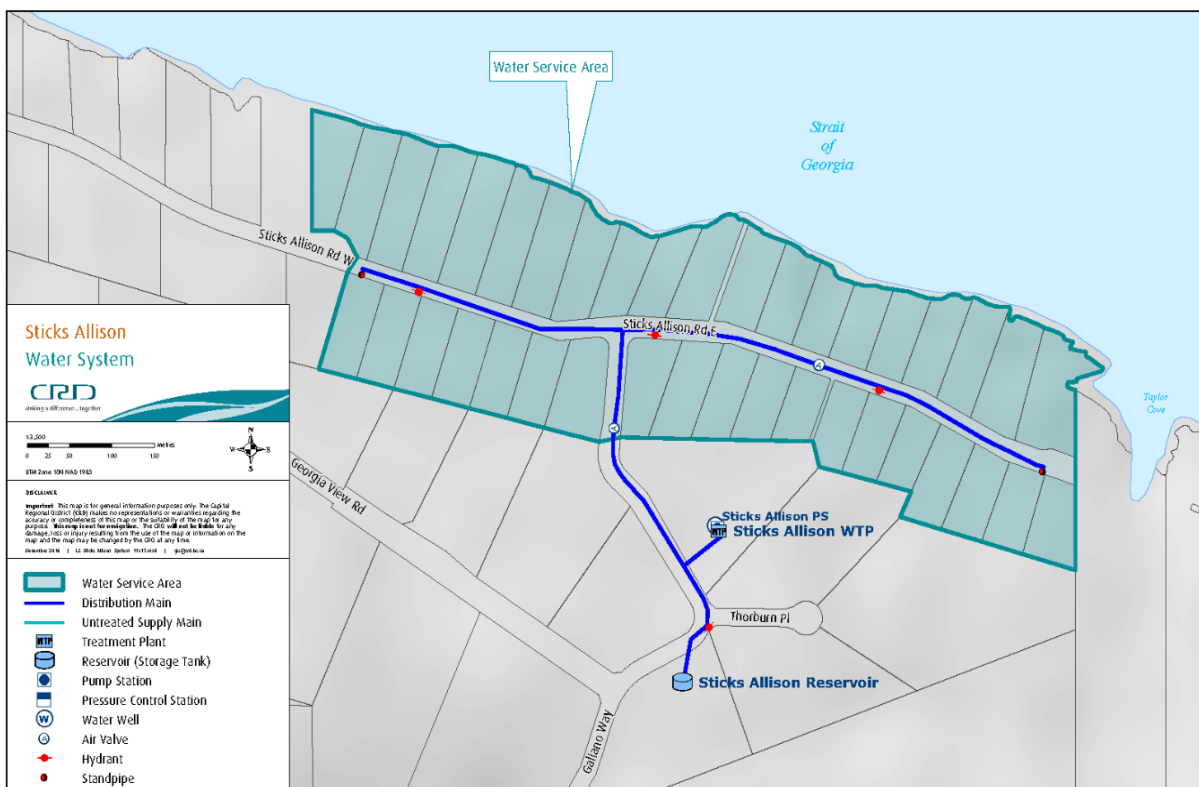


Figure 1: Map of Sticks Allison Water System

The Sticks Allison water system is primarily comprised of:

- One groundwater well, related pumping and control equipment and building.
- Disinfection process equipment (ultraviolet light and chlorine).
- One steel storage tank (total volume is 90 cubic metres).
- Distribution system (approx. 1,400 metres of water mains).
- Other water system assets: Service connections and meters, five hydrants, two standpipes, 10 gate valves, Supervisory Control and Data Acquisition (SCADA) system and auxiliary generator.

Water Supply

Groundwater supply monthly water levels are highlighted for 2025 in Figure 2. Groundwater levels for the most part during 2025 are within the typical historical range.

