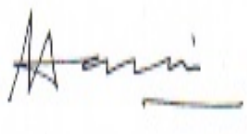
Government of Newfoundland and Labrador
Department of Environment and Climate Change
Water Resources Management Division

PERMIT TO OPERATE

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 38

Date:	**NOVEMBER 02, 2022**	File No: **844.097.16.8** Permit No: **OP-W-12850-2022**
Permit Holder:	**City of St. John's** **P.O. Box 908** **10 New Gower St.** **St. John's NL A1C 5M2** **dtmartin@stjohns.ca**	
Attention:	**Mr. Daniel Martin, P.Eng.**	
Re:	**St. John's - Permit to Operate - Bay Bulls Big Pond Water Treatment Plant**	
For the operation of a:	**Class IV Water Treatment**	

- This Permit is valid until Tuesday, November 2, 2027 or until there is a change in the classification of the **water treatment or water distribution system** as applicable, or as may be determined by this Department.
- This Permit does not release the Permit Holder from the obligation to obtain appropriate approvals from other concerned municipal, provincial and federal agencies.
- This Permit is subject to the terms and conditions indicated in Appendices A and B (attached).



(for) MINISTER

APPENDIX A

Terms and Conditions for Permit

DW- General

1. The Owner shall operate and maintain a drinking water system which shall include the following:
   a. a surface water supply from Bay Bulls Big Pond;
   b. a 1220 mm diameter raw water intake and travelling screen;
   c. a low lift pumping station;
   d. a backwash storage reservoir with a capacity of 1990 m^3;
   e. a water treatment plant with the following components:
   - ozonation (4 contact chambers)
   - pH and alkalinity adjustment using hydrated lime and carbon dioxide gas
   - coagulation/flocculation using aluminum chlorohydrate (4 trains)
   - clarification using a dissolved air flotation (DAF) system (4 trains)
   - multi-media filtration using anthracite and sand (6 filters)
   - UV disinfection system (2 units)
   - disinfection using chloramines (chlorine gas and ammonia gas);

   f. two treated water clearwells with volumes of 4360 m^3 (Tank #4400-T-2) and 6000 m^3 (Tank #4400-T-3);
   g. a 1067 mm diameter transmission main to the Ruby Line Pumping Station;
   h. a RBC (rotating biological contactor) wastewater treatment system for treating domestic and laboratory wastes; and
   i. two DAF sludge treatment lagoons and a filter backwash settling pond.

2. The Owner shall operate the drinking water system in accordance with any applicable regulations, policy, guidelines, and this approval, or as may be directed by this Department. Water supplied to the consumer shall satisfy the requirements of the latest version of the *Guidelines for Drinking Water Quality in Newfoundland and Labrador*, and the *Standards for Bacteriological Quality of Drinking Water*.

3. The Owner shall ensure that all chemicals and materials used in the 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 or NSF/61.

4. The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by 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.

5. The Owner shall practice a multi-barrier approach to protect the quality of drinking water from the source to the end of the water distribution system within the Owner's jurisdiction.

6. The Owner shall endeavour to take all necessary steps to ensure protection of the water supply source from contamination. The operators must establish and maintain a regular inspection routine to monitor activities within the water supply area.

7. The Owner shall ensure a copy of this Permit is kept in a conspicuous place so that it is available for reference by all persons responsible for all or part of the operation of the drinking water system.

8. The Owner shall maintain a sufficient inventory of spare parts for the most critical components of the drinking water system in order to keep downtime and disruptions to the system to a minimum. In particular, an adequate inventory of spare parts for the disinfection system must be maintained to ensure continuous disinfection.

9. The Owner shall develop and promote a water conservation program to reduce water demand on the drinking water system.

10. The Owner shall take preventative or corrective action as directed by this Department to address any identified deficiencies that may pose a risk to public health or the environment.

DW-Disinfection

11. The Owner shall monitor and document on a daily basis the consumption of chemicals used for disinfection.

12. Disinfection facilities should be kept at an adequate temperature to ensure the integrity of disinfection chemicals is not compromised.

13. The Owner should periodically check UV disinfection systems for proper operation including calibration to ensure UV transmission has not fallen below certified levels, cleaning UV lamps of any fouling, and replacing UV lamps once life expectancy has been exceeded or as recommended by the manufacturer.

14. A summary of emergency procedures shall be posted outside the chemical disinfection room(s).

DW-Water Treatment

15. The Owner shall operate the water treatment facility to treat water at a rate not exceeding the maximum flow rate of 126 000 m^3/d (total).

