Tłı̨chǫ Government
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April 26, 2021

Jody Pellissey
Executive Director
Wek'èezhìı Renewable Resources Board (WRRB)
jpellissey@wrrb.ca

Re: WMMP for Tłı̨chǫ Government's Whatì Fibre Line Project

Dear Jody,

Tłı̨chǫ Government is submitting a Wildlife Mitigation and Monitoring Plan (WMMP) for the Whatì Fibre Line Project to the WRRB under section 12.5.1 of the Tłı̨chǫ Agreement.

Masi for the comments WRRB staff provided as part of the land use permit review. The WMMP (Version 2 attached) has been revised to address the comments made during the land use permit review. We have also attached the comment table which includes some additional details in the "proponent response" column.

We understand that the Board is meeting in May and, in accordance with section 12.5.4 of the Tłı̨chǫ Agreement, we ask that the WRRB makes its recommendation by June 4.

In Tłı̨chǫ Unity,

Laura Duncan
Tłı̨chǫ Government

Wildlife Management and Monitoring Plan

for the

Tłı̨chǫ Fiber Optic Line Project

Prepared for the

Wek’èezhìı Land and Water Board

Version 2.0

April 1, 2021

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Tables

Appendices

Definitions and Acronyms

Adaptive management	Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. The term is commonly thought of as “learning by doing”. Active adaptive management typically involves active experimentation to simultaneously test a range of alternative management actions, whereas passive adaptive management may involve selecting only the “best” management option and evaluating the results to see if further adjustments are needed.
Construction Areas	Areas where there is active construction at that time.
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWS	Canadian Wildlife Service
Danger Zone	Areas determined by blast supervisor.
DNA	Deoxyribonucleic acid
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
Environmental Monitor	Individuals who observe Project activities in relation to permit conditions, and report observations to the NSI Environmental Manager so that mitigation actions can be taken if necessary.
GNWT	Government of the Northwest Territories
GNWT-ENR	Department of Environment and Natural Resources, GNWT
GNWT-INF	Department of Infrastructure, GNWT
GNWT-Lands	Department of Lands, GNWT
GPS	Global Positioning System
Habitat	The area or type of site where a species or an individual of a species of wildlife naturally occurs or on which it depends, directly or indirectly, to carry out its life processes (NWT *Wildlife Act*).
MBCA	*Migratory Birds Convention Act*
Mitigation	Measures taken to eliminate or reduce a potential Project effect.
Monitoring	The process of observing and documenting Project activities. This document distinguishes between “mitigation monitoring” which is undertaken to identify the need to apply or modify mitigations for the protection of wildlife and wildlife habitat at the project site, and “effects monitoring” which consists of the design and implementation of monitoring studies for quantifying project-related effects both within the project footprint and region.
MVEIRB	Mackenzie Valley Environmental Impact Review Board
NT1	The Northwest Territories Range for boreal caribou, used for critical habitat identification in the Recovery Strategy for the Woodland Caribou, Boreal population in Canada.
NWT	Northwest Territories
Project	Tlicho Fiber Line Project
Project Co.	The company that will be engaged to construct and operate the Tłı̨chǫ FL.
Project site	The area encompassed by the Tłı̨chǫ FL right of way, access roads, and all equipment and infrastructure within this area.
SARA	*Species at Risk Act*
SARC	Species at Risk Committee
Tłı̨chǫ FL	Tłı̨chǫ Fiber Line Project
WEMP	Wildlife Effects Monitoring Plan
Wildlife	"wildlife" means (a) all species of vertebrates and invertebrates found wild in nature in the Northwest Territories, and individuals of those species, except (i) fish as defined in section 2 of the *Fisheries Act* (Canada), and (ii) other prescribed species and subspecies,

	(b) species of wildlife referred to in paragraph (a) that are domesticated or held in captivity, and individuals of those species, and (c) prescribed species or subspecies of vertebrates and invertebrates, and individuals of those species or subspecies. (NWT *Wildlife Act*).
WLWB	Wek'èezhìı Land and Water Board
Worker	A person employed by the Developer or the Contractor to work on the Project.
WRRB	Wek'èezhìı Renewable Resources Board
WMMP	Wildlife Management and Monitoring Plan

Plan Maintenance and Control

The Peter Kiewit Sons ULC (PKS) Environmental Manager is responsible for the overall distribution, maintenance and updating of the Wildlife Management and Monitoring Plan (WMMP). Final plan details must be approved by the Tlicho Government , and will be in accordance with conditions included in the land use permit issued by the Wek'èezhìı Land and Water Board (WLWB). Prior to approval of the WMMP by the Minister of Environment and Natural Resources under s. 95(1) of the *Wildlife Act*, it will be submitted to the Wek'èezhìı Renewable Resources Board (WRRB) for review as per section 12.5.1 of the Tłı̨chǫ Agreement.

Changes to this WMMP that do not affect the intent of the plan are to be made as required on a regular basis (e.g., phone numbers, names of individuals, etc.).

Wildlife Management and Monitoring Plan Document History

Revision #	Section(s) Revised	Description of Revision	Prepared by	Issue Date
1	-	Original version (in draft) accompanied permit application to WLWB for preliminary screening. Submitted in March 2021. The intent of the plan is to provide mitigation strategies associated with direct effects from construction to wildlife, with a particular focus on bison and caribou.	PKS	March 2021
2	6.0 Monitoring	Added Pre-activity Bird Nest Sweep Monitoring	PKS	April 1, 2021
	7.0 Reporting	Added wildlife sightings submission to Environment and Natural Resource's Wildlife Management Information System (WMIS) in reporting requirements		

1.0 INTRODUCTION

The Tlicho Government (TG) is constructing a Fiber Line from Highway 3 to the community of Whatì (Appendix A Overview Map). The route follows the already constructed Tlicho All Season Road (TASR), that continues to be used for hunting, trapping and recreation (NSMA 2018, YKDFN 2018, Tłı̨chǫ Government 2014).

The construction of the Tłı̨chǫ Fiber Optic Line Project (TFOL) may impact wildlife and wildlife habitat in a few ways, including direct habitat loss (limited to new vegetation clearing possible along Hwy 3) , functional habitat loss due to noise or other sensory disturbances, dust, accidental spills of toxic or hazardous substances, and potential injury or mortality due to vehicle collisions. Concern over impacts to bison due to increased road-induced mortality is of the utmost concern.

This Wildlife Management and Monitoring Plan (WMMP) outlines mitigation measures that are being implemented to reduce Project impacts on wildlife and wildlife habitat. This WMMP describes mitigation and monitoring that applies to the construction of the TFOL.

2.0 BACKGROUND

2.1 Project Description

The proposed TFOL will follow the existing TASR Right of Way (97 km long beginning at Km 196 on Highway 3 to Whatì) and is expected to begin construction August 2021. A project overview map is detailed in Appendix A. Access for the installation of the fiber line will utilize the TASR for the duration of the project. Heavy equipment will be used to either plow or trench a path for the cable to be laid. Areas which require water crossing will optimize the use existing bridges on the road to minimalize the risk or damage to riparian areas. Directional drilling may also be utilized to mitigate/minimize risks in areas where surface water may be affected by construction activities.

2.2 Roles and Responsibilities

The Tłı̨chǫ Government has partnered with Peter Kiewit and Sons LLC (PKS) to instal the fiber line. Therefore, PKS is ultimately responsible for the implementation, mitigation, and reporting requirements set out in the WMMP.

Table 1. Primary Project Contact's

Organization	Role	Position	Name	Contact
TG	Developer	Tlicho Executive Officer	Laura Duncan	Lauraduncan@tlicho.com
PKS	Private Partner	Project Manager	Bruno Pigeon	Bruno.pigeon@kiewit.com
PKS	Private Partner	Environmental Manager	Dave Green	Dave.green1@Kiewit.com

2.3 Objectives

The objectives of this WMMP include the following:

- Document and mitigate effects to wildlife from TFOL construction.
- Describe how adaptive management will be applied to wildlife mitigation and monitoring.
- Constitute part of the engagement with communities, regulatory agencies, and interested parties in wildlife effects mitigation and monitoring.
- Describe how the Tłı̨chǫ Government will meet relevant guidelines and regulatory requirements.

3.0 WILDLIFE SPECIES AND/OR HABITAT FEATURES OF CONCERN

3.1 Focal Wildlife Species

The WMMP focuses on mitigating and monitoring the impacts to caribou, bison, and moose, species at risk, and prescribed species. The WMMP does not exclude any wildlife from monitoring and address a broader range of species for which general prohibitions under the *Wildlife Act*, *Species at Risk Act,* and *Migratory Birds Convention Act* and associated regulations apply. Mitigation and monitoring measures are meant to address impacts to individuals of these species and their habitat.

3.1.1 Species at Risk

The intent of the *Species at Risk Act*, and the *Species at Risk (NWT) Act* is to protect species at risk from becoming extirpated or extinct as a result of human activity. While the former was enacted by the Government of Canada, the latter was enacted by the GNWT and applies only to wild animals and plants managed by the GNWT. For example, species managed by the *Migratory Bird Convention Act* and Regulations are not covered by the *Species at Risk (NWT) Act*. For the purposes of this WMMP (and as recommended by ECCC 2017b), species may be considered to be of concern as a result of either their national, territorial or Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status (notwithstanding that COSEWIC does not provide legal protection). The list of species of concern that may be affected by the TFOL is provided in Table 2. This table may be updated in the future to reflect the latest species assessments by the NWT Species at Risk Committee (SARC) and COSEWIC.

