

PERMIT TO ALTER A BODY OF WATER

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

Date: **SEPTEMBER 11, 2015**

File No: **534.05**
Permit No: **ALT8190-2015**

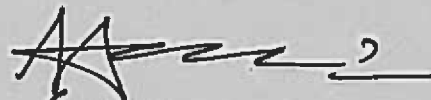
Permit Holder: **Anaconda Mining Inc.**
P.O. Box 238
Baie Verte, NL A0K 1B0

Attention: 

Re: **Pine Cove Mine Phase II Tailings Dam and Polishing Pond Dam- Anaconda Mining Ltd.**

Permission is hereby given for: the construction of the Pine Cove Mine Phase II Tailings Dam and Polishing Pond Dam as per the design brief "Pine Cove Mine - Phase II Tailings Storage Facility Design" prepared by Knight Piesold Consulting on Sept 1, 2015, and associated activities including stream diversion and fording outlined in the application received from Anaconda Mining Inc. on July 17, 2015 with additional information received on Sept 2, 2015.

- 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 Conservation 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 downstream channel.
2. The dam(s) and appurtenant structures shall be constructed at the following coordinates:

Name	Datum	Northing (m)	Easting (m)	Zone
Phase II Tailings Dam	NAD 83	5535070	562492	21
Phase II Polishing Pond Dam	NAD 83	5535195	562222	21

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

Name	Height/Elevation of Dam (m)	Elevation of Spillway (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
Phase II Tailings Dam	Stage 1: 42/72, Final:53/83	Stage 1: 70.5, Final: 81.5	Final: 82.5	N/A	1.5
Phase II Polishing Pond Dam	15/45	43.5	44.5	40	1.5

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

Name	Design Return Period (years)	Inflow Design Flood (m ³ /s)
Phase II Tailings Dam	2/3 between 1:1000 year and PMF	22.7
Phase II Polishing Pond Dam	2/3 between 1:1000 year and PMF	14.5

General Alterations

5. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
6. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
7. 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*.
8. 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.
9. 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.
10. 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.

11. 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.
12. 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.
13. 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 the Department.
14. 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.
15. All waste materials resulting from this project must be disposed of at a site approved by the Department of Service NL.
16. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.
17. 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.
18. 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.
19. The attached Completion Report (Appendix C) for Permit No. 8190 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.
20. This Permit is valid for two years from the date of issue for all construction related work. Construction 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 mine dam structures: 23.
21. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.
22. All work must be carried out within the proponent's legal property boundaries.

Dam Safety

23. The Phase II Tailings Dam has been conditionally classified as HIGH. The Phase II Polishing Pond Dam has been conditionally classified as SIGNIFICANT. At least one existing dam at this mine site 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 at this site, 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 within two years of the start of commissioning of the Phase II tailings dam and polishing pond dam, and a maximum of every five years after that,
 - Develop within one year of the issuance of this permit, and in consultation with this Department, an updated Operation, Maintenance and Surveillance (OMS) Manual for the operation and closure phases,
 - Prepare an updated Emergency Preparedness and Response Plan (EPRP) prior to reservoir filling.

Special Conditions

24. The tailings dam and management area (TMA) must meet the requirements of the Environmental Protection Plan (latest version) and mine Rehabilitation and Closure Plan for the project.
25. The mine Rehabilitation and Closure Plan must be revised to reflect the Phase II Tailings Management Area within one year of the issuance of this permit.
26. The dams 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 following instrumentation shall be included for long term monitoring of the Phase II Tailings Dam: 5 piezometers and at least 3 settlement plates/survey monuments. The following instrumentation shall be included for long term monitoring of the Phase II

Polishing Pond Dam: 3 piezometers and at least 2 settlement plates/survey monuments.

29. A toe drain shall be installed behind the liner tie-in of both embankment dams to ensure that any seepage is collected and directed away from the structure.
30. Embankment dam foundations shall be prepared to ensure a clean, stable, competent foundation. Exposed foundations will be inspected and approved by a qualified geotechnical engineer prior to fill placement.