16. The Owner shall only use the following chemicals in the treatment process, unless otherwise approved by this Department:
    a. ozone;
    b. hydrated lime;
    c. carbon dioxide;
    d. aluminum chlorohydrate;
    e. chlorine gas; and
    f. ammonia gas.

17. The effluent discharge from the two DAF sludge treatment lagoons and the backwash settling pond to Bay Bulls Big Pond must be in compliance with the *Environmental Control Water and Sewage Regulations, 2003* and the *Canadian Water Quality Guidelines for the Protection of Aquatic Life*, as applicable.

18. Sludge must be removed from the residuals treatment lagoon as warranted to maintain adequate functioning, and transported and disposed in a manner that is acceptable to this Department.

19. The Owner shall ensure that access to the treatment plant is maintained year-round.

20. The Owner shall ensure that the treatment facility is reasonably secure from all unauthorized intrusions and shall maintain adequate security defences such as plant surveillance, adequate fencing and gates, and other measures as may be deemed necessary to prevent vandalism and unauthorized entry.

21. The Owner shall ensure the use of proper housekeeping techniques to keep the water treatment facility clean. All functioning components and housing structures shall be kept in good repair and well maintained.

22. The Owner shall ensure that all backflow prevention devices that are in use in the water treatment facility to prevent the backflow of contaminants into the potable water system are installed, maintained and tested on a regular basis by a certified installer and tester.

23. The Owner shall monitor and document filter rates, filter backwash rates, chemical dilutions, chemical feed rates, air flow rates and results from jar tests, as applicable.

DW-Operators

24. There shall be a person or persons designated by the Owner with the overall authority for the operation and maintenance of the water treatment facility(ies) and water distribution system, respectively, the Operator in Direct Responsible Charge.

25. Sufficient staffing of Operators must be provided to carry out daily operation and maintenance activities on the drinking water system to ensure reliable operation of the system.

26. The Operator(s) in Direct Responsible Charge of the water treatment facility is required to have Class IV Water Treatment Operator Certification status. Other subordinate Operators are required to have Class II Water Treatment Operator Certification status. These required levels of certification must be achieved at the earliest possible opportunity, if not already achieved, not to exceed 5 years from the date of issue of this Permit. Certification must be achieved in accordance with the Operator education and experience requirements of the *Policy for Newfoundland and Labrador Water and Wastewater Operator Certification Program*. All Operators shall be permitted to certify to one level above that of the water treatment facility they operate.

27. Operators must receive a minimum of 24 hours of related training per year. The Owner shall ensure that Operators participate in training opportunities as they arise in order to meet this requirement.

28. Contractors who do work on the drinking water system on behalf of the Owner shall do so under the supervision of the Operator in Direct Responsible Charge and be trained in the particular aspect of the operation and maintenance that they have been contracted to do.

DW-Monitoring/Records/Reports

29. The Owner shall notify this Department prior to implementing significant changes to any process that may adversely affect the quality and/or quantity of the finished water.

30. The Owner shall establish a maintenance and operation program that includes the following:
    - The Owner shall compile and maintain an up to date operations manual that is made available for reference by all persons responsible for all or part of the operation of the drinking water system. The manual must include manufacturer's information on all components of the system including supplier, contact information, specification information, shop drawings, model and serial numbers, date installed or date put into service, length of service, and parts inventory.
    - A maintenance schedule must be maintained for task specific items to be completed on a daily, weekly, monthly, and annual basis as may be applicable for the drinking water system.
    - An operator's daily log must be kept of items pertaining to the operation and maintenance of the drinking water system. All manual records should include date and time of record and the operator's signature.

31. The Owner shall ensure the continuous measurement and recording of:
    a. Flow rates of water conveyed into individual treatment systems and trains, and the daily volumes of water conveyed into the individual treatment systems.
    b. Flow rates and daily volumes of water conveyed to the distribution system from each treatment system that has a separate line feeding the distribution system.
    c. Pressure at critical points in the distribution system, as applicable.

32. The Owner shall ensure that monitoring of raw and finished water quality (turbidity, pH, temperature, conductivity, aluminium residual, UVA/UVT, TOC, chlorine residual, etc.) is undertaken to ensure efficient operation of the water treatment plant.

33. The Owner shall maintain complete up to date digital and/or paper as-built drawings of the drinking water system including all major infrastructure components, process flow diagrams (PFDs), and process and instrumentation diagrams (P&IDs).

34. The Owner shall ensure that all process control monitoring instruments (including flow measuring devices, pressure sensors, level indicators, and water quality sensors) are maintained, calibrated and replaced in accordance with manufacturer's recommendations.

