

**Ministry of the
Environment,
Conservation and Parks**
Eastern Region
Belleville Area Office
345 College Street East
Belleville ON K8N 5S7

**Ministère de l'Environnement,
de la Protection de la nature
et des Parcs**
Région de l'Est
Bureau du secteur de Belleville
345, rue College Est
Belleville (Ontario) K8N 5S7



October 3, 2022

Sent by Email: cao-treasurer@tweed.ca

Gloria Raybone
Chief Administrative Officer / Treasurer
The Corporation of the Municipality of Tweed
255 Metcalf Street
Tweed, ON K0K 3J0

Dear: Gloria Raybone

Re: 2022-23 Inspection Report

The enclosed report documents findings of the inspection that was performed at the Tweed drinking water system on August 23, 2022.

One section of the report, namely "Non-compliance/Non-conformance Items", if found, may cite due dates for the submission of information or plans to my attention.

Please note that Non-compliance Items are linked to incidents of non-compliance with regulatory requirements contained within an act, a regulation, or site-specific approvals, licenses, permits, orders, or instructions. Such violations may result in the issuance of mandatory abatement instruments which could include orders, tickets, penalties, or referrals to the ministry's Environmental Enforcement and Compliance Office.

Non-conformance Items convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the fulsome availability of information to consumers, and conformance with existing and emerging industry standards. Please note that items which appear as recommended actions do not, in themselves, constitute violations.

In order to measure individual inspection results, the ministry continues to adhere to an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (I&E) Secretariat and advice of internal/external risk experts. The Inspection Rating Record (IRR) provides the ministry, the system owner and the local Public Health Unit with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. Please note that due to a change in IT systems, the IRR cannot be generated at the same time as the inspection report. The IRR will be sent separately and prior to any public release, typically within one to two months of the completion of the inspection. IRR ratings are published in the ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Mahmud Mahmud, Acting Water Compliance Supervisor, at 613-548-6934.

Section 19 of the Safe Drinking Water Act, 2002 (Standard of Care) cites a number of obligations of individuals who exercise decision-making authority over municipal drinking water systems. The ministry encourages individuals, particularly municipal councilors, to take steps to be well informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings.

I would like to thank OCWA for the assistance afforded to me during the conduct of the compliance assessment. Should you have any questions regarding the content of the enclosed report, please do not hesitate to contact me.

Best Regards,



Sarah Young
Water Compliance Inspector, Provincial Officer Badge #1888

Enclosure

cc:

- Allan Broek, Public Works Manager, The Corporation of the Municipality of Tweed, pubwks@twp.tweed.on.ca
- Natalie Iezzi, Process & Compliance Technician, Kawartha-Trent Regional Hub Ontario Clean Water Agency, nlezzi@ocwa.com
- Dr. Ethan Toumishey, Medical Officer of Health, Hasting and Prince Edward County Health Unit, moh@hpeph.ca
- Catherine Lovell, Executive Assistant to the Medical Officer of Health, Hasting and Prince Edward County Health Unit, clovell@hpeph.ca
- Brad McNevin, Chief Administrative Officer, Quinte Conservation Authority, bmcnevin@quinteconservation.ca
- Amy Dickens, Source Protection Manager, Quinte Conservation Authority, adickens@quinteconservation.ca

c: File SI-HA-TW- RI-540 (2022-23)



TWEED DRINKING WATER SYSTEM
430 RIVER ST W, TWEED, ON, K0K 3J0

Inspection Report

System Number: 220001557
Entity: ONTARIO CLEAN WATER
AGENCY
THE CORPORATION OF THE
MUNICIPALITY OF TWEED
Inspection Start Date: 08/23/2022
Inspection End Date: 09/19/2022
Inspected By: Sarah Young
Badge #: 1888



(signature)

NON-COMPLIANCE/NON-CONFORMANCE ITEMS

This should not be construed as a confirmation of full compliance with all potential applicable legal requirement and BMPs. These inspection findings are limited to the components and/or activities that were assessed, and the legislative framework(s) that were applied. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

If you have any questions related to this inspection, please contact the signed Provincial Officer.

INSPECTION DETAILS

This section includes all questions that were assessed during the inspection.

Ministry Program: DRINKING WATER | Regulated Activity:

Question ID	MRDW1001001	Question Type	Information
Question:			
What was the scope of this inspection?			
Legislative Requirement	Not Applicable		
Observation			
<p>The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.</p> <p>This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O. Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.</p> <p>This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.</p> <p>On August 23, 2022; Provincial Officer Sarah Young with the Ministry of the Environment, Conservation and Parks (the Ministry) commenced an unannounced focused inspection of the Tweed Drinking Water System (the System). Amber Coupland- Senior Operations Manager; Natalie Lezzi - Process Compliance Technician and Derrick Chapman - Site Operator were present during the inspection, whom are employed by Ontario Clean Water Agency the Accredited Operating Authority (OA) for the System. The Corporation of the Municipality of Tweed is the Owner of the System.</p> <p>The Tweed DWS inspection included a physical inspection of the source, treatment facility, elevated storage tank, distribution system; and a compliance assessment with all applicable legislation and legal documents. The inspection period covered from September 20, 2021 to August 23, 2022 (the inspection period). Copies of electronic documents were received and reviewed by Sarah Young.</p> <p>Documents reviewed in association with this report include, but were not limited to:</p>			

1. Municipal Drinking Water Licence (MDWL), #168-101 Issue #3, dated June 3, 2021;
2. Drinking Water Works Permit (DWWP), #168-201 Issue # 3, dated June 3, 2021;
3. Permit to Take Water (PTTW), #4464-A9NRHH, dated May 10, 2016; and
4. Other documents maintained by the owner/operating authority (O/OA) were also reviewed in conjunction with this inspection.

Question ID	MRDW1000001	Question Type	Information
Question: Does this drinking water system provide primary disinfection?			
Legislative Requirement	Not Applicable		
Observation			
<p>This Drinking Water System provides for both primary and secondary disinfection and distribution of water. The Tweed Drinking Water System services the Village of Tweed, approximately 1,400 persons, and consists of two groundwater wells (No.1 and No.3), a water treatment facility and a water distribution system. The water treatment facility includes an ion exchange unit and a primary disinfection system utilizing ultraviolet (UV) light and sodium hypochlorite for primary and secondary disinfection.</p> <p>The Treatment plant is located at 430 Crookston Road, with the Production Well No.3 located outside beside the treatment plant. Production Well No. 1(for emergency use only) is located at 351 Hungerford Road, adjacent to elevated water storage tank. Well No 1. will only be activated/in-production, with communication to the Health Unit due to reported elevated Uranium), and may result in the Operating Authority/Owner requesting a Do Not Drink advisory. Well #1 can be used/activated for fire fighting purposes only.</p> <p>The distribution system consists of an elevated storage tank, valves, piping, hydrants and associated appurtenances. The Tweed distribution system pipe material consists of cast iron, ductile iron and PVC. The total length of the distribution system is approximately 18.2 km.</p>			

Question ID	MRDW1018001	Question Type	Legislative
Question: Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?			
Legislative Requirement	SDWA 31 (1);		
Observation			
The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.			

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Question ID	MRDW1025001	Question Type	Legislative
Question: Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?			
Legislative Requirement	SDWA 31 (1);		
Observation			
All parts of the drinking water system were disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit. The OA provided SOP 8 Watermain Breaks for review and the procedure referenced the use of the Ministry's 2020 Watermain Disinfection Procedure.			

Question ID	MRDW1024001	Question Type	Legislative
Question: Do records confirm that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated as required?			
Legislative Requirement	SDWA O. Reg. 170/03 1-2 (2);		
Observation			
Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined. Documents reviewed during the inspection period indicated a minimum free chlorine residual of 1.07 mg/L on July 13, 2022. The Reported average free chlorine residual for 2021 was 1.78 mg /L and for the current 2022 is 1.81 mg/L; from the continuous analyzer located at the elevated storage tank.			

Question ID	MRDW1038001	Question Type	Legislative
Question: Is continuous monitoring equipment that is being utilized to fulfill O. Reg. 170/03 requirements performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4;		

Observation
Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.

Question ID	MRDW1035001	Question Type	Legislative
Question: Are operators examining continuous monitoring test results and are they examining the results within 72 hours of the test?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10;		
Observation			
Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.			

Question ID	MRDW1037001	Question Type	Legislative
Question: Are all continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or MDWL or DWWP or order, equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10; SDWA O. Reg. 170/03 6-5 (1.1);		
Observation			
All continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6. During the inspection the O/OA indicated the following set points/alarms: Pre Contact Chlorine Lo Lo @ 0.80 mg/L with a 60 second delay and system lockout; Post Contact Chlorine Lo @ 1.0 mg/L with and delay and system lockout; UV Lo Lo @ 46.1 W/m2, with no time delay will automatically switch over second UV unit and will resume treatment operations and should the second UV unit fail, then the entire water treatment plant would be locked out.			

Question ID	MRDW1040000	Question Type	Legislative
Question: Are all continuous analysers calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10;		
Observation			
All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation. Documents reviewed indicated the OA checked/calibrated analyzers monthly.			

Question ID	MRDW1108001	Question Type	Legislative
Question: Where continuous monitoring equipment used for the monitoring of free chlorine residual, total chlorine residual, combined chlorine residual or turbidity, required by O. Reg. 170/03, an Order, MDWL, or DWWP issued under Part V, SDWA, has triggered an alarm or an automatic shut-off, did a qualified person respond in a timely manner and take appropriate actions?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10; SDWA O. Reg. 170/03 6-5 (1.1);		
Observation			
Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions. Documents provided for review confirmed when free chlorine residual triggered an alarm, a qualified person responded in a timely manner and took appropriate actions.			

Question ID	MRDW1033001	Question Type	Legislative
Question: Is the secondary disinfectant residual measured as required for the large municipal residential distribution system?			
Legislative Requirement	SDWA O. Reg. 170/03 7-2 (3); SDWA O. Reg. 170/03 7-2 (4);		
Observation			
The secondary disinfectant residual was measured as required for the large municipal residential distribution system. The OA monitors free chlorine residual in the distribution at			

the elevated water storage tank using a chart recorder and an on-line continuous analyzer.

Question ID	MRDW1099001	Question Type	Information
Question: Do records show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg. 169/03)?			
Legislative Requirement	Not Applicable		
Observation			
Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg. 169/03).			

Question ID	MRDW1081001	Question Type	Legislative
Question: For LMR systems, are all microbiological water quality monitoring requirements for distribution samples being met?			
Legislative Requirement	SDWA O. Reg. 170/03 10-2 (1); SDWA O. Reg. 170/03 10-2 (2); SDWA O. Reg. 170/03 10-2 (3);		
Observation			
All microbiological water quality monitoring requirements prescribed by legislation for distribution samples in a large municipal residential system were being met. During the inspection period, at least 10 distribution samples were collected per month and analyzed for EC, TC and heterotrophic plate count (HPC) in accordance with Schedule 10-2 of O. Reg 170/03.			
During the inspection period, E-coli and Total Coliforms samples were reported as non-detected, and HPC ranged from 0 to 67 CFU/1mL.			

