ENERGY SAFETY CANADA

WILDLIFE AWARENESS

A Program Development Guideline

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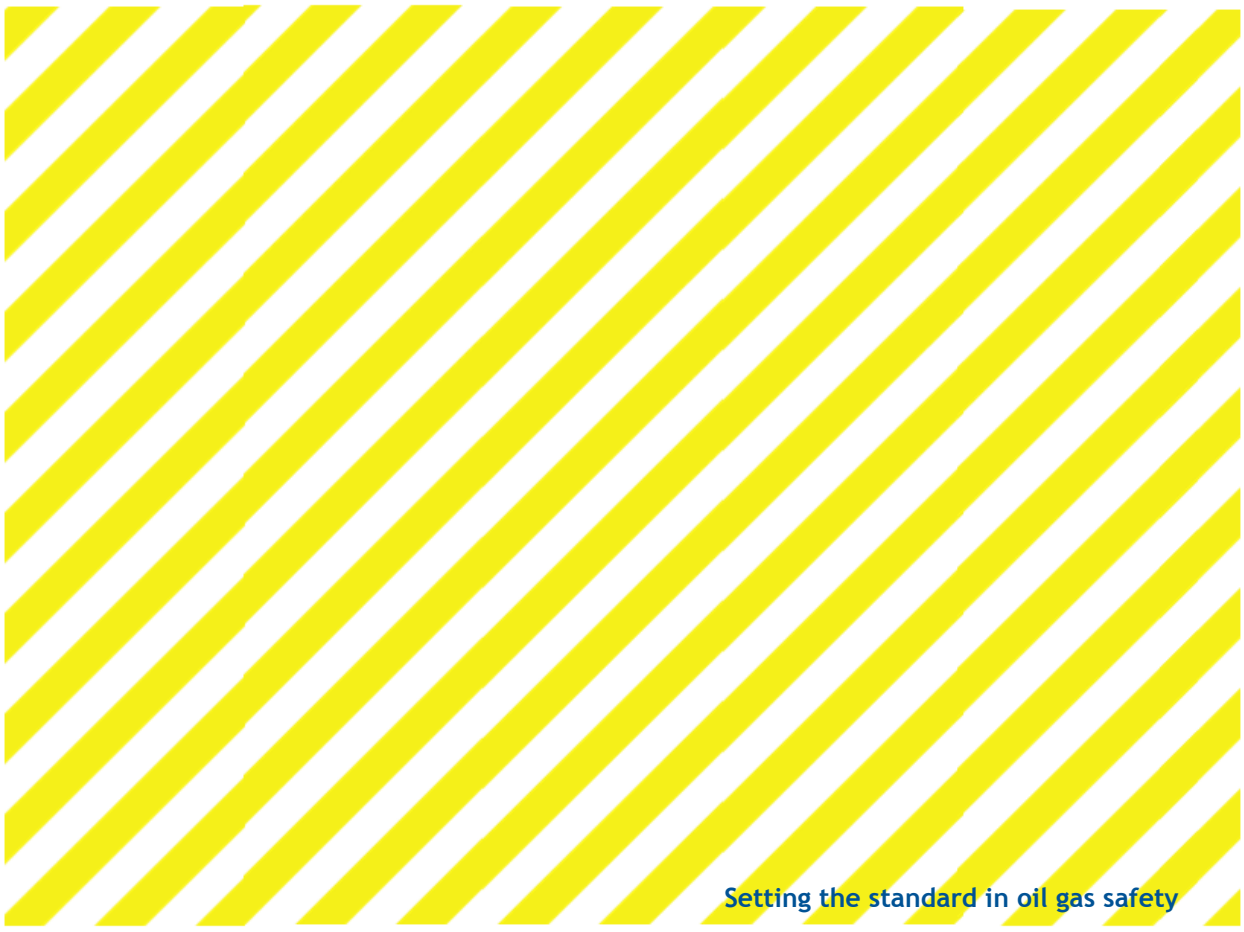

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ABOUT ENERGY SAFETY CANADA

Energy Safety Canada is the upstream oil and gas industry's advocate and leading resource for the continuous improvement of safety performance. Our mission is to help companies achieve their safety goals by providing practices, assessment, training, support, metrics and communication.

AVAILABILITY

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PREFACE

PURPOSE

This guideline outlines principles of wildlife awareness for protecting outdoor workers from wildlife.

HOW TO USE THIS GUIDELINE

This guideline is intended for employers, safety professionals, supervisors and workers who work outdoors or plan for working outdoors.

