



October 16, 2020

Ms. Angela Love
Regulatory Specialist
Mackenzie Valley Land and Water Board
7TH FLOOR - 4922 48TH STREET
YELLOWKNIFE NT X1A 2P6

Dear Ms. Love,

Re: **De Beers Canada Inc.
Type A Water Licence and Type A Land Use Permit Amendments
Additional Ore - Gahcho Kué Diamond Mine
Undertakings from Public Hearing**

On September 30 & October 1, 2020, the Mackenzie Valley Land and Water Board (the Board) held a public hearing to discuss amendment applications for Water Licence MV2005L2-0015 and Land Use Permit MV2005C0032. Undertaking #3 directed to the Government of the Northwest Territories (GNWT) arose from the Public Hearing and was stated as follows:

The Government of the Northwest Territories will confirm its position on whether or not air and wildlife monitoring need to be included in the De Beers Canada Inc. Gahcho Kué RECLAIM Security Estimate.

If the Government of the Northwest Territories confirms that air and wildlife monitoring should be included, please provide a recommended amount, to be considered by the Board, related to air and wildlife monitoring. Please also indicate in which phase(s) of the payment schedule these amounts would be added to.

Regarding the request for clarification on whether or not air and wildlife monitoring need to be included in the current security estimate before the Board, the GNWT would like to take this opportunity to provide some additional context. On April 7, 2014, during the initial water licensing, the GNWT submitted [an intervention](#) which included line items in the security estimate related to air and wildlife monitoring. Within the [2014 Reasons for Decision](#), the Board determined that wildlife and air costs should not be included in RECLAIM and included the following statement:



The Board has decided that the requirement for provision of an AQMP [Air Quality Monitoring Program] and a WEMP [Wildlife Effects Monitoring Program] is outside its jurisdiction. As the monitoring and management of air quality and wildlife are outside the limits of the Board’s authorities, as more deeply examined in section 4.3.8 (air) and 5.3.3 (wildlife) of the main body of the reasons, the Board has not included the estimated costs associated with these programs.

During a 2018 review of RECLAIM, the GNWT noted that in Comment ID1 that:

“There is no security for air or wildlife monitoring; however, it is acknowledge (sic) in Figure 40 of the ICRP v.4 for Gahcho Kué that air quality monitoring will be conducted during the summer for three years post-closure and that there will be wildlife monitoring at the mine post-closure for seventeen years, although detailed monitoring plans have not been developed yet. ENR notes that approved RECLAIM estimates for Snap Lake, Diavik and Ekati diamond mines contain security for air and wildlife monitoring post-closure.”

In response on July 30, 2018, De Beers referenced the aforementioned 2014 Reasons for Decision and noted that as these items were outside the Board’s jurisdiction, they were not included in the security amount.

Following that, the Board submitted an Information Request to ENR on September 27, 2018 requesting that ENR provide cost estimates for air and wildlife monitoring. On October 5, 2018, ENR provided a response to the Board noting the following cost range related to other diamond mines in the NWT.

Table 1. Security held for Ekati, Diavik and Snap Lake diamond mines for air and wildlife monitoring.

	Ekati¹	Diavik²	Snap Lake³
Air Quality Monitoring Program	\$30,000/year	Not defined	\$34,000 to \$117,000/year
Wildlife Effects Monitoring Program	\$120,000/year	\$50,000/year	\$20,000/year

¹ [Misery UG Security – WLWB Determination – July 12 18](#)

² Appendix VII of the Diavik Closure and Reclamation Plan – WRSA – Version 1.2 – [Expected Cost of Closure and Reclamation](#)

³ [Security Estimate RECLAIM Report v.3. Table A.9](#) – June 4, 2018, estimates accepted in [the Board’s change to schedule 2](#) on June 20, 2018



This response is attached in its entirety for additional details for the Board's consideration (Appendix A).

In an [October 17, 2018 submission to the Board](#) regarding GNWT's Financial Security Estimate response, De Beers provided additional cost estimates in this regard to the Board.

