

**TOWN OF FORT FRANCES**

**REQUEST FOR PROPOSAL**

**FOR**

**DESIGN FOR THE WATER TREATMENT PLANT BACKWASH EFFLUENT  
TREATMENT AND PLANT LIFE ASSESSMENT & RENEWAL PLAN**

**RFP NO. 2022-OF-18**

**September 12, 2022**

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**TOWN OF FORT FRANCES  
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**FOR**

**DESIGN FOR THE WATER TREATMENT PLANT BACKWASH EFFLUENT  
TREATMENT AND PLANT LIFE ASSESSMENT & RENEWAL PLAN**

**RFP NO. 2022-OF-18**

The Town of Fort Frances wishes to obtain proposals from a reputable Engineering firm for engineering and process design services for the Town's Water Treatment Plant. Sealed proposals, in triplicate and clearly marked shall be submitted to:

**Faisal Anwar, Administrator  
Town of Fort Frances  
320 Portage Avenue  
Fort Frances, Ontario P9A 3P9**

and must be received no later than:

**TUESDAY, October 18, 2022 AT 2:00 PM (CST)**

after which time such Tenders will be opened and read aloud in the Committee Room, Fort Frances Civic Centre, 320 Portage Avenue, Fort Frances, Ontario.

Further information, specifications and contract documents may be obtained upon request at the Information Desk, Fort Frances Civic Centre, 320 Portage Avenue, Fort Frances, Ontario P9A 3P9. 807-274-5323.

Questions regarding this proposal must be directed to Craig Miller, P.Eng., Environmental Superintendent, at telephone (807) 274-9893 facsimile (807) 274-7360 email [cmiller@fortfrances.ca](mailto:cmiller@fortfrances.ca).

The lowest or any proposal will not necessarily be accepted. The Town reserves the right to reject any or all proposals, to waive irregularities and informalities therein, and to award the Contract in the best interest of the Town in its sole and unfettered discretion. The accepted proposal must be approved by Council.

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## SECTION 2

### GENERAL INFORMATION AND INSTRUCTIONS

#### 2.1 INTENT OF THE REQUEST FOR PROPOSALS

The purpose of the request for proposals is to retain a reputable firm to complete the investigation and detailed design for the flowing works:

Part 1: DESIGN FOR THE WATER TREATMENT PLANT BACKWASH EFFLUENT TREATMENT

And

Part 2: OVERALL PLANT LIFE ASSESSMENT & RENEWAL PLAN

#### 2.2 QUALIFICATIONS

The lowest or any proposal will not necessarily be accepted. The Town reserves the right to reject any or all proposals, to waive irregularities and informalities therein, and to award the contract in the best interest of the Town in its sole and unfettered discretion. The accepted proposal must be approved by Council.

#### 2.3 CLOSING DATE

The Request for Proposals closes at 2:00pm CST, Tuesday, **October 18, 2022** and will be publically opened immediately thereafter at the Committee Room, Civic Centre, Fort Frances, Ontario.

Three (3) copies of the proposal, fully completed, sealed and marked "**RFP No. 2022-OF-18**" must be delivered by mail or otherwise, to the Administrator, not later than 2:00 pm CST on the closing date.

#### 2.4 INFORMAL PROPOSALS

All proposals provided and all entries shall be in ink or typewritten. Proposals which are incomplete, conditional or obscure or which contain additions not called for, erasures, alterations or irregularities of any kind, or in which any of the prices are obviously unbalanced, may be rejected as informal.

The Town reserves the right to disqualify proposals not submitted in strict accordance with the terms and conditions of the Terms of Reference.

#### 2.5 ERRORS AND OMISSION

The Firm shall examine the Terms of Reference Documents as soon as possible. Any errors, omissions or conflicts discovered shall be reported to the Manager of Operations and Facilities immediately.

Verbal instruction and/or communications will not be accepted.

## **2.6 LIST OF ADDENDA**

During the request for proposals period, Firms may be advised by Addenda of required additions to, deletions from, or alterations in the Terms of Reference Documents. All such changes shall become an integral part of the Terms of Reference Documents and shall be allowed for in arriving at the Total Proposal Price. All Addenda received during the request for proposals period shall be acknowledged.

## **2.7 PROPOSAL WITHDRAWAL AND AWARD**

Proposals received by the Administrator prior to Closing may be withdrawn upon written application only. The last proposal received shall invalidate all previous proposals received from the same Firm. Withdrawal of proposals shall be by letter bearing an official company or corporation signature and seal only.

No contracts will be awarded until after the proposal has been approved by Council.

Council reserves the right to:

- i) reject any recommendation;
- ii) reject any or all proposals;
- iii) accept any proposal deemed to be in the best interest of the Town, or
- iv) disqualify proposals not submitted in strict accordance with requirements of the terms of reference documents.

Firms are informed that it is a condition of the Terms of Reference Documents that each proposal shall remain in force from the closing date of the request of proposal until forty-five (45) calendar days thereafter unless the Firm has been formally rejected.

## **2.8 TAX MANAGEMENT (HST)**

As it is the responsibility of the Firm to determine levy and collection of the Harmonized Sales Tax (HST), amounts bid shall show separately the HST amount, or alternatively cite the basis of exemption in lieu thereof.

## **2.9 ONTARIO RETAIL SALES TAX**

Where contracts are awarded to non-resident Ontario Firms, they are required to either:

- a) Provide a copy of a valid Retail Sales Tax Vendor Permit, or
- b) file with the Town a copy of the letter of compliance issued by the Ontario Retail Sales Tax Branch.

Failure to comply will result in 4% of each payment due to the Contract to be withheld for remittance to the Treasurer of Ontario.

## **2.10 FAX TRANSMITTAL**

Proposals may be submitted by Fax transmittal (807-274-8479) subject to additional conditions:

- i) All terms and conditions outlined in the Terms of Reference apply, including duplicate fax transmittals

- ii) All original proposal documents and enclosures are received within forty-eight (48) hours of the closing date of the request for proposals, and
- iii) The Town assumes no responsibility whatsoever for proper receipt of such Fax transmittals.

## **2.11 MUNICIPAL FREEDOM OF INFORMATION PROTECTION OF PRIVACY ACT**

The Town is governed by the Municipal Freedom of Information and Protection of Privacy Act, therefore Firms must accept that proposal contents can be made public as a condition of the request for proposal process.

## **2.12 PAGES NUMBERED**

All pages of the proposal document submitted must be numbered.

## **2.13 LOCATION OF FORT FRANCES**

The Town of Fort Frances is located in the District of Rainy River, approximately 350 kilometers west of Thunder Bay, Ontario and 425 kilometers East of Winnipeg, Manitoba. The Town is bounded to the north and the east by Couchiching First Nation and the unorganized Township of Miscampbell, to the west by the Township of Alberton, and to the south by the United States of America. Also please note that Fort Frances is in the Central Time Zone.

## **2.14 FIRM'S INSURANCE**

The successful Firm shall take out and keep in force throughout the duration of the Contract, a comprehensive policy of Professional Liability in the amount of not less than \$2,000,000.00 inclusive per occurrence.

The Town of Fort Frances shall be named as an additional insured thereunder, a certified copy of the policy or certificate thereof shall be deposited upon signing of the Agreement or as the Town may direct.

## **2.15 INQUIRIES**

Questions regarding the Terms of Reference must be directed to:

Craig Miller, P.Eng.  
Environmental Superintendent  
Town of Fort Frances  
320 Portage Avenue  
Fort Frances, Ontario  
P9A 3P9

Telephone: 807-274-9893 ext 1313  
Fax: 807-274-7360  
Email: [cmiller@fortfrances.ca](mailto:cmiller@fortfrances.ca)

**SECTION 3**  
**PROJECT DESCRIPTION**  
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- 3.1 GENERAL INFORMATION ON THE DESIGN ACTIVITIES
- 3.2 SCOPE OF WORK
- 3.3 OTHER SPECIFICATIONS FOR THE DESIGN ACTIVITIES



## SECTION 3

### PROJECT DESCRIPTION

#### 3.1 GENERAL INFORMATION ON THE DESIGN ACTIVITIES

The successful firm will be tasked with a two part project. The first part deals specifically with the media filter backwash water. In 2022, the Ontario Ministry of Environment, Conservation and Parks and the Town agreed to an amended Municipal Drinking Water License (MDWL 224-101 Issue #4) that allowed for the continued discharge of chlorinated media filter backwash water to Rainy River for the duration of the license (set to expire May 11, 2026). When the MDWL is renewed in 2026, the backwash water will be subject to a maximum of Total Chlorine Residual of 0.02 mg/L and a TSS of 25 mg/L. The Town requires the successful firm to re-engineer the backwash water discharge process to treat the backwash effluent to achieve the standards of the Province of Ontario.

