

PERMIT TO ALTER A BODY OF WATER

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 48

Date: AUGUST 18, 2017

File No: 535-18
Permit No: ALT9328-2017


Permit Holder: Newfoundland Power Inc.
55 Kenmount Road
P.O. Box 8910
St. John's, NL, A1B 3P6

Attention: Alex Hawco

Re: Three Arm Pond Dam Refurbishment (Topsail Hydroelectric Development)

Permission is hereby given for : the refurbishment of the Three Arm Pond Dam including removal of the existing dam; construction of a new earthen dam, concrete control structure, and spillway; and associated appurtenances and activities as detailed in the application received from Newfoundland Power Inc. on July 18, 2017 and additional documentation received on August 11, 2017.

- This Permit does not release the Permit Holder from the obligation to obtain appropriate approvals from other concerned municipal, provincial and federal agencies.
- The Permit Holder must obtain the approval of the Crown Lands Administration Division if the project is being carried out on Crown Land.
- This Permit is subject to the terms and conditions indicated in Appendices A and B (attached).
- It should be noted that prior to any significant changes in the design or installation of the proposed works, or in event of changes in ownership or management of the project, an amendment to this Permit must be obtained from the Department of Municipal Affairs and Environment under Section 49 of the *Water Resources Act*.
- Failure to comply with the terms and conditions will render this Permit null and void, place the Permit Holder and their agent (s) in violation of the *Water Resources Act* and make the Permit Holder responsible for taking any remedial measures as may be prescribed by this Department.



MINISTER

APPENDIX A
Terms and Conditions for Permit

Dam/Reservoir Design

1. Reservoirs must be provided with a spillway of adequate capacity to safely discharge design flows at non-erosive velocities without causing flooding of the reservoir or damage to the spillway or section downstream channel.
2. Alteration of the natural minimum streamflow is not permitted in order to preserve aquatic life.
3. The dam and appurtenant structures shall be constructed at the following coordinates:

Name	Datum	Northing (m)	Easting (m)	Zone
Three Arm Pond Dam	NAD83	5262638	357170	22

4. The dam(s) must have the following dimensions:

Name	Height/Elev of Dam (m)	Elev of Spillway (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
Three Arm Pond Dam	2.85/123.6	122	122.61	121.36	1.48

5. To safely convey peak flows the dam(s) must be designed according to the following hydraulic criteria:

Name	Design Return Period (years)	Minimum Flow Capacity (m ³ /s)
Three Arm Pond Dam	10,000	14.5

General Alterations

6. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
7. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
8. Water pumped from excavations or work areas, or any runoff or effluent directed out of work sites, must have silt and turbidity removed by settling ponds, filtration, or other suitable treatment before discharging to a body of water. Effluent discharged into receiving waters must comply with the *Environmental Control Water and Sewage Regulations, 2003*.
9. All operations must be carried out in a manner that prevents damage to land, vegetation, and watercourses, and which prevents pollution of bodies of water.
10. The use of heavy equipment in streams or bodies of water is not permitted. The operation of heavy equipment must be confined to dry stable areas.
11. All vehicles and equipment must be clean and in good repair, free of mud and oil, or other harmful substances that could impair water quality.

12. During the construction of concrete components, formwork must be properly constructed to prevent any fresh concrete from entering a body of water. Dumping of concrete or washing of tools and equipment in any body of water is prohibited.
13. Wood preservatives such as penta, CCA or other such chemicals must not be applied to timber near a body of water. All treated wood or timber must be thoroughly dry before being brought to any work site and installed.
14. Any areas adversely affected by this project must be restored to a state that resembles local natural conditions. Further remedial measures to mitigate environmental impacts on water resources can and will be specified, if considered necessary in the opinion of this Department.
15. The bed, banks and floodplains of watercourses, or other vulnerable areas affected by this project, must be adequately protected from erosion by seeding, sodding or placing of rip-rap.
16. All waste materials resulting from this project must be disposed of at a site approved by the Department of Service NL.
17. Care must be taken to prevent spillage of pollutants into the water.
18. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.
19. Sediment and erosion control measures must be installed before starting work. All control measures must be inspected regularly and any necessary repairs made if damage is discovered.
20. Fill material must be of good quality, free of fines or other substances including metals, organics, or chemicals that may be harmful to the receiving waters.
21. The attached Completion Report (Appendix C) for Permit No. 9328 must be completed and returned to this Department upon completion of the approved works. Pictures must be submitted along with the completion report, showing the project site prior to and after development.
22. This Permit is valid for two years from the date of issue. Work must be completed by that date or the application and approval procedure must be repeated. The following terms are valid for the life cycle of the dam structure: 25, 28.
23. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.
24. All work must be carried out within the Permit Holder's legal property boundaries.

Dam Safety

25. The dam has been conditionally classified in the LOW Consequence category based on the 2007 Canadian Dam Association (CDA) guidelines. The dam consequence classification should be reviewed periodically, since there may be changes to downstream development over time. If the classification increases, a Dam Safety Review is required at that time. The dam owner must carry out an annual Dam Safety Inspection and provide the results to this Department.

