General Site Information and Guide
for the Iqaluit Water Treatment Plant
Iqaluit, Nunavut

June 2022

1 INTRODUCTION

Year of Completion: 2004

Original Scope: Expand existing water treatment facility to meet city's requirements and Canadian Drinking Water Quality Guidelines.

This manual has been updated to include:

DATE	DESCRIPTION OF CHANGE
December, 2018	This section is a new addition to incorporate information regarding plant standards and procedures for site inspections, personnel training and emergency response plans.
March, 2022	Inclusion of supplemental text regarding updates and upgrades made to the water treatment plant as per WTP Project No. 211-12487-00.
May, 2022	Inclusion of additional information per the requests from Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC).
June, 2022	Inclusion of additional information per the requests from Nunavut Water Board (CIRNAC).

Iqaluit Water Treatment Plant

Project History

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3 USE O&M MANUAL GUIDE

3.1 USE OF THIS MANUAL

The intent of this Operations and Maintenance (O&M) manual is to provide the operations and maintenance personnel with a clear and concise understanding of how the City of Iqaluit Water Treatment Plant (WTP) operates, and the steps that must be followed to ensure that the facility is running safely and efficiently.

The primary goal of this manual and of all personnel operating in and around the WTP is loss prevention, the prevention of personnel injury and property damage. To meet this objective, the operation and maintenance program includes:

- General site information and purpose of the WTP.
- Specific operating instructions (divided into individual O&M Manual sections) pertaining to Architectural & Structural, Process, Mechanical and Electrical and Instrumentation components of the WTP to be learned and followed at all times to promote safe and efficient operation. These also include, but are not limited to information for the following:
  - Operational procedures for storage, treatment and distribution of potable water.
  - Waste streams generated as part of the water treatment process.
  - Hazardous substances found on site and their respective handling requirements.
  - Water quality sampling and monitoring.
- Site inspections and routine maintenance of all the facility's systems and structures.
- Detailed inspections of all equipment, facilities, system and structures as well as reporting and correction of deficiencies.
- Emergency procedures to be followed in the event of spills or accidents.
- Proper record keeping.
  - The appendices for each specific technical O&M section contain construction documents (record drawings, specifications and shop drawings).
- Maintaining a supply of parts, spare materials and equipment necessary to keep the facility running safely and efficiently.

Personnel must review and be familiar with all chapters of the manual to ensure that they have a thorough working knowledge of the Water Treatment Plant. This will enable them to turn directly to the correct chapter should a reference be required.

END OF CHAPTER 3

4 SITE INSPECTIONS

4.1 GENERAL SITE INSPECTIONS

The City of Iqaluit Water Treatment Plant (WTP) is located south of Geraldine Lake, which also provides the raw water source for potable water treatment at the WTP. With the exception of the occasional algal blooms during the summer, Geraldine Lake provides relatively good quality raw water. The WTP has a gross design capacity of 9,500 m3/day.

Site inspections are performed daily to ensure that all equipment and systems within the are operating and properly functioning, as well as ensure the housekeeping aspects are in place (such as tidiness and accessibility). On-shift operators perform daily rounds throughout the WTP in a 24-hour cycle. In the event an equipment is identified to be deficient, it is tagged and logged for maintenance, or where required, replacement. Refer to the Process, Mechanical, Electrical and Instrumentations Operations and Maintenance Manuals for further details on the maintenance schedule and requirements for operating equipment on site.

The observations for the daily site inspections are logged in the inspection’s logbook.

END OF CHAPTER 4

5 PERSONNEL TRAINING

5.1 PERSONNEL TRAINING REQUIREMENTS

Personnel training is done in-house by the City of Iqaluit. Topics that are covered as part of the training process include, but are not limited to the following:

- Site safety and orientation.
- Operating procedures for each of the process units on site.
- WHIMIS.
- Confined space.
- First Aid.

New operating personnel are expected to shadow an experienced operator as part of the training process.

5.2 FIRE

Information on the response to a fire (or other emergency event) is covered in Section 6 which includes the following:

- The designated muster point in the event of a fire.
- The primary responders during a fire event (the local City fire department and the WTP Lead Operator).
- Locations of all the manual fire alarm pull stations in the WTP.

5.3 SPILLS

In the event of a chemical spill, all operators on shift must be notified, and action must be taken to contain the spill as soon as possible. Depending on the nature and location of the chemical spill, the local and territorial environmental agencies may need to be notified.

Proper PPE must be worn when addressing the spills. Depending on the degree of the chemical spill hazard, appropriate PPE would generally consist of the following:

- Suits (ranging from regular coveralls to Hazmat protection)
- Gloves
- Goggles or face shields
- Respirators
- Rubber Boots

Spills waste materials must be stored in a safe location until it can be safely disposed of through sea-lift services.

