SNAP LAKE MINE

Wildlife Management and Monitoring Plan Tier 2

December 2021

REVISIONS HISTORY

Version	Date	Notes/Revisions
1	19 March 2021	No previous versions.
1.1	2 December 2021	Updated to address requirements and recommendations from public review

EXECUTIVE SUMMARY

The Snap Lake Mine (Mine) is a diamond mine owned and operated by De Beers Canada Inc. (De Beers) and is located approximately 220 kilometres (km) northeast of Yellowknife, NWT. A Wildlife Management Plan (WMP; De Beers 2008a) and Wildlife Effects Monitoring Program (WEMP; De Beers 2004) were developed and implemented as required under the Snap Lake Land Use Permit and Environmental Agreement.

An update to the WEMP was approved in 2013, following a review of wildlife monitoring results at the Mine, and at other diamond mines in the region. This review was undertaken jointly with the Government of the Northwest Territories, the Snap Lake Environmental Monitoring Agency, other monitoring agencies, and community organizations in 2009, 2010, and 2011.

The 2013 update involved the following changes to the WEMP:

- removal of aerial surveys for barren ground caribou (*Rangifer tarandus groenlandicus*) during the northern migration, annual raptor nest use and productivity surveys, and wolf den use surveys in the study area;
- modification to the caribou aerial survey design to assess a zone of influence (ZOI);
- replacement of surveys for bear sign with a regional hair snagging program to monitor grizzly bears (*Ursus arctos*) and black bears (*Ursus americanus*);
- replacement of wolverine (*Gulo gulo*) surveys for snow tracks with a regional hair snagging program;
- the addition of systematic surveys of wildlife interactions within the site, waste management areas, and the winter access road; and
- the addition of action levels to guide adaptive management for habitat loss and direct Mine-related wildlife mortality.

In February 2019 De Beers submitted to the Government of the Northwest Territories (GNWT), a revised Wildlife Effects Monitoring Program to (De Beers 2019a) to address all wildlife monitoring and management requirements under the Environmental Agreement. The 2019 WEMP was aligned with the Final Closure and Reclamation Plan and water licence renewal package and described all future wildlife monitoring at Snap Lake. Review comments from the GNWT were not provided specifically on the WEMP, although the GNWT did participate in the public review of the water licence and Final Closure and Reclamation Plan and other associated management plans.

In August 2019 the GNWT issued a new guidance document for wildlife management plans (GNWT-ENR 2019a) to meet requirements of the *NWT Wildlife Act*. The Snap Lake water licence renewal process was completed in the spring of 2020 with the issuance of the new licence in May 2020. The GNWT then issued a directive letter to De Beers in September 2020 instructing De Beers that a new Tier 2 Wildlife Management and Monitoring Plan (WMMP) for Snap Lake would be required to meet compliance with the *NWT Wildlife Act*. The WMMP should align with the Final Closure and Reclamation Plan.

This Snap Lake WMMP was prepared in accordance with the GNWT Wildlife Management and Monitoring Plan (WMMP) Process and Content Guidelines (GNWT-ENR 2019a), and the September 18, 2020 letter to De Beers from the GNWT. The caribou behaviour, grizzly bear hair snagging, and wolverine hair snagging programs were removed from the WMMP, as an outcome of a diamond mine wildlife monitoring meeting in February 2021 (GNWT-ENR 2021). There has been limited behaviour monitoring data available for Snap Lake during operations, and all parties were given the opportunity to review and provide feedback on the proposed wildlife monitoring program within the review process of this WMMP.

Since 2015, production at the Mine have ceased, with only seasonal care and maintenance activities continuing and planning for closure activities to start in 2022. Wildlife mitigation and monitoring will be adjusted and adapted to align with the changes in intensity and frequency of planned site activities associated with closure and post-closure. The WMMP includes the following changes:

- systematic wildlife surveys to occur during periods that staff are on site;
- remote camera monitoring during periods with no staff on site;
- replacement of aerial surveys with collared caribou for ZOI monitoring; and
- no contributions to regional monitoring (per Tier 2 WMMP guideline requirements).

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ACRONYMS AND ABBREVIATIONS

AQEMMP	Air Quality Emissions Management and Monitoring Plan
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
De Beers	De Beers Canada Inc.
DNA	deoxyribonucleic acid
EAR	Environmental Assessment Report
ELC	ecological landscape classification
EMS	Environmental Management System
ENR	(Department of) Environment and Natural Resources
FCRP	Final Closure and Reclamation Plan
GIS	Geographical Information System
GNWT	Government of Northwest Territories
GPS	global positioning system
Mine	Snap Lake Mine
MVEIRB	Mackenzie Valley Environmental Impact Review Board
NWT	Northwest Territories
QA/QC	quality assurance/quality control
RSA	regional study area
SARA	*Species at Risk Act*
SARC	Species at Risk Committee
SGP	Slave Geographical Province
SLEMA	Snap Lake Environmental Monitoring Agency
VECs	valued ecosystem components
WEMP	Wildlife Effects Monitoring Program
WWHPP	Wildlife and Wildlife Habitat Protection Plan
WMP	Wildlife Management Plan
WMMP	Wildlife Management and Monitoring Plan
ZOI	zone of influence

UNITS OF MEASURE

%	percent
±	plus or minus
ha	hectare
km	kilometre
km/hr	kilometres per hour
km^2	square kilometre
m	metre

1. INTRODUCTION

1.1 Background

De Beers Canada Inc. (De Beers) owns and operates the Snap Lake Mine (Mine). An Environmental Assessment Report (EAR) for the proposed underground Mine (De Beers 2002a) was completed and submitted to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) in February 2002. Following the EAR review process, the MVEIRB recommended that the Mine proceed subject to the implementation of measures to mitigate environmental impacts (MVEIRB 2003). Final regulatory approvals for construction and operation of the Mine were granted in May 2004, and construction began in April 2005. Mining began in 2007 and ceased in December of 2015. Activities at the Mine shifted from operation to care and maintenance in 2015 and the Mine is presently in extended care and maintenance. In December of 2017 notification was provided that De Beers intends to close the Mine. Following the successful installation of remote monitoring instrumentation at site, De Beers transitioned to zero occupancy in the winter of 2018/2019. A Final Closure and Reclamation plan (FCRP) and water licence renewal package was submitted to the Mackenzie Valley Land and Water Board (MVLWB) in March 2019. The MVLWB issued their recommendation for approval of the Snap Lake water licence in March 2020 and the licence was issued in May 2020. Several management plans, including the FCRP were resubmitted in March 2021 (De Beers 2021a).

A Tier 2 Wildlife Management and Monitoring Plan (WMMP) is required for the Mine under the Environmental Agreement and the *Northwest Territories* (*NWT*) *Wildlife Act*. A WMMP was initially developed in 2004 as the Wildlife Effects Monitoring Program (WEMP) and subsequently in 2008 as the Wildlife Management Plan (WMP) (De Beers 2008a). Since that time a number of changes to wildlife monitoring have occurred following discussions with the Government of the Northwest Territories (GNWT), Snap Lake Environmental Monitoring Agency (SLEMA), Independent Environmental Monitoring Agency, Environmental Monitoring Advisory Board, and community organizations (Marshall 2009; Handley 2010). In 2013, the GNWT issued guidelines (GNWT-ENR 2013a) for developing a Wildlife and Wildlife Habitat Protection Plan (WWHPP) and WEMP, with a different focus between the two plans. The WWHPP was meant to focus on site mitigation and monitoring and the WEMP was meant to focus on off-site (or regional) monitoring. In August 2019, the GNWT issued a new guidance document for wildlife management plans (GNWT-ENR 2019a) to meet requirements of the *NWT Wildlife Act*. The WMMP presented here was developed from the existing WWHPP and WEMP and updated to align with the Wildlife Management and Monitoring Plan (WMMP) Process and Content Guidelines (GNWT-ENR 2019a). It combines both on-site and off-site requirements reflected in the most recent versions of the WWHPP and WEMP documents (De Beers 2013a,b), aligns with direction from the new guidance documents (GNWT-ENR 2019a) and the updated FCRP (De Beers 2021a), and importantly, reflects changes from operation, to care and maintenance, to closure and post-closure.

During closure the Mine site will be occupied by staff full-time until completion or seasonally depending on operational scheduling of closure activities and then unoccupied during post-closure, except when periodic post-closure monitoring is required. There will be occasions during closure when the Mine site will be unoccupied during winter months. Activities associated with the closure of the Mine that may cause disturbance to wildlife includes construction of a cover over the North Pile, decommissioning, demolition, and removal of surface facilities, grading and recontouring slopes, and soil preparation and revegetation

(De Beers 2021a). These activities will require the use of heavy machinery and human presence, and will occur throughout the closure period, which is expected to last three to four years. Post-closure monitoring will continue for at least five years after closure. Residual effects related to wildlife movement, distribution, and abundance in the regional study area (as described in the EAR [De Beers 2002a]) during the closure phase were predicted to have a low to negligible magnitude (De Beers 2021a). This WMMP is intended to cover wildlife monitoring activities at the Mine during closure and post-closure (i.e., decommissioning / demolition, reclamation, and monitoring), with the level of monitoring (e.g., component type, intensity, frequency, and duration) commensurate with the level of activities and number and capacity of staff on site. The WMMP includes a Caribou Protection Plan (Section 3.2) which addresses Measure R13 of the MVEIRB's Report on the Environmental Assessment for the Snap Lake Project (MVEIRB 2003).

Changes in Regional Monitoring Components of the WMMP

In 2009 and 2010, the Department of Environment and Natural Resources (ENR), GNWT hosted a workshop with representatives from the Diavik, Ekati, and Snap Lake diamond mines, their monitoring agencies, and community organizations (Marshall 2009; Handley 2010). The workshop included a review of existing wildlife monitoring programs at these mines and recommendations for changes. The consensus of the attendees at the workshop was that an alternate study design was needed for grizzly bear (*Ursus arctos*) monitoring. Further, attendees concluded that surveys of caribou (*Rangifer tarandus groenlandicus)* during the northern migration, raptor nests, and wolf (*Canis lupus*) dens added little value because the data from these programs were ineffective at assessing mine-related effects. Instead, it was recommended that the mines contribute in-kind data from wolf den and raptor nest surveys to ENR and the National Peregrine Falcon Recovery Program, respectively. Contributions to those programs were made during operation of the Snap Lake Mine and discontinued during care and maintenance (i.e., since 2015). Analysis of long-term raptor nest survey data found no evidence for a strong linkage between the Mine and nest occupancy or success during the years when the program was conducted at Snap Lake (De Beers 2008b) or at Ekati and Diavik (Coulton et al. 2013).

An additional workshop on grizzly bear monitoring was hosted by ENR in November 2011, at which time a regional hair snagging program supported by De Beers, BHP Billiton Canada Inc. (Ekati), and Rio Tinto Canada Inc. (Diavik) was proposed (Rescan 2012). The purpose of this proposed grizzly bear monitoring program, which integrates the findings and recommendations from the 2011 workshop, was to provide ENR with regional-scale demographic information and population trends for grizzly bear that would support cumulative effects assessment. This program was implemented in 2013 and 2014 and supported by De Beers. Similarly, a wolverine (*Gulo gulo*) hair snagging program was implemented at the Mine in 2013 and 2014 to provide demographic and population trend information and support cumulative effects assessment but also to support the assessment of wolverine as a species at risk in the NWT.

In April 2018, ENR hosted a diamond mine wildlife monitoring meeting in Yellowknife. De Beers attended this workshop along with other representatives from industry, Indigenous communities, government agencies, academia, and environmental consultants. The results of the regional grizzly bear monitoring (Jessen 2017) and vegetation monitoring work supported by De Beers to elucidate the relationships between grizzly bear populations and phenology of tundra plants (Diepstraten et al. 2018) were presented by Dr. Marco Musiani of the University of Calgary. These studies related back to an objective identified at the 2010 wildlife workshops (Handley 2010) to determine if Mine-related activities influenced the relative abundance and distribution of grizzly bears in the study area over time. Infrequent, and limited Mine-related

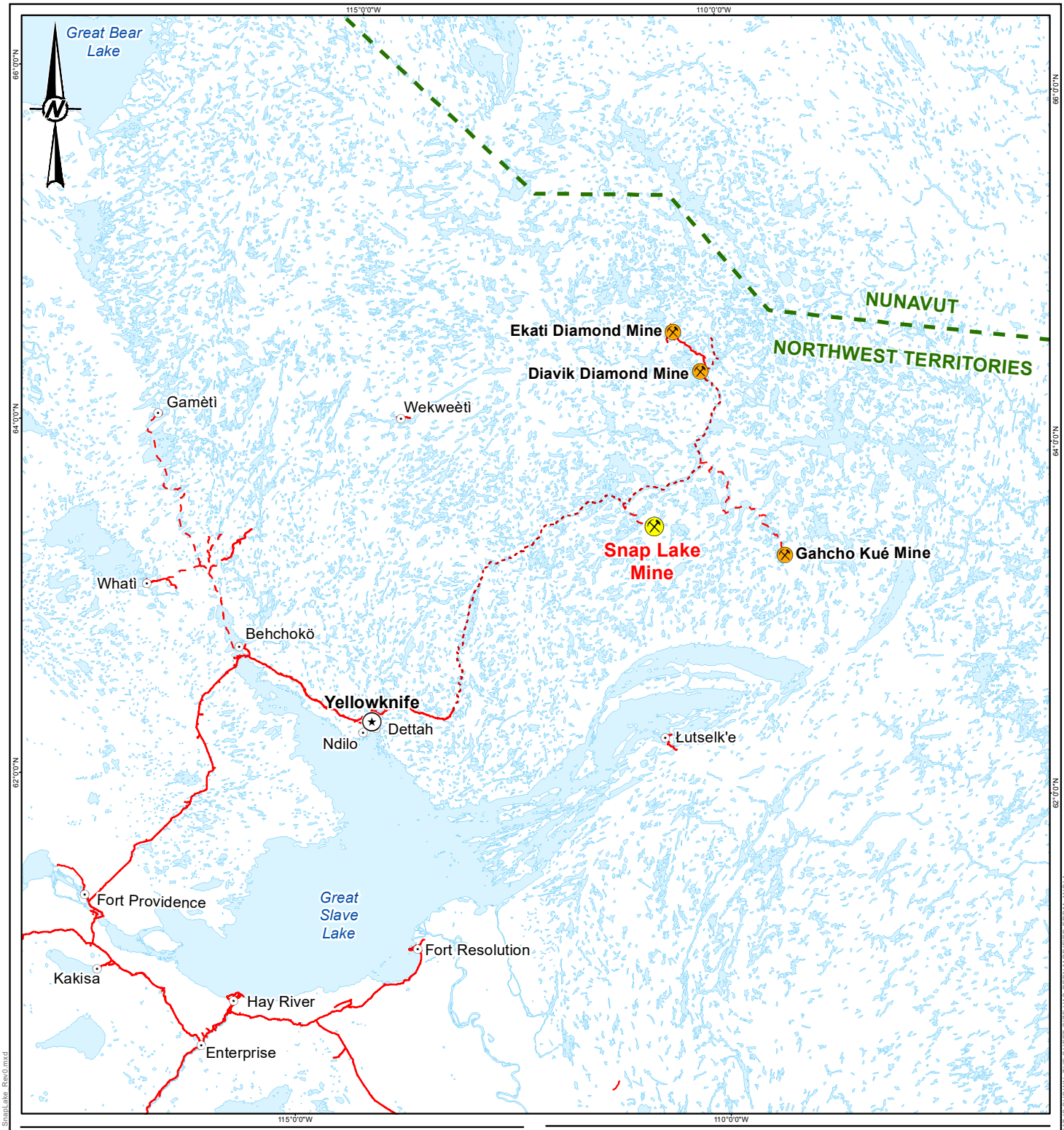
mortalities of grizzly bear and wolverine were found to have a negligible influence on regional populations, which have been relatively stable over time (Jessen 2017; Efford and Boulanger 2018).

Activity levels at the Mine have declined substantially since operation ended (December 4, 2015) and the site has been under care and maintenance. Populations of grizzly bear (ERM 2018) and wolverine (Efford and Boulanger 2018) are stable in NWT; neither wolverine or grizzly bear are protected under the *NWT Species at Risk Act* but both have been assessed as 'Sensitive' (Working Group on General Status of NWT Species 2016). Participation in grizzly bear and wolverine hair snagging programs is no longer required at the Mine based on the objectives for a Tier 2 WMMP (GNWT-ENR 2019a). Wildlife monitoring for the Mine has been modified to align with planned activities during closure and post-closure to protect grizzly bear, wolverine and other wildlife from adverse effects that might occur due to the increase in the presence of people on site, particularly during the two-year decommissioning/demolition period of closure.

1.2 Study Area

The Mine is located approximately 220 kilometres (km) northeast of Yellowknife, Northwest Territories (NWT), 30 km south of MacKay Lake, and 100 km south of Lac de Gras where the Diavik Diamond Mine and the Ekati Diamond Mine are located (Figure 1-1). The WMMP study area is defined by a circle with a radius of 31 km, centred on the Mine site (Figure 1-2), and is identical to the regional study area (RSA) used in the EAR (De Beers 2002a). The size and shape of the study area were chosen so that the area remained within the Taiga-Shield Ecozone. The scale of the study area is also ecologically relevant with respect to determining the distribution of habitat types available to wildlife species during their seasonal and annual movements. The study area encompasses Camsell Lake and the southern portion of MacKay Lake, which are important historical migratory routes for the Bathurst caribou herd (Weledeh Yellowknives Dene 1997; Lutsel K'e Dene First Nation 2001).

The study area primarily consists of heath tundra/boulder habitat interspersed with lakes (Figure 1-2). The habitat in the study area is naturally divided along a line approximately through the centre in a northeast to southwest direction. Heath tundra/bedrock and heath tundra/boulder associations dominate the southeastern half of the study area while the northwestern half largely consists of heath tundra, heath tundra/boulder, and spruce forest stands. Vegetation also includes sedges and grasses, and heath mat with low shrubs such as dwarf birch, willow, Labrador tea, crowberry, bog cranberry, and bearberry. Eskers are found throughout the study area. The Mine site and location of infrastructure are shown in Figure 1-3.



LEGEND

- Snap Lake Mine
- Existing Mine
- Territorial Capital
- Populated Place
- All Weather Road
- Tibbit-to-Contwoyto Winter Road
- Winter Road
- Territorial/Provincial Boundary
- Watercourse
- Waterbody

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REFERENCES

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CLIENT

DE BEERS GROUP

PROJECT

SNAP LAKE MINE

TITLE

LOCATION OF SNAP LAKE MINE

CONSULTANT

GOLDER

YYYY-MM-DD	2020-10-30
DESIGNED	C. GRAY
PREPARED	L. STUART
REVIEWED	D. COULTON
APPROVED	D. COULTON

PROJECT NO.	PHASE	REV.	FIGURE
19127683	9300	0	1-1

PATH: I:\CLIENTS\DE BEERS\Snap Lake\Mapping\MXD\WMP 2020\Fig. 1-1 Location of SnapLake Rev0.mxd

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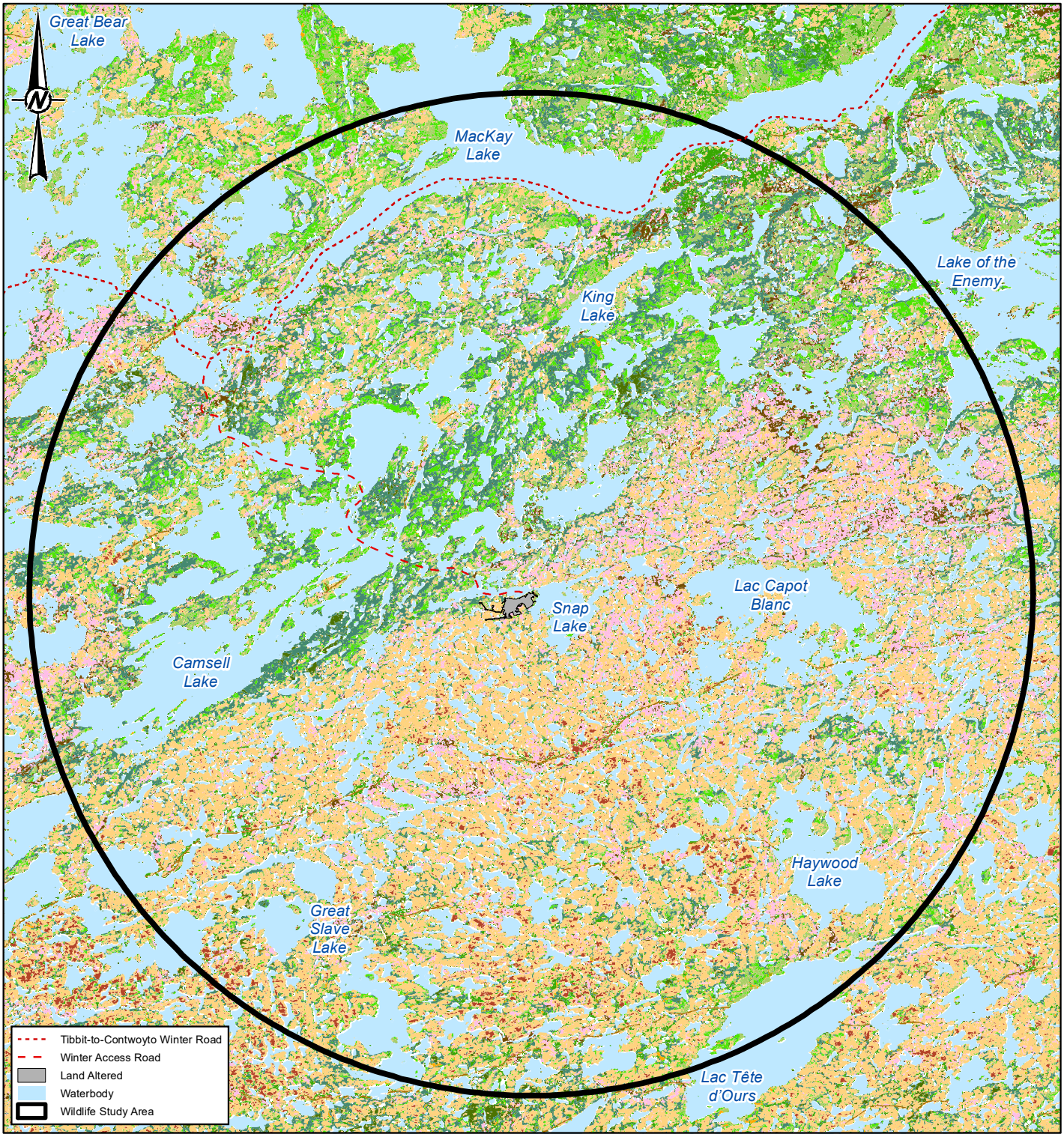

LEGEND

Ecological Landscape Classification

- Bedrock Boulder
- Closed Spruce Forest
- Esker Complex
- Heath Bedrock
- Heath Boulder
- Heath Tundra
- Lichen Veneer
- Mixed Forest
- Open Spruce Forest
- Riparian Tall Shrub
- Sedge Wetland
- Tussock Hummock

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REFERENCES

Landcover TM Land cover classification conducted by Golder Associates Ltd. Base Data Source: The Atlas of Canada and CanVec obtained from Geogratis, © Department of Natural Resources Canada. All rights reserved. Datum: NAD 83 Projection: UTM Zone 12

CLIENT

DE BEERS GROUP

PROJECT

SNAP LAKE MINE

TITLE

WILDLIFE MANAGEMENT AND MONITORING PLAN STUDY AREA

CONSULTANT

GOLDER

YYYY-MM-DD	2020-10-30
DESIGNED	D. COULTON
PREPARED	L. STUART
REVIEWED	D. COULTON
APPROVED	D. COULTON

PROJECT NO.	PHASE	REV.	FIGURE
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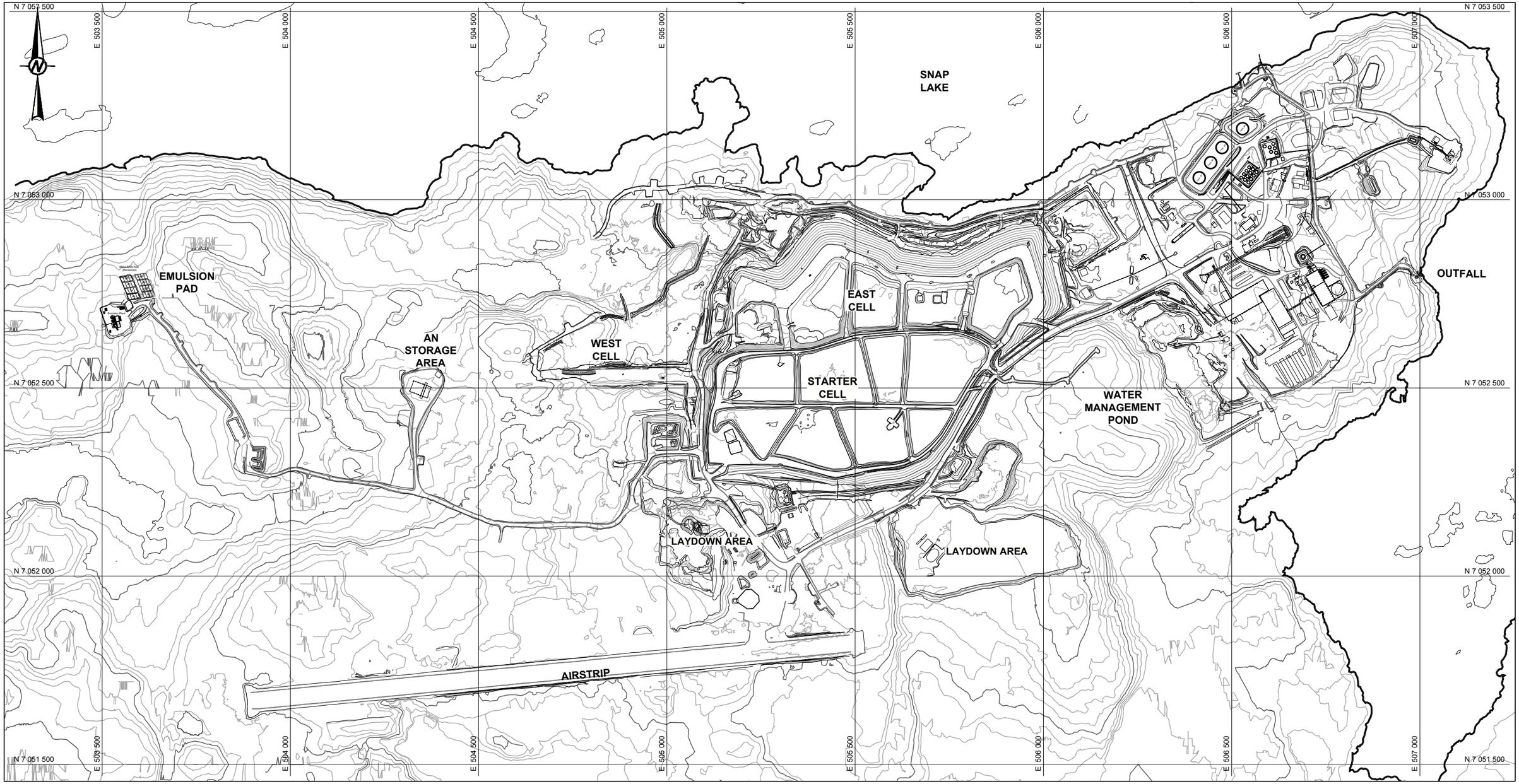

NOTES

1. Grid is displayed in Transverse Mercator, Datum : NAD83,
2. Coordinate system : UTM zone 12.
3. Project site infrastructure is shown for information purposes only.

REFERENCE

August 2019 contours and infrastructure provided by De Beers, file name: "statmap august 14, 2019 incl contours.dwg", received: December 02, 2019.

CLIENT

De Beers
Group of Companies

CONSULTANT

GOLDER

YYYY-MM-DD	2021-03-19
PREPARED	J. FARAH
DESIGN	D. COULTON
REVIEW	D. COULTON
APPROVED	C. GRAY

PROJECT
SNAP LAKE MINE

TITLE
SNAP LAKE MINE SITE INFRASTRUCTURE

PROJECT No.	PHASE/TASK	Rev.	FIGURE
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1.3 Purpose

The principal purpose of the updated WMMP is to comply with relevant Articles in the Environmental Agreement (i.e., Articles VII and VIII), related corporate commitments, and legislative and regulatory requirements such as the *NWT Wildlife Act* and *Species at Risk Act* (Appendix A). The intent of this document is to describe the monitoring components, objectives, methods, frequency, analyses, and reporting requirements to meet the associated relevant Articles and regulatory requirements. To comply with the relevant terms and conditions stated in the Land Use Permit and Environmental Agreement, and to provide an updated plan fit for closure and post-closure, De Beers has designed the WMMP on the following objectives:

- test the impact predictions made in the EAR;
- implement, through the Environmental Management System (EMS; De Beers 2002b), operational practices that mitigate disturbance to wildlife and wildlife habitat, including migratory and non-migratory birds and their nesting areas, species at risk, and caribou;
- determine the effectiveness of mitigation implemented through the EMS;
- incorporate available Traditional Knowledge;
- establish action levels or triggers for early warning signs to implement adaptive management and mitigation where appropriate;
- provide opportunities for the involvement and active participation by communities in the implementation of the WMMP;
- develop and review the WMMP in collaboration with the GNWT and the SLEMA; and
- contribute to monitoring the progress of closure objectives of the FCRP (Appendix C; De Beers 2021a).

1.4 Valued Ecosystem Components

Several indicators or valued ecosystem components (VECs) will be measured to test predicted effects, evaluate the performance of the EMS, and determine unanticipated effects on wildlife and wildlife habitat. These VECs were selected because of their ecological, cultural, and economic importance, and potential sensitivity to Mine-related stressors. The following VECs are monitored by De Beers under the existing WEMP (De Beers 2013a, b):

- vegetation and associated wildlife habitat;
- caribou;
- grizzly bear; and
- wolverine (*Gulo gulo*).

Grizzly bear and wolverine were included as VECs in the WEMP and were monitored though regional hair-snagging programs in collaboration with GNWT-ENR and the other diamond mines in the Lac de Gras area. Discontinuation of these programs was determined at a diamond mine wildlife monitoring meeting in February 2021 (GNWT-ENR 2021). Subsequently, grizzly bear and wolverine are not included as VECs in

the effects monitoring component of the WMMP, but remain a priority for protection and mitigation at the Mine site.

During closure and post-closure, De Beers will continue to monitor these VECs and other wildlife through the on-site programs. Additional off-site monitoring is planned for caribou.

1.5 Species of Concern

The intent of the federal *Species at Risk Act* (*SARA*) and the *Species at Risk (NWT) Act* is to prevent wildlife species from becoming extirpated or extinct, to provide for the recovery of extirpated, endangered or threatened species, and to manage species of special concern to prevent them from becoming at further risk. This legislation may be used to prohibit the killing, harming, or harassing of listed species, the damage and destruction of their residences, and the destruction of critical habitat. The *Species at Risk (NWT) Act* applies only to birds not already covered by the *Migratory Birds Convention Act*. In the NWT, the Species at Risk Committee will assess species, and the Conference of Management Authorities will prepare the List of Species at Risk, providing legal protection.

For the purposes of the WMMP, species may be considered of concern as a result of their national or territorial status, or their status under the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (GNWT-ENR 2019a). As the *Species at Risk (NWT) Act* is implemented, the NWT Species at Risk Committee will make further assessments, and the Conference of Management Authorities will prepare the List of Species at Risk, providing legal protection for these species, and possibly leading to changes in the species at risk considered for the Mine and the WMMP.