Dam Construction

31. An HDPE geomembrane liner shall be installed overlaying a non-woven geotextile layer that is placed on a 0.3 m Geosynthetic Bedding layer along the upstream face of the tailings pond and polishing pond dam embankments. The geomembrane will be anchored in a trench at the new dam crests and tied into the glacial till foundation soils or anchored with a concrete plinth at the toe to form a hydraulic barrier.
32. 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.
33. Reservoir shorelines with moderately steep slopes or vulnerability to wave induced erosion, and spillway channels must be adequately protected with armour stone, rip-rap, or by other suitable measures.
34. The finished downstream side of the Phase II Tailings Dam shall have an average slope of 2 horizontal to 1 vertical. The finished upstream side of the dam shall have a slope of 2.5 horizontal to 1 vertical.
35. The areas to be flooded by the reservoir must be prepared by removing timber, brush, and slash up to the maximum water elevation.
36. The finished downstream side of the Phase II Polishing Pond Dam shall have a slope of 2 horizontal to 1 vertical. The finished upstream side of the dam shall have a slope of 3 horizontal to 1 vertical.
37. The Phase II Polishing Pond Dam shall be constructed before the Phase II Tailings Dam to allow dewatering of the existing polishing pond. The Permit Holder must provide pumps with sufficient capacity to dewater the existing polishing pond and outlet into the Phase II Polishing Pond.
38. 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.
39. The spillways must be constructed with a geomembrane lined inlet and a protective rip-rap barrier lining the outlet channel to prevent erosion of the structure when overtopping occurs. Rip-rap shall be sized such that it does not erode during design flood conditions.
40. The transportation of labour and materials to the site must be along existing access roads.
41. The dams and spillways 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.

Stream Diversion Design

42. The new channel must provide adequate capacity to safely discharge flood flows at a velocity no greater than that which would occur in the natural channel.
43. A minimum freeboard of 0.25 metres must be provided between the design high water level and the top of the channel bank to prevent overtopping.
44. The stream diversion must have the following dimensions:

Bottom Width (m)	Depth of Channel (m)	Bank Slope (H:V)	Flow Area (m ²)	Bed Slope (%)
1.0	1.0	2:1	3.0	varies (1.5% to 25%)

45. To safely convey peak flows, the stream diversion must be designed according to the following hydraulic criteria:

Design Return Period	Maximum Flow Capacity	Maximum Flow Velocity
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(years)	(m ³ /s)	(m/s)
2/3 between 1:1000 year and PMF	5.0	varies (3.1 m/s to 8.9 m/s)

Stream Diversion Construction

46. Alteration of the natural minimum streamflow is not permitted in order to preserve aquatic life.
47. The old channel must be closed to all flow of water. The fill or structure diverting flows into the new channel must be adequately protected from erosion.
48. The toe of the stream bank must be stabilized with fitted rock. The bank must be covered with an adequate layer of topsoil and seeded or sodded. The channel bed must be stabilized with a layer of clean gravel to resemble natural stream conditions.
49. The Permit Holder must prevent erosion of drainage ditches, streams or other natural bodies of water by installing rip-rap and/or sodding.
50. 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.
51. 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.
52. The new channel must be excavated in the dry beginning from the downstream end.
53. Flow must not be diverted into the new channel until all excavation, lining and bank stabilization work has been completed. Water from the old channel must be diverted into the new channel gradually. The channel must be monitored visually for any indications of excessive erosion or other problems.
54. The channel, including any areas up to the high water mark, must be kept free of all excavated or unused construction materials at all times.
55. The channel must be inspected regularly and maintained to ensure that there is no erosion of the channel. Any debris causing a blockage must be removed when necessary.
56. A water quality monitoring program is not required at this time. However, the Department reserves the right to require that the Permit Holder sample, analyse, and submit results of water quality tests, for the purpose of ensuring that the water quality is maintained within acceptable guidelines. All analyses must be undertaken by a C.A.E.A.L. accredited laboratory.