Question ID	MRDW1096001	Question Type	Legislative
Question: Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?			
Legislative Requirement	SDWA O. Reg. 170/03 6-3 (1);		
Observation			

Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.

Question ID	MRDW1086001	Question Type	Legislative
Question:			
Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?			
Legislative Requirement	SDWA O. Reg. 170/03 13-6.1 (1); SDWA O. Reg. 170/03 13-6.1 (2); SDWA O. Reg. 170/03 13-6.1 (3); SDWA O. Reg. 170/03 13-6.1 (4); SDWA O. Reg. 170/03 13-6.1 (5); SDWA O. Reg. 170/03 13-6.1 (6);		
Observation			
All haloacetic acid water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location. During the inspection period, distribution samples were collected and analyzed for Haloacetic Acids(HAAs) in accordance with O.Reg 170/03 Schedule 13-6.1 on the following dates:			
2022-07-04 @ 8.8 ug/L 2022-04-04 @ 7.1 ug/L 2022-03-07 @ 5.5 ug/L 2022-01-10 @ 5.3 ug/L 2021-10-12 @ 5.3 ug/L			

Question ID	MRDW1087001	Question Type	Legislative
Question:			
Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?			
Legislative Requirement	SDWA O. Reg. 170/03 13-6 (1); SDWA O. Reg. 170/03 13-6 (2); SDWA O. Reg. 170/03 13-6 (3); SDWA O. Reg. 170/03 13-6 (4); SDWA O. Reg. 170/03 13-6 (5); SDWA O. Reg. 170/03 13-6 (6);		
Observation			
All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location. During the inspection period, distribution samples were collected and analyzed for trihalomethanes (THMs) in accordance with O.Reg 170/03 Schedule 13.6 on the following dates:			
2022-07-04 @ 35 ug/L 2022-04-04 @ 17 ug/L			

2022-03-07 @ 15 ug/L
2022-01-10 @ 17 ug/L
2021-10-12 @ 21 ug/L

Question ID	MRDW1094001	Question Type	Legislative
Question: Are all water quality monitoring requirements imposed by the MDWL and DWWP being met?			
Legislative Requirement	SDWA 31 (1);		
Observation			
<p>All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met. MDWL Schedule C Section 5 Additional Sampling, Testing and Monitoring, Table 5: Drinking Water Health Related Parameters requires Uranium to be sampled in the distribution system quarterly.</p> <p>During the inspection period the following Uranium samples were collected from the distribution system: 2022-07-04 @ 5.11 ug/L 2022-04-04 @ 13.6 ug/L 2022-03-07 @ 11.5 ug/L 2022-01-10 @ 10.3 ug/L 2021-10-12 @ 10.2 ug/L</p>			

Question ID	MRDW1060000	Question Type	Legislative
Question: Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?			
Legislative Requirement	SDWA 31 (1);		
Observation			
<p>The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA. Documents provided appeared to be in accordance with the MDWL Condition 16:2; 16.2.1 The requirements of this licence and associated procedures; 16.2.2 The requirements of the drinking water works permit for the drinking water system; 16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system including where applicable: a) A copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions and other operating conditions, if applicable; and</p>			

b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;

16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;

16.2.5 Procedures for the operation and maintenance of monitoring equipment;

16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;

16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;

16.2.8 An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;

16.2.9 Well inspection and maintenance procedures that consider the entire well structure of each well including all above and below grade well components; and

16.2.10 Remedial action plans for situations where an inspection indicates noncompliance with respect to regulatory requirements and/or risk to raw well water quality.

Question ID	MRDW1061001	Question Type	Legislative
Question:			
Are logbooks properly maintained and contain the required information?			
Legislative Requirement	SDWA O. Reg. 128/04 27 (1); SDWA O. Reg. 128/04 27 (2); SDWA O. Reg. 128/04 27 (3); SDWA O. Reg. 128/04 27 (4); SDWA O. Reg. 128/04 27 (5); SDWA O. Reg. 128/04 27 (6); SDWA O. Reg. 128/04 27 (7);		
Observation			
Logbooks were properly maintained and contained the required information. The OA utilizes an electronic logbook which includes, entry time, label (wells, treatment, maintenance, distribution, facility checks, ect), daily ORO and OIC, entry text (operator notes), operator stamp and created time stamp. Electronic log books and physical logbooks were reviewed during the inspection period and appeared to be in accordance with Section 27 of O.Reg 128/04 which states:			
27. (1) The owner or operating authority of a subsystem shall ensure that logs or other recordkeeping mechanisms are provided to record information concerning the operation of the subsystem.			
(2) Entries in the logs or other record-keeping mechanisms shall be made chronologically.			
(3) No person shall make an entry in a log or other record-keeping mechanism unless the person is an overall responsible operator, an operator-in-charge or is authorized to make an entry by the owner, the operating authority, the overall responsible operator or an operator-in-charge.			
(4) A person who makes an entry in a log or other record-keeping mechanism shall do so in			

a manner that permits the person to be unambiguously identified as the maker of the entry.
(5) An operator-in-charge or a person authorized by an operator-in-charge shall record the following information in the logs or other record-keeping mechanisms in respect of each operating shift:

1. The date, the time of day the shift began and ended and the number or designation of the shift.
2. The names of all operators on duty during the shift.
3. Any departures from normal operating procedures that occurred during the shift and the time they occurred.
4. Any special instructions that were given during the shift to depart from normal operating procedures and the person who gave the instructions.
5. Any unusual or abnormal conditions that were observed in the subsystem during the shift, any action that was taken and any conclusions drawn from the observations.
6. Any equipment that was taken out of service or ceased to operate during the shift and any action taken to maintain or repair equipment during the shift.

Question ID	MRDW1062001	Question Type	Legislative
Question: Do records or other record keeping mechanisms confirm that operational testing not performed by continuous monitoring equipment is being done by a certified operator, water quality analyst, or person who meets the requirements of O. Reg. 170/03 7-5?			
Legislative Requirement	SDWA O. Reg. 170/03 7-5;		
Observation			
Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.			

Question ID	MRDW1071000	Question Type	BMP
Question: Has the owner provided security measures to protect components of the drinking water system?			
Legislative Requirement	Not Applicable		
Observation			
The owner had provided security measures to protect components of the drinking water system. The water treatment plant, well #1 pumphouse and elevated storage tank have intrusion alarms with door sensors and both sites have emergency contact information posted. The elevated storage tank has a locked gate at the road and locked access door.			

Question ID	MRDW1073001	Question Type	Legislative
Question: Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?			
Legislative Requirement	SDWA O. Reg. 128/04 23 (1);		
Observation			
<p>The overall responsible operator had been designated for each subsystem.</p> <p>The OA's SOP #4 Overall Responsible Operator (ORO) Absent or Unable to Act indicates the specific requirements to be fulfilled for the ORO and the back up ORO in accordance with O.Reg 128/04 Section 23.</p> <p>At the time of the inspection, Derrick Chapman was designated as the ORO whom holds a valid Water Treatment Subsystem Class 3, and Water Distribution Subsystem Class 2 Certificates.</p>			

Question ID	MRDW1074001	Question Type	Legislative
Question: Have operators-in-charge been designated for all subsystems for which comprise the drinking water system?			
Legislative Requirement	SDWA O. Reg. 128/04 25 (1);		
Observation			
<p>Operators-in-charge had been designated for all subsystems which comprise the drinking water system. The OA indicated any licenced operator is designated as OIC, except an operator-in- training (OIT) in accordance with O.Reg 128/04 Section 25.</p> <p>At the time of the inspection, Derrick Chapman was designated as the OIC whom holds a valid Water Treatment Subsystem Class 3, and Water Distribution Subsystem Class 2 Certificates.</p>			

Question ID	MRDW1075001	Question Type	Legislative
Question: Do all operators possess the required certification?			
Legislative Requirement	SDWA O. Reg. 128/04 22;		
Observation			

All operators possessed the required certification.

Question ID	MRDW1076001	Question Type	Legislative
Question: Do only certified operators make adjustments to the treatment equipment?			
Legislative Requirement	SDWA O. Reg. 170/03 1-2 (2);		
Observation Only certified operators made adjustments to the treatment equipment.			

Question ID	MRDW1117001	Question Type	Information
Question: Are there any other DWS related items that should be recognized in this report?			
Legislative Requirement	Not Applicable		
Observation The following items are noted as being relevant to the Drinking Water System: The Owner/Operating Authority (O/OA) is aware with potential sources of pollution or activities that could impair source water quality. The OA indicated the rising nitrates levels in the source water, to above the half maximum allowable concentration (MAC) specified in the Drinking Water Quality Standards O.Reg 169/03. The O/OA has increased raw water sampling to monthly and are replacing filter media, scheduled for fall 2022. The Quinte Region Source Protection Committee (QRSPC) has moved ahead and identified nitrates as an issue under the Clean Water Act, and created an issues contributing area equal to the 25 year wellhead. Next steps will be to update policies to address the threat, consultation periods, and submit to MECP for approval. QRSPC have finished early engagement with the MECP, pre-consultation with implementing bodies, and the public consultation period ended August 31, 2022. On September 21, 2022 confirmation of Quinte's Section 34 Amendment submission was received by the Ministry for approval.			

Question ID	MRDW1007001	Question Type	Legislative
Question: Is the owner maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials?			
Legislative Requirement	SDWA O. Reg. 170/03 1-2 (1);		

Observation

The owner was maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials. Both wells were visually assessed during the field inspection. Well No. 3 was found to have a secure vermin proof cap with intact screens and no surface water ponding was found in the vicinity. Well No. 1 is located in a pumphouse beside the elevated storage tank and was observed to have no surface water ponding around the casing and a secure vermin proof cap.

Question ID	MRDW1009001	Question Type	Legislative
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Question:
Are measures in place to protect the groundwater and/or GUDI source in accordance with any MDWL and DWWP issued under Part V of the SDWA?

Legislative Requirement	SDWA 31 (1);
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Observation

Measures were in place to protect the groundwater and/or GUDI source in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA. During the inspection the OA provided SOP 22 Above Grade Well Inspection and SOP 23 Below Grade Well Inspection for review, which is accordance with the MDWL Section 16 Requirements;

16.2.8 An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;

16.2.9 Well inspection and maintenance procedures that consider the entire well structure of each well including all above and below grade well components; and

16.2.10 Remedial action plans for situations where an inspection indicates noncompliance with respect to regulatory requirements and/or risk to raw well water quality.

Documents provided indicated the above grade well inspection was completed in June 8, 2022, by the OIC. The OA indicated the below grade inspection has yet to be completed. The Ministry strongly recommends the Owner/OA initiated a below grade inspection of both wells, to help maintain integrity and to determine the susceptibility of the wells to contamination. The OA SOP 23 indicates the need for a below grade inspection based on analytical results that may indicate potential water quality issues, and changes in chemicals indicators especially after rainstorms or snow melts. Based on the analytical records reviewed it appears the chemical "Nitrates" have been seasonally increasing and has the potential to impact the water quality of the system, therefore based on the SOP 23 a below grade inspection should be schedule and completed.

