Newfoundland Labrador

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR
Department of Municipal Affairs and Environment

CERTIFICATE OF APPROVAL

Pursuant to the Environmental Protection Act, SNL 2002 c E-14.2 Section 83

Issue Date: ***October 31, 2016*** Approval No. AA16-105640A

Amendment: ***April 2, 2018***

Expiration: ***August 31, 2021*** File No. 716.008, 716.050.1

Proponent: **Newfoundland and Labrador Hydro**
P.O. Box 29
Holyrood, NL
A0A 2R0

Attention: Rod Healey, Environment Department Manager

Re: **Holyrood Thermal Generating Station, 123 MW Combustion Turbine and Six (6) Diesel Generating Units**

Approval is hereby given for the operation of a 123 MW Combustion Turbine, Six (6) Diesel Generating Units and a Thermal Generating Station, including power house, wastewater treatment plant, hazardous waste landfill and associated works located at Holyrood, NL.

This Certificate of Approval does not release the proponent from the obligation to obtain appropriate approvals from other concerned provincial, federal and municipal agencies. Nothing in this Certificate of Approval negates any regulatory requirement placed on the proponent. Where there is a conflict between conditions in this Certificate of Approval and a regulation, the requirements in the regulation shall take precedence. Approval from the Department of Environment and Climate Change shall be obtained prior to any significant change in the design, construction, installation, or operation of the facility, including any future expansion of the works. This Certificate of Approval shall not be sold, assigned, transferred, leased, mortgaged, sublet or otherwise alienated by the proponent without obtaining prior approval from the Minister.

This Certificate of Approval is subject to the terms and conditions as contained therein, as may be revised from time to time by the Department. Failure to comply with any of the terms and conditions may render this Certificate of Approval null and void, may require the proponent to cease all activities associated with this Certificate of Approval, may place the proponent and its agent(s) in violation of the *Environmental Protection Act*, and will make the proponent responsible for taking such remedial measures as may be prescribed by the Department. The Department reserves the right to add, delete or modify conditions to correct errors in the Certificate of Approval or to address significant environmental or health concerns.

Beth Potter

For **MINISTER**

TERMS AND CONDITIONS FOR APPROVAL No. AA16-105640A
April 2, 2018

General

1. This Certificate of Approval is for the operation of a 123 MW Combustion Turbine, Six (6) Diesel Generating Units and a Thermal Generating Station, including power house, wastewater treatment plant, hazardous waste landfill and associated works located at Holyrood, Newfoundland. Extensive future expansion or change of activities will require a separate Certificate of Approval.

2. Certificate of Approval AA16-105640 is revoked and replaced by this Certificate of Approval.

3. Any inquiries concerning this Approval shall be directed to the St. John's office of the Pollution Prevention Division (telephone: (709) 729-2556; or facsimile: (709) 729-6969).

4. In this Certificate of Approval:

- **accredited** means the formal recognition of the competence of a laboratory to carry out specific functions;
- **acutely lethal** means that the effluent at 100% concentration kills more than 50% of the rainbow trout subjected to it during a 96-hour period, when tested in accordance with the ALT;
- **administrative boundary** means the boundary surrounding the Thermal Generating Station outside of which the ambient air quality standards, outlined in Schedule A of the ***Air Pollution Control Regulations, 2004***, apply;
- **air contaminant** means any discharge, release, or other propagation into the air and includes, but is not limited to, dust, fumes, mist, smoke, particulate matter, vapours, gases, odours, odorous substances, acids, soot, grime or any combination of them;
- **ALT (acute lethality test)** means a test conducted as per Environment and Climate Change Canada's Environmental Protection Service reference method EPS/1/RM-13 Section 5 or 6;
- **BOD_5** means biochemical oxygen demand (5 day test);
- **CEMS** means the continuous emissions monitoring system used to measure gaseous releases of SO_2, NO_x, CO_2, CO and O_2 from each boiler;
- **CO** means carbon monoxide;
- **CO_2** means carbon dioxide;
- **Combustion Turbine (CT)** means the 123 MW combustion turbine;

- **Department** means the Department of Municipal Affairs and Environment and its successors;

- **Director** means the Director of the Pollution Prevention Division of the Department;

- **discharge criteria** means the maximum allowable levels for the parameters listed in Table 3;

- **EDMS** means Environmental Data Management System;

- **GAP** means *Storage and Handling of Gasoline and Associated Products Regulations, 2003;*

- **grab sample** means a quantity of undiluted sample collected at any given time;

- **hazardous waste** means a product, substance or organism that is intended for disposal or recycling, including storage prior to disposal or recycling, and that:
  (a) is listed in Schedule III of the *Export and Import of Hazardous Waste Regulations under the Canadian Environmental Protection Act, 1999*;
  (b) is included in any of Classes 2 to 6, and 8 and 9 of the *Transportation of Dangerous Goods Regulations* under the *Transportation of Dangerous Goods Act, 1992*; or
  (c) exhibits a hazard classification of a gas, a flammable liquid, an oxidizer, or a substance that is dangerously reactive, toxic, infectious, corrosive or environmentally hazardous;

- **HYDRO** means Newfoundland and Labrador Hydro;

- **Landfill Operations Manual** means the Hydro Procedure Manual for the Controlled Waste Landfill (most recent version);

- **licensed** means has a Certificate of Approval issued by the Minister to conduct an activity;

- **liquid waste** is defined by the *Slump Test* (Canadian Standards Association test method A23.2-5C for determining the slump of concrete). The liquid waste slump test involves placing the waste in a 30 cm open inverted cone. The cone is removed and the immediate decrease (slump) in height of the waste material is measured. If the material slumps such that the original height is reduced by 15 cm or more, the waste is considered liquid;