Special Conditions

26. The dam and associated works shall be designed according to the Canadian Dam Association Dam Safety Guidelines and associated Bulletins (most recent edition).
27. The dam and associated works must be designed and constructed under the direct supervision of an engineer eligible for membership with the Professional Engineers and Geoscientists of Newfoundland and Labrador (or equivalent Canadian organization) who is able to demonstrate competence in the design, construction, and surveillance of dams.
28. The Department of Environment and Conservation may require the set-up of water resources monitoring stations through a Memorandum of Agreement as per provisions of Section 31 of the Water Resources Act, SNL2002 Chapter W-4.01.
29. The reconstructed dam shall be approximately 80 m in length.

Dam Construction

30. The existing dam structure and appurtenances shall be completely removed from the site. Clearing and grubbing shall extend 1 m beyond the proposed dam footing at the original grade and ensure the removal of any organics. The foundation of the new dam will be constructed on native material.
31. Fill material must be obtained from an approved quarry site. It must not be taken from beaches or streams, and must not be dredged from a body of water.
32. Reservoir shorelines with moderately steep slopes or vulnerability to wave induced erosion, must be adequately protected with armour stone, rip-rap, or by other suitable measures.
33. The embankment shall have upstream and downstream slopes of 1V:2H. The upstream face of the embankment shall be protected with a 0.8 m layer of D50=400 mm rip rap. The rip rap layer will extend the crest height by 0.4 m over a width of 0.5 m along the reservoir side of the dam crest.
34. The dam must be constructed with a concrete control structure with a capacity of 7.16 m³/s. The control structure will allow for a gate and stop logs upstream of the gate. The footing of the control structure will be anchored 1.4 m in the ground from the existing upstream grade. The inlet and outlet of the control structure shall have a 1.5-2.5 m long rip rap apron of D50=400 mm.
35. The spillway shall have an upstream slope of 1V:6H, a 3m crest, and a downstream slope of 1V:10H. The spillway shall be protected with a 0.8 m layer of D50=400 rip rap.
36. Where pumping is used to bypass flow, cofferdams must be installed both above and below areas of construction. The Permit Holder must provide pumps with sufficient capacity to prevent washout of cofferdams.
37. Cofferdams must be properly designed and constructed of suitable materials to prevent leakage and to resist loss of any material as a result of erosion. Cofferdams must be removed upon completion of their intended function. All material must be removed carefully to prevent disturbance of the water body and to prevent water quality degradation.
38. The area to be flooded by the reservoir must be prepared by removing timber, brush, and slash up to the maximum water elevation.
39. The transportation of labour and materials to the site must be along existing access roads.
40. An approximate 75 m steel cut-off wall shall be installed along the centerline of the embankment and spillway to a depth of 1 m from the sub-grade after clearing and grubbing. A cap shall be attached to the top of the steel cut-off wall. The cut-off wall shall be anchored in impervious fill along the embankment. The cut-off wall shall be anchored in 1 m of impervious fill, topped by a 0.3 m layer of filter material, and 0.8 m of rip rap along the spillway.
41. The steel cut off wall shall extend and be bolted to either side of the concrete control structure.

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Municipal Affairs and Environment

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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 and/or Ministerial orders and guidelines, as determined by this Department, the Minister may, after providing ten (10) day notice to the Permit Holder, 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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- cc: File Copy for Binder
- cc: Ms. Paula Dawe, P.Eng.
Manager, Drinking Water and Wastewater Section
Water Resources Management Division
Department of Municipal Affairs and Environment
P.O. Box 8700
4th Floor, West Block, Confederation Building
St. John's, NL A1L 4J6
pauladawe@gov.nl.ca
- cc: Fisheries Protection Division
Ecosystem Management Branch
Fisheries and Oceans Canada
P.O. Box 5667
St. John's, NL A1C 5X1
FPP-NL@dfo-mpo.gc.ca



Appendix C - Completion Report

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 48

Date: **AUGUST 18, 2017**

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Permit Holder: **Newfoundland Power Inc.
55 Kenmount Road
P.O. Box 8910
St. John's, NL, A1B 3P6**

Attention: **Alex Hawco**

Re: **Three Arm Pond Dam Refurbishment (Topsail Hydroelectric Development)**

Permission was given for : **the refurbishment of the Three Arm Pond Dam including removal of the existing dam; construction of a new earthen dam, concrete control structure, and spillway; and associated appurtenances and activities as detailed in the application received from Newfoundland Power Inc. on July 18, 2017 and additional documentation received on August 11, 2017.**

I (the Permit Holder named above or agent authorized to represent the Permit Holder) do hereby certify that the project described above was completed in accordance with the plans and specifications submitted to the Department of Municipal Affairs and Environment and that the work was carried out in strict compliance with the terms and conditions of the Permit issued for this project.

Date: _____

Signature: _____

This completion report must be completed and forwarded to the following address upon completion of the approved work.

Department of Municipal Affairs and Environment
Water Resources Management Division
PO Box 8700
St. John's NL A1B 4J6

APPENDIX D
Location Map for Permit