Question ID	MRDW1014001	Question Type	Legislative
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Question:	
Is there sufficient monitoring of flow as required by the MDWL or DWWP issued under Part V of the SDWA?	
Legislative Requirement	SDWA 31 (1);
Observation	
<p>There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.</p> <p>During the inspection flow meters were observed and operational on both wells in accordance with MDWL Schedule C 2 Flow Measurement and Recording Requirements;</p> <p>2.1.1 The flow rate (L/s) and daily volume (m³/day) of treated water that flows from the treatment subsystem to the distribution system.</p> <p>2.1.2 The flow rate (L/s) and daily volume (m³/day) of water that flows into the treatment subsystem.</p> <p>The OA also monitors the flows into the Ion Exchange unit, it was reported that the 75% of raw water enters the unit. Records provided for reviewed indicate that all flow meters for the System were verified by Tower Electronics Canada on June 7, 2022.</p>	

Question ID	MRDW1016001	Question Type	Legislative
Question:			
Is the owner in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the MDWL issued under Part V of the SDWA?			
Legislative Requirement	SDWA 31 (1);		
Observation			
<p>The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.</p> <p>Schedule C of the MDWL Section 1.0 System Performance-Rated capacity indicates a maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the rated capacity of 1,633 m³/day.</p> <p>SCADA (Supervisory Control And Data Acquisition) flow records derived from the treated water flow meters were provided for review, and revealed a maximum treated flow of 932m³/day reported in August 2022; which represents approximately 57% of the rated capacity.</p> <p>The average daily flows reported during the inspection period was 540 m³/day, which represents 33% of the rated capacity.</p>			

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Question ID	MRDW1023001	Question Type	Legislative
Question:			
Do records indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a DWWP and/or MDWL issued under Part V of the SDWA at all times that water was being supplied to consumers?			
Legislative Requirement	SDWA O. Reg. 170/03 1-2 (2);		
Observation			
Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under O. Reg. 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.			
All municipal drinking water systems that obtain water from a 'surface water' supply must provide a minimum level of treatment consisting of chemically assisted filtration and disinfection to ensure adequate level of removal or inactivation of pathogenic organisms that may be present in raw surface water.			
The system obtains water from Well No 3. which are classified as groundwater under the direct influence of surface water (GUDI) with effective in-situ filtration. The Tweed Drinking Water System services the Village of Tweed and consists of two groundwater wells, a water treatment facility and a water distribution system. The water treatment facility includes an ion exchange unit and a disinfection system utilizing ultraviolet (UV) light and sodium hypochlorite.			
The treatment facility is capable of achieving an overall performance that provides at a minimum 4-log removal or inactivation of viruses, 3-log removal or inactivation of Giardia cysts, and 2-Log removal or inactivation of Cryptosporidium oocysts, as per MDWL Schedule E: Pathogen Log Removal/Inactivation Credits.			
A review of the operational records, including flow rates, UV Dosage, chlorine residuals, and logbook entries indicates the system appeared to be operated in a manner that achieved the design capabilities.			

Question ID	MRDW1026001	Question Type	Legislative
Question:			
If primary disinfection equipment that does not use chlorination or chloramination is provided, is the equipment equipped with alarms or shut-off mechanisms that satisfy the			

standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03?	
Legislative Requirement	SDWA O. Reg. 170/03 1-6 (1);
Observation	
<p>The primary disinfection equipment was equipped with alarms or shut-off mechanisms that satisfied the standards described in Section 1-6 (1) of Schedule 1 of O. Reg. 170/03.</p> <p>The OA indicated the UV Units alternate duty operations and the other is standby (alternate at plant start-up), each rated at 18.9 L/s. The units are continuously monitored and are equipped with an alarm that will lock-out the plant if the intensity falls below 46.1 W/m², with no time delay. If one unit were to fail, the second unit would automatically be switched over to resume treatment operations and should the second UV unit fail, then the entire water treatment plant would be locked out.</p>	

Question ID	MRDW1030000	Question Type	Legislative
Question:			
Is primary disinfection chlorine monitoring being conducted at a location approved by MDWL and/or DWWP issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved?			
Legislative Requirement	SDWA O. Reg. 170/03 7-2 (1); SDWA O. Reg. 170/03 7-2 (2);		
Observation			
<p>Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved. Primary disinfection is continuously monitored by a free chlorine residual analyzer located at the end of the chlorine contact pipe; as specified in the DWWP Schedule A: 17 m³ capacity (750 mm diameter) chlorine contact pipe located prior to the distribution system to provide chlorine contact time.</p> <p>The Ministry recommends the OA update "Tweed WTF Wells 1&3 CT Requirements" to add the chlorine contact time calculation/dosage as provided in the excel document "Deloro Cluster CT calculation", for acute reflection of designated log removal credits in accordance with the MDWL Schedule E: Pathogen Log Removal/Inactivation Credits for primary disinfection.</p>			

Question ID	MRDW1039000	Question Type	Legislative
Question:			
If primary disinfection equipment that does not use chlorination or chloramination is			

provided, has the owner and operating authority ensured that the equipment has a recording device that continuously records the performance of the disinfection equipment?	
Legislative Requirement	SDWA O. Reg. 170/03 1-6 (3);
Observation	
<p>The owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.</p> <p>MDWL Section 1.6, Schedule C requires flow rate, UV light intensity and UV lamp status to be recorded once every four (4) hours or less. Flow rate through the UV units is deemed to be equal to that monitored by the treated water flow meter. UV intensity is continually monitored and will lock out the plant when the intensity falls below 46.1 W/m², data is recorded every two minutes and is alarmed should the recording stop. UV intensity for the units, lamp elapsed time and lamp status are continuously monitored and displayed on the operator interface, located on the control panel door.</p>	

Question ID	MRDW1042001	Question Type	Legislative
Question:			
If UV disinfection is used were duty sensors and reference UV sensors checked and calibrated as per the requirements of Schedule E of the MDWL or at a frequency as otherwise recommended by the UV equipment manufacturer?			
Legislative Requirement	SDWA 31 (1);		
Observation			
<p>All UV sensors were checked and calibrated as required.</p> <p>MDWL Schedule E: Pathogen Log Removal/Inactivation Credits; Treatment Component UV Disinfection specifies :</p> <p>Duty UV Sensor Checks and Calibration</p> <ol style="list-style-type: none"> 1. Duty UV sensors shall be checked on at least a monthly basis against a reference UV sensor; 2. When comparing a duty UV sensor to a reference UV sensor, the calibration ratio (intensity measured with the duty UV sensor/intensity measured with the reference UV sensor) shall be less than or equal to 1.2; 3. If the calibration ratio is greater than 1.2, the duty UV sensor shall be replaced with a calibrated UV sensor or a UV sensor correction factor shall be applied while the problem with the UV sensor is being resolved; 4. Reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer. <p>Records were reviewed for the inspection period that showed that duty sensors for both UV units were checked monthly against a reference sensor. During the inspection period,</p>			

calibration ratios were less than or equal to 1.2 as required.

Question ID	MRDW1083001	Question Type	Legislative
Question: For LMR systems, are all microbiological water quality monitoring requirements for treated samples being met?			
Legislative Requirement	SDWA O. Reg. 170/03 10-3;		
Observation			
All microbiological water quality monitoring requirements prescribed by legislation for treated samples were being met. During the inspection period, at least 1 treated samples was collected per week and analyzed for EC, TC and HPC in accordance with Schedule 10-3 of O.Reg 170/03.			
During the inspection period, EC and TC samples were reported as non- detected, and HPC ranged from 0 to 1 CFU/1mL.			

Question ID	MRDW1084001	Question Type	Legislative
Question: Are all inorganic water quality monitoring requirements prescribed by legislation conducted within the required frequency?			
Legislative Requirement	SDWA O. Reg. 170/03 13-2;		
Observation			
All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency. The most recent Schedule 23 inorganic parameters collected from a treated water sample was on March 7, 2022 and previously sampled on March 3, 2021 in accordance with Schedule 13-2 of O.Reg 170/03.			

Question ID	MRDW1093001	Question Type	Legislative
Question: If the owner is required to conduct sampling under Schedule 13 of O. Reg. 170/03, have they increased the frequency of monitoring for any Schedule 13-2 or 13-4 parameter(s) as a result of having exceeded half the value of an applicable ODWQS?			
Legislative Requirement	SDWA O. Reg. 170/03 13-5 (1); SDWA O. Reg. 170/03 13-5 (2);		
Observation			

The owner was required to increase frequency of monitoring as a result of having exceeded half the value of an applicable ODWQS of a Schedule 13-2 or 13-4 parameter(s) and the increased monitoring was conducted.

The OA indicated the rising nitrates levels in the source water, to above the half maximum allowable concentration (MAC) specified in the Ontario Drinking Water Quality Standards O.Reg 169/03(ODWQS). The O/OA has increased raw water sampling to monthly and reported the filter media replacement is scheduled for fall 2022, as well the QRSPC has identified nitrates as an issue under the Clean Water Act, and will be creating and implementing plans and restrictions within the contributing area equal to the 25 year wellhead. These plans and restriction will subsequently start implementing additional measures on the land to lower the level of nitrates in the groundwater.

During the inspection period, water samples tested for Uranium are also reported above half MAC of the ODWQS standards and increase sampling is required in accordance with the MDWL Schedule C Section 5 Additional Sampling, Testing and Monitoring, Table 5: Drinking Water Health Related Parameters requires Uranium to be sampled in the distribution system quarterly. The proposed filter media is also designed to remove uranium from the source water, which will help reduce uranium levels.

Question ID	MRDW1088000	Question Type	Legislative
Question:			
Are all nitrate/nitrite water quality monitoring requirements prescribed by legislation conducted within the required frequency for the DWS?			
Legislative Requirement	SDWA O. Reg. 170/03 13-7;		
Observation			
All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS. During the inspection period treated samples were collected and analyzed for nitrates/nitrites on the following dates:			
2022-08-02			
2022-07-04			
2022-06-06			
2022-05-02			
2022-04-04			
2022-03-07			
2022-03-07			
2022-02-07			
2022-01-10			
2022-01-04			
2021-12-06			
2021-11-08			

2021-10-12
2021-10-04
2021-09-13

Question ID	MRDW1089000	Question Type	Legislative
Question: Are all sodium water quality monitoring requirements prescribed by legislation conducted within the required frequency?			
Legislative Requirement	SDWA O. Reg. 170/03 13-8;		
Observation			
All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency. The most recent Sodium treated water sample was collected on March 23, 2020 and was previously sampled on June 25, 2018 in accordance with Schedule 13-8 of O.Reg 170/03.			

Question ID	MRDW1090000	Question Type	Legislative
Question: Where fluoridation is not practiced, are all fluoride water quality monitoring requirements prescribed by legislation conducted within the required frequency?			
Legislative Requirement	SDWA O. Reg. 170/03 13-9;		
Observation			
All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency. The most recent Fluoride treated water sample was collected on October 12, 2021; in accordance with Schedule 13-9 of O. Reg 170/03.			