- **leachate holding pond** means the detention pond for leachate control prior to transfer to the on-site wastewater treatment plant;

- **malfunction** means any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, wastewater treatment equipment, process equipment, or a process to operate in a normal or usual manner. Failures, caused in part by poor maintenance or careless operation, are not malfunctions;

- **Minister** means the Minister of the Department;
- **MW** means megawatt;
- **NO_x** means oxides of nitrogen;
- **NO_2** means nitrogen dioxide;
- **O_2** means oxygen;
- **PCBs** means polychlorinated biphenyls;
- **Plan** means the specific plan as identified in the section of this Approval within which it is used. For example, in the *Waste Management Plan* section it refers to the Waste Management Plan;
- **$PM_{2.5}$** means particulate matter with a diameter of 2.5µm or less;
- **PPMV** means parts per million by volume;
- **proficiency testing** means the use of inter-laboratory comparisons to determine the performance of individual laboratories for specific tests or measurements;
- **QA/QC** means Quality Assurance/Quality Control;
- **register(ed)**, in the context of storage tanks, means that information regarding the storage tank system has been submitted to a Service NL office and a registration number has been assigned to the storage tank system. In the context of dispersion modelling, registered means submitted to and approved by the Department in accordance with departmental policy and guidelines;
- **regulated substance** means a substance subject to discharge limit(s) under the *Environmental Control Water and Sewage Regulations, 2003*;
- **SO_2** means sulfur dioxide;
- **SOP** means Standard Operating Procedure;
- **spill or spillage** means a loss of gasoline or associated product in excess of 70 litres from a storage tank system, pipeline, tank vessel or vehicle, or an uncontrolled release of any volume of a regulated substance onto or into soil or a body of water;
- **stack** means a chimney, flue, conduit or duct arranged to conduct an air contaminant into the environment;
- **storage tank system** means a tank and all vent, fill and withdrawal piping associated with it installed in a fixed location and includes a temporary arrangement;
- **TDS** means total dissolved solids;
- **TPH** means total petroleum hydrocarbons, as measured by the Atlantic PIRI

method;

- **TSP** means total suspended particulate with diameter less than100µm. For the purpose of this Approval, TSP shall be measured using a high volume TSP sampler;

- **TSS** means total suspended solids;

- **used lubricating oil** means lubricating oil that as a result of its use, storage or handling, is altered so that it is no longer suitable for its intended purpose but is suitable for refining or other permitted uses;

- **used oil** means a used lubricating oil or waste oil;

- **waste oil** means an oil that as a result of contamination by any means or by its use, is altered so that it is no longer suitable for its intended purpose; and

- **wastewater treatment plant (WWTP)** means HYDRO's treatment plant for wastewater streams resulting from periodic cleaning of boiler fireside equipment, and includes the periodic basin, the batch reactor, filter press and all associated works.

5. All necessary measures shall be taken to ensure compliance with all applicable acts, regulations, policies and guidelines, including the following, or their successors:

- *Environmental Protection Act*;
- *Water Resources Act*;
- *Air Pollution Control Regulations, 2004;*
- *Environmental Control Water and Sewage Regulations, 2003;*
- *Halocarbon Regulations;*
- *Storage and Handling of Gasoline and Associated Products Regulations, 2003;*
- *Used Oil Control Regulations;*
- *Storage of PCB Waste Regulations, 2003;*
- *Ambient Air Monitoring Guidance Document;*
- *Sampling of Water and Wastewater - Industrial Effluent Applications Guidance Document;*
- *Accredited Laboratory Policy;*
- *Compliance Determination Guidance Document;*
- *Stack Emission Testing Guidance Document;*
- *Plume Dispersion Modelling Guidance Document;*
- *Guidance Document for the Management of Impacted Sites.*

This Approval provides terms and conditions to satisfy various requirements of the above listed acts, regulations, policies and guidelines. If it appears that any of the pertinent requirements of these acts, regulations, policies and guidelines are not being met, then a further review of the works shall be conducted, and suitable pollution control measures may be required by the Minister.

6. All reasonable efforts shall be taken to minimize the impact of the operation on the environment. Such efforts include:

- minimizing the area disturbed by the operation,
- minimizing air or water pollution,

- finding alternative uses, acceptable to the Director, for waste or rejected materials,
- removing equipment or structures when they no longer have further use, and
- considering the requirement for the eventual rehabilitation of disturbed areas when planning the development of any area on the facility property.

7. HYDRO shall provide to the Department, within a reasonable time, any information, records, reports or access to data requested or specified by the Department.

8. HYDRO shall keep all records or other documents required by this Approval at the Thermal Generating Facility location for a period of not less than three (3) years, beginning the day they were made. These records shall be made available for review by officials of the Department or Service NL when requested.

9. Should HYDRO wish to deviate in any way from the terms and conditions of this Certificate of Approval, a written request detailing the proposed deviation shall be made to the Minister. HYDRO shall comply with the most current terms and conditions until the Minister has authorized otherwise. In the case of meeting a deadline requirement, the request shall be made at least 60 days ahead of the applicable date as specified in this Approval or elsewhere by the Department.

Waste Management

10. All waste generated at the facility is subject to compliance with the ***Environmental Protection Act***. All non-industrial waste shall be stored in a manner acceptable to the Department and, on at least a weekly basis, be disposed of:

- at an authorized waste disposal site, with the permission of the owner/operator of the site; or
- by some other means acceptable to the Department.

If required, industrial waste shall be disposed of by a licensed operator.