35. The Owner shall immediately report any major problems or malfunctions to the Environmental Scientist by telephone at (709) 729-2558 or by email at: waterandsewer@gov.nl.ca. A written report shall be submitted within seven days to this Department.

36. The Owner shall notify consumers at the earliest possible time of malfunctions in the system. The Owner shall also provide advance notice of any planned disruptions for maintenance and repair, upgrading, and flushing, including anticipated duration and any other relevant information. The nature of the circumstance that will result in water quality deterioration must also be communicated to other concerned Departments, as applicable, including the Department of Health and Community Services, and Service NL.

37. The Owner shall establish procedures for receiving and responding to complaints including a reporting system which records what steps were taken to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its reoccurrence.

38. The Owner shall produce an annual summary report documenting the operation and maintenance of the drinking water system, including as a minimum: daily water production, daily disinfectant residuals, amount of chemicals used, and any issues experienced with the distribution system (heavy rainfall, major leaks, water shortages, algae blooms, beavers in the water source, shutdown of water treatment equipment, etc.).

39. Any information requested by officials from this Department concerning the drinking water system and its operation under this Permit, including but not limited to any records required to be kept by this permit, shall be provided upon request.

40. The Owner shall retain all records required by or created in accordance with this approval for a minimum of 5 years from the date of their creation.

41. The Owner shall establish long and short term plans for the sustainable operation of the drinking water system. Planning shall incorporate sound fiscal planning for all operational aspects of the system including general maintenance and operation, emergencies, operator training and continuing education, and capital fiscal planning for upgrading, expansion, and replacement.

42. The Owner shall sample any residuals effluent discharged to a public sewer, the environment, or a waterbody on an annual basis and report the results to the regional Environmental Scientist. The grab samples shall be analysed at an accredited lab.

SCADA

43. Owners with automated Supervisory Control and Data Acquisition (SCADA) systems shall ensure the functionality of all Remote Terminal Units (RTUs)/ Programmable Logic Controllers (PLCs), Master Terminal Units (MTUs), Human Machine Interfaces (HMIs), data historian and trend applications, and communication systems on a daily basis.

44. The Owner will keep a backup copy of the SCADA system master database and the HMI. The backup copy may be located on a spare computer or MTU. Data collected by the SCADA system and stored on the MTU must be backed up on a regular basis.

45. The computer/MTU containing the SCADA system master database and HMI must be kept in a separate server room that can be locked. The MTU must never be turned off. The computer being used as the MTU shall be cleaned out with compressed air as required.

46. Multiple firewalls must be set up on the SCADA system if the Owner is to allow remote access/login to the SCADA system. Passwords used to gain access to different parts of the SCADA system must be changed on a regular basis.

47. The computer/MTU housing the SCADA system master database and HMI shall not be networked to the internet and shall not be used for sending/receiving emails or browsing the internet.

48. Automatic patches and updates for antivirus software and the computer operating system housing the SCADA system master database and HMI shall be disabled. All updates will be uploaded manually after confirmation from the update source that they will not interfere with the operation of the SCADA system.

49. The Owner shall maintain technical support for the SCADA system, which may include signing a maintenance support agreement with the developer. Updates to the SCADA system shall be installed as provided by the developer.

50. Network connections on the SCADA system must be identified and configured to prevent unauthorized access.

51. Logging services should be installed onto the SCADA system to track activity such as user log-on, user log-off, etc.

DW-Safety & Emergencies

52. The Owner shall ensure that all self-contained breathing apparatuses (SCBAs) are maintained as per the latest version of the CSA Standard for the *Selection, Use and Care of Respirators*. Air cylinders which have not been used in any 3-6 month period should be slowly depressurized and recharged with clean, dry, respirable air. The designated system operators must be trained in the use of the breathing apparatus.

53. The Owner shall ensure that all eye wash stations and emergency showers adhere to the latest edition of the ANSI Z358.1 standard and to the requirements of the applicable Safety Data Sheet(s) (SDS). Portable stations shall be checked regularly and the solutions replaced as required. Permanent stations should be flushed regularly to ensure an adequate and clean supply of potable water.

54. The Owner shall ensure the operation of emergency electrical generation or emergency pumping systems on a regular basis.

55. Operation of the drinking water system shall be conducted in accordance with the requirements of the *Occupational Health and Safety Act* and its regulations for the safety of operators and the general public. All safety requirements (handrails, guards, walkways, gas detectors, alarms, first aid equipment, emergency lighting, etc.) with respect to operation and maintenance of the drinking water system must be met.