Table 2: Species at Risk Expected at the Project

Species	NWT SARC Assessment[(a)]	NWT List of Species at Risk	COSEWIC Listing[(b)]	SARA Listing[(c)]
Boreal caribou	Threatened	Threatened	Threatened	Threatened
Barren-ground caribou	Threatened	Threatened	Threatened	No Status
Wood bison	Threatened	Threatened	Special Concern	Threatened
Wolverine	Not at Risk	No status	Special Concern	Special Concern
Little brown myotis	Special Concern	Special Concern	Endangered	Endangered
Peregrine falcon	Not assessed	No status	Not at Risk	Special Concern
Short-eared owl	Not assessed	No status	Special Concern	Special Concern
Bank swallow	Not applicable	Not applicable	Threatened	Threatened
Barn swallow	Not applicable	Not applicable	Threatened	Threatened
Common nighthawk	Not applicable	Not applicable	Special Concern	Threatened
Olive-sided flycatcher	Not applicable	Not applicable	Special Concern	Threatened
Horned grebe (Western population)	Not applicable	Not applicable	Special Concern	Special Concern
Red-necked phalarope	Not applicable	Not applicable	Special Concern	No Status
Rusty blackbird	Not assessed	No status	Special Concern	Special Concern
Yellow rail	Not applicable	Not applicable	Special Concern	Special Concern
Evening Grosbeak	Not applicable	Not applicable	Special Concern	No Status
Harris's Sparrow	Not applicable	Not applicable	Special Concern	No Status
Gypsy cuckoo bumble bee	Data Deficient in the NWT	No status	Endangered	Endangered
Yellow-banded bumble bee	Not at Risk in the NWT	No status	Special Concern	Special Concern

All listings sourced from NWT Species at Risk (2019)

a) Northwest Territories Species at Risk Committee. Note that species included in the Migratory Bird Convention Act are not covered by the Species at Risk (NWT) Act and are labelled 'Not applicable'.

b) Committee on the Status of Endangered Wildlife in Canada

c) Species at Risk Act.

The WMMP is intended to be consistent with the proposed Recovery Strategy for the Wood Bison in Canada (ECCC 2018a) by including mitigation to reduce vehicle collisions and including a mechanism for documenting and reporting bison observations along the TFOL. The WMMP do not conflict with any existing recovery strategy for species listed on the Species At Risk found in the Project Area.

3.2 Sensitive Periods for Wildlife:

Known sensitive periods for wildlife are listed in Table 3. Sensitive periods are not meant to imply that all construction activities will need to be suspended at these times; however, different types of pre-construction surveys and additional mitigation measures will be required during these times to minimize sensory disturbance and/or risk of wildlife injury or mortality.

Table 3: Sensitive Periods for Wildlife and Rationale

Wildlife	Period	Rationale
Boreal Caribou Moose Bison	Calving/Post-Calving: 05 April to 15 July (caribou) 15 May to 15 July (moose) 1 March to 15 July (bison)	Timing window captures parturition (birth) and the first month of life for offspring. Female ungulates entering the parturition period are usually in poorer physical condition from the harsher climatic conditions and limited food availability throughout the winter period. After parturition, females are subject to additional energy demands from lactation, and generally attain their lowest body condition post-calving. Disturbance during the calving/fawning period can induce fleeing, increased movement of young and increased nutritional demands, and higher susceptibility to predation.
Boreal Caribou	Late-winter: 16 March to 04 April	Boreal caribou are exhibiting their shortest daily movements at this time of year, likely reflecting the increased energetic costs of travelling through deep snow at this time of year, or limited areas that provide easier access for foraging on ground. As boreal caribou are depleting their stores of fat throughout the winter, and movement through deep snow or displacement from good foraging habitat could have high energetic costs, disturbance events at this time of year could have negative impacts on female body condition and subsequently have negative impacts on calving and calf survival.
Birds	Nesting season: 01 May to August 15	Prohibition against damage or destruction of nests or eggs of migratory birds under Migratory Birds Regulations and the *Wildlife Act*. This sensitive period should cover the majority of species, but it should be noted that some raptor species may initiate nests as early as late March, and may remain at the nest until mid-September. (Shank and Poole 2016)
Black Bear	Denning season: September 30 to March 30	Prohibition under the *Wildlife Act* against damage or destruction of a den. Disturbance of denning bears could jeopardize survival of both adults and young born in the den.

4.0 PROJECT IMPACTS

The construction of the TFOL may impact wildlife and wildlife habitat in a few ways such as functional habitat loss due to noise, dust, spills of toxic or hazardous substances or other sensory disturbances, and injury or mortality due to vehicle collisions. Details on mitigation measures surround potential impacts are listed in Section 5.0 below.

5.0 MITIGATION PROGRAM

5.1 Mitigation for Indirect Habitat Loss or Alteration

- Reduced speed limits (50 km/h) during construction will reduce dust production coupled with the application of water in active haul/work areas.
- Clean and inspect Project vehicles and equipment prior to entering the NWT to avoid introducing noxious and invasive plants.
- Re-cleaning Project vehicles and equipment if an area of weed infestation is encountered, prior to advancing to a weed-free area to minimize the spread of noxious and invasive plants.
- Locating and managing cleaning locations on the Project site to avoid the spread of noxious and invasive plants (see the pamphlet “Invaders in the Northwest Territories” for more information on invasive plants in the NWT).
- Domestic and recyclable waste and dangerous goods will be stored on site in appropriate containers, as per the TASR Waste Management Plan, to avoid exposure until they are shipped off site to an approved facility, and to prevent spills or leakage into the surrounding environment that would cause habitat degradation.
- Hazardous materials and fuel will be stored according to regulatory requirements to avoid contamination to the environment and workers under the plan approved for the TASR.
- Individuals working on-site and handling hazardous materials will be trained in the Workplace Hazardous Materials Information System and the Transportation of Dangerous Goods to avoid accidental spills under the plans approved for the TASR.
- The Spill Contingency Plan from the TASR will be followed by Project staff to prevent spills and if spills occur as a result of an accident, that they will be controlled to minimize the area impacted.
- Emergency spill kits will be available wherever toxic materials or fuel are stored and transferred during construction to minimize effects to vegetation and wildlife habitat.
- Spill response and containment will be completed expeditiously in accordance with the approved site-specific Spill Contingency Plan to reduce the area impacted. Spills will be reported in a timely manner.
- Construction equipment, machinery, and vehicles will be regularly maintained to avoid accidental spills.
- Fuel storage areas will be equipped with spill kits and will be located at least 100 m away from water bodies. Large fuel storage tanks (2,000 to less than 80,000 litres) will be double walled as per the regulations. Fuel for the Fiber project will be supplied by the TASR project.
- Construction and maintenance vehicles will be equipped with spill kits and fuelled at least 30 m away from water bodies.
- Workers will not travel off the Project site unless there is a specific requirement.

- Riparian areas will be maintained whenever possible to minimize erosion, with vegetation removal limited to the width of the right of way. At watercourse crossings, a riparian buffer will be maintained along the width of the right of way except at the actual crossing location.
- Removed vegetation/debris will be removed from site to prevent them entering the watercourse.

5.2 Mitigation for Sensory Disturbance

- Harassment, feeding or approaching wildlife by Project staff will be prohibited.
- Project staff will communicate, via radio, relevant observations of wildlife to the PKS Environmental Manager or designate. The PKS Environmental Manager will then relay this information to Site Supervisors and equipment operators working in the area. Any such observations will be included in the Wildlife Sightings Log for the TASR project.
- Construction will be temporarily suspended by the PKS Environmental Manager, or speed limits on the road temporarily reduced, when moose, caribou, bison, or any other wildlife that may be at imminent risk of injury or mortality, are known to be near the active construction site. An Incident Report will be prepared for each such occurrence.
- Construction activities will consider sensitive periods. For example, vegetation clearing is planned to occur outside of the nesting season for migratory birds.
- If any big game species are observed within the cleared right of way adjacent to active construction areas, speed limits will be reduced to 30 km/h within 1 km on either side of the sighting. If bison are present on roads, Environmental Monitors will be contacted. Environmental Monitors should be aware that groups of bison with more than 5 individuals are likely to be nursery groups containing calves and juveniles. Any such observations should be included in the Wildlife Sightings Log for the TASR.
- The PKS Environmental Manager will communicate, via radio, the requirements for a reduced speed limit to Supervisors and equipment operators working in the area. The Manager will monitor equipment operations to ensure the reduced speed limit is followed.
- Pre-clearing wildlife surveys will detect the presence of large mammals prior to vegetation clearing
- Observations of caribou, moose, bison, and other big game and species at risk will be reported to Environmental Monitors. Observations of species at risk will be tracked through the wildlife sightings log and conveyed to the appropriate governing agencies though the annual reporting requirements for the TASR.