11. HYDRO shall ensure that all volatile chemical and solvent wastes, if they cannot be reused, are placed in suitable covered containers for disposal in a manner acceptable to the Department. Disposal of liquid wastes at waste disposal sites in the province is not permitted.

12. Disposal of hazardous waste in a municipal or regional waste disposal site in this Province is prohibited. Transporters of hazardous waste shall have an approval issued by the Minister. Those generating hazardous waste shall have a waste generator's number issued by the Director and shall also complete the required information outlined in the Waste Manifest Form.

Waste Management Plan

13. HYDRO shall revise and submit the Waste Management Plan for their Combustion Turbine and Thermal Generating Station including the six (6) Diesel Generators by ***October 31, 2018***. Every year the Plan shall be reviewed and revised as necessary, accounting for expanding or alteration of activities. All proposed revisions shall be submitted to the Director for review. The Department will acknowledge receipt of the Plan and/or revisions, and shall provide any review comments within a

reasonable time frame.

Noise

14. HYDRO shall revise and submit the Noise Management Plan for their Combustion Turbine and Thermal Generating Station including the six (6) Diesel Generators by ***October 31, 2018***. Every year the Plan shall be reviewed and revised as necessary. All proposed revisions shall be submitted to the Director for review. The Department will acknowledge receipt of the Plan and/or revisions, and shall provide any review comments within a reasonable time frame.

Chemical Operations

15. All chemical loading and blending shall be performed in a controlled environment with an effort to minimise or eliminate the release of any fugitive emissions or odours.

Spill Prevention and Containment

16. Areas in which chemicals are used or stored shall have spill containment systems constructed with impermeable floors, walls, dykes or curbs as applicable and be configured, maintained, inspected and repaired as follows:

- they shall not discharge to the environment;
- they shall have an effective secondary containment capacity of at least 110% of the chemical storage tank capacity, in the case of a single storage container;
- if there is more than one storage container, the spill containment system shall be able to retain no less than 110% of the capacity of the largest container or 100 % of the capacity of the largest container plus 10% of the aggregate capacity of all additional containers, whichever is greater;
- they shall be kept clear of material that may compromise the containment capacity;
- they may include a floor drain system provided that the floor drains, and the place or device to which they drain, are configured in such a manner that the required effective secondary containment capacity is maintained;
- every year they shall be visually inspected for their liquid containing integrity, and repairs shall be made when required; and
- once every ten years, spill containment systems shall be inspected, by a means other than visual inspection, for their liquid containing integrity, and repairs shall be made when required.

Contingency Plan

17. HYDRO shall revise and submit the Contingency Plan for their Combustion Turbine and Thermal Generating Station including the six (6) Diesel Generators at Holyrood by ***October 31, 2018***. This Plan describes the actions to be taken in the event of a spill of a toxic or hazardous material. Copies of the Plan shall be placed in convenient areas throughout the facility so that employees can easily refer to it when needed. HYDRO shall ensure that all employees are aware of the Plan and understand the procedures and the reporting protocol to be followed in the event of

an emergency. An annual response exercise is recommended for response personnel. Every year, as a minimum, the Plan shall be reviewed and revised as necessary. Any proposed significant revisions shall be submitted to the Director for review. Changes which are not considered significant include minor variations in equipment or personnel characteristics which do not affect implementation of the Plan.

18. Every time HYDRO implements the Contingency Plan, information shall be recorded for future reference. This will assist in reviewing and updating the Plan. The record is to consist of all incidents with environmental implications, and include such details as:

- date;
- time of day;
- type of incident (i.e. liquid spill, gas leak, granular chemical spill, equipment malfunction, etc.);
- actions taken;
- problems encountered; and
- other relevant information that would aid in later review of the Plan performance.

Each incident report shall be submitted to the Department as per the ***Reporting*** section.

Site Decommissioning and Restoration

19. A preliminary Decommissioning Plan, entitled "*Decommissioning and Demolition of the Holyrood Thermal Generating Station, dated July 29, 2016*" has been submitted to the Department on February 23, 2018.

20. A detailed Decommissioning Plan that includes measures to restore areas disturbed by the operation shall be submitted to the Director for review at least six (6) months prior to the cessation of operations at the Thermal Generating Station's power house. For guidance on the preparation of the Decommissioning Plans, refer to Appendix A.

21. As part of the site decommissioning and restoration process, HYDRO shall employ a registered Site Professional to complete a site-wide environmental site assessment, as defined in the ***Guidance Document for the Management of Impacted Sites***. Should impacts be identified, HYDRO shall proceed through the process outlined in the ***Guidance Document for the Management of Impacted Sites*** to achieve regulatory site closure.

Fuel Usage, Fuel Storage & Offloading

22. HYDRO is permitted to accept and combust in its Combustion Turbine ultra-low sulfur diesel oil.

23. HYDRO shall not combust Heavy Fuel Oil with sulfur content greater than **0.7%** by weight in the Thermal Generating Station.

24. HYDRO is permitted to accept and burn alternative fuel only with the written approval of the Department.

25. The diesel fuel offloading, storage and handling area for the new CT shall have an impermeable surface with an oil containment or collection system routed towards an oil/water-separator. Care shall be taken to prevent spillage on the ground and to the surrounding environment, particularly streams and other water bodies.

26. HYDRO shall maintain, and submit to the Director on a monthly basis as per the ***Reporting*** section, the following information:

- Name of Supplier, date and volume of each shipment of ultra-low sulfur diesel oil received; and
- Hourly diesel oil usage of new CT in litres per hour.

27. HYDRO shall analyze each delivery of Heavy Fuel Oil for the parameters listed in Table 1. Analysis shall be on a representative sample of the Heavy Fuel Oil received.