The second part of this RFP deals more generally with the entire water treatment plant. The plant was commissioned c. 1986. Few upgrades and renewals have taken place at the water treatment plant aside from general maintenance activities. The successful firm will need to undertake a comprehensive review of the water treatment plant and develop a plan and budget to ensure that the plant can continue to operate safely, effectively and efficiently producing safe drinking water for the Town of Fort Frances for the next 25 to 50 years.

#### 3.2 SCOPE OF WORK – PART 1 – BACKWASH WATER DECHLORINATION

The purpose of the request for proposal is to retain a reputable Firm to complete the design works for the dechlorination of the media filter backwash effluent to the Rainy River.

1. Review existing process, equipment, piping, etc.
2. Review existing relevant plant documentation included as part of this RFP.
3. Complete an inventory of the existing process, equipment, piping, etc. and prepare options and recommendations that are required to meet the media filter backwash effluent Total Chlorine Residual of 0.02 mg/L and TSS limit of 25 mg/L.
4. Complete the design works specific to this part of the request for proposal, including complete issue for tender design drawings and specifications ready to be issued for tender.
5. Complete any submissions to the Province of Ontario required to obtain the necessary approvals for the project.
6. Provide a quotation to act as Project Engineer for the awarded tender.

#### 3.3 SCOPE OF WORK – PART 2 – WTP LIFE ASSESSMENT & RENEWAL PLAN

The purpose of the request for proposals is to retain a reputable Firm to complete a detailed assessment of the Water Treatment Plant and to prepare a plan with budgets for recommended renewals and upgrades to allow the plant to continue operating for the next 25 to 50 years.

Included in scope: All process related equipment, including but not limited to piping, valves, pumps, motors, instrumentation, etc., building lighting, building and process civil works, all mechanical systems, laboratory space, chemical storage and transfer systems, windows, doors, process media, electrical supply and power factor.

Exclusions from scope of work: Motor Control Centre (MCC), Standby Generator and Associated

Switchgear, Delta-V SCADA system, Water Tower and equipment on site at Water Tower.

1. Review existing water treatment plant, process, equipment, piping, etc.
2. Review existing relevant plant documentation included as part of this RFP.
3. Complete a detailed inventory of the water treatment plant and prepare a detailed, current assessment of the equipment in its current state, including its age and expected life cycle.
4. Provide an overall condition rating of the facility as well as each assessed asset for Asset Management purposes following the Town's condition reporting parameters.
5. Provide a list of prioritized recommendations for upgrades and renewals for the water treatment plant and provide options, if there are any available.
6. Provide budget for recommended upgrades and renewals, including a budget for engineering a tender package (similar to Part 1) and a budget for tendering the recommended works. Also include timelines for engineering, submissions to and approvals from the Province of Ontario and construction.

### **3.3 OTHER SPECIFICATIONS FOR THE ENGINEERING ACTIVITIES**

1. The Town is requiring that the successful firm complete the design works in as timely fashion as possible. Both part 1 and 2 are priority and can be worked on concurrently. The intent is to award the contract to the successful firm within 2 weeks of the closing date of October 18, 2022. Each firm shall include a proposed schedule with their proposal. The successful firm shall submit a formal schedule of work including important dates and milestones to the town, prior to commencing work.
2. The successful firm shall complete the review and design works in accordance with applicable regulations and codes within the Province of Ontario and Canada.

**SECTION 4**  
**PROPOSAL REQUIREMENTS**  
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- 4.1 PROPOSAL REQUIREMENTS SUBMITTED BY FIRM
- 4.2 PROPOSAL EVALUATION
- 4.3 OCCUPATIONAL HEALTH & SAFETY PLAN
- 4.4 CONTRACT

## SECTION 4

### PROPOSAL REQUIREMENTS

#### 4.1 PROPOSAL REQUIREMENTS SUBMITTED BY FIRM

The proposals prepared by the Firms will clearly indicate that the design works will be carried out in accordance with the **Request for Proposal 2022-OF-18**. The Firm's proposal must contain at least, but is not necessarily limited to the following:

- 1) A work chart or work schedule showing the timing of the major tasks and milestones for each part of this project.
- 2) The Firm shall describe their previous work of this type, highlighting their experience and expertise with the specific requirements of this project. If the Firm intends to partner with others to complete certain components, the experience and expertise of those partner companies must also be described, citing previous relevant work.
- 3) The Firm shall identify the lead designer and other staff and list the responsibilities of each. Qualifications of the Firm's lead designer and key personnel should be outlined. Any substitution of staff during the course of the design works will not be permitted without approval of the Town's Manager of Operations and Facilities.
- 4) Maximum total cost of the project broken down by deliverable, where major tasks or milestones, field inspection work, report writing, printing costs and other disbursements are listed separately.
- 5) Per diem rates for key personnel involved in the project and an estimate of the number of hours that project staff will spend on each specific task.
- 6) A listing of any special circumstances required to complete the design works.
- 7) Identify any possible gaps in this Request for Proposal and how these gaps will be taken into account in the design activities.
- 8) Submit a listing of previous projects of similar scale or type completed for Municipal or institutional clients.
- 9) Three (3) copies of the proposal will be submitted
- 10) All Documents will be in Microsoft Office Format.

#### 4.2 PROPOSAL EVALUATION

The Town of Fort Frances will review the proposal submitted by each individual Engineering Firm during late October / early November 2022. A scoring system will be utilized on the following categories:

- 1) Quality of the proposal submitted - ease of understanding, required components of the Design Activities, and work schedule.
- 2) Past Experience in completing similar design activities.

- 3) Key Personnel assigned to the project
- 4) Proposal value
- 5) Schedule

It should be clearly understood that the Town of Fort Frances has the right to assign weighting to each of the 5 above mentioned categories and if any proposal submitted fails to include any mandatory requirements as outlined in the Terms of Reference, the proposal is automatically disqualified.

#### **4.3 OCCUPATIONAL HEALTH & SAFETY PLAN**

The proposed Occupational Health and Safety Plan shall outline the Firm's general approach to Occupational Health and Safety.

The successful Firm will be responsible for meeting all of the "employer" obligations under the Occupational Health and Safety Act (OHSA) and shall ensure that all work is carried out in accordance with the OHSA and all applicable regulations. This includes but is not limited to, the duties to: provide a safe workplace; provide information and educate the workers on workplace hazards; appoint a competent supervisor; prepare and provide a health and safety policy; implement a comprehensive health and safety program to support the policy; and take every reasonable precaution to protect the health and safety of workers.

Each Firm shall submit a statutory declaration with the proposal: Appendix "A".

#### **4.4 CONTRACT**

The Firm shall include a draft contract of engagement with their proposal.

The Firm shall enter into an engineering contract with the Corporation of the Town of Fort Frances. The contract shall indicate that work to be undertaken shall be done to the satisfaction of the Municipality according to the request for proposal and for the amount agreed upon by the two parties. The contract shall also indicate that no additional money shall be paid to the Firm for any additional work for which prior authorization has not been given in writing. The contract shall contain, as a minimum, the Request for Proposal and the Proposal accepted.

**APPENDIX "A"**

**STATUTORY DECLARATION**

## STATUTORY DECLARATION

In submitting this proposal, I/We, on behalf of \_\_\_\_\_  
Legal Name of Company

certify the following:

- (a) I/We have a health and safety policy and will maintain a program to implement such policy as required by clause 25(2) (j) the *Occupational Health and Safety Act*, R.S.O. 1990, c.O.1, as amended, (the "OHSA").
- (b) With respect to the services being offered in this proposal, I/We and our proposed sub-contractors, acknowledge the responsibility to, and shall:
  - (i) fulfill all of the "employer" obligations under the OHSA and ensure that all work is carried out in accordance with the OHSA and its regulations.
  - (ii) ensure that adequate and competent supervision is provided as per the OHSA to protect the health and safety of workers; and
  - (iii) provide information and instruction to all employees to ensure they are informed of the hazards inherent in the work and understand the procedures for minimizing the risk of injury or illness.
- (c) I/We agree to take every precaution reasonable in the circumstances for the protection of worker health and safety, as required under the OHSA.

Dated at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_ 2022.

\_\_\_\_\_  
(Authorized signing agent for the Firm)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Telephone Number)

## **APPENDIX “B”**

### **MUNICIPAL DRINKING WATER LICENCE – ISSUE 4**





## MUNICIPAL DRINKING WATER LICENCE

**Licence Number: 224-101**

**Issue Number: 4**

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 Town of Fort Frances**

**320 Portage Avenue  
Fort Frances, ON  
P9A 3P9**

For the following municipal residential drinking water system:

### **Fort Frances Drinking Water System**

This municipal drinking water licence includes the following:

<b>Schedule</b>	<b>Description</b>
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 #224-101, all previously issued versions of licence #224-101 are revoked and replaced by this licence.