5.3 Mitigation for Direct Wildlife Mortality

5.3.1 Wildlife Sighting and Collisions

Increased risk of wildlife injury and mortality due to vehicle collisions is one of the main concerns with the TFOL. One difficulty in predicting the extent and the seriousness of harm to wildlife from vehicle collisions associated with a new road is that currently GNWT does not have a single source of baseline data on wildlife mortalities. GNWT-INF and GNWT-ENR have different

processes and keep separate records of animal–vehicle collisions which makes assessing the true costs to humans and wildlife difficult. The wildlife data collected during the construction of the TASR allows for project staff to map out areas with higher concentrations of bison on the alignment which can lead to areas with reduced speed to minimalize the risk of vehicle/wildlife interactions. Further mitigation measures are listed below:

- Project staff will be provided with awareness training prior to start of work on the site.
- Awareness training provided to personnel, will include information on yielding the right of way to wildlife during construction. If wildlife are crossing or attempting to cross a road or active construction area, traffic and mobile equipment will stop and wait for the animal to cross unless they are posing a risk to personnel or themselves as noted in the following bullet point. The presence of large mammals (e.g., caribou, moose, and bison) and other wildlife will be communicated to construction workers, which will minimize risks of physical hazards through site-wide awareness.
- Project staff will communicate, via radio, relevant observations of wildlife to the PKS Environmental Manager or designate. The PKS Environmental Manager will then relay this information to Site Supervisors and equipment operators working in the area.
- If bison, caribou or moose are observed in areas where they are at risk, operations at that particular work site will be temporarily suspended by the PKS Environmental Manager to allow wildlife to move away from the area of their own accord. If they do not leave the area within 15 minutes, they may be gently encouraged to move away from construction activities. This will involve the slow approach of Environmental Monitors by vehicle towards the caribou/moose/bison or making their presence known by calling out and waving their arms to encourage them to move. This is to be done from behind a vehicle or piece of equipment to prevent personnel from going too close to the animal. An Incident Report will be completed for all deterrent actions. It is possible that females may be unwilling to leave the area if they have a calf hiding nearby. In these cases, operations in the area may be suspended by the PKS Environmental Manager.
- Bear-banger type deterrents are only to be used if there is an immediate need to mitigate risk to personnel or wildlife safety.
- Environmental Monitors will document wildlife and manage and minimize risks to wildlife and workers.
- Harassment, feeding or approaching wildlife by Project staff is prohibited.
- No hunting or fishing by Project staff will be permitted.
- To avoid wildlife harvest, firearms will not be allowed on-site during construction except for firearms in the possession and control of authorized Environmental Monitors or law enforcement officers.
- The Waste Management Plan to avoid access to food waste by wildlife. This will include:
    - Waste products will be stored in secured containers and transported to approved facilities to avoid access by wildlife.
    - Food waste will be collected in bear proof containers that minimize attraction or impact to wildlife.

- Littering and feeding of wildlife will be prohibited to avoid wildlife attraction to the site. All workers and visitors will be educated on waste management practices for the Project site to avoid wildlife attraction.
- Exposure of wildlife to contaminants will be avoided by use of appropriate deterrents (e.g., temporary fencing and noise makers) to discourage wildlife from entering an affected area until remediation is completed.
- In case of wildlife exposure to contaminants, territorial (GNWT-ENR) or federal (ECCC) authorities will be contacted immediately to determine appropriate course of action, which may include capturing, relocating, or treating contaminated wildlife.

6.0 MONITORING

6.1 Mitigation Monitoring

This section describes the monitoring that will take place to ensure that the wildlife and wildlife habitat protection measures identified for the Tłı̨chǫ Fiber Optic Line Project are being implemented and functioning as intended, provide advance warning of wildlife issues that may require mitigation. Detailed procedures from the TASR are being carried over to the Fiber Line Project, these procedures and the data sheets are provided in Appendix B. All information collected from the Fiber project will be combined with the TASR data.

6.1.1 Wildlife Sightings Log

Wildlife sighting logs provide a simple means for all Project staff to contribute to tracking wildlife activity at the Project. The value of the data is limited as it is not systematically collected and contains repeated observations, but it can provide an indication of the potential for wildlife incidents or problem wildlife and areas of concern at the Project.

6.1.2 Road Surveys

Environmental Monitors will be driving the TASR regularly. Documenting wildlife observations along the road may help to identify wildlife risks that should be communicated to Project staff in the area, or to identify areas with higher presence of wildlife.

Observations of wildlife on project roads (includes all spur roads such as quarry and water source roads) within the cleared right of way adjacent to the road, or within borrow pits will be documented by Environmental Monitors. Unlike the Wildlife Sightings Monitoring, this task will be only completed by the Environmental Monitors.

6.1.1 Bird Nest Surveys

While the vast majority of the Tłı̨chǫ All Season Road RoW has been cleared of vegetation and the fiber optic line installation will occur inside these cleared limits, there still remains a possibility that certain bird species may construct nests within the corridor during the migratory bird breeding season.

In these cases, non-intrusive pre-activity surveys are required. This would include:

- Environmental Manager or Environmental Monitors taking into consideration the type of habitat and species that are likely to be present during the specific time period.

- Searching for evidence of nesting by the presence of birds through observation of singing birds, alarm calls and distraction displays prior to the start of fiber optic line installation

Any clearing of vegetation (particularly along Highway 3) is scheduled to occur outside of migratory bird breeding season. However, there may be instances where vegetation removal is required during this period due to schedule changes or unforeseen circumstances. If this situation develops, non-intrusive pre-clearing surveys will be required. This includes:

- Qualified biologists taking into consideration the type of habitat and species that are likely to be present during the specific time period.
- Searching for evidence of nesting by the presence of birds through observation of singing birds, alarm calls and distraction displays.

Plans will be developed case-by-case in consultation with ECCC and ENR, following the Guidelines (ECCC 2018b). Any nest found will be protected with a buffer zone determined by a setback distance appropriate to the species, the level of the disturbance and the landscape context, until the young have permanently left the vicinity of the nest.

6.1.2 Wildlife Surveillance

Wildlife surveillance monitoring is intended to provide systematic and current information of wildlife activity at the Project construction camps and will provide direct feedback regarding the effectiveness of wildlife mitigation. Examples of wildlife activities that will be documented through the Wildlife Surveillance monitoring include presence of wildlife within camp areas, any instances where food or wastes may be improperly stored and use of buildings by wildlife for shelter or nesting. Through systematically and actively searching for and documenting the presence of all wildlife within and around the Project footprint, Environmental Monitors will remain appraised of current and emerging issues and will be able to manage issues as they arise.

Environment Monitors will undertake systematic tours of the Project construction camps to record all wildlife observations or recent wildlife sign (e.g., tracks and scat). Environmental Monitors will record the area surveyed, and the nature and location of all observations. The surveillance monitoring survey will include areas of the Project where there is risk of wildlife attractants or risk of wildlife finding shelter, denning or availability of food. This includes camps, construction areas, and waste management areas.

6.1.3 Wildlife Incidents

Wildlife incidents refer to a range of possible occurrences at the Project. Examples of wildlife incidents include:

- Human-wildlife interactions that present a risk to either people or animals
- Wildlife-caused damage to property or delay in operations
- Wildlife deterrent actions

- Wildlife injury or mortality (including vehicle collisions), or situations likely to cause injury or mortality
- Wildlife in hazardous areas or hazardous situations
- Incidents related to migratory birds, which includes damage or disturbance to nest or eggs, bird mortalities.

Bear encounter response guidelines can be found in Appendix C.

7.0 REPORTING

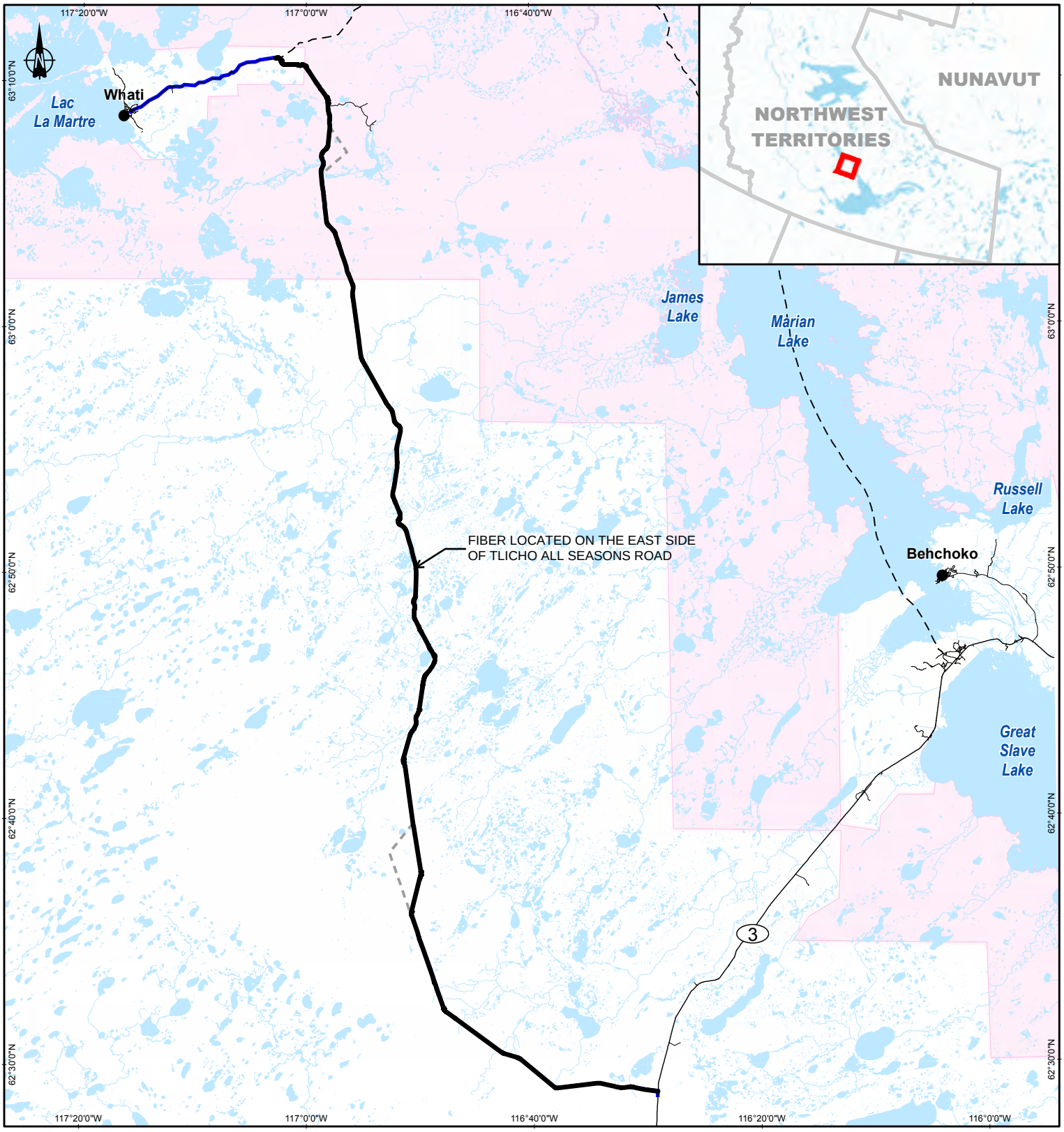
As per section 5.3.3 of the WMMP Process and Content document (GNWT), the project is stated to be a “short term” project and only requires a report to be written upon completion of the job. Considering the spatial and temporal overlap of the TASR and the TASR Fiber project, the wildlife information collected during the fiber installation will be included as part of the TASR reporting requirements. A separate report for the fiber project disconnects valuable data from an existing data set managed as part of the TASR project.

