

Appendix I

Basis for Reclamation Cost Estimate

Anarraaq and Aktigiruaq Exploration Program

Phase I – Exploration Access Road and Surface Pad Construction

Prepared for:

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This document originally dated April 2022 and submitted to ADNR on May 9, 2022, has been modified to include updated reclamation costs and acreage values to reflect updated designs for access roads to material sites AA-MS-1 and AA-MS-4.

Modifications to this document include:

- a. The date on the cover page has been changed from April 2022 to October 2022.
- b. Table 1 has been modified to include disturbance acreage for updated road designs for material sites AA-MS-1 and AA-MS-4 and for consistency with SRCE Figures.
- c. Table 2 has been modified to reflect higher reclamation costs related to the updated access road designs for material sites AA-MS-1 and AA-MS-4. The total reclamation costs increased from \$5,430,957 to \$5,535,456.

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ACRONYMS/ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
BLM	Bureau of Land Management
G&A	General and Administrative Expenses
GET	Ground Engaging Equipment
NDEP	Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation
NvMA	Nevada Mining Association
SRCE	Standard Reclamation Cost Estimator
SSoA	Shared Services of Alaska
TAI	Teck American Incorporated

1 INTRODUCTION

Teck American Incorporated (TAI) has prepared a reclamation cost estimate for Phase I of the Anarraaq and Aktigiruuq Exploration Program (Project) located in northwest Alaska, using the Standard Reclamation Cost Estimator (SRCE). This report describes the basis and assumptions used to prepare the estimate and the modifications made to meet the objectives and requirements of the location. The SRCE file is provided as a separate EXCEL file.

This estimate assumes that all exploration activity ceases, and the areas developed under authorization of the Phase I Plan of Operations Approval from the Alaska Department of Natural Resources (ADNR) are reclaimed at that time.

2 RECLAMATION COST BASIS

The estimate was prepared in SRCE Version 2.0. The SRCE is spreadsheet software that was developed as part of a cooperative effort between the Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation (NDEP), the U.S. Department of Interior, Bureau of Land Management (BLM), and the Nevada Mining Association (NvMA) to facilitate accuracy, completeness, and consistency in the calculation of costs for mine site reclamation.

SRCE uses first principles methods to estimate quantities (lengths, areas, and volumes), productivities, and work hours required for various closure tasks based on input from the user. The model is available in the public domain and hosted on the web site: <http://www.nvbond.com>.

The SRCE model offers key advantages in the estimation of reclamation costs for the following reasons:

- SRCE provides a standardized and systematic methodology for mine Reclamation cost estimates. The routines provided in the model cover different operation units and aspects of mining projects.
- In the absence of a standardized cost estimation model in Alaska, the SRCE provides a defensible approach. SRCE is acceptable to the ADNR and Department of Environmental Conservation (ADEC) for meeting the cost reclamation cost estimated required to meet project bonding requirements.

The SRCE model used is a public-domain version that differs from the Nevada, USA version in some ways. The Nevada version uses parameters specific to the jurisdiction of Nevada that may not be applicable in other locations. The current SRCE model incorporates Alaska-specific costs and procedures as described below.

2.1 Reclamation Cost Rates

SRCE requires rates for labor, equipment, and materials as data inputs. These rates are compiled into the Cost Data file which is then loaded to the SRCE.

2.1.1 Equipment Rates

Hourly equipment rates were based on estimates developed by SRK using monthly rental rates provided by NC Machinery. Rates for equipment not available at NC Machinery were quoted from, APR Rentals, United Rentals, and Alaska Crane. Rental rates were provided in terms of 4-week increments. The reclamation construction season is expected to span 120 days (4 months), with equipment rental for 6 months to account for mobilization timing of approximately 4 weeks on either side of construction.

The hourly rental rate is based on a 4-week term and a 10 hr/day, 5 day/week schedule. This results in 200 hours per 4-week term. The rental price is divided by 200 hours to derive the estimated hourly equipment rate.

