

Response to Comments

for

Department of Environmental Conservation
Waste Management Permit No. 2021DB0001

and

Department of Natural Resources
Reclamation Plan Approval No. F20219958RPA
Plan of Operations Approval No. F20219958 POOA

Teck Alaska, Incorporated
Red Dog Mine

Public Noticed July 2, 2021 – August 2, 2021

FINAL

September 23, 2021

Introduction

Public notice start: July 2, 2021

Public notice end: August 2, 2021

The Red Dog Mine facilities are located in northwest Alaska, 82 air miles north of Kotzebue, in the Red Dog Creek drainage, on private land owned by NANA Regional Corporation, and some support facilities on State of Alaska lands.

The Red Dog Mine is an open pit zinc and lead mine. It currently consists of two open pit mines, a mill for processing ore, a tailings impoundment, waste rock storage areas, and support facilities. After processing, lead and zinc concentrates are transported from the mine facilities via a 52-mile road to a port facility located on the Chukchi Sea.

This document summarizes and addresses comments received on Alaska Department of Environmental Conservation (DEC), draft Waste Management Permit (WMP) No. 2021DB0001 and Alaska Department of Natural Resources (DNR), draft Reclamation Plan Approval (RPA) No. F20219958RPA and draft Plan of Operations Approval (POOA) No. F20219958POOA. The WMP regulates the containment and disposal of mine tailings, waste rock, wastewater, and other mine-related wastes at the Red Dog Mine, while the RPA regulates activities associated with the reclamation of the mine and the POOA regulates the approval of activities to occur on State of Alaska lands covered under Millsite Lease ADL 233521.

Substantive comments concerning requirements of the DEC WMP permit and the DNR RPA and the State's responses are contained in the following pages. The State did not respond to comments outside the scope or beyond regulatory authority of these permits. There were no changes made to the draft permits resulting from comments received during the public notice period that are reflected in the final permits. There were also some minor changes made to the draft permits after public notice to correct typographical and grammatical errors, formatting, and to clarify information. Minor changes to the permits are not detailed in this document.

Comment Overview and General Comments

The State received comments from two parties. Substantive comments concerning permit-specific requirements and their responses follow. General comments about public process received no responses herein because they lack content applicable to permit conditions. No changes to the permits were made as a result of comments received.

Response to Comments on draft Waste Management Permit No. 2021DB0001, draft Reclamation Plan Approval No. F20219958RPA and draft Plan of Operation Approval no. F20219958POOA for the Red Dog Mine

Comment 1:

In year-100 of the ADEC/ADNR's calculation, the final year cost is \$122,963,000. This is over twice the largest annual cost used in previous years. From the SRCE spreadsheet (SRCE 2021, User 10 Summary Tables), the large increase in costs in the final year of the calculation (Year-100) is due to very large increases in: (27) Water Treatment Plant Consumables – Early Closure, from \$4.4 million/year to \$35.3million; (29) Water Treatment Plant and Camp – Manpower, from \$3.8 million/year to \$30.5 million; and,(33) Water Treatment Plant – Power Cost, from \$2.0 million/year to \$16.3 million. All of these increases are exactly 8 times the previous cost/year. There is no explanation for these figures by ADEC/ADNR, or by the cost assumption used by Teck in the 2021 Reclamation Plan, section 4.3.5 Capital Replacement.

The SRCE present value calculation assumes a real discount rate of 4.3%, and runs for 100 years (SRCE 2021, User 12 Cash Flows). Of note, the cash flow cost basis, which shows the annual costs for 100 years post-closure, does not include the large final year charge of \$122,963,000 that appears in the User 10 Summary Table.

Adding these costs to the final year of the ADEC/ADNR calculation has a significant impact on the present value of the financial assurance. This was obviously done to influence the present value of the financial assurance, but lacking an explanation for including these final-year costs, the inclusion appears to be an unexplained fudge factor. The proper way to calculate the present value of the financial assurance would be to use the documented costs, and to carry out the present value calculation to a logical endpoint, not to arbitrarily terminate the present value calculation at 100 years.

Response 1:

The Standardized Reclamation Cost Estimator (SRCE) model is widely accepted estimating tool for calculating reclamation costs in Alaska and has been utilized throughout the United States by state and federal agencies.

SRCE model programming is limited to 100 *Plan Years*. The SRCE model schedules costs for activities based on their applicability for each phase of reclamation and includes holding costs (two years), active reclamation cost (two years), and long-term costs (100 years). The costs are applied and calculated for the entire period of the estimate.

The eight-fold increase for the identified cost items represents the application of the long term care and maintenance costs for *Closure Years* 97 through 104, which was applied to the SRCE model *Plan Year 100 (Closure Year 97)* due to the 100-year calculation limit of the SRCE model.

Given the limitation of the model to calculate beyond 100 *Plan Years* (97 of the 104 scheduled closure years), the remaining percentage of the total was placed in the final year, resulting in a large cost being represented in *Plan Year 100*. Those costs were then discounted at year 97, rather than a discounting the cash flow for years 97-104. This results in a slightly higher

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discounted value because these costs are discounted pre-maturely in year 97 rather than the following years which provides for a conservative estimate for the last seven years of cash flow.

Preliminary calculations to discount cash flows to approach zero were also performed as noted in the comment. Similarly, calculations were performed to determine the degree of error of the 100 year SRCE model limit where the timeline was extended to year 425. The sum of discounted cash flows from year 104 to 425 resulted in a value 0.8% of the total estimate presented. This difference is much smaller than the sensitivity of the estimates used in deriving the required financial assurance, and it is easily overwhelmed by myriad of conservative assumptions and contingencies included in the overall estimate.

No change were made as a result of this comment.

Comment 2:

It is not clear whether the ADEC/ADNR financial assurance of \$585,662,000 includes any holding costs. ADEC should include at least 2 years of holding costs, and should make it clear whether/what holding costs are included in its financial assurance requirements. Has this been included?

Response 2:

Yes, holding costs were included in the first two years of the reclamation model. Holding costs can be found in the *SRCE 2021, User 10 Summary Tables* under *Plan Year 4 and 5 (Closure Year 1 and 2)*.

No changes were made as a result of this comment.