As per the Government of the Northwest Territory’s WMMP Process and Content Guidelines, wildlife sightings will be submitted to Environment and Natural Resource’s Wildlife Management Information System (WMIS) on an annual basis at minimum.

Reporting requirements for hazardous releases will be reported internally on the PKS network and detailed in the TASR Annual Report, except in the case that the spill material is in exceedance with the GNWT Reportable Quantities. In this case, the appropriate forms and government agencies will be notified.

All wildlife mortality incidents will be reported immediately to the GNWT Wildlife Incident Hotline.

APPENDIX A OVERVIEW MAP



LEGEND

- POPULATED PLACE
- ALL SEASON ROAD
- LOCAL ROAD
- WINTER ROAD
- OLD AIRPORT ROAD
- WATERCOURSE
- TLICHO LAND
- WATER BODY
- PROJECT FOOTPRINT - FIBER

0 10 20 Kilometers

REFERENCE(S) :
BASE DATA OBTAINED FROM GEOGRATIS, DEPARTEMENT OF NATURAL RESOURCES CANADA, ALL RIGHTS RESERVED
PROJECTION : UTM ZONE 11 DATUM : NAD 83

CLIENT	TLICHO GOVERNMENT
PROJECT	TLICHO FIBRE LINE WILDLIFE MANAGEMENT PLAN
TITLE	PROPOSED TLICHO FIBRE LINE

CONSULTANT		
	YYYY-MM-DD	2021-02-10
	DESIGNED	EL
	PREPARED	EL
	REVIEWED	SL
	APPROVED	DL

PROJECT NO	REV	FIGURES
1665943	0	2

Réf. géo. : S13354-001-00-SL

APPENDIX B MONITORING PROTOCOLS AND FORMS

Tłı̨chǫ Fibre Line Project

Wildlife Management and Monitoring Plan

Appendix B: Monitoring Protocols and Data Sheets

February 11, 2021

WILDLIFE SIGHTINGS PROCEDURE

PURPOSE

The purpose of this procedure is to describe the management of the Wildlife Sightings that are observed during the construction phase of the Project.

RESPONSIBILITY

All staff are responsible for reporting wildlife sightings. The Environmental Monitors are responsible for collecting the log sheets weekly, entering them into a database. Environmental Monitors are also responsible for entering wildlife observations reported by radio into the log sheets.

PROCEDURE

1. Wildlife sighting logs will be posted on various bulletin boards in camps and work areas for Project staff to record observations of wildlife.
2. Project staff will be made aware of which species are a priority to report.
3. All Project staff will be encouraged to add observations to the log, including the species, number, location, and date of the observation.
4. Environmental Monitors will check the logs weekly for evidence of problem wildlife or problem areas that may pose a risk to wildlife.
5. Observations of wildlife may be called in by radio and entered into the Wildlife Sightings Log by the Environmental Monitors.

EQUIPMENT REQUIREMENTS

None. Data sheets to be posted for all Project staff use.

REPORTING

Observations relevant to human or wildlife safety, such as observations of bears, caribou, moose, bison, species at risk or nesting birds, will be included in the Weekly Report. Copies of all Wildlife Sightings Logs will be provided in the Weekly Report. All information including surveys and monitoring will be summarized in the Annual Report.

Tłı̨chǫ FIBRE Wildlife Sightings Log

Date	Time	Species	Number	Location (km marker, or coordinates)	Notes (any behavioural response or reactions?)	Name	Company

WILDLIFE ROAD SURVEY PROCEDURE

PURPOSE

The purpose of this procedure is to describe the management of the Wildlife Road Survey. This procedure will be used during the construction phase only.

RESPONSIBILITY

The Environmental Monitors are responsible for completing wildlife road surveys and entering them into a database.

PROCEDURE

1. The Wildlife Road Survey is to be completed each time Environmental Monitors drive a section of road.
2. Observations of wildlife on the roads, within the cleared right of way adjacent to the road, or within borrow pits will also be documented by Environmental Monitors. This survey may be completed as a stand-alone survey, or while driving the road for other purposes. To provide sufficient survey effort, a minimum distance of 10 km is suggested when completing a stand-alone survey and the entire drivable length of road should be covered at least twice per week.
3. At the start of a survey, the date, start time, start location and observers will be document on the Wildlife Road Survey data sheet provided.
4. All observations of wildlife or wildlife sign along the road will be documented, including the species, number of individuals, location (UTM or kilometre) and photo if relevant.
5. Speed should be limited to 50 km/h, the maximum driving speed for Project vehicles. Any notes on mitigation actions taken or suggested follow up will also be reported.
6. Observations of large mammals on the road will be reported to other drivers in the area, to reduce risk of collision.
7. At the completion of the survey, document the end time and the end location. File the original hard copy in the Environmental Office and update the Wildlife Sightings Form database.

EQUIPMENT REQUIREMENTS

- Truck
- Binoculars
- Data Sheet

- Field guide to birds
- GPS
- Project map
- Digital camera

REPORTING

Observations relevant to human or wildlife safety, such as observations of bears, caribou, species at risk or nesting birds, will be included in the Weekly Report. All information including surveys and monitoring will be also summarized in the Annual Report.

Wildlife Road Survey

Date: Start time: End time: Observer(s):

Survey start at (km marker, GPS location or other landmark):

Survey completed at:

Time	Species	Number	Age/sex	Location (general feature describe)	Location UTM or Km Marker	Photo ID	Notes (any behavioural response or reactions?)

Additional notes (e.g. details on wildlife interactions, behavioural responses, or response to mitigation):

WILDLIFE SURVEILLANCE MONITORING PROCEDURE

PURPOSE

To prevent wildlife incidents through systematically documenting wildlife activity. This procedure will be used during the construction phase only.

RESPONSIBILITY

The Environmental Monitors are responsible for completing surveys of all camps and construction areas for evidence of wildlife presence and entering them into a database.

PROCEDURES

Environment Monitors will undertake systematic tours of the Project construction camps to record all wildlife observations or recent wildlife sign (e.g., tracks and scat). Surveys of will be completed at least once per week. Observers will travel to defined Project location, and record the following at each location:

1. Time upon arrival at location / monitoring site
2. Location or monitoring site
3. Presence of wildlife or wildlife sign (Yes or No)
4. Species or sign observed
5. Number of individuals
6. Wildlife Activity
7. Photo number (if photo taken)
8. Record any relevant comments about the observation, or relevant information from people working at the location.
9. Observations of any birds nesting or mammals denning adjacent to the cleared right of way, access roads or borrow sources will also be recorded.
10. Record any relevant comments about improper storage or segregation of wastes or other wildlife attractants, any evidence of wildlife gaining access to wastes or attractants, and any reports of dangerous wildlife interactions from people working at the location.
11. Report wildlife sign (such as tracks or scat) or observations of wildlife from Project staff working in the area shall be recorded on the data sheets in the additional comments section on the reverse side of the data sheet. Photos of sign and wildlife should be taken where possible to help in identification of species after completion of the survey.

12. Record the photo number on the data sheet and download and file the photos by date.
13. If no wildlife is observed, no sign seen and no reports of wildlife from staff, then an "N" should be recorded on the data sheet and in the database for that monitoring site or location.

LOCATIONS FOR SYSTEMATIC MONITORING

The following areas / sites should be visited at least once a week:

- Accommodations camps (entire perimeter)
- Waste transfer areas (entire perimeter)
- Quarries

EQUIPMENT REQUIREMENTS

- Truck
- Binoculars
- Data Sheet
- Field guide to birds
- GPS
- Project map
- Digital camera

REPORTING

Any wildlife concerns that come to light during the survey should immediately be brought to the attention of the Project Supervisor so that appropriate action can be taken. Any wildlife incidents observed or reported during this survey should be reported in the Wildlife Incident Report Form (see separate form). Observations relevant to human or wildlife safety, such as observations of bears, caribou, moose, species at risk or nesting birds, will be included in the Weekly Report. All information including surveys and monitoring will be summarized in the Annual Report.