Table 1 – Heavy Fuel Oil Analysis Program

Parameters			**Frequency**
A.P.I Gravity @60 ^{o}F Pour Point Sulfur% by Weight Sediment % by Weight Aluminum Sodium	Density (kg/m^3 @ 15 ^{o}C) Viscosity cSt @ 50 ^{o}C BTU's per US Gallon Water % by Volume Nickel Vanadium	Flash Point Ash % by Weight Asphaltenes % by Weight Silicon	**Every Batch Delivered**

28. HYDRO shall maintain, and submit to the Director as per ***Reporting*** section, a record of all Heavy Fuel Oil received. The record shall include:

- name of the supplier;
- date and volume of the Heavy Fuel Oil offloaded;
- the certificate of analysis for each batch of Heavy Fuel Oil delivery received; and
- the name of the laboratory where analysis was performed.

Combustion Turbine Operations

29. HYDRO shall maintain, and submit to the Director on a monthly basis as per the ***Reporting*** section, the following information:

- date and hours of operation of the Combustion Turbine;
- date and time of start-up and shutdown of the Combustion Turbine;
- specification of all maintenance performed on the Combustion Turbine and/or associated water injection system, including the date and time the work commenced and completed; and
- total litres of water flow per hour for each hour of the day when the Combustion Turbine is in operation.

30. The Combustion Turbine facility shall have an impermeable surface with an oil containment or collection system routed to an oil/water separator.

31. All floor drains from the main building of the Combustion Turbine shall be directed to the oil/water separator prior to release into the Indian Pond.

32. HYDRO shall operate the Combustion Turbine water treatment plant as per manufacturer standards.

Diesel Generators

33. HYDRO shall operate no more than any five (5) of the six (6) diesel generators at **87% load** from **6:00 AM** to **10:00 AM** and from **4:00 PM** to **8:00 PM** to generate up to **8 MW** of power from ***November 1*** to ***April 30*** for peaking purposes.

34. HYDRO shall operate no more than any five (5) of the six (6) diesel generators at **67% load**, 24 hours a day, 365 days a year to generate up to **6 MW** of power for emergency purposes.

35. HYDRO shall complete the required stack modifications on all six diesel generators [as described in their revised (February 28, 2018) project schedule-70154TB, dated September 27, 2017] by ***June 30, 2018***.

Storage Tanks

36. All on site storage of petroleum shall comply with the ***Storage and Handling of Gasoline and Associated Products Regulations, 2003***, or its successor. Storage tank systems shall be registered with Service NL. All aboveground storage tanks shall be clearly and visibly labelled with their GAP registration numbers.

37. HYDRO shall implement the API-653, "*Tank Inspection, Repair, Alteration and Reconstruction*" in accordance with common industry practice.

38. An inventory of all petroleum storage tanks shall be submitted to the Director for review by ***June 30, 2018***. This inventory shall include the following:

- site plan showing tank location,
- registration number (where applicable),
- identification number,
- material stored,
- capacity,
- annual throughput,
- tank material,
- tank type,
- tank diameter,
- tank height,
- tank colour,
- roof type,
- year of manufacture,
- date of installation,
- date of last inspection,

- failure history,
- maintenance history,
- secondary containment capacity, and
- date of next planned inspection.

Every two (2) years, an update of any changes to the inventory shall be submitted to the Director.

Used Oil

39. Used oil shall be retained in an approved tank or closed container, and disposed of by a company licensed for handling and disposal of used oil products.

40. HYDRO shall submit a revised SOP for the handling and storage of used oil to the Director by ***December 31, 2018***. The SOP shall include as a minimum, detail procedures for the storage, handling and recording of the volumes and quality of used oil.

Wastewater Flows and Treatment

41. The Thermal Generating Station's once-through cooling water shall be obtained from Indian Pond, and shall be discharged directly to Conception Bay.

42. The Thermal Generating Station's south-east floor drains shall be routed through an oil/water separator (OS-1) and then to Indian Pond through the storm water collection system.

43. The Thermal Generating Station's south-west floor drains shall be routed through a grease trap and an oil/water separator (OS-2) and then to the cooling water discharge piping associated with Unit No. 1 & 2.

44. The Thermal Generating Station's north-east and north-west floor drains shall be routed through a grease trap and oil/water separator (north-east OS-4 & north-west OS-3) and then to a 900 m^3 equalization basin (Continuous Basin).

45. All wastewater generated from backwashing in the Combustion Turbine water treatment plant from the backwashing shall be routed to the Combustion Turbine oil/water separator (CT-OS) prior to discharge into Indian Pond.

46. All oil/water separators shall be checked routinely to ensure they are working properly. A log of these checks shall be maintained.

47. Wastewater streams resulting from the Thermal Generating Station's daily operations, including raw water clarification, filter backwashes, boiler blowdown and other similar activities shall be directed to the Continuous Basin. Any flow or drainage from the Continuous Basin shall be routed to the new oil/water separator (OS-5) before discharging into Indian Pond.

48. Demineralizer regeneration wastewater flows may be directed to the seal pit associated with Units No. 1 & 2, during such times at least one cooling water pump shall be active.

49. Wastewater streams resulting from periodic events where water is used to clean the Thermal Generating Station's boiler fireside equipment, including air pre-heater wash flows, fireside boiler wash flows and boiler acid wash flows, shall be directed to a 900 m^3 equalization basin (Periodic Basin). Any flow or drainage from the Periodic Basin shall be directed to the wastewater treatment plant.

50. Any flow or drainage from the wastewater treatment plant shall be discharged to the cooling water intakes for Units No. 1 & 2 or Unit 3.