DATED at TORONTO this 15<sup>th</sup> day of February, 2022

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 Town of Fort Frances
Licence Number	224-101
Drinking Water System Name	Fort Frances Drinking Water System
Licence Effective Date	February 15, 2022

### 1.0 Licence Information

Licence Issue Date	February 15, 2022
Licence Effective Date	February 15, 2022
Licence Expiry Date	May 11, 2026
Application for Licence Renewal Date	November 10, 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
Fort Frances Drinking Water System	224-201	May 11, 2021

#### 2.2 Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Rainy River	3528-AE6PEM	September 27, 2016

#### 2.1 Other Documents

Document Title	Version Number	Version Date
Not Applicable	Not Applicable	Not Applicable

### 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:	224-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	224-301A

### 4.0 Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
Fort Frances Drinking Water System	The Corporation of the Town of Fort Frances	224-401	224-OA1

## Schedule B: General Conditions

System Owner	The Corporation of the Town of Fort Frances
Licence Number	224-101
Drinking Water System Name	Fort Frances Drinking Water System
Licence Effective Date	February 15, 2022

### 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;

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

“**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;

“**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;
- 16.3** 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	<b>The Corporation of the Town of Fort Frances</b>
Licence Number	<b>224-101</b>
Drinking Water System Name	<b>Fort Frances Drinking Water System</b>
Licence Effective Date	<b>February 15, 2022</b>

### 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.

<b>Table 1: Rated Capacity</b>	
Column 1 Treatment Subsystem Name	Column 2 Rated Capacity (m <sup>3</sup> /day)
Fort Frances Water Treatment Plant	17,000

#### 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.

<b>Table 2: Maximum Flow Rates</b>		
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:
- a) not exceed the value in column 3 of the same row; and
  - b) 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.

<b>Table 3: Residuals Management</b>			
<b>Column 1 Treatment Subsystem or Treatment Subsystem Component Name</b>	<b>Column 2 Test Parameter</b>	<b>Column 3 Annual Average Concentration (mg/L)</b>	<b>Column 4 Maximum Concentration (mg/L)</b>
Media filter backwash effluent	Total Suspended Solids	25	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;

<b>Table 4: UV Disinfection Equipment</b>			
<b>Column 1 Treatment Subsystem or Treatment Subsystem Component Name</b>	<b>Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm<sup>2</sup>)</b>	<b>Column 3 Control Strategy</b>	<b>Column 4 Test Parameter</b>
Not Applicable	Not Applicable	Not Applicable	Not Applicable

## 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 (m<sup>3</sup>/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 (m<sup>3</sup>/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 224-201, 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.

<b>Table 5: Drinking Water Health Related Parameters</b>			
<b>Column 1 Treatment Subsystem or Treatment Subsystem Component Name</b>	<b>Column 2 Test Parameter</b>	<b>Column 3 Sampling Frequency</b>	<b>Column 4 Monitoring Location</b>
Not Applicable	Not Applicable	Not Applicable	Not Applicable

<b>Table 6: Drinking Water Non-Health Related Parameters</b>			
<b>Column 1 Treatment Subsystem or Treatment Subsystem Component Name</b>	<b>Column 2 Test Parameter</b>	<b>Column 3 Sampling Frequency</b>	<b>Column 4 Monitoring Location</b>
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”, 23<sup>rd</sup> Edition, 2017, or as amended from time to time by more recently published editions.

<b>Table 7: Environmental Discharge Parameters</b>				
<b>Column 1 Treatment Subsystem or Treatment Subsystem Component Name</b>	<b>Column 2 Test Parameter</b>	<b>Column 3 Sample Type</b>	<b>Column 4 Sampling Frequency</b>	<b>Column 5 Monitoring Location</b>
Fort Frances Water Treatment Plant	Total Suspended Solids	Composite	Monthly	Top of filter (for point of discharge to Rainy River)

**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**

### **Harmful Algal Blooms**

**6.1** The owner shall develop and keep up to date a Harmful Algal Bloom monitoring, reporting and sampling plan, herein known as the "Plan", to be implemented when a potential harmful algal bloom is suspected or present. The owner shall have the Plan in place on or before October 28, 2021.

6.1.1 The owner must have a copy of the Plan available onsite at the drinking water system, for inspection upon request by Ministry staff.



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- 6.1.2 The owner must implement the Plan annually during the harmful algal bloom season, during but not limited to the warm seasonal period between June 1 and October 31 each year, or as otherwise directed by the Ministry or the Medical Officer of Health.
- 6.1.3 The owner must train all relevant drinking water system staff on the Plan prior to the beginning of each warm season, as described in Condition 6.1.2.
- 6.2** For clarity, a Harmful Algal Bloom is considered suspected or occurring when:
- 6.2.1 the owner or operating authority has observed an algal bloom:
- a) near the shoreline at or near the source water intake(s) described in drinking water works permit #224-201, or
  - b) where the intake has an Intake Protection Zone in a source protection plan, within IPZ-1, or
  - c) within a circle that has a radius, measured from the intake, equal to the distance from the intake to the farthest edge of IPZ-2.
- 6.2.2 microcystin has been detected in a raw or treated water sample; and/or,
- 6.2.3 the owner has received any form of notification related to an algal bloom from the Ministry, a Medical Officer of Health, or the public; or,
- 6.2.4 the presence of or identification of cyanobacteria has been determined through optical probes or other analytic techniques used by the drinking water system.
- 6.3** The Plan described in condition 6.1 must include, at a minimum:
- 6.3.1 details relating to visual monitoring for harmful algal blooms at or near the drinking water system intake(s),
- a) as described in drinking water works permit #224-101, or
  - b) where the intake has an Intake Protection Zone in a source protection plan, within IPZ-1, or
  - c) within a circle that has a radius, measured from the intake, equal to the distance from the intake to the farthest edge of IPZ-2.
- 6.3.2 details relating to visual monitoring of shoreline; this is applicable to drinking water systems where the proximity of the intake(s) may be of concern.
- 6.3.3 details relating to reporting the observed or suspected harmful algal bloom, as described in section 6.2:
- a) to the Overall Responsible Operator(s) and/or Operator(s)-in-Charge if the blooms have been observed or suspected by a duty operator; the Plan shall include wording that directs relevant drinking water staff to follow the instructions provided by the Overall Responsible Operator(s) or the Operator(s)-in-Charge;

- b) to the medical officer of health; and
  - c) to the local MECP representative and the Ministry's Spills Action Centre.,
- 6.3.4 a sampling plan, including the identification of sample location(s) and frequencies that at a minimum match those described in condition 6.4.
- 6.3.5 triggers that may increase the required sampling frequency;
- 6.3.6 up-to-date records that document staff training on the harmful algal bloom monitoring, reporting, and sampling procedures.
- 6.4** Any water samples collected under Condition 6.3.4 must be:
- 6.4.1 collected, at a minimum, once per week, or as otherwise directed by the Ministry or the medical officer of health;
  - 6.4.2 collected prior to any treatment, if the sample is taken from raw water;
  - 6.4.3 collected at the point of entry into the distribution system, if the sample is taken from treated water;
  - 6.4.4 collected from the shoreline by the drinking water system, if applicable based on Condition 6.3.1;
  - 6.4.5 submitted to a laboratory licensed to perform ELISA testing for total microcystin;
  - 6.4.6 repeatedly collected until 3 consecutive samples have shown non-detection of microcystin and the algal bloom is no longer suspected or visually observed.

## 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	<b>The Corporation of the Town of Fort Frances</b>
Licence Number	<b>224-101</b>
Drinking Water System Name	<b>Fort Frances Drinking Water System</b>
Licence Effective Date	<b>February 15, 2022</b>

As of the effective date of the Licence, 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 Town of Fort Frances
Licence Number	224-101
Drinking Water System Name	Fort Frances Drinking Water System
Licence Effective Date	February 15, 2022

### 1.0 Primary Disinfection Pathogen Log Removal/Inactivation Credits

#### Fort Frances Water Treatment Plant

Rainy River [SURFACE WATER]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts <sup>a</sup>	Viruses <sup>b</sup>
Fort Frances Water Treatment Plant	2	3	4

<sup>a</sup> At least 0.5 log inactivation of Giardia shall be achieved by the disinfection portion of the overall water treatment process.

<sup>b</sup> At least 2 log inactivation of viruses shall be achieved by disinfection.