Wildlife Surveillance Monitoring Form

Observers: Date: Page: of:

Wildlife Observed or Wildlife Sign

Time	Location	Wildlife Present? (Y/N)	Species Or Sign	Number	Activity	Photo #	Observations from people working at the location / other comments

Record any additional comments on reverse page

Additional comments or notes:

Reviewed by:

Date:

Follow up:

BIRD NESTING ACTIVITY PROCEDURE

PURPOSE

To purpose of this procedure is to detect and mitigate impacts to active nests and bat roosting sites. This procedure will be used during the construction phase only, except for quarries which will be monitored during operations as well.

Clearing of vegetation is scheduled to occur outside of migratory bird breeding season (1 May to 15 August). However, there may be instances where vegetation removal is required during this period due to schedule changes or unforeseen circumstances. In these cases non-intrusive pre-clearing surveys are required, to be developed on a case-by-case basis.

RESPONSIBILITY

The Environmental Monitors are responsible for completing the surveys and entering them into a database.

PROCEDURE

Environment Monitors will undertake systematic monitoring of the Project site to detect bird nesting activity, bird nests on the Project infrastructure. Environment Monitors will document all avian nests and nesting behaviour in the areas surveyed, as well as for little brown myotis maternal roosting sites. The surveillance monitoring survey will include areas of the Project where there is risk of birds or bats nesting or finding shelter. This will include buildings, stockpiles of supplies, mobile and stationary equipment.

The surveys will occur at least twice per week prior to and during the migratory bird nesting season (April to mid-July) and more frequently in particular areas if nests are found or nesting activity is observed.

LOCATIONS FOR SYSTEMATIC MONITORING

The following areas / sites should be visited at least once a week:

- Accommodations camps (entire perimeter and buildings)
- Waste transfer areas (entire perimeter and buildings)
- Heavy equipment that has been stationary for more than two days
- Waterbodies within 100 m of camps
- Stream crossing locations
- Quarries
- Borrow sources

Observers will travel to defined Project locations, and record the following at each location:

1. Time upon arrival at location / monitoring site
2. Location or monitoring site
3. Presence of bird nesting behaviour, active bird nests or bat roosting sites
4. Number of individuals
5. Photo number (if photo taken)
6. Any relevant comments about the observation, or relevant information from people working at the location.
7. Any reports of sign or observations of species from Project staff working in the area shall be recorded on the data sheets in the additional comments section on the reverse side of the data sheet.
8. If no nests, nesting behaviour or roosting sites are observed, no sign seen and no reports of wildlife from staff, then an "N" should be recorded on the data sheet and in the database for that monitoring site / location.
9. Quarries in particular should be checked for signs of swallow and nighthawk nesting. Quarry pile slopes should be less than 70 degrees to discourage swallow nesting (Refer to the ECCC pamphlet Bank Swallow in Sandpits and Quarries).
10. Monitoring will initiate in April and continue at least until mid-July (or until all identified nests are inactive), and focus on areas where scheduled construction activities are expected during the migratory bird nesting season.
11. Incidental observations of avian species at risk in particular should be documented. These include:

    - Peregrine falcon
    - Short-eared owl
    - Bank swallow
    - Barn swallow
    - Common nighthawk
    - Olive-sided flycatcher
    - Horned grebe

- Red-necked phalarope
- Rusty blackbird
- Yellow rail

EQUIPMENT REQUIREMENTS

- Truck
- Binoculars
- Data Sheet
- Field guide to birds
- GPS
- Project map
- Digital camera

Reporting

Any bird nesting observed during the survey should immediately be brought to the attention of the Project Supervisor. The Project Supervisor will email ECCC at ec.dalfnort-wednorth.ec@canada.ca to determine an appropriate course of action. Through consultation with GNWT-ENR and ECCC, bird nests will be protected by a buffer that protects the nest while allowing construction to continue, and will be monitored. Details of nests identified and the mitigation will be included in the weekly wildlife monitoring reports.

All observations of nesting activity or risk of nesting on Project infrastructure should be included in the Weekly Report. All information including surveys and monitoring will be summarized in the Annual Report.

Bird Nesting / Bat Roosting Activity Monitoring Form

Observers: Date: Page: of:

Location:

Wildlife Observed or Wildlife Sign

Time	Location	Species Observed	Photo #	Nesting behaviour observed	Nests Roost observed (describe)

Record any additional comments on reverse page

Additional comments or notes:

Reviewed by:

Date:

Follow up:

PRE-CLEARING LARGE MAMMAL SURVEY PROCEDURE

PURPOSE

The purpose of this procedure is to detect large mammals ahead of the clearing activities, as well as to detect any possible denning locations. This procedure will be used during the construction phase of the Project.

RESPONSIBILITY

The Environmental Monitors are responsible for completing the surveys and entering them into a database. Surveys will be overseen by the NSI Environmental Supervisor.

PROCEDURE

PRE-CLEARING LARGE MAMMAL SURVEY

1. Environmental Monitors will travel (by foot, ATV or snow machine) the length of the right of way that will be cleared, ahead of the clearing activities.
2. The Monitors will travel at no more than 10 km per hour along the road alignment, one person on each side of the alignment, and looking into the forest on either side of the alignment for wildlife or fresh wildlife sign.
3. Any large mammals (caribou, moose, bison, bears, wolves) or sign observed in the forest to either side of the alignment will be documented and reported to the NSI Environmental Manager. The Environmental Monitors should aim to survey areas to be cleared no more than 48 hours prior to the vegetation clearing.
4. For each day of surveys, the following information will be recorded using the datasheet provided: the start and finish coordinates, the observer names and any observations. Communications with the NSI Environmental Manager and any follow up actions will also be documented.
5. If a caribou is seen within 500 m ahead of clearing operations, operations will be temporarily suspended by the Project Supervisor to allow wildlife to move away rom the area of their own accord. If they do not leave the area within 15 minutes, they will be gently encouraged to move away from construction activities, and an incident report will be completed. This will involve the slow approach of Environmental Monitors towards the caribou to encourage them to move. If a caribou is reluctant to leave the area, this could be a sign that it is a female that is hiding a calf in close proximity. If this is the case, suspend operations, and contact regional ENR biologist for advice.

BEAR DEN AERIAL SURVEYS

Helicopter-based bear den surveys will be completed surveys by GNWT-ENR. Detailed methods will be prepared prior to the survey, but will include the following elements:

1. The survey will be conducted by one ENR biologist and two environmental monitors in the fall of 2019 and 2020, during den initiation, targeting all areas where vegetation clearing is planned for that winter season, plus an 800 m buffer around those areas.
2. Flights lines will be flown between 200-300m apart
3. A rotary wing aircraft will be used to allow for low and slow flying opportunities for the observers
4. If any wildlife dens are observed, the pilot will slow down and circle the area to obtain photographs and GPS waypoints of the den location. In some cases, where it is safe to do so, the helicopter may need to land so that observers can verify the presence of a suspected den on the ground. Surveyors will be equipped with bear deterrents and firearms in the event there is an active bear in the area.
5. Mineral licks, raptor nests and landscape features that might provide suitable habitat for bat hibernacula will also be documented.
6. Any other wildlife sightings during the survey will also be recorded.

Mitigation options in the event that a denning bear is detected:

If a bear is located in, at or near a den site that is within 800 m of an area that will be cleared of vegetation during the winter, the following mitigation options will be evaluated by ENR and NSI (in decreasing order of preference):

- If feasible, adjust the road alignment, access road alignment, borrow source boundaries or camp location to avoid the bear den by 800 m.
- Do not use all or a portion of a borrow source for that winter of construction in order to avoid the den by 800 m.
- Reduce the size of the exclusion zone and proceed but implement continual monitoring of the den to ensure the denning bear is not disturbed by activities.
- If a den is located directly on the ROW for the road, and no other mitigations can be applied, contact the Tłı̨chǫ Government to preselect a potential hunter(s) from the closest Tłı̨chǫ community to harvest the bear(s) in a den.

Mitigation options in the event that a mineral lick is detected:

If a mineral lick is documented during the aerial bear den survey that is within 250 m of an area that will be cleared of vegetation during winter, the following mitigation options will be evaluated by ENR and NSI (in decreasing order of preference):

- If feasible, adjust the road alignment, access road alignment, borrow source boundaries or camp location to avoid the mineral lick by 250 m.
- Do not use all or a portion of a borrow source to avoid the mineral lick by 250 m.
- Reduce the size of the exclusion zone but maintain a vegetated buffer between the mineral lick and the cleared area, maintain connectivity of the vegetated buffer to adjacent forested areas, and avoid disruptions to drainage and groundwater near the mineral lick.

Mitigation options in the event that a raptor nest(s) is detected:

If an unoccupied raptor nest is documented during the aerial bear den survey that is within 500 m of an area that will be cleared of vegetation during winter, the following mitigation options will be evaluated by ENR and NSI (in decreasing order of preference):

- If feasible, adjust the road alignment, access road alignment, borrow source boundaries or camp location to avoid the raptor nest by 500 m.
- Do not use all or a portion of a borrow source to avoid the raptor nest by 500 m.
- Reduce the size of the exclusion zone but maintain a vegetated buffer around the raptor nest. Leave the tree(s) supporting the raptor nest(s) standing if safety permits.
- If the tree(s) supporting the nest(s) is directly within an area that must be cleared, and the mitigations listed above are not feasible, obtain a permit from ENR to destroy the raptor nest.

Equipment Requirements

- Data Sheet
- GPS
- Project map
- Transect lines
- Digital camera
- Rotary Wing Aircraft

Reporting

Observations of large mammals or fresh sign will be reported immediately to the NSI Environmental Manager. Survey effort and a summary of results will be included in the

Weekly Report. All information including surveys and monitoring will be summarized in the Annual Report.

