APPENDIX H

Minimum Sampling Requirements based on Source Water Type

Table of Contents

H1 Sampling Requirements for Municipal Public Drinking Water Supplies using Surface Water

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Turbidity		
Turbidity	Raw water	Continuous at no more than 5 minute intervals or daily grab
	Individual filter effluent	Continuous at no more than 5 minute intervals
	Filtered water directed to waste	Continuous at no more than 5 minute intervals or grab sample during filter-to-waste
	Distribution system sample points	Weekly grab sample
Primary Disinfection (Note: Parameters to be monitored depend on the disinfection method used)		
Free Chlorine		
Free Chlorine Residual	CT control point (water entering distribution system)	Continuous at no more than 5 minute intervals – must meet CT design criteria
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals - must meet CT design criteria
UV		
UV (IT)	UV chamber	Continuous at no more than 5 minute intervals – minimum UV dose of 40 mJ/cm^2 unless an alternate dose accepted by the Department.

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Chlorine Dioxide		
Chlorine Dioxide	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
Ozone		
Ozone	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
	Air Quality (off-gas destruct unit)	Continuous at no more than 5 minute intervals* *Should be interlocked with the ozone generator controls to shut down system if excess ozone is detected
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Secondary Disinfection (Note: Parameters to be monitored depend on the disinfection method used)		
Free Chlorine		
Free Chlorine Residual	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Chloramines		
Combined Chlorine Residual	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Microbial Quality		
Total Coliforms and *E. coli* (present/absent)	Water entering the distribution system	Weekly grab sample
	Distribution system sample points	Weekly grab sample
Viruses	Raw water	As requested by the Department
	Water distribution system	As requested by the Department
Giardia and Cryptosporidium	Raw water	As requested by the Department
	Water distribution system	As requested by the Department
Cyanobacteria	Raw water	Visual monitoring at least weekly for evidence of bloom formation from May to October.

<table>
<tr><th>Water Quality Parameters</th><th>Sample Location</th><th>Minimum Sampling Frequency</th></tr>
<tr><td rowspan="2">Cyanobacterial toxins - Total Microcystins</td><td>Raw water</td><td>During a bloom

Minimum of every 5 years as part of full health-related parameter suite (during warmest month)</td></tr>
<tr><td>Treated water</td><td>During a bloom

Minimum of every 5 years as part of full health-related parameter suite (during warmest month)</td></tr>
<tr><td colspan="3">Corrosion Monitoring Program</td></tr>
<tr><td>pH
Alkalinity
Conductivity
Temperature
Chlorine or chloramine residual
Corrosion inhibitor residual (if used)</td><td>Point of entry and representative locations within the distribution system based on population served:

<table><tr><td>Population Served</td><td># of distribution samples</td></tr><tr><td><100</td><td>1</td></tr><tr><td>101-500</td><td>2</td></tr><tr><td>501-3,300</td><td>3</td></tr><tr><td>3,301-10,000</td><td>4</td></tr><tr><td>10,001-100,000</td><td>6</td></tr><tr><td>>100, 000</td><td>10</td></tr></table></td><td>Quarterly grab sample</td></tr>
<tr><td>Lead and Copper</td><td colspan="2">As per the “Requirements for Lead and Copper Management Municipal Public Drinking Water Supplies”</td></tr>
</table>