Overhead costs for equipment, such as ground engaging equipment (GET), tires, and major maintenance, are included in the average wear and tear clause of the rental terms as part of the rental rate. The maximum time any one piece of equipment is scheduled to operate per season is approximately 600 hours. The expected lifespan of a tire, for instance, is 4,500-5,000 hours; the anticipated GET rebuild for dozers, loaders, etc. is approximately 7,000-9,000 hours. Therefore, including costs associated with GET or tire replacement is not included in the cost estimate. See User Sheet 3 for approximate equipment hours. An additional 15% of the hourly rate is included for general and incidental maintenance, and an additional 10% of fuel cost is included for lube and preventative maintenance. These additional costs are entered in the Cost Data file under preventative maintenance.

This method of calculating equipment costs is consistent with the SRCE method for calculating hourly rates, and the Caterpillar Handbook for calculating ownership costs. Reclamation activities are estimated to be performed over the course of one construction season. Equipment idle time, for time in which the equipment is on-site, but not engaged, is calculated at 100% of the base hourly rental rate and is included in the General and Administrative Expenses (G&A) calculations. Idle rental time is a significant cost but is driven by the construction schedule and shipping time for mobilization and demobilization. A more refined construction schedule (i.e., shorter construction period) could result in reduced idle time and cost savings. As a result, the current cost estimate is conservative with regard to idle time.

2.1.2 Labor Rates

Labor rates for an independent contractor were built up from base hourly rates presented in Issue 42 (effective September 1, 2021) of the *Laborers' & Mechanics' Minimum Rates of Pay*

(Pamphlet 600), published by the Alaska Department of Labor and Workforce Development. Labor rates not available in Pamphlet 600 were built up from wages available on the Alaska Department of Labor's website. Base hourly rates include standard overtime, benefits, and payroll burden. Labor rates do not include the costs of camp accommodation or flights, which are included separately in the G&A calculation sheet.

2.1.3 Material Costs

A fuel unit cost of \$5.11 per gallon was used throughout the cost estimate. The estimate is based on the current negotiated fuel price for state contracts delivered to Kotzebue. See Shared Services of Alaska (SSoA) Ultra-Low Sulfur Diesel price. The cost of fuel to Red Dog Port would likely be similar in cost to the delivery to Kotzebue.

Fuel will be delivered to the site via bulk tank during mobilization and is included in both the mobilization and transport to site costs. Storage is assumed to be in tanks at the Red Dog Port and delivery to the site via tanker truck as needed and stored in smaller bulk tanks at the site.

2.2 Equipment Productivities

Productivity data and calculations were based on:

- Caterpillar Handbook, Edition 47 for productivity calculations incorporated into the SRCE.
- Means Heavy Construction Handbook for productivity calculations for crew-based activities (e.g., demolition).

3 RECLAMATION COST ESTIMATION

3.1 Data Provided

The following files were provided to SRK by TAI:

- *Anarraaq and Aktigiruaq Exploration Program, Red Dog Mine, Alaska – Access Road construction drawings prepared by Kuna Engineering (Kuna January 2022).*
- Project conceptual site layout drawings for the various pads were prepared by Wood.

3.2 Key Cost Assumptions

3.2.1 Site Layout and Components

Figure 1 depicts the proposed site layout including roads, surface pads and material sites. Reclamation of all these components is included in the SRCE cost estimate. Table 1 shows the