In their November 7, 2018 [Reasons for Decision](#), the Board noted:

As the developer of the RECLAIM model and the party that is responsible for clean-up of the site in the case of abandonment, the GNWT's recommendations are well-informed. As such, prior to resubmission to ensure an efficient review, the Board requires De Beers to:

- a) Engage with the GNWT with the goal of building consensus and enabling the proponent and the GNWT to provide a thorough rationale for any differences in opinion; and*
- b) Based on the engagement completed to satisfy direction (a) above, outline any differences between the GNWT and De Beers' estimates/positions, and provide a rationale for De Beers' position.*

In their [March 17, 2020 RECLAIM submission](#), De Beers did not include cost estimates for air and wildlife monitoring. De Beers again noted in [a subsequent submission](#) that "The 2020 security estimate does not include air and wildlife monitoring fees. It is De Beers' understanding that air and wildlife aspects may not be within the MVLWB's jurisdiction."

The GNWT's position, similar to that in the processes for Diavik, Ekati and Snap Lake mines is that security for air and wildlife monitoring during closure should be included in the estimate. Therefore, the GNWT offers the following information.

Air Quality Monitoring

The Interim Closure and Reclamation Plan (ICRP) v.4.1 states that particulate monitoring will occur "Throughout mining and during refilling of Kennady Lake, minimum 3 consecutive years and until closure objectives have been met." The ICRP also notes that ambient air quality will not exceed the NWT Ambient Air Quality Standards for total suspended particulate (TSP), fine Particulate Matter (PM_{2.5}), and Nitrogen Dioxide (NO₂). Figure 44 of the ICRP shows natural refilling of Kennady Lake occurring from 2031 to 2047. Based on this information it is reasonable to



assume that De Beers will need to conduct air quality monitoring of TSP, PM_{2.5} and NO₂ during active closure and, at a minimum, particulate monitoring during post-closure until 2047.

The GNWT cannot reasonably estimate the yearly costs of air quality monitoring at Gahcho Kué post-operations due to the lack of data presented at this time. Uncertainties that prevent us from providing a cost estimate include:

- The absence of a post-closure air quality monitoring program.
- Uncertainties on whether De Beers will adhere to Environment and Climate Change Canada's National Air Pollution Surveillance Network's national standards for maintenance and calibration of NO₂ and PM_{2.5} monitoring equipment. This standard requires equipment to be maintained and calibrated every three months. At a minimum, regardless of which standard that is being use, all analyzers and sensors should be serviced, inspected and calibrated according to either government specific standard operating protocols or according to manufacturer's instructions as outlined in the instruments' manuals.
- The location and number of air quality monitoring stations. It is possible stations may need to be added and/or relocated to better capture activities on site (e.g., stations may need to be located closer to infrastructure being removed or remaining infrastructure).
- Infrastructure required to monitor air quality. The current air quality station on site is contained within a building that is heated, cooled and has electricity. It is unclear how air quality monitoring equipment will be powered and maintained post-closure. There may be a cost to purchase telemetry equipment if air quality data is to be monitored in real-time and a cost to power and house the equipment.
- 'Particulate monitoring' is undefined. It is likely De Beers is referring to PM_{2.5} monitoring but an accurate cost estimate cannot be determined without knowing the parameters to be monitored.
- It is unclear if the cost of meteorological monitoring and dust monitoring will be included under the Aquatic Effects Monitoring Program or under the air quality monitoring program post-operations.

In the absence of additional data, which the GNWT expects De Beers to provide at a future date, the GNWT accepts the annual air quality monitoring cost estimates provided by De Beers in 2018. The estimate provided by De Beers is likely an underestimation and to be conservative, as well as consistent with the commitment in the ICRP to monitor particulates during the refilling of Kennady Lake, the GNWT recommends an annual cost for air quality monitoring until 2047. Security for air



quality monitoring for the Gahcho Kué mine site should be set at \$260,000 (Appendix B). This cost will need to be reviewed as more data on post-closure monitoring becomes available.