Question ID	MRDW1085001	Question Type	Legislative
Question: Are all organic water quality monitoring requirements prescribed by legislation conducted within the required frequency?			
Legislative Requirement	SDWA O. Reg. 170/03 13-4 (1); SDWA O. Reg. 170/03 13-4 (2); SDWA O. Reg. 170/03 13-4 (3);		
Observation			
All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency. The most recent Schedule 24 organic parameters collected			

from a treated water sample was on March 7, 2022 and previously sampled on March 3, 2021 in accordance with Schedule 13-4 of O.Reg 170/03.

APPENDIX A
**DRINKING WATER LICENCE AND
WORKS PERMIT**



MUNICIPAL DRINKING WATER LICENCE

Licence Number: 168-101

Issue Number: 3

Pursuant to the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, I hereby issue this municipal drinking water licence under Part V of the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Tweed

255 Metcalf St
Tweed, ON K0K 3J0

For the following municipal residential drinking water system:

Tweed Drinking Water System

This municipal drinking water licence includes the following:

Schedule	Description
Schedule A	Drinking Water System Information
Schedule B	General Conditions
Schedule C	System-Specific Conditions
Schedule D	Conditions for Relief from Regulatory Requirements
Schedule E	Pathogen Log Removal/Inactivation Credits

Upon the effective date of this drinking water licence # 168-101, all previously issued versions of licence # 168-101 are revoked and replaced by this licence.

DATED at TORONTO this 3rd day of June, 2021

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act, 2002*

Schedule A: Drinking Water System Information

System Owner	The Corporation of the Municipality of Tweed
Licence Number	168-101
Drinking Water System Name	Tweed Drinking Water System
Licence Effective Date	June 3, 2021

1.0 Licence Information

Licence Issue Date	June 3, 2021
Licence Effective Date	June 3, 2021
Licence Expiry Date	June 2, 2026
Application for Licence Renewal Date	December 3, 2025

2.0 Incorporated Documents

The following documents are applicable to the above drinking water system and form part of this licence:

2.1 Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
Tweed Drinking Water System	168-201	June 3, 2021

2.2 Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Well 1, Well 3	4464-A9NRHH	May 10, 2016

3.0 Financial Plans

The Financial Plan Number for the Financial Plan required to be developed for this drinking water system in accordance with O. Reg. 453/07 shall be:	168-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	168-301A

4.0 Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
Tweed Drinking Water System	Ontario Clean Water Agency	168-401	168-OA1

Schedule B: General Conditions

System Owner	The Corporation of the Municipality of Tweed
Licence Number	168-101
Drinking Water System Name	Tweed Drinking Water System
Licence Effective Date	June 3, 2021

1.0 Definitions

1.1 Words and phrases not defined in this licence and the associated drinking water works permit shall be given the same meaning as those set out in the SDWA and any regulations made in accordance with that act, unless the context requires otherwise.

1.2 In this licence and the associated drinking water works permit:

“**adverse effect**”, “**contaminant**” and “**natural environment**” shall have the same meanings as in the EPA;

“**alteration**” may include the following in respect of this drinking water system:

- (a) An addition to the system,
- (b) A modification of the system,
- (c) A replacement of part of the system, and
- (d) An extension of the system;

“**compound of concern**” means a contaminant described in paragraph 4 subsection 26 (1) of O. Reg. 419/05, namely, a contaminant that is discharged to the air from a component of the drinking water system in an amount that is not negligible;

“**CT**” means the CT Disinfection Concept, as described in subsection 3.1.1 of the Ministry’s Procedure for Disinfection of Drinking Water in Ontario, dated July 29 2016.

“**Director**” means a Director appointed pursuant to section 6 of the SDWA for the purposes of Part V of the SDWA;

“**drinking water works permit**” means the drinking water works permit for the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

“**emission summary table**” means a table described in paragraph 14 of subsection 26 (1) of O. Reg. 419/05;

“**EPA**” means the *Environmental Protection Act*, R.S.O. 1990, c. E.19;

“**financial plan**” means the financial plan required by O. Reg. 453/07;

“**Harmful Algal Bloom (HAB)**” means an overgrowth of aquatic algal bacteria that produce or have the potential to produce toxins in the surrounding water, when the algal

cells are damaged or die. Such bacteria are harmful to people and animals and include microcystins produced by cyanobacterial blooms.

“**licence**” means this municipal drinking water licence for the municipal drinking water system identified in Schedule A of this licence;

“**Ministry**” means the Ontario Ministry of the Environment, Conservation and Parks;

“**operational plan**” means an operational plan developed in accordance with the Director’s Directions – Minimum Requirements for Operational Plans made under the authority of subsection 15(1) of the SDWA;

“**owner**” means the owner of the drinking water system as identified in Schedule A of this licence;

“**OWRA**” means the *Ontario Water Resources Act*, R.S.O. 1990, c. 0.40;

“**permit to take water**” means the permit to take water that is associated with the taking of water for purposes of the operation of the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

“**point of impingement**” has the same meaning as in section 2 of O. Reg. 419/05 under the EPA;

“**point of impingement limit**” means the appropriate standard from Schedule 2 or 3 of O. Reg. 419/05 under the EPA and if a standard is not provided for a compound of concern, the concentration set out for the compound of concern in the document titled “Air Contaminants Benchmarks (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants”, as amended from time to time and published by the Ministry and available on a government of Ontario website;

“**licensed engineering practitioner**” means a person who holds a licence, limited licence or temporary licence under the Professional Engineers Act;

“**provincial officer**” means a provincial officer designated pursuant to section 8 of the SDWA;

“**publication NPC-300**” means the Ministry publication titled “Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning” dated August 2013, as amended;

“**SCADA system**” means a supervisory control and data acquisition system used for process monitoring, automation, recording and/or reporting within the drinking water system;

“**SDWA**” means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32;

"**sensitive receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from a discharge to air from an emergency generator that is a component of the drinking water system, including one or a combination of:

- (a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.),
- (b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.),
- (c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.), and
- (d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings).

"**sub-system**" has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) under the SDWA;

"**surface water**" means water bodies (lakes, wetlands, ponds - including dug-outs), water courses (rivers, streams, water-filled drainage ditches), infiltration trenches, and areas of seasonal wetlands;

"**UV**" means ultraviolet, as in ultraviolet light produced from an ultraviolet reactor.

2.0 Applicability

- 2.1 In addition to any other applicable legal requirements, the drinking water system identified above shall be established, altered and operated in accordance with the conditions of the drinking water works permit and this licence.

3.0 Licence Expiry

- 3.1 This licence expires on the date identified as the licence expiry date in Schedule A of this licence.

4.0 Licence Renewal

- 4.1 Any application to renew this licence shall be made on or before the date identified as the application for licence renewal date set out in Schedule A of this licence.

5.0 Compliance

- 5.1 The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, all applicable regulations made in accordance with that act, the drinking water works permit and this licence and shall take all reasonable measures to ensure any such person complies with the same.

6.0 Licence and Drinking Water Works Permit Availability

- 6.1 At least one copy of this licence and the drinking water works permit shall be stored in such a manner that they are readily viewable by all persons involved in the operation of the drinking water system.

7.0 Permit to Take Water and Drinking Water Works Permit

- 7.1 A permit to take water identified in Schedule A of this licence is the applicable permit on the date identified as the Effective Date of this licence.
- 7.2 A drinking water works permit identified in Schedule A of this licence is the applicable permit on the date identified as the Effective Date of this licence.

8.0 Financial Plan

- 8.1 For every financial plan prepared in accordance with subsections 2(1) and 3(1) of O. Reg. 453/07, the owner of the drinking water system shall:
- 8.1.1 Ensure that the financial plan contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence; and
- 8.1.2 Submit a copy of the financial plan to the Ministry of Municipal Affairs and Housing within three (3) months of receiving approval by a resolution of municipal council or the governing body of the owner.

9.0 Interpretation

- 9.1 Where there is a conflict between the provisions of this licence and any other document, the following hierarchy shall be used to determine the provision that takes precedence:
- 9.1.1 The SDWA;
- 9.1.2 A condition imposed in this licence that explicitly overrides a prescribed regulatory requirement;
- 9.1.3 A condition imposed in the drinking water works permit that explicitly overrides a prescribed regulatory requirement;
- 9.1.4 Any regulation made under the SDWA;
- 9.1.5 Any provision of this licence that does not explicitly override a prescribed regulatory requirement;
- 9.1.6 Any provision of the drinking water works permit that does not explicitly override a prescribed regulatory requirement;
- 9.1.7 Any application documents listed in this licence, or the drinking water works permit from the most recent to the earliest; and

- 9.1.8 All other documents listed in this licence, or the drinking water works permit from the most recent to the earliest.
- 9.1.9 Any other technical bulletin or procedure issued by the Ministry from the most recent to the earliest.
- 9.2 If any requirement of this licence or the drinking water works permit is found to be invalid by a court of competent jurisdiction, the remaining requirements of this licence and the drinking water works permit shall continue to apply.
- 9.3 The issuance of and compliance with the conditions of this licence and the drinking water works permit does not:
- 9.3.1 Relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including the *Environmental Assessment Act*, R.S.O. 1990, c. E.18; and
- 9.3.2 Limit in any way the authority of the appointed Directors and provincial officers of the Ministry to require certain steps be taken or to require the owner to furnish any further information related to compliance with the conditions of this licence or the drinking water works permit.
- 9.4 For greater certainty, nothing in this licence or the drinking water works permit shall be read to provide relief from regulatory requirements in accordance with section 46 of the SDWA, except as expressly provided in the licence or the drinking water works permit.

10.0 Adverse Effects

- 10.1 Nothing in this licence or the drinking water works permit shall be read as to permit:
- 10.1.1 The discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or
- 10.1.2 The discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.
- 10.2 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.
- 10.3 Fulfillment of one or more conditions imposed by this licence or the drinking water works permit does not eliminate the requirement to fulfill any other condition of this licence or the drinking water works permit.

11.0 Change of Owner or Operating Authority

- 11.1 This licence is not transferable without the prior written consent of the Director.
- 11.2 The owner shall notify the Director in writing at least 30 days prior to a change of any operating authority identified in Schedule A of this licence.
 - 11.2.1 Where the change of operating authority is the result of an emergency situation, the owner shall notify the Director in writing of the change as soon as practicable.

12.0 Information to be Provided

- 12.1 Any information requested by a Director or a provincial officer concerning the drinking water system and its operation, including but not limited to any records required to be kept by this licence or the drinking water works permit, shall be provided upon request.

13.0 Records Retention

- 13.1 Except as otherwise required in this licence or the drinking water works permit, any records required by or created in accordance with this licence or the drinking water works permit, other than the records specifically referenced in section 12 or section 13 of O. Reg. 170/03, shall be retained for at least 5 years and made available for inspection by a provincial officer, upon request.

