

PERMIT TO ALTER A BODY OF WATER

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

Date: **JULY 15, 2021**

File No: **534-01**

Permit No: **ALT11976-2021**

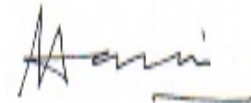
Permit Holder: **Englobe
39 Sagona Ave.
Mount Pearl NL A1N 4P9
erich.lenz@englobecorp.com**

Attention: **Erich Lenz**

Re: **Buchans Mine - Rehabilitation of Dams 1-4**

Permission is hereby given for : **rehabilitation of Buchans Mine Dams 1-4 including the raising of existing dam crests to achieve adequate freeboard, placement of riprap along upstream embankment slopes, and associated activities as detailed in the application received from Englobe Corporation on June 25, 2021 with additional information sent on July 14, 2021.**

- 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 Environment and Climate Change under Section 49 of the *Water Resources Act*.



(for) MINISTER

APPENDIX A
Terms and Conditions for Permit

Dam/Reservoir Design

1. The dam and appurtenant structures shall be constructed at the following coordinates:

Name	Latitude	Longitude
Buchans Tailings Dam 1	48.8151	-56.8652
Buchans Tailings Dam 2	48.8102	-56.8655
Buchans Tailings Dam 3	48.8125	-56.8685
Buchans Tailings Dam 4	48.8105	-56.8791

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

Name	Height of Dam (m)	Elevation of Spillway (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
Buchans Tailings Dam 1	7.3	289.26	289.50	289.26	1.4
Buchans Tailings Dam 2	1.0 - 5.5	290.03	290.30	290.00	0.70
Buchans Tailings Dam 3	1.0 - 5.5	n/a	290.30	290.00	0.70
Buchans Tailings Dam 4	1.0 - 5.5	n/a	290.30	290.00	0.70

3. 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.
4. 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.

5. The dam and associated works shall be designed according to the Canadian Dam Association Dam Safety Guidelines and associated Bulletins (most recent edition).

Dam Construction

6. 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.
7. 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.
8. The reservoir side of Dam 1 structure must be constructed with a 700 mm facing of armour stone or rip-rap with a D50 = 400 mm to provide adequate protection from wave or ice induced erosion.
9. The reservoir side of Dam 2 -4 structures must be constructed with a 400 mm facing of armour stone or rip-rap with a D50 = 300mm to provide adequate protection from wave or ice induced erosion.
10. The dam and spillway must be inspected regularly to identify any indications of structural failure, leaking, erosion or other problem so that immediate action can be taken to rectify the problem.
11. The work must meet the requirements of the Environmental Protection Plan (latest approved version) for the project.
12. The transportation of labour and materials to the site must be along existing access roads.
13. Work must be conducted in dry conditions. Construction on any of the dams shall be preceded by the temporary lowering of the reservoir water level before proceeding with any construction work on the dams for the duration of the construction period.

Dam Safety

14. The four dams has been conditionally classified in the VERY HIGH Consequence category based on the 2007 Canadian Dam Association (CDA) guidelines. To meet the CDA's Dam Safety guidelines (Current Edition) for dams of this classification, the owner must:
 - Carry out an annual Dam Safety Inspection and provide the results to this Department,
 - Carry out a Dam Safety Review and submit a Dam Safety Report to this Department a maximum of every **five years**,
 - Update within one year of the issuance of this permit, and in consultation with this Department, the Operation, Maintenance and Surveillance (OMS) Manual for the operation and closure phases of the mine,
 - Update the Emergency Preparedness and Response Plan (EPRP) within one year of the issuance of this permit.

General Alterations

15. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
16. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
17. 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*.