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Process Control		
Water Volume	Raw water entering facility	Continuous at no more than 5 minute intervals -must meet CT/IT design criteria
Free ammonia (as N) – for facilities using chloramination	Select distribution system sample point(s)* *Sampling points should include distribution system storage and dead ends	Weekly
Nitrate/nitrite (as N) – for facilities using chloramination	Select distribution system sample point(s)* *Sampling points should include distribution system storage and dead ends	Weekly
Fluoride – for facilities that add fluoride	Water entering the distribution system	Daily
Disinfection By-products		
Total Trihalomethanes (THMs)	Select distribution system sample point(s) – representative of highest level. Areas in the distribution system with the longest disinfectant retention time.	Quarterly - locational running annual average (lraa) based on a minimum of 4 quarterly samples.
Haloacetic Acids (HAAs)	Select distribution system sample point(s) – where historical data show the highest concentration. Where historical data is not available concentrations shall be monitored in the middle and extremities of the distribution system.	Quarterly - locational running annual average (lraa) based on a minimum of 4 quarterly samples.
Chlorate and chlorite – if using chlorine dioxide	Select distribution system sample point(s) – mid-system and end locations	Quarterly
Chlorate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Bromate – if using ozone	Select distribution system sample point(s) – water entering distribution system	Monthly
Bromate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly
N-Nitrosodimethylamine (NDMA) – if using chloramines for secondary disinfection	Water entering distribution system and far-point in distribution system	Quarterly
N-Nitrosodimethylamine (NDMA) – chlorinated systems	Water entering distribution system.	Quarterly * *After four quarterly samples collected over a year period the Approval Holder may request a reduction to annual sampling if NDMA is not detected in the treated water.

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Treatment Process - Backwash Wastewater Parameters, locations and frequencies in accordance with this standard, the operating approval and the accepted annual monitoring program.		
General Chemical and Physical Quality		
General chemical and physical parameters listed in the Guidelines for Monitoring Public Drinking Water Supplies Part I	Raw and treated water	Minimum annually
Manganese	Raw water (prior to treatment) Entering the distribution system Distribution system	Quarterly * The Approval Holder may request a reduction in sample frequency if it is determined that manganese is not a parameter of concern for the water supply.
Guidelines for Canadian Drinking Water Quality		
All health-related parameters in the Guidelines for Canadian Drinking Water Quality	Raw and treated water	Every 5 years unless system assessment report or source water protection plan requires more frequent monitoring.
Source Water Protection		
Parameters as per the source water protection monitoring program	Locations and frequencies in accordance with the source water protection monitoring program.	

H2 Sampling Requirements for Municipal Public Drinking Water Supplies using GUDI Sources not Assigned a Department-Accepted Natural Filtration Log Credit

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Turbidity		
Turbidity	Raw water	Continuous at no more than 5 minute intervals or daily grab
	Individual filter effluent	Continuous at no more than 5 minute intervals
	Filtered water directed to waste	Continuous at no more than 5 minute intervals or grab sample during filter-to-waste
	Distribution system sample points	Weekly grab sample
Primary Disinfection (Note: Parameters to be monitored depend on the disinfection method used)		
Free Chlorine		
Free Chlorine Residual	CT control point (water entering the distribution system)	Continuous at no more than 5 minute intervals – must meet CT design criteria
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
UV		
UV (IT)	UV chamber	Continuous at no more than 5 minute intervals – minimum UV dose of 40mJ/cm^2 unless alternate dose has been accepted by the Department
Chlorine Dioxide		
Chlorine Dioxide	CT control point	Continuous at no more than

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
		5 minute intervals – must meet CT design criteria
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab- must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals – must meet cT design criteria
Ozone		
Ozone	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
	Air Quality (off-gas destruct unit)	Continuous at no more than 5 minute intervals* *Should be interlocked with the ozone generator controls to shut down system if excess ozone is detected
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Secondary Disinfection (Note: Parameters to be monitored depend on the disinfection method used)		
Free Chlorine		
Free Chlorine Residual	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Chloramines		
Combined Chlorine Residual	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Microbial Quality		
Total Coliforms and *E. coli* (present/absent) * During the GUDI assessment if water is distributed for consumption twice weekly sampling is required for water entering the distribution system and distribution system sample points.	Water entering the distribution system	Weekly grab sample
	Distribution system sample points	Weekly grab sample
	Raw water from individual well(s)	As requested by the Department
Viruses	Raw water	As requested by the Department
	Water distribution system	As requested by the Department
Giardia and Cryptosporidium	Raw water	As requested by the Department
	Water distribution system	As requested by the Department