51. Effluent from the dewatering of filter cake shall be re-cycled through the wastewater treatment plant.

52. All solid waste generated from the Combustion Turbine water treatment plant and the Thermal Generating Station wastewater treatment plant operations shall be directed to the hazardous waste landfill.

Effluent Monitoring and Discharge

53. HYDRO shall perform an Effluent Monitoring Program as per Table 2. All results shall be submitted to the Director as per the ***Reporting*** section.

Table 2: Effluent Monitoring Program

Location	EDMS Location Code	Parameters	Frequency
WWTP	00068	Aluminum Iron Magnesium Nickel Vanadium pH TSS	Grab sample prior to each batch release †
		ALT	Grab sample from each batch following new addition of wastewater to the periodic basin
Continuous Basin Outfall	00069	Iron Nickel Vanadium pH TSS TPH	Weekly Grab
		ALT	Monthly Grab
OS-1	00070	Iron Nickel Vanadium pH TSS TPH	Weekly Grab
OS-2	00071	Iron Nickel Vanadium pH TSS TPH	Weekly Grab
CT-OS (Prior to discharge into Indian Pond)	00072	TPH TDS TSS BOD pH	Weekly (Whenever there is discharge)
† Grab samples for all parameters shall be taken from the batch reactor at the same time.			

54. If effluent from wastewater treatment plant fails the ALT, HYDRO shall collect a grab sample from the next batch of effluent from the wastewater treatment plant and conduct an ALT, even if there has been no addition to the Periodic Basin.

55. HYDRO shall record on a continuous basis the volume of influent to the Periodic Basin. The results shall be submitted to the Director as per the ***Reporting*** section.

56. Refer to Table 3 for the discharge criteria.

Table 3 - Effluent Discharge Criteria	
Parameter	**Allowable Limits ***
Arsenic	0.50
Barium	5.00
Boron	5.00
BOD	20.00
Cadmium	0.05
Chromium	1.00
Copper	0.30
Iron	10.00
Lead	0.20
Mercury	0.005
Nitrates	10.00
Nitrogen (ammoniacal)	2.00
Nickel	0.50
Phenol	0.10
Phosphates (total as P2O5)	1.00
pH	5.5 – 9.0 pH units
Selenium	0.01
Silver	0.05
TDS	1000.00
TSS	30.00
TPH	15.00
Vanadium	0.50
Zinc	0.50
***** Units are in mg/L unless otherwise specified	

57. If effluent is determined to be acutely lethal for three consecutive ALTs, HYDRO shall implement a toxicity identification evaluation to identify the toxin, and from this develop measures to prevent or reduce the toxin. The report, written as a result of these identification activities, shall be submitted to the Director for review, ***within 60 days*** of the third consecutive failed ALT result. After review of the report, the Director may place additional requirements upon the proponent for treatment of effluent prior to discharge.

Water Chemistry Analysis

58. HYDRO shall perform a Water Chemistry Analysis Program for the Thermal Generating Station four times per calendar year and not less than thirty (30) days

apart, as per Table 4. All results shall be submitted to the Director as per the ***Reporting*** section.

59. HYDRO shall perform a Water Chemistry Analysis Program for the Combustion Turbine on a monthly basis, whenever the Combustion Turbine water treatment plant and/or Combustion Turbine is in operation, as per Table 4. All results shall be submitted to the Director as per the ***Reporting*** section.

Table 4 - Water Chemistry Analysis Program

Location	EDMS Location Code	Parameters
Cooling Water Intake at Indian Pond (Grab Sample)	00073	**General Parameters –** must include the following: nitrate + nitrite, nitrate, nitrite, pH, TSS, DOC, conductance, colour, TDS (calculated), orthophosphate, potassium, carbonate ($CaCO_3$), hardness ($CaCO_3$), bicarbonate ($CaCO_3$), magnesium, sodium, phenolics, sulfate, calcium, sulphide, reactive silica, alkalinity, ammonia, phosphorous, chloride, turbidity
Cooling Water Outfall Stream, Prior to Release into Conception Bay (Grab Sample)	00074	
Continuous Basin Outfall Stream, Prior to Release into Indian Pond (Grab Sample)	00069	**Metals Scan** - must include the following: Aluminium, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, mercury, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc
CT Effluent Prior to Discharge into Indian Pond	00072	

60. HYDRO shall inform the Department of the date and duration of any usage of the **Copper Ion Injection** in their system, as per ***Reporting Section***.

Environmental Effects Monitoring

61. HYDRO shall continue to conduct an Environmental Effects Monitoring study to monitor the impacts of the discharge of cooling water, the continuous basin's water and the wastewater treatment plant treated water on Conception Bay. The study design shall be submitted to the Director for review by ***September 30, 2017.*** The results of the completed study shall be submitted to the Director for review by ***June 30, 2020.***

Hazardous Waste Landfill Operations

62. HYDRO shall operate the hazardous waste landfill in the manner as described in the ***Landfill Operations Manual.*** Any revision or changes to the ***Landfill Operations Manual*** shall be submitted to the Director for review and approval prior to such revision or changes being made.

63. Only waste identified in the ***Landfill Operations Manual*** shall be placed in the hazardous waste landfill. These include: bottom and fly ash, periodic basin sludge, continuous basin sludge, wastewater treatment plant filter-cake, filter sand, raw-water treatment ion exchange resins, and clean-up from chemical spills.

64. Liquid waste shall not be disposed of in the hazardous waste landfill, unless otherwise authorized in writing by the Department.

65. The Department reserves the right to require some form of pre-treatment of waste before placement in the site.

66. HYDRO shall periodically review opportunities for reuse and/or recycling of the waste types disposed of in the landfill.