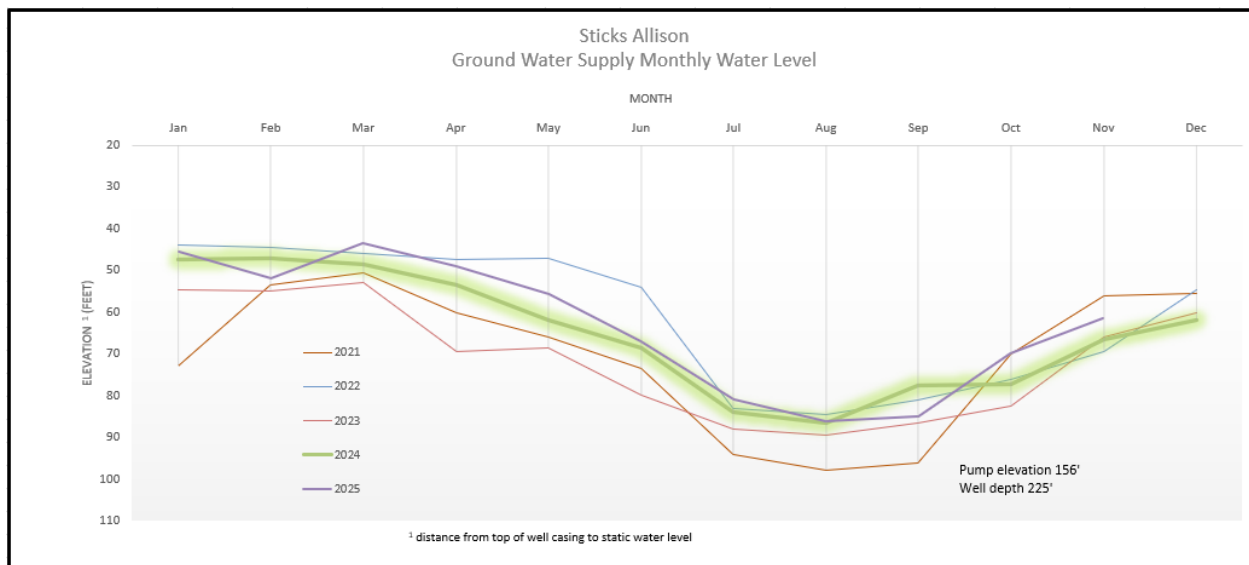


Figure 2: Sticks Allison Monthly Groundwater Water Level

Water Production and Demand

Referring to Figure 3; 5,556 cubic metres of water were extracted (water production) from the ground water source in 2025. This is a 6% decrease from the previous year and a 15% decrease from the five-year average. Water demand (customer water billing) for the service totaled 4,145 cubic metres of water; a 7% decrease from the previous year and a 18% decrease from the five-year average.

