Annual Sampling Plan for Surface Water Sources

Submitted to Nova Scotia Environment and Climate Change on behalf of

|  |  |
| --- | --- |
| Facility Name |  |
| Approval Number |  |
| Address |  |
| Contact Name |  |
| Telephone Number |  |

I hereby certify that the information provided in this report is complete and accurate.

How to Use the Annual Sampling Plan Template

* The template was designed to mirror the Schedule A format for ease of reference. However, some site-specific variations in sampling requirements may exist. **It is ultimately the responsibility of the approval holder to ensure the sampling plan submitted reflects the requirements outlined in their Operating Approval**.
* If you wish to add additional information/parameters, please do so in the comments box in the relevant section or add additional information at the end of the template.
* Information in black text outlines requirements and should NOT be deleted of modified. If a parameter is not applicable, please tick the associated box.
* Information in grey text must be modified by the approval holder to indicate the site-specific sample locations and sample frequencies. Note that the sample frequencies indicated in grey outline the minimum requirements for a parameter (except where a reduced frequency was approved by the Department).
  + If a sample frequency is the same as that indicated in grey, you are still required to retype the information in the space provided for confirmation.
  + If the approval holder has an approved modified sample frequency that is less than the minimum outlined in the template, please indicate this in the associated comments section.
* In the comment section, if there are no comments, or if it is not applicable, please tick the appropriate boxes. This helps to confirm that you have reviewed the information.