Log Removal/Inactivation Credits Assigned <sup>c</sup>	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Conventional Filtration	2	2.5	2
Chlorination [CT: Contact chamber, clearwell/reservoir and high lift pump chamber]	-	0.5	2+

<sup>c</sup> 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
Conventional Filtration	<ol style="list-style-type: none"> <li>1. A chemical coagulant shall be used at all times when the treatment plant is in operation;</li> <li>2. Chemical dosages shall be monitored and adjusted in response to variations in raw water quality;</li> <li>3. Effective backwash procedures shall be maintained including filter-to-waste or an equivalent procedure during filter ripening to ensure that effluent turbidity requirements are met at all times;</li> <li>4. Filtrate turbidity shall be continuously monitored from each filter; and</li> <li>5. Performance criterion for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month shall be met for each filter.</li> </ol>
Chlorination	<ol style="list-style-type: none"> <li>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 Procedure for Disinfection of Drinking Water in Ontario; and</li> <li>2. At all times, CT provided shall be greater than or equal to the CT required to achieve the log removal credits assigned.</li> </ol>
<b>Primary Disinfection Notes</b>	

**APPENDIX “C”**

**DRINKING WATER WORKS PERMIT – ISSUE 3**



## DRINKING WATER WORKS PERMIT

**Permit Number: 224-201**

**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 Town of Fort Frances**

**320 Portage Avenue  
Fort Frances, ON  
P9A 3P9**

For the following municipal residential drinking water system:

### **Fort Frances Drinking Water System**

This drinking water works permit includes the following:

<b>Schedule</b>	<b>Description</b>
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 #224-201, all previously issued versions of permit #224-201 are revoked and replaced by this permit.

DATED at TORONTO this 11<sup>th</sup> day of May, 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 Town of Fort Frances
Permit Number	224-201
Drinking Water System Name	Fort Frances Drinking Water System
Permit Effective Date	May 11, 2021

### 1.0 System Description

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

#### Overview

The **Fort Frances Drinking Water System** consists of a drinking water treatment plant, a two-celled storage ground reservoir, an elevated storage tank and approximately 6.0 kilometers of trunk watermains and 70.4 kilometers of distribution watermains.

The Fort Frances Water Treatment Plant is a conventional surface water treatment plant. Raw water is drawn from Rainy River through low lift pumps. Liquid alum is added to the raw water ahead of the in-line mixer for coagulation while polyelectrolytes are added to the solids contact tanks for assisting flocculation. The water then flows to the two solids contact clarifiers units, operating in parallel, where flocculation and sedimentation occurs. The settled floc is disposed of to the sanitary sewer. Powdered activated carbon, soda ash, and hydrofluosilicic are also added ahead of in-line mixer, in solids contact clarifiers, and/or in chemical contact chambers, as needed, for taste and odour and pH adjustment. The settled effluent is gravity fed to four dual media gravity sand filters. The filters are equipped with a backwash pump. The filtered water flows to a two-celled, ground storage reservoir through a chemical contact chamber. Chlorine and fluoride are added in the chemical contact chamber. The treated water then flows to the high lift pump wells where it is pumped to the distribution system. Chlorine residual and fluoride are monitored with continuous on-line analyzers just prior to the water leaving the plant. The Fort Frances Drinking Water System also includes an elevated water storage tank within the distribution system equipped with re-chlorination facilities.

The Fort Frances Drinking Water System provides drinking water to the Couchiching First Nation (borders the northeast limits of the Town) and five sites on Agency 1 Land (Rusty Myers Flying Service Ltd., Treaty 3 Police Station, Nanicost Ltd., Gizhewaadiziwin Health Access Centre, and Seven Generations Educational Institute). The Fort Frances Drinking Water System also provides Drinking water to the Friesen 5 Apartment Units located in Alberton Township, outside the limits of the Town of Fort Frances.

## Fort Frances Water Treatment Plant

### Treatment Plant

#### Location and General Description

Name	Fort Frances Water Treatment Plant housed in an approximately 46 m by 32 m masonry structure
Street Address	901 Colonization Road East
UTM Coordinates	NAD 83: Zone 15 +/- 10m: Easting 472938: Northing 5384735
System Type	Treatment, storage and distribution
Notes	Houses screen chamber, low and high lift pumps, solids contact clarifiers, filters, chemical storage and feeding equipment, instrumentation and control, an administration area comprising of an office, lunchroom, washrooms and control room/laboratory

### Surface Water Supply

#### Raw Water Intake

Description	Approximately 190 m of 630 mm diameter intake pipe located in the Rainy River including an upturned elbow intake structure with a coarse bar screen
Source	Rainy River
Location	Approximately 190 m east of the Water Treatment Plant in Rainy River
Notes	

### Low Lift Works

#### Screens

Description	A raw water screen chamber equipped with two sets of screens
Dimensions	Each screen 2.25 m <sup>2</sup> in area
Notes	Screen chamber located ahead of raw water pumping well

#### Low Lift Pumps

Description	Three (3) vertical turbine low lift pumps
Capacity	<ul style="list-style-type: none"> <li>- Two (2) pumps rated at 100 L/s against a total dynamic head (TDH) of 14 m</li> <li>- One (1) VFD pump capable of providing flows in the range of 40 to 150 L/s against a total dynamic head (TDH) of 14m</li> </ul>
Metering Device	Equipped with one metering device for measuring raw water flows
Notes	



## Coagulation

### In-Line Mixer

Description	An in-line mixer located downstream of the low lift pumps within the influent (raw water) line to facilitate the dosing of liquid alum, activated carbon slurry and soda ash solution
Dimensions	450 mm diameter
Notes	Located between low lift pumps and solids contact clarifiers

## Flocculation/Clarification

### Flocculation/Clarification Tanks - Solids Contact Clarifiers

Description	Two (2) solids contact clarifier units, operating in parallel equipped with facilities for polymer dosing
Dimensions	Each solids contact clarifier approximately 13.7 m x 13.7 m x 3.75 m side water depth (s.w.d.)
Notes	The settled floc is discharged to sanitary sewer

## Filtration

### Filters

Description	Four (4) dual media, gravity filters (sand and anthracite)
Dimensions	Each filter approximately 4.9 m x 4.9 m providing a total filtration area of 96 m <sup>2</sup>
Equipment	One (1) vertical turbine backwash pump capable of delivering 290.3 L/s at 14 m TDH
	A turbidimeter on each filter
	All filters equipped with an underdrain and air scouring system
Notes	

## Instrumentation and Control

### SCADA System

Description	A computerized control system monitoring the critical components of the process including raw and finished water quantity and quality
Equipment	Four (4) turbidimeters for continuously monitoring filter effluent
	One (1) laboratory model turbidimeter for manual testing
	One (1) continuous chlorine/fluoride analyzer monitoring free chlorine and fluoride residual in the discharge pipe of the high lift pumps
	Three (3) flowmeters to measure flow at various locations
Notes	Status of the elevated storage tank by telemetry, receiving alarms and controlling the operation

## Waste Residual Management

### Outfall Pipe

Description	Filter backwash disposal
Dimensions	Approximately 60 m of 800 mm diameter pipe
	One (1) vertical turbine backwash pump capable of delivering 290.3 L/s at 14 m TDH
Notes	Filter backwash water returned to Rainy River through outfall line

### Sludge Disposal

Description	Solids contact clarifier settled sludge disposal
Equipment	Settled sludge discharged through a 150 mm pipe using pneumatic blow down valves - gravity system, no pumps utilized
Notes	Solids contact clarifier settled sludge discharged to the sanitary sewer system

## High Lift Works

### High Lift Pumps

Description	Four (4) vertical turbine high lift pumps and one (1) diesel engine driven vertical turbine fire pump
Capacity	Two (2) vertical turbine pumps rated at 63.1 L/s. at TDH of 55m
	One (1) vertical turbine pump rated at 94.7 L/s at TDH of 55m
	One (1) vertical turbine pump rated at 126.2 L/s at a TDH of 55m
High Lift Pump Chamber	470 m <sup>3</sup> capacity
Notes	

## On-Site Storage

### Chemical Contact Chamber

Description	One (1) chemical contact chamber to provide chlorine contact time
Volume	240 m <sup>3</sup>
Notes	

**Clearwell/Reservoir**

Description	Two-celled, ground storage reservoir
Capacity	Cell No. 1 = 2,565 m <sup>3</sup> Cell No. 2 = 1,465 m <sup>3</sup> Total = 4,030 m <sup>3</sup>
Notes	The two cells receive filtered water after passing through chemical contact chamber

**Emergency Power****Backup Power Supply**

Description	One (1) 450 kW diesel generator set for use during power outage situations
Notes	

**Fuel Oil Systems****Fuel Storage Locations**

Location	901 Colonization Road East NAD 83: Zone 15 +/- 10m: Easting 472938: Northing 5384735
Description	3785 litres, double walled, integrated sub-base fuel tank for the diesel generator
Fuel Type	Diesel
Source Protection Area	Not Applicable
Notes	

**Chemical Addition****Alum**

Description	Alum feed system for coagulation
Feed Point	Liquid alum to the raw water ahead of the in-line mixer for coagulation
Equipment	A chemical metering pump A day tank with secondary spill containment
Notes	