There are currently eleven species of concern that may interact with the Mine (Table 1-1). All but lesser yellowlegs (*Tringa flavipes*) were observed in the RSA between 1999 to 2019 (De Beers 2021b). Some of these species may occur year-round in the study area (grizzly bear, wolverine), while others (barren-ground caribou and migratory birds) may interact with the Mine on a seasonal basis. The breeding season represents the most vulnerable or sensitive period for most species. The breeding season for raptors is typically April to July (GNWT-ENR 2019b), and for migratory birds is mid-May to mid-September (ECCC 2018). Pre-calving, calving and post-calving periods are the most sensitive times for caribou, which occurs between May to August. There are no caribou calving grounds near the Mine or in the RSA.

Table 1-1: Species of Concern for the Snap Lake Mine, Potential Effects, and Related Monitoring Components in the Wildlife Management and Monitoring Program

Species	NWT General Status Ranking[a]	*Species at Risk (NWT) Act*[b]	COSEWIC Assessment[c]	*Federal Species at Risk Act*[d]	Potential Mine Effects	Components of the WMMP
Bank swallow (*Riparia Riparia*)	At risk	No Status	Threatened	Schedule 1 - Threatened	• may nest on sand/ gravel mounds or aggregate quarries associated with the Mine • may be affected by habitat loss	Areas with suitable habitat will be contoured to have slopes < 70 degrees for stability
Barn swallow (*Hirundo rustica*)	Sensitive	No Status	Special Concern	Threatened (under consideration for addition to Schedule 1)	• may nest on Mine infrastructure • may be affected by habitat loss	Habitat loss Site monitoring (particularly for nesting activity)
Barren-ground caribou	At risk	Threatened	Threatened	Under consideration for addition	• may be affected by habitat loss • may be sensitive to disturbance and human activity • risk of harm or mortality	Habitat loss Site monitoring Sensory disturbance monitoring
Grizzly bear (western population)	Sensitive	No Status	Special Concern	Schedule 1 - Special Concern	• may be attracted to developments if food is available resulting in injury/mortality risk • sensitive to disturbance particularly when accompanied by young or during denning • long generation time means one individual may be affected by disturbance seasonally over multiple years, resulting in potential regional population effects	Habitat loss Site monitoring
Harris's sparrow (*Zonotrichia querula*)	Undetermined	No Status	Special Concern	Under consideration	• may be sensitive to noise and disturbance from human activities • may be affected by habitat loss	Habitat loss Site monitoring (particularly for nesting activity)

Table 1-1: Species of Concern for the Snap Lake Mine, Potential Effects, and Related Monitoring Components in the Wildlife Management and Monitoring Program

Species	NWT General Status Ranking[a]	*Species at Risk (NWT) Act*[b]	COSEWIC Assessment[c]	*Federal Species at Risk Act*[d]	Potential Mine Effects	Components of the WMMP
Lesser yellowlegs	Sensitive	No Status	Threatened	No status	• Waterbirds that use mine-altered water may be harmed • May be affected by loss of breeding habitat	Habitat loss Site monitoring
Peregrine falcon (*anatum-tundrius complex*)	Sensitive	No Status	Not at Risk	Special Concern (under consideration for addition to Schedule 1)	• falcons have been known to nest on Mine infrastructure where they may be at risk of harm or may cause delays in Mine activities	Habitat loss Site monitoring (particularly for nesting activity)
Red-necked phalarope (*Pharlaropus lobatus*)	Sensitive	No Status	Special Concern	Schedule 1 – special concern	• Waterbirds that use mine-altered water may be harmed • May be affected by loss of breeding habitat	Habitat loss Site monitoring
Rusty blackbird (*Euphagus carolinus*)	Sensitive	No Status	Special Concern	Schedule 1 - Special Concern	• may nest on Mine infrastructure (risk of mortality)	Habitat loss Site monitoring (particularly for nesting activity)
Short-eared Owl (*Asio flammeus*)	Sensitive	No Status	Special Concern	Schedule 1 - Special Concern	• may be affected by habitat loss • sensitive to noise and disturbance and human activity during nesting	Habitat loss Site monitoring (particularly for nesting activity)
Wolverine (western population)	Sensitive	No status	Special Concern	Special Concern	• may be attracted to developments if food or shelter are available resulting in injury/mortality risk	Habitat loss Site monitoring

a) Working Group on General Status of NWT Species 2016. Ranking levels, from highest to lowest conservation concern, is: at risk, may be at risk, sensitive, secure, undetermined.
b) NWT SARC 2021.
c) Government of Canada 2021.
d) *Species at Risk Act* 2002.
COSEWIC = Committee on the Status of Endangered Wildlife in Canada; WMMP = Wildlife Management and Monitoring Plan.

1.6 Measures from Environmental Review

In the report from the MVEIRB on the environmental assessment for the Mine (MVEIRB 2003), five wildlife-related measures were recommended to De Beers for the proposed Mine to proceed (Table 1-2).

Table 1-2: Wildlife-related Measures from the Mackenzie Valley Environmental Impact Review Board's Report on the Environmental Assessment for the Snap Lake Project

Measure (MVEIRB 2003)	Snap Lake Mine Outcome	WMMP Section
(S21) De Beers should design a project-specific monitoring protocol to test for behaviourally induced habitat avoidance effects as a result of the project, and include this in an Adaptive Management Plan. There is a need to develop scientifically sound research projects to address this issue and to examine the relationship between project activities and a reduction in habitat effectiveness. This protocol should apply to grizzly bear, wolverine and caribou and should be developed in consultation with the GNWT and Traditional Knowledge holders.	A Wildlife Effects Monitoring Program (WEMP) was developed in 2004 (De Beers 2004), and has evolved over time. Previous WEMP monitoring for grizzly bear and wolverine related to measuring changes in habitat and habitat effectiveness (suitability) were discontinued in 2021. Caribou ZOI monitoring is ongoing. Previous iterations of the WEMP and Wildlife Management Plan (WMP; De Beers 2008a) and this current WMMP reflect consultation with the GNWT and the Snap Lake Environmental Monitoring Agency (SLEMA), which included individuals from Indigenous communities.	3.2
(R13) De Beers shall, in consultation with the GNWT, develop a Caribou Protection Plan that imposes increasingly stringent mitigation measures as the number of animals potentially exposed to disturbance from the site increases. This plan could be modeled on the caribou protection measures included as terms and conditions of land use permits by Indigenous and Northern Affairs Canada in the past.	Mitigation and monitoring to protect caribou was incorporated into the WMMP. Examples include the reporting requirement by site staff when caribou are seen, limiting snow berms to 1.6 m in height to allow crossing, giving caribou the right of way on roads, and deterring caribou from site hazards (e.g., airstrip; OP 194).	3.2, 4.0
(R14) De Beers shall, in consultation with the GNWT, develop a monitoring program to test the predictions of the EAR for grizzly bears, wolverines, and caribou and to further the scientific understanding of behavioural responses of these species to Mine-related disturbance.	Grizzly bear, wolverine, and caribou behaviour monitoring was included in previous iterations of the WEMP (De Beers 2004). Grizzly bear and wolverine behaviour were monitored indirectly through habitat use and snow track surveys, respectively; monitoring has been discontinued in 2021. Caribou behaviour was monitored through aerial surveys and ground-based scanning observations, and is continued through ZOI monitoring. The WMMP incorporates the WEMP (De Beers 2004) and the WMP (De Beers 2008a), and has been developed in consultation with the GNWT and SLEMA.	1.9
(R17) De Beers shall, in consultation with the GNWT, develop a comprehensive waste and odour management strategy to minimize the attraction of carnivores to the site. The strategy must identify and describe details of design features, operational measures, employee/contractor staff awareness and training, for handling of food, food waste and other wastes throughout the mine site and specifically for the incinerator, landfill site, kitchens, camps and personnel quarters.	A Domestic Waste Management Plan (De Beers 2006) was developed for the Snap Lake Mine. This plan included strategies, design features, and policies and procedures to manage odours such as training on waste segregation and limiting access to food waste by wildlife. The most recent Waste Management Plan was completed in 2021 (De Beers 2021c). The WMMP includes mitigation of waste and odours, and operational measures such as staff environmental awareness training and waste segregation.	2.2.1

Table 1-2: Wildlife-related Measures from the Mackenzie Valley Environmental Impact Review Board's Report on the Environmental Assessment for the Snap Lake Project

Measure (MVEIRB 2003)	Snap Lake Mine Outcome	WMMP Section
(R18) De Beers shall, in consultation with the GNWT, develop a comprehensive on-site Wildlife Management Plan that limits the attractiveness of the mine site to carnivores and includes protocols for dealing with on-site wildlife encounters. The requirement for the on-site wildlife management plan shall be incorporated into the proposed Environmental Agreement.	The WMP (De Beers 2008a) includes mitigation for limiting attractiveness to the Mine site by carnivores (and gulls/ravens), primarily implemented through the Waste Management Plan (De Beers 2006). The most recent Waste Management Plan was completed in 2021 (De Beers 2021c). The revised WMMP also included protocols for dealing with wildlife encounters at site.	2.2.1

In addition to measures from the environmental assessment review process, the Mine developed this WMMP to comply with legislation, regulations, and De Beers' Environmental Agreement with the Government of Canada for the Snap Lake Mine. A table demonstrating concordance of the WMMP with legislation, regulations, and the Environmental Agreement is provided in Appendix A.

1.7 Engagement

De Beers has been, and continues to be, committed to engaging with Indigenous groups, communities, and regulators throughout the life of the Mine. This includes communications and outreach activities in relation to planning, construction, operation, and care and maintenance activities conducted to date, and closure of the Mine (e.g., site visits, community visits, workshops on closure, public review processes). Engagement on the WMMP will follow the approach outlined in the Snap Lake Mine Engagement Plan (De Beers 2019b). The Engagement Plan is based on the guidance identified in the MVLWB Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits. It also conforms to De Beers' Sustainable Development Policy and Guidelines for working with Aboriginal Communities. As noted in the MVLWB Engagement Guidelines, the Snap Lake Mine Engagement Plan describes how De Beers will continue to work with affected parties and parties of interest throughout the life of the Mine.

De Beers' approach to engagement is guided by the following values:

- Respect for each party's unique history, knowledge, perspective, and culture is the foundation of a positive relationship. Careful listening, understanding of communication protocols, and following through on commitments made are important ways of practicing respect.
- Timeliness in providing adequate time for communities to evaluate and respond.
- Trust between parties is recognized as vital to the success of engagement activities. Building trust requires a long-term commitment to the relationship and to following through on commitments. Engaging parties before, during, and after each stage or aspect of Mine development helps to build and maintain trust.
- Transparency, including complete disclosure of information in a plain-language and understandable manner in multiple accessible formats, demonstrating a willingness to address issues as they arise, and adjust perspectives and practices as additional information is provided. Openness, sincerity, and honesty are core values necessary to genuine engagement.

- An ongoing process that allows for feedback and fosters lasting and meaningful relationships.
- Responsiveness such that communication leads to meaningful changes and/or feedback regarding perspectives or practices.

As activities at the Mine change over the years, De Beers continues to regularly update stakeholders and affected parties and seek their input at key decision points. Engagement will take place during forums including:

- SLEMA;
- Snap Lake Working Group;
- Community Meetings;
- Workshops; and
- Site Visits.

The Mine is now entering the closure and post-closure phase and De Beers will continue to work closely with stakeholders and affected parties during this time. Monitoring during closure and post-closure, including the participation of SLEMA representatives, was discussed at length throughout the planning and regulatory review of the FCRP. The FCRP describes how SLEMA will participate in site inspections to provide input into the achievement of most of the site wide objectives (SW1, SW3, SW4, SW5, SW6, SW7) in addition to many of the component specific objectives (UG2, I1, I3). Many of these objectives address wildlife specifically and it is envisioned that SLEMA will provide input regarding the effectiveness of closure activities in achieving closure objectives as it relates to wildlife. Engagement on the WMMP will also take place as part of the annual reporting process, which has occurred throughout operation.

In addition, De Beers will seek to hire Indigenous personnel when opportunities arise within the Environment Department and will encourage sub-contractors to do the same. Community Wildlife Monitors will be included in the field programs as required to ensure safe implementation of programs on the land and inclusion of Indigenous personnel in the monitoring of the closure and reclamation of Snap Lake Mine. The role of the Community Wildlife Monitors is to provide feedback as to how well current mitigations are performing to reduce effects to wildlife and to identify further actions as necessary. They will also assist De Beers in ensuring that the mitigation and monitoring activities are acceptable to communities and to provide knowledge to help understand and minimize Mine effects.

1.8 Mitigation

The environmental design features and mitigation policies, practices, and procedures that the Mine has implemented to avoid and minimize or limit effects to wildlife and wildlife habitat are collectively referred to as mitigation. The WMMP includes a large number of mitigation actions implemented on a hierarchy of intensity (action) levels and spatial and temporal scales to protect wildlife and wildlife habitat. Standard mitigation hierarchy includes the following (IFC 2012; BBOP 2015):

- Avoid: actions taken to completely avoid creating effects from the outset, such as careful spatial or temporal placement of elements of infrastructure and engineered designs of facilities (e.g., infrastructure placement can avoid disturbing areas with rare plants or uncommon and sensitive wildlife habitat).

- Minimize: actions taken to reduce the duration, intensity and/or spatial extent of effects that cannot be avoided.
- Reclaim: actions taken to rehabilitate degraded ecosystems or restore ecological function following exposure to on-site effects that cannot be completely avoided and/or minimized (e.g., revegetated areas).
- Offset: measures taken to compensate for any residual significant, adverse effects that cannot be avoided, minimized and/or rehabilitated or restored. Offsets are achieved once compensation is sufficient that the outcome is no net loss or a net gain for the feature (e.g., VEC) for which compensation was developed. Offsets can take the form of positive management interventions, such as off-site restoration of degraded habitat, arrested degradation or averted risk, and protecting areas where there is imminent or projected loss.

Adverse effects from a project should be mitigated as much as possible using avoidance, followed by minimization, and reclamation. This is because effects that are avoided entirely or minimized mean that the effects from a development prior to implementing reclamation are reduced.

The Snap Lake Mine uses mitigation that avoids, minimizes, and reclaims adverse effects associated with environmental risks or effects pathways. The results of the EAR (De Beers 2002a) and Review Panel (MVEIRB 2003) for the Mine concluded that there were no significant residual effects to wildlife and wildlife habitat, so offsetting is not required. The Bathurst Caribou Range Plan (GNWT-ENR 2019c) suggests that financial and in-kind contributions to science and Traditional Knowledge research and monitoring (guardianship programs) are a form of offsetting even though this form of compensation cannot be demonstrated to result in no net loss or a net gain. De Beers has made financial contributions in the past to support science and Traditional Knowledge research and monitoring. For example, the Mine has made financial contributions to the GNWT's caribou collaring program that has supported increases in the number of collars deployed and deployment of high resolution geo-fenced collars, which will better inform management and the ecology of caribou. The Mine has contributed to DNA hair snagging studies for grizzly bear and wolverine that provide demographic information and have informed species at risk assessments by the NWT Species at Risk Committee (NWT SARC 2014, 2017), and cumulative effects assessments and management by the GNWT. The Mine has completed zone of influence (ZOI) monitoring and analysis, which does not inform on Mine mitigation but contributes to understanding cumulative effects to caribou (De Beers 2008b; Boulanger et al. 2012) and partly addresses Measure S21 of the Report of EA (MVEIRB 2003). Monitoring results during closure and post-closure of the Mine will also fill an information gap about effects to wildlife during decommissioning/demolition, reclamation, and post-closure activities. De Beers will continue to explore opportunities to contribute to science and research in the future.

A primary direct effect from Mine development is the small observed loss of vegetation communities and associated wildlife habitat. Mitigation for loss of wildlife habitat consists of reclamation activities in accordance with the Final Revegetation Plan (De Beers 2020a) and the FCRP (De Beers 2021a). Reclamation is expected reduce/replace the amount of disturbed vegetation and wildlife habitat over the long term during and beyond post-closure.

Incidents are considered direct effects and include any wildlife interaction at the Mine site that requires a response by Mine personnel, which may range from simple deterrent actions to the injury or death of an animal. Mitigation are outlined in Section 2.2. Incidents and mortalities will be reported to GNWT-ENR and

ECCC contacts listed below. Contact information will be reviewed periodically to make certain that appropriate contacts are reached directly and to reduce potential delays in receiving advice.

- GNWT-ENR: 1-867-873-7181 (Yellowknife)
- ECCC CWS: cwsnorth-scfnord@ec.gc.ca
- ECCC Wildlife Enforcement: dalfnord—wednorth@ec.gc.ca.

Mitigation actions implemented at the Snap Lake Mine during construction and operation (as outlined in the previous WMP and WWHPP), will continue where appropriate into the closure and post-closure periods. Mitigations to reduce the potential for Mine-related wildlife incidents and mortalities are outlined in Section 2.2.1.

Sensory disturbances such as the presence of people, smells, lights, noise and dust may alter the suitability of wildlife habitat indirectly even when wildlife habitat has not been physically disturbed. The WMMP includes several mitigation actions implemented on a hierarchy of intensity (action) levels and spatial and temporal scales to protect wildlife and wildlife habitat (Section 4). Mitigations implemented at the Mine previously during construction and operation will continue to be implemented during closure and post-closure to reduce the potential for Mine-related sensory disturbances and are outlined in Section 3.1.1. Additional mitigations specific to protecting caribou are provided in Section 3.2.1.

1.9 Monitoring of Mine EAR Predicted Effects

The Snap Lake EAR predicted there would be low impacts on direct habitat loss, direct mortality, and changes to movement and behaviour of all wildlife VECs during construction and operation (De Beers 2002a). In 2012, a comprehensive analysis of environmental effects from 1999 to 2012 was conducted which demonstrated the EAR predictions were valid. It is anticipated that effects from closure activity will be of similar magnitude (low) as predicted for construction.

Monitoring of Mine-related direct effects will include the following components:

- change in direct loss of vegetation communities associated with the Mine footprint as a result of reclamation; and
- site observations of wildlife and Mine-related incidents.

De Beers is not expecting additional loss of vegetation during closure and post-closure. During the operations phase, the direct loss of vegetation from the Mine footprint was monitored to quantitatively measure the direct effects. Monitoring through operations already indicates that loss of vegetation has been less than predicted in the EAR. Vegetation monitoring will continue into the closure and post-closure phases to monitor the progression / success of reclamation.

Monitoring of sensory disturbance to wildlife in the recent versions of the monitoring program (i.e., WEMP and WMP) was focused on caribou and included two components:

- whether the caribou ZOI changes in relation to Mine activity; and
- whether caribou behaviour changes with distance from the Mine.

The sensory disturbance programs for caribou were seldom implemented due to insufficient numbers of caribou in proximity to Mine. Caribou populations have dramatically declined in the region over the past two decades. De Beers will use collared caribou data instead of aerial surveys for ZOI monitoring (Section 3.2.3).

De Beers continues to support the gathering of Traditional Knowledge and application of Traditional Knowledge to the monitoring and mitigation of the Mine. The primary mechanism for this is continued support of the SLEMA and its Traditional Knowledge Panel. De Beers also adheres to the Engagement Plan for informing and receiving input from the Aboriginal Parties.

Closure of the Mine represents a change in the activity at the Mine site where the focus is on decommissioning infrastructure, rehabilitating disturbed areas, and implementing engineering plans for Mine Components that are to remain permanently, in accordance with the FCRP (De Beers 2021a). The overarching goal of the FCRP is to return the site, and affected areas around the Mine, to technically viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities. Activities associated with closure will involve the use of heavy machinery and equipment and human presence similar to the Mine construction phase. However, the intensity, frequency and duration of these activities and number of people on site will vary during closure and post-closure. De Beers will implement the WMMP during the closure and post-closure phase of the Mine with the level of monitoring (e.g., component type, intensity, frequency, and duration) commensurate with the level of activities and number and capacity of staff on site.

The WMMP has been organized to generally follow the guidelines for compliance with the *NWT Wildlife Act* (GNWT-ENR 2019a). The Snap Lake WMMP contains the criteria for a Tier 2 WMMP in accordance with GNWT guidelines (GNWT-ENR 2019a) and the Mine entering the closure phase. Each component of the WMMP includes the following sections:

- an introduction that links Mine activities as described in the EAR and potential effects on wildlife;
- a summary of the mitigation measures to minimize impacts to wildlife and wildlife habitat;
- a description of the monitoring objective(s);
- a description of the biological indicators (measured parameters) that will be used to assess the accuracy of effects predictions, identify unexpected effects, and evaluate the effectiveness of mitigation measures for the Mine;
- a description of the sampling program, field protocols, analytical techniques, and quality assurance/quality control (QA/QC) procedures;
- a description of the format for the WMMP Annual Report, and how the report should be used to periodically evaluate and adjust the components included in the WMMP; and
- an update to the program for closure and post-closure.

1.10 Related Mine Plans and Documents

The WMMP is part of a series of monitoring plans and programs that have been created in compliance with various licenses and agreements, to verify the accuracy of potential effects, and to determine the effectiveness of mitigation. Other monitoring plans, programs, licenses, and agreements that are related to the WMMP include:

- Environmental Agreement;
- Land Use Permit;
- Air Quality Emissions Management and Monitoring Plan (AQEMMP) (De Beers 2019c);
- Engagement Plan (De Beers 2019b);
- FCRP (De Beers 2021a);
- Final Revegetation Plan (De Beers 2020a);
- Spill Contingency Plan (De Beers 2020b);
- Vegetation Monitoring Program (De Beers 2019d);
- Waste Management Plan (De Beers 2021c); and
- Explosives Management Plan (De Beers 2021d).

Although the WMMP is a stand-alone plan, when regulatory requirements of management plans disagree, De Beers will engage with the regulatory agencies to determine the appropriate solution.

Appendix B contains the internal operating procedures that describe Mine site policy and practices that support mitigation and monitoring described in this plan. These documents may be updated periodically through lessons learned at other mines, adaptive management (Section 4) or engagement (Section 1.7). As such, periodic changes to internal operating procedures will not be circulated for public review. These documents will be provided when an updated plan is scheduled for approval by the GNWT-ENR.

2. MITIGATION AND MONITORING OF DIRECT EFFECTS

This section of the WMMP considers direct, physical effects to wildlife habitat from the Mine, such as removal, alteration, and reclamation of vegetation communities, which can alter wildlife movement, abundance, and distribution. Other direct effects include Mine-related injury or mortality to animals. Direct effects are used to evaluate mitigation of the Mine site and activities and apply to all wildlife, not just VECs. Monitoring components of direct effects include:

- vegetation loss;
- site wildlife monitoring and incidents; and
- wildlife effects associated with the winter access road.

2.1 Vegetation Loss

Disturbance to vegetation and associated wildlife habitat was expected to occur directly from the construction of Mine infrastructure. Each wildlife species has specific habitat requirements that are necessary for finding food, shelter (from predators and weather), and a suitable place for raising young. For example, barren-ground grizzly bears select home ranges that include more esker, tussock/hummock, birch seep, and riparian tall shrub areas relative to other habitat types (McLoughlin et al. 2002). Alternately, caribou prefer heath tundra relative to other habitats during the northern migration but exhibit greater use of sedge wetlands and tussock/hummock habitats during the post-calving migration (BHP Billiton 2004; Johnson et al. 2005).

The summary of cumulative annual predicted habitat loss for each Ecological Landscape Classification (ELC) unit is provided in the EAR (De Beers 2002a). At full development, the Mine was predicted to disturb 219 hectares (ha) of soil and vegetation based on 2.4 metres (m) resolution land cover data from 2002 (De Beers 2018). This area includes the core Mine area, airstrip, and the North Pile, as well as the esker quarry, the esker access road (a temporary winter road), and the winter access road from the Tibbitt-to-Contwoyto winter road to the Mine site. Natural areas used for Mine facilities were assumed to be effectively lost to wildlife for the duration of the Mine life and for several decades after closure, until natural vegetation becomes re-established. The area used in the EAR predictions was a conservative estimate; physically altered areas will be reclaimed throughout closure to reduce and restore the extent of disturbed habitat.

Most of this loss occurred during the first year of construction. During operation, the extent of terrestrial disturbance was 192.4 ha, which is 23.9 ha less than predicted.

2.1.1 Mitigation Measures

Adverse effects to vegetation associated with closure and post-closure are expected to be minimal. Decommissioning/demolition of Mine facilities and infrastructure and reclamation/revegetation are anticipated to result in positive changes to vegetation communities and create functional wildlife habitat. Reclamation is designed to encourage a natural succession, ingress, of native plant species on priority areas within the Mine site (i.e., physical footprint). Where appropriate, grading and contouring will be done

to promote soil stability and revegetation. Where rock slopes or other site features preclude revegetation, materials such as capping rock may be used to provide long-term stability.

Mitigation measures to limit vegetation loss during construction and operation of the Mine included the following:

- kept the Mine footprint within the area authorized by the Land Use Permit;
- promoted natural revegetation and practiced progressive reclamation; and
- implement the FCRP for the Mine (De Beers 2021a).

During the closure and post-closure period, mitigation measures related to vegetation is to implement the Final Revegetation Plan for the Mine (De Beers 2020a).

2.1.2 Monitoring Objective

This component of the WMMP has the following objective:

- To determine if the amount of direct habitat loss is greater than 219 ha as predicted in the EAR (De Beers 2002a).

Monitoring for habitat change with respect to reclamation and revegetation is primarily completed through the Vegetation Monitoring Program (De Beers 2019d). Wildlife use of reclaimed and revegetated areas will be monitored through systematic site visits to record signs of wildlife activity (e.g., nests, tracks, and scat). Records of incidental wildlife observations during times of site occupancy will also be used to monitor wildlife use of reclaimed and revegetated areas (Section 2.2.4).

2.1.3 Study Area

The study area for this component of the WMMP includes the Mine site.

2.1.4 Field Methods

Monitoring the direct effects of the development on wildlife habitat will focus on the cumulative area of ELC units (vegetation types) altered. Included in this cumulative total will be both the area of ELC units altered due to previous Mine development, and the area of successfully reclaimed and revegetated ELC units (Vegetation Monitoring Program (De Beers 2019d) and FCRP (De Beers 2021a). Changes to ELC units will be estimated using ground surveys, satellite imagery, and Geographical Information System (GIS) analysis.

2.1.4.1 Frequency

The cumulative loss of ELC units (wildlife habitat) will be measured immediately before closure activities. In accordance with the Final Revegetation Plan (De Beers 2020a), once revegetation and reclamation are complete, the reclamation sample plots will be monitored annually for the first five years. If after five years the closure criteria are not achieved, the reclamation plots will be monitored on a five-year interval until the closure criteria are achieved. The frequency of reclamation monitoring is subject to change depending on the results, trends, and regulatory requirements. Information on the change in the ELC unit area required

for the analysis of cumulative changes in wildlife habitat will be obtained from the Vegetation Monitoring Program (De Beers 2019d).

2.1.4.2 Parameters

Parameters are the area of the Mine footprint, ELC units, and reclaimed habitats as defined by the Vegetation Monitoring Program (De Beers 2019d). Indicators of wildlife use of reclaimed and revegetated areas are animal observations, animal signs (tracks, scat, feeding areas), upland breeding bird nests, raptor nests and mammal dens and burrows.

2.1.5 Data Analyses

Analyses will be completed in a GIS platform to compare the predicted and observed cumulative area of ELC units altered due to Mine activities, including revegetated areas and reclaimed ELC units. Qualitative and quantitative (depending on the amount of data obtained) analyses will also be performed to identify long-term trends in wildlife use of revegetated and reclaimed areas.

2.2 Wildlife Incidents and Mortalities

Mine-related activities can result in wildlife incidents such as wildlife interactions with the Mine site or staff that require action such as the use of deterrents, or result in property damage, injury or death of wildlife. For example, raptors (falcons, hawks, and owls) and other bird species are known to nest on buildings and other site infrastructure within mining areas (BHP Billiton 2003, 2011; DDMI 2010), which can be dangerous to the birds if not mitigated; the peregrine falcon (Section 1.5) has been observed to nest adjacent to mine sites and in open pits. Food garbage, oil products, and shelter opportunities can attract wildlife and increase the risk of adverse animal-human interactions, and vehicle or aircraft collisions with wildlife. Injury or mortality from vehicles, aircraft or the consumption of toxic material from spills can also occur for animals passing through the Mine site. However, effective waste management, wildlife safety, the Spill Contingency Plan (De Beers 2020b), and employee education mitigate the risk of wildlife injury and mortality.

2.2.1 Mitigation Measures

Mitigation actions implemented at the Snap Lake Mine previously during construction and operation (i.e., WMP and WWHPP) will continue to be implemented in the closure and post-closure phases. Mitigations implemented at the Mine to reduce the potential for Mine-related wildlife incidents include:

- prohibit hunting, trapping, harvesting and fishing by employees and contractors;
- prohibit the personal use of recreational vehicles;
- zero tolerance toward harassment of wildlife;
- establish and enforce speed limits (maximum of 30 km/hr) on roads;
- wildlife will have the right-of-way on roads;
- reduced speed limits when caribou and other large wildlife are within 200 m of roads;

- when vehicles are stopped at night due to wildlife presence, bright headlights will be turned off, low beams or driving lights will remain on;
- warn drivers with signage and radio when wildlife are moving through an area;
- If demolition activities during the breeding season (May 4 to August 17) is required, pre-activity nest sweeps will be conducted by qualified personnel (Appendix B; EP-DOP-015, CL 117);
- conduct surveys for wildlife and raptor nest prior to commencing decommissioning/demolition and reclamation activities (Appendix B: EP-DOP-015, CL 117);
- unoccupied nests detected prior to closure activities will be reported to GNWT-ENR and/or ECCC to determine the appropriate course of action;
- prevent or discourage upland breeding birds and raptors from nesting on Mine infrastructure, man-made structures, and idle and stationary equipment by installing visual deterrents and/or noise makers (Appendix B: EP-DOP 015, CL 115);
- prevent or discourage bank swallow from establishing colonies on sites or features (e.g., stock piles or coarse processed kimberlite) by contouring slopes to less than 70 degrees;
- avoid destruction of active bird nests and inactive raptor nests. If an unoccupied raptor nest is detected on areas scheduled for demolition, it will be reported to ENR and a General Wildlife Permit will be required to authorize removal;
- a species-specific and disturbance-specific buffer zone (5 m to 100 m; ECCC 2019) will be used around active nests found at site, based on consultation with ECCC;
- When needed, wildlife deterrent actions will be performed by designated individuals (such as the environment staff or security staff) (Appendix B: EP-DOP 015, OP 193);
- provide training to on-site personnel about wildlife awareness and safety including the dangers of improper food waste disposal and feeding wildlife (De Beers 2021c);
- provide education and enforcement of proper waste management practices to all workers and visitors to the site (De Beers 2021c);
- implement waste management awareness programs (Appendix B: OP 014, CL 071) and follow procedures outlined in the Waste Management Plan (De Beers 2021c);
- continual improvement of the waste management program through adaptive management (De Beers 2021c);
- provide designated indoor areas for lunch and coffee breaks for staff working outdoors;
- separate food waste and non-food waste through the use of designated garbage cans;
- incinerate food waste and other attractants regularly to reduce holding time and odours;
- store food waste, fuel waste and other potential animal attractants inside buildings prior to incineration or transportation off-site for disposal;
- burn food waste and non-toxic combustible waste in oil-fired incinerators;

- ship hazardous material off site for recycling or disposal at an appropriate facility;
- inspect the landfill and cover it progressively;
- collect, sort, and place waste products that cannot be incinerated or deposited in the landfill in designated areas within the waste management and storage area until they can be shipped off-site;
- isolate and remove any chemical hazards to wildlife (i.e., Spill Contingency Plan; De Beers 2020b);
- designate and train a spill response team consisting of on-site personnel;
- provide spill containment supplies at fuel transfer and storage areas;
- immediately isolate, clean and report any spills;
- keep spill response equipment readily available and maintained;
- maintain vehicles and equipment;
- store fuel in double-walled containers or single-walled containers in lined containment areas;
- deter wildlife from hazardous areas (Appendix B: OP-194);
- staff are alerted to the presence of wildlife to protect work and wildlife safety (Appendix B: OP 006);
- record the presence of wildlife at site (Appendix B: OP 006, OP 014);
- contact GNWT-ENR to receive additional direction regarding new wildlife incident issues as they arise; and
- contact GNWT-ENR for approval to destroy problem wildlife (this will only be done as a last resort).