Wildlife Monitoring

The ICRP states that wildlife effects monitoring will occur “Throughout mining and refilling of Kennady Lake, minimum 2 consecutive years post refilling and until closure objectives have been met.” The ICRP also notes that to support site wide closure objective 5 the operational wildlife monitoring programs will be adjusted for post closure conditions, and will inform the specific closure receptors that will be monitored to assess closure criteria, which will primarily look valued components and/or species of concern such as caribou, grizzly bear, wolverine, and raptors. Figure 44 of the ICRP shows natural refilling of Kennady Lake occurring from 2031 to 2047. Based on this information it is reasonable to assume that De Beers will need to conduct wildlife monitoring during active closure and during post-closure until 2049, at a minimum. A number of other assumptions, such as the approach and frequency of monitoring, were made in order to determine a security estimate for wildlife monitoring at Gahcho Kué. The existing wildlife monitoring programs at Gahcho Kué were also used as a guide in determining wildlife monitoring costs during active reclamation and post-closure.

The GNWT recommends that security for wildlife monitoring for the Gahcho Kué mine site be set at \$1,020,190 (Appendix C). The security estimate is conservative, based on the lack of available data at this time.

The GNWT recognizes that a large amount of uncertainty exists regarding the scope and timing of air quality and wildlife monitoring at Gahcho Kué and that this uncertainty will decrease as the mine approaches closure. Should De Beers provide any site-specific monitoring details to the Board in the future, GNWT could review those plans and the security estimate for air and wildlife monitoring for Gahcho Kué mine. The GNWT also recognizes that the cost estimates provided in this undertaking response are based on timelines and information in the ICRP and do not reflect the updates outlined in the current amendment application. A further refinement of cost estimates for air quality and wildlife monitoring will be required should the amendment be approved and updates to the ICRP follow.

Air quality and wildlife monitoring security during reclamation and post-closure should be required immediately if the Board chooses to include such costs in the Gahcho Kué security estimate, as this monitoring liability exists presently.



Should you have any questions or concerns, please do not hesitate to contact Rick Walbourne, A/Manager, Water Regulatory at (867) 767-9234 Ext: 53113 or email [Rick Walbourne@gov.nt.ca](mailto:Rick.Walbourne@gov.nt.ca).

Sincerely,

Meghan Beveridge
A/Director
Water Management and Monitoring Division
Department of Environment and Natural Resources
Government of the Northwest Territories

Attachments



October 5, 2018

Appendix A

Chris Hotson
Regulatory Manager
Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Avenue
P.O. Box 2130
Yellowknife, NT
X1A 2P6

Dear Mr. Hotson,

**Re: De Beers Canada Inc. (De Beers) – Gahcho Kue Mine
Land Use Permit MV2005C0032 - Water Licence MV2005L2-0015
2018 RECLAIM Financial Security Estimate Report
Additional Information**

On September 27, 2018, the Mackenzie Valley Land and Water Board (the Board) requested that the Government of the Northwest Territories – Environment and Natural Resources (GNWT – ENR) provide further rationale and information on our July 20, 2018 submission related to the revised security estimate (RECLAIM Version 5) for the Gahcho Kue Mine as submitted by De Beers. The Board requested clarification in two areas which are reiterated below.

1. Related to GNWT-ENR comment-1

- a. As the developer of the RECLAIM model, and the party that is responsible for clean-up of the site in the case of abandonment, please provide a recommended amount of security, to be considered by the Board, related to air and wildlife monitoring that would be in line with the other diamond mines operating in the NWT (as noted by GNWT-ENR in their comment). Please also indicate in which phase(s) of the payment schedule these amounts would be added to, based on those presented by De Beers in RECLAIM Version 5.

GNWT-ENR Response:

In GNWT-ENR's July 20, 2018 submission, it was requested that De Beers "provide an estimate on the amount of security that should be held for air and wildlife monitoring for Gahcho Kue, consistent with other diamond mines operating in the NWT." Note, GNWT-ENR did not estimate these costs previously as detailed monitoring plans for air and wildlife have not been provided. These details are needed for the GNWT-ENR to provide a site-specific estimate of air and wildlife monitoring costs for the site.