**Chlorine**

Description	Chlorine gas disinfection System
Feed Point(s)	1. Chemical contact chamber; and 2. Before the flash mixer
Equipment	One (1) duty chlorinator
	One (1) standby chlorinator including: <ul style="list-style-type: none"> <li>- two (2) chlorine cylinders with an automatic switch over device in a separate room</li> <li>- a weight scale</li> <li>- one (1) chemical metering pump</li> <li>- a free chlorine analyzer for monitoring finished water residuals</li> </ul>
Notes	

**Hydrofluosilicic Acid**

Description	Fluoridation system
Feed Point	Chemical Contact Chamber
Equipment	One (1) day tank
	One (1) chemical metering pump
	Secondary spill containment
Notes	

**Polyelectrolytes/Polymer**

Description	<ul style="list-style-type: none"> <li>- A polyelectrolytes feed system for assisting in flocculation</li> <li>- A polymer feed system for assisting in flocculation (used as back-up)</li> </ul>
Feed Point	Solids Contact Clarifiers
Equipment	<ul style="list-style-type: none"> <li>- Two (2) chemical metering pumps for polyelectrolytes injection complete with aging and batch tanks</li> <li>- Two (2) chemical metering pumps for polymer injection complete with aging and solution tanks (used as back-up)</li> </ul>
Notes	

**Powdered Activated Carbon**

Description	Powdered activated carbon for taste and odor control
Feed Point	Ahead of in-line mixer or solids contact clarifiers
Equipment	One (1) slurry tank
	One (1) chemical metering pump
	Secondary spill containment
	A dust control system
Notes	

**Soda Ash**

Description	Soda ash dosing system for pH adjustment
Feed Point #1	Chemical contact chamber
Feed Point #2	Solid contact clarifiers
Feed Point #3	In-line mixture
Equipment	A silo inside the building
	One (1) day tank
	Volumetric feeder
	A dust collector
Notes	

**Elevated Storage Tank**

Description	An elevated storage tank
Location	South-east side of the intersection of Colonization Road West and McIrvine Road
UTM Coordinates	NAD 83: Zone 15 +/- 10: Easting 468540: Northing 5383616
Capacity	4,500 m <sup>3</sup>
Equipment	Includes calcium hypochlorite re-chlorination facility along with: <ul style="list-style-type: none"> <li>- a telemetry system providing the water level information to the main computer at the plant; and</li> <li>- a looped circulation system</li> </ul>
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.

<b>Table 1: Watermains</b>	
<b>Column 1 Document or File Name</b>	<b>Column 2 Date</b>
PDF File Name: Distribution Map.pdf Title: Water Distribution System, November 10, 2020	November 10, 2020

- 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 Town of Fort Frances
Permit Number	224-201
Drinking Water System Name	Fort Frances Drinking Water System
Permit Effective Date	May 11, 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 #224-101.
- 1.2 The definitions and conditions of licence #224-101 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 #224-101.
- 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 November 9, 2021 the ministry's Watermain Disinfection Procedure, dated November 2015. As of November 10, 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.

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## 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/m<sup>3</sup> 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	<b>The Corporation of the Town of Fort Frances</b>
Permit Number	<b>224-201</b>
Drinking Water System Name	<b>Fort Frances Drinking Water System</b>
Permit Effective Date	<b>May 11, 2021</b>

### 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.

<b>Table 2: Schedule C Documents</b>				
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

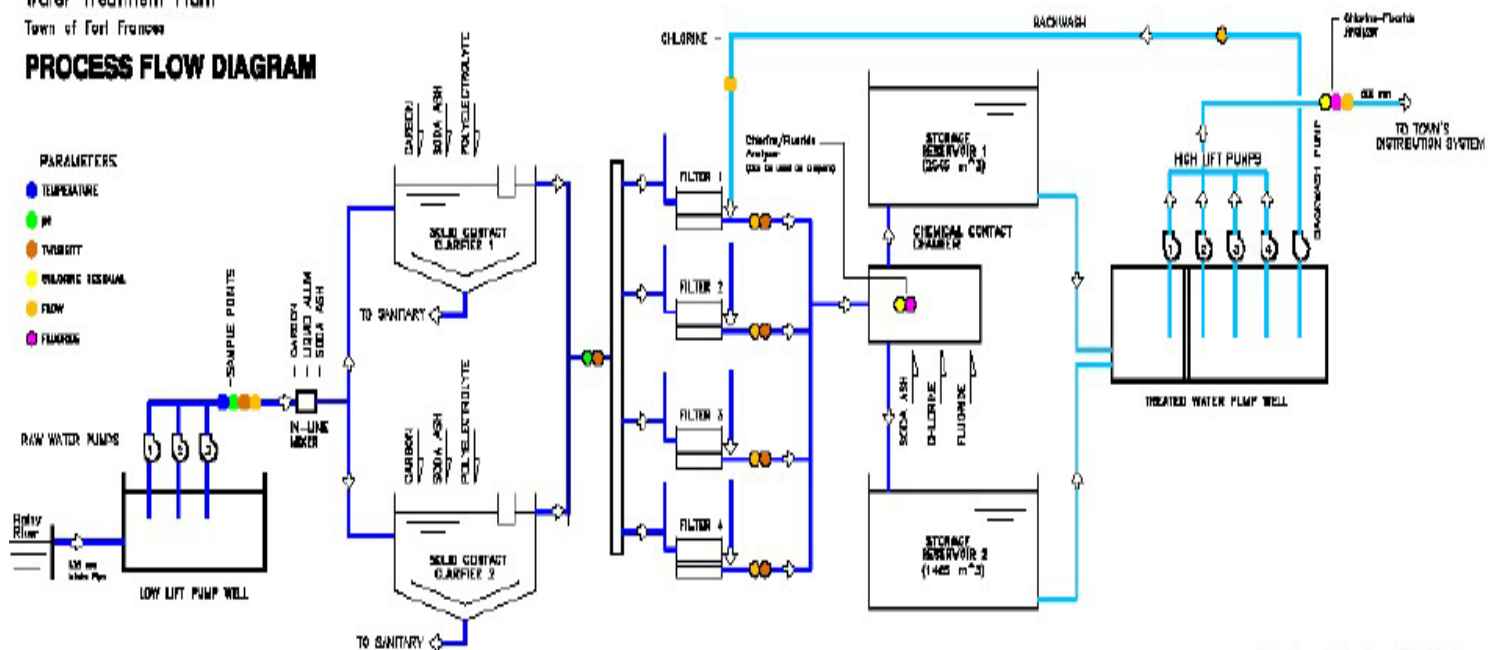
System Owner	The Corporation of the Town of Fort Frances
Permit Number	224-201
Drinking Water System Name	Fort Frances Drinking Water System
Permit Effective Date	May 11, 2021

### 1.0 Process Flow Diagrams

#### Fort Frances Water Treatment Plant

Water Treatment Plant  
Town of Fort Frances

#### PROCESS FLOW DIAGRAM



[Source: Quality Management System Operational Plan Town of Fort Frances Water System, Revision No. 13, June 3, 2020]

Note: this process flow diagram is for reference only, and represents a high level overview of the system as of June 3, 2016.

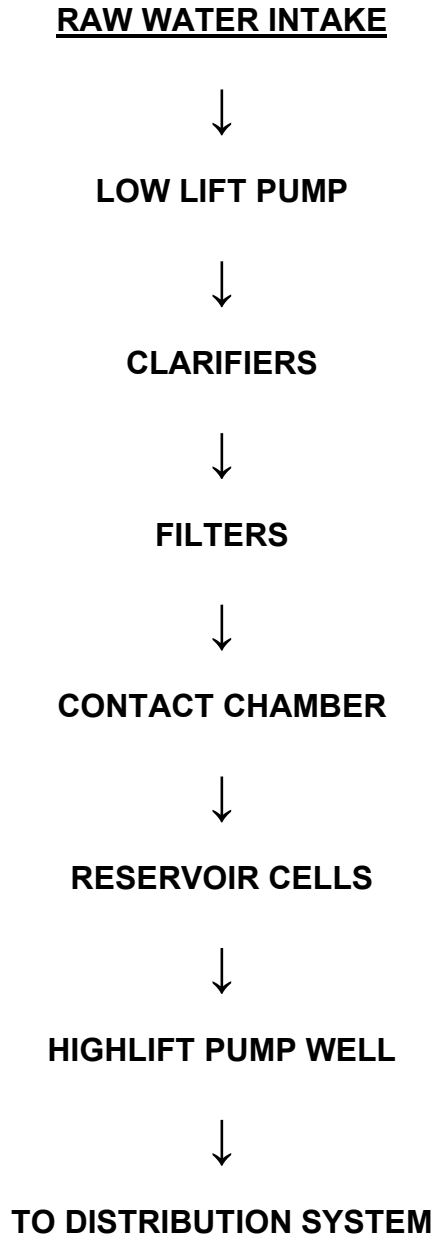
## **APPENDIX “D”**

### **SELECTED SECTIONS OF WTP OPERATIONS MANUAL**

- SECTION 07 - DESCRIPTION OF SYSTEM WORKS
- SECTION 09 – DAILY AND SYSTEM OPERATIONS
- SECTION 24 – PLANT EQUIPMENT AND SUPPLIERS
- SECTION 29 – WTP FLOW CHART

## **DRINKING WATER SYSTEM PROCESS DESCRIPTION**

The following is a brief description of the Fort Frances Water Treatment Plant:



## **WATER TREATMENT PLANT**

### **Intake Structure:**

Located approximately 190 metres southeast of the Water Treatment Plant.