18. 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.
19. 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.
20. 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.
21. 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.
22. 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.
23. 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.
24. All waste materials resulting from this project must be disposed of at a site approved by the Department of Digital Government and Service NL.
25. Periodic maintenance such as painting, resurfacing, clearing of debris, or minor repairs, must be carried out without causing any physical disruption of any watercourse. Care must be taken to prevent spillage of pollutants into the water.
26. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.
27. 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.
28. The attached Completion Report (Appendix C) for Permit No. 11976 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.
29. 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 structures: 1,2,3,8,9,and 14.
30. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.

Culvert Design

31. The crossing structure must provide adequate capacity to safely discharge flood flows without causing backwater effects upstream or increased flow velocity downstream.

32. To safely convey peak flows the culvert installations must be designed according to the following hydraulic criteria:

Crossing Name / No.	Design Return Period (years)	Design Flow (m³/s)	Minimum Size (mm)	Number of Pipes	Length (m)	Max. Velocity (m/s)
Temporary Culvert at Dam 1 Spillway	2	0.048	300	4	5	4

Culvert Installation

33. Drainage ditches must collect and transport surface runoff in a manner that does not cause flooding, erosion or sedimentation of adjacent land or receiving waters.

34. Inlet and outlet areas of culvert installations must be adequately protected from erosion by placing rip-rap, fitted stone, or concrete headwalls.

35. Culvert installations must follow the stream channel gradient to the maximum extent possible and placed in line with the direction of the main flow to minimize disturbance to the channel. Culverts must not disrupt the flow of water or cause ponding at the upstream side of the installation.

36. In multiple culvert installations, one culvert must be set a minimum of 150 mm lower than the others to provide adequate water depth and velocity for fish passage during low flow conditions. In addition, multiple culverts must be installed within 0.6 to 0.9 metres apart for maximum stability.

37. All work involving minor alteration to the stream channel to permit culvert placement must be carried out at a time of low flow, and in a manner that prevents downstream siltation and unnecessary alteration of the channel.

38. Grading and finishing of roadways or road embankments must not cause damage to culverts or allow road material to enter the watercourse.

39. Roadside embankments near the watercourse must be adequately protected from erosion by sodding, seeding or placing of rip-rap.

40. Culverts must be inspected regularly so that immediate action can be taken to clear blockages caused by ice or debris or to undertake repairs as required.

41. The inlet and outlet of culverts must be clearly marked so that operators of road grading and snow clearing equipment can avoid blocking culverts.

42. Any damage to culverts during installation or due to inadequate capacity and/or improper construction must be reported to this Department. Damaged culverts must be replaced immediately to prevent overtopping, erosion, or flooding.

43. If a culvert is installed in natural fish habitat it must be embedded a minimum of 150 mm below the natural streambed (up to a maximum of 1/3 of the culvert diameter).

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.

File No: **534-01**
Permit No: **ALT11976-2021**

- cc: Ms. Paula Dawe, P.Eng.
Manager, Drinking Water and Wastewater Section
Water Resources Management Division
Department of Environment and Climate Change
P.O. Box 8700
4th Floor, West Block, Confederation Building
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- cc: Fisheries Protection Division
Ecosystem Management Branch
Fisheries and Oceans Canada
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St. John's, NL A1C 5X1
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- cc: Darren Pittman
Mineral Development Engineer, Mines - Mineral Development
DarrenPittman@gov.nl.ca



Appendix C - Completion Report

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

Date: **JULY 15, 2021**

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Permit No: **ALT11976-2021**

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Attention: **Erich Lenz**

Re: **Buchans Mine - Rehabilitation of Dams 1-4**

Permission was given for : **rehabilitation of Buchans Mine Dams 1-4 including the raising of existing dam crests to achieve adequate freeboard, placement of riprap along upstream embankment slopes, and associated activities as detailed in the application received from Englobe Corporation on June 25, 2021 with additional information sent on July 14, 2021.**

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 Environment and Climate Change 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 Environment and Climate Change
Water Resources Management Division
PO Box 8700
St. John's NL A1B 4J6

APPENDIX D
Location Map for Permit