In light of the information request noted above and in absence of such site-specific information, GNWT-ENR has provided the Board with a range of costs that have been included in RECLAIM for other mines operating in the NWT. As outlined in Table 1 below, the Diavik Diamond Mine, the Ekati Diamond Mine and the Snap Lake Diamond Mine all have security currently held for air and wildlife monitoring. Note, a specific dollar value could not be assigned to Diavik's Air Quality Monitoring Program, as Diavik does not provide an estimate for air quality monitoring as a standalone item in RECLAIM. It is included in the line item "Performance monitoring (water, dust, wildlife, etc.)" and presumably in the "reporting" and "person, labour, equipment, logistics, etc" line items. These line items have a unit cost of \$250,000 and \$100,000 per year and an overall total cost of \$6,237,680 respectively. The air quality and meteorological cost for Snap Lake is \$117,000 per year during interim care and maintenance and final reclamation and then drops to \$34,000 per year during post-closure period.

As outlined in the table, average yearly air monitoring costs at the other diamond mines range from \$30,000 to \$117,000 while average yearly wildlife monitoring costs range from \$20,000 to \$120,000. It is anticipated that monitoring costs for these items at Gahcho Kue mine site would fall somewhere in this range.

Table 1. Security held for Ekati, Diavik and Snap Lake diamond mines for air and wildlife monitoring.

	Ekati¹	Diavik²	Snap Lake³
Air Quality Monitoring Program	\$30,000/year	Not defined	\$34,000 to \$117,000/year
Wildlife Effects Monitoring Program	\$120,000/year	\$50,000/year	\$20,000/year

¹ [Misery UG Security – WLWB Determination – July 12 18](#)

² Appendix VII of the Diavik Closure and Reclamation Plan – WRSA – Version 1.2 – [Expected Cost of Closure and Reclamation](#)

³ [Security Estimate RECLAIM Report v.3, Table A.9](#) – June 4, 2018, estimates accepted in the [MVLWB's change to schedule 2](#) on

Given the uncertainty that exists regarding the scope and timing of this monitoring at Gahcho Kue, GNWT-ENR would be willing to work with De Beers on the scope of activities and the costs associated with them if, to be consistent with other operations, the Board chooses to include such costs in the Gahcho Kue estimate. Should De Beers provide any site-specific monitoring details to the Board in the future, GNWT-ENR could review the plans and prepare a site-specific estimate for air and wildlife monitoring for Gahcho Kue mine.

Regarding the Board's inquiry to which phase of the schedule these amounts should be added, GNWT-ENR notes that the intent of securities held with the Minister of GNWT-ENR is to ensure environment liabilities at the site will be managed should the property come under the management of the GNWT. It is GNWT-ENR's understanding that air and wildlife monitoring programs are currently being conducted at the site, therefore, cost to undertake these monitoring programs in the case of insolvency represents an existing liability. Securities related to air and wildlife monitoring would be appropriately posted under the current phase.

2. Related to GNWT-ENR comment-3

- a) It is understood that consistency with other diamond mines operating in the NWT should be considered, however, there may be different circumstances at each site that should be considered before standardized grouping occurs. As such, please provide further rationale as to why the cost code, and associated unit costs, for the placement of cover on the fine processed kimberlite containment facility should be changed and increased from what De Beers has provided.

GNWT-ENR Response:

The RECLAIM model was developed as a tool to aid in the estimation of closure and reclamation costs at sites in the NWT. The format of the model, unit cost multiplied by quantity of units, is intended to be transparent, easy to use and easy to update.

The intent of setting and holding reclamation security for a site is that funds will be available to the GNWT to carry out the necessary reclamation work in the event that the owner of the site is unable to do so. In order to ensure that there will be sufficient funds available for the GNWT to conduct such work, the unit costs in the model should reflect expected costs to the greatest extent possible. Unit costs in RECLAIM are reviewed as part of regular updates to the model, but can also be modified in between updates when revised costs for such work undertaken by government becomes available, or, site-specific unit costs are derived by a licensee based on site specific activities and information (i.e. in third party dollars).