67. HYDRO shall maintain a landfill security fence with a sign affixed to the fence identifying the site as a hazardous waste containment system. This sign shall identify the owner of the landfill and a contact phone number. The sign and its placement shall be acceptable to the Department.

68. No activities shall occur within the fenced area of the landfill, except for the deposition of waste; extraction of leachate; or other maintenance requirements of the landfill cap or the landfill.

69. HYDRO shall conduct an annual inspection program as per the ***Landfill Operations Manual.***

70. Leachate accumulated in each of the hazardous waste landfill collection systems, including the leachate holding pond, shall be removed as required so that leachate does not overflow the collection system.

71. Any flow or drainage from the leachate holding pond shall be directed to the Periodic Basin. Leachate shall not be discharged directly to the environment without prior authorization by the Department.

Hazardous Waste Landfill Monitoring

72. HYDRO shall perform an Environmental Monitoring Program as depicted in the ***Landfill Operations Manual,*** including monitoring of: groundwater quality and levels, surface water quality, leachate leakage, liner integrity and physical movement of the landfill.

73. HYDRO shall perform a Groundwater Monitoring Program as per Table 5. This monitoring program shall be performed throughout the operational life of the landfill, and during the twenty five (25) years following closure.

Table 5: Groundwater Monitoring Program					
Location	**EDMS Location Code**	**Parameters**			**Frequency**
Monitoring Wells:					
BH-1	00075				
BH-2	00076	Aluminum	Iron	Magnesium	**Every Four Months**
BH-3	00077	Nickel	Vanadium		
BH-4	00078				
BH-5	00079				
BH-6	00080				
BH-7	00081				
Monitoring Wells:		Antimony	Arsenic	Barium	
		Beryllium	Bismuth	Cadmium	
BH-1	00075	Cobalt	Calcium	pH	
BH-2	00076	Chromium	Copper	Lead	**Annually**
BH-3	00077	Manganese	Mercury	Molybdenum	
BH-4	00078	Phosphorus	Potassium	Selenium	
BH-5	00079	Silver	Sodium	Zinc	
BH-6	00080	VOC's	TDS		
BH-7	00081				

74. HYDRO shall perform a Surface Water Monitoring Program as per Table 6. This monitoring program shall be performed throughout the operational life of the landfill, and during the twenty five (25) years following closure.

Table 6: Surface Water Monitoring Program				
Location	**EDMS Location Code**	**Parameters**		**Frequency**
Surface Well 1	00082	VOCs		**Annually**
Surface Well 2	00083			**Monthly (provided water is flowing in the ditches during the month)**
Surface Well 3	00084	Cadmium	Chromium (total)	
Surface Well 4	00085	Iron	Lead	
Surface Well 5	00086	Mercury	Nickel	
Surface Well 6	00087	Vanadium	pH	
.		TDS	TSS	

75. The total monthly flow:

- from the primary and secondary leachate collection systems;
- from the leachate holding pond to the Periodic Basin; and

- through the primary cell and holding pond leak detection manholes;

shall be accurately measured and recorded. This record and all results from the Groundwater and Surface Water Monitoring Programs shall be submitted to the Director as per the ***Reporting*** section.

76. HYDRO shall submit an annual Landfill Operating Report to the Director by ***February 28*** of the subsequent year. This report shall include:

- results of the Environmental Monitoring Program; and
- summaries of all materials placed in the landfill site including: waste characterization reports, volumes of waste deposited in the landfill, source(s) of the waste, identification of contaminants of concern, and copies of the hazardous waste manifest forms.

Ambient Air

77. HYDRO shall operate an ambient air monitoring program as per the conditions in this Approval and its amendments. Approval shall be obtained from the Director prior to purchase or installation of any monitoring equipment.

78. Site locations and parameters to be monitored are outlined in Table 7.

Table 7 - Ambient Air Monitoring Program

Monitoring Sites	Parameter
Butter Pot	$PM_{2.5}$, SO_2, NO_x, NO_2
Green Acres	TSP, $PM_{2.5}$, SO_2, NO_x, NO_2
Indian Pond	TSP, $PM_{2.5}$, SO_2, NO_x, NO_2
Lawrence Pond	TSP, $PM_{2.5}$, SO_2, NO_x, NO_2
Lower Indian Pond Drive	TSP, $PM_{2.5}$, SO_2, NO_x, NO_2
Main Gate	TSP, $PM_{2.5}$

79. HYDRO shall label, date and store all the TSP filters from the monitoring sites in a secure place for the period of three (3) month.

80. Ambient air monitoring shall be done in accordance with the ***Ambient Air Monitoring Guidance Document (GD-PPD-065)***, or its successors.

81. Frequency of non-continuous TSP sampling shall coincide with the 6-day National Air Pollution Surveillance (NAPS) schedule. Sampling results shall be submitted as per the ***Reporting*** section.

82. Non-continuous TSP shall be determined by the United States EPA Test Method: "Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method), or alternate method approved by the Director.

83. HYDRO shall operate, calibrate and maintain a meteorological station at **Green Acres** site in accordance with the guidelines specified in the United States EPA document "Quality Assurance Handbook for Air Pollution Measurement Systems -

Volume IV: Meteorological Measurements Version 2.0 (Final)," EPA- 454/B-08-002, or its successors. Parameters to be measured and recorded shall include as a minimum: wind speed, wind direction, ambient air temperature, relative humidity, barometric pressure and precipitation. All records shall be made available to the Department upon request.

84. Information regarding calibrations, site visits and maintenance for all continuous ambient air monitors shall be recorded into the DR DAS electronic logbook. Specific information regarding non-continuous TSP monitors, including but not limited to slopes, intercepts, initial and final masses, times, flows, etc. shall be submitted electronically, as per the ***Reporting*** section.