<table>
<tr><th>Water Quality Parameters</th><th>Sample Location</th><th>Minimum Sampling Frequency</th></tr>
<tr><td colspan="3">Corrosion Monitoring Program</td></tr>
<tr><td>pH
Alkalinity
Conductivity
Temperature
Chlorine or chloramine residual
Corrosion inhibitor residual (if used)</td><td>Point of entry and representative locations within the distribution system based on population served:
<table><tr><th>Population Served</th><th># of distribution samples</th></tr><tr><td><100</td><td>1</td></tr><tr><td>101-500</td><td>2</td></tr><tr><td>501-3,300</td><td>3</td></tr><tr><td>3,301-10,000</td><td>4</td></tr><tr><td>10,001-100,000</td><td>6</td></tr><tr><td>>100, 000</td><td>10</td></tr></table></td><td>Quarterly grab sample</td></tr>
<tr><td>Lead and Copper</td><td colspan="2">As per the “Requirements for Lead and Copper Management Municipal Public Drinking Water Supplies”</td></tr>
<tr><td colspan="3">Process Control</td></tr>
<tr><td>Water Volume</td><td>Raw water entering facility</td><td>Continuous at no more than 5 minute intervals- must meet CT/IT design criteria.</td></tr>
<tr><td>Free ammonia (as N) – for facilities using chloramination</td><td>Select distribution system sample point(s)*

*Sampling points should include distribution system storage and dead ends</td><td>Weekly</td></tr>
<tr><td>Nitrate/nitrite (as N) – for facilities using chloramination</td><td>Select distribution system sample point(s)*

* Sampling points should include distribution system storage and dead ends</td><td>Weekly</td></tr>
<tr><td>Fluoride – for facilities that add fluoride</td><td>Water entering the distribution system</td><td>Daily</td></tr>
</table>

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Disinfection By-products		
Total Trihalomethanes (THMs)	Select distribution system sample point(s) – representative of highest level. Areas in the distribution system with the longest disinfectant retention time.	Quarterly - locational running annual average (lraa) based on a minimum of 4 quarterly samples.
Haloacetic Acids (HAAs)	Select distribution system sample point(s) – where historical data show the highest concentration. Where historical data is not available concentrations shall be monitored in the middle and extremities of the distribution system.	Quarterly - locational running annual average (lraa) based on a minimum of 4 quarterly samples.
Chlorate and chlorite – if using chlorine dioxide	Select distribution system sample point(s) – mid-system and end locations	Quarterly
Chlorate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly
Bromate – if using ozone	Select distribution system sample point(s) – water entering distribution system	Monthly
Bromate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly
N-Nitrosodimethylamine (NDMA) – if using chloramines for secondary disinfection	Water entering distribution system and far-point in distribution system	Quarterly

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
N-Nitrosodimethylamine (NDMA) – chlorinated systems	Water entering distribution system.	Quarterly * * After four quarterly samples collected over a year period the Approval Holder may request a reduction to annual sampling if NDMA is not detected in the treated water.
Treatment Process Backwash Water Parameters, locations and frequencies in accordance with this standard, the operating approval and the accepted annual monitoring program.		
General Chemical and Physical Quality		
General chemical and physical parameters listed in the Guidelines for Monitoring Public Drinking Water Supplies Part I	Raw and treated water	Minimum annually
Manganese	Raw water (prior to treatment) Entering the distribution system Distribution system	Twice per year (spring and fall) Quarterly Quarterly * The Approval Holder may request a reduction in sample frequency, if it is determined that manganese is not a parameter of concern for the water supply.

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Guidelines for Canadian Drinking Water Quality		
All health-related parameters in the Guidelines for Canadian Drinking Water Quality	Raw and treated water	Every 5 years unless system assessment report or source water protection plan requires more frequent monitoring
Source Water Protection		
Parameters as per the source water protection monitoring program	Locations and frequencies in accordance with the source water protection monitoring program.	