14.0 Chemicals and Materials

- 14.1 All chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60, NSF/61 and NSF/372.
 - 14.1.1 In the event that the standards are updated, the owner may request authorization from the Director to use any on hand chemicals and materials that previously met the applicable standards.
- 14.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be available at all times for each chemical and material used in the operation of the drinking water system that comes into contact with water within the system.
- 14.3 Conditions 14.1 and 14.2 do not apply in the case of the following:
 - 14.3.1 Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene (HDPE);
 - 14.3.2 Articles made from stainless steel, glass, HDPE or Teflon®;
 - 14.3.3 Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement;

- 14.3.4 Gaskets that are made from NSF approved materials;
- 14.3.5 Food grade oils and lubricants, food grade anti-freeze, and other food grade chemicals and materials that are compatible for drinking water use that may come into contact with drinking water, but are not added directly to the drinking water; or
- 14.3.6 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry is satisfied that the chemical or material is acceptable for use within the drinking water system and the chemical or material is only used as permitted by the documentation.

15.0 Drawings

- 15.1 All drawings and diagrams in the possession of the owner that show any treatment subsystem as constructed shall be retained by the owner unless the drawings and diagrams are replaced by a revised or updated version showing the subsystem as constructed subsequent to the alteration.
- 15.2 Any alteration to any treatment subsystem shall be incorporated into process flow diagrams, process and instrumentation diagrams, and record drawings and diagrams within one year of the alteration being completed or placed into service.
- 15.3 Process flow diagrams and process and instrumentation diagrams for any treatment subsystem shall be kept in a place, or made available in such a manner, that they may be readily viewed by all persons responsible for all or part of the operation of the drinking water system.

16.0 Operations and Maintenance Manual

- 16.1 An up-to-date operations and maintenance manual or manuals shall be maintained and applicable parts of the manual or manuals shall be made available for reference to all persons responsible for all or part of the operation or maintenance of the drinking water system.
- 16.2 The operations and maintenance manual or manuals, shall include at a minimum:
 - 16.2.1 The requirements of this licence and associated procedures;
 - 16.2.2 The requirements of the drinking water works permit for the drinking water system;
 - 16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system including where applicable:
 - a) A copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions and other operating conditions, if applicable; and
 - b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;

- 16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;
 - 16.2.5 Procedures for the operation and maintenance of monitoring equipment;
 - 16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;
 - 16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;
 - 16.2.8 An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;
 - 16.2.9 Well inspection and maintenance procedures that consider the entire well structure of each well including all above and below grade well components; and
 - 16.2.10 Remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.
- 16.3** Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.
- 16.4** All of the procedures included or referenced within the operations and maintenance manual must be implemented.

Schedule C: System-Specific Conditions

System Owner	The Corporation of the Municipality of Tweed
Licence Number	168-101
Drinking Water System Name	Tweed Drinking Water System
Licence Effective Date	June 3, 2021

1.0 System Performance

Rated Capacity

- 1.1 For each treatment subsystem listed in column 1 of Table 1, the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the value identified as the rated capacity in column 2 of the same row.

Table 1: Rated Capacity	
Column 1 Treatment Subsystem Name	Column 2 Rated Capacity (m ³ /day)
Water Treatment Facility	1,633

Maximum Flow Rates

- 1.2 For each treatment subsystem listed in column 1 of Table 2, the maximum flow rate of water that flows into a treatment subsystem component listed in column 2 shall not exceed the value listed in column 3 of the same row.

Table 2: Maximum Flow Rates		
Column 1 Treatment Subsystem Name	Column 2 Treatment Subsystem Component	Column 3 Maximum Flow Rate (L/s)
Not Applicable	Not Applicable	Not Applicable

- 1.3 Despite conditions 1.1 and 1.2, a treatment subsystem may be operated temporarily at a maximum daily volume and/or a maximum flow rate above the values set out in column 2 of Table 1 and column 3 of Table 2 respectively for the purposes of fighting a large fire or for the maintenance of the drinking water system.
- 1.4 Condition 1.3 does not authorize the discharge into the distribution system of any water that does not meet all of the requirements of this licence and all other regulatory requirements, including compliance with the Ontario Drinking Water Quality Standards.

Residuals Management

- 1.5 In respect of an effluent discharged into the natural environment from a treatment subsystem or treatment subsystem component listed in column 1 of Table 3:
- 1.5.1 The annual average concentration of a test parameter identified in column 2 shall:
- not exceed the value in column 3 of the same row; and
 - be calculated at least once monthly as the running annual average based on the previous twelve months of results;
- 1.5.2 Where the average concentration of a test parameter identified in column 2 exceeds the value in column 3, the concentration shall be reported to the local Ministry district office within 72 hours of receipt of the last lab result used in the calculation;
- 1.5.3 The maximum concentration of a test parameter identified in column 2 shall not exceed the value in column 4 of the same row;
- 1.5.4 Where the maximum concentration of a test parameter identified in column 2 exceeds the value in column 4, the discharge shall be reported in accordance with s.13.2 of O. Reg. 675.98 and recorded in accordance with s.12.2 of O. Reg. 675.98 within 24 hours of receipt of the lab result; and,
- 1.5.5 The test parameters listed in column 2 of Table 3 shall be sampled in accordance with conditions 5.2, 5.3 and 5.4 of Schedule C in this Licence.

Table 3: Residuals Management			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Annual Average Concentration (mg/L)	Column 4 Maximum Concentration (mg/L)
Not Applicable	Not Applicable	Not Applicable	Not Applicable

UV Disinfection Equipment Performance

- 1.6 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 4, and while directing water to the distribution system and being used to meet pathogen log removal/inactivation credits specified in Schedule E:
- 1.6.1 The UV disinfection equipment shall be operated within the validated limits for the equipment at all times such that a continuous pass-through UV dose is maintained throughout the life time of the UV lamp(s) that is at least the minimum continuous pass-through UV dose set out in column 2 of the same row

- 1.6.2 In addition to any other sampling, analysis and recording that may be required, the ultraviolet light disinfection equipment shall test for the test parameters set out in column 4 of the same row at a testing frequency of once every five (5) minutes or less and record the test data at a recording frequency of once every four (4) hours or less;
- 1.6.3 If there is a UV disinfection equipment alarm signaling that the disinfection equipment is malfunctioning, has lost power, or is not providing the appropriate level of disinfection the test parameters set out in column 4 of the same row shall be recorded at a recording frequency of once every five minutes or less until the alarm condition has been corrected;
- 1.6.4 A monthly summary report shall be prepared at the end of each calendar month which sets out the time, date and duration of each UV equipment alarm described in condition 1.6.3, the volume of water treated during each alarm period and the actions taken by the operating authority to correct the alarm situation;

Table 4: UV Disinfection Equipment			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm ²)	Column 3 Control Strategy	Column 4 Test Parameter
UV Light Disinfection Unit	40 mJ/cm ²	UV Intensity Set Point	Flow Rate
			UV Light Intensity
			UV Lamp Status

2.0 Flow Measurement and Recording Requirements

- 2.1 For each treatment subsystem identified in column 1 of Table 1 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for:
- 2.1.1 The flow rate (L/s) and daily volume (m³/day) of treated water that flows from the treatment subsystem to the distribution system.
- 2.1.2 The flow rate (L/s) and daily volume (m³/day) of water that flows into the treatment subsystem.
- 2.2 For each treatment subsystem component identified in column 2 of Table 2 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of water that flows into the treatment subsystem component.

- 2.3 Where a rated capacity from Table 1 or a maximum flow rate from Table 2 is exceeded, the following shall be recorded:
- 2.3.1 The difference between the measured amount and the applicable rated capacity or maximum flow rate specified in Table 1 or Table 2;
 - 2.3.2 The time and date of the measurement;
 - 2.3.3 The reason for the exceedance; and
 - 2.3.4 The duration of time that lapses between the applicable rated capacity or maximum flow rate first being exceeded and the next measurement where the applicable rated capacity or maximum flow rate is no longer exceeded.

3.0 Calibration of Flow Measuring Devices

- 3.1 All flow measuring devices that are required by regulation, by a condition in the drinking water works permit 168-201, or by a condition otherwise imposed by the Ministry, shall be checked and where necessary calibrated in accordance with the manufacturer's instructions.
- 3.2 If the manufacturer's instructions do not indicate how often to check and calibrate a flow measuring device, the equipment shall be checked and where necessary calibrated at least once every 12 months during which the drinking water system is in operation.
- 3.2.1 For greater certainty, if condition 3.2 applies, the equipment shall be checked and where necessary calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

4.0 Calibration of CT Monitoring System

- 4.1 Any measuring instrumentation that forms part of the monitoring system for CT shall be checked and where necessary calibrated at least once every 12 months during which the drinking water system is in operation, or more frequently in accordance with the manufacturer's instructions.
- 4.1.1 For greater certainty, if condition 4.1 applies, the instrumentation shall be checked and where necessary calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

5.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

- 5.1 For each treatment subsystem or treatment subsystem component identified in column 1 of Tables 5 and 6 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter

listed in column 2 at the sampling frequency listed in column 3 and at the monitoring location listed in column 4 of the same row.

Table 5: Drinking Water Health Related Parameters			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Tweed Water Distribution System	Uranium	Quarterly	Distribution

Table 6: Drinking Water Non-Health Related Parameters			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Discharge Parameters

- 5.2** For each treatment subsystem or treatment subsystem component identified in column 1 of Table 7 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 using the sample type identified in column 3 at the sampling frequency listed in column 4 and at the monitoring location listed in column 5 of the same row.
- 5.3** For the purposes of Table 7:
- 5.3.1 Manual Composite means the mean of at least three grab samples taken during a discharge event, with one sample being taken immediately following the commencement of the discharge event, one sample being taken approximately at the mid-point of the discharge event and one sample being taken immediately before the end of the discharge event; and
- 5.3.2 Automated Composite means samples must be taken during a discharge event by an automated sampler at a minimum sampling frequency of once per hour.
- 5.4** Any sampling, testing and monitoring for the test parameter Total Suspended Solids shall be performed in accordance with the requirements set out in the publication "Standard Methods for the Examination of Water and Wastewater", 23rd Edition, 2017, or as amended from time to time by more recently published editions.

Table 7: Environmental Discharge Parameters				
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sample Type	Column 4 Sampling Frequency	Column 5 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

5.5 Pursuant to Condition 10 of Schedule B of this licence, the owner may undertake the following environmental discharges associated with the maintenance and/or repair of the drinking water system:

- 5.5.1 The discharge of potable water from a watermain to a road or storm sewer;
- 5.5.2 The discharge of potable water from a water storage facility or pumping station:
 - a) To a road or storm sewer; or
 - b) To a watercourse where the discharge has been dechlorinated and if necessary, sediment and erosion control measures have been implemented.
- 5.5.3 The discharge of dechlorinated non-potable water from a watermain, water storage facility or pumping station to a road or storm sewer;
- 5.5.4 The discharge of raw water from a groundwater well to the environment where if necessary, sediment and erosion control measures have been implemented; and
- 5.5.5 The discharge of raw water, potable water or non-potable water from a treatment subsystem to the environment where if necessary, the discharge has been dechlorinated and sediment and erosion control measures have been implemented.
- 5.5.6 The discharge of any excess water to a road, storm sewer or the environment, associated with the management of materials excavated as part of watermain construction or repair, where necessary sediment, erosion and environmental control measures have been implemented.