Continuous Opacity Monitoring System

85. Opacity of emissions from each boiler at the Thermal Generating Station shall be continuously measured and recorded using a Continuous Opacity Monitoring System (COMS) that meets all the requirements of *Performance Specification 1 (PS-1) - Specifications and Test Procedures for Opacity Continuous Emission Monitoring Systems in Stationary Sources*, of the United States *Code of Federal Regulations - 40 CFR Part 60, Appendix B*. Minimum QA/QC requirements are specified to assess the quality of COMS performance. Daily zero and span checks, quarterly performance audits, and annual zero alignment checks are required to assure the proper functioning of the COMS and the accuracy of the COMS data. These shall be recorded in a written log and a copy made available on request.

86. The United States EPA Federal Register Test Method 203 - Determination of the Opacity of Emissions from Stationary Sources by Continuous Opacity Monitoring Systems shall be used to determine compliance with the opacity standards in the ***Air Pollution Control Regulations, 2004.***

87. Monthly opacity data reports, in digital format, shall be submitted in the form of six minute arithmetic averages of instantaneous readings, as per the ***Reporting*** section. Each six minute average data point shall be identified by date, time and average percent opacity.

Continuous Emissions Monitoring System

88. Emissions from each boiler at the Thermal Generating Station shall be measured and recorded using an automated CEMS that meets the requirements of Environment Canada's *Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation (EPS 1/PG/7)*, or its successor. Notwithstanding this, application of specific requirements of EPS 1/PG/7 to the CEMS may be modified subject to approval by the Director.

89. Monthly CEMS data reports containing one-hour arithmetic averages of emission rates of SO_2, NO_x, CO_2, CO and O_2 (all expressed in ppmv) shall be submitted in digital format, as per the ***Reporting*** section.

Pollution Control Equipment

90. All pollution control equipment shall be maintained and operated as per manufacturer's specifications for best performance.

91. HYDRO shall not operate the Combustion Turbine unless the NOx control system associated with the Combustion Turbine is in full operation.

Administrative boundary

92. The ambient air quality standards specified in Schedule A of the ***Air Pollution Control Regulations, 2004*** shall apply to all points outside of HYDRO's administrative boundary. The administrative boundary is defined as the area encompassed by the coordinates contained in Appendix B, a total area of approximately **0.2687 km^2**. All coordinates are referenced to NAD83 UTM Zone 22.

Stack Emissions Testing and Dispersion Modelling

93. Stack emissions testing shall be done in accordance with the ***Stack Emission Testing Guidance Document (GD-PPD-016.1)***. Dispersion modelling shall be done in accordance with the ***Plume Dispersion Modelling Guidance Document (GD-PPD-019.2)***. Determination of frequency of stack emissions testing and dispersion modelling shall be done in accordance with the ***Compliance Determination Guidance Document (GD-PPD-009.4)***.

94. HYDRO shall be required to complete the next stack emissions testing once every four years if it has been shown, via a registered dispersion model, that the operation is in compliance with section 3(2) and Schedule A of the ***Air Pollution Control Regulations, 2004***. If it has been shown, via a registered dispersion model, that the operation is not in compliance with section 3(2) and Schedule A of the ***Air Pollution Control Regulations, 2004***, then the facility shall complete stack emissions testing every two years.

95. Plume dispersion modelling results shall be submitted to the Department within ***120 days*** of completion of the stack emissions testing.

Annual Air Emissions Reporting

96. HYDRO shall submit an annual Air Emission Report to the Director by ***February 28*** of the subsequent year. This report shall include:

- total fuel consumption;
- the weighted average sulfur content of the fuel;
- the fuel specific gravity;
- the estimated, or, if available, the monitored annual emissions of the following flue gas constituents: SO_2, NO_x, NO_2, CO and particulate; and
- the actual calculations including factors, formulae and/or assumptions used.

Analysis and QA/QC

97. Unless otherwise stated herein, all solids and liquids analysis performed pursuant to this Approval shall be done by either a contracted commercial laboratory or an in-house laboratory. Contracted commercial laboratories shall have a recognized form of accreditation. In-house laboratories have the option of either obtaining accreditation or submitting to an annual inspection by a representative of the Department, for which HYDRO shall be billed for each laboratory inspection in accordance with Schedule 1 of the ***Accredited Laboratory Policy (PD:PP2001-01.02)***. Recommendations of the Director stemming from the annual inspections shall be addressed within 6 months, otherwise further analytical results shall not be accepted by the Director.

98. If HYDRO wishes to perform in-house laboratory testing and submit to an annual inspection by the Department then a recognized form of proficiency testing recognition shall be obtained for compliance parameters for which this recognition exists. The compliance parameters are listed in the ***Effluent and Monitoring*** section. If using a commercial laboratory, HYDRO shall contact that commercial laboratory to determine and to implement the sampling and transportation QA/QC requirements for those activities.

99. The exact location of each sampling point shall remain consistent over the life of the monitoring programs, unless otherwise approved by the Director. A sketch or diagram clearly identifying each sampling location shall be submitted by ***March 31, 2017*** to the Department.

100. HYDRO shall bear all expenses incurred in carrying out the environmental monitoring and analysis required under conditions of this Approval.

Monitoring Alteration

101. The Director has the authority to alter monitoring programs or require additional testing at any time when:

- pollutants might be released to the surrounding environment without being detected;
- an adverse environmental effect may occur; or
- it is no longer necessary to maintain the current frequency of sampling and/or the monitoring of parameters.

102. HYDRO may, at any time, request that monitoring programs or requirements of this Approval be altered by:

- requesting the change in writing to the Director; and
- providing sufficient justification, as determined by the Director.