LIMITATIONS

Energy Safety Canada (ESC) offers this guideline with no specific guarantee or warranty stated or implied. Wildlife behavior cannot be predicted with absolute certainty. As such, ESC cannot declare that workers who follow this guideline will not have injuries, property damage or other negative outcomes. Although this guideline identifies the optics in which a worker ought to be knowledgeable, no preference or bias is identified amongst the variety of training organizations or programs that may be available or used.

CONTRIBUTORS

This document is based on the ESC Wildlife Awareness Course, including Bear Awareness. It also incorporates the CAGC's Bear Hazard Response Guideline.

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1.0 Introduction

Working in the wild increases the likelihood of encountering wildlife, including bears, cougars, wolves and coyotes. Employers and workers must be prepared for working around and potentially encountering wildlife before beginning work.

This guideline outlines principles of wildlife awareness for protecting outdoor workers from wildlife. The appendices outline strategies for avoiding other wildlife hazards, such as large ungulates, noxious plants, insects, and vector-borne diseases. The purpose of this guideline is to inform workers and employers of roles and responsibilities and strategies for avoiding wildlife, as well as what to do in the event of a wildlife encounter. The goal of this guideline is to limit interactions and maintain the safety of both workers and wildlife.

Key Definitions:

Large Ungulate(s): Hoofed mammals, including deer, elk, caribou, moose and bison.

Zoonoses: Infectious diseases carried by animals that can be transmitted to humans.

Carrion: Flesh of dead animals – what scavengers eat.

Scat: Animal feces.

Rut: Breeding season for large ungulates (usually fall).

1.1 Respecting Wildlife

Working outdoors sometimes involves intruding on wildlife habitat. It is important that employers and workers alike remember that they are the outsider when working in the wilderness. Employers and workers should be respectful of habitat and wildlife living there, by leaving as little trace as possible. In addition, employers and workers should be aware that their presence may put stress on wildlife and may increase the risk of conflict. It is important to have a respectful attitude toward the wildlife living around the worksite, in order to avoid encounters.

2.0 Roles and Responsibilities

This document is not designed to interpret Canadian federal and provincial legislation. For more detail, please refer to applicable legislation for the jurisdiction where the work is being carried out.

This section discusses the general responsibilities of the prime contractor, employer and workers. It addresseswho will contribute to the planning for wildlife and bear management.

2.1 Prime Contractor

The client or owner is the prime contractor unless the authority is otherwise assigned, in writing, to a qualified party.

The prime contractor is responsible for establishing and maintaining a system or process that will ensure compliance with all applicable regulations. As the prime contractor is charged with the overall responsibility for the health and safety of all workers at the worksite, the prime contractor must ensure contractors and employers comply with applicable legislation.

- Prime contractor responsibilities include:
- Ensuring the applicable Occupational Health and Safety Act and regulations, as well as wildlife-related acts, are complied with at the worksite
- Identifying and assessing risk
- Initiating and implementing a plan for mitigating risk from wildlife
- Communicating the plan to all workers on site
- Coordinating with sub-contractors
- Controlling wildlife using the lowest risk method practicable

Note: Supervisors share the responsibility of complying with legislation in conjunction with any others who may direct workers.

2.2 Employer

Employer responsibilities include:

- Developing work processes that ensure compliance with this guideline
- Providing adequate supervision and ensuring active supervision occurs
- Ensuring the level of disturbance created on a project does not unnecessarily expose worker to risk from wildlife
- Conducting a site-specific hazard assessment to identify all dangers associated with wildlife in the area
- Implementing a hierarchy of controls for elimination or control of wildlife hazards
- Providing appropriate food storage facilities and systems
- Providing appropriate garbage storage and disposal facilities and systems
- Checking with authorities to see if animals are in the area (e.g. bear)
- Monitoring animals in the area for signs of habituation
- Reporting bear and cougar sightings to authorities
- Reporting problem wildlife (habituated animals) to authorities
- Working with authorities to deal with problem wildlife
- Working to improve food and garbage storage and disposal to prevent habituation
- Providing training to workers
- Communicating potential wildlife hazards to workers
- Communicating the presence of wildlife to workers, especially problem wildlife
- Abiding by applicable regulations
- Acting in a manner that ensures the safety and protection of both workers and wildlife

2.3 Worker

Worker responsibilities include:

- Being aware of personal food storage practices
- Using the food and garbage facilities and systems provided
- Taking wildlife training
- Assisting in identifying hazards and implementing hazard controls
- Reporting problem wildlife to supervisors
- Reporting wildlife encounters to supervisors
- Warning co-workers of the presence of problem wildlife
- Abiding by applicable regulations
- Following established industry practices and safe work procedures
- Acting in a manner that ensures the safety and protection of both workers and wildlife

