

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF MINING AND WATER MANAGEMENT

DAM SAFETY AND CONSTRUCTION UNIT



[Revised]

Certificate of Approval to Construct a Dam

The **State of Alaska** under AS 46.17, and the regulations adopted under this statute, grants to:

Teck Cominco Alaska, Inc.

The approval to construct the following structure at the **Red Dog Mine** in accordance with the terms and conditions contained in this certificate:

Red Dog Back Dam (AK00303)

The location of this project is: S31, T31N, R18W, Kateel River Meridian

The holder of this certificate shall:

- Construct the dam and appurtenant works in accordance with the plans and specifications listed in Attachment A.
- Except for claims or losses arising from negligence of the State, defend and indemnify the State against, and hold it harmless from any and all claims, demands, legal actions, loss, liability and expense for injury or death of persons, and damages to or loss of property, arising out of or connected with the exercise of the approval granted by this certificate.
- Comply with all applicable laws, regulations and conditions.
- Allow representatives of the Department to inspect the work and records covered by this certificate at all times determined necessary by the Commissioner.
- Follow special conditions listed in Attachment B, attached hereto and made a part hereof.

**[Revised] CERTIFICATE OF APPROVAL TO CONSTRUCT A DAM
Red Dog Back Dam**

This *Certificate of Approval to Construct a Dam* is granted subject to the pertinent statutory provisions in AS 46.17 and the Administrative Regulations in 11 AAC 93.

APPROVED BY:

TITLE:

SIGNATURE:

Charles F. Cobb

DATE:

August 28, 2008

State of Alaska)
) SS.
Third Judicial District)

This is to certify that on *August 28*, 2008, before me appeared *Charles F. Cobb*, known by me to be the Director or Authorized Representative of the Dam Safety and Construction Unit of the Division of Mining, Land and Water, Alaska Department of Natural Resources, and acknowledged to me that this Certificate of Approval was voluntarily executed on behalf of the State of Alaska.

Michael Walton
Notary Public in and for the State of Alaska

My Commission expires: *with office.*



**[Revised] CERTIFICATE OF APPROVAL TO CONSTRUCT A DAM
Red Dog Back Dam**

Attachment A – Approved Construction Documents

DRAWINGS

**Teck Cominco Alaska, Inc.
Back Dam Cut-Off Wall Construction
Red Dog Mine, Alaska**

<i>Drawing Number</i>	<i>Revision</i>	<i>Title</i>	<i>Date</i>
5762-01	<u>3</u>	Title Sheet	<u>June 24, 2008</u>
5762-02	<u>2</u>	Plan of Overburden Stockpile	<u>June 24, 2008</u>
5762-03	<u>2</u>	Geological Sections (East-West)	<u>June 24, 2008</u>
5762-04	<u>2</u>	Geological Sections (North-South)	<u>June 24, 2008</u>
5762-05	<u>5</u>	Cut-Off Wall Excavation Section -Plan and Embankment Profile	<u>June 24, 2008</u>
5762-06	<u>5</u>	Fill Sections and Bench Detail	<u>June 24, 2008</u>
5762-07	<u>3</u>	Est. Cut-Off Wall Embankment Sections Sta. 1+50 to 24+00	<u>June 24, 2008</u>
5762-08	<u>3</u>	Est. Cut-Off Wall Embankment Sections Sta. 25+50 to 48+00	<u>June 24, 2008</u>
5762-09	<u>3</u>	Cut-Off Wall Embankment Plan and Target Elevations	<u>June 24, 2008</u>
5762-10	<u>4</u>	Staged Bench Detail and Finished Insulated Section	<u>June 24, 2008</u>
5762-11	<u>1</u>	Instrumentation	<u>June 24, 2008</u>