Pre-Clearing Wildlife Survey

Date: Start time: End time:

Observer(s):

Survey Type (circle): Pre-Clearing Wildlife Survey Bear Den Survey

Feature (circle one): Quarry Quarry access road Road right of way

Start location (UTM): End location:

Wildlife and Wildlife Sign Observations

Time	Species	Observation (observed, tracks, other sign)	Location (UTM)	Comments

Document follow-up actions resulting from any wildlife observations

WILDLIFE INCIDENT REPORTING PROCEDURE

Purpose

The following procedure is intended as a guideline to identify wildlife that requires immediate reporting and sampling (if necessary). ENR encourages all those conducting activities on the land or residents to record and report all instances of injury or possibility of disease in wildlife. The Project will document all such incidents to prevent future incidents or escalation of problems, and report to GNWT-ENR and ECCC if migratory birds are involved.

RESPONSIBILITY

All project personnel are responsibility for providing recording wildlife incident to the on the Project site.

As per Section 57 of the *Wildlife Act,* any defense of life and property kills must be reported without delay to ENR. All reasonable efforts must be made to ensure the hide and other valuable parts do not spoil and that these are turned over to an ENR Officer to avoid any wastage.

As per Section 58 of the *Wildlife Act*, and sub-section 8(1) of the Wildlife General Regulations, any person who accidentally kills or seriously wounds big game or other prescribed wildlife with a motorized vehicle on a highway must report the event to an officer within 24 hours after the incident.

PROCEDURES

Report wildlife incidents when:

- wildlife is determined to be injured.
- wildlife is suspected of being diseased.
- wildlife is found dead.
- there is the potential for human/wildlife conflict such as an occupied bird nest or wolf or bear den.
- wildlife was deterred from camp or other work area.
- there is a defensive kill.
- property is destroyed by wildlife.
- wildlife is injured or killed due to collision with a vehicle.

Complete the Wildlife Incident Record Form, providing information such as:

- Behaviour and movements
- Loss of life or property
- Reason for attraction to area
- Estimation of how long the animal was dead
- Any other animals seen in the area

Collect photographs:

- Add photo name/label
- Show general area
- In case of mortality, photograph the animal (one from each side, head, and tail), including anything unusual and any obvious injuries or marks

REPORTING

Environmental Monitors should report all incidents immediately to the NSI Environmental Manager. When the Wildlife Incident Report is complete, the NSI Environmental Manager is to contact:

- GNWT-ENR North Slave Emergency number at (867) 873 - 7181 (24 Hours), Fax: (867) 873 – 6230.
- Environment and Climate Change Canada at ec.dalfnort-wednorth.ec@canada.ca

All Incident Reports will be included in the Weekly Reports.

Occurrence Date/Time:

Date Reported:

Wildlife Incident Record

MAIN CONTACT INFORMATION			
NAME: **ADDRESS:** **PHONE NUMBER:**			
Location of Complaint: (coordinates, km marker, lake, camp)			
Details Taken by:			
Location of Incident (coordinates, km marker, lake, camp):			
Type of Incident:	☐ Encounter ☐ Nuisance ☐ Wildlife Mortality ☐ Wildlife Injured ☐ Defensive ☐ Other:		
Species:	☐ Black Bear ☐ Bison ☐ Fox ☐ Wolverine ☐ Wolf ☐ Caribou ☐ Moose ☐ Bird ☐ Other:		
Sex:	☐ Male	**AGE CLASS:**	☐ Adult
	☐ Female		☐ Juvenile
	☐ Unknown		☐ Cub
			☐ Unknown
Details of Incident: (movement, behaviour, reason for attraction, property damage, vehicle collision, etc.)			
Details of Action Taken: (reporting, deterrence type, disposal, removal of attractant, etc.)			
DATE: mm/dd/yy			
Was the incident resolved?		☐ Yes	☐ No
Has Environment & Natural Resources been contacted? **Contact Name:** **Date/Time Reported:**		☐ Yes	☐ No

Hemmera
An Ausenco Company

MEMORANDUM

Date:	January 20, 2020
To:	Environment and Climate Change Canada
From:	Peter Kiewit Sons and Hemmera Envirochem Inc.
File:	File No. 103902-01
Re:	Tlicho All Season Road Nest Survey Protocol

1.0 INTRODUCTION

The purpose of this document is to inform Peter Kiewit Sons (the proponent) of applicable regulations, provide standard methods, and suggest the format of reporting and data collection for nest surveys at the Tlicho All Season Road Project (The Project).

Pre-clearing nest surveys reduce the chance of incidental take of migratory and/or federally protected bird species due to vegetation clearing activities associated with the Project. As there are currently no federal or territorial based standards for nest surveys, nest survey methodology was produced using the Government of Canada's Guidelines to Reduce Risk to Migratory Birds (2019) and nest survey industry standard best management practices and methodologies for similar development projects.

2.0 REGULATORY REQUIREMENTS

2.1 Federal

2.1.1 The *Migratory Birds Convention Act* (MBCA)

Songbirds and their nests are protected in Canada by the federal MBCA (MBCA 1994). Compliance with this legislation is generally assumed to have been met if vegetation clearing does not occur during the critical bird breeding period. The critical bird breeding period is based on the nesting zones and periods identified by Environment and Climate Change Canada.

2.1.2 Species at Risk Act

Migratory birds and their habitat are protected under the *Species at Risk Act* if they have been listed as threatened, endangered, or extirpated with recovery strategy (Canada 2002) as designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) species assessments. It should be noted that COSEWIC listed species are more at risk and may require larger designated setbacks.

2.2 Territorial

2.2.1 *Species at Risk* (NWT) *Act*

The *Species at Risk* (NWT) *Act* currently has no avian species listed with protection status (Government of the Northwest Territories 2018).

3.0 APPROACH AND METHODOLOGY

3.1 Timing of Surveys

The Project is located in the B7 nesting zone, which Environment Canada states as having a nesting period of early May to late August (ECCC 2018). Risk rankings for habitats associated with this zone can be found in **Appendix A**.

Birds vary in detectability, and as such, it is recommended that nest surveys be avoided when detectability could be hindered by weather or timing, or when the flushing of nesting birds could cause harm to eggs or young. Songbirds are the most difficult to detect and therefore, to increase detectability, nest surveys should be conducted between sunrise and 11 am, when these species are most active. Waterfowl surveys and raptor surveys can be conducted at any time throughout the day, assuming there is suitable visibility for detection. Surveys are not recommended during periods of inclement weather (e.g., heavy rain, fog or snow), or under high wind conditions (i.e., > 2 on the Beaufort scale).

3.2 Personnel

The Government of Canada's Guidelines to Reduce Risk to Migratory Birds (2019) states that nest surveys should only be conducted by "skilled and experienced observers", herein referred to as a qualified biologist. All nest surveys must be conducted by, or be completed under the direction of, a qualified biologist. All survey team members are to have sufficient experience with bird identification and/or biology and should be trained by a qualified biologist, who is responsible for sign-off on any surveys. Qualification may vary depending on the habitat in which the surveys will occur, and the species involved. For example, waterfowl surveys in an open wetland will require less qualification than songbird surveys in more complex shrubby habitat, where species detectability is reduced.

3.3 Survey Effort

A minimum survey effort of 2 hectares per hour (ha/hr) must be applied for each survey. Some habitat types have higher potential for breeding bird usage; therefore, slower survey speeds are recommended to account for greater search difficulty in these habitats. Descriptions of likely habitats and recommended survey speeds can be found in **Table 1**. The Government of Canada considers complex and/or large habitat to have a high potential for nesting birds to occur, and considers these to be high risk areas for incidental take (Government of Canada 2019). Clearing these areas prior to the nesting period can reduce the risk for incidental take and potential delays. Successive nest surveys in these complex habitats can reduce the likelihood of incidental take, and therefore, recommendations for additional survey effort can be made at the discretion of the qualified biologist to reduce the risk of incidental take in these areas.

Table 1 Recommended Search Efforts for Habitat Type

Habitat	Description	Speed
Complex	Multi-tier vegetation (e.g. dense forest)	0.5 ha per hour
Simple	Grass or non-dense shrub lands	1.0 ha per hour
Disturbed	Pre-cleared or dirt exposed areas	2.0 ha per hour

Survey personnel should walk transects through the proposed vegetation clearing areas to record observations of bird nests and nesting activity to assist in locating nests. Transect separation can vary in width depending on visibility within the habitat type, but should be a maximum width of 10 m. For dense habitat with low visibility, a 5 m transect width should be utilized.

3.4 Nest Activity Determinations

Nest activity can be determined using direct observation of nest use, or behavioral cues from species known to be nesting in the region. Useful behavioural cues may include:

- food begging calls elicited by nestlings;
- "scolding" of nest searchers by adult birds;
- adults carrying either nesting material or food;
- birds flushing from nests close to surveyors, and
- repetitive movements between nests and other sites (e.g., perches, mating sites, food or nest materials).

The survey personnel should situate themselves in a location that is close enough to verify whether birds are visiting likely nest locations, but as far as possible to ensure their presence is not preventing adults from returning. Signs a bird is wary of returning to a nest due to observer presence may include:

- the bird quietly approaching a potential nest site within a few metres;
- sitting close to a nest for extended periods without approaching, and
- repeatedly flying toward a nest but veering off and landing close by.