| Surface Water | | | |
| --- | --- | --- | --- |
| Water Quality Parameters | Sample Location | Frequency |
| Turbidity | | | |
| Turbidity | Raw water  Insert/list sample location. | Continuous at no more than 5-minute intervals or daily grab. |
| Individual filter effluent  Insert/list sample location. | Continuous at no more than 5-minute intervals. |
| Filtered water directed to waste  Insert/list sample location. | Continuous at no more than 5-minute intervals or grab sample during filter-to-waste. |
| Distribution system sample points  Insert/list sample location. | Weekly grab sample. |
| **Comments:**  No comments  Insert comments here. | | | |
| Primary Disinfection (Parameters to be monitored depend on the disinfection method used) | | | |
| Free Chlorine | | | |
| Free Chlorine Residual | CT control point (water entering distribution system)  Insert/list sample location. | Continuous at no more than 5-minute intervals – must meet CT design criteria. |
| Temperature | CT control point  Insert/list sample location. | Continuous at no more than 5-minute intervals or daily grab – must meet CT design criteria. |
| pH | CT control point  Insert/list sample location. | Continuous at no more than 5-minute intervals – must meet CT design criteria. |
| **Comments:**  No comments  Insert comments here. | | | |
| UV  N/A | | | |
| UV Dose (IT) | UV chamber  Insert/list sample location. | Continuous at no more than 5-minute intervals – minimum UV dose of 40 mJ/cm2 unless an alternate dose accepted by the Department. |
| **Comments:**  No comments  Insert comments here. | | | |
| Chlorine Dioxide  N/A | | | |
| Chlorine Dioxide | CT control point  Insert/list sample location. | Continuous at no more than 5-minute intervals – must meet CT design criteria. |
| Temperature | CT control point  Insert/list sample location. | Continuous at no more than 5-minute intervals or daily grab – must meet CT design criteria. |
| pH | CT control point  Insert/list sample location. | Continuous at no more than 5-minute intervals – must meet CT design criteria. |
| **Comments:**  No comments  Insert comments here. | | | |
| Ozone  N/A | | | |
| Ozone | CT control point  Insert/list sample location. | Continuous at no more than 5-minutes interval – must meet CT design criteria. |
| Air Quality (off-gas destruct unit)  Insert/list sample location. | Continuous at no more than 5-minute intervals. |
| Temperature | CT control point  Insert/list sample location. | Continuous at no more than 5-minute intervals or daily grab – must meet CT design criteria. |
| pH | CT control point  Insert/list sample location. | Continuous at no more than 5-minute intervals – must meet CT design criteria. |
| **Comments:**  No comments  Insert comments here. | | | |
| Secondary Disinfection (Parameters to be monitored depend on the disinfection method used) | | | |
| Free Chlorine  N/A – I use chloramines | | | |
| Free Chlorine Residual | Storage structure outlet  Insert/list sample location. | Continuous at no more than 5-minute intervals. |
| Distribution system sample points  Insert/list sample location(s). | Weekly grab sample. |
| **Comments:**  No comments  Insert comments here. | | | |
| Chloramines  N/A – I use chlorine | | | |
| Combined Chlorine Residual | Storage structure outlet  Insert/list sample location. | Continuous at no more than 5-minute intervals. |
| Distribution system sample points  Insert/list sample location(s). | Weekly grab sample. |
| **Comments:**  No comments  Insert comments here. | | | |
| Microbial Quality | | | |
| Total Coliforms and *E. coli* (present/absent) | Water entering the distribution system  Insert/list sample location. | Weekly grab sample. |
| Distribution system sample points  Insert/list sample location(s). | Weekly grab sample. |
| Viruses  N/A – this has not been requested | Raw water  Insert/list sample location. | As requested by the Department. |
| Water distribution system  Insert/list sample location. | As requested by the Department. |
| Giardia and Cryptosporidium  N/A– this has not been requested | Raw water  Insert/list sample location. | As requested by the Department. |
| Water distribution system  Insert/list sample location. | As requested by the Department. |
| Cyanobacteria | Raw water  Insert/list sample location. | Visual monitoring at least weekly for evidence of bloom formation from May to October. |
| Cyanobacterial toxins - Total Microcystins | Raw water  Insert/list sample location. | During a bloom  Minimum of every 5 years as part of full health-related parameter suite (during warmest month). |
| Treated water  Insert/list sample location. | During a bloom  Minimum of every 5 years as part of full health-related parameter suite (during warmest month). |
| **Comments:**  No comments  Insert comments here. | | | |
| Corrosion Monitoring Program | | | |
| * pH * Alkalinity * Conductivity * Temperature * Chlorine or chloramine residual * Corrosion inhibitor residual (if used) * Insert/list additional parameter(s) | Point of entry and representative locations within the distribution system based on population served:  Insert/list number of required distribution sample locations based on population served:   |  |  | | --- | --- | | Population | # of distribution samples | | <100 | 1 | | 101-500 | 2 | | 501-3,300 | 3 | | 3,301-10,000 | 4 | | 10,001-100,000 | 6 | | >100, 000 | 10 | | Quarterly grab sample. |
| Lead & Copper | Refer to the “Requirements for Lead and Copper Management – Municipal Public Drinking Water Supplies”. | Refer to the “Requirements for Lead and Copper Management – Municipal Public Drinking Water Supplies”. |
| Process Control | | | |
| **Water Volume** | Raw water entering facility  Insert/list sample location. | Continuous at no more than 5-minute intervals. Must meet CT/IT design criteria. |
| **Free ammonia (as N) – for facilities using chloramination**  N/A | Select distribution system sample point(s). Sampling points should include distribution system storage and dead ends.  Insert/list sample location(s). | Weekly |
| **Nitrate/nitrite (as N) – for facilities using chloramination**  N/A | Select distribution system sample point(s). Sampling points should include distribution system storage and dead ends.  Insert/list sample location(s). | Weekly |
| **Fluoride – for facilities that add fluoride**  N/A | Water entering the distribution system  Insert/list sample location. | Daily |
| Insert/list parameter(s), location(s) and frequency for additional process monitoring. | | |
| **Comments:**  No comments  Insert comments here. | | | |
| Disinfection By-products | | | |
| **Total Trihalomethanes (THMs)** | Select distribution system sampling point(s) – representative of the highest levels (e.g. areas with the longest retention times).  Insert/list sample location(s). | Quarterly |
| **Haloacetic Acids (HAAs)** | Select distribution system sampling point(s) – where historical data show the highest concentrations or in the middle and extremities of the distribution system.  Insert/list sample location(s). | Quarterly |
| **Chlorate and chlorite – if using chlorine dioxide**  N/A | Select distribution system sample point(s) – mid-system and end locations.  Insert/list sample location(s). | Quarterly |
| **Chlorate – if storing sodium hypochlorite more than 3 months**  N/A | Water entering the distribution system  Insert/list sample location. | Quarterly |
| **Bromate – if using ozone**  N/A | Select distribution sample point(s) – water entering the distribution system.  Insert/list sample location(s). | Monthly |
| **Bromate – if storing sodium hypochlorite more than 3 months**  N/A | Water entering the distribution system  Insert/list sample location. | Quarterly |
| **N-Nitrosodimethylamine (NDMA) – if using chloramines for secondary disinfection**  N/A | Water entering distribution system and far-point in distribution system  Insert/list sample location. | Quarterly |
| N-**Nitrosodimethylamine (NDMA) – chlorinated systems**  N/A | Water entering distribution system  Insert/list sample location. | Quarterly |
| **Comments:**  No comments  Insert comments here. | | | |
| Treatment Process -Backwash Wastewater | | | |
| Treatment process backwash wastewater- parameter(s), location(s), and frequency in accordance with the approval and the treatment standards for municipal drinking water systems.  Insert/list parameter(s), location(s) and frequency | | | |
| **Comments:**  No comments  N/A  Insert comments here. | | | |
| Guidelines for Monitoring Public Drinking Water Supplies | | | |
| The following parameters, **except for Manganese,** are required to be monitored at a minimum of annually from raw (untreated water) and from a treated water location. Note that space has been provided for all parameters for those who may sample above and beyond the minimum requirements outlined in the **Guidelines for Monitoring Public Drinking Water Supplies – Part I**. | | | |
| **Alkalinity** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Aluminum** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Ammonia** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Antimony** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Arsenic** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Barium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Boron** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Cadmium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Calcium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Chloride** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Chromium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Colour** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Conductivity** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Copper** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Fluoride** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Hardness** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Iron** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Lead** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Magnesium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Manganese** | Raw water (prior to treatment)  Insert/list sample location. | Quarterly |
| Entering the Distribution System  Insert/list sample location. | Quarterly |
| Distribution System  Insert/list sample location(s). | Quarterly |
| **Nitrate** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Nitrite** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **pH** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Potassium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Selenium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Sodium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Strontium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Sulphate** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Total Dissolved Solids** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Total Organic Carbon** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Turbidity** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Uranium** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Zinc** | Raw & Treated  Insert/list sample location. | Annually |
| Additional sample locations. | Enter Frequency |
| **Comments:**  No comments  Insert comments here. | | | |
| Guidelines for Canadian Drinking Water Quality | | | |
| **All health-related parameters in the Guidelines for Canadian Drinking Water Quality, latest version.** | Raw and treated water  Insert/list sample location. | Every 5 years unless system assessment report or source water protection plan requires more frequent monitoring. |
| **Comments:**  No comments  N/A this year  Insert comments here.  **Date last test was completed:**  Insert date of last 5-year test here. | | | |
| Source Water Protection | | | |
| **Parameters as per the source water protection monitoring program** | Insert or append details including parameters, sample locations, minimum frequency in accordance with the source water protection monitoring program. | |
| **Comments:**  No comments  N/A  Insert comments here. | | | |