6.0 Studies Required

6.1 Not Applicable

7.0 Source Protection

- 7.1 The owner of the drinking water system shall implement risk management measures, as appropriate, to manage any potential threat to drinking water that results from the operation of the drinking water system.
- 7.2 The owner of the system shall notify the Director in writing within thirty (30) days of any approved changes to an applicable source protection plan that impact the assessed threat level of a fuel oil system identified in Schedule A of drinking water works permit.
- 7.3 The notification required in condition 7.2 shall include:
 - 7.3.1 A description of the changes and their impact on the assessed threat level of the fuel oil system(s); and,
 - 7.3.2 A timeline for re-assessing the threat level and providing the results of the assessment to the Director.

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	The Corporation of the Municipality of Tweed
Licence Number	168-101
Drinking Water System Name	Tweed Drinking Water System
Licence Effective Date	June 3, 2021

Effective June 3, 2021, no relief from regulatory requirements is authorized by the Director under section 46 of the SDWA in respect of the drinking water system.

Schedule E: Pathogen Log Removal/Inactivation Credits

System Owner	The Corporation of the Municipality of Tweed
Licence Number	168-101
Drinking Water System Name	Tweed Drinking Water System
Licence Effective Date	June 3, 2021

1.0 Primary Disinfection Pathogen Log Removal/Inactivation Credits

Tweed Water Treatment Facility

Well No.1 & Well No. 3 [GUDI with Effective In-situ filtration]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Tweed Water Treatment Facility	2	3	4

Log Removal/Inactivation Credits Assigned ^a	Cryptosporidium Oocysts	Giardia Cysts	Viruses
UV Disinfection [40 mJ/cm ²]	2	3	2
Chlorination [CT: Contact Pipe]	-	-	2+

^a Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.

Treatment Component	Log Removal/Inactivation Credit Assignment Criteria
UV Disinfection	<p data-bbox="522 321 889 344">Duty UV Sensor Checks and Calibration</p> <ol data-bbox="522 369 1396 632" style="list-style-type: none"> <li data-bbox="522 369 1344 417">1. Duty UV sensors shall be checked on at least a monthly basis against a reference UV sensor; <li data-bbox="522 417 1393 489">2. When comparing a duty UV sensor to a reference UV sensor, the calibration ratio (intensity measured with the duty UV sensor/intensity measured with the reference UV sensor) shall be less than or equal to 1.2; <li data-bbox="522 489 1370 560">3. If the calibration ratio is greater than 1.2, the duty UV sensor shall be replaced with a calibrated UV sensor or a UV sensor correction factor shall be applied while the problem with the UV sensor is being resolved; <li data-bbox="522 560 1396 632">4. Reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer; <p data-bbox="522 653 764 676">Operational Requirements</p> <ol data-bbox="522 701 1393 961" style="list-style-type: none"> <li data-bbox="522 701 1393 793">5. Ultraviolet light disinfection equipment shall have a feature that ensures that no water is directed to users of water treated by the equipment or that causes an alarm to sound in the event that the equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection; <li data-bbox="522 793 1370 842">6. Water shall not flow through a UV reactor when the reactor's UV lights are off or not fully energized; <li data-bbox="522 842 1154 865">7. UV lamp status shall indicate whether each UV lamp is on or off; <li data-bbox="522 865 1377 913">8. All UV sensors shall operate within their calibration range or corrective measures shall be taken; and <li data-bbox="522 913 1338 961">9. Installed or replaced UV equipment components shall be equal or better than the components used during validation testing unless the UV equipment was revalidated.
Chlorination	<ol data-bbox="522 972 1403 1115" style="list-style-type: none"> <li data-bbox="522 972 1403 1064">1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's <i>Procedure for Disinfection of Drinking Water in Ontario</i>; and <li data-bbox="522 1064 1403 1115">2. At all times, CT provided shall be greater than or equal to the CT required to achieve the log removal credits assigned.
Primary Disinfection Notes	



DRINKING WATER WORKS PERMIT

Permit Number: 168-201

Issue Number: 3

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, I hereby issue this drinking water works permit under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Tweed

255 Metcalf St
Tweed, ON K0K 3J0

For the following municipal residential drinking water system:

Tweed Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system
Schedule D	Process Flow Diagrams

Upon the effective date of this drinking water works permit #168-201, all previously issued versions of permit #168-201 are revoked and replaced by this permit.

DATED at TORONTO this 3rd day of June, 2021

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	The Corporation of the Municipality of Tweed
Permit Number	168-201
Drinking Water System Name	Tweed Drinking Water System
Permit Effective Date	June 3, 2021

1.0 System Description

- 1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Tweed Drinking Water System** services the Village of Tweed and consists of two groundwater wells, a water treatment facility and a water distribution system. The water treatment facility includes an ion exchange unit and a disinfection system utilizing ultraviolet (UV) light and sodium hypochlorite. The distribution system consists of an elevated storage tank and approximately 18.2 km of watermains.

Tweed Water Treatment Facility

Groundwater Supply

Well No. 1 (For Emergency Use Only)

Location	351 Hungerford Road (adjacent to elevated water storage tank)
UTM Coordinates	NAD 27: UTM Zone 18: 315376.00 E, 4927669 N
Description	Drilled groundwater well cased in bedrock, a 4m x 4m x 2.5m concrete block well house, and appurtenances
Source Type	Groundwater
Well Dimensions	250 mm diameter, 132 m deep
Well Pump	Submersible well pump with a rated capacity of 15.1 L/s at a TDH of 87.9m to convey raw water from Well No. 1 to the Treatment Facility
Equipment	Pump discharge piping including pump-to-waste connection, raw water flowmeter and flow control valve
	Approximately 875 m of 150 mm diameter watermain from Well No. 1 site to the Treatment Facility
Notes	

Well No. 3 (Crookston Well)

Location	430 Crookston Road (54m north of County Road 38, 188 m west of College Street)
UTM Coordinates	NAD 27: UTM Zone 18: 315426.00 E, 4926973.00 N
Description	Drilled groundwater well cased in bedrock, a 14.1m x 7.8m x 3.5m high concrete block treatment plant, and 100mm diameter raw water supply line to the main treatment plant
Source Type	Groundwater under the direct influence of surface water (GUDI) with effective in-situ filtration
Well Dimensions	250mm diameter, 122.2m deep
Well Pump	Submersible well pump with a rated capacity of 18.9 L/s at a TDH of 110m
Equipment	Pump discharge piping from Well No. 3 to the Treatment Facility
	Pump-to-waste connection, raw water flowmeter, flow control valve, sample line and air release valve
Notes	Located outside on the south west side of the treatment building

Water Treatment Facility

Location	430 Crookston Road (54m north of County Road 38, 188 m west of College Street)
UTM Coordinates	NAD 27: UTM Zone 18: 315426.00 E, 4926973.00 N
Description	Houses Ion Exchange unit, UV light disinfection unit, and sodium hypochlorite disinfection system
Notes	

Ion Exchange System**Ion Exchange Unit**

Description	Ion exchange treatment system for both nitrate and/or uranium removal
Capacity	1,513 m ³ /day
Equipment	One (1) ion exchange unit containing 3.12 m ³ of resin and inlet, outlet and bypass piping
	Electrically actuated valves and flowmeters to permit blending of raw and treated water
Notes	

Regeneration System

Description	Ion exchange regeneration system
Equipment	One (1) 1,200 L capacity brine storage day tank and
	One (1) transfer pump
	One (1) 31 m ³ twin compartment reinforced concrete brine make-up/bulk storage tank, transfer pump and piping to brine day tank
Notes	

Backwash System

Description	Ion exchange back flush system with softened water after every 9999 m ³
Equipment	One (1) water softener with rated capacity of 100 L/min, and discharge piping to wastewater holding tank
	One (1) 3,100 L capacity softened water storage tank
	One (1) transfer pump
	One (1) 29.3 m ³ reinforced concrete wastewater holding tank equipped with a gravity outlet and 50 mm diameter outlet orifice to limit the maximum discharge rate to 3.0 L/s
Notes	The backwash water discharged to the sanitary sewer

Disinfection**Ultraviolet (UV) Light Units**

Description	UV light for primary disinfection
Capacity	18.9 L/s, each
Equipment	Two (2) UV light reactors (one duty and one standby)
	UV intensity sensor, a portable UV transmittance photometer and manual cleaning facilities
Notes	Minimum UV dose of 40 mJ/cm ²

Chlorination

Description	A sodium hypochlorite feed system for secondary disinfection
Equipment	One (1) solution tank
	Two (2) metering pumps
	A 17 m ³ capacity (750 mm diameter) chlorine contact pipe located prior to the distribution system to provide chlorine contact time
	One pre-chlorine and one post-chlorine residual analyzers/recorder and treated water sample line
Notes	

Emergency Power

Standby Power Supply

Description	One (1) 80 Kilowatts standby diesel generator set to provide power for the drinking-water facility during emergency situations
Notes	The standby diesel generator is located outside on the north west end of the treatment building

Fuel Oil Systems

Fuel Storage Locations

Location	NAD 27: UTM Zone 18: 315426.00 E, 4926973.00 N
Description	One (1) 150 L double walled diesel fuel tank located outside on the north west end of the treatment building attached to the generator unit.
Fuel Type	Diesel
Source Protection Area	Quinte Source Water Protection Area
Notes	Vulnerability Score 10 Threat Level Significant

Instrumentation and Control

SCADA System

Description	No SCADA System
Flow Measurement Locations	One (1) raw flowmeter on inlet pipe
	One (1) flowmeter before regen unit (Treatment)
	One (1) flowmeter for water that by-passes regen-unit(raw)
	One (1) flowmeter total of Raw and Treated
Regulatory Analyzer Locations	One (1) post contact tank analyzer
Process Analyzer Locations	One (1) pre contact tank analyzer
Notes	

Elevated Storage Tanks

Tweed Elevated Storage Tank

Location	351 Hungerford Road (adjacent to Well No. 1)
UTM Coordinates	NAD 27: UTM Zone 18: 315428.00 E, 4927580 N
Description	Elevated water storage tank
Capacity	1,370 m ³
Equipment	Chlorine residual analyzer/recorder
Notes	

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains	
Column 1 Document or File Name	Column 2 Date
TWEEDMAPDRAINAGE - Greyscale.pdf	November 2006

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	The Corporation of the Municipality of Tweed
Permit Number	168-201
Drinking Water System Name	Tweed Drinking Water System
Permit Effective Date	June 3, 2021

1.0 Applicability

- 1.1 In addition to any other applicable legal requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence #168-101.
- 1.2 The definitions and conditions of licence #168-101 are incorporated into this permit and also apply to this drinking water system.