H3 Sampling Requirements for Municipal Public Drinking Water Supplies using Medium Risk and Low Risk GUDI Sources with a Department-Accepted Natural Filtration Log Credit

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Turbidity		
Turbidity	Individual GUDI well (at wellhead)	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Primary Disinfection (Note: Parameters to be monitored depend on the disinfection method used)		
Free Chlorine		
Free Chlorine Residual	CT control point (water entering the distribution system)	Continuous at no more than 5 minute intervals – must meet CT design criteria
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals or daily grab– must meet CT design criteria
UV		
UV (IT)	UV chamber	Continuous at no more than 5 minute intervals. Minimum UV dose of 40mJ/cm^2 is required unless alternate dose has been accepted by the Department

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Chlorine Dioxide		
Chlorine Dioxide	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
Ozone		
Ozone	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
	Air Quality (off-gas destruct unit)	Continuous at no more than 5 minute intervals* *Should be interlocked with the ozone generator controls to shut down system if excess ozone is detected
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Secondary Disinfection (Note: Parameters to be monitored depend on disinfection method used)		
Free Chlorine		
Free Chlorine Residual	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Chloramines		
Combined Chlorine Residual	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Microbial Quality		
Total Coliforms and *E. coli* (present/absent) * During the GUDI assessment if water is distributed for consumption twice weekly sampling is required for water entering the distribution system and distribution system sample points.	Water entering the distribution system	Weekly grab sample
	Distribution system sample points	Weekly grab sample
	Raw water from individual well(s)	As requested by the Department
Microscopic Particulate Analysis (MPA)	Raw water from each individual GUDI well	Every two years as per GUDI Protocol (Appendix A)
Viruses	Raw water	As requested by the Department
	Water distribution system	As requested by the Department
Giardia and Cryptosporidium	Raw water	As requested by the Department
	Water distribution system	As requested by the Department

<table>
<tr><th>Water Quality Parameters</th><th>Sample Location</th><th>Minimum Sampling Frequency</th></tr>
<tr><td colspan="3">Corrosion Monitoring Program</td></tr>
<tr><td>pH
Alkalinity
Temperature
Conductivity
Chlorine or chloramine residual
Corrosion inhibitor residual (if used)</td><td>Point of entry and representative locations within the distribution system based on population served:
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<tr><td>Lead and Copper</td><td colspan="2">As per the “Requirements for Lead and Copper Management Municipal Public Drinking Water Supplies”</td></tr>
</table>

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Process Control		
Water Volume	Each individual well	Continuous at no more than five minute intervals - must meet CT/IT design criteria.
Free ammonia (as N) – for facilities using chloramination	Select distribution system sample point(s)* *Sampling points should include distribution system storage and dead ends	Weekly
Nitrate/nitrite (as N) – for facilities using chloramination	Select distribution system sample point(s)* *Sampling points should include distribution system storage and dead ends	Weekly
Fluoride – for facilities that add fluoride	Water entering the distribution system	Daily
Disinfection By-products		
Total Trihalomethanes (THMs)	Select distribution system sample point(s) – representative of highest level. Areas in the distribution system with the longest disinfectant retention time.	Quarterly - locational running annual average (lraa) based on a minimum of 4 quarterly samples.
Haloacetic Acids (HAAs)	Select distribution system sample point(s) – where historical data show the highest concentration. Where historical data is not available concentrations shall be monitored in the middle and extremities of the distribution system.	Quarterly - locational running annual average (lraa) based on a minimum of 4 quarterly samples.
Chlorate and chlorite – if using chlorine dioxide	Select distribution system sample point(s) – mid-system and end locations	Quarterly
Chlorate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Bromate – if using ozone	Select distribution system sample point(s) – water entering distribution system	Monthly
Bromate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly
N-Nitrosodimethylamine (NDMA) – if using chloramines for secondary disinfection	Water entering distribution system and far-point in distribution system	Quarterly