2.2.2 Monitoring Objectives

De Beers will monitor Mine-related interactions, injuries, or mortality (i.e., incidents) to all wildlife at the mine site during closure and post-closure. Observations of wildlife on and adjacent to the Mine site will also be recorded and reported in annual wildlife reports; systematic and incidental wildlife observations will be separated in reporting and analysis. The program is designed to provide regular reporting and to contribute to an understanding of the best practices that can be used to limit Mine-related incidents with wildlife. Site monitoring of wildlife incidents and mortalities will also inform on the progress of closure objectives in the FCRP (De Beers 2021a), such as SW3, SW4, SW6, NP2 and I2 associated with wildlife safety (Appendix C). However, the success indicators in the FCRP (De Beers 2021a) are not measured and determined from wildlife monitoring. For example, closure objective SW1 is that dust levels are safe for people, vegetation, aquatic life, and wildlife and achievement of this objective will be measured and determined from dust and vegetation monitoring for metals concentrations. Other closure objectives associated with stability of Mine Components (e.g., Mine Rock Piles) and wildlife safety will be determined from engineering designs and inspections (Appendix C; De Beers 2021a).

This component of the WMMP has the following objectives:

- monitor the number of Mine-related incidents with wildlife on site and the winter access road (Appendix B: OP-014; EP-DOP-001);

- record the presence of wildlife on and adjacent to the Mine site and winter access road (Appendix B: EP-DOP-001);
- protect wildlife from site hazards and closure activities;
- implement mitigation for bird nests that are located within the lease boundary where required;
- inform on waste management practices;
- describe the annual frequency of public use of the winter access road (Appendix B: EP-DOP-001);
- include community participation in closure monitoring programs; and
- contribute monitoring on the progress of closure objectives of the FCRP (Appendix C; De Beers 2021a).

2.2.3 Study Area

The study area for this component of the WMMP includes the Mine site and the winter access road.

2.2.4 Field Methods

2.2.4.1 Wildlife Incidents

An incident is defined as any wildlife interaction that requires a response by Mine personnel. This may include incidents which require simple deterrent actions (e.g., deterring caribou or muskox [*Ovibos moschatus*] off the airstrip) or more serious incidents, including wildlife mortality. Records will be kept of all wildlife incidents that occur or are discovered within the Mine site area (Appendix B). Incidents will be reported annually in the WMMP and as part of the EMS reporting (Section 6).

Observations of nesting activity on Mine infrastructure by bird species will be recorded, and decommissioning/demolition and reclamation activities in the area around the nest will be suspended until the nest is no longer active. De Beers will report the presence of active nests to the regulating authority of the species (i.e., ENR or Canadian Wildlife Service).

2.2.4.2 Monitoring of Wildlife Presence within the Mine Site

De Beers will record incidental observations of common, uncommon, rare or new species (i.e., species that have expanded their range to include the study area). As well, the *Species at Risk (NWT) Act*, which was implemented in February 2010, provides a list of wildlife and plant species targeted for conservation (GNWT-ENR 2012a). The WMMP may be expanded to include rare or new species depending on the frequency of observations and information from other resource users of the study area. The final decision to include rare or new species in the WMMP will be based on discussions with communities, SLEMA, and relevant government agencies.

Site surveillance monitoring during periods of Mine Site activity

The surface Mine Components described in the FCRP (De Beers 2021a) will be the focus of site monitoring activities to protect wildlife from decommissioning/demolition and reclamation activities (Appendix B: OP 014, EP-DOP-001, OP 006, CL 031). These include the North Pile and related Water Management System and Surface Infrastructure (e.g., airstrip, buildings, waste management areas), which will be surveyed once

prior to the commencement of decommissioning activities. Observers will record the location, survey time and duration, species observed, the number of animals, sex and age (if possible), approximate distance from site infrastructure, and global positioning system (GPS) coordinates. Observers will also record any other details that could be considered important (e.g., injured wildlife, wildlife consuming food waste). Systematic surveys will allow the number of incidents to be standardized and assessed for temporal trends.

In addition to recording evidence of wildlife use, inspections of waste management areas will also record the presence of wildlife attractants (e.g., food, food packaging) to determine the effectiveness of the waste management system (De Beers 2021c). Should the inspections find misdirected waste, wildlife attractants (food waste in particular), or should observations of wildlife, wildlife sign, or wildlife incidents point to problems in the waste management process, immediate corrective actions (e.g., remove misdirected waste, notify manager of the area, enhanced training) will be taken or delegated by Environment staff (Appendix B, CL 002, CL 071).

Remote camera monitoring during periods of Mine Site inactivity

During closure and post-closure when the site is unoccupied by staff and contractors, wildlife cameras will be placed at Mine Components areas identified in the FCRP (i.e., the North Pile and associated Water Management System, Infrastructure Areas [airstrip, buildings, waste management areas]). Approximately two cameras will be deployed at each surface infrastructure, resulting in a total of approximately 30 cameras (see figure in Appendix B, OP 201 for proposed general locations). Decisions around the precise location of cameras will be made at the time of installation by qualified personnel. Camera locations may be adjusted over time (Appendix B: OP 201).

Cameras will be used to monitor wildlife use of reclaimed areas and contribute to the progress of achieving closure objectives related to safe passage and use by wildlife. Cameras may record species presence in or moving through revegetated and reclaimed areas. Camera data can be used to support that the closure objectives have been met but cannot be relied on as the sole data source. For example, a “no detection” from camera monitoring does not mean that revegetated areas are unsuitable. Thus, information from wildlife monitoring is anticipated to provide a secondary line of evidence on reclamation success (Appendix C; De Beers 2021a). Camera use during periods of inactivity at site will be discontinued when post-closure monitoring for closure criteria, outlined in the FCRP (De Beers 2021a), is complete and indicates that the closure criteria for SW4 and SW6 are satisfied. Post-closure monitoring for SW4 and SW6 is currently scheduled to occur during years 1 to 5 of Post-closure (De Beers 2021a). Additional details about camera monitoring and proposed general locations are provided in Appendix B: OP 201.

Winter Access Road

De Beers will provide Mine-related traffic levels for the winter access road, likely by deploying a remote camera and/or traffic counter at the junction of the winter access road with the Tibbitt to Contwoyto Winter Road. Mine and private traffic use and wildlife occurrence along the winter access road will be recorded during years when the road is active and reported on in the annual WMMP reports (Section 6). Security staff will record evidence of traffic-wildlife collisions as part of regular monitoring for road maintenance, spills, and break-downs during years when the road is active. The GNWT-ENR maintains responsibility for monitoring and management of wildlife harvest.

2.2.5 Frequency

Incidental observations of wildlife will be collected by site personnel while on site during closure and post-closure. Staff visitations to the site during post-closure will be predominantly in the ice-free months and will be campaign-based. It is anticipated that for the first 5 years of post-closure there will be personnel on site temporarily for a number of days from May to September. These visits however are subject to change and are not necessarily focussed on wildlife.

Systematic surveys of the Mine site and winter access road will occur approximately once every two weeks when the site is occupied or the winter road is operational during closure. Survey effort will be largely consistent in all areas, however, situations may arise where staff need to prioritize effort and respond to emergencies (e.g., spills, bear on site) over completion of the survey.

When the site is unoccupied, remote cameras will be used for monitoring wildlife observations with the Mine site.

2.2.6 Parameters

Parameters include the number and location of recorded wildlife incidents, and observations from Mine site surveys and remote cameras. Parameters associated with waste management inspections will be the proportion of inspections where wildlife attractants, misdirected waste, and observations of wildlife sign are observed. For wildlife cameras, the number, type of species and frequency observed recorded in photos will be reported (Appendix B: OP-201). Recorded injuries and mortalities will also be reported. For the winter access road monitoring, the number of traffic-wildlife collisions, frequency of private traffic use and wildlife observed will be recorded.

2.2.7 Data Analyses

Data analyses will generally be limited to summary statistics. If there are sufficient data, then temporal trends may also be assessed. Analyses will also attempt to determine the cause of incidents and identify any further mitigation that would improve the effectiveness of mitigation measures.

3. MITIGATION AND MONITORING OF SENSORY DISTURBANCE TO WILDLIFE

Mining activity not only causes direct changes to habitat but can also disturb wildlife indirectly by influencing the quality of habitats adjacent to the physical footprint. The indirect effects of the Mine on wildlife habitat are typically associated with a decrease in habitat effectiveness or suitability. Fugitive dust, which could theoretically alter the palatability of forage or the growth of plants, and potentially the feeding behaviour of animals is addressed as part of the AQEMMP (De Beers 2019c) and the Vegetation Monitoring Program (De Beers 2019d).

The level of sensory disturbance during periods of closure are predicted to be similar to sensory disturbances during construction and less than during operation, when the Mine was active 24 hours a day with daily underground blasting and multiple haul truck traffic. . Sensory disturbances during closure will result from the presence of people and machinery required for decommissioning/demolition and reclamation of Mine facilities and infrastructure. Monitoring for sensory disturbance is focused on caribou and at areas beyond the Mine site. This type of monitoring will inform on the effects related to closure and post-closure (when staff are on site) activities.

3.1 Wildlife Protection

3.1.1 Mitigation Measures

Mitigations implemented at the Mine previously during construction and operation will continue to be implemented during closure and post-closure to reduce the potential for Mine-related sensory disturbance, and includes:

- manage fugitive dust (e.g., surface watering as required) in accordance with the AQEMMP (De Beers 2019c);
- use dust suppression strategies such as regular road watering, when required based on visual observations;
- enforce speed limits (30 km/hr) to reduce the production of dust and noise;
- reduced speed limits when caribou and other large wildlife are within 200 m of roads;
- maintain snow berms along the winter access road at heights of less than 1.6 m to not hinder wildlife movement;
- maintain a minimum flying altitude of 300 m above ground level (except during takeoff and landing) for cargo and passenger aircraft outside of the Mine site (see GWNT-ENR Flying Low brochure);
- prohibit recreational vehicle use by personnel.; and
- conduct a pre-blasting search for large mammals in the area within 1 km of the blasting site. Blasting will be delayed when large mammals are present within the search area.

3.1.2 Monitoring Objectives

De Beers will monitor sensory disturbances to wildlife during closure and post-closure. Dust is believed to cause sensory disturbance to some wildlife species and may cause them to avoid or reduce time spent in an otherwise suitable habitat. Closure activities at the Mine that will generate noise include aircraft, vehicles, generators and other equipment, and blasting. Localized and short duration blasting operations will follow the Explosives Management Plan (De Beers 2021d). Closure activities at the Mine that will generate dust include road decommissioning, blasting, and traffic. De Beers is committed to minimizing the amount of dust through mitigation listed in Section 3.1.1. However, dust cannot be completely controlled and is predicted to settle in the area near the Mine.

This component of the WMMP has the following objectives:

- Monitor the extent of dust emissions during closure and post-closure; and
- include community participation in closure monitoring programs.

3.1.3 Study Area

The study area for this component of the WMMP includes the Mine site and the winter access road.

3.1.4 Field Methods

Application of water or commercial dust suppression products to roads to reduce dust is the primary mechanism for limiting fugitive dust emissions and the magnitude and extent of deposition. Dust control will consider GNWT-ENR guidelines (GNWT-ENR 2013b).

3.1.5 Frequency

Water will be applied when drivers report that the road is dusty. Dustfall is monitored through the Vegetation Monitoring Program (De Beers 2019d).

3.1.6 Parameters

Parameters associated with dust emissions are identified in the Vegetation Monitoring Program.

3.1.7 Data Analyses

Data analyses will be included in reports for Vegetation Monitoring Program report.

3.2 Caribou Protection Plan

The Bathurst caribou herd is one of six barren-ground caribou herds in the NWT and was previously considered the only herd with an annual range that included the Mine study area. Information from satellite collared cows collected by ENR confirms that the Bathurst herd annual range overlaps with the Mine study area. Collar data also suggest that caribou from the Beverley and Ahiak herds may occasionally occur in the study area, based on their presence in the adjacent Lac de Gras region. The most recent population estimate for the Bathurst herd determined by ENR in June 2018 was 8,200 animals (GNWT-ENR 2020).

Both Traditional and scientific knowledge indicate that caribou herd size cycles relatively regularly with climate patterns (GNWT-ENR 2005, 2006; Bongelli et al. 2020). Caribou herds also exhibit periodic changes in seasonal migration routes and calving and winter ranges (Gunn et al. 1997; Gunn and D'Hont 2002; Boulanger et al. 2004; Bathurst Caribou Management Planning Committee 2004). A more recent analysis demonstrated changes in seasonal range attributes (e.g., area, location) with declining population size in the Bathurst herd (Virgl et al. 2017). Barren-ground caribou were listed as threatened by the NWT Species at Risk Committee on 11 July 2018 (NWT SAR 2018). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed barren-ground caribou in November 2016 as threatened (COSEWIC 2016). A Recovery Strategy for Barren-ground Caribou in the Northwest Territories was issued by the Conference of Management Authorities in 2020 (NWT CMA 2020).

In 2019, ENR developed a Bathurst Caribou Range Plan (GNWT-ENR 2019c), which proposes development limitations and hierarchical management actions for different areas in the Bathurst annual range. The Mine is located in Area 2 of the Bathurst Caribou Range Plan, which has a designated moderate development level and status of cautionary. The Mine is in compliance with recommended Management Tools described in the Bathurst Caribou Range Plan such as having a small site footprint (i.e., Habitat Conservation); the Mine has a total disturbed area of 194.9 ha (De Beers 2021b) and will decrease through closure activities. The objective for monitoring changes in caribou behaviour is based on recommendations from the Diamond Mine Wildlife Monitoring Workshop (Marshall 2009). The data collected could be provided to GNWT-ENR to further develop caribou behaviour and energetic models.

3.2.1 Mitigation Measures

In addition to the mitigation measures outlined in Sections 2.2.1 and 3.1.1, mitigations implemented at the Mine specific to caribou include:

- All sightings of caribou will be reported to the on-site Environment Department, and will be immediately communicated to all vehicle operators.
- Caribou will not be blocked from crossing Mine-related roads or the airstrip. If caribou are crossing or attempting to cross the winter or site roads, then traffic will stop and wait for them to cross. Aircrafts will be notified to enter a holding pattern until the caribou have completed their crossing of the airstrip.
- Caribou within 100 m of the airstrip, site service roads, or winter access roads will be monitored.
- Caribou will only be herded away from roads or the airstrip in specific circumstances, such as an emergency and the following scenarios (Appendix B: OP 194):
    - There are less than 100 caribou on the airstrip within 15 minutes of flight arrival.
    - Caribou are on the road or airstrip at the time of an emergency that requires the use of the road or airstrip.
    - Caribou are within 100 m of the airstrip 15 minutes prior to aircraft arrivals or departures.
- When deterrent action is necessary, caribou will be deterred from the airstrip by driving a truck down the strip, getting out of the vehicle, and making noise by yelling (Appendix B: OP 194).
- If caribou are crossing Mine roads, traffic will stop and wait for them to cross (i.e., caribou have the right-of-way).

- All incidents involving interactions, use of deterrents or potential injury of caribou will be documented and evaluated.
- All interactions involving injury to caribou will be reported to GNWT-ENR.
- All caribou management actions will be reported in the annual report of the WMMP.

3.2.2 Monitoring Objectives

Monitoring for caribou during closure and post-closure has the following objective:

- Determine whether caribou behaviour changes in relation to Mining activities (Handley 2010).

Past methods of monitoring changes in caribou distribution in relation to Mine activities included the use of aerial surveys, beginning in 1999 during baseline studies. As the Bathurst caribou herd declined, the effectiveness of aerial surveys to provide an adequate number of caribou observations during the post-calving period for analysis also decreased (De Beers 2013c). Long-term results from aerial surveys at Snap Lake Mine show that few caribou have occurred near the study area including during baseline years and that the patterns over time are consistent with the distribution of collared Bathurst caribou (Golder 2013). Aerial surveys have not been triggered since 2012. Aerial surveys were not completed in 2013 and 2014 because of insufficient numbers of caribou in the study area. The Mine went into care and maintenance in 2015 so Golder (2013) are the most relevant results. Rather than collecting aerial survey data during closure and post-closure, De Beers will use collared caribou data to conduct zone of influence (ZOI) monitoring to address the objective of determining change in caribou behaviour (Section 3.2.3).

In addition to ZOI monitoring, site surveillance monitoring during periods of Mine site activity and remote camera monitoring during periods of inactivity (Section 2.2) will capture caribou use of reclaimed areas or potential injuries or mortalities, should they occur, and will inform causes of incidents and whether additional mitigation can be applied. These ongoing methods for monitoring caribou will continue regardless of the number of collared caribou in the study area.

3.2.3 Zone of Influence Monitoring

Changes to caribou distribution from alterations in movement are anticipated to occur as caribou respond to habitat loss and sensory disturbance. The GNWT-ENR uses collared caribou to track the distribution of caribou herds over time. Collar data will be used to analyze whether caribou behaviour (distribution) changes in relation to mining activity through time (e.g., mining phases of baseline, construction, operation, closure, post-closure) after accounting for natural factors. Collared caribou location data provided by GNWT-ENR are preferred by De Beers because they are collected independent of Snap Lake Mine and represent the behaviour of individual caribou. The data can also be used to infer resource selection (Manley et al. 2002) including changes in the selection of habitat with proximity to Snap Lake Mine (Golder 2016). Ideally the amount of data used for comparisons will be balanced but this may not be possible given that variation in length (time) of mine phases and numbers of collared caribou available are variable. The objective is based on recommendations during the Diamond Mine Monitoring Technical Workshop in September 2010 (Handley 2010).

Studies on the ZOI around the Mine are not likely to provide information helpful to adaptively manage mining closure activities. However, monitoring caribou distribution around the Mine could contribute information for future environmental assessments and for the ongoing assessment and management of cumulative effects by government under different development scenarios. ZOI estimates are used by government in implementing the Bathurst Caribou Range Plan and in particular calculating total disturbance levels across the range. The GNWT also regularly uses cumulative effects models (e.g., the Integrated Caribou Cumulative Effects model as well as ALCES) which rely on ZOI estimates to examine range-scale impacts to barren-ground caribou herds in the NWT.

3.2.3.1 Objective

The objective of this component of the WMMP is to:

- Determine whether a caribou zone of influence changes in relation to mining activity.

3.2.3.2 Field Methods

Satellite and GPS collared caribou location data provided by the GNWT will be used for monitoring caribou distribution. The GNWT monitors caribou locations with satellite and GPS collars annually. Changes in caribou habitat use relative to available habitat will be measured.

3.2.3.3 Frequency

The GNWT monitors caribou locations with satellite and GPS collars annually.

3.2.3.4 Parameters

Parameters include measuring changes in caribou habitat use relative to availability.

3.2.3.5 Data Analyses

De Beers will follow the ZOI guidelines from the Caribou ZOI Technical Task Group (GNWT-ENR 2015). Annual ZOI estimates will be generated for years where sample sizes are sufficient. The time or season of the point estimate (if statistically achievable) may change across years depending on the caribou population size. The point estimate may not be consistent with respect to season from year to year and this will influence the comprehensive analysis at the end of closure and post-closure. Mechanism(s) causing such changes are uncertain and likely related to sources of sensory disturbance operating simultaneously. Therefore, this monitoring does not directly inform on mitigation but is used to fill an information gap. Activity at the Mine site during the decommissioning/demolition period of closure is anticipated to be similar to construction and less than during operation.

De Beers will complete analysis of collar data at the end of the closure (1996 to end of closure), and once during post-closure (1996 to post-closure), depending on availability of collar data in the Mine study area.

4. ACTION LEVELS FOR ADAPTIVE MANAGEMENT

The study of direct effects associated with the Mine site and activities will provide feedback for decisions regarding the effectiveness of current mitigation designs, policies, and practices. Wildlife have remained in the area surrounding the Snap Lake Mine. Although some wildlife species may avoid the Mine site, occasionally there are wildlife within the Mine perimeter.

Action levels for vegetation loss will not be considered given that the Snap Lake Mine footprint and layout are ultimately governed by the required land use permits and leases for the Mine. At the end of operations, habitat disturbance by Snap Lake Mine was 89% of the EAR prediction (De Beers 2018). Closure activities and reclamation is expected to result in positive changes to vegetation communities and associated wildlife habitat during the post-closure phase in the long-term (during and beyond post-closure).

The direct Mine-related effects from injury or mortality of wildlife will be evaluated against the following action levels for adaptive management:

- Level I Change (no action required, continued monitoring): No wildlife present at site.
- Level II Change (implement mitigation, continued monitoring): Wildlife present at site.
- Level III Change (incident investigation, internal review of applicable mitigation, develop action plan): Any incident resulting in direct Mine-related injury or mortality of wildlife.

Action levels for dustfall were set out in the Vegetation Monitoring Program to act as a trigger for additional Triggered Monitoring Programs (De Beers 2019d), and include:

- if dustfall monitoring data exceed the Alberta Ambient Air Quality Guidelines (AEP 2017) for dustfall over a three-month period; or
- visual dust observations reported during daily operations when personnel are present show a high-dust condition extending over a long enough period that visible dusting of vegetation occurs, then a dustfall effects monitoring program is triggered.

A dustfall “trigger” may produce a response that would include enhanced dust suppression such as surface watering. In the event of a trigger, a Dustfall Effects Triggered Monitoring Program may also be initiated to identify if dust from the Mine has caused a significant difference in the plant species cover or composition of ELC types (units), in the vigour of plant species, or in the depth of the active layer. The Dustfall Effects Triggered Monitoring Program is described within the Vegetation Monitoring Program (De Beers 2019d). If studies show evidence that dustfall is the cause of significant changes in vegetation community or active layer characteristics, then the appropriate changes during closure and/or post-closure would be applied.

As described in Section 3.2, sensory disturbance mechanism(s) causing changes to caribou behaviour outside of the Mine footprint are uncertain and likely related to many sources (e.g., lights, smells, noise, dust) operating simultaneously. Therefore, ZOI monitoring does not directly inform the approach for adaptive mitigation but is used to fill an information gap on associated ZOI magnitude, extent and duration during closure and post-closure. Collar data will be used to analyze whether caribou behaviour (distribution) changes in relation to mining activities through time and Mine phase. This analysis can be used to test predictions of the Snap Lake EAR (which is one of the objectives of the WMMP; Section 1.3) and will

contribute information for future environmental assessments and for ongoing assessment and management of cumulative effects under different development scenarios (Handley 2010). Action levels will not be considered in monitoring for sensory disturbance.

5. QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

For all components of the WMMP, the study designs, field methods, and data collection techniques will be reviewed on an ongoing basis by De Beers, their environmental consultants, SLEMA, government biologists, and regulators. In addition, raw data will be available for review by the SLEMA, community organizations, and government through the Snap Lake Mine Environmental Data Management System . These QA/QC control procedures will provide consistency and integrity of study designs, field protocols, and data collection techniques. Furthermore, continuous evaluation of study methods and results will be used to identify elements for modification or implementation of new techniques. This approach is intended to provide a WMMP that generates feedback for the EMS and adaptive environmental management strategies, and which concurrently complies with the terms and conditions in the Land Use Permit and Environmental Agreement for the Mine.

6. REPORTING

De Beers will report on the progress and implementation of the mitigation and monitoring described in the WMMP annually, in an annual Wildlife Management and Monitoring Report (WMMR). The WMMR will be submitted to the MVLWB, ENR (by email to WMMP@gov.nt.ca), ECCC (by mail to EANorthNWT@ec.gc.ca) and other interested groups or parties. A report on the WMMP during the calendar year will be available for regulatory review in March of the following year and will follow Article 7.4 of the Environmental Agreement. Each year, the report will summarize the cumulative data and analyses from baseline through present. The main body of the report will be technical, providing details on the study design, sampling protocols, statistical analyses (where applicable), and results. Systematic and incidental wildlife observations will be separated in the analysis such that survey effort and temporal trends can be assessed using systematic survey results. A plain English summary will also be included. In addition to the WMMP components, additional information on environmental variables will be provided including weather, freshet timing, and winter access road season length. This additional information will be appended to the report. Records of wildlife incidents during the reporting year will also be appended.

Experience has shown that significant patterns associated with effects from mining operations and natural factors are typically not apparent with data collected during one- or two-year periods. However, if significant results are obtained within the short-term, then a discussion of these results will be provided annually. All results will be discussed in the context of predictions made in the EAR (De Beers 2002a) and relative to potential environmental significance. De Beers anticipates providing a comprehensive analysis report in the year after Closure activities are complete (i.e., Year 1 of Post-Closure). The calendar year will depend on the time required to complete closure. A comprehensive analysis report is also anticipated in Year 6 of the Post-Closure period in accordance with the FCRP (see Figure 8.1 of FCRP; De Beers 2021a). This approach aligns the comprehensive analysis with the schedule of monitoring in the Closure and Post-Closure periods identified in the FCRP. De Beers anticipates an updated Tier 2 WMMP will be designed for wildlife monitoring in the Post-Closure period, within which the reporting schedule for WMMP reporting for that period will be confirmed. De Beers will discuss and confirm reporting schedule options with ENR.

The reports will provide a mechanism for determining the certainty of effects predictions, unanticipated ecological effects, and effectiveness of mitigation policies, procedures, and actions. The reports will also be used to help assess the effectiveness and utility of various components of the WMMP. Using the principles of adaptive management, the assessment will be used to make recommendations regarding the intensity, frequency, and duration of recording of wildlife observations, and possible changes to the components included in the monitoring program.

7. ROLES AND RESPONSIBILITIES

The Snap Lake Mine employs Environment Supervisors to manage and guide the Environment Technicians who implement the WMMP. The Environment Department is led by a superintendent who oversees regulatory concordance, reporting and engagement associated with the WMMP and provides the resources necessary to implement the WMMP, which is also intended to engage interested parties and solicit feedback.

8. REFERENCES

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9. GLOSSARY

Adaptive Management	Management method that incorporates change from monitoring results and is an iterative and ongoing process.
Aerial Surveys	The collection of data in a fixed-wing aircraft or helicopter.
Barren-Ground	Describes the Arctic tundra landscape north of the treeline.
Barriers	Impediment to wildlife movement or behaviour, e.g., roads, airstrips, facilities.
Baseline	Describes the assessed pre-development environmental setting (1999 to 2004), against which changes in the environment from the Snap Lake Diamond Project will be assessed.
Disturbance	A natural or human-induced process that influences the patterns of species, populations, and/or individuals.
Ecological Land Classification (ELC)	A means of classifying landscapes by integrating landforms, soils and vegetation components in a hierarchical manner.
Esker	Linear structures of loose sand and gravel, formed by glacial rivers. They provide critical habitat for carnivores and ungulates in the Arctic.
Footprint	The proposed development area that directly affects the soil and vegetation components of the landscape.
Freshet	A spring thaw event resulting from melting snow and ice on rivers.
Fugitive Dust	Dust that is difficult to control or retain.
Ground Survey	The collection of data from the ground (e.g., by foot or snowmobile).
Habitat	The place or environment where a plant or animal naturally or normally lives or occurs.
Heath	Any of a family (Ericaceae, the heath family) of shrubby dicotyledonous and often evergreen plants that thrive on open barren usually acid and ill-drained soil.
Home Range	The area to which an animal usually confines its annual or seasonal activities.
Indigenous Species	Originating and living or occurring naturally in an area or environment.
Land Classification Unit	Units of land categorized based on specific properties or suitability for specific purposes.
Lichen	Complex thallophytic plants made up of an alga and a fungus growing in symbiotic association on a solid surface (e.g., on a rock).
Mine Footprint	The disturbed area covered by the Mine site.

Natural Variation	Disparity in an environmental condition that occurs naturally, without human-induced disturbance.
Non-Nursery	Group of animals composed of adult females, adult males, or adult females and males, but no calves.
Nursery	Group of animals composed of adult females with calves, adults with calves.
Relative Abundance	An estimate of the number of individuals within an area relative to the number of individuals within a larger area.
Riparian	A band of terrestrial habitat that is adjacent to and directly influenced by streams, rivers or lakes.
Sample Plot	A sampling unit used to estimate variables within a patch.
Sedge	Any of a family (*Cyperaceae*, the sedge family) of usually tufted marsh plants similar to but taxonomically different from grasses.
Tundra	A level or rolling treeless plain that is characteristic of Arctic and subarctic regions, consists of black mucky soil with a permanently frozen subsoil, and has a dominant vegetation of mosses, lichens, herbs, and dwarf shrubs. Analogous to barren-ground.
Upland	Elevated land (e.g., hilly or mountainous).
Valued Ecosystem Component (VEC)	A component of the environment that is representative of traditional, public, and scientific values (e.g., caribou or areas of rare plant potential and traditional plant potential).
Wildlife	Under the proposed new *Species at Risk Act*, wildlife includes all wild vertebrates and invertebrates except fish and marine mammals. This definition includes mammals, birds, reptiles, amphibians, and insects (GNWT-ENR 2012b).
Zone of Influence (ZOI)	The geographic area where animal behaviour and activities may be influenced by mining activities.