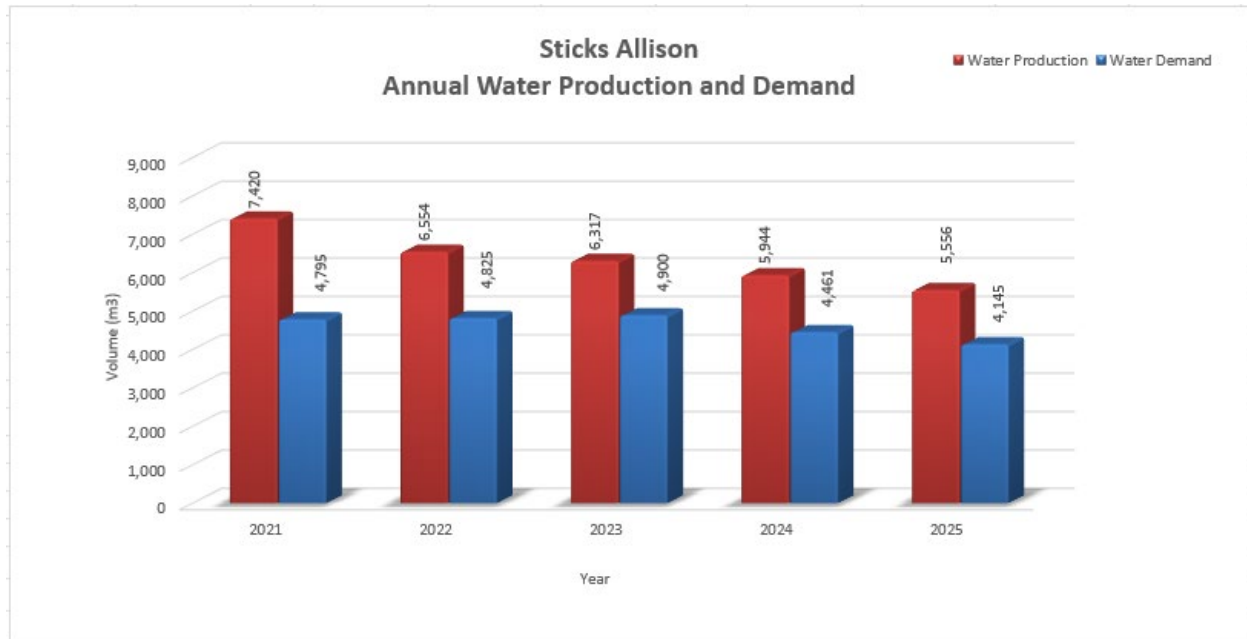


Figure 3: Sticks Allison Water Service Annual Water Production and Demand

The difference between annual water production and annual water demand is referred to as non-revenue water and can include water system leaks, water system maintenance and operational use (e.g. water main flushing, filter system backwashing), potential unauthorized use and fire-fighting use.

The 2025 non-revenue water (1,411 cubic metres) represents approximately 25% of the total water production for the service area. However, approximately 80 cubic metres can be attributed to operational use, resulting in a non-revenue water of approximately 24%. Non-revenue water for 2025 continues to suggest there is likely ongoing water system leak or leaks that require further investigation.