2.0 Alterations to the Drinking Water System

- 2.1 Any document issued by the Director to be incorporated into Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance with the applicable conditions of this drinking water works permit and licence #168-101.
- 2.2 All documents issued by the Director as described in condition 2.1 shall form part of this drinking water works permit.
- 2.3 All parts of the drinking water system in contact with drinking water that are added, modified, replaced, extended shall be disinfected in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:
 - a) Until December 2, 2021 the ministry's Watermain Disinfection Procedure, dated November 2015. As of December 3, 2021 the ministry's Watermain Disinfection Procedure, dated August 1, 2020;
 - b) Subject to condition 2.3.2, any updated version of the ministry's Watermain Disinfection Procedure;
 - c) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
 - d) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
 - e) AWWA C654 – Standard for Disinfection of Wells.
- 2.3.1 For greater clarity, where an activity has occurred that could introduce contamination, including but not limited to repair, maintenance, or physical / video inspection, all equipment that may come in contact with the drinking water system shall be disinfected in accordance with the requirements of condition 2.3. above.
- 2.3.2 Updated requirements described in condition 2.3 b) are effective six months from the date of publication of the updated Watermain Disinfection Procedure.

- 2.4 The owner shall notify the Director in writing within thirty (30) days of the placing into service or the completion of any addition, modification, replacement, removal or extension of the drinking water system which had been authorized through:
- 2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;
 - 2.4.2 Any document to be incorporated in Schedule C to this drinking water works permit respecting works other than watermains; or
 - 2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.
- 2.5 The notification required in condition 2.4 shall be submitted using the "Director Notification Form" published by the Ministry.
- 2.6 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement, removal or extension in respect of the drinking water system which:
- 2.6.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;
 - 2.6.2 Constitutes maintenance or repair of the drinking water system; or
 - 2.6.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.
- 2.7 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.
- 2.8 For greater certainty, the owner may only carry out alterations to the drinking water system in accordance with this drinking water works permit after having satisfied other applicable legal obligations, including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

- 3.1 The owner may alter the drinking water system, or permit it to be altered by a person acting on the owner's behalf, by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:
- 3.1.1 The design of the watermain addition, modification, replacement or extension:
 - a) Has been prepared by a licensed engineering practitioner;
 - b) Has been designed only to transmit water and has not been designed to treat water;

-
- c) Satisfies the design criteria set out in the Ministry publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012”, as amended from time to time; and
 - d) Is consistent with or otherwise addresses the design objectives contained within the Ministry publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.
- 3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.
 - 3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system’s ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.
 - 3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.
 - 3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.
 - 3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.
 - 3.1.7 A licensed engineering practitioner has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.
 - 3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.
- 3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:
 - 3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;
 - 3.2.2 Has a nominal diameter greater than 750 mm;
 - 3.2.3 Results in the fragmentation of the drinking water system; or
 - 3.2.4 Connects to another drinking water system, unless:
 - a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner’s delegate of the drinking water system being connected to; and

- b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.
- 3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:
- 3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry, prior to the watermain addition, modification, replacement or extension being placed into service; and
- 3.3.2 Retained for a period of ten (10) years by the owner.
- 3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:
- 3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
- 3.4.2 Constitutes maintenance or repair of the drinking water system.
- 3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.
- 3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.
- 3.7 Despite clause (a) of condition 3.1.1 and condition 3.1.7, with respect to the replacement of an existing watermain or section of watermain that is 6.1 meters in length or less, if a licensed engineering practitioner has:
- 3.7.1 inspected the replacement prior to it being put into service;
- 3.7.2 prepared a report confirming that the replacement satisfies clauses (b), (c) and (d) of condition 3.1.1 (i.e. "Form 1 – Record of Watermains Authorized by a Future Alteration" (Form 1), Part 3, items No. 2, 3 and 4); and
- 3.7.3 appended the report referred to in condition 3.7.2 to the completed Form 1,
- the replacement is exempt from the requirements that the design of the replacement be prepared by a licensed engineering practitioner and that a licensed engineering practitioner verify on Form 1, Part 3, item No. 1 that a licensed engineering practitioner prepared the design of the replacement.
- 3.8 For greater certainty, the exemption in condition 3.7 does not apply to the replacement of an existing watermain or section of watermain if two or more sections of pipe, each of which is 6.1 meters in length or less, are joined together, if the total length of replacement pipes joined together is greater than 6.1 meters.

4.0 Minor Modifications to the Drinking Water System

- 4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:
- 4.1.1 Coagulant feed systems in the treatment system, including the location and number of dosing points:
 - a) Prior to making any alteration to the drinking water system under condition 4.1.1, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and
 - b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.1.1 and shall provide the Director with a copy of the review.
 - c) The notification required in condition 4.1.1 b) shall be submitted using the "Director Notification Form" published by the Ministry
 - 4.1.2 Instrumentation and controls, including new SCADA systems and upgrades to SCADA system hardware;
 - 4.1.3 SCADA system software or programming that:
 - a) Measures, monitors or reports on a regulated parameter;
 - b) Measures, monitor or reports on a parameter that is used to calculate CT; or,
 - c) Calculates CT for the system or is part of the process algorithm that calculates log removal, where the impacts of addition, modification or replacement have been reviewed by a licensed engineering practitioner;
 - 4.1.4 Filter media, backwashing equipment, filter troughs, and under-drains and associated equipment in the treatment system;
 - 4.1.5 Spill containment works; or,
 - 4.1.6 Coarse screens and fine screens
- 4.2 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:
- 4.2.1 Treated water pumps, pressure tanks, and associated equipment;
 - 4.2.2 Raw water pumps and process pumps in the treatment system;
 - 4.2.3 Inline booster pumping stations that are not associated with distribution system storage facilities and are on a watermain with a nominal diameter not exceeding 200 mm;
 - 4.2.4 Re-circulation devices within distribution system storage facilities;
 - 4.2.5 In-line mixing equipment;

- 4.2.6 Chemical metering pumps and chemical handling pumps;
 - 4.2.7 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,
 - 4.2.8 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry.
 - 4.2.9 Chemical injection points;
 - 4.2.10 Valves.
- 4.3 The drinking water system may be altered by replacing the following:
- 4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;
 - 4.3.2 Measuring and monitoring devices that are required by regulation, by a condition in the Drinking Water Works Permit or by a condition otherwise imposed by the Ministry.
 - 4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;
 - a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and
 - b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.
 - c) The notification required in condition 4.3.3 b) shall be submitted using the "Director Notification Form" published by the Ministry.
- 4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:
- 4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;
 - 4.4.2 The bypassing or removal of any unit process within a treatment subsystem;
 - 4.4.3 The addition of any new unit process other than coagulation within a treatment subsystem;
 - 4.4.4 A deterioration in the quality of drinking water provided to consumers;

-
- 4.4.5 A reduction in the reliability or redundancy of any component of the drinking water system;
 - 4.4.6 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or
 - 4.4.7 An adverse effect on the environment.
- 4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.
- 4.6 The verifications and documentation required in condition 4.5 shall be:
- 4.6.1 Recorded on "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System" published by the Ministry, prior to the modified or replaced components being placed into service; and
 - 4.6.2 Retained for a period of ten (10) years by the owner.
- 4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:
- 4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
 - 4.7.2 Constitutes maintenance or repair of the drinking water system, including software changes to a SCADA system that are not listed in condition 4.1.3
- 4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

- 5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the air:
- 5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;
 - 5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;
 - 5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;
 - 5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;

-
- 5.1.5 Maintenance welding stations;
 - 5.1.6 Minor painting operations used for maintenance purposes;
 - 5.1.7 Parts washers for maintenance shops;
 - 5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;
 - 5.1.9 Venting for activated carbon units for drinking water taste and odour control;
 - 5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;
 - 5.1.11 Venting for an ozone treatment unit;
 - 5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or
 - 5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.
- 5.2 The owner shall not make an addition, modification, or replacement described in condition 5.1 in relation to an activity that is not related to the treatment and/or distribution of drinking water.
- 5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.
- 5.4 The owner shall prepare an emission summary table for nitrogen oxides emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

- 5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:
- 5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;
 - 5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive receptors shall not exceed the applicable point of impingement limit, and at non-sensitive receptors shall not exceed the Ministry half-hourly screening level of 1880 ug/m³ as amended; and
 - 5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.

- 5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.
- 5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.
- 5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:
- 5.8.1 Recorded on "Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere", as published by the Ministry, prior to the additional, modified or replacement equipment being placed into service; and
- 5.8.2 Retained for a period of ten (10) years by the owner.
- 5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:
- 5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
- 5.9.2 Constitutes maintenance or repair of the drinking water system.
- 5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

- 6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:
- 6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;
- 6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and
- 6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

- 7.1 Not Applicable

8.0 Source Protection

- 8.1 Not Applicable

Schedule C: Authorization to Alter the Drinking Water System

System Owner	The Corporation of the Municipality of Tweed
Permit Number	168-201
Drinking Water System Name	Tweed Drinking Water System
Permit Effective Date	June 3, 2021

1.0 General

1.1 Table 2 provides a reference list of all documents to be incorporated into Schedule C that have been issued as of the date that this permit was issued.

1.1.1 Table 2 is not intended to be a comprehensive list of all documents that are part of Schedule C. For clarity, any document issued by the Director to be incorporated into Schedule C after this permit has been issued is considered part of this drinking water works permit.