APPENDIX A CONCORDANCE TABLE

Table A1 Concordance of Legislation/Regulation Requirements and Wildlife Management and Monitoring Plan Guidelines

Legislation/ Regulation/ Agreement	Requirement	Corresponding Section in WMMP	Responsible Regulatory Agency
Environmental Agreement	• Measure compliance with regulatory requirements • Determine the environmental effects of the Mine • Implement A Wildlife Management Plan • Test impact predictions • Measure the performance of operations and effectiveness of impact mitigation	Entire Document	Government of Canada, GNWT
Migratory Birds Convention Act, Migratory Bird Regulations	The taking of nests or eggs of migratory game or insectivorous or nongame birds shall be prohibited, except for scientific or propagating purposes under such laws or regulations as the High Contracting Powers may severally deem appropriate.	Section 2.2	CWS (ECCC)
NWT Wildlife Act	A Wildlife Management and Monitoring Plan must include: (a) a description of potential disturbance to big game and other prescribed wildlife, potential harm to wildlife and potential impacts on habitat; (b) a description of measures to be implemented for the mitigation of potential impacts; (c) the process for monitoring impacts and assessing whether mitigative measures are effective; and, (d) other prescribed requirements.	Entire Document	GNWT-ENR
Species at Risk Act and *Species at Risk (NWT) Act*	De Beers Group of Companies will adhere to requirements of all applicable Regulations or Recovery Plans that may be developed over the duration of the Mine.	Section 1.5	CWS (ECCC) GNWT-ENR
NWT Wildlife Act	Guidelines for the preparation of a Tier 2 Wildlife Management and Monitoring Plan (WMMP), dated June 2019 (GNWT-ENR 2019a).	Section 1.0	GNWT-ENR
	Purpose of and Objectives of the WMMP		
	Measures, conditions and developer commitments concordance table	Section 1.6	
	Engagement	Section 1.7	
	Mention of associated operational or management plans	Section 1.10	
	Project description	Section 1.0	
	Project map	Section 1.0	
	Affected species or habitat features	Section 1.4	
	Potential impacts to wildlife and wildlife habitat	Section 1.4	
	Employee wildlife awareness education and training	Section 2.2	
	Infrastructure design and camp layout for bear safety and/or to prevent denning, nesting, and roosting	Section 2.2	
	Management of camp waste and other wildlife attractants	Section 2.2	
	Timing restrictions and/or set back distances to protect wildlife and wildlife habitat features	Section 2.2	
	Direct habitat loss – minimizing the project's physical footprint	Section 2.1	

Table A1 Concordance of Legislation/Regulation Requirements and Wildlife Management and Monitoring Plan Guidelines

Legislation/ Regulation/ Agreement	Requirement	Corresponding Section in WMMP	Responsible Regulatory Agency
NWT Wildlife Act (cont'd)	Habitat alteration – minimizing physical manipulation of habitat that would decrease its value to wildlife	Section 2.1	
	Indirect habitat loss – minimizing functional habitat loss due to sensory disturbance, dust, etc.	Section 3.0	
	Management of hazards to wildlife (e.g., open pits, tailings ponds, roads, airstrips, spills)	Section 2.2	
	Wildlife deterrence procedures	Appendix B	
	Habitat restoration	Section 2.1	
	Description of the role of community wildlife monitors in implementing aspects of the plan	Section 1.7	
	Offsetting or compensatory measures	Section 1.8	
	Mitigation monitoring	Sections 2 and 3	
	Wildlife effects monitoring	Sections 2 and 3	
	Project footprint size reporting	Section 2.1	
	Description of approach to adaptive management	Section 4.0	
	Formal response frameworks with action levels	Section 4.0	
	Reporting protocols	Section 6.0	
	Roles and responsibilities	Section 7.0	
	Literature cited	Section 8.0	
	Glossary	Glossary	
	SOPs	Appendix B	
	Monitoring forms and data sheets	Appendix B	
	Reporting form templates	Appendix B	
	WMMP revisions tracking table	Page i	

CWS = Canadian Wildlife Service, Environment and Climate Change Canada.
ECCC = Environment and Climate Change Canada.
GNWT = Government of the Northwest Territories.
GNWT-ENR = Department of Environment and Natural Resources, Government of the Northwest Territories.

APPENDIX B STANDARD OPERATING PROCEDURES, DATA SHEETS AND REPORT FORMS

Table of Contents

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment & Permitting	**Document No.:**	*EP-DOP 001*
Section:		**Effective Date:**	March 19, 2021
OPERATING PROCEDURE –*Winter Road Wildlife and Public Use Surveillance*			
Revision:	1	**Replaces:**	
APPROVED:			

1.0 PURPOSE

The purpose of this program is to gather information on the use of the Snap Lake Mine winter road by members of the public, contractors, staff, and wildlife. This surveillance program is designed to address concerns that use of the winter road during closure and post-closure will lead to increased wildlife mortalities due to vehicle traffic and increased access to hunters. De Beers will monitor both wildlife occurrence and public use of the road and where possible will gather information on wildlife mortalities and incidents.

2.0 SCOPE

Security personnel will patrol the entire length of the road in pick-up trucks daily during the haul season (February-March) so long as weather permits. The survey will be systematic. Duties related to traffic flow, delay reporting, accident reporting and investigation, obtaining emergency service for transport vehicles and first aid are not addressed in this Operating Procedure. This procedure addresses only the recording and reporting of wildlife observations and the use of the road by members of the public.

3.0 RESPONSIBILITIES

3.1. Environment Department

The Environment Department is responsible for communicating with the Contractor on at least a weekly basis during the contract. This can be done either through face-to-face contact, radio, email, phone or other means. The Environment Department will be responsible for refining the operating procedure as needed including revisions to maps, division of responsibilities, and data sheets. The Environment Department will provide the relevant logs (i.e., data sheets) to the Contractor. . The Environment Department is responsible for reporting to government, regulators, communities, and the public.

3.2. Security Contractor

The Security Contractor will be responsible for conducting the daily surveillance of the road. The Security Contractor will record all wildlife and public use observations on the relevant data sheets, and will provide the data to the Environment Department on a weekly basis. The contractor will report any key observations, such as the occurrence of caribou, other wildlife, public use, and vehicle-wildlife collision to the Environment Department. Data sheets shall be submitted to the Environment Department on a weekly basis. The Security Contractor shall allow an

Indigenous Community Monitor to accompany them on the daily surveillance of the road upon request.

4.0 CRITICAL CONTROLS

If not currently available, these will be identified during the next document review when the Job Risk Assessment is completed.

5.0 DEPARTMENT OPERATING PROCEDURE

5.1. Equipment to be provided by DBCI

- Map of the winter road
- Data sheets (attached)

5.2. Equipment to be provided by Security Contractor

- One GPS unit/vehicle set to NAD83, and spare batteries
- Field supplies including pencils and field notebook
- Digital camera

5.3. Procedures

5.3.1. Public Use Surveys

De Beers and its contractors will not restrict public or recreational use of the winter access road. Disclosure of information by recreational users is purely optional and voluntary. De Beers and its Contractors will maintain a friendly and hospitable demeanor when conversing with members of the public who may be using the road. De Beers and its Contractors will explain the rules of the road to users as necessary to ensure the safety of workers and members of the public. These include the check-in procedures if arriving at site, road speed limits, and right-of-way for wildlife.

Security Contractors will record occurrences of recreational users of the winter access road on the Winter Road User Form. These observations shall include vehicles that were observed but not stopped as well as those that were stopped. One data form shall be filled in for every recreational vehicle observed on the road. Security Contractors may, at their discretion, stop recreational users of the road to converse and gather information. This interview shall be cordial, and if users do not wish to provide personal information they shall not be pressed. Security personnel shall record the information on the Winter Road User Form. Key pieces of information include number of people, names, purpose of trip, community of origin, description of vehicle, license plate number, number of snowmobiles, the location

(portage number/lake name) and number of animals harvested (if hunting or fishing).

Information on public use of the road, including names, license plate numbers, locations, and photos will be shared with the Government of Northwest Territories, Environment and Natural Resources upon request.

5.3.2. Wildlife Observations

All wildlife the size of a fox or larger observed from the road must be announced on the radio and recorded on the Winter Road Wildlife Sightings Form. The original observer shall record their observations upon check-in at Snap Lake Mine Dispatch. The Security Contractor shall record their own winter road wildlife sightings and shall provide completed forms to the Environment Department on a weekly basis. The Security Contractor can record the observations relayed by others, but must make note of the original observers name on the form.

The Security Contractor shall make every effort to enforce the rules of the road as they relate to wildlife. This includes:

- giving the right-of-way to wildlife;
- enforce speed limits (30 km /hr);
- reduce speed limits to 10 km / hr when caribou or other large wildlife are within 200 m of roads;
- warn drivers with signage and radio when wildlife are moving through an area; and
- turning off bright head-lights when stopped at night due to wildlife presence on the road.

5.3.3. Incident Reporting

All incidents concerning wildlife and/or members of the public shall be investigated, recorded, and reported as per the standard incident reporting procedures. The contractor shall use the Accident-Incident Short Report Form to record all relevant observations including but not limited to:

- Location (UTM, lake, portage)
- Time and Date
- Names, companies of people involved
- Photographs

- Potential Causes/contributing factors
- Management response actions taken (e.g., re-routed traffic, reported to Environment/Dispatch)

Incidents involving wildlife or members of the public shall be reported immediately to the Environment Department.

6.0 CONTACT NUMBERS

6.1. Environment Staff

Personnel responsible for Winter Road Wildlife and Public Use Surveillance will have immediate access to the site based environmental staff via radio communication, and the dispatch communications.

Updated communication details, including names, telephone numbers and email addresses will be made available at the start of the winter road each year.

7.0 Example Data Sheets

7.1. Winter Road Wildlife Observations Form

WINTER ROAD WILDLIFE SIGHTINGS FORM

YEAR:_____ SHEET:_____ De Beers Group of Companies

DATE (Y/M/D)	TIME (24 h)	SPECIES	NUMBER	LOCATION				PROXIMITY TO ROAD[1]			OBSERVER	COMPANY
				Lake Name	Portage Number	UTM						
						Easting	Northing	on	bank	off		

1. A check mark to indicate animal is on the road, on the bank of the road, or off the road is fine. Observer may also estimate distance from center of road to animal in meters.

7.2. Winter Road User Survey

De Beers Winter Road Access Reporting

Winter Road User Survey

SIDE ONE: USER INFORMATION

Monitoring Station: ☐ Gahcho Kué Winter Road ☐ Snap Lake

Monitor's name: _____

Vehicle Information
Description of vehicle:_____

Vehicle license place origin (Territory/Province):_____ License plate no:_____

Accessory vehicles: (Snowmobiles/ATVs) **NO** ☐ **YES** ☐ How many? _____

Number of people in the vehicle: _____

Northbound Date: _____ Time: _____ am / pm
(Spell out Month)

Southbound: Date: _____ Time: _____ am / pm
(Spell out month)

Community representation (indicate the community for EACH person in the vehicle)

Yellowknife	_____	N'Dilo	_____	Ingraham Trail	_____
Dettah	_____	Rae/Edzo	_____	Wha Ti	_____
Gameti	_____	Wekweti	_____	Lutsel K	_____

Other (specify) _____

Purpose for using the winter road (check all that apply):

Sight-seeing: ____ Camping:____ Trapping:___ **(Licence #)**_____
Fishing: ___ **(Licence #)**_____
Hunting: ___ **(Licence #)**_____
Other (specify) _____

Hunter classification: GHL ____ Special GHL ____ Resident ____ Non-Resident ____
(Use one √ per hunter) Non-Resident Alien _____

How many days for hunting? 1 2 3 Other _____

What animal species are you hunting? (check all that apply)

Caribou	_____	Moose	_____	Grouse	_____
Wolf	_____	Wolverine	_____	Ptarmigan	_____

Other (specify) _____

7.3. Accident / Incident Short Report Form

DE BEERS
GROUP OF COMPANIES

Accident - Incident
Short Report Form
Must be submitted within 24 hours
Rating of 6 or more requires 3 page AI Form within 72 hours

YELLOW FIELDS REQUIRE COMPLETION N/A or pen mark required to identify attention		Date of Accident/Incident	Date Reported	Date of Investigation
SITE	DEPARTMENT	Time of Accident/Incident	Time Reported	Date Submitted

TYPE OF MISHAP Multiple Selections Possible						BRIEF DESCRIPTION OF INJURY, LOSS, POTENTIAL LOSS, OR HAZARD
ACCIDENT				INCIDENT		
INJURY		PROPERTY DAMAGE LOSS TO PROCESS		POTENTIAL FOR LOSS		
FIRST AID		ENVIRONMENT		INJURY		
MEDICAL AID		EQUIPMENT		ENVIRONMENT		
LOST TIME		MATERIAL		EQUIPMENT		
OCCUPATIONAL ILLNESS		LOSS TO PROCESS		LOSS TO PROCESS		
				HAZARD		
				SHE NON-CONFORMANCE		LOCATION OF OCCURRENCE

EMPLOYEE NAME:		OCCUPATION:		YRS OF EXPERIENCE IN OCCUPATION:	

Describe what happened including the event and IDENTIFY THE ROOT CAUSE

STATE WHAT ACTION WILL PREVENT THIS EVENT FROM RE-OCCURRING Root Cause must be addressed in these actions.	RESPONSIBLE PERSON	DATE TO BE COMPLETE	Action assigned by

WITNESSES:

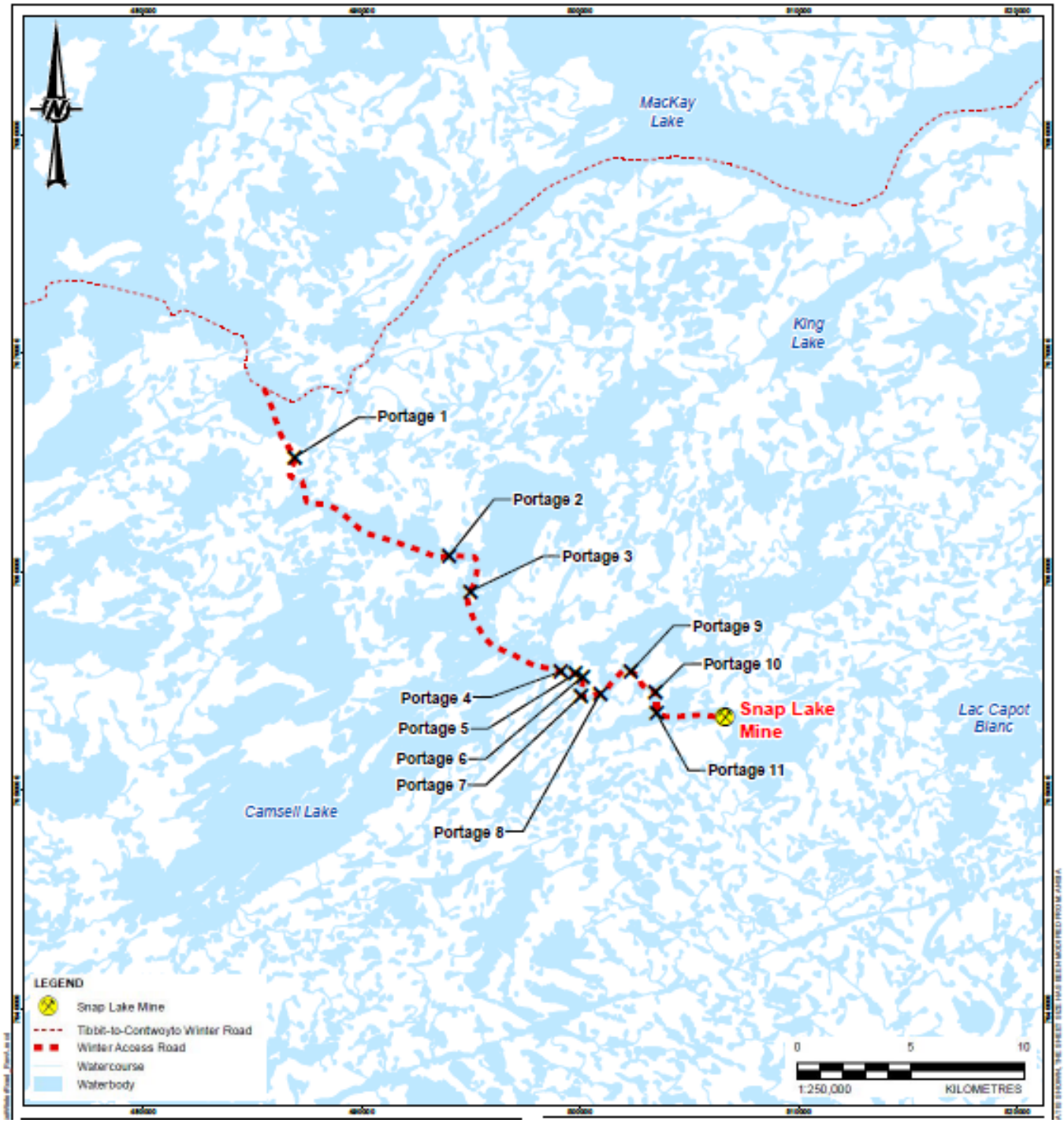
	PROBABILITY		HIGHEST CONSEQUENCE		RISK ASSESSMENT RATING		
RISK ASSESSMENT RATING		+		=		=	**Rating of 6 or more requires completion of 3 page AI Form within 72 hours**

COMMENTS	PRINTED NAME	SIGNATURE	TITLE	DATE
			Employee	
			Immediate supervisor	
			JOSHIEC Rep.	
			DBC Dept. Mgr.	
			SHE Coordinator	
			SHE Manager	
			Mine Manager	

Note: Any Supervisor or Manager or their designate may require an investigation be completed on any incident regardless of the risk rating where other potentially more serious outcomes could result.

Effective November 10, 2009.	Approved by: SHE Manager	File: A130 Accident-Incident Short Form

7.3.1. Field Map



8.0 APPROVAL

Name	Title	Date	Signature
	Environmental Superintendent		

9.0 REVISION HISTORY

Noted below is the revision history of this document.

Revision	Date	Comments
1.1	March 19, 2021	Approved for Use

10.0 DEFINITIONS

None

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment & Permitting, SHERT	**Document No.:**	OP 006
Section:		**Effective Date:**	
OPERATING PROCEDURE – *Wildlife Procedure*			
Revision:		**Replaces:**	
APPROVED:			

1.0 PURPOSE

This procedure describes how disruptions to natural wildlife (including fish and birds) are to be minimized, what to do in a situation where wildlife is encountered, and related regulations to be complied with at the Snap Lake Mine (SLM). It also addresses the disposal of animal carcasses encountered near areas of human activity.

2.0 SCOPE

This procedure applies to all employees and contractors at the SLM.

3.0 RESPONSIBILITIES

3.1. Mine General Manager or Designate:

3.1.1. Overall management of the SLM sites and workforce.

3.2. Heads of Departments/Contractor Managers, Superintendents or their Designates:

3.2.1. Ensure this procedure is communicated to their employees as applicable;

3.2.2. Ensure their employees have received the appropriate training; and

3.2.3. Ensure this procedure is implemented.

3.3. Responsible Person for Airstrip Operations of Designate:

3.3.1. Ensure the inbound aircraft is alerted to the presence of large animals on or near landing areas, via the SLM Travel Clerk or other means.

3.4. Safety, Health, Environment, Risk and & Training (SHERT) Superintendent Manager or Designate:

3.4.1. Decide when herding actions will be taken to disperse animals, and ensuring that details are recorded;

3.4.2. Contact the appropriate regulatory authorities to notify and/or arrange the removal of an aggressive or nuisance animal;

3.4.3. Maintain records of wildlife activities through the Wildlife Sighting Log: CL 031 and incident reports;

3.4.4. Liaise with appropriate regulatory authorities on wildlife management issues;

3.4.5. Report on wildlife management issues in regular environmental reports;

3.4.6. Monitor the implementation of this procedure; and

3.4.7. Ensure this procedure is maintained.

3.5. Supervisors:

3.5.1. Implement this procedure as applicable;

3.5.2. Ensure this procedure is followed.

3.6. All Employees:

3.6.1. Report bear sightings immediately, as specified in OP 078: Responding to Bears or Aggressive Animals At or Near SLM – Emergency Situation;

3.6.2. Record wildlife sightings in the *Wildlife Sighting Log: CL 031*;

3.6.3. Be aware of current SLM site rules;

3.6.4. Take reasonable precautions to prevent disturbing wildlife; and

3.6.5. Ensure wastes are properly disposed of to avoid attracting wildlife;

3.6.6. Understand and practise this procedure as required; and

3.6.7. Ask their supervisor for clarification if they are unsure of any aspect of this procedure.

Responsibilities of Employers, Contractors, Supervisors and Employees are also described in the NWT Mine Health and Safety Act (Sections 15 – 18) and throughout the NWT Mine Health and Safety Regulations.

4.0 CRITICAL CONTROLS

A completed Job Risk Analysis can be found in Section 10.0, and lists hazards, unwanted events and controls in place for the following task/activities:

- Report all wildlife sighting;
- Report all nesting activity
- Wildlife Collision Prevention Plan
- Disposal of Dead Wildlife
- Bear Encounters

5.0 PROCEDURE

5.1. General

5.1.1. Site orientation sessions for staff and contractors shall include instruction relating to wildlife encounters (see Section 5.4);

5.1.2. Do not feed wildlife, offer them food or leave food out for them. Feeding wildlife may cause them to stay at the site and become habituated to human contact;

5.1.3. The consequences of feeding may result in serious harm to humans, and/or the animal being relocated or destroyed. Feeding of wildlife is also illegal under the *NWT Wildlife Act*;

5.1.4. Ensure that all food and garbage that might attract wildlife are stored in wildlife-proof containers or buildings;

5.1.5. When wildlife, other than common small animals or birds, are observed at or near the site, fill out the *Wildlife Sighting Log: CL 031* just outside the dining area, promptly upon returning to the camp, or advise Environmental Staff of the sighting;

5.1.6. Any nesting sites of eagles, hawks or owls; den areas of bears, wolves, wolverines or foxes; and calving areas of moose or caribou are items of significant interest and should also be recorded;

5.1.7. Human interactions with animals that have safety or environmental implications must be reported according to *OP 1026: Incident and SHE NC Documentation Process, Reporting and Investigation*. This includes actual or threatened animal attacks, injuries to animals caused by vehicles, feeding of animals, etc.;

5.1.8. For safety reasons, no De Beers Canada employee or contractor is permitted to hunt or use firearms at or within 3 km of the SLM site, or within 1 km of active winter roads, except as part of authorized wildlife deterrent actions. The only exception is the removal of an aggressive or nuisance bear, following notification of the ENR (except in extreme emergencies). Removal or killing of an animal involving the use of firearms may only be authorized and directed by the Project Manager or their designate;

5.1.9. No fishing or hunting for food or sport in the lands, rivers or streams around the SLM site is allowed by De Beers Canada employees and contractors while they are residing at the on-site camps, or visiting the site for business purposes;

5.1.10. Scientific studies of fish and wildlife must obtain all necessary permits and licenses from provincial and/or federal agencies. Fish or wildlife which is incidentally killed during these studies will be offered to First Nation (FN) members for use, where appropriate, or otherwise dealt with as specified in collection permits and licences;

5.1.11. To the extent practical, disruptive or noisy work activities (i.e., demolition low level aircraft flights) will be scheduled to avoid sensitive times for wildlife known to be in the area, such as migrations, breeding seasons and times when young are being reared;

5.1.12. Where practical, avoid disturbing wildlife by flying over them. Where possible, aircraft should travel at an altitude of 300 m (1000 feet) or greater to reduce noise and disturbance to wildlife. Exceptions apply when landing or taking off, for specially permitted environmental studies, and when weather conditions (e.g., low cloud) restrict flight altitudes. See *OP 003: Aircraft - Environmental Factors* for details.

5.1.13. All wildlife shall be left as undisturbed as possible. Vehicles, boats or aircraft shall not be used to purposefully kill, injure, capture, harass, pursue or chase wildlife of any type;

5.1.14. The only time a vehicle may be used to interact with wildlife is when the animal is posing a threat to either company property, employee safety and health or its own health – and then only under the guidance and direction of the SHERT Superintendent or their Designate;

5.1.15. No employee shall disturb, destroy or take a nest or egg of birds on and around site without specific advance permission from the Environmental Superintendent in consultation with ENR and/or Wildlife Monitors. Likewise, den areas of other mammals (i.e., bears, beavers, fox, wolverines, etc.) are not to be disturbed without permission;

5.1.16. If a nesting or den area is discovered, take note of the location and notify the Environmental Superintendent or designate of the situation and the animal involved if known (Section 5.1.6).

5.2. Wildlife Collision Prevention Plan

5.2.1. Wildlife is considered to have the right-of-way over light vehicles and mobile equipment, but this shall not take precedence over human safety. When encountering wildlife while operating a machine, if it safe to do so:

a. Stop your vehicle and turn off or dim the headlights;

b. Avoid using the horn, and remain with the vehicle;

c. Use a radio to report the presence of the animal in the immediate area of the SLM site to the Environmental Superintendent or designate;

d. Wait for the wildlife to pass before continuing;

e. On return to camp complete the *CL 031: Wildlife Sighting Log*.

5.2.2. Due to the massive size of heavy mine equipment, making emergency stops or sudden turns is very dangerous to the operator, so it is not appropriate to take such emergency actions to avoid small wildlife that suddenly runs in front of such machines;

5.2.3. Special precautions are necessary at any airstrip (runway) for fixed-wing aircraft:

a. A visual check of the airstrip is to be done early in the day on which aircraft landings are expected, and again 15 to 30 minutes prior to the estimated arrival time;

b. The Responsible person in charge of the airstrip and apron area will drive the entire length of the runway, looking for large animals within 100 meters of it;

c. Radio a report to the SLM Travel radio operator or their designate, who will alert inbound aircraft to the probable presence of animals on the runway;

d. Where necessary, and particularly in emergency situations such as a medical evacuation flight, an attempt may be made to herd animals off the runway on foot or with vehicles, with the approval of the SHERT Manager or their designate (Refer to OP 194 Wildlife Deterrence from Hazardous Areas). If this is not successful the aircraft will be told not to take off, or if already airborne, not to land without further radio clearance;

e. As soon as the animals have moved 100 meters off the runway, no further approach to them should be made;

f. If the animals do not move more than 100 meters from the runway perimeter, or look like they may attempt to re-enter it, workers on the ground should remain between the animals and the runway to prevent them from returning before the inbound aircraft lands;

g. In addition to an entry in the Wildlife Sighting Log: CL 031, a detailed report must be made to the SHERT Manager or their designate after any herding attempts, describing what was tried and how the animals responded.

5.3. Disposal of Dead Wildlife

5.3.1. Dead or sick animals encountered must be managed so as not to put people or other wildlife at risk from diseases or scavengers. Dead animals discovered must be reported through the near miss reporting system (see *OP 1026: Incident and SHE NC Documentation Process, Reporting and Investigation*) and removed at least 25 metres from roadways and active work areas;

5.3.2. Large carcasses that might attract bears are to be removed 1 km away from areas of human activity;

5.3.3. When handling carcasses, appropriate personal protective safety measures must be taken;

CARCASSES OF MOOSE, BEAR OR CARIBOU:

5.3.4. CAUTION - When approaching a dead moose, bear or caribou (check caribou for radio tracking collars), during seasons when bears are active, there must be at least two people present, each equipped with pepper spray, air horns and/or other devices to deter bears. See *OP 193: Bear Deterrents*;

5.3.5. If the carcass is more than 1 km from areas of human activity:

a. Carcasses of moose, caribou and bear will not be removed. Removing the kill may cause the bear feeding on it to approach areas of human activity in search of its food;

b. Everyone on-site will be alerted to the presence of the carcass, and the area closed to human activity until the SHERT Manager or designate has determined that the area is clear, and it is safe for activity to resume.

5.3.6. If the carcass is within 1 km of human activity, any dead moose, caribou or bear will be relocated due to the danger posed by a bear feeding on it:

a. Relocate the carcass by dragging it at least 1 km away from areas of human activity, preferably in an upwind direction. Dragging leaves a scent trail so that a bear can easily relocate the kill. If the carcass is removed entirely the bear may come into camp looking for it;

b. An ATV, snowmobile, or other vehicle may be used to drag the carcass. Use of a helicopter for this is considered unsafe due to the chance of snagging the load;

c. Everyone on-site will be alerted to the presence of the carcass, and the area closed to human activity until the SHERT Manager or designate has determined that the area is safe.

5.3.7. Animals which appear sick or for which the cause of death is not apparent:

a. The greatest concern is with animals behaving in ways that suggest they may be infected with rabies. These include unusual aggression or tameness, partial paralysis, drooping head, excess saliva ("frothing at the mouth"), and general poor physical condition. Foxes and skunks are the most frequently affected animals;

b. Cases of suspected rabies must be reported to the local office of the Canadian Food Inspection Agency. For the SLM, the closest CFIA office is in Edmonton at (780) 395-6701. These reports are to be made by the SHERT Manager or their designate;

c. If people have been directly exposed (scratched, bitten or exposed to saliva), the animal carcass must be sent to the CFIA for testing to see if special medical care is required;

d. The CFIA will advise on shipping requirements which will include rigorous dangerous goods transportation requirements;

e. The ENR recommends burying diseased animals at least 1 metre deep in the ground, to prevent infecting other wildlife. Cremation in the burn pit, with prior permission from the ENR and FN, may be more appropriate. See *OP 009: Open Fires (Burn Pit*).

5.4. Bear Encounters

5.4.1. The SLM is located in a zone that sees the presence of both black and grizzly bears. Usually, bears hibernate from late October to April. Bears have a tendency to avoid encounters with humans if they are aware of their presence in time;

5.4.2. When surprised, a bear may become aggressive. Therefore, good awareness of surroundings should be practiced at all times;

5.4.3. Poor food handling or waste management will attract them into areas of human activity. Bears will usually avoid people, but can be aggressive if threatened or surprised;

5.4.4. Any bear that approaches the main SLM camp or active work areas must be promptly dealt with to protect both the bear and people.

5.4.5. The following are tips to prevent bear encounters:

a. Be alert at all times;

b. Have respect for all bears, they are potentially dangerous;

c. Never approach a bear for any reasons;

d. Ensure food wastes are not available to any wildlife; and

e. If leaving the immediate SLM site, ensure regular communication with Security via radio or satellite phone, be aware of surroundings, and carry applicable bear deterrents.