Figure 4 below illustrates the monthly water production for 2025 along with the historical water production information. The monthly water production trends are typical for small water systems such as the Sticks Allison water system.

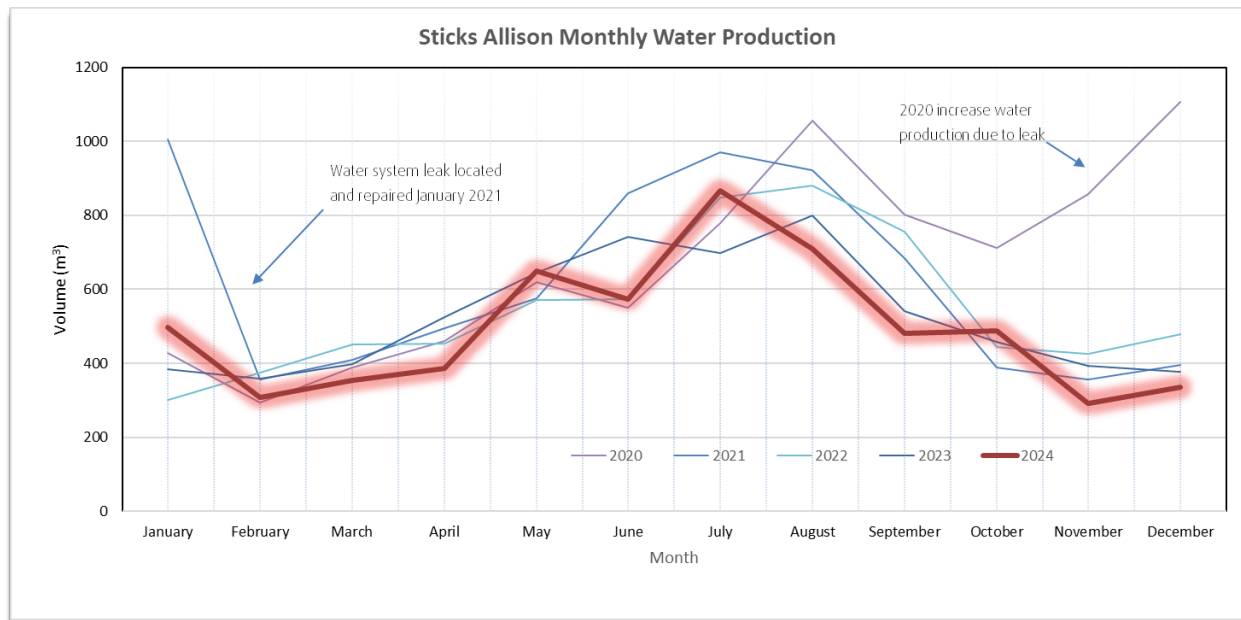


Figure 4: Sticks Allison Water Service Monthly Water Production

Drinking Water Quality

Staff completed the water quality monitoring program at Sticks Allison in accordance with regulatory requirements and system specific risks. Samples were collected at regular intervals from the raw water, the treatment plant, and multiple locations within the distribution system. Analyses were conducted either at the CRD Water Quality Laboratory or at external laboratories for specialized parameters such as disinfection by-products and metals.