Table 2: Schedule C Documents

Column 1 Issue #	Column 2 Issued Date	Column 3 Description	Column 4 Status	Column 5 DN#
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

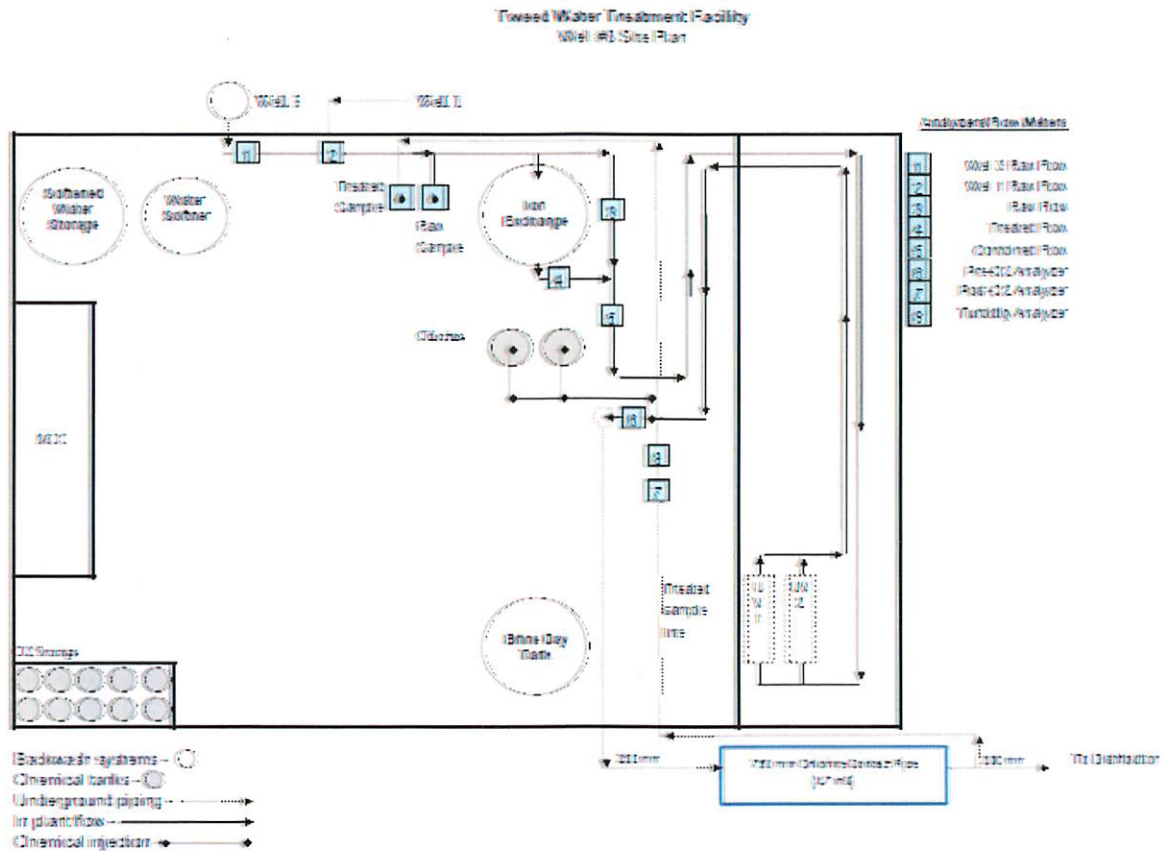
1.2 For each document described in columns 1, 2 and 3 of Table 2, the status of the document is indicated in column 4. Where this status is listed as 'Archived', the approved alterations have been completed and relevant portions of this permit have been updated to reflect the altered works. These 'Archived' Schedule C documents remain as a record of the alterations.

Schedule D: Process Flow Diagrams

System Owner	The Corporation of the Municipality of Tweed
Permit Number	168-201
Drinking Water System Name	Tweed Drinking Water System
Permit Effective Date	June 3, 2021

1.0 Process Flow Diagrams

Tweed Water Treatment Facility



[Source: Tweed Operational Plan Nov 20 2020]

Note: this process flow diagram is for reference only, and represents a high level overview of the system as of November 20, 2020.



APPENDIX B
PERMIT TO TAKE WATER

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Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

PERMIT TO TAKE WATER
Ground Water

NUMBER 4464-A9NRHH

Reference Number 2584-A63K

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

The Corporation of the Municipality of Tweed
255 Metcalf Street
Tweed, Ontario K0K 3J0
Canada

For the water taking from: Well 1, Well 3

Located at: 404 Hungerford Road Village of Tweed
Tweed, County of Hastings

430 River Street West Village of Tweed
Tweed, County of Hastings

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

- (a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.
- (b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 10 of the OWRA.
- (c) "Ministry" means Ontario Ministry of the Environment and Climate Change.
- (d) "District Office" means the Belleville District Office.
- (e) "Permit" means this Permit to Take Water No. 4464-A9NRHH including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.
- (f) "Permit Holder" means The Corporation of the Municipality of Tweed.
- (g) "OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40, as amended.

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You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated December 11, 2015 and signed by Betty Gallagher, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation. The issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections

The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act*, R.S.O. 1990, the *Pesticides Act*, R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirement including the provisions of the *Ontario Water Resources Act*, and the *Environmental Protection Act*, and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

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2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take an action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information shall not be construed as:

- (a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or legal requirement; or
- (b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances at the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 Expiry

This Permit expires on **May 3, 2026**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting Northing
1	Well 1	Well Drilled	Municipal	Water Supply	1,090	24	950,000	365	18 31537E 492766'
2	Well 3	Well Drilled	Municipal	Water Supply	1,134	24	1,633,000	365	18 31542E 492697.
Total Taking:							2,583,000		

3.3 The Permit Holder shall take well-water exclusively from Well # 3 (also known as the Crookston Well) for the municipal supply and the Permit Holder shall only use well-water from Well # 1 (also known as the Main Well) as a back up well-water supply to supplement the municipal supply as prescribed in section G of the Permit Holder's December 6, 2004 Permit To Take Water application that was signed by Patricia Bergeron.

4. Monitoring

4.1 Record of Takings

4.1.1 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings and the total measured amounts of water pumped per day for each day that water is taken under the authorization of Permit. A separate record shall be maintained for each source. The Permit Holder shall keep all required records up to date available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The total amounts of water pumped shall be measured using a manufactured flow meter and totalizer.

4.2 Well-Water Level Monitoring

4.2.1 The Permit Holder shall identify the locations of wells numbered TW 05-01, TW 05-02 by using Figure 1 titled *Well Locations* attached to a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

4.2.2 The Permit Holder shall measure water levels to the nearest centimetre at Well # 1 (or the Main Supply Well) and Well (the Crookson Well) on a daily basis using electronic water level measuring devices and the Permit Holder shall measure water levels to the nearest centimetre using an electronic water level indicator at three month intervals at TW 05-01, TW 05-02 commencing within one month of the date of issuance of this Permit and as recommended in a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

4.2.3 The Permit Holder shall record and maintain a record of all water level measurements from the wells. This record shall include the dates and times of water level measurements. A separate record shall be maintained for each well. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.2.4 The Permit Holder shall provide the well-water level information to a practicing professional engineer or practicing professional geoscientist at two year intervals who shall review the information and determine if water use interference is occurring as recommended in a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

4.3 Well-Water Quality Monitoring

4.3.1 The Permit Holder shall obtain well-water samples from Well # 1 (or the Main Supply Well) and Well # 3 (the Crookson Well) for nitrate, nitrite, ammonia, uranium and other parameters in accordance with its Drinking-water Permit made under *Safe Drinking Water Act*, and the Permit Holder shall obtain well-water samples at a three month interval for nitrite, nitrate, ammonia, uranium, Escherichia coli (E. coli) bacteria and Total Coliform bacteria parameters from Domestic Well 3 commencing within one month of the date of issuance of this Permit and as recommended in a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

4.3.2 The Permit Holder shall take the well-water samples identified in section 4.3.1 of this Permit to a laboratory licensed under the *Safe Drinking Water Act* and shall ensure that the laboratory analyses and reports the concentration of at least nitrite, nitrate, ammonia, uranium, Escherichia coli (E. coli) bacteria and Total Coliform bacteria for each water sample.

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4.3.3 The Permit Holder shall record and maintain a record of all well water laboratory analyses from the wells. This record shall include the dates and times of water samples and reports from the laboratory. A separate record shall be maintained for each well. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.3.4 The Permit Holder shall provide the well-water sample analysis information to a practicing professional engineer or practicing professional geoscientist at two year intervals who shall review the information and determine if quality interference is occurring as recommended in a two (2) page February 8, 2006 letter to the Corporation of the Municipality of Tweed from Hydroterra Limited regarding Draft Permit To Take Water, Tweed Water System HT File: 1635M.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

5.3 Should the Permit Holder receive a well-water shortage complaint from the owners of TW 2-93 (presently owned by Granite Springs Water Company) or any other well near Well # 1 or Well # 3, or should the practicing professional engineer or practicing professional geoscientist determine water use interference is occurring with off-site wells, the Permit Holder shall immediately arrange to provide temporary water supplies at its expense to the allegedly affected resident, shall undertake a scientific investigation to evaluate the validity of the well water problem, shall undertake mitigative action to permanently restore the well owner(s) supply and shall advise the District Office of the findings and the mitigative action as recommended in sections 1 and 2 of a four page September 5, 1997 letter to Totten Sims Hubicki Associates from Hydroterra Limited regarding Monitoring/Contingency Modifications, New Well Permit, Village of Tweed, TSH Project No. 52-20648, HT File: 1089M.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or

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reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act*, Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.
2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.
3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

*In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written notice served upon me at the Environmental Review Tribunal and the Environmental Commissioner, **Environmental Bill of Rights**, R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner shall place notice of your appeal on the Environmental Registry. Section 101 of the Ontario Water Resources Act, as amended provides that the Notice requiring a hearing shall state:*

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

- a. The name of the appellant;
- b. The address of the appellant;
- c. The Permit to Take Water number;
- d. The date of the Permit to Take Water;
- e. The name of the Director;
- f. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 326-5370
ERTTribunalsecretary@ontario.ca

AND

The Environmental Commissioner
1075 Bay Street
6th Floor, Suite 605
Toronto, Ontario M5S 2W5

AND

The Director, Section 34.1,
Ministry of the Environment and Climate Change
1259 Gardiners Rd, PO Box 22032
Kingston, ON
K7P 3J6

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by Telephone at
(416) 212-6349
Toll Free 1(866) 448-2248

by Fax at
(416) 326-5370
Toll Free 1(844) 213-3474

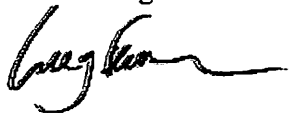
by e-mail at
www.ert.gov.on.ca

*This instrument is subject to Section 38 of the **Environmental Bill of Rights** that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.*

This Permit cancels and replaces Permit Number 1674-8WAL9T, issued on 2012/09/27.

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Dated at Kingston this 10th day of May, 2016.

A handwritten signature in black ink, appearing to read "Greg Faaren", with a long horizontal flourish extending to the right.

Greg Faaren
Director, Section 34.1
Ontario Water Resources Act, R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 4464-A9NRHH, dated May 10, 2016.



APPENDIX C
STAKEHOLDER SUPPORT

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater



PUBLICATION TITLE	PUBLICATION NUMBER
FORMS:	
Drinking Water System Profile Information	012-2149E
Laboratory Services Notification	012-2148E
Adverse Test Result Notification	012-4444E
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	Website
Procedure for Disinfection of Drinking Water in Ontario	Website
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	Website
Filtration Processes Technical Bulletin	Website
Ultraviolet Disinfection Technical Bulletin	Website
Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments	Website
Certification Guide for Operators and Water Quality Analysts	Website
Guide to Drinking Water Operator Training Requirements	9802E
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	Website
Drinking Water System Contact List	7128E01
Ontario's Drinking Water Quality Management Standard - Pocket Guide	Website
Watermain Disinfection Procedure	Website
List of Licensed Laboratories	Website

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment. Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le ministère au 1-866-793-2588, ou encore à waterforms@ontario.ca si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/eaupotable

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Renseignements sur le profil du réseau d'eau potable	012-2149F
Avis de demande de services de laboratoire	012-2148F
Avis de résultats d'analyse insatisfaisants et de règlement des problèmes	012-4444F
Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux	Site Web
Marche à suivre pour désinfecter l'eau potable en Ontario	Site Web
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Liste des personnes-ressources du réseau d'eau potable	Site Web
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