If any of these behaviours are observed, the survey personnel is likely too close to an active nest, or recently fledged young, and should remove themselves from the area immediately. After waiting a period of fifteen minutes, the observer may then quietly return to the area to attempt to confirm whether the nest is active or if it has recently fledged young. If the bird(s) elicits the same wary behaviour a second time the surveyor should mark the area as active prior to leaving. Additional attempts to confirm nesting activity may then be conducted on a subsequent day.

Any nests that appear to be in good condition, but where no activity is immediately observed should be considered active until additional observations have been conducted. Bird presence and/or breeding activity in the vicinity of the nest may be indicative of nesting activity. If the contents of a nest are easily observed from a distance, the presence of new nesting material, eggs or nestlings, or documentation of adult birds repeatedly visiting the nest can be used to designate the nest as active.

If an empty nest is observed, the survey personnel should watch for activity for a sufficient period of time before the nest is approached. Using a periscope or mirror pole, the nest contents can then be inspected to confirm inactivity. A nest may be determined inactive if the nest cups are observed to contain, or are completely filled with, debris such as twigs or leaves. Nests in poor condition without any evidence of bird presence and/or breeding activity can also be designated as inactive.

3.5 Active Nest Marking and Flagging

Each nest observed during the survey must be GPS marked and designated as either active or inactive. Other than for the purposes of GPS marking, bird nests must not be directly approached for any reason if nesting activity is observed or if a nest has the obvious potential to be active. A nest can only be directly approached in order to examine the contents if it has been designated inactive. Nests should be approached and walked away from using different paths to reduce the risks of identifying the nest location for predators.

Upon discovery of any nest, a buffer zone around the nest location must be clearly flagged with "Environmentally Sensitive Area (ESA)" flagging tape or stakes to notify and prevent Project personnel from entering the buffer zone. Flagging or stakes should be spaced tightly enough for Project personnel to clearly define the area as a restricted access area. For any active nests, the flagging tape is to be labelled with pertinent information including date, nest number, and status. A 'no clearing' buffer zone must be established and clearly flagged around any active nests. DO NOT flag the tree or object that is hosting the nest.

3.6 Buffer Zones

It is recommended that buffer distances be determined by the qualified biologist to appropriately represent the species present, species protection status, level of bird agitation, proposed Project activities and best management practices. If Project personnel wish to travel through a buffer zone, it is recommended that a qualified biologist be present to guide them and assess levels of agitation to reduce the risks of nest abandonment.

3.7 Removal or Changing of Nest buffers

A nest previously designated as active requires an additional survey in order to change its status to inactive. Following accepted songbird nest monitoring protocols, active nests may be checked once every four days (BBIRD 2004, Martin and Geupel 1993) to determine nesting status.

One-hour nest watches documenting no activity at a nest must be repeated on two separate days prior to a nest being approached to confirm inactivity. These nest watches must be completed under the same suitable weather and wind conditions described for the initial nest surveys. Based upon the characteristics of the nest (e.g., well- concealed and/or high canopy location) and the determinations of a qualified biologist, a third one-hour nest watch may be required. This third nest watch may be conducted on the same day as the second nest watch.

Extreme care must be taken to ensure that the presence of the survey personnel undertaking nest watches does not deter birds from returning to the nest. Nest status may be changed from active to inactive if the nest watches have been conducted and no bird presence and/or breeding activity is noted. As a final verification of inactivity, the nest can be approached and inspected for evidence of nest damage, signs of abandonment, and/or successful fledging. Project activities within a nest buffer zone can only occur once the nest has been determined to be inactive or at the direction of a qualified biologist.

3.8 Due Diligence

It is recommended that vegetation be cleared as soon as possible upon completion of the survey. Standards on maximum time before expiration of a sweep are typically 5 to 7 days, based on the habitat type present, time within the critical bird breeding season and species observed. The qualified biologist can discuss implications of survey expiry relevant to each location with the Project personnel. Potential additional mitigation measures or travel by Project personnel within designated buffers should be approved by a qualified biologist.

Additional surveys following the end of the critical bird breeding season may be recommended on the advice of a qualified biologist to avoid risks of incidental take and contraventions of the MBCA, taking into consideration local conditions during the breeding season which may extend nesting activity beyond the general season. It is recommended that a qualified biologist determine if risks of incidental take are low for all habitat types, prior to the completion of nest surveys for the Project. If this is determined, a qualified biologist may provide a written opinion that nesting activity has decreased sufficiently to allow vegetation clearing with low risk to nesting songbirds and no further songbird nest surveys are recommended.

4.0 REPORTING

Notifications of nest survey results are to be submitted by email within one day of completion of a survey cycle and prior to any vegetation clearing. It is recommended that data be collected using the sample field sheets provided in **Appendix B** as a template to capture relevant information. A tracking sheet should be updated and submitted daily to relevant Project personnel to show the areas of the Project that have had nest surveys completed and their associated nesting status, as well as any special instructions or mitigation recommendations provided by the qualified biologist (**Appendix C**). Upon receipt of the tracking sheet, Project personnel will be able to proceed with Project activities in those areas cleared with a green status. Areas indicated with yellow or red will inform Project personnel that these areas are to be avoided until the qualified biologist clears them as green, or any special mitigation measures to be followed in those areas.

5.0 CLOSURE

This memo provides relevant details for the implementation and organization of nest surveys in Northwest Territories B7 nest zone. Key information includes relevant territorial and federal regulations, methodology for conducting nest surveys, data collection and organization, and reporting. Recommendations or adaptations to this protocol by a qualified biologist may be required for work in other nesting zones.

Report prepared by:
Hemmera Envirochem Inc.

Glenn Harasym, B.Sc.
Wildlife Biologist

Report reviewed by:
Hemmera Envirochem Inc.

Tyler Reid, M.Sc., P.Biol.
Senior Biologist

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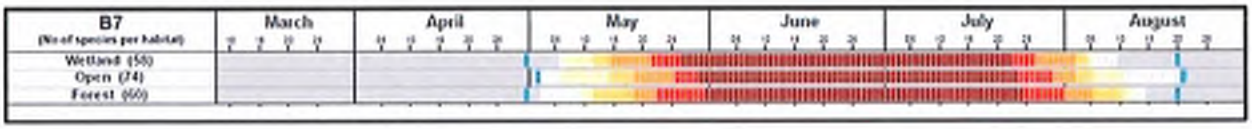
APPENDIX A

Government of Canada's Nesting Calendar for Zone B7

Government of Canada's Nesting Calendar for Zone B7



Legend for calendars: Number of species in percentage (Blue markers show extreme dates predicted for some atypical parts of the nesting zone where nesting could be earlier or later)

Source: ECCC 2018

APPENDIX B

Nest Survey Sample Datasheet

Nest Survey Sample Datasheet

Nest Survey Datasheet

Client	Kiewit Corporation			Date (DD/MMM/YY)			
Project Name	Tlicho All Season Road			Surveyor Name			
Project Number	Km Post Start	Km Post End	Time Start (24h)	Time End (24h)	Precip[2]	Wind[3]	Temp °C

THESE SENSITIVE SPECIES INVENTORY GUIDELINE SURVEY CONDITIONS MUST BE FOLLOWED

No precipitation. Wind no stronger than Beaufort 3 (20 kph).

Sunrise to 11am, or when bird activity decreases.

Code Table

3-Surveyor initials, 2-Month, 2-Day, 4-Species code, 2-Number of nests found for day. Ex: GDH0720SAVS01

0 = none 1 = drizzle 3 = showers 4 = snow/sleet

0 = vertical smoke (<2kph) 1 = smoke drifts (2-5kph) 2 = wind felt on face, leaves rustle (6-12kph) 3 = leaves/twings in constant motion (13-19kph) 4 = raises dust, small branches sway (20-29kph) 5 = trees sway (30-38kph) 6 = Larger tree brances moving, whistling in wires (39-49kph) 7 = Whole trees moving, resistance felt walking against wind (50-61kph).

NB=Nest Building, OE=On Eggs, JI=Juveniles Immobile, JM=Juvenile Mobile, IN=Inactive, UN=Unknown

Nest ID[1]	Zone	UTM E	UTM N	Time (24 Hr)	Species	Nest Stage[4]	Buffer (m)	Status (circle one)
								Active Inactive Unknown

Nest Information	☐ Nest Located	# Adults		Behaviour Notes	
	☐ Behaviour Onl	# Young			

Notes/Photos

Nest ID[1]	Zone	UTM E	UTM N	Time (24 Hr)	Species	Nest Stage[4]	Buffer (m)	Status (circle one)
								Active Inactive Unknown

Nest Information	☐ Nest Located	# Adults		Behaviour Notes	
	☐ Behaviour Onl	# Young			

Notes/Photos

Nest ID[1]	Zone	UTM E	UTM N	Time (24 Hr)	Species	Nest Stage[4]	Buffer (m)	Status (circle one)
								Active Inactive Unknown

Nest Information	☐ Nest Located	# Adults		Behaviour Notes	
	☐ Behaviour Onl	# Young			

Notes/Photos

Nest ID[1]	Zone	UTM E	UTM N	Time (24 Hr)	Species	Nest Stage[4]	Buffer (m)	Status (circle one)
								Active Inactive Unknown

Nest Information	☐ Nest Located	# Adults		Behaviour Notes	
	☐ Behaviour Onl	# Young			

Notes/Photos

APPENDIX C

Sample Tracking Spreadsheet for Nest Surveys

Do Not Enter | Qualified Biologist Required for Entry | No Nests Present | Survey Almost Expired