The water system performed well in 2025 and consistently supplied safe drinking water to its customers. The groundwater well provided generally good quality source water, containing only low concentrations of iron and manganese. However, accumulation at the end of the distribution system occasionally exacerbated these metals, resulting in regular exceedances of the aesthetic objectives in the Guidelines for Canadian Drinking Water Quality (GCDWQ) at the system extremities. Elevated iron or manganese can cause brown or yellow discoloration.

The storage tank experienced chronically low chlorine residuals due to limited turnover.

The data below provides a summary of the water quality characteristics in 2025:

Raw Water:

- The Sticks Allison well water was free of the indicator bacteria *E. coli* but recorded once a very low concentration of total coliform bacteria (November 19).
- The raw water had a median manganese concentration of 12.5 µg/L which is consistent with previous years. It was also below the aesthetic objectives in the GCDWQ. The median annual iron concentration was 24.6 µg/L and therefore well below the aesthetic objective.
- The raw well water had a median hardness of 34.4 mg/L (CaCO₃). pH was not tested in 2025 but is typically between 7.5 and 8.0.

- The raw water turbidity was consistently under 1 Nephelometric Turbidity Unit (NTU) with an annual median of 0.20 NTU.

Treated Water:

- The treated water was safe to drink and free of *E.coli* and total coliform bacteria.
- The treated water turbidity was normally below 1 NTU, with an annual median of 0.43 NTU. On October 15, the sample from the treated water tap at the well site recorded a turbidity of 1.7 NTU. This was likely caused by inadequate flushing of the sampling tap before collecting the sample.
- Iron and manganese concentrations in the distribution system regularly exceeded the GCDWQ aesthetic limits at the east end of Sticks Allison Road throughout most of the year. Although manganese exceeded the aesthetic limit, it did not reach the health limit, though levels approached it in November. Because the raw water does not contain elevated iron or manganese, these exceedances are attributable to accumulation at the end of the system where water turnover and sediment removal are insufficient. Similar conditions were likely present at the west end of Sticks Allison Road, although this location was not sampled. No customer complaints were received. Operators conducted regular spot flushing, but the program may need to be expanded to address this ongoing metal accumulation at the system's extremities.
- The annual average levels of the disinfection by-product total trihalomethanes (TTHM) were well below the maximum allowable concentration. Haloacetic acids (HAA) were not tested in 2025 but are typically low when TTHM are low.
- Free chlorine residuals in the distribution system ranged from 0.05 to 1.24 mg/L, with a median of 0.25 mg/L, indicating that secondary disinfection was occasionally insufficient at the system extremities. The storage tank, in particular, exhibited persistently low chlorine concentrations and periodically elevated heterotrophic plate count (HPC) results (harmless background bacteria), indicating reduced drinking water quality.
- Water temperature exceeded briefly the GCDWQ aesthetic objective in July.

Table 1 and 2 below provide a summary of the 2025 raw and treated water test results.

Water quality data collected from this drinking water system can be reviewed on the CRD website:

<https://www.crd.bc.ca/about/data/drinking-water-quality-reports>

Operational Highlights

- Replaced faulty 2" isolation valve on well effluent line to reservoir – May/June
- UV reactor failure and procurement of replacement unit in July
- Communications failure and operational response in November

Capital Projects Updates

No capital works were planned or completed in 2025. In alignment with the approved capital plan, funds were held for replacement of failed/leaking service lines, which did not end up being utilized.

Financial Report

Please refer to the attached 2025 Statement of Operations and Reserve Balances.

Revenue includes parcel taxes (*Transfers from Government*), fixed user fees (*User Charges*), and interest on savings (*Interest earnings*), a transfer from the *Operating Reserve Fund*, and miscellaneous revenue such as late payment charges (*Other revenue*).