### **Intake Line:**

630mm Polyethylene Pipe

### **Screen Chamber:**

Two stainless steel screens

### **Pumpwell:**

Raw water enters pump well from screen chamber, gravity fed.

### **Low Lift Pumps:**

Three (3) vertical turbine low lift pumps each electrically driven. Two (2) by 30 hp motors with a rated capacity to deliver 100 L/s and one (1) variable speed drive (40 hp) capable of providing flows in the range of 40 to 150 L/s.

### **Raw Water Flow Metering System:**

This unit counts the “litres” of water as it passes through the unit.

### **In-line Mixer (Initiating Pre-Treatment):**

The mixer is equipped with four chemical application injectors and the following chemicals can be added to the treatment process at this point:

1. Liquid Alum
2. Soda Ash
3. Chlorine solution (pre-chlorination is practiced only under exceptional circumstances)
4. Activated carbon slurry can be added to the process, but it is not currently.

### **Raw Water Influent Line:**

This 450mm diameter pipe carries the raw water to the clarifiers.

## **Clarifiers:**

The raw water, after pre-treatment, enters primary mixing and reaction zone of each unit through the 450mm inlet pipe. Activated carbon, soda ash and polymer can be added to the process in this zone.

Recycled solids are drawn up into the bottom of the zone by the re-circulator impeller to be mixed with the incoming pre-treated water. The re-circulated solids provide additional particle surface area to absorb and entrap precipitates in the raw water. The solids settle to the bottom of the clarifier to form a sludge blanket. Chemical addition and solids present in the raw water result in new solids being continually added to this sludge blanket. The pre-treated water then flows upward and into the effluent box at the top of the clarifiers.

## **Filter Influent Flume:**

Settled water from the effluent box is piped through two 450mm diameter lines to the filter influent flume for distribution to the filters.

## **Filters:**

Four gravity filters are provided. Each unit consists of Ecodyne filtration equipment installed within a square concrete tank. The dual-media gravity filters are to remove any particles in suspension that have carried over from the solids contact clarifiers.

The filter media on top of the underdrain system consists of a 500mm thickness of anthracite over 400mm thickness of silica sand.

The filtered water then enters the chemical contact chamber.

## **Chemical Contact Chamber:**

This chamber is located between the two reservoir storage cells and underneath the filters. Soda Ash solution, chlorine solution and hydrofluosilicic acid are added to the process in the chamber.

## **Reservoir Cells:**

Two (2) reservoir cells are provided, Cell No. 1 has a capacity of approximately 2565 m<sup>3</sup> and Cell No. 2 has a capacity of approximately 1465 m<sup>3</sup>. Total capacity of the tow reservoir cells is 4,030 m<sup>3</sup>.

## **Treatment Water Pump Wells:**

The treated water pump well contains the fire pump (no longer active), the filter backwash pump and high lift pumps number 1, 2, 3 and 4. It is located between the two reservoirs cells.

## **High Lift Pumps:**

These four (4) units draw water from the treated water pump wells and are of varying capacities and are controlled by the water elevation in the Elevated Storage Tank/Water Tower.

High Lift Pumps No. 1 and No. 4 draws water from the pump well and is rated to deliver 63.1 L/s. These pumps are equipped with a 60 hp electric motor variable speed drive.

High Lift Pump No. 2 draws water from the pump well and is rated to deliver 94.7 L/s. This pump is equipped with a 100 hp electric motor.

High Lift Pump No. 3 draws water from the pump well and is rated to deliver 126.2 L/s. The pump is equipped with a 125 hp electric motor.

## **Backwash Pump:**

The backwash pump is used for back washing the filters and draws water from the pump well. This unit is rated to deliver 300 L/s and is equipped with a 75 hp electric motor.

## **Plant Effluent Discharge Header:**

The plant effluent discharge header receives the flow from the high lift pumps and the fire pump and directs it to the Town's water distribution system. There are two analyzers – one for chlorine and one for fluoride which continually monitors the concentration of these two chemicals prior to entering the water distribution system.

## **Emergency Standby Generator:**

In cases of an electric power failure, a 450kW emergency standby generator automatically comes on line. The generator can operate the water treatment plant to its full potential.

## **Rated Capacity of the Plant:**

CAPACITY 17,000 m<sup>3</sup>/d or 3,744,493 gallons per day.  
196.76 litres/sec or 11.81 m<sup>3</sup>/min

## **LABORATORY**

Tests are carried out at least once daily.

### **Chlorine:**

Free chlorine residual concentration 0.2 mg/L to 4.0 mg/L

### **Fluoride:**

A fluoride ion concentration target point is maintained at 0.5 to 0.8 mg/L

### **pH:**

The use of soda ash maintains the pH concentration between 6.5 to 8.5.

### **Alum:**

Aluminum concentrations of less than 0.10 mg/L is maintained.

### **Turbidity:**

On raw treated and settled water. Treated turbidity is maintained at less than 1.0 N.T.U.

A free chlorine residual is measured at the water tower daily.

## **COMPUTER**

The computer process control system known as a SCADA System (Supervisory Control and Data Acquisition) is the heart of the water treatment plant. It starts the plant, opens and closes valves, starts and stops motors, maintains the set chemical dosages, back washes filters and many more operational adjustments.

## **ELEVATED STORAGE TANK**

The Elevated Storage Tank pressure gauge controls the high lift pumps. As the water tower tank fills the controls shut down the pumps and as the water tower tank empties the controls start the pumps. The level is sent back to the SCADA System at the water treatment plant. The free available chlorine residual is measured at least once a day and recorded in the logbook kept at the facility.

## **DAILY AND SYSTEM OPERATIONS**

### **Day-to-Day Operations:**

Water Treatment Plant Operators arrive every Monday to Friday on or before 7:30 am. Times may vary on weekends and statutory holidays, where the operators will use their own discretion and arrive in the morning between 6:00 am and 9:00 am.

Upon arriving at the Water Treatment Plant the Operator will:

- a) disengage the interior alarm
- b) turn on the building lights
- c) inspect the main floor equipment i.e.: high& low lift pumps and chemical feed systems
- d) record flow readings from the raw, treated, and backwash flow meters and check sample pump
- e) record chemical quantities used, chlorine and fluoride from the weight scales
- f) Record the flow reading, raw, treated, backwash and chemical quantities on the log sheet kept in the lab
- g) upon arrival upstairs at the Plant, check the clarifiers, sludge blankets, rakes and clarifier mixers
- h) Perform AM operating parameter testing (residual testing): pH on raw, treated and settled total and free available and total chlorine residual on treated water, turbidity on raw, treated and settled water, aluminum sulphate on the treated water, fluoride residual on the treated water as well. The Operators use the town's Hach Drell 2000 to do the in-house bench tests for alum, free and total chlorine and fluoride. The Operators use the Hach Ratio Turbidimeter to measure the turbidity on the raw, treated and settled water, the units for turbidity is measured in (NTU) or Nephelometric Turbidity Unit. The Operators measure the pH on a Hach Sension 3 pH meter. pH concentration is taken on the raw water, treated water and the settled water.

The soda ash dosage measured on a daily basis. The method that is used is to put a 1000 mil beaker under the soda ash screw feed for 8 minutes, after the 8 minutes the soda ash is weighed on the 0 Haus Digital Readout Scale which reads the weight in grams which is then multiplied by 1000 to convert the reading to milligrams. The flow is then taken for 8 minutes and the flow is then divided into soda ash.



For Example:

70L/s = which equals 70L/s x 60 seconds x 8 minutes = 33,6000 L in an 8 minute period.

Soda Ash weight is 848 grams/8 minutes  $848 \times 1000\text{mg/g} = 848,000 \text{ mg}$  of Soda Ash

$848,000 \text{ mg} \div 33,600 \text{ L} = 25.23 \text{ mg/L}$  Dosage Rate = 25.23 mg/L

The amount of soda ash and aluminum sulphate by weight (in kgs/day) used each day is arrived by multiplying the dosage rate of the soda ash and the aluminum sulphate by the Raw Water Flow Rate, respectively. The amount of each chemical, along with the flows are logged into the excel spreadsheet and printed out each month where a monthly report is presented to the Town Council as it exercises decision-making authority over the entire water system.