5.4.6. Be aware that you may encounter a bear at closer than expected distance. Bears are unpredictable and do not respond to human presence in a consistent manner;

5.4.7. Always treat the presence or proximity to a bear as a danger. They will fiercely defend their young and food supply;

5.4.8. Bears have also been known to travel together as a family group as well as during mating season. For this reason, be extra careful and cognizant that there may be other bears in close proximity. Although there is no guaranteed formula, the following tips may help:

a. Do not panic; stop, stand still and stay calm;

b. If you are not alone, group together, it will make you appear bigger, raising your arms will also contribute to making you appear bigger;

c. Assess the situation, looking at egress options, including barriers to your moving away;

d. Avoid direct eye contact. While keeping sight of the bear, slowly back up until you feel confident that the risk has decreased;

e. Do not run;

f. If the bear is aware of your presence, identify yourself as a human by talking. Being in an upwind position will allow the bear to identify you as a human;

g. If possible, move to a safe location (i.e. vehicle, building, boat, etc. and report the encounter, request support, should you need to be removed from the area;

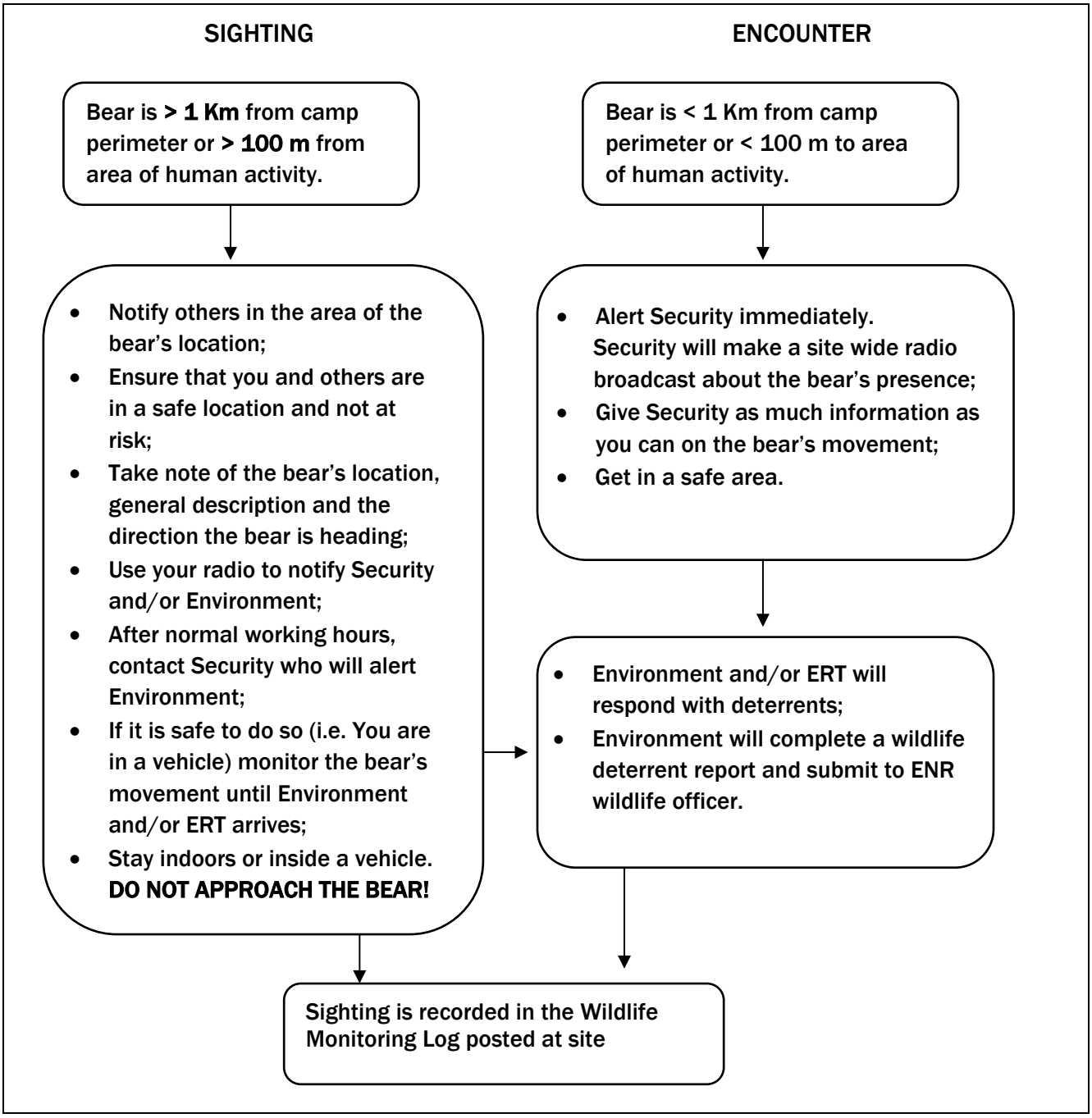
h. Have your deterrent materials readily available; be prepared to use them as dictated by the conditions; and

i. Immediately alert your supervisor of your situation (by radio if possible), and report the occurrence to Site Security;

5.4.9. Where it is necessary to drive a bear (or other types of large animal) away, this must be done with care to avoid causing the animal to overheat. Air-horns, "bear-bangers", rubber bullets and pepper spray are available and will be used at the direction of the Project Manager or Designate to encourage a bear to leave. See *OP 193: Bear Deterrents*;

5.4.10. No more should be done than is necessary to get the animal to move. Once they are doing what you need them to do, stop your approach;

5.4.11. In the event that a bear becomes a persistent nuisance or significant safety risk to workers, refer to *OP 078: Responding to Bears or Aggressive Animals at or Near SLM* – Emergency Situation for instructions on a progressive deterrent response, up to and including the killing of the bear by authorized persons.



5.5. Training

5.5.1. Limited training is provided to site staff if work occurs within the mine footprint. Staff required to work at some distance from the mine footprint will require additional information on bear biology and behaviour.

6.0 APPROVAL

Name	Title	Date	Signature

7.0 REVISION HISTORY

Noted below is the revision history of this document.

Revision	Date	Comments

8.0 DEFINITIONS

8.1. **Encounter:** The animal is seen **closer than 1 km** from the camp perimeter, and is **less than 100 m** from any area of human activity.

8.2. **ENR:** Department of Environment and Natural Resources

8.3. **Rabies:** An infectious and deadly disease sometimes carried by wildlife, usually spread by direct contact with blood, saliva or other body fluids. Symptoms in animals include unusual aggression or tameness, partial paralysis, drooping head, excess saliva ("frothing at the mouth"), and general poor physical condition. Foxes and skunks are the most frequently affected animals.

8.4. **Sighting:** The animal is seen **further than 1 km** from the camp perimeter, and is **more than 100 m** from any area of human activity.

DE BEERS GROUP	SLM CHECKLIST **Wildlife Sighting Log**	**ID No.: CL 031** **Revision Date: November 15, 2021**

SIGHTING LOG LOCATION: _____ MONTH / YEAR: _____

DATE (DD-MMM-YYYY)	TIME (24hr)	SURVEY DURATION	SPECIES OBSERVED	COUNT	SEX AND AGE OF INDIVIDUALS OR GROUP	ACTIVITY / BEHAVIOUR (WALKING, FEEDING, FLYING, NESTING, ETC.)	UTM COORDINATES		GENERAL HABITAT DESCRIPTION	OBSERVER	COMPANY
							EASTING	NORTHING			

Approved By: Environmental Superintendent	Page: 1 of 1

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment	**Document No.:**	**OP 014**
Section:		**Effective Date:**	March 19, 2021
OPERATING PROCEDURE – *Environmental Inspections*			
Revision:	2	**Replaces:**	1
APPROVED:	*Original Signature: Refer to Item 6. APPROVAL*		

1.0 PURPOSE

This document summarizes the environmental inspections that are required by the Snap Lake Safety, Health and Environmental Management System and all applicable environmental operating permits and environmental management plans during the Closure and Post-closure Phase of Snap Lake Mine (SLM).

2.0 SCOPE

This procedure applies to all employees and contractors at the SLM and associated facilities.

3.0 RESPONSIBILITIES

3.1. Closure Manager or Designate:

3.1.1. Overall management of the SLM sites and workforce.

3.2. Heads of Departments, Superintendents or their Designates:

3.2.1. General inspections of their work sites for signs of environmental effects resulting from their activities, including waste storage and handling, spills, fuel and hazardous material storage and handling, and wildlife activity;

3.2.2. Accurate completion of inspection forms and other records; and

3.2.3. Reporting any environmental issues identified to the Environmental Manager or designate.

3.3. Environmental Superintendent or Designate:

3.3.1. Monitor the implementation of this procedure; and

3.3.2. Ensure this procedure is maintained.

3.4. Environmental Coordinator or Designate:

3.4.1. Monitor the implementation of this procedure;

3.4.2. Follow up on issues and corrective actions identified, and communicate these to the relevant Department or Contractor representative;

3.4.3. Ensure this procedure is maintained, and revised as required.

3.5. Environmental Technician or Designate:

3.5.1. Regular inspections of storage areas for waste, explosives, fuel and chemicals;

3.5.2. Regular inspections of Mine Components and surface infrastructure and facilities;

3.5.3. Compiling records and summaries of inspections carried out;

3.5.4. Accurate completion of inspection forms and other records within their control; and

3.5.5. Reporting the completion of inspection forms and other records.

3.6. All Employees:

3.6.1. Promptly reporting any environmental spills or other environmental problems, including problems with drinking water or sewage to the Environmental Coordinator or designate; and

3.6.2. Understanding and implementing this procedure as required.

Responsibilities of Employers, Contractors, Supervisors and Employees are also described in the NWT Mine Health and Safety Act (Sections 15 – 18) and throughout the NWT Mine Health and Safety Regulations.

4.0 CRITICAL CONTROLS

If not currently available, these will be identified during the next document review when the Job Risk Assessment is completed.

5.0 PROCEDURE

5.1. The Environmental Technician will inspect SLM facilities for wildlife presence immediately prior to closure activities involving decommissioning/demolition of infrastructure or areas where mobile equipment will used for reclamation or rehabilitation.

5.1.1. Inspections will include searching entire areas where activities will occur for wildlife and nests (if applicable). Activities will not commence until the survey inspections are complete and the facilities or areas are deemed not to contain wildlife, nests, eggs or young.

5.1.2. During the general nesting period, nest sweep surveys will be conducted prior to disturbance of features where bank swallows may be nesting (EP-DOP-015, CL 117, CL 119). Noise and/or visual deterrents may be installed on

infrastructure scheduled for decommissioning, demolition, or reclamation (EP-DOP-015, CL 115, CL 220).

5.1.3. Unoccupied or occupied nests will be reported to the Department of Environment and Natural Resources, Government of the Northwest Territories or Environment and Climate Change Canada (cwsnorth-scfnord@ec.gc.ca) to determine the appropriate course of action.

5.1.4. The NWT Wildlife Act s. 51(2) prohibits breaking into, destroying or damaging a den unless authorized by a license or permit to do so. If denning activity is observed at waste storage areas, dens will be left alone until they are unoccupied, or if it is deemed necessary to disturb or destroy a den, De Beers will contact GNWT-ENR to determine the appropriate course of action and to obtain a permit.

5.2. The Environmental Technician will inspect SLM facilities and work areas, as described below, at a frequency of every two weeks or as outlined in specific OPS and management plans. Results of these inspections will be recorded in checklists and forms as outlined in this procedure. The regular completion of Environmental Inspections will be tracked by the Environmental Coordinator or their designate using *CL 130: Environmental Inspection Tracking Table*. Any noted deficiencies will be recorded on *CL 035 Work Site Environmental Inspection* (unless otherwise specified), and reported to the Environmental Coordinator so corrective actions can be determined, tracked, and implemented in a timely manner.

5.3. The Environmental Technician will inspect waste storage areas every two weeks using *CL 071: Waste Inspection*. This includes inspecting maintenance areas and shops for appropriate handling of hazardous wastes in the workplace to ensure that secondary containment and spill response equipment is in place, containers are appropriately labelled, and that any full containers have been taken to the central hazardous waste management area. Environment personnel will also inspect the non-hazardous landfill site at least weekly for excessive dust, windblown litter, nuisance animals, odour, gate controls and other issues. Personnel will also survey water management ponds every two weeks for use by birds using the *Wildlife Sightings Log (CL 031)*.

5.4. The worker assigned as the "Responsible Person" in control of the open fire burn pit will check that it contains only clean wood and cardboard before starting the fire. This will include checking the area around the pile to be sure that the fire cannot spread to other nearby material and completing the CL109: Open Burning Record Form. See OP 009: Open Fires (Burn Pit) for specific details.

5.5. When the SLM airstrip for fixed-wing aircraft is in use, a check of the airstrip is required to look for people, mobile equipment or wildlife such as bears or caribou

within 100 m of the strip. This will be done on any day which an aircraft arrival is expected and again at reasonable intervals before expected aircraft arrival times. The radio operator must be immediately notified of any such risks so that they can notify inbound aircraft of the possible presence of animals or other activity on or near the runway. See OP 003: Aircraft – Environmental Factors and OP 006 – Wildlife Procedures for details if any significant wildlife is seen. These observations are to be communicated to the Environmental Coordinator/Technician or designate and recorded *the Wildlife Sighting Log (CL 031)*.

5.6. Equipment Operators must conduct pre-use inspections on any equipment that is about to be operated to ensure that there is no leaking oil or fuel. Any such leakage must be fully contained by absorbent pads or other devices, locked-out to prevent use, and repaired prior to operation. Operators must also investigate any unusually noisy vehicle, generator or stationary engine to ensure that it is equipped with an exhaust muffler system that is in good working order. If not, repairs must be completed before the equipment is used (See *OP 004: Equipment Operations - Environmental Factors, OP 126: Zero Energy and Lockout*).

5.7. The Environmental Technician will inspect soil stockpiles, excavations, water bodies and protection measures every two weeks looking for signs of soil erosion, contamination or other problems (e.g., dead vegetation, discoloured runoff, etc.). Observations of any problems will be reported to the Environmental Manager and as appropriate through the *CL 035 Work Site Environmental Inspection* (See *OP 007: Vegetation Management*). Note that erosion inspections are not required during frozen ground conditions.

5.8. The Environmental Technician will inspect fuel storage areas and tanks and associated secondary containment and fuel handling infrastructure on a weekly basis for evidence of leaks, spills or other environmental problems, and record their observations on *CL 019 Fuel System Inspection Sheet*. See *OP 201: Petroleum Products* for additional details.

5.9. The Environmental Technician will inspect a representative sample of mining equipment, light vehicles and other mobile equipment for evidence of leakage, missing or damaged spill kits and fire extinguishers or other environmentally significant deficiencies on a weekly basis. Any problems noted will be reported to the Environmental Coordinator or designate and, as appropriate, through *CL 035 Work Site Environmental Inspection*.

5.10. Site Services workers will determine, on a weekly frequency, the inventory of gasoline, diesel and Jet-B fuels on site. They will do this by counting the number of fuel drums and measuring the depth of fuel in each bulk tank. The tank level readings will be

converted to volume measurements, corrected for temperature expansion to a standard 15° C temperature and recorded in fuel inventory tracking records (written or digital) stored within the Site Services Department. On a monthly basis, the Site Services Supervisor or their designate will reconcile fuel inventory measurements against consumption and deliveries to determine if unexplained losses or leaks are apparent. See *OP 201: Petroleum Products for details*.

5.11. The Environmental Technician will inspect operating pipeline(s) carrying water, wastewater, processed kimberlite or petroleum products on at least a monthly frequency, or as otherwise specified in other operating procedures, permits, or management plans. These inspections will be recorded on inspection form *CL 035 Work Site Environmental Inspection*.

5.12. The Environmental Technician will inspect spill response kits throughout the site, including contractor work areas and the on-site Spill Response Trailers on at least a monthly basis. Basic supplies will be replaced and any problems observed will be reported to the Environmental Coordinator. These inspections will be documented in *CL 035: Work Site Environmental Inspection* and *CL 088: Spill Kit Inspection Form*.

5.13. The Environmental Technician will inspect the on-site explosives blending plant and related storage areas on at least a bi-weekly basis accompanied by the explosives contractor. This inspection will focus on environmental issues such as waste management, water penetration of the storage area, materials storage, spills and spill prevention measures. The inspection will be documented using *CL035: Work Site Environmental Inspection* and any deficiencies raised will be tracked and resolved by the Environmental Coordinator or designate, and the Mining Manager.

6.0 APPROVAL

Name	Title	Date	Signature
Name	Environmental Superintendent	March 19, 2021	

7.0 REVISION HISTORY

Noted below is the revision history of this document.

Revision	Date	Comments
0	Month/Day/Year	Approved for Use

8.0 DATA FORMS

8.1. Wildlife Sightings Log

SIGHTING LOG LOCATION: _____

MONTH / YEAR: _____

DATE (DD-MMM-YYYY)	TIME (24hr)	SPECIES	COUNT	LOCATION	ACTIVITY / BEHAVIOUR (WALKING, FEEDING, FLYING, NESTING, ETC.)	OBSERVER	COMPANY

DE BEERS GROUP	SLM CHECKLIST **Waste Inspection**	ID No.: **CL 071** Revision Date: **November 15, 2021**

Date (DD-MMM-YYYY): _____ Time: _____ Inspected By: _____

Weather: _____

Landfill Burn Pit

Infrastructure Status

Non-Compliance Issues: Yes No

If Yes, Type (i.e., food waste, hydrocarbons, recyclables):

Wildlife Observation

Wildlife Present: Yes No

Type of Observation: Tracks Scat Fur Live Dead

Species: _____

Denning Activity: Yes No

Comments:

Date (DD-MMM-YYYY): _____ Time: _____ Inspected By: _____

Weather: _____

Landfill Burn Pit

Infrastructure Status

Non-Compliance Issues: Yes No

If Yes, Type (i.e. food waste, hydrocarbons, recyclables):

Wildlife Observation

Wildlife Present: Yes No

Type of Observation: Tracks Scat Fur Live Dead

Species: _____

Denning Activity: Yes No

Comments:

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment & Permitting	**Document No.:**	**EP-DOP 015**
Section:		**Effective Date:**	October 25, 2021
DEPARTMENT OPERATING PROCEDURE – *Nesting Deterrence Procedures for Migratory Birds at the Snap Lake Mine*			
Revision:		**Replaces:**	
APPROVED:	*Original Signature: Refer to Item 6. APPROVAL*		

1.0 PURPOSE

This document outlines the mitigating measures that De Beers will implement in order to deter migratory birds from nesting in critical work areas around the mine site (i.e., areas slated for demolition and revegetation).

2.0 SCOPE

This Department Operating Procedure applies to all De Beers employees and contractors involved in employing active and passive deterrence methodologies during the migratory bird nesting season. Based on the regional location of the Snap Lake Mine, this season typically extends from early May to mid-August (Environment and Climate Change Canada, 2017).

3.0 RESPONSIBILITIES

3.1. The Environment Coordinator or designate:

3.1.1 Ensure appropriate deterrence methods applicable to site conditions are selected and employed as per the Department Operating Procedure;

3.1.2 Provide the results of any data collected to the Wildlife Mitigation and Monitoring Plan Annual Report; and

3.1.3 Revise this Department Operating Procedure as and when required.

3.2. The Environmental Officer or designate:

3.2.1 Understand and follow the Department Operating Procedure;

3.2.2 Coordinates with other applicable mine departments involved in passive or active deterrence programs;

3.2.3 Records observations and regularly assess effectiveness of deterrence measures being applied; and

3.2.4 Communicates findings to those departments that may be directly impacted by migratory bird nesting behaviours.

3.3. De Beers Mine Operations and Contactors:

3.3.1 Provide up to date information on any nesting activities on buildings slated for demolition and vegetation that may be disturbed during closure activities; and

3.3.2 Will supply long range forecasts of planned closure mining activity including proposed drill patterns blast schedules, and any proposed construction activities around site.

3.4. Site Services and contractors:

3.4.1 Report observations of migratory bird nesting activity around site.

4.0 CRITICAL CONTROLS

If not currently available, these will be identified during the next document review when the Job Risk Assessment is completed.

5.0 OPERATING PROCEDURE

Mitigation strategies include the use of passive and active deterrents along with active field monitoring to discourage migratory birds from nesting in critical work areas during closure. Passive deterrents include visual objects such as fox decoys, terror eyes, scarecrows, eagle decoys (flying and perching) and auditory devices such as the Phoenix Wailer™ (Phoenix Agritech) and BirdXPeller Pro™ (BirdX Canada). Active deterrents include the use of bear bangers and propane scare cannons (Zon Electra Scare Cannon™) along with the physical presence of Environment Department personnel in the field to discourage migratory birds from a specific area.

NOTE: The use of active deterrents must be documented in a Deterrent Log Book for the season with the information transcribe to an electronic database and filed on Snap Lake Mine Environmental Data Management System server.

5.1. Equipment Required

5.1.1. Binoculars

5.1.2. Digital Camera

5.1.3. Handheld Radio

5.1.4. GPS

5.1.5. Pencils/Pen

5.1.6. Bird Surveillance Data Sheets (CL 119)

5.1.7. Wildlife Sightings Log (CL 031)

5.1.8. Deterrent Placement Data Sheet (CL 115)

5.1.9. Sunglasses/Sunscreen

5.1.10. Field PPE (i.e., hard hat, work boots, safety vest, bear bangers, air horn)

5.1.11. Bird Identification Field Guide

5.1.12. Wildlife Deterrent Log Book

5.1.13. Applicable deterrents for either passive or active mitigation

5.2. Deterrent Inventory and Maintenance

A deterrent inventory will be taken at the beginning and end of each season. The inventory will document that sufficient quantities of deterrents are available, that batteries are serviceable, that propane cylinders have been re-filled or additional ones ordered, that solar panels are functioning and that broken gear has been repaired or replaced. The list of inventory items to be maintained is described in Table 1.

Table 1. Bird Deterrent Inventory List

Deterrent Items	Required Inventory
Fox	10
Falcon Flying Kit	10
Terror Eyes	5
Eagles Perching	10
Large Eagle Perching	4
Foam Flying Eagles	10
Scarecrow	10
Zon Electra Scare Cannon (Propane Cannon)	6
20lb Propane Cylinders	6
Airhorns	20
Pistol Banger	13
Pen Banger	22
Pistol Pouch Kit	3
Pen Pouch Kit	13
Pistol Cartridge Boxes(50/box)	15
Pen Banger Shell Boxes(6/box)	15
Pen Flare Shell Boxes (6/box)	5
Pistol .22 Blank Containers (100/container)	10
12V Batteries	7
BirdXPeller Pro	2
Phoenix Wetland Wailer MK IV	1
Super BirdXPeller Pro	1

5.3. Deterrent Placement Strategy

Prior to deployment or use of any deterrents around active work areas, discussions with Mine Operations must be conducted and the locations recorded using Deterrent Placement Data Sheet (CL115). For deployment in any other areas of concern the UTM coordinates with photos, date, and time must be recorded and the Deterrent Placement Data Sheet completed. Deterrents will be selected based on distances, terrain, and most effective deterrent for a given area. See Table 2 for descriptions of potential deterrents available.

Table 2. Deterrent Descriptions

Deterrent	Details
Phoenix Waller 	• Auditory deterrent for use during nest initiation period in critical locations of concern • Emits a range of electronic and natural sounds • Need a battery to operate
Fox Decoy 	• Foxes are ground nest predators • Decoys will pivot in the wind, replicating movement of fox
Eagle Decoys 	• Eagles are nest predators • The wings will flap in the wind which is a scare tactic
Terror Eyes 	• Mimic predators • Will move in wind • Can be hung or put on ground

BirdXPeller Pro 	• Auditory deterrent that emits a range of predator and electronic sounds • Need battery to operate
Super BirdX Peller Pro 	• Auditory deterrent that emits a range of predator and electronic sounds • Need battery to operate
Scarecrows 	• Mimic humans
Propane Scare Cannon 	• Auditory deterrent that emits a range of sounds • Need battery to operate and propane
Flying Falcon Kit 	• Mimic predators flying • Will move in wind
Eagle Decoys  	• Eagles are nest predators

Pistol Style Banger 	• Hand pistol that uses .22 caliber blanks to fire a shell that produces a loud "gunshot" style noise
Pen Style Banger 	• Produce a loud "gunshot" style noise when fired • "Flash/Bang" cartridges can also be fired from this style of Banger

5.4. Inspections

Pre-demolition inspections of infrastructure (e.g., buildings, equipment) scheduled to be decommissioned will be commence from mid-May to late June to coincide with the peak period of migratory bird nesting activity.

The inspections will consist of filling out the *Bird Surveillance Data Sheet* (CL119) for each location as well as completing the *Wildlife Sighting Form* (CL031) for any incidental sightings of other wildlife (e.g., Red Fox, Common Ravens, Gulls Spp., etc.) Migratory species known to occur around the Snap Lake Mine site are listed in Table 3.

Table 3. Migratory Species Occurrences for the Snap Lake Mine Site

Common Name	Scientific Name
Harri's Sparrow	*Zonotrichia querula*
American Tree sparrow	*Spizella arborea*
Savannah Sparrow	*Passerculus sandwichensis*
Least Sandpiper	*Calidris minutilla*
Stilt Sandpiper	*Calidris himantopus*
Gray-cheeked Thrush	*Catharus minimus*
Yellow Warbler	*Setophaga striata*
Black Warbler	*Setophaga petechia*
Yellow-rumped warbler	*Setophaga coronata*
White-crowned sparrow	*Zonotrichia leucophrys*
Lapland Longspur	*Calcarius lapponicus*
American Robin	*Turdus migratorius*
Peregrine Falcon	*Falco peregrinus*
Gyrfalcon	*Falco rusticolus*
Raven	*Corvus corax*
Red-tailed Hawk	*Buteo jamaicensis*
Broad-wing Hawk	*Buteo platypterus*
Rough-legged Hawk	*Buteo lagopus*
Bank Swallow	*Riparia riparia*

5.5. Nesting Sites Found

If nesting behaviour is observed or an active nest site is found during inspections, the following procedures will be performed:

- **5.5.1.** Record UTM coordinates of nesting behaviour and/or nest location;
- **5.5.2.** Take photos of the nesting site and nest;
- **5.5.3.** Flag the area, creating an initial buffer zone around the nest site of at least a 20 m radius (adjust accordingly based on species present and type of work activity associated with nest site);
- **5.5.4.** Advise the applicable Supervisors of any findings and inform the Environmental Coordinator and Environmental Superintendent. Increase visits to nest location to verify nesting activity;
- **5.5.5.** Superintendent or designate will notify the appropriate regulators (ENR or ECCC) as required. In the case of raptor species the following required notification will be completed: "*Report any raptor nesting activity observed on Mine infrastructure*" – WMMP; and
- **5.5.6.** Increase the frequency of site visits to the nest location and continue to advise Supervisors of nest status (i.e., bird on nest, eggs present, chicks hatched, nest abandoned, nest predated, etc.).

5.6. Reporting

Completed wildlife sighting logs, deterrent placement sheets, bird surveillance sheets, active deterrents fired/used, and any other information will be recorded into a database and be reviewed for completeness and accuracy on a daily basis. Information will be reported in future annual wildlife reports.

6.0 APPROVAL

Name	Title	Date	Signature
	SHERT Manager		

7.0 REVISION HISTORY

Noted below is the revision history of this document.

Revision	Date	Comments

8.0 DEFINITION

8.1. **WMMP**: Wildlife Management and Mitigation Plan

8.2. **UTM:** Universal Transverse Mercator Coordinate System

8.3. **AN:** Ammonium Nitrate

8.4. **ML:** Million Litres (Volume)

8.5. **PPE:** Personal Protective Equipment

9.0 REFERENCES and RELATED DOCUMENTS

9.1. CL 031: Wildlife Sightings Log

9.2. CL 115: Deterrent Placement Data Sheet

9.3. Wildlife Management and Mitigation Plan, October 2021

9.4. CL 119: Bird Surveillance Data Sheet

9.5. Wildlife Deterrent Log Book

9.6. Mine Closure Forecasted Activity Map (for placement strategy)

9.7. Environment and Climate Change Canada. 2017. General Nesting Periods of Migratory Birds in Canada. (http://www.ec.gc.ca/paom itmb/default.asp?lang=En&n=4f39a78f-1#_03), accessed April 25, 2017

Migratory Breeding Bird Reference Material

Source: Environment and Climate Change Canada, Breeding Bird

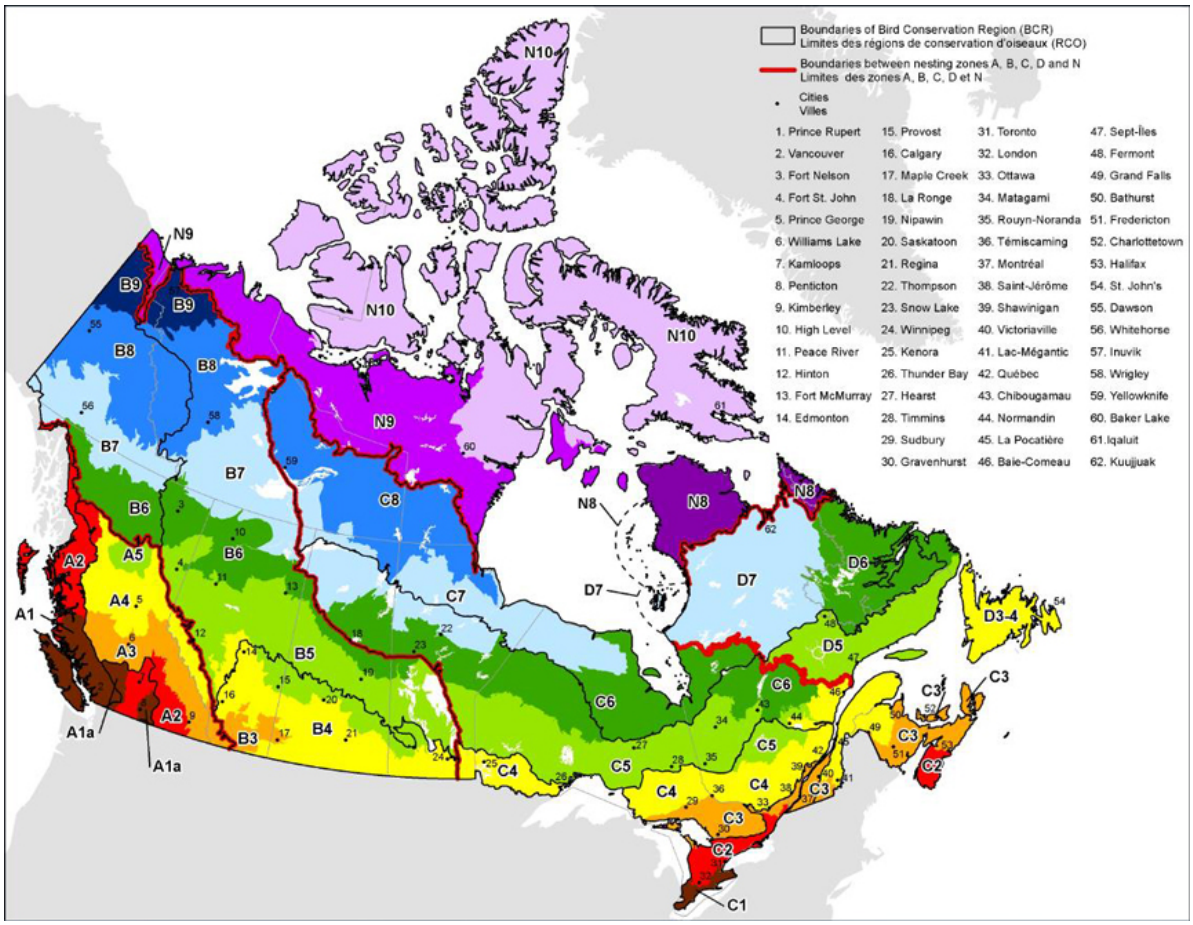


Figure 1: Migratory Bird Nesting Zones in Canada (Environment and Climate Change Canada, 2021)

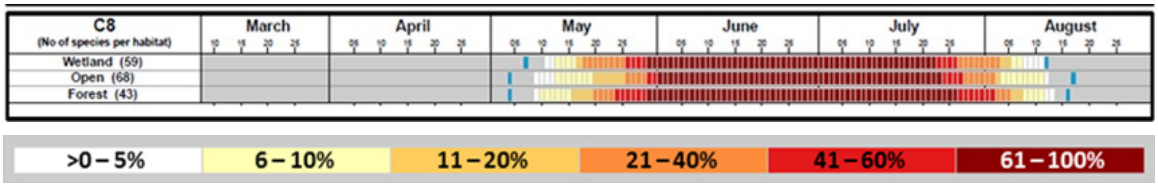


Figure 2: Nesting Calendar for Zone C8, location of Snap Lake Mine (Environment and Climate Change Canada, 2021)

The Nesting Calendar shows the time period over which nesting activity takes place within Zone C8. The colour codes represent the percentage of species nesting during different time periods. Blue markers show extreme dates predicted for some atypical parts of the nesting zone where nesting could be earlier or later.

References

Environment and Climate Change Canada. 2021. General Nesting Periods for Migratory Birds. Available at: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods.html. Accessed November 15, 2021.