The requirements of this Approval shall remain in effect until altered, in writing, by the Director.

Reporting

103. Monthly reports containing the environmental compliance monitoring and sampling

information required in this Approval shall be received by the Director in digital format within 30 calendar days of the reporting month. All related laboratory reports shall be submitted with the monthly report in XML format and Adobe Portable Document Format (PDF). Digital report submissions shall be uploaded through the EDMS web portal. The Pollution Prevention Division shall provide details of the portal web address and submission requirements.

104. Each monthly report shall include a summary of all environmental monitoring components and shall include an explanation for the omission of any requisite data. The monthly summary reports shall be in Microsoft Word or Adobe PDF and shall be uploaded through the EDMS web portal with the data submissions

105. All incidents of:

- *Contingency Plan* implementation; or
- non-conformance of any condition within this Approval; or
- spillage or leakage of a regulated substance; or
- discharge criteria being, or suspected of being, exceeded; or
- verbal/written complaints of an environmental nature from the public received by HYDRO related to the Thermal Generating Station, whether or not they are received anonymously;

shall be immediately reported, within one working day, to Department.

A written report including a detailed description of the incident, summary of contributing factors, and an Action Plan to prevent future incidents of a similar nature, shall be submitted to the Department. The Action Plan shall include a description of actions already taken and future actions to be implemented, and shall be submitted within thirty days of the date of the initial incident.

106. Any spillage or leakage of gasoline or associated product shall be reported immediately through the Canadian Coast Guard at 1-(709)-772-2083.

Liaison Committee

107. The Department recognizes the benefits, and at times the necessity, of accurate, unbiased communication between the public and industrial operations, which have an impact on the properties and residents in the area. The Department encourages the formation and regular meeting of a Liaison Committee comprised of representatives of HYDRO, the Department and independent members of the general population of Holyrood and Conception Bay South. Regular meetings of the Liaison Committee will provide a clear conduit of communication between concerned citizens and HYDRO.

Expiration

108. This Certificate of Approval expires ***August 31, 2021.***

109. Should HYDRO wish to continue to operate the Thermal Generating Station and the Combustion Turbine beyond this expiry date, a written request shall be submitted to the Director for the renewal of this Approval. Such request shall be made prior to ***March 1, 2021.***

APPENDIX A

Industrial Site Decommissioning and Restoration Plan Guidelines

As part of the Department of Environment and Climate Change's ongoing commitment to minimize the residual impact of industrial activities on the environment of the province, the Department requires that HYDRO shall develop a Decommissioning and Restoration Plan for the Thermal Generating Station at Holyrood, NL and its associated property. The guidelines listed below are intended to provide some general guidance as to the expectations of the Department with regard to the development of the Plan, and to identify areas that are of particular concern or interest. The points presented are for consideration, and are open to interpretation and discussion.

Decommissioning and Restoration Plans are intended to present the scope of activities that a company shall undertake at the time of final closure and/or decommissioning of the industrial properties. Where it is useful and practical to do so the company is encouraged to begin undertaking some of the activities outlined in the Plan prior to final closure and decommissioning. The objectives of the restoration work to be undertaken can be summarized as follows:

- to ensure that abandoned industrial facilities do not endanger public health or safety;
- to prevent progressive degradation and to enhance the natural recovery of areas affected by industrial activities;
- to ensure that industrial facilities and associated wastes are abandoned in a manner that will minimize the requirement for long term maintenance and monitoring;
- to mitigate, and if possible prevent, the continued loadings of contaminants and wastes to the environment. The primary objective shall be to prevent the release of contaminants into the environment. Where prevention is not practical due to technical or economic limitations then activities intended to mitigate the consequence of such a release of contaminants shall become the objective of restoration work;
- to return affected areas to a state compatible with the original undisturbed condition, giving due consideration to practical factors including economics, aesthetics, future productivity and future use; and
- to plan new facilities so as to facilitate eventual rehabilitation.

The Decommissioning and Restoration Plan should:

- identify areas of known historical or current contamination;
- identify past or existing operational procedures and waste management practices that have, or may have, resulted in site contamination;
- highlight the issues or components to be addressed;
- identify operational procedures and waste management practices that can prevent or reduce site contamination;
- consider future land use, regulatory concerns and public concerns;
- enable estimation of the resources and time frame required to decommission the facility and restore the site to a condition acceptable to the Department;
- enable financial planning to ensure the necessary funds for decommissioning and restoration are set aside during the operational life of the facility, and;
- include arrangements for appropriate project management to ensure successful completion of the decommissioning and restoration program.

APPENDIX B

HYDRO Administrative Boundary Coordinates

341903.0	5257750.4
341925.9	5257759.4
341972.8	5257727.0
341962.6	5257711.0
342036.6	5257660.9
342232.8	5257494.1
342162.6	5257271.8
342095.8	5257245.3
341947.8	5257207.3
341949.6	5257201.9
341957.0	5257196.4
341949.3	5257185.4
341926.5	5257202.1
341918.4	5257200.3
341700.2	5257177.4
341694.0	5257177.7
341659.1	5257166.3
341593.5	5257072.8
341563.4	5257088.4
341513.5	5257117.4
341528.6	5257149.4
341509.6	5257158.7
341544.1	5257250.4
341563.9	5257298.8
341571.2	5257314.4
341584.6	5257339.8
341612.8	5257383.6
341662.4	5257454.4
341685.8	5257484.8
341704.4	5257507.1
341748.2	5257599.8
341750.0	5257614.9
341756.9	5257644.8
341770.7	5257678.4
341789.5	5257710.2
341844.4	5257789.4
341903.0	5257750.4

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