- i) The Operators then go through the computer (SCADA) system to check the flows, reservoir levels, chemical dosages and make adjustments to the flows and chemicals dosages to meet the Distribution Systems demands if required.
- j) The Operator will then initiate a backwash on one of the four filters alternating each day. For example, on Monday, filter 1 would be backwashed then on Tuesday, filter 2 would be backwashed, and so on. The filters are backwashed through the computer initiated by the operator.
- k) The operator will then go to the Water Tower which is located at the west end of Fort Frances. The Tower is fenced and the gate is locked at all times. The operator unlocks the gate then the exterior tower door and then the interior door. The operator then does a visual inspection of the Calcium Hypochlorite System and then does a free chlorine residual and records the results in the log book located at the Water Tower. The operator then fills the day tank and add calcium hypochlorite if the chlorine residual is down slightly. The operator then runs the mixer on the day tank and checks the hypochlorite pump. After the routine check is complete at the Tower the operator ensures that both doors are locked and the gate as well.

The pump used at the Water Tower is a metering pump with spare parts (diaphragms, check valves, hoses, etc.) located with the Tower. During the winter months with the extreme cold temperature the operator will start the heating system to keep the water from freezing along the interior wall surfaces of the Tower, the circulating pump runs at all times. The heating system is serviced annually by a mechanical and maintenance contractor.

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- l) The operator will then go to the Water Treatment Plant and drain both the air compressors and check the oil in each one. The air compressors operate the valves and actuators in the Water Treatment Plant. There are two air compressors online at all times which alternate back and forth. A spare air compressor is kept on hand, which can be used in case a breakdown occurs.
  
- m) Water customer complaints are also handled where the operators visit the customer and do chlorine (FAC) tests, flush hydrants and/or take microbiological samples or chemistry samples, to alleviate the customers concerns. The complaints are recorded and kept on file at the Water Treatment Plant. A copy of the blank Water Complaint Form is included in this manual. (See Appendix “A”)
  
- n) Perform PM operating parameters, testing (residual testing) which includes pH on raw, treated and settled water, total and free chlorine on the treated water, turbidity on the raw, treated and settled water, aluminum sulphate residual and fluoride residual on the treated water. PM Operating parameter testing is performed Monday to Friday but not on Statutory Holidays or either day on the weekend (Saturday or Sunday).
  
- o) The operator will then do a visual inspection before the end of the shift, which includes going through the computer (SCADA) system and a visual walkabout through the Plant. The operator checks the inline mixer located on the raw water line, feel the motor by hand to determine if it is running hot. If it runs too hot it will shut down on its own. We clean the inline mixer by shutting down the plant and isolating the inline mixer by valving it off on both sides of the mixer, disconnect the power and unbolt it, pull it out and clean it. It is then put back together and put back online. The Operators try to schedule it for cleaning before it shuts down on its own.
  
- p) The operator will check all the chemical feed pumps by visually checking the chlorine by checking the pressure gauges off the tanks, visually checking the residual recorder and chlorinators. This can be done by looking through the view windows to the chlorine room. The operator will also check the chlorine and fluoride analyzer, which is located on the piping prior to the distribution piping, this gives a digital display of the chlorine and fluoride residuals. The operator will check the poly unit by checking the bleed valves of both pumps, the poly unit has two pumps, Pump No. 1 pumps to clarifier No. 1 and Pump No. 2 pumps to clarifier No. 2. The operator will then check the alum metering pump, which is upstairs located off the alum day tank. The alum metering pump also has a bleed valve coming off the pump head or which when the valve is open indicates that the alum metering pump is operational. The operator’s final inspection of the day will include checking the sludge blankets in both clarifiers and checking the 4 turbidity meters on the effluent lines of the 4 dual media filters, (one installed on each filter).

### **Common Operating Problems and Solutions:**

A common operating problem the Town encounters during the summer months is maintaining an adequate supply of water in the Tower. The solution to this problem is isolating the Tower by shutting off all four valves inside the Tower on the 16" incoming line and discharge side. The Operators will perform this task during the peak demand time of day, which is approximately 6:00 a.m. to 10:00 p.m. The distribution system still has adequate pressure to function in a normal state. We leave the calcium hypo chlorite system on to maintain a free chlorine residual in which the Operators can still monitor the chlorine residual through a ¼" copper drain line. The four 16" isolation valves are turned back on at approximately 10:00 p.m. after the peak demand period is over so the Tower can refill.

Before the Water Tower is isolated, it is discussed amongst the Water Treatment Plant Operators. Then the Operator-in-Charge of the Water Treatment Plant informs Craig Miller and Milt Strachan, the Public Works Superintendents and Travis Rob, Manager of Operations and Facilities. The Fire Chief or his designate is also informed in case of a fire emergency arises.

### **System Start-up and Operation:**

The Water Treatment Plant in Fort Frances is located at 901 Colonization Road East, UTM Coordinates: NAD83 Zone 15 Easting 472938.00m Northing 5384735.00m.

Raw water is supplied from the upper portion of Rainy River through an intake structure located approximately 190 metres northeast of the Water Treatment Plant. The intake structure is equipped with bar screens to prevent logs and other debris from entering the intake line. The raw water is gravity fed into the plant through a 630mm diameter polyethylene pipe passing through two (2) sets of stainless steel screens before entering the raw water well.

Three (3) vertical turbine low lift pumps each electrically driven. Two (2) by 30 hp motors with a rated capacity to deliver 100 L/s and one (1) variable speed drive (40 hp) capable of providing flows in the range of 40 to 150 L/s. Raw water is pumped from the raw water well to the solid contact clarifiers. On route the raw water passes through a flow meter (magmeter), which maintains an accurate flow measurement as well as integrates with the operational control of the chemical feed pumps. Liquid alum is introduced to the raw water through injection points then passes through an inline flash mixer where rapid mixing occurs before flowing onto the clarifiers.

The alum-water solution splits off into two (2) separate lines before entering the clarifiers. Poly electrolyte is added and rapidly mixed to promote the formation of floc masses. Settling of the floc particles in the process water occurs forming a sludge blanket. The sludge blanket acts as a filter media where water flowing up through the blanket works like a finely meshed net catching other smaller particles. The processed water at the top of the clarifiers flows into collector flumes to the filter influent flumes to the four (4) dual media gravity filters.

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The sludge blanket in each clarifier is on an automatic blow-down controlled through the computer control system. Operators inspect the sludge blanket at least once per day and can increase/decrease the blow-down to maintain an optimum sludge blanket in the clarifiers.

The dual media filters is made up of a top layer of anthracite, 500 mm thickness while the filter media below is silica sand, 400 mm thick. The processed water is carried over the filter media where suspended solids are removed as it gravity flows through the media.

Each of the four (4) filters is equipped with a turbidity meter installed on the filter effluent, which are alarmed in case of media breakthrough or an upset in process. Periodically the filter media will require backwashing to remove/flush out the suspended particles.

The processed water flows to the contact chamber, located between the two (2) reservoir cells or clear wells. In the contact chamber chlorine, soda ash and hydrofluorosilic acid (fluoride) is added. The contact chamber is baffled to enhance proper mixing and contact time for the chlorine entering the reservoirs or clear wells.

The treated water then enters clear wells (two wells) located beneath the Water Treatment Plant main floor. Clear Well No. 1 and No. 2 have a capacity of 2565 m<sup>3</sup> and 1465m<sup>3</sup>, respectively. Treated water from the clear well is pumped into the distribution system through the four high lift vertical turbine pumps. Each pump is equipped with electric motors. High lift motor pump No. 1 and No. 4 are variable speed drive 60 horsepower/63.1L/s, No. 2 is 100 horsepower/94.7L/s and No. 3 is 125 horsepower/126.2L/s.

Chlorine-fluoride analyzers located on the distribution line within the plant monitors the treated water as it is pumped out of the clear wells into the distribution system.

## **DISTRIBUTION SYSTEM AND ELEVATED WATER STORAGE**

Treated water is pumped from the Water Treatment Plant clear wells into the distribution system. Distribution piping typically ranges in size from 100mm to 400mm and may consist of cast iron, ductile iron, transite or PVC, depending on location and date of installation.

The elevated water storage tank/water tower is located in the west end of Fort Frances at the southeast side of the intersection of Colonization Road West and McIrvine Road. UTM Coordinates: NAD83, Zone 15, Easting 468,540.00m and Northing 5,383,616.00m. The elevated storage tank is an integral component of the distribution system as it provides relatively constant system pressure and a reserve volume of water for community fire protection.

Secondary treatment, re-chlorinating of the treated water is done at this location to achieve and maintain residuals within provincial regulations through the distribution system. Calcium hypochlorite, granular form (65%) is mixed in a day tank with treated water and pumped into the influent line at the re-circulating pump. The re-circulating pump runs at all times.

The free available chlorine residual is measured at least once a day and recorded in the logbook kept at the facility.