Fording

57. Except for single passenger all-terrain vehicles, crossings by other vehicles or construction equipment shall be limited to one trip in and one trip out.
58. Timbers or rocks shall be placed in streams to facilitate crossing or to minimize damage to the channel sections provided the streams are not unnecessarily constricted or backed up.
59. Alteration of the natural minimum streamflow is not permitted in order to preserve aquatic life.
60. Stream banks at fording sites that contain loose or erodible material must be adequately stabilized before crossing to minimize any siltation of streams.
61. The natural course of any stream must not be altered.
62. Infilling must not cause increased water elevation upstream or increase flow velocity downstream of the site. Reduction of the natural cross sectional area of any watercourse is not permitted.
63. The fording sites must be located at shallow sections of the channels where there are low approach grades, and where the channels consists of stable non-erodible rock or cobbles.
64. Fording shall only be carried out during periods of low water levels.
65. When the fording sites are no longer required, the Permit Holder must dismantle and remove all constructed works and restore the

sites to their original condition. All material placed in streams must be completely removed.

66. A complete oil spill clean-up kit must be on site at all times when gasoline or fuel powered equipment is being used or refuelled. The kit must contain the following:
- One hand operated fuel pump
 - One recovery container such an empty 205 litre drum
 - One shovel
 - One pick ax
 - Five metres of containment boom
 - Five absorbent pads
 - Twenty-five litres of loose absorbent material
67. Within 30 days after expiry of this Permit, the Permit Holder must submit to the department a report confirming that each fording location was left in as good or better condition than prior to Permit Holder's fording activities. This report should include detailed pictures of each site before and after project activities.

68.

Stream Crossing	Description of Streambed	Amount of Vegetation	Channel Width (m)	Channel Depth (m)
Pine Cove Brook Crossing	Cobble	Moderate	4	0.3

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.

- cc: File Copy for Binder
- cc: Mr. Dexter Pittman, P. Eng.
Department Environment and Conservation
Pollution Prevention Division
PO Box 8700
St. John's NL A1B 4J6
- cc: Ms. Paula Dawe, P.Eng.
Environmental Engineer, Drinking Water and Wastewater Section
Water Resources Management Division
Dept. of Environment and Conservation
PO Box 8700
St. John's, NL
A1B 4J6
- cc: Fisheries Protection Division
Ecosystem Management Branch
Fisheries and Oceans Canada
P.O. Box 5667
St. John's NL A1C 5X1
- cc: Mr. Alex Smith, P. Eng.
Department of Natural Resources
PO Box 8700
St. John's NL A1B 4J6
- cc: Dr. Abdel-Zaher Kamal Abdel-Razek, Ph. D., P.Eng
Manager, Water Rights and Investigations Section
Water Resources Management Division
Department of Environment and Conservation
P.O. Box 8700
St. John's NL A1B 4J6

Appendix C - Completion Report

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

Date: SEPTEMBER 11, 2015

File No: 534.05
Permit No: ALT8190-2015

Permit Holder: Anaconda Mining Inc.
P.O. Box 238
Baie Verte, NL A0K 1B0

Attention: [REDACTED]

Re: Pine Cove Mine Phase II Tailings Dam and Polishing Pond Dam- Anaconda Mining Ltd.

Permission was given for : the construction of the Pine Cove Mine Phase II Tailings Dam and Polishing Pond Dam as per the design brief "Pine Cove Mine - Phase II Tailings Storage Facility Design" prepared by Knight Piesold Consulting on Sept 1, 2015, and associated activities including stream diversion and fording outlined in the application received from Anaconda Mining Inc. on July 17, 2015 with additional information received on Sept 2, 2015.

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 Conservation and that the work was carried out in strict compliance with the terms and conditions of the Permit issued for this project.