Expenses include all costs of providing the service. General Government Services include budget preparation, financial management, utility billing and risk management services. *CRD Labour and Operating Costs* include CRD staff time as well as the costs of equipment, tools, and vehicles. *Other Expenses* include all other costs to administer and operate the water system, including insurance, supplies, water testing and electricity.

The difference between Revenue and Expenses is reported as *Net revenue* (expenses). Any transfers to or from capital or reserve funds for the service (*Transfers to own funds*) are deducted from this amount and it is then added to any surplus or deficit carry forward from the prior year, yielding an *Accumulated Surplus* (or deficit). In alignment with *Local Government Act* Section 374 (11), any deficit must be carried forward and included in next year's financial plan.

Table 1

Table 1: 2025 Summary of Raw Water Test Results, Sticks Allison Water System										
PARAMETER		2025 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2015-2024 RESULTS			
Parameter	Units of	Annual	Samples	Range		≤ = Less than or equal to	Median	Samples	Range	
Name	Measure	Median	Analyzed	Minimum	Maximum				Median	Analyzed
ND means Not Detected by analytical method used										
Physical Parameters										
Carbon, Total Organic	mg/L	Not tested in 2025					5.2	1	5.2	5.2
Conductivity @ 25 C	uS/cm	439	5	419	454		438	5	391	444
Hardness as CaCO ₃	mg/L	34.35	4	28.7	35.6	No Guideline Required	31.25	26	26.6	41.3
pH	pH units	Not tested in 2025				7.0 - 10.5 AO	7.885	10	7.4	8.3
Turbidity	NTU	0.2	12	0.15	0.8		0.25	84	0.1	0.95
Water Temperature	°C	Not tested in 2025					10.5	54	9.5	12
Metals										
Aluminum	ug/L as Al	5.25	4	4	6.8	2900 MAC / 100 OG	5.05	26	3.4	24.6
Antimony	ug/L as Sb	< 0.5	4	< 0.5	< 0.5	6 MAC	< 0.5	26	< 0.5	< 0.5
Arsenic	ug/L as As	0.485	4	0.46	0.5	10 MAC	0.515	26	0.45	0.81
Barium	ug/L as Ba	< 1	4	< 1	< 1	1000 MAC	< 1	26	< 1	1.7
Beryllium	ug/L as Be	< 0.1	4	< 0.1	< 0.1		< 0.1	26	< 0.1	< 0.1
Bismuth	ug/L as Bi	< 1	4	< 1	< 1		< 1	26	< 1	< 1
Boron	ug/L as B	382	4	373	411	5000 MAC	364	26	325	433
Cadmium	ug/L as Cd	< 0.01	4	< 0.01	< 0.01	7 MAC	< 0.01	26	< 0.01	0.032
Calcium	mg/L as Ca	11.6	4	9.76	12.1	No Guideline Required	10.7	26	9.04	15.5
Chromium	ug/L as Cr	< 1	4	< 1	< 1	50 MAC	< 1	26	< 1	< 1
Cobalt	ug/L as Co	< 0.2	4	< 0.2	< 0.2		< 0.2	26	< 0.2	< 0.2
Copper	ug/L as Cu	1.445	4	1.16	1.53	2000 MAC / ≤ 1000 AO	1.46	26	0.65	10.9
Iron	ug/L as Fe	24.55	4	19.1	49.3	≤ 100 AO	32.95	26	12.5	395
Lead	ug/L as Pb	0.24	4	0.22	0.47	5 MAC	0.205	26	< 0.2	0.64
Lithium	ug/L as Li	12.45	4	12.2	12.8		12.5	19	11.2	14.1
Magnesium	mg/L as Mg	1.235	4	1.05	1.42	No Guideline Required	1.09	26	0.635	1.33
Manganese	ug/L as Mn	12.5	4	9.2	15.6	120 MAC / ≤ 20 AO	16.4	26	7.4	84.7
Molybdenum	ug/L as Mo	3.8	4	3.7	4.2		4	26	3.5	5.5
Nickel	ug/L as Ni	< 1	4	< 1	< 1		< 1	26	< 1	1.8
Potassium	mg/L as K	0.2725	4	0.254	0.3		0.283	26	0.258	0.326
Selenium	ug/L as Se	< 0.1	4	< 0.1	< 0.1	50 MAC	< 0.1	26	< 0.1	< 0.1
Silver	ug/L as Ag	< 0.02	4	< 0.02	< 0.02	No Guideline Required	< 0.02	26	< 0.02	< 0.02
Sodium	mg/L as Na	87.8	4	85.1	94.1	≤ 200 AO	83.95	26	80.4	90.3
Strontium	ug/L as Sr	46.05	4	43.2	47.7	7000 MAC	44.35	26	38	65.1
Sulphur	mg/L as S	9.5	4	8.7	10.7		9.05	26	7.3	10.9
Tin	ug/L as Sn	< 5	4	< 5	< 5		< 5	26	< 5	< 5
Titanium	ug/L as Ti	< 5	4	< 5	< 5		< 5	26	< 5	< 5
Thallium	ug/L as Tl	< 0.01	4	< 0.01	< 0.01		< 0.01	26	< 0.01	< 0.01
Uranium	ug/L as U	< 0.1	4	< 0.1	< 0.1	20 MAC	< 0.1	26	< 0.1	0.22
Vanadium	ug/L as V	< 5	4	< 5	< 5		< 5	26	< 5	< 5
Zinc	ug/L as Zn	6.75	4	5.8	7.7	≤ 5000 AO	7.45	26	< 5	34.3
Zirconium	ug/L as Zr	< 0.1	4	< 0.1	< 0.1		< 0.1	26	< 0.1	0.16
Non-Metallic Inorganic Chemicals										
Silicon	ug/L as Si	6765	4	6330	6920		6615	26	6080	7920
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	< 1	12	< 1	1		< 1	119	< 1	15
<i>E. coli</i>	CFU/100 mL	< 1	12	< 1	< 1		< 1	119	< 1	2
Hetero. Plate Count, 7 day	CFU/1 mL	Not tested in 2025								
Parasites										
<i>Cryptosporidium</i> , Total oocysts	oocysts/100 L	Not analyzed in 2025				Zero detection desirable				
<i>Giardia</i> , Total cysts	cysts/100 L	Not analyzed in 2025				Zero detection desirable				