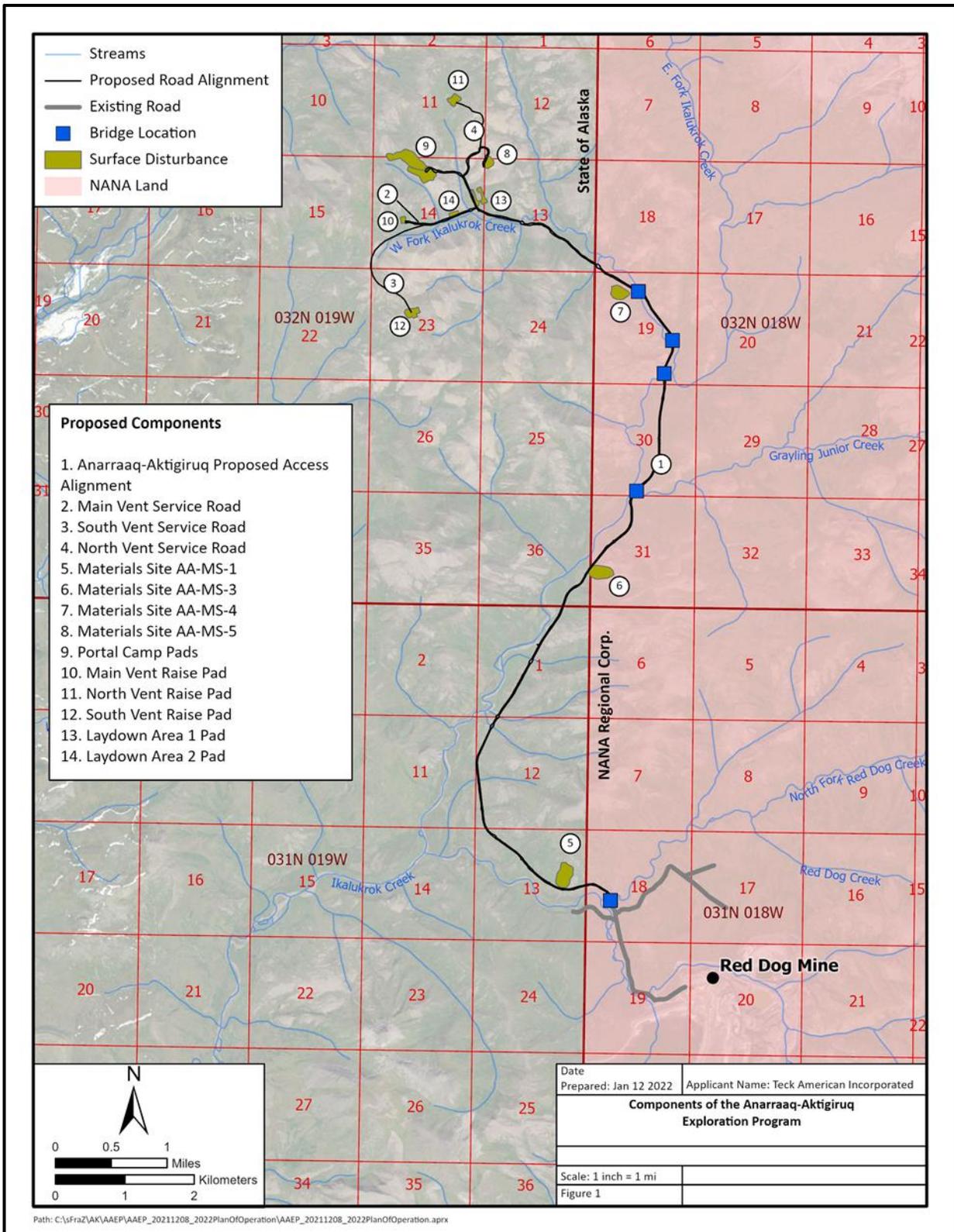


Figure 1. Components of the Anarraaq and Aktigiruiq Exploration Program Proposed in this Plan of Operations

Table 1. Surface Acreage Disturbance for Project Components

Surface Components	Disturbance (acres)
Main Exploration Access Road	79.4
AA-MS-1 Access Road	12.8
AA-MS-4 Access Road	1.7
AA-MS-5 Access Road	4.0
Main Vent Raise Road	4.5
South Vent Raise Road	9.5
North Vent Raise Road	4.2
Main Vent Raise Pad	1.7
South Vent Raise Pad	6.0
North Vent Raise Pad	4.9
Laydown Pad 1	5.7
Laydown Pad 2	1.9
Portal and Camp Pad	32.9
Material Site AA-MS-1	16.0
Material Site AA-MS-3	13.7
Material Site AA-MS-4	9.9
Material Site AA-MS-5	4.6
Total	213.4

surface acreage disturbance for each of the project components that were incorporated in the reclamation estimate. Figures 3, 4 and 5 in the Reclamation Plan illustrate typical sections for reclamation of the roads, culverts and bridges, and material sites respectively.

3.2.2 Reclamation Schedule

The SRCE model assumes that all the reclamation work would be completed in one construction season, with a complete mobilization to occur in early summer and demobilization in late fall to avoid shipping delays due to the formation of sea ice which ends the shipping season. Estimated hours were computed by SRCE.