DE BEERS
GROUP OF COMPANIES

SLM FORM

Deterrent Placement Data Sheet

ID No: CL 115

Revision Date: October 25, 2021

Site: Snap Lake | **Weather:**

Date: | **Start Time:** | **End Time:**

Observers/Company:

Deterrent Number	Deterrent Type	UTM Coordinates		Photo Number	Time	Wildlife Observed
		Easting	Northing			

Approved by: Environmental Superintendent

Unauthorized Changes Prohibited

DE BEERS GROUP	SLM FORM BIRD NESTING DATA SHEET	ID No.: CL 117 Revision Date: October 25, 2021

Site: Snap Lake	**Weather:**	
Date (DD-MMM-YYYY):	**Start Time:**	**End Time:**
Observers/Company:	**Location Inspecting:**	

Nest #	Location of Nest	UTM Coordinates		Species	# of Eggs or Young	Prediction for when birds will fledge	Nest Mitigation Action Plan (e.g., buffer, ECCC notification, monitoring schedule)	Photo #	Time	Wildlife Observer
		Easting	Northing							

Approved by: Environmental Superintendent

Unauthorized Changes Prohibited

DE BEERS GROUP	SLM CHECKLIST **Bird Surveillance Data Sheet**	**ID No.: CL 119** **Revision Date: October 25, 2021**

OBSERVER		WEATHER			DATE (DD-MMM-YYYY)	

LOCATION	TIME	BIRD SPECIES	PRESENCE (Y/N)	# OF INDIVIDUALS	ACTIVITY / BEHAVIOUR	COMMENTS

Entered in Excel Database _____ QA/QC Excel Database _____ Page ____ of _____

Common Name	Scientific Name	Code
Harris Sparrow	*Zonotrichia querula*	HRSP
American Tree sparrow	*Spizella arborea*	ATSP
Savannah Sparrow	*Passerculus sandwichensis*	SASP
Least Sandpiper	*Calidris minutilla*	LESA
Stilt Sandpiper	*Calidris himantopus*	STSA
Gray-cheeked Thrush	*Catharus minimus*	GCTH
Yellow Warbler	*Setophaga striata*	YEWA
Black Warbler	*Setophaga petechia*	BLWA
Yellow-rumped warbler	*Setophaga coronata*	YRWA
White-crowned sparrow	*Zonotrichia leucophrys*	WCSP
Lapland Longspur	*Calcarius lapponicus*	LALO
American Robin	*Turdus migratorius*	AMRB
Peregrine Falcon	*Falco peregrinus*	PEFA
Raven	*Corvus corax*	RAVN
Gull	*Laridae*	GULL
Bank Swallow	*Riparia riparia*	BKSW
Red-tailed Hawk	*Buteo jamaicensis*	RTHA
Broad-winged Hawk	*Buteo platypterus*	BAEG
Rough-legged Hawk	*Buteo lagopus*	BULA
Bald Eagle	*Haliaeetus leucocephalus*	BAEG
Greater white-fronted Goose	*Anser albifrons*	GWGO
Rock Ptarmigan	*Lagopus muta*	ROPT

Reference: http://www.birdpop.org/docs/misc/Alpha_codes_sci.pdf

Activity/Behavior	Code
Flying	FL
Resting	RS
Perching	PR
Nesting	NS
Tracks	TR
Feeding	FD
Deceased	DE
Swimming	SW
Other	OT – put in comment

DE BEERS GROUP	SLM FORM **Bird Deterrent Inspection Log**	**ID No.: CL 220** **Revision Date: October 25, 2021**

Site:	Snap Lake	Weather:			
Date (DD-MMM-YYYY):		Start Time:		End Time:	
Observers / Company:					

Deterrent Identification Number	Type	Status (Active/ Inactive)	Location	Repairs or Refills Conducted

Approved by: Environmental Superintendent	Page: 1 of 1

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment & Permitting / SHERT	**Document No.:**	**OP 078**
Section:		**Effective Date:**	March 19, 2021
OPERATING PROCEDURE – *Responding to Bears or Aggressive Animals At or Near SLM (Emergency Situation)*			
Revision:	1	**Replaces:**	
APPROVED:			

1.0 PURPOSE

This procedure applies to the Snap Lake Mine (SLM) site for the purpose of managing aggressive animal sightings, encounters, or in-camp situations.

2.0 SCOPE

This procedure applies to Environment superintendent and support personnel (i.e., ERT) responding to all aggressive animal sightings, encounters, and in-camp situations at the SLM. It covers such issues as consideration for the safety of personnel in relation to wildlife presence, requesting support should there be a need, reporting the incident, and dealing with deterrent actions and/or removal of the animal.

Aggressive animals include, but are not limited to, wolverines, bears, wolves, moose and muskox. Foxes and large birds are not normally aggressive but shall be managed in a similar manner if the animal's actions are aggressive in nature.

3.0 RESPONSIBILITIES

3.1. Mine General Manager or Designate:

3.1.1. Ensure that this procedure is implemented and maintained.

3.2. Heads of Departments/Contractor Managers, Superintendents or their Designates:

3.2.1. Ensure this procedure is communicated to their employees and contractors;

3.2.2. Ensure their employees and contractors have received the appropriate training; and

3.2.3. Ensure this procedure is implemented.

3.3. Environmental Superintendent or Designate:

3.3.1. Record the sighting on the Wildlife Monitoring Log;

3.3.2. Report and record encounters and actions on a Wildlife Deterrent Report and forwarding to appropriate *ENR Wildlife Officer;*

3.3.3. Ensure carcasses are handled properly, and the skin, including claws, head, and any requested specimen(s), are delivered to the appropriate *ENR Wildlife Officers* in a timely manner; and

3.3.4. Ensure any incident regarding wildlife is reported for the purpose of the Annual Wildlife Mitigation and Monitoring Report.

3.4. Supervisors:

3.4.1. Implement this procedure and ensure it is properly followed.

3.5. Safety, Health, Environment, Risk and Training (SHERT) Superintendent or Designate:

3.5.1. Monitor the implementation of this procedure; and

3.5.2. Ensure this procedure is maintained.

3.6. SHERT Coordinator is responsible for:

3.6.1. Monitoring the adherence of this procedure.

3.7. All Employees that use bear deterrents:

3.7.1. Understand and practice this procedure as required;

3.7.2. Be aware of applicable Safe Work Plans related to bears and other aggressive animals and bear deterrents;

3.7.3. Read and understand information contained in the approved Bear Awareness Program(s) before going into the field;

3.7.4. Ensure bear deterrents in use are within the specified expiry dates;

3.7.5. Report the use of wildlife deterrents on a SLM Near Hit reporting card

3.7.6. Ask their supervisor for clarification if they are unsure of any aspect of this procedure.

3.8. All Environmental Personnel or other Designated Individuals Who Handle or Fire the Shotgun:

3.8.1. Are required to hold a valid Canadian, Firearms Possession and Acquisition Licence (PAL).

3.8.2. Have their valid PAL on file with the Environmental department

3.8.3. Have taken current and appropriate shotgun handling and predator defence training (or equivalent as verified by the SHR/E Manager)

3.9. All Employees:

3.9.1. Understand and practice this procedure as required; and

3.9.2. Ask their supervisor for clarification if they are unsure of any aspect of this procedure.

Responsibilities of Employers, Contractors, Supervisors and Employees are also described in the NWT Mine Health and Safety Act (Sections 15 – 18) and throughout the NWT Mine Health and Safety Regulations.

4.0 CRITICAL CONTROLS

- Site radio communication;
- Bear Awareness Training;
- Bear deterrent sign-out kits;
- All persons handling firearms at SLM must have a valid Canadian PAL, appropriate training, and have a copy of their PAL on file with the environment department;
- Proper firearms usage techniques, positioning of second person always in line and never in front or behind the first person;
- Correct loading and unloading procedure while ensuring the firearms safety is actuated;
- Use of firearms 'safety' switch.

5.0 PROCEDURE

5.1. The intent of this procedure is to:

5.1.1. Prevent risk of injury to humans;

5.1.2. Prevent aggressive animals from becoming habituated to the site and its infrastructure;

5.1.3. Prevent aggressive animals from seeking refuge in or around buildings, equipment storage or laydown areas;

5.1.4. Prevent aggressive animals from gaining access to areas or substances that could be harmful to the animal, such as fuel and chemical storage;

5.1.5. Prevent injury or death to aggressive animals;

5.2. WARNING

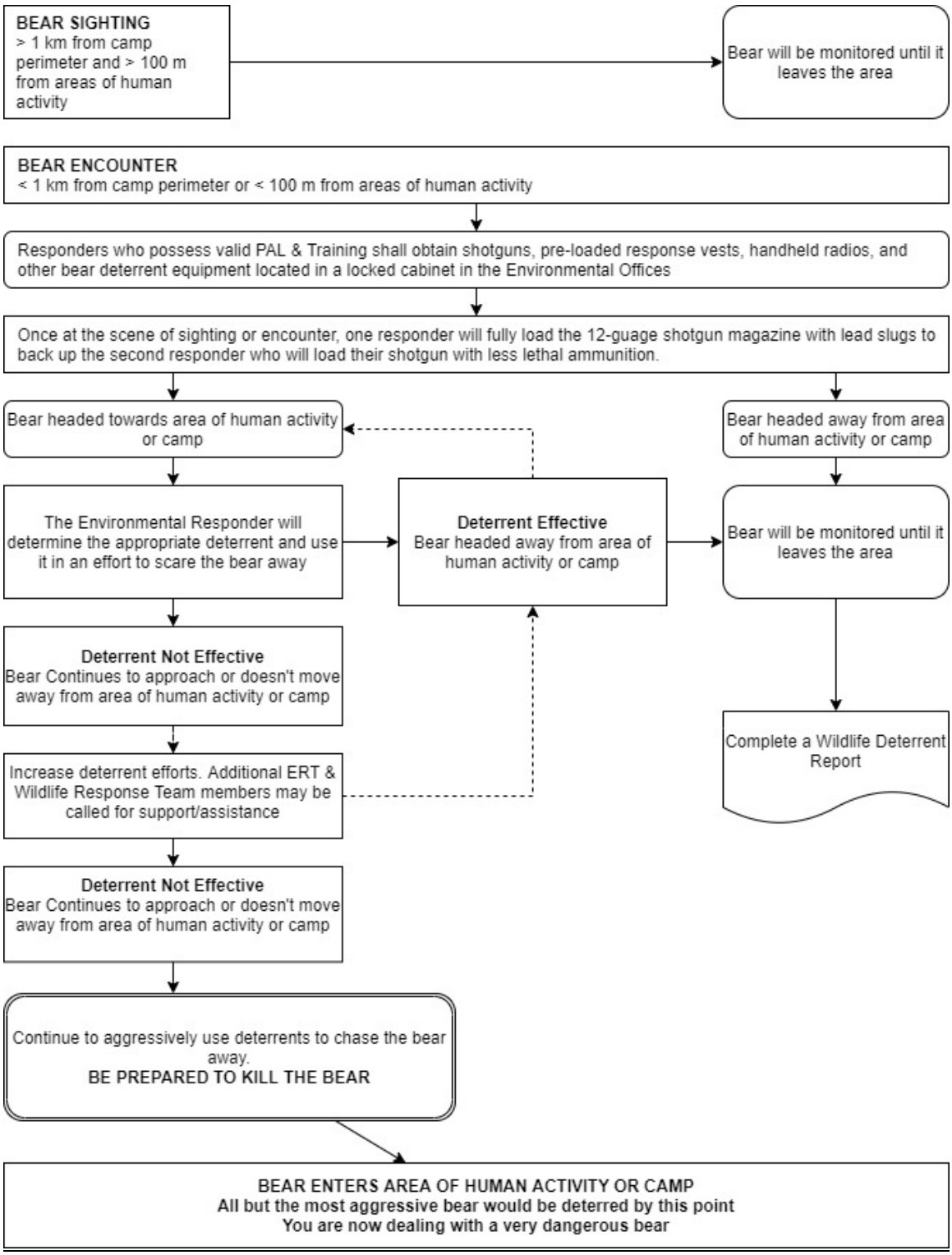
5.2.1. When responding to a wildlife encounter or an animal in camp, there must be a minimum of two responders;

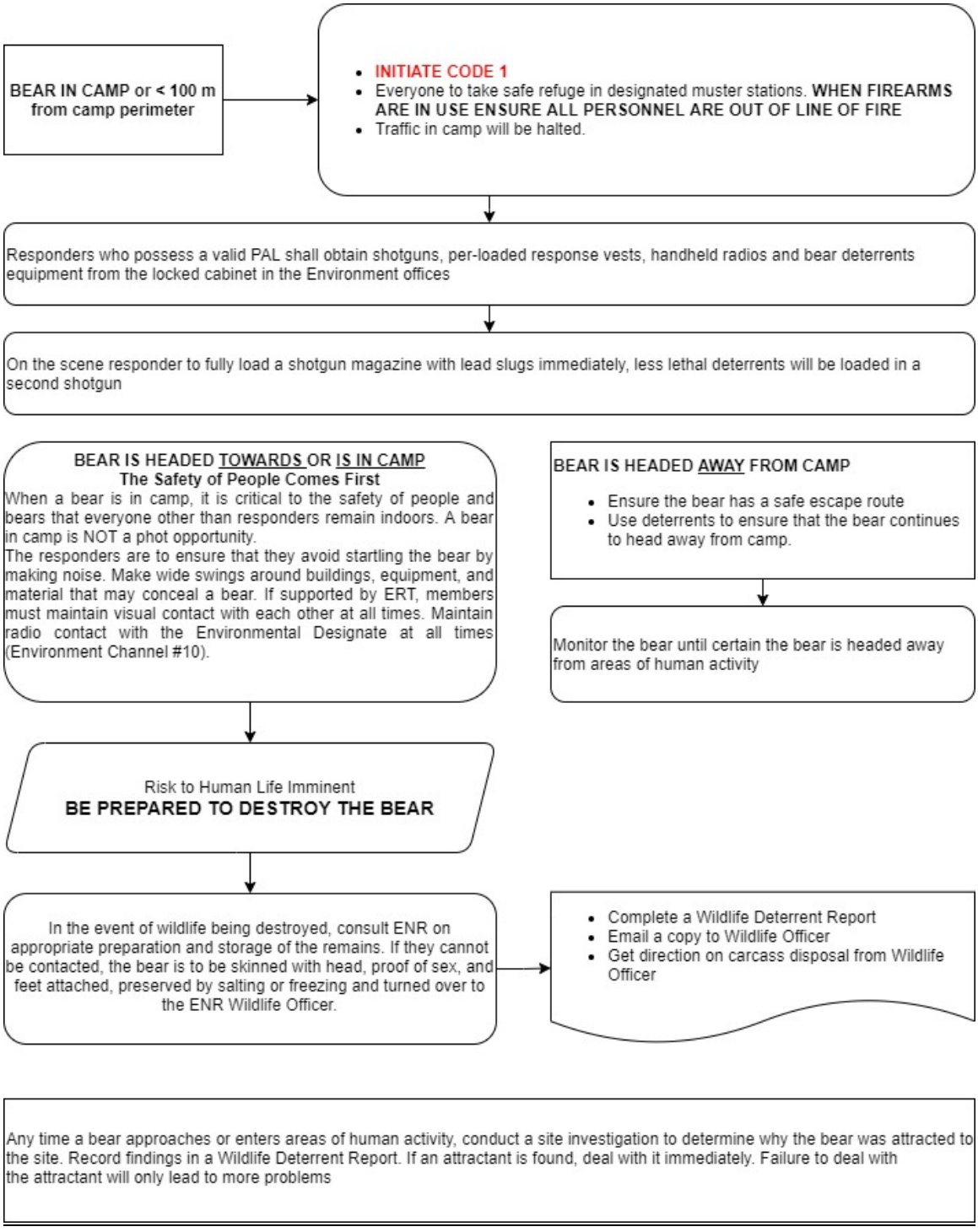
5.2.2. If firearms are determined to be an appropriate response, each responder will outfit themselves with a shotgun and a preloaded wildlife response vest. These vests will be pre-loaded with both lethal and less lethal ammunition. The lethally loaded shotgun may also be substituted for a rifle with lethal ammunition;

5.2.3. One responder will load their shotgun magazine fully with lethal ammunition (lead slugs) to provide backup for the second responder who will load their shotgun with less lethal ammunition (rubber slugs);

5.2.4. When preparing to fire both responders must be side by side, at least 3 metres apart (neither responder is allowed to be in front of the other responder), and ensure that the backdrop to the rear of the target is clear of personnel and hazardous materials (i.e., potential explosives);

5.2.5. Deterring animals at closer range may also include the use of the 15 mm bear bangers and other noise makers, however it is recommended that a second responder is present with a fully loaded shotgun (with lead slugs) in the event the non-lethal deterrents are ineffective.


BEAR SIGHTING
> 1 km from camp perimeter and > 100 m from areas of human activity
Bear will be monitored until it leaves the area
BEAR ENCOUNTER
< 1 km from camp perimeter or < 100 m from areas of human activity
Responders who possess valid PAL & Training shall obtain shotguns, pre-loaded response vests, handheld radios, and other bear deterrent equipment located in a locked cabinet in the Environmental Offices
Once at the scene of sighting or encounter, one responder will fully load the 12-guage shotgun magazine with lead slugs to back up the second responder who will load their shotgun with less lethal ammunition.
Bear headed towards area of human activity or camp
Bear headed away from area of human activity or camp
The Environmental Responder will determine the appropriate deterrent and use it in an effort to scare the bear away
Deterrent Effective
Bear headed away from area of human activity or camp
Bear will be monitored until it leaves the area
Deterrent Not Effective
Bear Continues to approach or doesn't move away from area of human activity or camp
Complete a Wildlife Deterrent Report
Increase deterrent efforts. Additional ERT & Wildlife Response Team members may be called for support/assistance
Deterrent Not Effective
Bear Continues to approach or doesn't move away from area of human activity or camp
Continue to aggressively use deterrents to chase the bear away.
BE PREPARED TO KILL THE BEAR
BEAR ENTERS AREA OF HUMAN ACTIVITY OR CAMP
All but the most aggressive bear would be deterred by this point
You are now dealing with a very dangerous bear


BEAR IN CAMP or < 100 m from camp perimeter
INITIATE CODE 1
Everyone to take safe refuge in designated muster stations. WHEN FIREARMS ARE IN USE ENSURE ALL PERSONNEL ARE OUT OF LINE OF FIRE
Traffic in camp will be halted.
Responders who possess a valid PAL shall obtain shotguns, per-loaded response vests, handheld radios and bear deterrents equipment from the locked cabinet in the Environment offices
On the scene responder to fully load a shotgun magazine with lead slugs immediately, less lethal deterrents will be loaded in a second shotgun
BEAR IS HEADED TOWARDS OR IS IN CAMP
The Safety of People Comes First
When a bear is in camp, it is critical to the safety of people and bears that everyone other than responders remain indoors. A bear in camp is NOT a phot opportunity.
The responders are to ensure that they avoid startling the bear by making noise. Make wide swings around buildings, equipment, and material that may conceal a bear. If supported by ERT, members must maintain visual contact with each other at all times. Maintain radio contact with the Environmental Designate at all times (Environment Channel #10).
BEAR IS HEADED AWAY FROM CAMP
Ensure the bear has a safe escape route
Use deterrents to ensure that the bear continues to head away from camp.
Monitor the bear until certain the bear is headed away from areas of human activity
Risk to Human Life Imminent
BE PREPARED TO DESTROY THE BEAR
In the event of wildlife being destroyed, consult ENR on appropriate preparation and storage of the remains. If they cannot be contacted, the bear is to be skinned with head, proof of sex, and feet attached, preserved by salting or freezing and turned over to the ENR Wildlife Officer.
Complete a Wildlife Deterrent Report
Email a copy to Wildlife Officer
Get direction on carcass disposal from Wildlife Officer
Any time a bear approaches or enters areas of human activity, conduct a site investigation to determine why the bear was attracted to the site. Record findings in a Wildlife Deterrent Report. If an attractant is found, deal with it immediately. Failure to deal with the attractant will only lead to more problems

5.3. Using a Helicopter to Deter an Animal

It is illegal to harass wildlife with aircraft, but occasionally, and only for reasons of human safety, it may be necessary to use a helicopter to deter wildlife. When using a helicopter to deter an animal from the SLM, the following procedures must be followed:

5.3.1. If possible, at least one member of the Environmental Department should be on board the aircraft. That person will be responsible for the safety of the animal and will provide instructions to the pilot;

5.3.2. The pilot is responsible for the aircraft and the safety of the people on board, and will ensure it is operated safely within the manufacturers specifications;

5.3.3. The pilot must maintain radio contact with SLM site management;

5.3.4. To minimize stress to the animal, the pilot must keep the helicopter well back from the animal. The minimum distance between the helicopter and the animal is 100 m (330 ft.) back and 30 m (100 ft.) up. The pilot should only get close enough to get the animal to move. A bear moving at a fast walk can cover a lot of ground quickly and efficiently, so there is no need to have the bear running. A running bear may become overheated, overstressed and die;

5.3.5. The pilot must keep the animal in visual contact, observing the minimum distances;

5.3.6. The pilot must keep the helicopter between the animal and the site to prevent pushing the animal into camp;

5.3.7. DO NOT push an animal for more than 10 min or 3 km (2.2 miles), unless personnel are still in imminent danger;

5.3.8. Once the Environmental representative is satisfied that the animal is moving away, the pilot may be directed to stop pursuing the animal and take the helicopter to an altitude where they can continue to monitor the animal to ensure it is not returning;

5.3.9. Once satisfied that the animal poses no further immediate risk, the helicopter will return to camp;

5.3.10. Ongoing communications and updates on the animals condition / location from the helicopter team will be provided to the SHR/E Manager.

5.4. Destroying Aggressive Wildlife

5.4.1. Lethal force must be exerted on aggressive wildlife (e.g., bear) when personnel are in immediate danger of attack, or when it is not possible to remove the animal without endangering human life.

5.4.2. Deciding exactly when to shoot a bear is a difficult decision to make and is wholly dependent on the prior experience and training of the shooter. For this reason there is no set distance at which to exert lethal force.

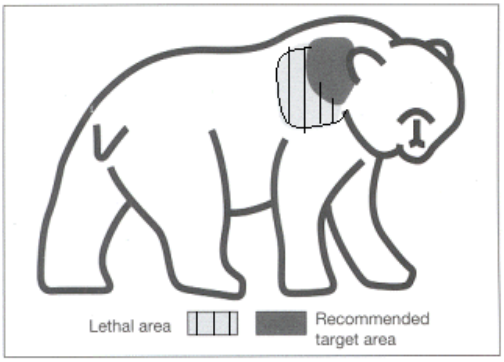


Figure 5. Area of instant kill or disabling shot.

5.4.3. Before shooting, always consider what is beyond the bear as the slug may pass through the bear or miss the target;

5.4.4. It is very difficult to kill a charging bear. The first shot is intended to stop or knock down the bear, not kill it. If the bear is standing sideways, shoot at the large shoulder and into the chest area;

5.4.5. If the bear is facing head on, shoot into the neck and top of the shoulders;

5.4.6. Once the bear is stopped or down, use the remaining lead slugs to kill the bear. A minimum of two shots must be made into the vital areas;

5.4.7. Do not approach the bear until the shotgun is fully reloaded and the bear is dead;

5.4.8. Do not handle or touch the bear until personal protective equipment (PPE) requirements have been determined;

5.4.9. If a bear is shot, report to the SHERT Superintendent or Designate. The Environmental Department designate will complete an incident report and the Wildlife Deterrent Report;

5.4.10. The Environmental Superintendent will report the incident to the appropriate ENR Wildlife Officer as soon as possible;

5.4.11. ENR should be contacted as soon as possible to provide instructions on the handling of the carcass. If contact cannot be made, the bear hide must be skinned, with the claws, proof of sex and the head attached, and kept from spoiling by salting or freezing. These must be turned over to an ENR Wildlife Officer as soon as possible. Before handling the bear or removing the hide, determine the PPE requirements (i.e., disposable latex gloves, raingear, etc.) as per the Wildlife Disease Investigation Manual and any other special precautions in consultation with the Wildlife Officer;

5.4.12. Dispose of the carcass under the direction of the Wildlife Officer. If contact cannot be made with ENR or the appropriate Wildlife Officer, the carcass must be incinerated to avoid attracting wildlife.

5.5. Training

5.5.1. This Site Wide Operating Procedures (OPs) requires specific training for all responders;

5.5.2. Advanced Wildlife Safety training is required. This training will include sessions on bear (and other potentially hazardous wildlife) biology, behaviour, wildlife/human encounters, what to do in the event of an encounter, prevention, detection, proper use of deterrents, wildlife response planning and reporting procedures;

5.5.3. All Environmental personnel or other designated individuals who handle or fire the shotgun are required to hold a valid Canadian Possession and Acquisition Licence (PAL) and have completed the training at the required frequency;

5.5.4. All Environmental or other designated individuals who handle or fire the shotgun must take training in the use of the specific on-site firearm(s).

6.0 APPROVAL

Name	Title	Date	Signature
	SHRT / Environmental Superintendent	March 19, 2021	

7.0 REVISION HISTORY

Noted below is the revision history of this document.

Revision	Date	Comments
1	March 19, 2021	Approved for Use

8.0 DEFINITIONS

8.1. Area of Human Activity: Any area within the SLM footprint where people are active. The size of this area will expand and contract based on the level and location of activity on site. Bears will be deterred from site regardless of how many people are at site to avoid human-bear conflicts.

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment & Permitting / SHERT	**Document No.:**	**OP 193**
Section:		**Effective Date:**	September 9, 2021
OPERATING PROCEDURE – *Bear Deterrents*			
Revision:		**Replaces:**	
APPROVED:	*Original Signature: Refer to Item 6. APPROVAL*		

1.0 PURPOSE

To establish a procedure for safe use and transportation of bear deterrents necessary to provide protection from possible bear or other aggressive animal encounters during the Closure phase of the Snap Lake Mine (SLM).

2.0 SCOPE

This procedure applies to all employees and contractors at the SLM who may have to use bear deterrents.

3.0 RESPONSIBILITIES

3.1. Closure Manager or Designate:

3.1.1. Overall management of the SLM sites and workforce.

3.2. Head of Departments, Superintendents or their Designates:

3.2.1. Ensure this procedure is communicated to their employees as applicable;

3.2.2. Ensure their employees have received the appropriate training as applicable; and

3.2.3. Ensure this procedure is implemented as applicable.

3.3. Supervisors:

3.3.1. Implement this procedure as applicable; and

3.3.2. Ensure this procedure is followed as applicable.

3.4. Safety, Health, Environment, Risk and Training (SHERT) Superintendent, Manager, or Designate:

3.4.1. Monitor the implementation of this procedure; and

3.4.2. Ensure this procedure is maintained.

3.5. All Employees that use bear deterrents:

3.5.1. Understand and practice this procedure as required;

3.5.2. Be aware of applicable Safe Work Plans related to bears and other aggressive animals and bear deterrents;

3.5.3. Read and understand information contained in the approved Bear Awareness Program(s) before going into the field;

3.5.4. Ensure bear deterrents in use are within the specified expiry dates;

3.5.5. Record use of wildlife deterrents on the SLAM Cards (CL 073)

3.5.6. Ask their supervisor for clarification if they are unsure of any aspect of this procedure.

Responsibilities of Employers, Contractors, Supervisors and Employees are also described in the NWT Mine Health and Safety Act (Sections 15 – 18) and throughout the NWT Mine Health and Safety Regulations.

4.0 CRITICAL CONTROLS

A completed Job Risk Analysis can be found in Section 10.0, and lists hazards, unwanted events and controls in place for the following task/activities:

- Use of Bear Bangers;
- Use of Bear Spray;
- Use of Air Horns, and;
- Bear Awareness Training.

5.0 PROCEDURE

5.1. Introduction

5.1.1. When at site and travelling remote from camp, you must bring with you; wildlife deterrents, (i.e., bear banger, bear spray and air horn) as well as a survival kit. See *OP 006: Wildlife Procedure & OP 078: Responding to Bears or Aggressive Animals at or Near SLM - Emergency Situation*.

5.2. Bear Bangers

5.2.1. Bear Bangers are used as a deterrent when wildlife comes too close to site personnel. Bear Bangers can be compared to blanks. When used correctly, the loud noise from the banger (along with the flash, like a firework or flare) should deter the animal from approaching any further. Revolver (starting pistol style) or Flare-Gun style launchers are allowed. If unsure whether or not a particular style of Bear Banger launcher is allowed check with the SHERT

Manager, Superintendent, Coordinator, Environmental Coordinator or Environmental Officer.

5.2.2. To use a bear banger, please follow the instructions available. Always discharge the banger between you and the animal. Pay particular attention not to overshoot, as the animal may now run towards you (away from the loud noise).

5.2.3. If the animal does not leave, walk backwards slowly, never looking the animal directly in the eyes. Make loud noises as you retreat. DO NOT TURN YOUR BACK AND RUN. THE ANIMAL MAY CHASE YOU. Ask your supervisor for other available information.

5.3. Bear Spray

5.3.1. Bear Spray can also be used as a deterrent. The spray works on the principle that the burning sensation the animal feels (in the eyes, nose and lungs) will "scare" it off.

5.3.2. The concern with using bear spray is that you must be in close proximity to the animal and up-wind (30 feet Spray Distance). If you are down-wind, you may be affected by the spray thus rendering you helpless. If you are too far away, the spray will dissipate and not be effective.

5.3.3. A qualified individual will be designated to demonstrate proper loading and firing techniques to all personnel who require bear spray use.

5.4. Air Horn

5.4.1. Using air horns and making noise while in the bush will deter animals from approaching. Making noise while walking is the best advice for protection against bear encounters. Whistles are not recommended because you can sound like an animal. NOTE: Air horns are ineffective at temperatures below 0º Celsius.

5.4.2. When wildlife deterrents are used it must be reported on a) SLAM Cards (CL 073) which must be given to the SHR Coordinator or Environmental Coordinator.

5.5. Travelling with Bear Deterrents

5.5.1. Bear deterrents are restricted from commercial flights. Do not take bear bangers, bear spray, or air horns with you on a commercial plane or in your luggage. For charter fixed wing and helicopter flights, employees are to identify the presence of Bear Spray or Bear Bangers to the pilot and follow

his/her directions. Travelling with bear deterrents in chartered helicopters or fixed wing aircraft is at the discretion of the Aircraft Company and pilot. Bear deterrents must be kept out of the passenger section of the helicopter or fixed wing aircraft at all times. The safe method to transport bear deterrents in a helicopter or fixed wing aircraft is to store them in the cargo hold in a hard plastic lockable container (such as a clam shell or similar). Each field crew is to be assigned a lockable container so that easy removal is achieved from the aircraft. See OP 178: Helicopter Safety – Transport of Hazardous and Bulky Material.

5.6. Bear Awareness

5.6.1. All personnel working outside of the camp area are required to receive the appropriate Bear Safety Awareness and orientation before going out in the field; this is available from the SHERT and Training Departments.

5.6.2. All personnel working outside of the camp area are to have training on the use and care of bear bangers and bear spray before going out in the field. Training will be conducted by the SHERT Training Department or designate, who will maintain a record of the training.

5.7. Sign-In Sheet

5.7.1. In an effort to mitigate the loss, and misplacement of Bear Deterrents, employees and contractors at the SLM site must sign-out and bring back Bear Deterrents on a daily basis to the Environmental Coordinator with the exception of air horns. On a daily basis the Bear Deterrents will be locked in a designated cabinet in the Environmental Coordinator's office with the information recorded on CL 175: Bear Deterrents Sign-Out Checklist.

5.8. Safe Work Plan

5.8.1. All field crews, especially working away from designated bear deterrent stations, will consider adding bear (or wildlife) encounters on their Safe Work Plans and Job Risk Assessments. See OP 208: Safe Work Plan Development Procedure.