Unit costs related to constructing covers were developed for the Ekati site. In the Ekati 2015 Closure and Reclamation Progress Report, Dominion Diamond Ekati ULC (Dominion) provided a relatively detailed description of the level of effort required to re-mine waste rock from the northeast portion of the Panda/Koala waste rock storage area (WRSA) for construction of the Pigeon pad. The following points summarize some of the aspects relevant to this IR:

- The recovery of the granite extended south into the main pile in two areas representing depths of ~ 13 m and 8 m. Dominion considered the recovery areas and the depths of excavations representative of what would be required for obtaining granite in reclamation.
- A total of 3,055,282 tonnes were recovered.
- In general, recovery of materials consisted of drilling and blasting materials that are either well-bonded with fine grained materials, or frozen water. For materials that were not well bonded, a combination of dozing and excavating granite materials were used.
- The overall distribution of well bonded versus not well bonded material within the pile was variable in nature and did not seem to be influenced by the recovery depth or location. This variability is reflected in the level of effort required. For example, in 2014 a total of 58% of the tonnage was drilled and blasted and at the end of 2015 the values had decreased to 37%.
- Recovery occurred consistently from May until mid-November 2014 and March until November 2015. Recovery operations during winter did not occur due to a lack of equipment and resource schedule, not as a result of winter conditions in the pile.
- In the summer months, where possible, excavated faces of well-bonded materials were exposed to sunlight to promote thawing.

Based on this information, and some further refinements to the costs, the unit costs approved for Dominion's security estimate were subsequently approved by the WLWB for the Diavik mine. Although the GNWT-ENR recognizes that there may be some differences between sites, and for different areas within a site (e.g. flat vs. sloped, haul distance, trafficability, etc.), GNWT-ENR recommends using these updated costs at Gahcho Kue where the proposed reclamation activities are substantially the same as those at the Ekati and Diavik sites.

GNWT-ENR notes the following:

- The quantities re-mined from the Panda/Koala WRSA are nearly the same as those estimated by De Beers as required for capping the FPK containment facility and coarse PK pile so direct comparisons can be made.
- Though possible to excavate waste rock from the active layer only, as described in De Beers' response, this was not what occurred at Ekati and may not be operationally desirable or practical for a number of reasons. Dominion also notes that the overall distribution of well bonded versus not well bonded material within the pile was variable.
- Waste rock will not only be frozen in portions, it will have been compacted with heavy equipment.

However, as is the case for any mine estimate, if De Beers can provide site-specific and detailed information on rock removal and placement that differ significantly from activities and conditions experienced at Ekati, GNWT-ENR and its retained consultant would review that information and adjust its position and costs, where it was determined necessary.

- b) Provide further rationale as to why this recommendation is related to only the fine processed kimberlite containment facility, and not to any of the other areas of the mine site that required mine rock for cover that used the same cost code and unit costs; including the coarse processed kimberlite pile, the landfill, or other associated areas of the mine site (i.e. concrete foundations).

GNWT-ENR Response:

When applying unit costs, the same unit cost should be used for activities that are substantially the same. In this instance, the GNWT-ENR's recommendation was directed only at using re-mined waste rock to cover the fine processed kimberlite facility. This was an unintentional oversight on the part of the GNWT-ENR. Should rock cover construction be required for other mine components using mine rock from rock piles, GNWT-ENR recommends that the updated unit cost be applied. One exception may be the landfill where De Beers' security estimate includes a provision to both stockpile granular material, as well as placing the stockpiled material as landfill embankments and cover. In such case, the provisions in De Beers' security estimate for covering the landfill would be considered more appropriate.

In closing, should the MVLWB or De Beers wish to discuss or require clarification on any of the above responses, feel free to contact Mr. Rick Walbourne, Acting Manager, Water Regulatory at (867) 767-9234 ext. 53113 or Rick.Walbourne@gov.nt.ca or the undersigned at Patrick.Clancy@gov.nt.ca. GNWT-ENR would be happy to meet and discuss.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Clancy', written in a cursive style.