Table 2

Table 2: 2025 Summary of Treated Water Test Results, Sticks Allison Water System										
PARAMETER		2025 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2015-2024 ANALYTICAL RESULTS			
Parameter	Units of Measure	Annual Median	Samples Analyzed	Range		≤ = Less than or equal to	Median	Samples Analyzed	Range	
Name	Measure	Median	Analyzed	Minimum	Maximum		Median	Analyzed	Minimum	Maximum
ND means Not Detected by analytical method used										
Physical Parameters										
Carbon, Total Organic	mg/L as C	2.15	4	2.1	2.6		2.5	31	1.9	5.95
Hardness as CaCO3	mg/L	40.7	6	34	43.9		34.25	28	29.7	40
pH	No Units	Not tested in 2025					7.9	22	7.6	8.3
Turbidity	NTU	0.425	12	0.25	1.7	>1 MAC	0.35	120	0.2	4.8
Water Temperature	°C	10.55	96	2.7	15.5	≥15 AO	10.5	2110	0.45	19
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	< 1	48	< 1	< 1	0 MAC	< 1	347	< 1	64
<i>E. coli</i>	CFU/100 mL	< 1	48	< 1	< 1	0 MAC	< 1	347	< 1	< 1
Hetero. Plate Count, 7 day	CFU/1 mL	130	11	50	3700	No Guideline Required	80	83	< 10	11000
Disinfectants										
Disinfectants										
Chlorine, Free Residual	mg/L as Cl2	0.25	96	0.05	1.24		0.33	2126	0	1.88
Chlorine, Total Residual	mg/L as Cl2	Not tested in 2025					0.38	1957	0.03	1.98
Disinfection By-Products										
Trihalomethanes (THMs)										
Bromodichloromethane	ug/L	11	4	9	12		15	32	2.6	19.3
Bromoform	ug/L	< 1	4	< 1	< 1		< 1	32	0.431	1.6
Chloroform	ug/L	16.5	4	10	22		24	32	4.9	29
Chlorodibromomethane	ug/L	4.4	4	4.3	5.5		5.8	32	1.4	13
Total Trihalomethanes	ug/L	31.5	4	24	39	100 MAC	37	31	8.9	56
Haloacetic Acids (HAAs)										
HAA5	ug/L	Not tested in 2022				80 MAC				
Metals										
Aluminum	ug/L as Al	9.05	6	8.3	18.4	2900 MAC / 100 OG	13.1	28	5	39.4
Antimony	ug/L as Sb	< 0.5	6	< 0.5	< 0.5	6 MAC	< 0.5	28	< 0.5	< 0.5
Arsenic	ug/L as As	0.495	6	0.46	0.55	10 MAC	0.56	28	0.46	0.89
Barium	ug/L as Ba	1.2	6	1.1	2.6	1000 MAC	1.2	28	< 1	2.2
Beryllium	ug/L as Be	< 0.1	6	< 0.1	< 0.1		< 0.1	28	< 0.1	< 0.1
Bismuth	ug/L as Bi	< 1	6	< 1	< 1		< 1	28	< 1	< 1
Boron	ug/L as B	376.5	6	344	400	5000 MAC	369.5	28	319	416
Cadmium	ug/L as Cd	< 0.01	6	< 0.01	< 0.01	7 MAC	< 0.01	28	< 0.01	0.035
Calcium	mg/L as Ca	14.4	6	12.1	15.6	No Guideline Required	12.2	28	10.7	14.5
Chromium	ug/L as Cr	< 1	6	< 1	< 1	50 MAC	< 1	28	< 1	< 1
Cobalt	ug/L as Co	< 0.2	6	< 0.2	< 0.2		< 0.2	28	< 0.2	< 0.5
Copper	ug/L as Cu	30.95	6	12.3	50.3	2000 MAC / ≤ 1000 AO	15.65	28	0.87	49
Iron	ug/L as Fe	105.55	6	53.7	301	≤ 100 AO	149.5	28	17.9	EXG 747
Lead	ug/L as Pb	1.4	6	0.6	1.54	5 MAC	0.855	28	0.22	2.32
Lithium	ug/L as Li	12.3	6	11.7	12.7		12.4	20	10.7	13.5
Magnesium	mg/L as Mg	1.085	6	0.924	1.3	No Guideline Required	0.8715	28	0.476	1.3
Manganese	ug/L as Mn	35.5	6	14.5	116	120 MAC / ≤ 20 AO	47.65	28	6.8	200
Molybdenum	ug/L as Mo	3.15	6	1.2	3.7		3.6	28	1	5.6
Nickel	ug/L as Ni	< 1	6	< 1	< 1		< 1	28	< 1	< 1
Potassium	mg/L as K	0.276	6	0.261	0.299		0.293	28	0.27	0.351
Selenium	ug/L as Se	< 0.1	6	< 0.1	0.12	50 MAC	< 0.1	28	< 0.1	0.11
Silicon	ug/L as Si	7050	6	6270	7950		6910	28	6340	7950
Silver	ug/L as Ag	< 0.02	6	< 0.02	< 0.02	No Guideline Required	< 0.02	28	< 0.02	< 0.02
Sodium	mg/L as Na	85.85	6	79.3	98	≤ 200 AO	84.25	28	79.6	92
Sulphur	ug/L as S	9.15	6	8.9	10		8.9	28	6.7	11.6
Strontium	ug/L as Sr	58.65	6	51.6	61.6	7000 MAC	53.1	28	46.3	60.3
Tin	ug/L as Sn	< 5	6	< 5	< 5		< 5	28	< 5	< 5
Thallium	ug/L as Tl	< 0.01	6	< 0.01	< 0.01		< 0.01	28	< 0.01	< 0.05
Titanium	ug/L as Ti	< 5	6	< 5	< 5		< 5	28	< 5	< 5
Uranium	ug/L as U	< 0.1	6	< 0.1	< 0.1	20 MAC	< 0.1	28	< 0.1	0.16
Vanadium	ug/L as V	< 5	6	< 5	< 5		< 5	28	< 5	< 5
Zinc	ug/L as Zn	12.7	6	9.5	27.2	≤ 5000 AO	14.15	28	5.9	34.1
Zirconium	ug/L as Zr	< 0.1	6	< 0.1	0.19		0.135	28	< 0.1	< 0.5