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Treatment Process Backwash Wastewater Parameters, locations, and frequencies in accordance with this standard, the operating approval and the accepted annual monitoring program.		
General Chemical and Physical Quality		
General chemical and physical parameters listed in the Guidelines for Monitoring Public Drinking Water Supplies Part I	Raw and treated water	Minimum annually
Manganese	Raw water (prior to treatment) Entering the distribution system Distribution system	• Twice per year (spring and fall) • Quarterly • Quarterly * The Approval Holder may request a reduction in sample frequency, if it is determined that manganese is not a parameter of concern for the water supply.
Guidelines for Canadian Drinking Water Quality		
All health-related parameters in the Guidelines for Canadian Drinking Water Quality	Raw and treated water	Every 5 years unless system assessment report or source water protection plan requires more frequent monitoring.
Source Water Protection		
Parameters as per the source water protection monitoring program	Locations and frequencies in accordance with the source water protection monitoring program.	

H4 Sampling Requirements for Municipal Public Drinking Water Supplies using Non-GUDI Sources

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Turbidity		
Turbidity	At individual wellheads or the combined flow	Continuous at no more than 5 minute intervals or daily grab sample.
	Distribution system sample points	Weekly grab sample
Primary Disinfection (Note: Parameters to be monitored depend on the disinfection method used)		
Free Chlorine		
Free Chlorine Residual	CT control point (water entering the distribution system)	Continuous at no more than 5 minute intervals – must meet CT design criteria
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals or daily grab– must meet CT design criteria
UV		
UV (IT)	UV chamber	Continuous at no more than 5 minute intervals. Minimum UV dose of 40mJ/cm^2 is required unless an alternate dose has been accepted by the Department

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Chlorine Dioxide		
Chlorine Dioxide	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals or daily grab– must meet CT design criteria
Ozone		
Ozone	CT control point	Continuous at no more than 5 minute intervals – must meet CT design criteria
	Air Quality (off-gas destruct unit)	Continuous at no more than 5 minute intervals* *Should be interlocked with the ozone generator controls to shut down system if excess ozone is detected
Temperature	CT control point	Continuous at no more than 5 minute intervals or daily grab – must meet CT design criteria
pH	CT control point	Continuous at no more than 5 minute intervals or daily grab– must meet CT design criteria

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Secondary Disinfection (Note: Parameters to be monitored depend on the disinfection method used)		
Free Chlorine		
Free Chlorine Residual	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Chloramines		
Combined Chlorine Residual	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Microbial Quality		
Total coliforms and *E. coli* (present/absent) * During the GUDI assessment if water is distributed for consumption twice weekly sampling is required for water entering the distribution system and distribution system sample points.	Distribution system sample points	Weekly grab sample
	Raw water from individual well(s)	As requested by the Department
Viruses	Raw water	As requested by the Department
	Water distribution system	As requested by the Department

<table>
<tr><th>Water Quality Parameters</th><th>Sample Location</th><th>Minimum Sampling Frequency</th></tr>
<tr><td colspan="3">Corrosion Monitoring Program</td></tr>
<tr><td>pH
Alkalinity
Conductivity
Temperature
Chlorine or chloramine residual
Corrosion inhibitor residual (if used)</td><td>Point of entry and representative locations within the distribution system based on population served:
<table><tr><th>Population Served</th><th># of distribution samples</th></tr><tr><td><100</td><td>1</td></tr><tr><td>101-500</td><td>2</td></tr><tr><td>501-3,300</td><td>3</td></tr><tr><td>3,301-10,000</td><td>4</td></tr><tr><td>10,001-100,000</td><td>6</td></tr><tr><td>>100, 000</td><td>10</td></tr></table></td><td>Quarterly grab sample</td></tr>
<tr><td>Lead and Copper</td><td colspan="2">As per the “Requirements for Lead and Copper Management Municipal Public Drinking Water Supplies”</td></tr>
</table>