Patrick Clancy
Environmental Regulatory Analyst
Environmental Assessment and Monitoring Section
Conservation, Assessment and Monitoring Division
Department of Environment and Natural Resources
Government of the Northwest Territories

Appendix B - Closure Cost Estimate for Air Quality Monitoring at the Gahcho Kué Mine

Activity	Year	Closure Year	Air Quality Monitoring Cost	Air Quality Monitoring Activities
Active Reclamation	1	2030	\$50,000	Monitoring of total suspended particulate (TSP), fine Particulate Matter (PM _{2.5}), and Nitrogen Dioxide (NO ₂).
Active Reclamation	2	2031	\$50,000	Monitoring of total suspended particulate (TSP), fine Particulate Matter (PM _{2.5}), and Nitrogen Dioxide (NO ₂).
Post-Closure	3	2032	\$10,000	Particulate monitoring.
Post-Closure	4	2033	\$10,000	Particulate monitoring.
Post-Closure	5	2034	\$10,000	Particulate monitoring.
Post-Closure	6	2035	\$10,000	Particulate monitoring.
Post-Closure	7	2036	\$10,000	Particulate monitoring.
Post-Closure	8	2037	\$10,000	Particulate monitoring.
Post-Closure	9	2038	\$10,000	Particulate monitoring.
Post-Closure	10	2039	\$10,000	Particulate monitoring.
Post-Closure	11	2040	\$10,000	Particulate monitoring.
Post-Closure	12	2041	\$10,000	Particulate monitoring.
Post-Closure	13	2042	\$10,000	Particulate monitoring.
Post-Closure	14	2043	\$10,000	Particulate monitoring.
Post-Closure	15	2044	\$10,000	Particulate monitoring.
Post-Closure	16	2045	\$10,000	Particulate monitoring.
Post-Closure	17	2046	\$10,000	Particulate monitoring.
Post-Closure	18	2047	\$10,000	Particulate monitoring.
Post-Closure	19	2048		
Post-Closure	20	2049		
Post-Closure	21	2050		
Post-Closure	22	2051		
Active Reclamation Costs		Year 1 & 2	\$100,000	
Post-Closure Costs		Years 3-22	\$160,000	
Total Costs			\$260,000	
Average Cost/Year			\$11,818.18	

Appendix C - Closure Cost Estimate for Wildlife Monitoring at the Gahcho Kué Mine

Activity	Year	Closure Year	Wildlife Monitoring Cost	Wildlife Monitoring Activities
Active Reclamation	1	2030	\$160,200	<p>Access road monitoring as per the road access monitoring plan. \$15,000.</p> <p>Raptor work. Raptor work is scheduled for every five years in the current WEMP. \$25,000.</p> <p>Wildlife sightings logs, site surveillance monitoring, wildlife incidents management, and workforce training on wildlife management. This will require one environmental technician position at an hourly rate of \$36 for 1950 hours. \$70,200.</p> <p>Caribou behaviour monitoring near and far from the road. \$50,000.</p>
Active Reclamation	2	2031	\$235,200	<p>Caribou zone of influence (ZOI) monitoring. The ZOI Technical Group's ZOI Guidance Document recommends a ZOI estimate during changes in mining phases. \$100,000.</p> <p>Access road monitoring as per the road access monitoring plan. \$15,000.</p> <p>Wildlife sightings logs, site surveillance monitoring, wildlife incidents management, and workforce training on wildlife management. This will require one environmental technician position at an hourly rate of \$36 for 1950 hours. \$70,200.</p> <p>Caribou behaviour monitoring near and far from the road. \$50,000.</p>
Post-Closure	3	2032	\$106,950	<p>Set up camera study. Roughly estimated at 50 cameras (\$1,125/camera, which includes a 25% mark up for repairs and replacements, plus \$8,000 for batteries for cameras over the life of the project) and one week of helicopter (\$8,000/day) and staff time (\$36/hour) of two environmental technicians.</p> <p>This assumes a camera study would be done for three years post active reclamation and then every three years during post-closure. Other forms of wildlife monitoring could be considered but given the lack of post-closure wildlife planning to date a camera survey was used as a placeholder.</p>
Post-Closure	4	2033	\$27,080	<p>Camera study. Requires two staff and two days of helicopter time to exchange the SD cards (estimated at \$17,080 for two days) and data processing costs of \$10,000 for the data from previous year. \$27,080.</p>
Post-Closure	5	2034	\$52,080	<p>Camera study. Requires two staff and two days of helicopter time to exchange the SD cards (estimated at \$17,080 for two days) and data processing costs of \$10,000 for the data from the previous year. \$27,080.</p> <p>Raptor work. Raptor work is scheduled for every five years in the current WEMP. \$25,000.</p>
Post-Closure	6	2035	\$27,080	<p>Retrieval of HD cards for the camera study. Requires staff and helicopter time to collect the SD cards (estimated at \$17,080 for two days) and data processing costs of \$10,000 for the previous year. \$27,080</p>