6.0 APPROVAL

Name	Title	Date	Signature

7.0 DEFINITIONS

None

DE BEERS GROUP	SNAP LAKE MINE **Incident & SHE Non-Conformance Investigation Report**	ID No: CL 002 Revision Date: October 25, 2021

*** SEE ATTACHED APPENDICES FOR ASSISTANCE**

STEP 1: INITIAL INCIDENT REPORT				Date of Incident / Non Conformance	Time of Incident / Non Conformance (24 hour clock)
Department		Contractor (if applicable)		Date Reported	Shift
Days on Rotation		Hours on Shift		Specific Location:	

Full Incident Description: (Describe how the incident occurred: include what the person(s) was doing, trying to do and anything unusual)

RISK DISCIPLINE							
(C) Social/Communities		(H) Occupational Health		(M) Material Losses/Damage/Business Interruptions			
(E) Environment		(L and R) Legal & Regulatory		(R) Reputation		(S) Safety	

Reported By:		Responsible HOD	
Reporters Dept.			
Reported To:		SAP Functional List	

STEP 2: INCIDENT REPORT

Activity performed at time of incident				Controlled Activity Y/N	
Energy / Risk Source (add more lines if needed)					
Linked Risk Area (add more lines if needed)					
Immediate Action Taken:					
Initial Observations:					
Is this incident reportable to Authorities ? Who?		Is this a repeat incident? Y/N		Date of last similar incident	

Risk Discipline - Specifics
From RISK DISCIPLINE above, complete corresponding section below

(C) Social/Communities

Actual Social Consequence (Level)		Potential Social Consequence (Level)		Work Related	
Provide brief comments to support your classification					
Social Impact					
Allegations of bias / Unfair preferential treatment		Behaviour of Employees		Employment Opportunities	
Community Health and Safety - Hazards and Risks		Business Ethics/ Integrity/ Corruption		Environmental Impacts	
Complaints related to Implementation On CSI projects		Communication and Engagement		Housing	
Quality of Services Provided by De Beers or Contractor		Community Health and Safety - Crime		Impact on Indigenous People	
Quality of Services Provided by Unrelated Third Party		Damage to De Beers Assets		Impacts on Livelihoods	
Supplier Opportunities		Damage to Community Assets		Land Acquisitions and Resettlement	
Training Opportunities		De Beers/ Site Security Provision		Land Use, Access and Management	

Social Incident		OR	Complaints and Grievances				
Date received		Is this an ongoing incident		Lifecycle State		How was complaint submitted	
Geographical Scope of Incident/ Complaint		Name of Complainant/ Affected Persons		Category of Stakeholder submitting complaint			
Main Contact Details for Stakeholder							
Date required for initial Acknowledgement of Receipt to Complainant		Notification Process (Phone, Email, Letter Etc.)					
Person Responsible for Acknowledging Receipt of Complaint		Person Responsible for Acknowledging Receipt of Complaint					
Geographic Location		Indigenous People Affected					

(E) Environment

Primary Element Impact		Impact on other:	
Secondary Element/s Impact		Impact on other:	
Actual Environmental Consequence (Level)			

Potential Environmental Consequence (Level)														
Was there an Environmental Spill / Release / Discharge														
Describe Environmental Impact														
(H) Occupational Health														
Actual Health Consequence (Level)							Potential Health Consequence (Level)							
Health Hazard	Bacterial		Dust				Poor Ergonomics		Ventilation					
	Blood		Fungal				Poor Lighting / Glare		Vibration					
	Body Fluids		Gases / Fumes				Radiation							
	Chemicals		Noise				Thermal Stress							
Short Term Actions														
Long Term Actions														
(L and R) Legal & Regulatory														
Actual Legal Consequence (Level)							Potential Legal Consequence (Level)							
(M) Material Losses/Damage/Business Interruptions														
Actual Damage and Loss (Level)									Damage and Loss Cost ($)					
Potential Damage and Loss (Level)														
Description of Damage														
Damage (Equipment / Material)			Identification #				Equipment Description							
Loss of Product			Loss of Production Time (Hrs.)				Other (describe)							
(R) Reputation														
Actual Reputational Consequence (Level)							Potential Reputational Consequence (Level)							
(S) Safety														
Actual Safety Consequence (Level)							Potential Safety Consequence (Level)							
Injured Persons	Brief Description of Duties													
	Injury Classification		First Aid		Medical Aid		LTI		Fatality					
Body Part Affected	Arm		Elbow		Fingers		Heart		Leg		Nose		Toes	
	Back lower		Eye		General		Hip		Lungs		Ribs		Trunk	
	Back upper		Face		Hands		Internal		Mouth		Shoulder		Wrist	
	Ear		Feet		Head		Knee		Neck		Skin			
Nature of Injury	Amputation				Wounds, muscular contusions				Luxations, sprains, squeezing					
	Contusions and internal Lesions				Fractures with or without dislocation				Burns and other effects of electricity and radiation					
	Intoxications, asphyxiations				Multiple lesions or not specified				Other					
Mechanism of Injury	Fall of Ground				Chemical / hazardous substances				Materials Handling					
	Transportation				Other Energy				Other Causes					
	Moving Machinery				Fire / Explosion				Criminal Activity On-site					
	Electricity				Slips, Trips, Falls				Work- related transportation incidents on public roads					
	Hydraulic Energy				Falling from heights				Commuting incident (company provided transport)					
	Pneumatic Energy				Falling Objects									

DE BEERS GROUP	SNAP LAKE MINE **Incident & SHE Non-Conformance Investigation Report**	ID No: CL 002 Revision Date: October 25, 2021

SECTION 3: INCIDENT INVESTIGATION

Investigation Details & Investigation Team

Investigation Start Date		Investigation End Date		*ENSURE TO INCLUDE A JOSHEC REP*	
Investigation Facilitator		Investigation Team			
Brief Overview of Investigation Plan					

GROUP STANDARDS

Fatal Risk Standards	Light Vehicle Standard		Surface Mobile Equipment Standard		Equipment Safeguarding		Isolation Standard	
	Working at Heights Standard		Lifting Operations Standard		Hazardous Materials Management			

MRS	Fire Prevention and Management Standard		Explosives Handling Standard		Surface Flooding Standard		Slope Stability and Design Optimization Standard	
	Mineral Residue Deposit Standard		Structural Integrity Standard		Inrush Standard			

Environmental Standards	Environmental Policy		Lifecycle Planning and Management standard		Biodiversity Standard		Water Standard	
	Energy and Climate Change Standard		Hazardous Substances, Waste and Emissions Standard					

Occupational Health Standards	Occupational Health Policy		Hearing Conservation Program Standard		Respiratory Protection Program Standard		Fatigue Management	

Preliminary Investigation

IMMEDIATE / DIRECT CAUSE(S) OF THE INCIDENT (Substandard Acts and Substandard Conditions)

Code Selection	REASON FOR SELECTION

ROOT / BASIC CAUSE(S)

Code Selection	REASON FOR SELECTION How does the Basic Root Code Relate to the Immediate Cause Code

HAZARDS BARRIER ANALYSIS - CONTROL ANALYSIS

Control	Critical Control (Y/N)	Control Available (Y/N)	Control Effective

TRAINING - What training was given in the proper performance of the task?

	On the Job		Apprentice		New Equipment		WHMIS
	Common Core		Skill		Environmental		None

Lessons Learned / Recommendations	
LESSONS LEARNED	RECOMMENDATION FOR LESSON LEARNED

Investigation Sign-Off			
Investigation Sign Off Date			
Investigation Sign Off By		Role In Investigation	
Investigation Sign Off By		Role In Investigation	
Investigation Sign Off By		Role In Investigation	
Investigation Sign Off By		Role In Investigation	

DE BEERS GROUP	SNAP LAKE MINE **Incident & SHE Non-Conformance Investigation Report**	ID No: CL 002 Revision Date: October 25, 2021

SECTION 4: ACTIONS

Corrective Actions

Action Description	Responsible Person	Action Due Date	Action Status

Preventative Actions

SECTION 5: SUPPORTING DOCUMENTATION

Collect all Supporting Documentation And Attach To Report

Photos Take	Statements	Interviews	Tool Box Meetings	SLAM Cards	In-House Training Records
Certifications	Safe Work Plans	Applicable SHE Ops	Maintenance Records	Manufacturer's Instructions	
Hygiene Sampling Results					

De Beers Group of Companies	SNAP LAKE MINE CHECKLIST **Bear Deterrents Sign-Out Checklist**	**ID No.: CL 175** **Revision Date: October 25, 2021**

Date	Name *please print*	Department / Contractor	Time Signed Out	Time Signed In	Air Horn	Bear Bangers	Bear Spray	Flares	Comments
Example Row									
02-May-14	John Smith	Golder	0830 H	1605 H	1	5	#6	#8 - 6 flares	Used one bear banger

Approved: Safety, Health, Environment, Risk & Training Superintendent

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment & Permitting	**Document No.:**	*OP 194*
Section:		**Effective Date:**	March 19, 2021
OPERATING PROCEDURE –*Wildlife Deterrence from Hazardous Areas*			
Revision:	1	**Replaces:**	
APPROVED:			

1.0 PURPOSE

This Operating Procedure (OP) outlines the procedures for deterring caribou and other wildlife (including bears, wolverine, fox, moose, muskox) observed at the Snap Lake Mine (SLM) away from areas that may be considered hazardous. Hazardous areas include the airstrip, high traffic areas, where heavy equipment is in use, and where blasting or demolition activities are taking place. The objective is to prevent wildlife injuries and mortalities by moving animals away from these areas and off the SLM site. Refer to OP 193 for procedures specific to use of bear deterrents, and OP 078 for procedures on emergency response to bears or other aggressive animals.

2.0 SCOPE

This procedure applies to all employees and contractors at the SLM who have been trained in wildlife deterrents.

3.0 RESPONSIBILITIES

3.1. Mine General Manager or Designate:

3.1.1. Overall management of the SLM site and workforce.

3.2. Head of Departments, Superintendents or their Designates:

3.2.1. Ensure this procedure is communicated to their employees and contractors as applicable;

3.2.2. Ensure their employees and contractors have received the appropriate training as applicable; and

3.2.3. Ensure this procedure is implemented as applicable.

3.3. Supervisors:

3.3.1. Implement this procedure as applicable; and

3.3.2. Ensure this procedure is followed as applicable.

3.4. Safety, Heath, Environment, Risk & Training (SHERT) Superintendent, or Designates:

3.4.1. Monitor the implementation of this procedure; and

3.4.2. Ensure this procedure is maintained.

3.5. All Employees that use bear deterrents:

3.5.1. Understand and practice this procedure as required;

3.5.2. Be aware of applicable Safe Work Plans related to bears and other aggressive animals and bear deterrents;

3.5.3. Read and understand information contained in the approved Bear Awareness Program(s) before going into the field;

3.5.4. Ensure bear deterrents in use are within the specified expiry dates;

3.5.5. Record use of wildlife deterrents on the SLM Near Hit Reporting Card: CL 003; and

3.5.6. Ask their supervisor for clarification if they are unsure of any aspect of this procedure.

Responsibilities of Employers, Contractors, Supervisors and Employees are also described in the NWT Mine Health and Safety Act (Sections 15 – 18) and throughout the NWT Mine Health and Safety Regulations.

4.0 CRITICAL CONTROLS

A completed Job Risk Analysis can be found in Section 10.0, and lists hazards, unwanted events and controls in place for the tasks/activities related to bear deterrents (Refer to OP-193 Bear Deterrents).

5.0 PROCEDURE

5.1. Introduction

5.1.1. Caribou and other wildlife observed at site are called in by radio, or otherwise communicated as soon as possible to Environment Technicians by site employees, pilots or Environment personnel who observed wildlife while conducting inspections around the mine site.

5.1.2. Upon receiving the report of wildlife presence, the Environment Technician will ensure all pertinent information is collected from the caller: who is calling the report in, where is the animal spotted, what direction is the animal moving, are there people working in that general area. This information should be documented in the Wildlife Log.

5.1.3. Only personnel trained in deterrence actions should respond and attempt to move animals away from hazardous areas.

5.1.4. Environment staff will communicate to contractors and staff about the location of animals to promote vigilance about the location where wildlife were observed.

5.1.5. If there is no risk to the animal or to people, then the animals should be left undisturbed.

5.2. Hierarchy of Herding Actions for Caribou

Caribou will only be herded away from roads or the airstrip in specific circumstances, as follows:

1) There are less than 100 caribou on the airstrip within 15 minutes of a flight arrival;
2) Caribou are on the road or airstrip at the time of an emergency that requires the use of the road or airstrip; or
3) Caribou are within 100 m of the airstrip 15 minutes prior to aircraft arrival or departure.

5.3. Herding Action

5.3.1. Herding of wildlife in open corridors will use a combination of a small truck and/or foot patrol as most appropriate to the local situation and terrain. The direction of herding will depend on their location or confined corridor relative to the escape routes. The shortest escape route may not always be the most appropriate route.

5.3.2. Herding by vehicle and on foot will entail approaching animals at a slow speed (i.e., < 5 km/hr for vehicles) and stopping when animals show an alarmed response. When animals stall, the patrol will slowly move forward to initiate a further response. Observation of wildlife behaviour will provide cues on when to proceed. Herding should never cause animals to run (i.e., very alarmed / panic response), only to slowly move away from the hazardous area.

5.4. Bear Bangers

5.4.1. Bear bangers are used as a deterrent when wildlife comes too close to site personnel. When used correctly, the loud noise from the banger (along with the flash) should deter the animal from approaching any further.

5.4.2. To use a bear banger, follow the instructions. Always discharge the banger between you and the animal. Pay particular attention not to overshoot, as the animal may not run towards you (away from the loud noise).

5.4.3. Bear bangers **are never used on caribou**.

5.4.4. Refer to OP-0193 on Bear Deterrents.

5.4.5. When wildlife deterrents are used it must be reported on a SLM Near - Hit Reporting Card (CL 003) which must be given to the SHERT Coordinator or Environmental Coordinator.

5.5. Air Horn

5.5.1. Using air horns and making noise while in the bush will deter animals from approaching. Making noise while walking is the a proactive measure to prevent bear encounters. Whistles are not recommended because they can sound like an animal. NOTE: Air horns are ineffective at temperatures below 0º Celsius.

5.5.2. Air horns **are never used on caribou**.

5.6. Bear Awareness

5.6.1. All personnel working outside of the camp area are required to receive the appropriate Bear Safety Awareness and orientation before going out in the field; this is available from the SHR/E and Training Departments (OP-193 Bear Deterrents).

5.6.2. All personnel working outside of the camp area are to have training on the use and care of bear bangers and bear spray before going out in the field. Training will be conducted by the SHR/E and Training Department or designate, who will maintain a record of the training (see OP-193 Bear Deterrents).

5.7. Sign-In Sheet

5.7.1. In an effort to mitigate the loss, and misplacement of bear deterrents, employees and contractors at the SLM site must sign-out and bring back bear deterrents on a daily basis to the Environmental Coordinator with the exception of air horns. On a daily basis the bear deterrents will be locked in a designated cabinet in the Environmental Coordinator's office with the information recorded on CL 175: Bear Deterrents Sign-Out Checklist.

5.7.2. When wildlife deterrents are used it must be reported on a SLM Near - Hit Reporting Card (CL 003) which must be given to the SHR Coordinator or Environmental Coordinator.

5.8. Safe Work Plan

5.8.1. All field crews will add bear (or wildlife) encounters on their Safe Work Plans and Job Risk Assessments. See OP 208: Safe Work Plan Development Procedure.

6.0 APPROVAL

Name	Title	Date	Signature
	SHRT / Environmental Superintendent	March 19, 2021	

7.0 REVISION HISTORY

Noted below is the revision history of this document.

Revision	Date	Comments
1	March 19, 2021	Initial Issue of SLM Management System Documents

8.0 DEFINITIONS

None

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment	**Document No.:**	**OP 201**
Section:	Monitoring	**Effective Date:**	March 19, 2021
OPERATING PROCEDURE – *Remote Camera Monitoring*			
Revision:	1	**Replaces:**	
APPROVED:			

1.0 PURPOSE

The purpose of this Operating Procedure (OP) is to outline the procedures for monitoring wildlife using remote cameras at the Snap Lake Mine during closure, and post-closure phases when the site is unoccupied.

2.0 PROCEDURES

2.1. Introduction

Wildlife remote cameras will be placed at Mine Component areas to monitor wildlife use of restored habitat and add supplemental information about safe passage and use of areas by wildlife. The units are a battery powered digital camera equipped with a passive infrared motion sensor, allowing the unit to take photographs at night without the use of a flash. All components of the unit are contained within the housing case for use in inclement weather conditions. The photos are stored on the camera's memory card; the batteries along with memory storage typically last approximately 6 months depending on the amount of wildlife activity. Other camera accessories required include securing the camera from theft, vandalism, or curious wildlife (e.g., black bears occasionally tamper with cameras, which can affect data collection).

2.2. Camera Programming

Each camera will be labeled with a unique identifier. Camera settings are programmed onto the memory cards, and the settings are applied to the camera once the card is inserted into the camera and the camera is turned on.

Camera settings are programmed using the appropriate software or manually on each camera. Key settings include the motion trigger sensor, which is set to high sensitivity, as well as time lapse settings so that the camera automatically takes one picture every 24 hours. Capturing one photo per day confirms that the camera is properly functioning and allows for accurate quantification of survey effort (i.e., number of active camera days).

2.3. Camera Deployment

Cameras will be deployed during the closure and post-closure period when the site is unoccupied by staff (e.g., December to April). Each camera will be marked with an

identification number. New batteries and an SD card will be inserted in the camera prior to deployment. Cameras should be deployed approximately 5 feet above ground level and secured tightly to avoid animals knocking it over.

A Camera Deployment data sheet will be filled out by the Environment Staff deploying the cameras, noting the exact GPS location and direction the camera is pointed.

2.4. Camera Placement

Approximately two cameras will be deployed at each Mine Component area identified in the FCRP. and an additional camera will be placed at the junction of the winter access road with the Tibbitt to Contwoyto Winter Road. A total of 29 cameras are identified in Figure 1, but an additional camera may be added where/ when needed, and upon recommendations from consultation. Precise location of cameras on the infrastructure itself will be made at the time of installation by qualified personnel.

General locations of cameras include:

- North Pile
- Fuel storage compound
- Potable Water Intake
- Batch plant and maintenance shop
- Fresh Air Raise 2
- Bulk Sample Pit
- Effluent Discharge Outfall
- Water Treatment Plant
- Main Camp Kitchen and Processing Plant
- Water Management Pond
- Organics Stockpile
- Laydown Area
- Airstrip and Apron
- Junction of the winter access road with the Tibbitt to Contwoyto Winter Road

Figure 1


Intake
Batch Plant and Maintenance Shop
Fresh Air Raise 2
Fuel Storage Compound
AEP Bulk Sample Pit
Emulsion Pad
AN Storage Area
East Cell
West Cell
Starter Cell
Processing Plant
Water Treatment Plant
Outfall
Waste Management Pond
Organics Stockpile
Laydown Area
Laydown Area
Airstrip
KEY MAP
MAIN MAP EXTENT
LEGEND
Proposed Remote Camera
Winter Access Road
Approximate Footprint
0
400
800
1:20,000
METRES

2.5. Camera Retrieval

When staff arrive at the Mine site each year, a designate of the Environment Department will retrieve all cameras. A Camera Retrieval data sheet will be filled out. SD cards will be removed from each camera and marked with the camera ID. Batteries will be removed and cameras will be locked until they are deployed again at the end of the staff visit.

2.6. Photo Transcription and QA/QC

All images will be reviewed for presence of wildlife and the total number of images counted in a spreadsheet. When wildlife are observed, the image ID, date, time, camera ID, memory card ID, the species and number of animals will be recorded. When possible, the behaviour(s) shown by wildlife and if any incidents (injury or mortality) occur will also be recorded.

The number of photos for each species will be determined by counting the number of separate detections, initiated by the first trigger of an identified wildlife species. For a particular species event, additional photos will not be counted until an hour has passed or until there is a distinguishable difference between separate individuals triggering the camera.

Data will undergo a quality assurance / quality control (QAQC) process whereby 100% of the photos from each camera will be reviewed to confirm species and number of individuals observed were identified correctly.

2.7. Data Analysis

Photo rates will be calculated for each species recorded and used as a metric for species relative abundance. Photo rates will be determined for each species photographed including vehicles and other human traffic. The human activity photo rate combines vehicles and other human photographs. The photo rate is the number of detections of a given species divided by the camera station sampling effort in months. The number of active months for each camera will be calculated as follows:

number of months = (number of active days/365 days) * 12 months

The number of detections for each species will be determined by counting the number of separate observations, initiated by the first camera trigger of an identified wildlife species. For a particular species event, additional photos will not be counted until an hour had past or until there was a distinguishable difference between separate individuals triggering the camera. For example, if a caribou walked by a camera and three photos were captured, this would constitute a single detection and only one caribou would be counted.

Statistical analyses will focus on investigating the relative mammal species abundance during the closure and post-closure periods.

DE BEERS GROUP	SLM Form **Remote Camera Monitoring Datasheet - Deployment**	**ID No.: xxx** **Revision Date: Nov. 20, 2020**

QA/QC:		Season:		Sheet_____ of _____

Plot Name:		Plot Phot		diagram ↑N
Description (circle one):		Snow Depth (cm)		
crossing structi	trail	Habitat:		
seismic line	ROW	Camera Facing (Deg		
other:		Camera Sensitivi		
Date (dd/mon/yyyy):		Memory Card Nar		
Time:		Height of Camera (c		
Observer		Camera Inventory		
NAD: #	UTM Easting:	UTM Northing:		

Notes:

Plot Name:		Plot Phot		diagram ↑N
Description (circle one):		Snow Depth (cm)		
crossing structi	trail	Habitat:		
seismic line	ROW	Camera Facing (Deg		
other:	AGP	Camera Sensitivi		
Date (dd/mon/yyyy):		Memory Card Nar		
Time:		Height of Camera (c		
Observer		Camera Inventory		
NAD: #	UTM Easting:	UTM Northing:		

Notes:

Plot Name:		Plot Phot		diagram ↑N
Description (circle one):		Snow Depth (cm)		
crossing structi	trail	Habitat:		
seismic line	ROW	Camera Facing (Deg		
other:	AGP	Camera Sensitivi		
Date (dd/mon/yyyy):		Memory Card Nar		
Time:		Height of Camera (c		
Observer		Camera Inventory		
NAD: #	UTM Easting:	UTM Northing:		

Notes:

DE BEERS GROUP	**SLM Form** **Remote Camera Monitoring Datasheet Retrieval**	ID No.: Revision Date: March 19, 2021

Season:	
Observers:	

Sheet:	_____of_____
QA/QC:	

Plot Name	Card Name		Date *(dd/mm/yyyy)*	Time (hh:mm)	Battery (%)	Memory (%Full)	Number of Pictures	Notes
	Out:							
	In:							
	Out:							
	In:							
	Out:							
	In:							
	Out:							
	In:							
	Out:							
	In:							
	Out:							
	In:							
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	In:							
	Out:							
	In:							
	Out:							
	In:							
	Out:							
	In:							

DE BEERS GROUP	SNAP LAKE MINE		
Department:	Environment & Permitting	**Document No.:**	**EP-DOP 747**
Section:		**Effective Date:**	November 23, 2021
DEPARTMENT OPERATING PROCEDURE – MIGRATORY BIRD NEST PRE-DECOMMISSIONING SURVEY			
Revision:	Original Version	**Replaces:**	-
APPROVED:	*Original Signature: Refer to Item 6. APPROVAL*		

1.0 PURPOSE

The purpose of this guideline is to provide direction to field operations with regard to federal and provincial regulatory requirements relating to non-intrusive migratory bird nest surveys. These surveys are intended to reduce the risk of incidental take of federally or provincially protected bird species due to decommissioning activities.

2.0 SCOPE

This survey is to be completed in advance of construction activities occurring at the Snap Lake (SL) Mine during the spring/summer nesting period. This is defined as May 1st to August 15th (ECCC 2021) based on the SL Mine presence in Nesting Zone C8 .

3.0 RESPONSIBILITIES

3.1. SHERT Manager

3.1.1. Ensure that document is appropriately reviewed on an annual basis to ensure new information is updated as required, and all risks are appropriately mitigated.

3.2. Environmental Coordinator or Designate

3.2.1. Ensure the procedure is reviewed prior to the completion of surveys by field staff

3.2.2. To coordinate with the Mine Operations & Projects Team to identify any decommissioning activities that may occur during the nesting season, and to ensure that a nest sweep has been conducted prior to work commencing.

3.2.3. Review results of surveys to ensure completeness and all follow up actions are appropriately taken.

3.3. Environmental Technician

3.3.1. To review the procedure and conduct it full, as required in advance of decommissioning activities.

3.3.2. Ensure all field notes and finding are appropriately filed and reviewed with the Environmental Coordinator.

4.0 CRITICAL CONTROLS

See the attached Job Risk Assessment.

5.0 Required Equipment

- Wildlife Deterrent Kit
- Appropriate PPE and outdoor clothing for conditions
- 10x42 (or equivalent) binoculars
- Sunscreen & Bug Spray as required
- GPS
- Field Notebook and Stationery
- Camera
- Site Radio
- Regionally Appropriate Bird Identification Guide
- CL-117 Bird Nesting Data Sheet

6.0 PROCEDURE

6.1. Timing

The SL Mine lies within the nationally designated Nesting Zone C8, which has a potential nesting period of May 1st to August 15th (ECCC 2021). During this period all activities that will incur land clearing must have a migratory bird nest survey completed prior to decommissioning.

6.2. Field Procedure

The focus of the survey should be to search for birds exhibiting breeding behaviour, such as paired birds, territorial singing, alarm calls, distraction displays, or birds carrying food, fecal sacs, or nesting material (ECCC 2021). Depending on the time of year, cues for finding nests can vary. The following information on breeding bird behaviour and signs may be used as guidance:

6.2.1. Surveys should be conducted by qualified Environment Staff quietly moving through vegetation, pausing intermittently to observe bird behaviour.

6.2.2. Working in pairs can help with this process; however, minimal verbal communication should be made between observers.

6.2.3. In addition, the more familiar an observer is with the habitat and the behaviour of the potential species in that habitat, the easier it is to locate females and observe breeding behaviour. It is recommended that observers spend some time prior to surveys determining which species are likely to occur in the area they

are surveying and ensure familiarity with the identification and behaviours of those species prior to conducting the survey.

6.2.4. Survey rate expected for treed or undisturbed areas is 0.5 ha/hr, survey rate expected for disturbed areas is 2 ha/hr.

6.2.5. The focus of the survey should be to search for birds exhibiting breeding behaviour, such as paired birds, birds carrying nesting material, birds carrying food, territorial singing, alarm calls, or distraction displays. Depending on the time of year, cues for finding nests can vary.

6.2.6. While searching for nests, observers should be cognizant of a birds' response to their presence (e.g., feigning broken wing, distraction displays, fixation on a spot with no food, circling and eyeing observers, alarm calling).

6.2.7. During nest building do not get too close to the suspected nest or verify the nest only when the female is absent to prevent abandonment. During incubation, if a female is behaving as if there is a nest in the area but does not appear to be going to it, then assume a nest is present and back away from the area because a female should not be off her eggs too long, especially during cold weather.

6.2.8. If nests are observed, ensure that a waypoint & coordinates (UTM), the species, location and suspected activity (nest building, incubation or rearing of young) are recorded on CL 117. Photos should also be taken of the nesting site if possible. The nesting area should also be properly demarked (with survey stakes or high visibility marking tape), with care being taken to cause as minimal disturbance as possible.

6.3. Results

Once completed, ensure the results are provided to the Environmental Coordinator, who will communicate these to the Mining and Projects teams. Should any nests be observed within the proposed decommissioning area, activities must be halted until the end of the nesting season, or the nest has been vacated due to predation or young departing the area. All results should be recorded within the wildlife management database.

7.0 APPROVAL

Name	Title	Date	Signature
Patrick Kramers	SHERT Manager	November 29, 2021	

8.0 REVISION HISTORY

Noted below is the revision history of this document.

Revision	Date	Comments
0	November 23, 2021	Original Document

9.0 DEFINITIONS

9.1. Active nest: A nest is considered active if it is under construction or in use for egg laying, incubating or rearing chicks. If a nest is found, but bird activity is not detected at the nest, professional judgment and expert knowledge must be used to determine whether the nest is likely to be in use or whether it has been abandoned. A nest is also considered active if its presence is suspected based on birds exhibiting breeding behaviour (i.e., paired birds, birds carrying nesting material, birds carrying food, or territorial singing) even if its precise location and condition cannot be verified. Dwellings (i.e., nests, cavities, burrows) that are used from one year to the next are generally protected year-round

9.2. Nest: According to the MBCA, "nest" is defined as "the nest of a migratory bird and includes parts of the nest." A broader definition includes any structure, ground scrape or part of the landscape (i.e., burrow, tree cavity, broken treetop, ground or floating vegetation) that a bird species uses for breeding, laying eggs or rearing young.

10.0 REFERENCES and RELATED DOCUMENTS

10.1. ECCC (Environment and Climate Change Canada). 2021. General nesting periods of migratory birds. Available at: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods.html. Modified October 30, 2019. Accessed November 15, 2021.

10.2. ECCC. 2019. Guidelines to reduce risk to migratory birds. Available at: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html#toc5. modified September 19, 2019. Accessed April 24, 2020.

10.3. Golder, 2020. Specific Work Instruction: Non-Intrusive Migratory Bird Nest Survey. Golder to De Deers Communication, March 2020

10.4. CL-117: "Bird Nesting Data Sheet"

11.0 APPENDIX 1: JOB RISK ASSESSMENT

SECTION A - GENERAL INFORMATION

Job/Task Description:
MIGRATORY BIRD NEST PRE-CONSTRUCTION SURVEY

Job/Task Objective:
To clear the area for nesting activity

Date JRA Conducted: November 11, 2021	**Department: Environment**
JRA Leader: M. Elwood	**JRA Recorded by:** **M. Elwood**

List Equipment/tools required for task:
See attached equipment list within the document above

Do the task activities impact on other people/work? ***Yes*** ☐ **/** ***No*** ☐ ***If 'Yes' indicate who/what and how as well include them in the JRA***

SECTION B – JOB/TASK INFORMATION

#	Task /Activity Step	Hazards	Unwanted Event	Controls in place	Residual Risk #
1	Light Vehicle Operation	1. Negative Mobile Equipment Interaction 2. Impact with Berm/Fixed Object 3. Roll Over	1. Death, LTI, MA, FA, Property Damage 2. Death, LTI, MA, FA, Property Damage 3. Death, LTI, MA, FA, Property Damage	1a. Site Drivers Procedure 1b. Equipment Pre-Operations Inspections 1c. Positive Communication between LV's & Mobile Equipment 1d. Mine safe traffic collision avoidance system. 1e. Working beacon, reflective identifiers & buggy whip. 2a. Equipment Pre-Operations Inspection (Brake Test) 2b. Drive to conditions, report unsafe conditions 3a. Roll Over Protection	10
2	Field Work	1. Slips Trips & Falls 2. Sun Exposure/Heat Related Injury 3.Negative Wildlife Interaction 4. Lightning & Inclement Weather	1. LTI, MA, FA 2. Death, LTI, MA, FA 3. Death, LTI MA, FA 4. Death, LTI, MA, FA	1a. Walk to conditions, get help if required. 1b. Proper footwear appropriate for the terrain. 1c. Cleats if icy conditions are present. 2a. Drink appropriate volumes of water, ensure that it is carried in the field	6

				2b. Wear sunscreen and appropriate clothing for conditions. 3a. Maintain situational awareness for wildlife, conducting 360 sweeps every 5 minutes to scan for wildlife. 3b. Carry bear kit and ensure that is in an easily accessible location (arms reach) at all times. 3c. Never work alone, always work in pairs at a minimum. 4a. Be continually aware of site weather conditions. Should conditions worsen follow the site lightning procedure and seek shelter immediately.	