3.2.3 Roads

The roads and drainage ditches will be reclaimed in areas of cut-to-fill and areas of fill as illustrated in the Reclamation Plan drawings. Culverts and bridges will be removed during reclamation to restore natural drainage courses. Figure 3 in the Reclamation Plan illustrates a typical section for the reclaimed roads. The following assumptions were used in the reclamation cost estimate for the roads and culverts:

- Assume roads are regraded in cut sections to reduce erosion potential of 1.5:1 cut slope transitions. Calculation assumes 50% of embankment cut volume is relocated (see Figure 3). Assume bridges are resting on concrete blocks consistent with the preliminary design.

- Bridge removal time based on estimated quote from Baily Bridge™ - Disassemble and remove/relocate structure in 4 days plus 2 days for concrete block abutment removal. Crew=6 men + 20-ton crane and backhoe.
- Hauling salvaged abutment blocks, calculated in waste disposal tab, hauling bridge structure included in cost of demo.

3.2.4 General and Administration Costs

Reclamation is assumed to be completed within one snow free construction season, with all earthwork costs assumed to be completed in 120 days.

- Crew size is estimated at 6 laborers and 3 administration personnel.
- Turnaround time assumes 2-week shifts; and
- Equipment idle time placeholder for rates is calculated in User Sheet 3.

3.2.5 User Sheets

- User Sheet 1 includes copies of the figures and maps used in the SRCE calculations.
- User Sheet 2 includes a calculation of the total weight of equipment to be mobilized.
- User Sheet 3 is used to estimate the total project hours for equipment as noted above in Section 2.1.1.

3.2.6 Indirect Costs

The basis of indirect costs is derived from guidelines provided by the ADEC and ADNR (DOWL, 2015). SRCE provides four categories of indirect input values, while the guidelines provide seven separate categories. To input the values into SRCE, some of the percent indirect costs were combined. The summary below lists the indirect percentages applied to the total direct costs.

- Engineering Design and Reclamation Construction Plans are assumed to be 3% of the direct project costs. Engineering design is expected to be minimal.
- A contingency of 10% was applied to all direct costs. This is a combination of both Scope and Bidding contingency for the project.
- Contractor overhead and profit is assumed to be 14%. This is a combined value including profit (6%), overhead (4%), liability insurance (1.5%), and bonding (2.5%).
- A 5% contract administration cost is included.

Table 2 contains a summary of the SRCE model reclamation costs

Table 2. Summary of Reclamation Costs from SRCE Model

Engineering, Design and Construction Plan (%)		3.0%	
Contingency (%)		10.0%	
Contractor OH and Profit (CP)(%)		14.0%	
Contract Administration (%)		5.0%	
Show how many years in schedule (10 to 150):		100	
Show how many operating years in schedule:		10	
Facility/Activity Type			Acct Code
			Total Cost
			\$
1	Access and Secondary Roads		945,038
2	Storm Water Management		120,880
3	Post Reclamation Monitoring		10,588
4	Material Sites		133,302
5	Waste Disposal		111,306
6	Surface Pads		368,337
7	Reclamation Maintenance		174,903
8	G & A		855,322
9	Equipment Idle Time		763,252
10	Mob/De-mob		710,598
		TOTALS	4,193,527
Engineering, Design and Construction Plan			125,806
Contingency			419,353
Contractor OH and Profit			587,094
Contract Administration			209,676
TOTAL COST			5,535,456

4 REFERENCES

Alaska Department of Labor, Laborers' & Mechanics' Minimum Rates of Pay.
Effective September 1, 2021. Issue 42.

DOWL, Mine Closure and Reclamation Cost Estimation Guidelines: Indirect Cost Categories,
Prepared for Alaska Department of Natural Resources and Alaska Department of
Environmental Conservation, 2015.

Kuna Engineering, Aktigiruq Exploration Access Road, Red Dog Mine Alaska, (Engineering
Road Design Drawings) 2022.

Caterpillar Performance Handbook (Edition 47).

Means Heavy Construction Cost Data (2016)