Activity	Year	Closure Year	Wildlife Monitoring Cost	Wildlife Monitoring Activities
Post-Closure	7	2036	\$100,000	Caribou zone of influence (ZOI) monitoring. The ZOI Technical Group's ZOI Guidance Document recommends a ZOI estimate during changes in mining phases. \$100,000.
Post-Closure	8	2037	\$17,080	Camera study. Requires two staff and two days of helicopter time to install the SD cards. \$17,080.
Post-Closure	9	2038	\$27,080	Retrieval of HD cards for the camera study. Requires staff and helicopter time to collect the SD cards (estimated at \$17,080 for two days) and data processing costs of \$10,000 for the previous year. \$27,080.
Post-Closure	10	2039	\$25,000	Raptor work. Raptor work is scheduled for every five years in the current WEMP. \$25,000.
Post-Closure	11	2040	\$17,080	Camera study. Requires two staff and two days of helicopter time to install the SD cards. \$17,080.
Post-Closure	12	2041	\$27,080	Retrieval of HD cards for the camera study. Requires staff and helicopter time to collect the SD cards (estimated at \$17,080 for two days) and data processing costs of \$10,000 for the previous year. \$27,080.
Post-Closure	13	2042		
Post-Closure	14	2043	\$17,080	Camera study. Requires two staff and two days of helicopter time to install the SD cards. \$17,080.
Post-Closure	15	2044	\$27,080	Retrieval of HD cards for the camera study. Requires staff and helicopter time to collect the SD cards (estimated at \$17,080 for two days) and data processing costs of \$10,000 for the previous year. \$27,080.
Post-Closure	16	2045		
Post-Closure	17	2046	\$17,080	Camera study. Requires two staff and two days of helicopter time to install the SD cards. \$17,080.
Post-Closure	18	2047	\$27,080	Retrieval of HD cards for the camera study. Requires staff and helicopter time to collect the SD cards (estimated at \$17,080 for two days) and data processing costs of \$10,000 for the previous year. \$27,080.
Post-Closure	19	2048		
Post-Closure	20	2049	\$25,000	Raptor work. Raptor work is scheduled for every five years in the current WEMP. \$25,000.
Post-Closure	21	2050	\$17,080	Camera study. Requires two staff and two days of helicopter time to install the SD cards. \$17,080.
Post-Closure	22	2051	\$67,880	Retrieval of HD cards for the camera study. Requires staff and helicopter time to retrieve the cameras (assume this is done as part of the on-site surveys done in the same year) and data processing costs of \$10,000 for the previous year. \$10,000. One week of on-site in-person sign surveys and wildlife monitoring. Helicopter time for five days plus two days of staff time for two environmental technicians. \$42,880. Access road monitoring as per the road access monitoring plan. \$15,000.
Active Reclamation Cost	Year 1 & 2		\$395,400	
Post-Closure Cost	Years 3-22		\$624,790	
Total Costs			\$1,020,190	
Average Cost/Year			\$46,372	