The elevated storage tank operates on a level control telemetry system with the high lift pumps at the Water Treatment Plant starting and stopping when the water level rises or drops within the tank. No. 1 and No. 4 high lift pumps, variable speed drive which are a 60 horsepower motor, are capable of pumping 63.1 L/s and No. 2 high lift pump is 100 horsepower and is capable of pumping 94.7 L/s and No. 3 high lift pump is a 125 horsepower motor and is capable of pumping 126.2 L/s.

The Water Tower has four (4) 400mm isolation valves, one (1) altitude valve and one (1) check valve.

## **PLANT EQUIPMENT AND SUPPLIERS**

### **Low and High Lift Pumps:**

#### **Low Lift Pumps**

2 - 30 hp electric motors with vertical turbine pumps and 1 - 40 hp electric motor with vertical turbine, variable speed drive pump.

1 - Spare 40 Horsepower Low Lift Pump

Major repairs and rebuilds done by: Supplier - Dells Electric  
Phone # - (204) 947-1391  
Contact Person - Ron Del Bigio

Repair or purchase pumps and motors: Supplier - Power & Mine Supply  
Phone # - (807) 622-4044  
Contact Person - Bruce Martinuzzi

#### **High Lift Pumps**

4 – High Lift Pumps and Motors online: 2 - 60 hp electric motors with vertical turbine, variable speed drive pumps, 1 - 100 hp and 1 - 125 hp.

Spare High Lifts: 1 - 60 Horsepower motor and pump  
1 - 100 Horsepower motor

2 - Euro Drive Clarifier Motors online

2 - Spare Euro Drive Motors in stock

1 - Spare Shaft in stock

Rebuild/Repair/Replace Motors & Shafts: Supplier: Busch's Auto Supply (Fort Frances)  
Phone # (807) 274-7701  
Contact Person - Murray DeGagne

Or

Supplier: Power & Mine Supply  
Phone # - (807) 622-4044  
Contact Person – Bruce Martinuzzi

**Major Repairs to Electric Motors:**

Same as Low Lift Pumps.

**Chemical Feed Equipment:**

V Notch Chlorinators - 1 online and 1 spare with spare parts located at the Water Treatment Plant

Chlorine Switch Overs - 2 online

Chlorine Fluoride Analyzers - 1 online and 1 - spare

The Chlorine Fluoride Analyzer which is installed at the end of the Contact Chamber can be used as a spare to replace the one located on the Distribution Line if a breakdown occurred which would allow the Town to remain in compliance as mentioned in Part 1 of the Certificate of Approval.

Chlorine Detection Unit: 1 online

Polymer Electrolyte Feed System: 2 pumps online  
1 spare pump  
Spare parts located at Water Treatment Plant

Liquid Aluminum Sulphate System: 1 pump online  
1 spare pump located at Water Treatment Plant

All chlorine and chemical feed equipment is supplied by Mequipco Ltd., Wallace & Tiernan and U.S. Filter.

Soda Ash Feeder & Pump: spare parts located at Water Treatment Plant

Phone # - (204) 982-1040  
Contact Person - Dan Landry

Turbidity Meters: 5 online  
Spare parts located at Water Treatment Plant

Supplier - Clear Tech  
Phone # - (204) 981-3285  
Contact Person - Keith Zentner/Dave Rushka

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Silica Sand & Anthracite: spare supply on hand at Water Treatment Plant

Supplier - Clear Tech  
Phone # - (204) 981-3285  
Contact Person - Keith Zentner

Valves & Actuators: spare parts located at Water Treatment Plant

Supplier – Lakeside Process Control  
Phone # - (204) 633-9197  
Contact Person – Keith Frye

Flow Meters: 3 online

Supplier – Lakeside Process Control  
Phone # - (807) 624-2792  
Contact Person - John Tenkula

or

Supplier – Control Tech  
Phone # - (204) 633-9197  
Contact Person – Keith Frye

Sample Pumps: 1 spare

Supplier – Canadian Tire  
Phone # (807) 274-7711

Fluoride Pump: 1 online  
1 spare

Supplier – Clear Tech  
Phone # (204) 981-3285  
Contact Person – Dave Rushka

Calcium Hypochlorite Pump: 1 online  
1 spare

Supplier – Clear tech  
Phone # - (204) 981-3285  
Contact Person – Dave Rushka



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Backwash Motor & Pump: 1 - 75 Horsepower motor and pump online  
1 spare - 75 Horsepower motor

Major repairs/rebuilds for the Highlift and Backwash Motors:

Supplier - Dells Electric  
Phone # - (204) 947-1391  
Contact Person - Ron Del Bigio

Repair/Purchase Pumps & Motors:

Supplier - Power & Mine Supply  
Phone # - (807) 622-4044  
Contact Person - Bruce Martinuzzi

Located at the Water Treatment Plant are the original Water Treatment Plant Operating Manuals prepared by U.M.A. Engineering in 1987. The original operating manuals for the Water Tower, prepared by U.M.A. Engineering in 1984 are also located at the Water Treatment Plant. The manuals are in three (3) volumes in binder form. The manuals contain information on all the Plant equipment including wiring diagrams and maintenance requirements - Trouble Shooting, Supplier Lists, Operating Procedures and Equipment Parts List.

The Water Treatment Plant staff, Electrical Contractor and the Mechanical Service Contractor, uses the manuals regularly.

There are three (3) sets of these manuals located at the Plant; one (1) set upstairs in the lunchroom, one (1) set located on the main floor as you walk in on the bookshelf and another set located in the storage/mechanical room on the shelf. The manuals are readily available for all the operators to use as reference guides, ordering parts and the overall operation of the Water Treatment Plant.

### **Equipment Calibration:**

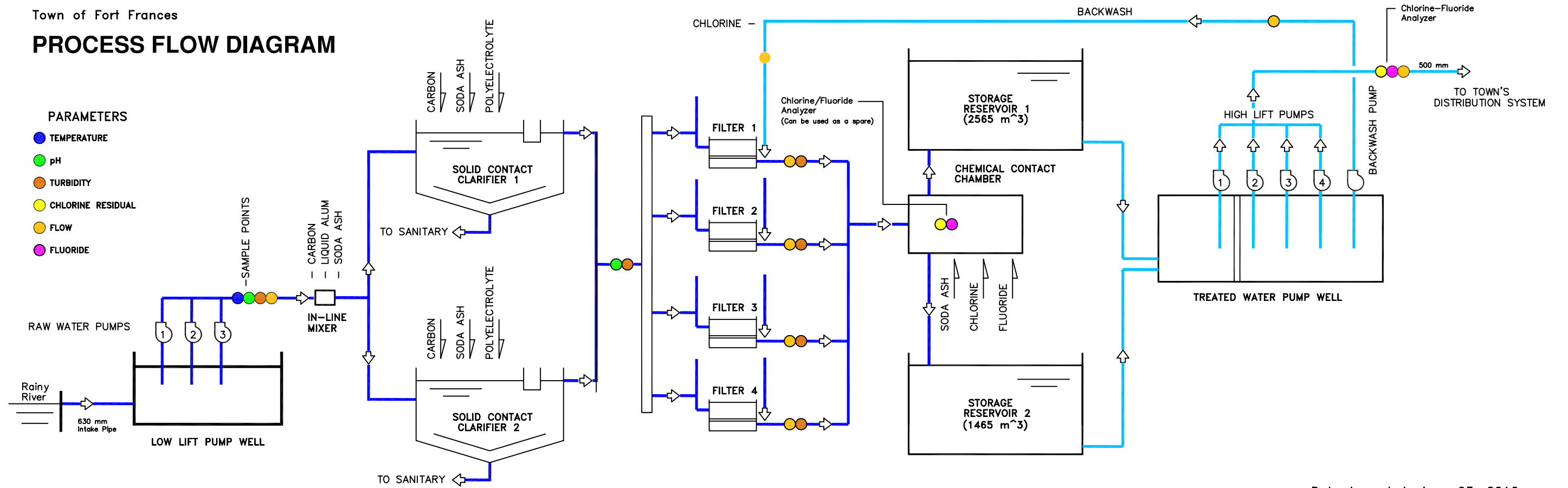
The Water Treatment Plant retains an Instrumental and Control Contractor, Lakeside Process Controls and Hach to perform annual calibrations on the flow meters and chemical metering pumps as per Schedule C: System-Specific Conditions, Part 3.0 Calibration of Flow Measuring Devices of the Municipal Drinking Water Licence.

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**PROCESS FLOW DIAGRAM**

PARAMETERS

- TEMPERATURE
- pH
- TURBIDITY
- CHLORINE RESIDUAL
- FLOW
- FLUORIDE



Date Amended: June 03, 2016

## **APPENDIX “E”**

### **ORIGINAL WATER TREATMENT PLANT DESIGN DRAWINGS**

Town of Fort Frances Water Treatment Plant

Drawings Available For Download At:

<https://fortfrances.ca/town/administration-finance/tenders>