5.4 OPERATIONAL AND CONTROLS ALARMS

In 2018, the City of Iqaluit WTP commenced a project to carry out a water and wastewater facilities-wide PLC and SCADA radio communications upgrade to allow all the water and wastewater facilities to communicate directly with one other and allow for the control of the different communications systems City-wide. The main control center is located within the WTP. As part of the implementation of the new PLC and communications system, when PLC alarms are triggered, the Plant Superintendent will be notified, along with the designated operators. This is to allow for timely response to the alarm and for plant personnel to take appropriate action to rectify any process related emergencies.

END OF CHAPTER 5

6 EMERGENCY RESPONSE

6.1 GENERAL

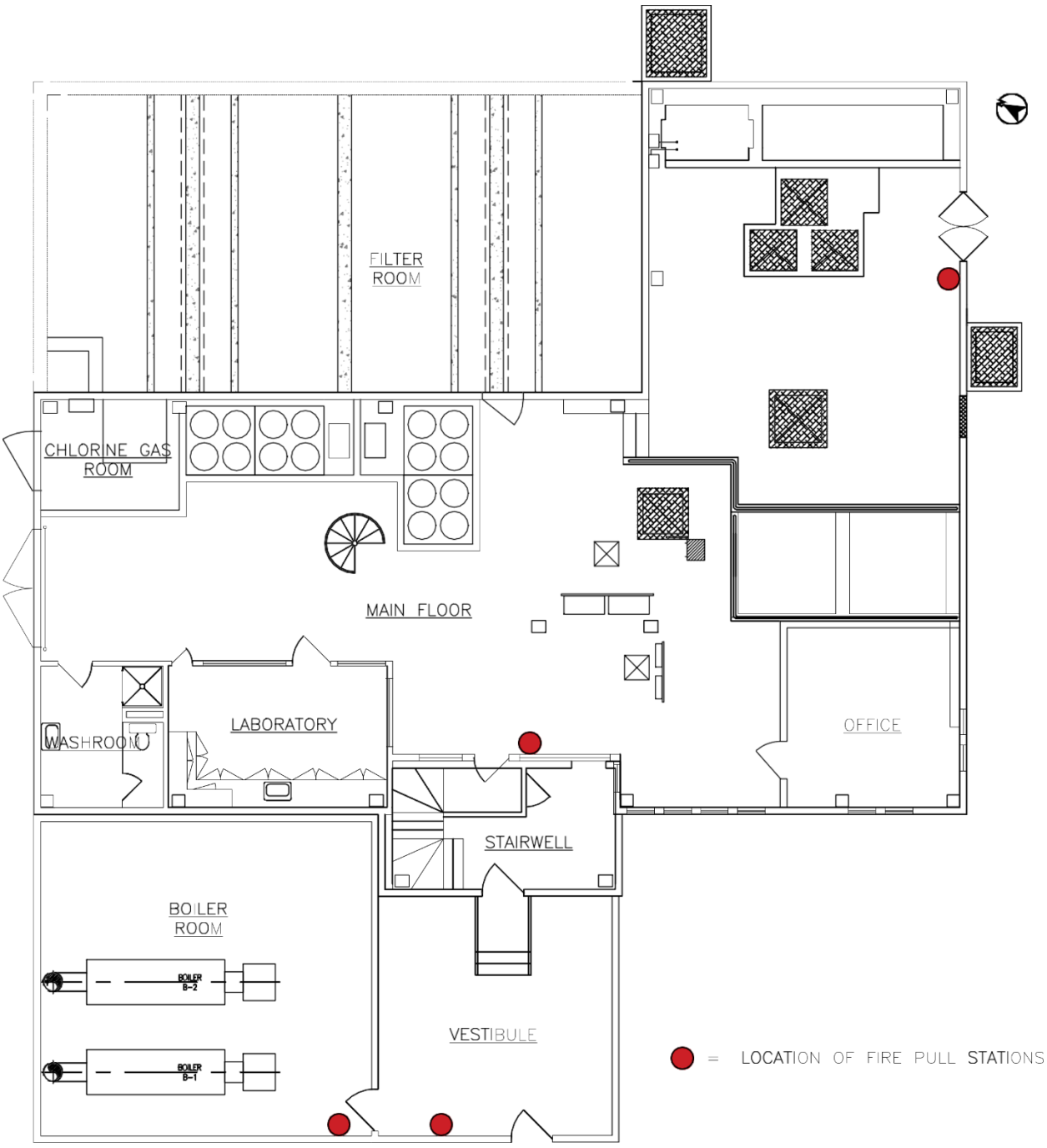
During the event of a fire or another onsite emergency, the first point of contact would be the local dispatch emergency service. On-shift operators are expected to take appropriate action and respond to emergencies on site, including notifying the local fire department of the emergency. The primary responder to an onsite emergency is:

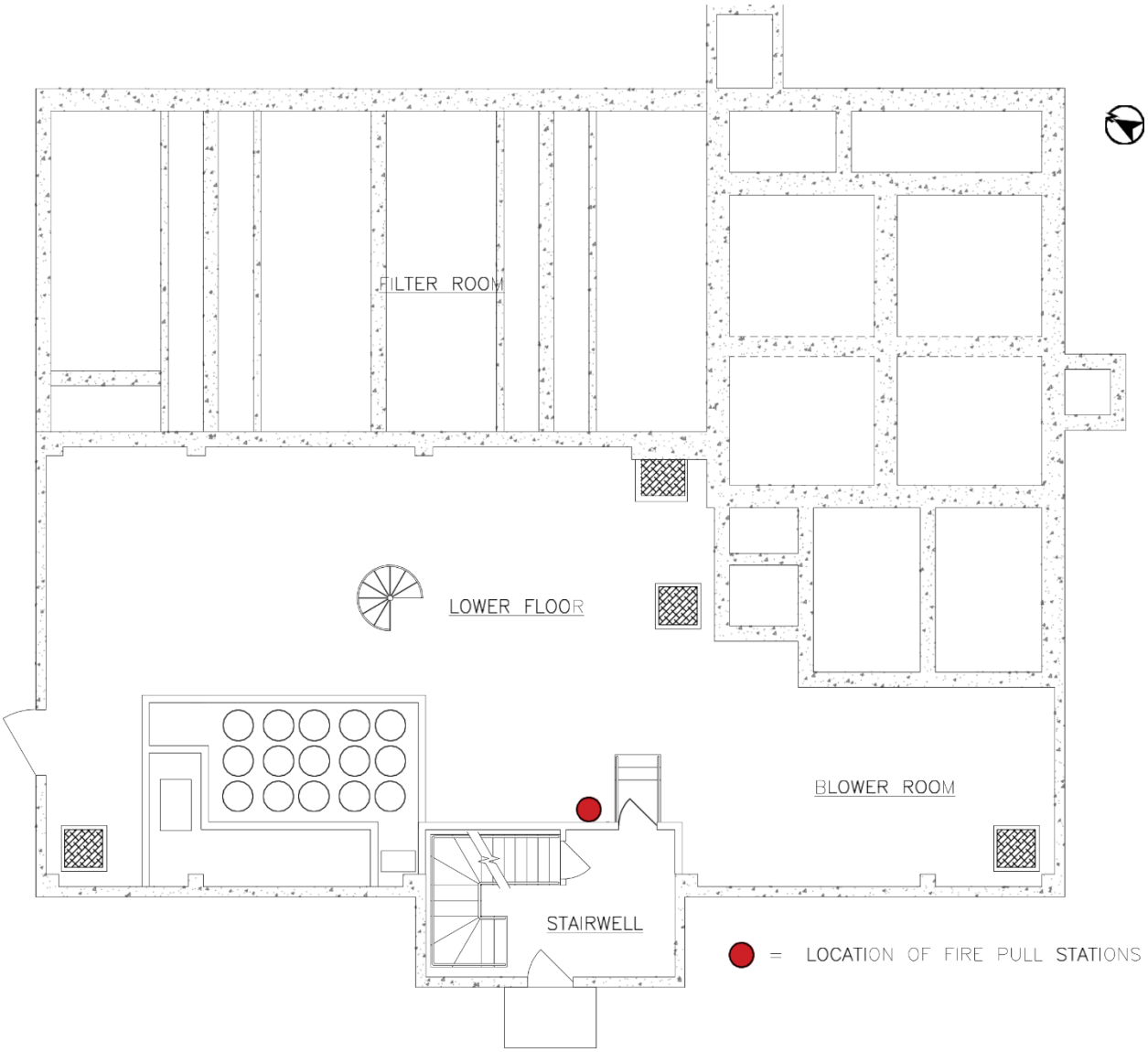
Pat Wolfe
WTP Lead Operator
(867) 222-2424
P.Wolfe@iqaluit.ca

An emergency response can also be prompted by the presence of chlorine gas, as detected by the chlorine gas monitor on the main floor adjacent to the chlorine gas room and as alarmed locally by a horn and blue-coloured beacon on the west exterior of the WTP.

In the event of an emergency, the muster point on site is located top the southeast of the Water Treatment Plant at the top of the access road, as shown in the image below:

The locations of fire pull stations at the Water Treatment Plant are given on the following two pages (main floor and lower floor).


FILTER ROOM
CHLORINE GAS ROOM
MAIN FLOOR
LABORATORY
WASHROOM
OFFICE
STAIRWELL
BOILER ROOM
BOILER B-2
BOILER B-1
VESTIBULE
= LOCATION OF FIRE PULL STATIONS



END OF CHAPTER 6

7 SKETCHES AND DRAWINGS

Sketches illustrating the civil site conditions and the structure and foundation of the WTP are provided at the end of this chapter and include the following:

A-101	**Site Plan & Floor Plans**
A-301	**Sections and Details**
A-501	**Room and Door Schedules**
C-101	**Site Grading Showing Pumps Floor**
C-102	**Water Treatment Plant and Site Plan**
C-301	**East-West Sections**
C-302	**South-North Sections**
A-001	**General and Design Notes**
S-101	**Existing Foundation Layout**
S-102	**Existing Reservoir Floor Plan**
S-103	**Pumps Floor Plan**
S-104	**Filters Floor Plan**
S-301	**Sections & Details**
S-302	**Sections & Details**
S-303	**Sections & Details**
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