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Process Control		
Water Volume	Each individual well	Continuous at no more than 5 minute intervals. Must meet CT/IT design criteria.
Free ammonia (as N) – for facilities using chloramination	Select distribution system sample point(s)* *Sampling points should include distribution system storage and dead ends	Weekly
Nitrate/nitrite (as N) – for facilities using chloramination	Select distribution system sample point(s)* *Sampling points should include distribution system storage and dead ends	Weekly
Fluoride – for facilities that add fluoride	Water entering the distribution system	Daily
Disinfection By-products		
Total Trihalomethanes (THMs)	Select distribution system sample point(s) – representative of highest level. Areas in the distribution system with the longest disinfectant retention time.	Quarterly*- locational running annual average (lraa) based on a minimum of 4 quarterly samples. * The Approval Holder may request a reduction in sample frequency to annual, if the lraa based on a minimum of four quarterly samples collected from each location is < 0.010mg/L.

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Haloacetic Acids (HAAs)	Select distribution system sample point(s) – where historical data show the highest concentration. Where historical data is not available concentrations shall be monitored in the middle and extremities of the distribution system.	Quarterly* - locational running annual average (lraa) based on a minimum of 4 quarterly samples. * The Approval Holder may request a reduction in sample frequency to annual, if the lraa based on a minimum of four quarterly samples collected from each location is < 0.010mg/L
Chlorate and chlorite – if using chlorine dioxide	Select distribution system sample point(s) – mid-system and end locations	Quarterly
Chlorate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly
Bromate – if using ozone	Select distribution system sample point(s) – water entering distribution system	Monthly
Bromate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly
N-Nitrosodimethylamine (NDMA) – if using chloramines for secondary disinfection	Water entering distribution system and far-point in distribution system	Quarterly

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Treatment Process Backwash Wastewater If required, parameters, locations and frequencies in accordance with this standard, the operating approval and the accepted annual monitoring program.		
General Chemical and Physical Quality		
General chemical and physical parameters listed in the Guidelines for Monitoring Public Drinking Water Supplies Part I	Raw and treated water	Minimum every two-years
Manganese	Raw water (prior to treatment) Entering the distribution system Distribution system	Twice per year (spring and fall) Quarterly Quarterly * The Approval Holder may request a reduction in sample frequency, if it is determined that manganese is not a parameter of concern for the water supply.
Guidelines for Canadian Drinking Water Quality		
All health-related parameters in the Guidelines for Canadian Drinking Water Quality	Raw and treated water	Every 5 years unless system assessment report or source water protection plan requires more frequent monitoring.
Source Water Protection		
Parameters as per the source water protection monitoring program	Locations and frequencies in accordance with the source water protection monitoring program.	

H5 Sampling Requirements for Municipal Public Drinking Water Supplies that Distribute Water Only

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
Turbidity		
Turbidity	Distribution system sample points	Weekly grab sample
Secondary Disinfection (Note: Parameters to be monitored depend on disinfection method used)		
Free Chlorine		
Free Chlorine Residual	Water Entering Distribution System	Continuous at no more than 5 minute intervals
	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Chloramines		
Combined Chlorine Residual	Water Entering Distribution System	Continuous at no more than 5 minute intervals
	Storage structure outlet	Continuous at no more than 5 minute intervals
	Distribution system sample points	Weekly grab sample
Microbial Quality		
Total coliforms and *E. coli* (present/absent)	Distribution system sample points	Weekly grab sample
Viruses	Raw water	As requested by the Department
	Water distribution system	As requested by the Department

<table>
<tr><th>Water Quality Parameters</th><th>Sample Location</th><th>Minimum Sampling Frequency</th></tr>
<tr><td>Giardia and Cryptosporidium</td><td>Raw water</td><td>As requested by the Department</td></tr>
<tr><td></td><td>Water distribution system</td><td>As requested by the Department</td></tr>
<tr><td colspan="3">Corrosion Monitoring Program</td></tr>
<tr><td>pH
Alkalinity
Conductivity
Temperature
Chlorine or chloramine residual
Corrosion inhibitor residual (if used)</td><td>Entering distribution system and representative locations within the distribution system based on population served:

<table><tr><th>Population Served</th><th># of distribution samples</th></tr><tr><td><100</td><td>1</td></tr><tr><td>101-500</td><td>2</td></tr><tr><td>501-3,300</td><td>3</td></tr><tr><td>3,301-10,000</td><td>4</td></tr><tr><td>10,001-100,000</td><td>6</td></tr><tr><td>>100, 000</td><td>10</td></tr></table></td><td>Quarterly grab sample</td></tr>
<tr><td>Lead and Copper</td><td colspan="2">As per the “Requirements for Lead and Copper Management Municipal Public Drinking Water Supplies”</td></tr>
<tr><td colspan="3">Process Control</td></tr>
<tr><td>Water Volume</td><td>Entering distribution system</td><td>Continuous at no more than 5 minute intervals</td></tr>
<tr><td>pH</td><td>Entering distribution system</td><td>Continuous at no more than 5 minute intervals or daily grab</td></tr>
<tr><td>Free ammonia (as N) – for facilities using chloramination</td><td>Select distribution system sample point(s)*

*Sampling points should include distribution system storage and dead ends</td><td>Weekly</td></tr>
<tr><td>Nitrate/nitrite (as N) – for facilities using chloramination</td><td>Select distribution system sample point(s)*

*Sampling points should include distribution system</td><td>Weekly</td></tr>
</table>

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
	storage and dead ends	
Disinfection By-products		
Total Trihalomethanes (THMs)	Select distribution system sample point(s) – representative of highest level. Areas in the distribution system with the longest disinfectant retention time.	Quarterly - locational running annual average (lraa) based on a minimum of 4 quarterly samples. * If the Approval Holder of the supply where treated water is purchased received a reduction in sampling frequency to annual from the Department, the Approval Holder of the stand-alone distribution system may request a reduction in sample frequency to annual.
Haloacetic Acids (HAAs)	Select distribution system sample point(s) – where historical data show the highest concentration. Where historical data is not available concentrations shall be monitored in the middle and extremities of the distribution system.	Quarterly - locational running annual average (lraa) based on a minimum of 4 quarterly samples. * If the Approval Holder of the supply where treated water is purchased received a reduction in sample frequency from the Department to annual, the Approval Holder of the stand-alone distribution system may request a reduction in sample frequency to annual.
Chlorate and chlorite – if purchasing water from a treatment facility using chlorine dioxide	Mid-system and end locations of the distribution systems	Quarterly
Chlorate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly
Bromate – if purchasing water from a treatment facility using ozone	Water entering distribution system	Monthly
Bromate – if storing sodium hypochlorite more than 3 months	Water entering distribution system	Quarterly
N-Nitrosodimethylamine (NDMA) – if using chloramines for secondary	Water entering distribution system and far-point in distribution system	Quarterly

Water Quality Parameters	Sample Location	Minimum Sampling Frequency
disinfection		

General Chemical and Physical Quality		
General chemical and physical parameters listed in the Guidelines for Monitoring Public Drinking Water Supplies Part I	Select distribution system sample point(s)* *Sample location(s) shall be selected that are representative of the water distribution system.	Annual – for distribution systems served by surface water or GUDI sources. Every two years – for distribution systems served by non-GUDI groundwater sources.
Manganese	Select distribution system sample locations	Quarterly * The Approval Holder may request a reduction in sample frequency, if it is determined that manganese is not a parameter of concern in the treated water purchased for distribution.
Guidelines for Canadian Drinking Water Quality		
All health-related parameters in the Guidelines for Canadian Drinking Water Quality	As requested by the Department	As requested by the Department * The Approval Holder shall request a copy of the laboratory results from the treatment facility the water is obtained from and retain the results for a period of ten years.