SPECIFICATIONS

**Teck Cominco Alaska, Inc.
Specifications for Construction of Back
Dam Cut-Off Wall
Red Dog Mine, Alaska
Revision 1**

June 24, 2008

CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL

**Red Dog Cut-Off Wall
Construction Quality Assurance Plan**

Date
April 17, 2007

End of Attachment A

[Revised] CERTIFICATE OF APPROVAL TO CONSTRUCT A DAM
Red Dog Back Dam

Attachment B – Special Conditions

1. This revised certificate approves the construction of the Red Dog Back Dam to a seal zone elevation of approximately 960-970 feet as indicated in the drawings listed in Attachment A.
2. After construction, the Red Dog Back Dam is to be operated as a Class II (significant) hazard potential classification dam as defined in 11 AAC 93.157.
3. All work associated with the construction of the dam and appurtenances must be observed and inspected by an engineer qualified in accordance with 11 AAC 93.193(c), for compliance with the approved drawings, specifications and construction quality assurance/quality control documents listed in Attachment A, and for developing the construction completion report required under Special Condition 7.
4. If any conditions are encountered which require substantial deviations or change in the design from the approved drawings and specifications listed in Attachment A (including failure to reach the target cut-off wall depth for any reason), the deviation or change must be approved in writing by the design engineer. Any changes that could affect the safety of the dam must be approved in writing by the Department before implementing the deviation or change.
5. Submit to the Department a revised construction schedule for any substantial deviations from the schedule previously submitted to the Department.
6. The foundation area under the dam must be inspected and approved by a qualified professional geologist or geotechnical engineer, after the overburden is removed, and prior to the placement of select fill. A geologic map containing soil types, bedrock types, fractures, faults, and other pertinent information must be prepared and certified by the professional geologist or geological engineer, and included in the construction completion report required under Special Condition 7. In addition, bedrock conditions must be estimated and recorded based on the construction of the cut-off wall, correlated with the map, and included with the completion report.
7. No tailings may be deposited against the Red Dog Back Dam until a *Certificate of Approval to Operate a Dam* is issued by the Department. The Department will issue a *Certificate of Approval to Operate a Dam* including any other pertinent terms and conditions, upon review and approval of the following submittals:
 - Construction completion report prepared in accordance with the requirements of 11 AAC 93.171(f)(6)(A) including design change details and approvals
 - An operation and maintenance manual prepared in accordance with the requirements of 11 AAC 93.197.
 - An emergency action plan developed in accordance with the requirements of 11 AAC 93.164(e).
8. Notify the Department of the date of substantial completion within one week after that date occurs.

**[Revised] CERTIFICATE OF APPROVAL TO CONSTRUCT A DAM
Red Dog Back Dam**

9. Commence construction by the first day of June of the second calendar year after the date of this certificate. If construction does not begin by this date, an updated application must be submitted for review and approval by the Department, including application fees required under 11 AAC 05.010.
10. Provide the following information in accordance with the indicated schedule:
 - ~~By March 31, 2008, complete a technical risk assessment in the form of a failure mode and effects analysis (FMEA) of the tailings storage facility in the design configuration and in the conceptual configuration after closure, and any interim operational configurations that may be different from the design configuration. The scope of the risk assessment and the participants must be approved by the Department.~~
 - By March 31, ~~2008~~2009, please provide the demonstration of financial assurance required by 11 AAC 93.171(f)(4)(F).
11. After the dam is placed in operation, if monitoring indicates that the permafrost conditions of the overburden stockpile are thawing, submit an application for a *Certificate of Approval to Modify a Dam* in accordance with the requirements of 11 AAC 93.171 for a seepage collection system adequate to collect all seepage from the Red Dog Back Dam and protect the Bons Creek drainage, or other mitigation measures.
12. Prior to raising the dam or other modifications that may affect the safety of the dam, submit to the Department an application for a *Certificate of Approval to Modify a Dam* in accordance with the requirements of 11 AAC 93.171.

End of Attachment B

D/F:daminfo/projects/reddog/backdam/certificates/[COACON FY2009-4-AK00303.doc](#)