JRA Comments/Remarks:

SECTION C - SIGN OFF

	Name	Signature	Date
Supervisor/Lead:	Mason Elwood/Allan Knight		
Team member/s:			

APPENDIX C CLOSURE OBJECTIVES FOR SNAP LAKE MINE

Table C1 Closure Objectives, Criteria, and Method of Measurement to Evaluate Achievement of Criteria

Closure Objective	Revised Closure Criteria[a]	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Associated Monitoring Plans[b]
Site Wide				
SW1 – Dust levels safe for people, vegetation, aquatic life and wildlife.	1. Physical Stability Not applicable as this is a chemical objective. 2. **Chemical Stability** a) Ambient air quality will meet the Northwest Territories Ambient Air Quality Standards (NWTAAQS) as demonstrated by monitoring during Closure. b) Dustfall will meet the Alberta Ambient Air Quality Guidelines (AAAQG) as demonstrated by monitoring during Closure. 3. **Future Use and Aesthetics** The principle of future use has been considered through identification of chemical stability criteria for air quality that are protective of people, vegetation, aquatic life and wildlife.	Engineering design and construction of a cover placed over the North Pile in accordance with the North Pile Closure Design (Appendix H). The North Pile closure will be completed as per design and QA/QC. QA/QC protocol and as-built reports completed and signed off by a professional engineer. The cessation of mining, construction and active closure activities (e.g., diesel combustion, surface vehicle traffic, blasting, material crushing and handling, earthworks, etc.) will result in diminished air emissions.	Air quality monitoring for suspended particulates and dustfall will be conducted during Closure. Vegetation dustfall monitoring event five years Post-Closure. Geotechnical monitoring of the engineered cover will occur to ensure long-term performance as a barrier. See Closure Objective NP1&2 for more detail regarding monitoring activities. Site inspections will be conducted by SLEMA to provide on-going community input into this objective.[6]	Air Quality and Emissions Monitoring and Management Plan Vegetation Monitoring Program
SW2 – Drainage pathways for surface runoff are physically stable.	1. **Physical Stability** Acceptable results for a minimum of three consecutive years of visual monitoring for deformation and degradation Post-Closure as part of site geotechnical inspections completed and signed off by a professional engineer[7]. Acceptable results are defined as a concluding statement in the geotechnical inspection report signed off by a professional engineer that drainage pathways are performing as designed and are physically stable. 2. Chemical Stability Not applicable as this is a physical objective. 3. **Future Use and Aesthetics** Future use and aesthetics are considered through physical stability criteria as described in SW2-1. Where appropriate, aesthetic considerations have been included in designs.	Final grading to promote positive drainage. Drainage pathways (e.g., spillways at the North Pile) will be established as per design (Appendix L.1 and L.2) as presented in the Final Landform Design Plan (Appendix G.3) and the North Pile Closure Design (Appendix H), and QA/QC. QA/QC protocol and as-built reports completed and signed off by a professional engineer.	Geotechnical inspections (visual) of the drainage pathways will occur Post-Closure in concert with the site geotechnical inspection and monitoring program. Surface water monitoring during Post-Closure at applicable drainage pathways to assess expected outcome that drainage pathways do not contribute erosion-induced sediment to site runoff. See Closure Objective SW3 for closure criteria and more detail on this monitoring program.	North Pile Management Plan Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan) Final Landform Design Plan
SW3 – Surface runoff and seepage water quality that is safe for people, vegetation, aquatic life, and wildlife.	1. Physical Stability Not applicable as this is a chemical objective. Relevant physical stability criteria are provided in NP1 and SW2. 2. **Chemical Stability** a) Meet Effluent Quality Criteria in surface water discharge as described in MVLWB Water Licence MV2019L2-0004 for a period of 5 years from the initiation of the Post-Closure period; b) Water Quality concentrations in Snap Lake are less than Aquatic Effects Monitoring Program (AEMP) benchmarks[8] as defined in the approved AEMP Design Plan and are demonstrated for a period of 5 years from the initiation of the Post-Closure period;	Closure of the North Pile including the application of a cover in accordance with the North Pile Closure Design (Appendix H), and final grading where required site-wide to promote positive drainage. Develop the closure water management system (Appendices L.1 and L.2): 1) Phase 1 – Active Water Management that includes monitoring, storage and active treatment (as required). Runoff and seepage will report to the Influent Storage Ponds (ISPs) and the WMP. When water quality meets EQCs, discharge via pumping to Snap Lake. If EQCs not met, active treatment to meet EQCs prior to discharge.	Geotechnical visual inspection of engineered covers for signs of deformation and/or degradation) to assess expected outcome that erosion-induced sediment will not contribute to water quality concerns and in concert with monitoring program (temperature and piezo water level monitoring within the North Pile area). Water quality monitoring (runoff and seepage at monitoring locations established across the site). Aquatic effects monitoring (water quality, fish heath, and fish tissue metal concentrations in Snap Lake). Monitoring total dissolved solids at Node 22 (in Mackay Lake).	North Pile Management Plan Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan) Water Management Plan Surveillance Network Program Aquatic Effects Monitoring Program

[6] De Beers committed to site inspections by SLEMA as part of the response to initial comments on FCRP Version 0, 2019.

[7] Where specified, the responsible professional engineer must be the Engineer of Record (EOR) for the North Pile. In all other cases, the professional engineer is to be qualified to perform the indicated scope.

[8] The Aquatic Effects Monitoring Program benchmarks incorporate health-based drinking water guidelines (Health Canada, 2019) if they are lower than water quality guidelines or site-specific water quality objectives for the protection of aquatic life.

Closure Objective	Revised Closure Criteria[a]	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Associated Monitoring Plans[b]
	c) Mean fish health endpoints are within the regional normal range as defined in the approved AEMP Design Plan and demonstrated twice after the initiation of the Post-Closure period (once during the first three years of Post-Closure (Year 1-3) and once during the following three years of Post-Closure (Year 4-6); and d) Fish tissue metal concentrations are below Health Canada benchmarks[9] as defined in the approved AEMP Design Plan and as demonstrated once after the initiation of the Post-Closure period (between Post-Closure Year 4 and 6). **3. Future Use and Aesthetics** The principle of future use has been considered through the identification of chemical stability requirements under SW3-2, whereby conformance with EA 1314-02 Measure 1 parts a through c[10] is demonstrated. Conformance with EA 131402 Measure 1d is demonstrated when the annual calculated total dissolved solids concentration at Node 22 (in Mackay Lake) is less than the Acceptable Limit[11], as defined in the approved AEMP Design Plan, within a minimum of 10 years of monitoring during the closure and post-closure period (until 2030)[12].	2) Phase 2 – No Active Water Management that includes passive gravity water flow once water meets EQCs and breach of water control structures is approved. Phase 1 and Phase 2 water management systems established as per design (Appendix L.1 and L.2) and QA/QC. QA/QC protocol and as-built(s) completed and signed off by a professional engineer.	Site inspections by SLEMA in addition to a community fish-tasting program[13] to provide on-going community input into this objective.	
SW4 – Mine areas are physically stable and safe for use by people and wildlife.	**1. Physical Stability** Acceptable results for a minimum of three consecutive years of visual monitoring for deformation and degradation Post-Closure as part of site geotechnical inspections completed and signed off by a professional engineer. Acceptable results are defined as a concluding statement in the geotechnical inspection report signed off by the professional engineer that landforms are performing as designed and are physically stable. **2. Chemical Stability** Not applicable as this is a physical objective. Chemical stability is addressed through site wide and infrastructure objectives (SW1, I1, and I3). **3. Future Use and Aesthetics** The principle of future use has been considered through identification of physical stability criteria for slope angles and maximum cover fill size to be protective of wildlife. Landform design will be compatible with surrounding areas to provide continuity in wildlife habitat and support site aesthetics in accordance with SW5-3. Additional detail on considerations for wildlife protection in landform design are described under SW6-3.	Closure of the North Pile in accordance with the North Pile Closure Design (Appendix H). Engineered earthen structures remaining at the site (e.g., North Pile) will be physically stable. See North Pile closure objectives NP1 and NP2 below for details specific to stability of the North Pile. Final grading will promote positive drainage. Drainage pathways will be established for long-term stability to avoid issues with erosion. Removal of all surface hazards, including buildings and equipment.	Geotechnical inspections (visual) of the site will occur Post-Closure in concert with the site geotechnical inspection and monitoring program. Additional monitoring will occur at the North Pile area (See NP1 and NP2 closure objectives below). Wildlife monitoring at the Mine area during Closure. Site inspections will be conducted by SLEMA to provide on-going community input into this objective.	North Pile Management Plan Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan) Wildlife Effects Monitoring Program Final Landform Design Plan

[9] Health Canada. 2015. Health Canada's Maximum Levels for Chemical Contaminants in Foods. Available at: https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/maximum-levels-chemical-contaminants-foods.html. Accessed January 2021.

[10] Mackenzie Valley Environmental Impact Review Board (MVEIRB), 2014. Report of Environmental Assessment and Reasons for Decision, De Beers Canada Inc. Snap Lake Amendment Project EA1314-02. September 2014.

[11] If Total Dissolved Solids (TDS) concentrations are above the Acceptable Limit due to causes other than the Mine (e.g., regional changes in TDS concentrations due to climate change effects), the Acceptable Limit may be recalculated following the approved methods in Golder (2017a) using more recent reference data.

[12] Ten years (2021 to 2030) are expected to be sufficient to capture peak concentrations at Node 22 based on model predictions (Golder, in prep). If concentrations at Node 22 are increasing based on data up to 2030 results, then monitoring should continue until concentrations at Node 22 are no longer increasing. Methods for identifying increasing trends will be provided in the approved AEMP Design Plan.

[13] As per the approved AEMP Design plan for closure, fish tasting will occur as necessary to verify results of fish health and fish tissue chemistry programs in Snap Lake.

Closure Objective	Revised Closure Criteria[a]	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Associated Monitoring Plans[b]
SW5 – Landscape features (shape and vegetation) match aesthetics of the surrounding natural area.	1. **Physical Stability** There will be no visible buildings, equipment or non-local materials remaining on site. Construction of physically stable drainage pathways is addressed in SW2. 2. **Chemical Stability** Not applicable as this is a physical/future use and aesthetics objective regarding landscape features at closure as described in SW5-1 and SW5-3. Chemical stability is addressed through site wide and infrastructure objectives (SW3, I2, I3). 3. **Future Use and Aesthetics** The principle of future use has been considered through the design of final landforms that includes slope angles and drainage pathways to be protective of people and wildlife. Landform design will be compatible with surrounding areas to provide continuity in wildlife habitat and support site aesthetics. Final grading will reflect surrounding topography (i.e., steep edges in mine-impacted areas including landforms, pits and trenches, flattened or backfilled) with slopes of 3H:1V where practical[14] through engineering design. Final grading will promote positive drainage towards pre-disturbance drainage pathways where practical. Revegetation targets for the key priority areas are addressed under SW7.	Removal of all buildings, equipment, and surface hazards. Final grading will reflect surrounding topography and re-establish natural drainage pathways where practical. Closure of the North Pile in accordance with the North Pile Closure Design (Appendix H); final design of North Pile will not exceed elevation of surrounding terrain. Revegetation efforts as detailed in Closure Objective SW7.	Final landscape inspected by a qualified professional[15] and representatives of SLEMA. Submission of as-built conditions in a summary report completed by a qualified person. Vegetation monitoring detailed in Closure Objective SW7.	Final Landform Design Vegetation Monitoring Program Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan)
SW6 – Safe passage and use for Caribou and other wildlife.	1. **Physical Stability** Where practical through engineering design, a 3H:1V slope in mine-impacted areas will be achieved to facilitate caribou passage. Acceptable results of visual monitoring for deformation and degradation for a minimum of three years Post-Closure as part of site geotechnical inspections completed and signed off by a professional engineer. Acceptable results are defined as a concluding statement in the geotechnical inspection report that landforms are performing as designed and are physically stable. 2. **Chemical Stability** Chemical stability is addressed under SW1, SW3 and I3. 3. **Future Use and Aesthetics** The principles of future use and aesthetics of the land have been considered through identification of physical stability criteria for slope angles and maximum cover fill size to create a relatively smooth surface and facilitate caribou and other wildlife passage, as well as to match surrounding terrain.	Removal of all buildings, equipment, and surface hazards. Closure of the North Pile in accordance with the North Pile Closure Design (Appendix H). Engineered earthen structures remaining at the site (i.e., North Pile) will be physically stable. See North Pile closure objectives NP-1 and NP-2 below for details specific to stability of mine waste areas. Final grading of landforms to match surrounding terrain with slopes of 3H:1V where practical per SW5-3. Access to the underground mine will be blocked in a physically stable manner per objective UG3. Chemical stability criteria to support safe passage and use of the site by caribou and other wildlife are detailed in Closure Objectives SW1, SW3 and I3.	Final landscape inspected by a qualified professional and representatives of SLEMA. Submission of as-built conditions in a summary report completed by a qualified person. Geotechnical inspections (visual) of the site will occur Post-Closure in concert with the site geotechnical inspection and monitoring program. Water quality monitoring (runoff and seepage at locations of concern across the site). Wildlife monitoring at the Mine area during Closure. Site inspections will be conducted by SLEMA to provide on-going community input into this objective. Post-Closure inspection and monitoring will be a combination of professional engineer and representatives of SLEMA.	North Pile Management Plan Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan) Wildlife Effects Monitoring Program Aquatic Effects Monitoring Program Final Landform Design Plan
SW7 – Revegetation targeted to priority areas.	1. Physical Stability	Revegetation efforts will include some combination of the following activities at priority areas across the mine-impacted area:	Final landscape inspected by a qualified professional and representatives of SLEMA.	Revegetation Plan Vegetation Monitoring Program

[14] "Where practical", as it applies to implementation of reclamation activities, means the measure is to be implemented in all cases other than where a local circumstance is prohibitive or implementation of the activity would cause more harm than good. For example, the slope will be graded at an angle of 3H:1V unless doing so would lead to an unacceptable environmental effect on an adjacent habitat such as deposition of fill material into a waterbody or leakage of processed kimberlite into the environment. In those instances where a criteria or reclamation activity cannot be implemented, a rationale would be provided for consideration by the MVLWB.

[15] A qualified professional is defined as one who possesses specified knowledge, skills, training, experience and other requirements (e.g., holding an accreditation from a professional association) to perform a task.

Closure Objective	Revised Closure Criteria[a]	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Associated Monitoring Plans[b]
	Not applicable as this is a future use and aesthetics objective as described in SW7-3. Physical stability is addressed through site wide and infrastructure objectives (SW2, SW4, NP2, I2). 2. **Chemical Stability** Not applicable as this is a future use and aesthetics objective as described in SW7-3. Chemical stability is addressed through site wide and infrastructure objectives (SW3, I1, I2, I3). 3. **Future Use and Aesthetics** Discussions with traditional land users and knowledge holders highlighted the general importance of indigenous plant types to animals, fish and birds. This input has been integrated into design of the revegetation program, allowing for natural progression of native vegetation species to develop on the reclaimed landscape over time. Revegetation activities, including scarification, soil preparation, and seeding, will be successfully completed at priority areas to promote natural recovery. Priority areas are defined as the mine building and main laydown area. Successful completion will be measured by 5% mean plant coverage on upland areas as measured by Post -Closure monitoring, resulting in a mean plant coverage of approximately 25% over the LSA. Revegetation activities have been designed to target successful completion within 5 years of seeding.	• Grading surfaces to promote drainage and limit pooling, surface material loosening (scarification); • Soil preparation, including placement of salvaged overburden as a growth amendment to priority locations; • Seed application of native species; and • Optimization of revegetation activities through adaptive management measures identified from on-going monitoring of existing and future revegetated areas, as well as input from representatives of SLEMA.	Submission of as-built conditions in a summary report completed by a qualified person. Vegetation monitoring will be completed to evaluate the establishment of vegetation at reclaimed surfaces across the site and provide a documented case study for future projects.	
North Pile				
NP1 – Prevent PK from entering the surrounding terrestrial and aquatic environment.	1. **Physical Stability** Successful closure of the North Pile to support objective NP1 is to include the following: a) Closure design of engineered structures (including a cover at least 0.3 m thick and water control structures) is prepared by a professional engineer and approved by the Water Board as necessary. b) Engineered closure works are constructed according to the design intent and as-built reports are prepared by the professional engineer. c) Facility (including perimeter embankments, water control structures and instrumentation) is routinely monitored according to design and under the direction of the North Pile Engineer of Record who is also a professional engineer. d) Facility is periodically inspected and cumulative monitoring data reviewed against design by the North Pile Engineer of Record. e) Inspection reports are prepared by the North Pile Engineer of Record including recommended maintenance work and recommended adjustments to the monitoring program. f) Recommended maintenance work is implemented by the owner or otherwise addressed in a timely manner. g) As-built reports, monitoring results, inspection reports and maintenance descriptions are provided to the Water Board. h) Post-Closure monitoring and inspection program proceeds for a minimum of three years and then progressively decreases in scope and frequency based on demonstrated stability, in coordination with the	Deposition of PK within the North Pile Facility, which will include a cover at Closure. Closure of the North Pile in accordance with the North Pile Closure Design (Appendix H) and QA/QC. QA/QC protocol and as-built(s) completed and signed off by a professional engineer. Maintenance work recommended by the professional engineer as part of the annual geotechnical inspection report is implemented by the owner or otherwise addressed in a timely manner.	Geotechnical inspections (visual) of the North Pile will occur Post-Closure in concert with the site geotechnical inspection and monitoring program. Thermal monitoring will be completed using thermistor cables installed in the North Pile. Water table in the North Pile will be monitored through vibrating wire piezometers. Both thermistors and vibrating wire piezometers are currently being monitored and monitoring is expected to continue into Closure and Post Closure as needed. Water quality monitoring of seepage will occur at the North Pile area as outlined in the SNP.	North Pile Management Plan Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan) Surveillance Network Program

Closure Objective	Revised Closure Criteria[a]	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Associated Monitoring Plans[b]
	North Pile closure monitoring plan in the North Pile Management plan and site-wide Post-Closure monitoring program, and in accordance with recommendations of the engineer. Successful closure will be demonstrated by: a) Inspection reports and as-built reports prepared and signed off by the North Pile Engineer of Record and approved by the Water Board as necessary; and b) Meeting acceptable performance threshold values consistently as presented in the North Pile closure monitoring plan and demonstrates steady state condition as identified in CDA 2014[16] that could include: - pore pressures (ground water levels) have reduced and stabilized - dam erosion prevention measures are effective - deformations are either non-existent or are at a steady state and do not present a concern with respect to the stability of the dam. Once steady state condition achieved, transition to Closure passive care (Post-Closure condition) can be evaluated based on the data and engineering judgement, in accordance with the North Pile Closure Designs and North Pile Management Plan. Acceptable results conditions allowing for a transition to Closure passive care would require a concluding statement in the geotechnical inspection reports, construction record, and as-built reports signed off by the North Pile Engineer of Record that the North Pile is performing as designed, physical stable and in a steady state. **2. Chemical Stability** Chemical stability specific to seepage from the North Pile is demonstrated when the Effluent Quality Criteria as described in MVLWB Water Licence MV2019L2-0004 is met in the North Pile influent storage ponds for a period of 5 years from the initiation of the Post-Closure period. **3. Future Use and Aesthetics** The principles of future use and aesthetics of the North Pile have been considered through identification of physical stability criteria for slope angles and maximum cover fill size to create a relatively smooth surface and facilitate wildlife passage, as well as to match surrounding terrain. Additional detail to support this criterion is provided under SW6.			
NP2 – Physically stable PK containment area to limit risk of failure that would affect safety of people or wildlife.	**1. Physical Stability** Closure design to support the long-term stability of the North Pile, and as-built report, prepared and signed off by the North Pile Engineer of Record and approved by the Water Board as necessary. The site geotechnical inspections completed and signed off by a professional engineer to state that the closed North Pile is performing as designed and is both physically stable and in a steady state condition when applicable. These inspection reports must demonstrate that the North Pile is in a steady state condition for a minimum of three years Post-Closure. This will include acceptable results from visual monitoring for deformation and degradation as defined in NP1-1.	Closure of the North Pile in accordance with the North Pile Closure Design (Appendix H) and QA/QC. QA/QC protocol and as-built reports completed and signed off by the North Pile Engineer of Record. The WMP and North Pile sumps will be covered to stabilize accumulated sediments. Re-grading the slope of the west perimeter embankment of the Starter & East Cells. Infilling of the interior compartments of the Starter & East Cells. Placement of a final cover layer of coarse material over the entire North Pile for erosion protection purposes.	Area inspected and as-built drawing is deemed acceptable and signed-off by a professional engineer. Geotechnical inspections (visual) of the North Pile will occur Post-Closure in concert with the site geotechnical inspection and monitoring program. The components of the visual inspections are provided in the North Pile Management Plan. Thermal monitoring will be completed using thermistors currently installed with additional thermistors that will be installed in the North Pile closure configuration. Water table in the North Pile will be monitored through vibrating wire piezometers. Both thermistors and vibrating wire piezometers are currently being	North Pile Management Plan Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan) Surveillance Network Program Final Landform Design Plan

[16] CDA 2014 – Canadian Dam Association Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams. 2014.

Closure Objective	Revised Closure Criteria[a]	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Associated Monitoring Plans[b]
	2. Chemical Stability Not applicable as this is a physical stability objective. Chemical stability is addressed in SW3. 3. **Future Use and Aesthetics** The principle of Future Use has been considered through identification of physical stability criteria to limit risk of failure that would affect safety of people or wildlife as described in NP2-1. Final grading will be compatible with surrounding areas to provide continuity in wildlife habitat and support site aesthetics.	Construction of swales and spillways on the final surficial cover of the North Pile to the perimeter ditches and influent storage ponds. Final landscape inspected and submission of as-built conditions in a summary report completed by a professional engineer. Maintenance work recommended by the North Pile Engineer of Record as part of the annual geotechnical inspection report is implemented by the owner or otherwise addressed in a timely manner.	monitored remotely and expected to continue into Closure and Post Closure as needed. Permafrost establishment is not required to achieve stable slopes, but may enhance it.	
Underground				
UG1 – Flooding of the underground mine will have no impacts to aquatic habitat and community in source lakes.	1. Physical Stability Not applicable as physical stability of the underground mine is addressed in UG3. 2. Chemical Stability Not applicable as chemical stability of the underground mine is addressed in UG2. 3. Future Use and Aesthetics Not applicable as the principles of future use and aesthetics objectives will be achieved through SW3.	In accordance with the MVLWB approved Extended Care and Maintenance Plan, the underground mine was flooded between February and May 2017.	Post-Closure aquatic effects monitoring of Snap Lake.	Aquatic Effects Monitoring Program
UG2 – Underground mine should not contribute to the contamination of ground or surface water.	1. Physical Stability Not applicable as physical stability of the underground mine is addressed in UG3. 2. **Chemical Stability** The removal of all potential contaminant sources was completed prior to flooding in consultation with the GNWT Inspector. Water may be pumped to the underground mine during Closure. To meet this closure objective, the annual water quality concentrations at Snap Lake stations where water from the underground may enter the lake will be less than Aquatic Effects Monitoring Program (AEMP) benchmarks defined in the approved AEMP Design Plan for the period when water is pumped to the underground[17]. 3. **Future Use and Aesthetics** The principles of future use and aesthetics will be addressed through UG2-2 and SW3-2.	All potentially hazardous materials and equipment were removed from the underground mine. In the unlikely case that any water is released from the underground prior to capping of the portals, the water will be managed as surface runoff and covered by actions described under SW3.	Aquatic effects monitoring (water quality in Snap Lake). Site inspections by SLEMA and community fish-tasting (where requested) will be conducted to provide on-going community input into this objective.	Water Management Plan Aquatic Effects Monitoring Program
UG3 – Underground mine workings are physically stable.	1. **Physical Stability** Prior to flooding, the Mine was physically stable in accordance with the WSCC Northwest Territories' Mines Act requirements. All Mine openings to surface, and permanent seals, will be designed and inspected in accordance with Northwest Territories Mines Act and associated regulations and will be constructed and inspected for a minimum of three years Post-Closure by a professional engineer. 2. Chemical Stability	Construction of concrete caps for mine portals and raises in accordance with design prepared by a professional engineer. As-built report prepared and signed-off by a professional engineer.	Geotechnical inspections (visual) of the site will occur in Post-Closure in concert with the site geotechnical inspection and monitoring program (at the North Pile). Visual monitoring specific to the physical stability of the cap structures installed at the underground mine openings will include signs of cracks in the concrete, settlement, erosion, scaling, spalling, and discolouration. The design structural engineer or a designate will perform field reviews during construction to ensure the cap construction has	Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan)

[17] If concentrations in Snap Lake are above an Aquatic Effects Monitoring Program benchmark but the exceedance is not related to groundwater (e.g., concentrations are not higher at locations above the underground mine compared to other locations in Snap Lake), then closure criteria for UG2 may still be met.

Closure Objective	Revised Closure Criteria[a]	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Associated Monitoring Plans[b]
	Not applicable as chemical stability of the underground mine is addressed in UG2. **3. Future Use and Aesthetics** The principle of future use is addressed through physical stability criteria as described in UG3-1, to be protective of people and wildlife. Where appropriate, aesthetic considerations will be included in designs.		been completed as per the design drawings and meets the design intent. The final sign off will be provided by the design structural engineer.	
Infrastructure				
I1 – Prevent remaining infrastructure from contaminating land or water.	**1. Physical Stability** Physical stability is addressed in SW4 and I2. **2. Chemical Stability** a) Confirmation that all potentially hazardous materials have been moved to an approved disposal facility or treated onsite as per the approved Waste Management Plan; b) Contaminated soils at the Mine are remediated to meet the Tier 1 levels for Industrial Sites as per the Environmental Guideline for Contaminated Site Remediation[18] and to the satisfaction of a professional engineer or geoscientist; and c) Refer to SW3-2b, SW3-2c, and SW3-2d criteria to confirm the remaining in-water infrastructure (fresh water intake and effluent diffuser) are chemically stable. **3. Future Use and Aesthetics** The principles of future use and aesthetics will be addressed through chemical stability criteria as described in I1-2.	All potentially hazardous materials and equipment will be removed from site. Infrastructure that will remain at the site in perpetuity are the freshwater intake and diffuser, laydown areas and gravel pad, stockpiles, airstrip, roads, quarries, and waste management facilities. Post-Closure Environmental Site Assessment of on-land remaining infrastructure and Remedial Action Plan will be completed by a professional engineer or geoscientist, in accordance with GNWT guidelines[18]. Remedial Activities of contaminated soils will be one of the following activities: Contaminated soil transferred off-site to an approved waste facility (primary means); In-situ biological or chemical amendments (i.e., bioremediation); Ex-situ Chemical Amendments (i.e., Chemical Oxidation); Landfarming (Bio-remediation); Soil Solidification/Stabilization (Low Temperature Asphalt/Concrete); or Low Temperature Thermal Desorption. Reclamation of fresh water intake facilities, the effluent diffuser will be completed as described in Section 5.3.4.1.	Final landscape inspected by a qualified professional and representatives of SLEMA. Submission of as-built conditions in a summary report completed by a qualified person. Water quality monitoring (at locations of concern across the site). Aquatic effects monitoring (water quality, fish heath, and fish tissue metal concentrations in Snap Lake).	Waste Management Plan Surveillance Network Program Aquatic Effects Monitoring Program Final Landform Design Plan
I2 – On-site disposal areas are safe for people, wildlife, and vegetation.	**1. Physical Stability** a) The on-site disposal areas (i.e., North Pile Landfills) will be designed and constructed by a professional engineer. b) Acceptable results of visual monitoring for deformation and degradation for a minimum of three consecutive years Post-Closure as part of site geotechnical inspections completed and signed off by a professional engineer. Acceptable results are defined as a concluding statement in the geotechnical inspection report signed off by the professional engineer that the North Pile closure configuration, including the Landfill areas, is performing as designed and is physically stable. **2. Chemical Stability** a) Chemical stability will be achieved by removing/treating all hazardous waste as described in objectives I1 and I3; and b) Confirmation that the on-site waste disposal areas are safe for people, wildlife, and vegetation is addressed through SW-3 criteria. **3. Future Use and Aesthetics** The principles of future use and aesthetics are addressed through physical stability criteria as described in I2-1 and as identified through engagement (FCRP, Appendix C.3)., to be protective of people and wildlife. Aesthetic considerations have been included in final landform designs to provide continuity with surrounding landscape.	Isolation of contaminated soils and non-hazardous waste within disposal areas designed and inspected by a professional engineer. Final landscape inspected and submission of as-built conditions in a summary report completed by a professional engineer. Post-Closure geotechnical monitoring at appropriate locations. Re-grading the slope of the west perimeter embankment of the Starter & East Cells. Infilling of the interior compartments of the Starter & East Cells. Placement of a final cover layer of coarse material over the entire North Pile for erosion protection purposes. Construction of swales and spillways on the final surficial cover of the North Pile to the perimeter ditches and influent storage ponds.	Area inspected and as-built drawing is deemed acceptable and signed-off by a professional engineer. Geotechnical inspections (visual) of the site will occur Post-Closure in concert with the site geotechnical inspection and monitoring program. Waste will be handled, stored and disposed of as described in the Waste Management Plan. Upon completion of demolition, the landfill will no longer be needed and it will be closed and capped as described in the North Pile Closure Cover Detailed Design (Section 4.1.2). The location of the landfill is illustrated (FCRP, Appendix F.1, Figure 1). Water quality monitoring (at influent storage ponds). Aquatic effects monitoring (water quality, fish heath, and fish tissue metal concentrations in Snap Lake).	North Pile Management Plan Closure and Post-Closure Geotechnical Monitoring Plan (Appendix to the North Pile Management Plan) Waste Management Plan Final Landform Design Plan Surveillance Network Program Aquatic Effects Monitoring Program

Closure Objective	Revised Closure Criteria[a]	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Associated Monitoring Plans[b]
I3 – Contaminated soils and waste disposal areas that cannot contaminate land and water.	1. **Physical Stability** Physical stability is addressed through SW4 and I2. 2. **Chemical Stability** Contaminated soils at the Mine are remediated to meet the Tier 1 levels for Industrial Sites as per the Environmental Guideline for Contaminated Site Remediation[18] and to the satisfaction of a professional engineer or geoscientist. 3. **Future Use and Aesthetics** The principles of future use and aesthetics are addressed through chemical stability criteria as described in I3-2 and I2, to be protective of people and wildlife. Aesthetic considerations have been included in in final landform designs to provide continuity with surrounding landscape.	Post-Closure Environmental Site Assessment and Remedial Action Plan completed by a professional engineer or geoscientist, in accordance with GNWT guidelines[18]. Remedial Activities of contaminated soils (as determined through the Environmental Hazards Assessment Program) will be one of the following activities: Contaminated soil transferred off-site to an approved waste facility (primary means); In-situ biological or chemical amendments (i.e., bioremediation); Ex-situ Chemical Amendments (i.e., Chemical Oxidation); Landfarming (Bio-remediation); Soil Solidification/Stabilization (Low Temperature Asphalt/Concrete); or Low Temperature Thermal Desorption.	Final landscape inspected by a qualified professional and representatives of SLEMA to confirm completion of remedial activities. For soils designated for treatment on site, the frequency of soil sampling will be bi-annual (spring and autumn). Seepage from the landfill and North Pile will be directed to North Pile sumps and monitoring completed as per I2.	Waste Management Plan Environmental Hazards Assessment

[a] *Revised Table 5.2 as provided in response to multiple recommendations on Version 0 of the FCRP; submitted to the MVLWB 3 July 2019 (De Beers, 2019g).*

[b] *Also listed in Table 9.1*

[18] Government of the Northwest Territories (GNWT), 2003. Environmental Guideline for Contaminated Site Remediation.