56. The Owner shall ensure that operators are provided with all the safety clothing, equipment and training required to carry out hazardous activities. Hazards may include contact with sewage, dangerous chemicals and physical hazards such as confined space entry, climbing water storage tanks, buried power hazards, traffic, trenches, heights, etc. Servicing of all safety equipment must be undertaken according to the manufacturer's recommendations.

57. The Owner shall provide operators with access to suitable facilities for hand washing and cleaning, and shall provide disinfecting soap and cleaning products and services as may be necessary.

58. The Owner shall ensure that all used oil products and other related hazardous wastes generated by the machinery used in the operation of the drinking water system are collected and disposed of in an approved manner. The regional office of Service NL shall be contacted in this regard.

59. Emergency warning devices must be checked and exercised on a regular basis to ensure that all systems are operating and functioning properly. In particular, chlorine gas detectors should be tested on a monthly basis and calibrated every 6 months. A log shall be maintained to record the details of emergency warning device maintenance activity.

60. Contingency and emergency response plans must be established for all foreseeable what if scenarios such as extensive fire demand, main line breaks, contamination problems, or the SCADA system is hacked. Plans must include notification of all water system users. The Owner shall ensure that adequate equipment and material are available for dealing with emergencies, upset conditions and equipment breakdowns.

61. WHMIS and SDS information will be kept on site where any chemicals are used in the operation of the drinking water system.

Special Conditions

62. The effluent discharged from the RBC wastewater treatment plant must be in compliance with the *Environmental Control Water and Sewage Regulations, 2003* and shall be operated in such a manner as to minimize the impact of its discharge on Bay Bulls Big Pond, with special attention being given to its chlorination systems and the bacteriological quality of the effluent. Sludge must be removed from the wastewater treatment plant as warranted to maintain adequate functioning. This sludge shall not be discharged to the water treatment plant's sludge lagoon, but to a location that is acceptable to Service NL.

DW-Tanks

63. The Owner shall ensure that water storage tanks put back into service after cleaning or repairs shall be disinfected by an approved method such as described in the standard *Disinfection of Water Storage Facilities C652* prepared by the American Water Works Association. The solution used for disinfecting may not be discharged to a water course.

APPENDIX B

Special Terms and Conditions for Permit

1. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall keep all systems and works in good condition and repair and in accordance with all laws, by-laws, directions, rules and regulations of any governmental authority. The Permit Holder or its agent(s), subcontractor(s), or consultant(s) shall immediately notify the Minister if any problem arises which may threaten the structural stability of the systems and works, endanger public safety and/or the environment or adversely affect others and/or any body of water either in or outside the said Project areas. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall be responsible for all damages suffered by the Minister and Government resulting from any defect in the systems and works, operational deficiencies/inadequacies, or structural failure.

2. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall operate the said Project and its systems and works in a manner which does not cause any water related and/or environmental problems, including but not limited to problems of erosion, deposition, flooding, and deterioration of water quality and groundwater depletion, in or outside the said Project areas. The Permit Holder and its agent(s), subcontractor(s), and consultant (s) shall be responsible for any and all damages associated with these problems caused as a result of changes, deficiencies, and inadequacies in the operational procedures by the Permit Holder or its agent(s), subcontractor(s), or consultant(s).

3. If the Permit Holder or its agent(s), subcontractor(s), or consultant(s) fails to perform, fulfil, or observe any of the terms and conditions, or provisions of this Permit, as determined by this Department, the Minister may, without notice, amend, modify, suspend or cancel this Permit in accordance with the *Water Resources Act*.

4. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) indemnify and hold the Minister and Government harmless against any and all liabilities, losses, claims, demands, damages or expenses including legal expenses of any nature whatsoever whether arising in tort, contract, statute, trust or otherwise resulting directly or indirectly from granting this Permit, systems and works in or outside the said Project areas, or any act or omission of the Permit Holder or its agent(s), subcontractor(s), or consultant(s) in or outside the said Project areas, or arising out of a breach or non-performance of any of the terms and conditions, or provisions of this Permit by the Permit Holder or its agent(s), subcontractor(s), or consultant(s).

5. This Permit is subject to all provisions of the *Water Resources Act* and any regulations in effect either at the date of this Permit or hereafter made pursuant thereto or any other relevant legislation enacted by the Province of Newfoundland and Labrador in the future.

6. This Permit shall be construed and interpreted in accordance with the laws of the Province of Newfoundland and Labrador.

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