Construction Information										
Km Post Start	Km Post End	Species	Km Section	Approx. Days to Mobile Fledge	Distance From ROW	Setback (m)	Recommended Mitigation	Monitoring /Follow Up	Nest ID	Comments
0.125	1.000	savannah sparrow	0 to 10	35	On ROW (west side)	30		2	GDH_0720_SAVS01	
0.125	1.000	black-capped chickadee	0 to 10	Unknown	On ROW boundary	30		2	GDH_0720_BCCH02	
0.125	1.000	black-capped chickadee	0 to 10	25	On ROW (middle)	30		2	GDH_0720_BCCH03	
0.125	1.000	Eurasian collared dove	0 to 10	8	On ROW boundary	0		2	GDH_0720_EUCD04	Qualified Bio
0.125	1.000	bald eagle	0 to 10	0	500 m off ROW (west)	0		2	GDH_0720_BAEA05	
9.000	10.000	None - Empty Nest	0 to 10	N/A	On ROW	0		3	JJS_0721_none01	
10.000	16.800	N/A	10 to 20	N/A	N/A	N/A		3	N/A	
20.000	21.000	Boreal chickadee	20 to 30	0	On ROW boundary	0		0	GDH_0717_BOCH01	

ey Conditions			Nest Information							
Temp (C)	Precip	Wind (Beaufort)	Nest ID	Zone	UTM E	UTM N	Species	Status	Nest Stage	Notes/Photos
15 - 21	0	3	GDH_0720_SAVS01	11V	504831	6954656	savannah sparrow	Active	Nest Building	1
15 - 21	0	3	GDH_0720_BCCH02	11V	504835	6954703	black-capped chickadee	Active	Unknown	Nest
15 - 21	0	3	GDH_0720_BCCH03	11V	504840	6954802	black-capped chickadee	Active	On Eggs	
15 - 21	0	3	GDH_0720_EUCD04	11V	504850	6954903	Eurasian collared dove	Active	Juvenile - Immobile	
15 - 21	0	3	GDH_0720_BAEA05	11V	504850	6954918	bald eagle	Inactive	Juvenile - Mobile	2 Mobile j
16 - 20	0	2	JJS_0721_none01	11V	504850	6955000	None - Empty Nest	Inactive	Inactive	
20 - 21	0	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
13 - 20	0	3	GDH_0717_BOCH01	11V	504850	6956903	Boreal chickadee	Inactive	Juvenile - Mobile	Mo

APPENDIX C BEAR ENCOUNTER RESPONSE GUIDELINE

2014

Bear Occurrence Procedures Manual

Photo by Dean Cluff/ENR

Environment & Natural Resources

Northwest Territories Environment and Natural Resources

Bear Occurrence Procedures Manual

Implementation of these procedures will allow ENR a greater ability to provide advice and assistance in preventing harm to humans, bear(s) or property. In addition, it will provide guidance on safely deterring bears that find themselves in areas of development, tourism camps or cabins with the aim of preventing habituation and unnecessary destruction.

Report any incidents such as sightings, encounters, injuries and/or mortalities to the ENR. The GNWT Phone Directory can be found at http://rdirectory.gov.nt.ca/rDirectory.aspx Regional contacts are listed below:

North Slave Region

Wildlife Emergency	(867) 873 - 9238 (24 Hours)
Yellowknife	(867) 873 - 9238
Fax:	(867) 873 - 6230

South Slave Region

Wildlife Emergency	(867) 872 - 0400 (24 Hours)
Fort Smith	(867) 872 - 6400
Fax:	(867) 872 - 4250

Inuvik Region

Wildlife Emergency	(867) 678 - 0289 (24 Hours)
Inuvik	(867) 678 - 6650
Fax:	(867) 678 - 6659

Sahtu Region

Wildlife Emergency	(867) 587 - 2422 (24 Hours)
Norman Wells	(867) 587 - 3500
Fax:	(867) 587 - 3516

Deh Cho Region

Wildlife Emergency	(867) 695 - 7433 (24 Hours)
Fort Simpson	(867) 695 - 7450
Fax:	(867) 695 - 2381

BEAR AWARENESS TRAINING

ENR supports the NWT Mine Health and Safety Regulations (s.15.05), which requires that all field personnel involved in mineral exploration undertake bear-safety training. However, human/wildlife incident prevention is a key component to the training.

Training of personnel in preventing and responding to wildlife incidents can reduce the likelihood of injury to personnel and wildlife. Therefore, all field personnel working on the project must receive bear awareness training, preferably from a professional trainer.

The training should include:

1. Recognizing the causes of human/wildlife conflicts;
2. How to prevent and respond to bear incidents;
3. Proper storage, transfer and disposal of camp waste; and
4. Proper use and safe application of deterrents.

INCIDENT PREVENTION

Refer to the ***Camp Waste and Wildlife Attraction Guideline.*** This resource provides guidance on how to minimize or prevent attraction from bears to your camp, cabin or work site.

OCCURRENCE RESPONSE

Small scale exploration and tourism camps should develop and implement Bear Incident Standard Operating Procedures (SOPs) that can be used in the field. The SOPs will allow all members on site to have knowledge of how to minimize or prevent any loss of life or property if there is a bear within the vicinity of your camp area or work site. SOPs may include such things as:

a) Response team
b) Equipment
c) Action level
d) Emergencies
e) Reporting Requirement

1. SIGHTING - Bear in the general vicinity (>1km)

1. If it is within sight of your camp/cabin and it is safe to do so, use a ***Wildlife Sightings Log*** to record and report information regarding your observations.
2. Continue to monitor, if necessary.

2. ENCOUNTER - Bear In Camp (<1km)

1. If safe to do so; take a quick note of the location, direction of travel and general behaviour of the bear(s).
2. Sound the bear alarm.
3. If necessary, phone the ENR Regional contacts listed above for guidance on necessary next steps to ensure human/wildlife safety and protection of property.
4. If necessary, stay indoors or in your vehicle. **DO NOT APPROACH THE BEAR.**
5. Keep all doors and windows closed.

6. If necessary and safe to do so; continue to monitor the behaviour and movement until either the bear leaves on its own, deterrence is successful or response personnel arrive.
7. If possible, start deterrence procedures.
8. Report status of bear encounter to the ENR Regional contacts listed above when safe to do so.

3. Injury

1. Any injuries a bear may have obtained from direct or indirect contact with the camp or persons must be reported to the appropriate ENR Regional contact listed above.

4. Mortality

1. A bear may be destroyed if human life is in danger or destruction of property is imminent.
2. Under the NWT Wildlife Act, mortalities must be reported to the appropriate ENR Regional contact listed as soon as is practicable. In some cases, the responsible party may be asked to:

    a) Skin the bear leaving the claws and head attached.
    b) Preserve the hide by freezing and/or salting it and store it in a cool place. Turn in the hide, the skull, evidence of sex and any other biological samples requested when filing the report to the nearest ENR Regional office or to an ENR Renewable Resource Officer.

If or when possible, the attached ***Bear Occurrence Checklist*** should be completed prior to calling ENR. It is critical that as much information as possible be provided in order for ENR to provide appropriate advice and guidance.

DENNING BEARS

A. For exploration camps, if a bear is located in, at or near a den site, work in the area must halt. All employees should safely retreat from the area and report the incident to the Site Supervisor and/or Wildlife Monitor and the appropriate ENR Regional contact listed above for further advice and assistance.

B. For cabin owners, if a bear is located in, at or near a den site, safely retreat from the area and report the incident to the appropriate ENR Regional contact listed above for further advice and assistance.

C. Staff from ENR will be required to assess the den site and may implement measures to ensure both human safety and that the bear(s) remain undisturbed. This may include the establishment of a buffer zone of at least 300 meters around the den.

D. Work inside the buffer zone may not be permitted until after den emergence.

Office Use Only
File#:

Environment & Natural Resources (ENR)
Bear Occurrence Checklist

- Fill out or check all that apply

1. **Complainant Details:**				
Name, job title and affiliation:				
Contact information:				
Location of complainant: *(coordinates, lake or property name)*				
Other on-site contact information: *(wildlife monitors/site supervisors)*				
2. **Bear Occurrence Details:**				
Date/Time:		**Location:** *(coordinates, lake or property name)*		
Type of bear occurrence:	□ sighting	□ encounter	□ injury	□ mortality *Ear tag/tattoo #*
	□ Other, explain:			
Number of bears:		**# of cubs**		
Type:	□ black	□ grizzly	□ unknown	
Sex :	□ male	□ female	□ unknown	
Age Class:	□ cub (<1)	□ juvenile	□ adult	□ unknown
Behaviour:	□ fearful	□ not fearful	□ aggressive	□ other
General Observations	□ moving toward site	□ moving away from site	□ at site	
Other observations: *(i.e. walking, resting, eating, mortality, injury, den site, number of cubs, etc.)*				
Has bear(s) been involved in a previous incident:	□ No □ Yes	**If yes, explain:**		
Did the bear obtain a reward	□ No □ Yes	**If yes, explain:**		
Any property damage or loss of life:	□ No □ Yes	**If yes, explain:**		

3. **Detection/Deterrent:**				
Detection system on site:	□ Alarm	□ Dog	□ Motion detector	□ Other:
Deterrence on site:	□ Bear boards	□ Auditory *(Yelling/Flares/Alarm/Horn/Bell/ Whistle/Cracker shells)*	□ Projectile *(Rubber Bullets/Firearms)*	
	□ Electric Fence	□ Chased *(Dog, vehicle)*	□ Other:	
Was deterrence used:	□ No □ Yes	**Explain:**		
Was the deterrence successful:	□ No □ Yes	**Explain:**		
Present status of bear with dates:	□ at large	□ captured	□ deterred	□ other

4. Additional Comments	