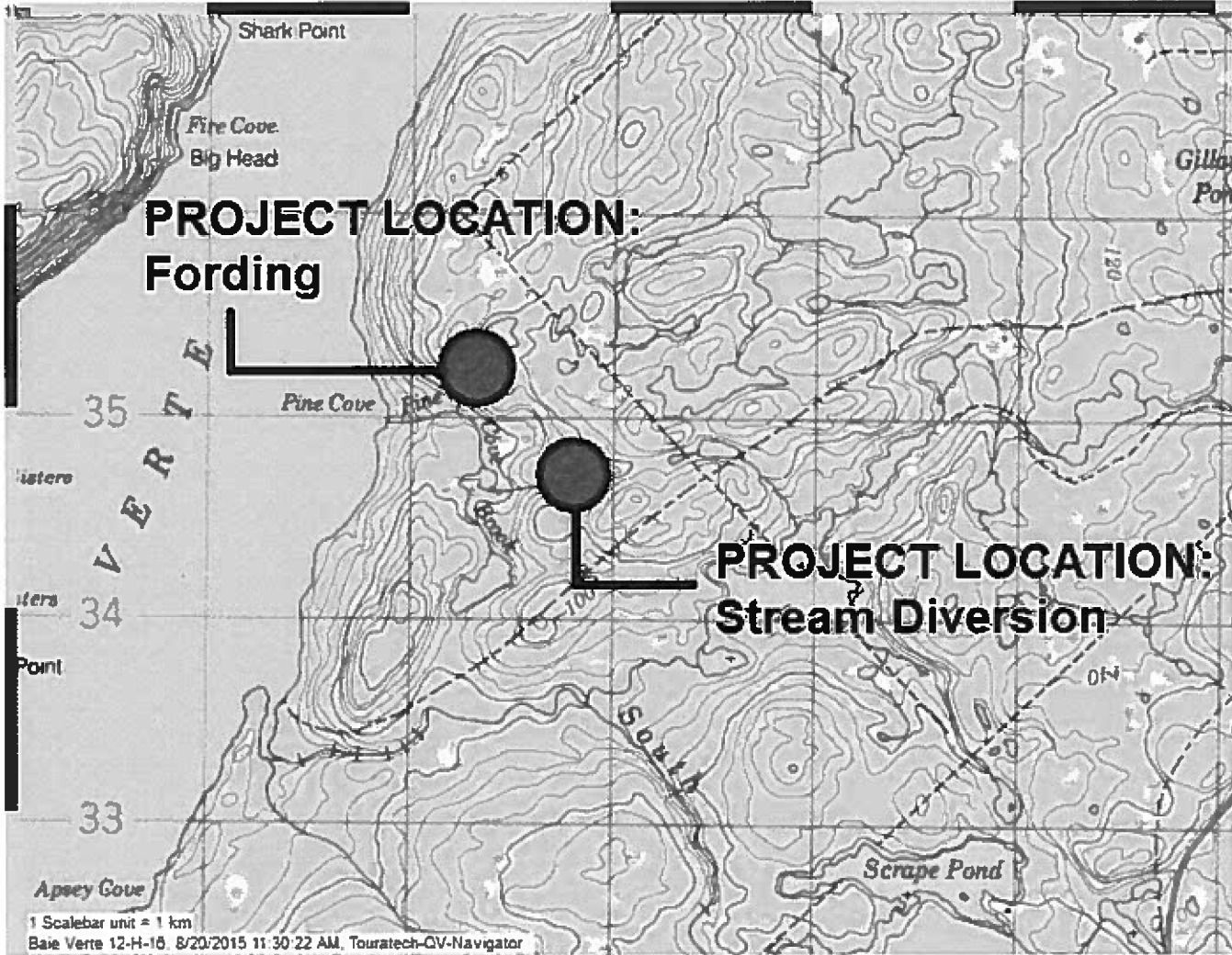
Date: _____

Signature: _____

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

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

APPENDIX D
Location Map for Permit



Second Attached Image File