Worker rights include:

- Right to Refuse
  - Right to refuse work that he/she believes is unsafe

  For example: you refuse to work in an area where a bear has been recently sighted

- Right to Know
  - Right to know hazards

  For example: your next job is in grizzly territory and your employer provides trail reports

- Right to Participate
  - Right to participate in identifying and correcting job safety hazards

  For example: you report a bull elk in the area to your supervisor

3.0 Applicable Regulations

Regulations are in place that are meant to protect both workers and the environment, including wildlife and their habitat. Workers and employers are legally bound to comply with all applicable regulations. Fines and imprisonment can result if workers are found to be negligent or in non-compliance on the job.

Responsibilities for employers and workers include:

- Abiding by applicable regulations
- Following established industry practices
- Acting in a manner that ensures the safety and protection of both workers and wildlife

Regulations exist at the federal, provincial or territorial and municipal level. Many federal regulations are further supported at the provincial level, including wildlife protection laws.

Note: Regulations may be different from one province to another. Employers and workers must be aware of the regulations that apply in each jurisdiction they work in.

Various entities manage the applicable regulations. They include:

- Department of Fisheries and Oceans Canada (DFO)
- Environment Canada
- Canadian Wildlife Service
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC)
- Canadian Heritage

Each entity enforces regulations. *Table 1: Overview of Federal Entities and Table 2: Overview of Applicable Federal Regulations*, found in the Appendices, describe federal entities and the legislation they enforce that affects employers and workers.

3.1 Provincial/Territorial Agencies and Regulations

Laws change from province to province. An animal might be protected in Alberta, but not in British Columbia. It is important for both employers and workers to be aware of the regulations in their current jurisdiction.

Generally, provincial and territorial agencies manage wildlife and habitat by issuing licenses and permits and enforcing regulations with Fish and Wildlife Officers. Officers can make arrests, impose fines, and confiscate property, as well as check permits and conduct inspections. Be aware of your jurisdiction's enforcement system.

Fish and Wildlife Officers can be a valuable resource for employers. They can provide information on protected species in the area, carnivores whose territory overlaps with the worksite, and other important issues.

Certain overarching ideas govern most provincial legislation. *Table 3: Summary of Provincial/Territorial Regulations*, found in the Appendices, addresses ideas common to all provincial legislation that will affect the worker.

There are many acts and regulations in place. Visit provincial and territorial websites for more specific information.

4.0 Planning for Worker Around Wildlife

Employers must be prepared before beginning work in any area where wildlife is present. Certain elements should be considered:

- Species present in the area
- Protection status of species
- Likelihood of an encounter
- Risk of an encounter
- Time of day most likely to encounter species
- Time of year most likely to encounter species (seasonality – what's the most dangerous time of year? e.g. breeding season, rut, with young, etc.)
- Species territory requirements (e.g. large vs. small, territorial, defensive, etc.)
- Potential hazards presented by wildlife in the area
- Plan for controlling food storage
- Plan for controlling garbage storage and disposal
- Communicating wildlife hazards to workers
- Bear spray required if working in bear country; must be carried on person to be able to be used if an encounter occurs
- Recommended actions if encounter occurs
- Reporting encounters
- Working alone
- ERPs (Emergency Response Procedures)

Appendix A, the *Sample Wildlife Management Plan*, is a starting point for employers to use when developing their own plan for working around wildlife.

Much of this planning may be covered by a company's health and safety program. However, it is important to consider specific issues related to working around wildlife and how to to avoid encounters. Companies may not need to create a stand-alone wildlife management plan. Risks posed by wildlife may be addressed through hazard assessments for site specific work, or regional wildlife strategies.

Consider whether the information in this guideline is already covered in your company's plans. If not, the following topics may fit well into a site-specific orientation or hazard assessment.

4.1 Training Workers

Workers may be more prepared to work safely around wildlife if they have been trained in how to avoid wildlife encounters, and what to do in case of an encounter. Several training options are available, or a company can create its own training program, depending on its needs and the location where it will be working.

4.2 Communicating Wildlife Hazards

Planning for working around wildlife should address communicating wildlife hazards to workers. Workers must be prepared before starting work in the wilderness. Employers can communicate wildlife hazards via signage, safety meetings, posters, and safety alerts, among other means.

The Appendices at the back of this document provide information on the types of wildlife workers are likely to encounter while working in the Canadian wild. They can be used as topics for safety meetings or put up as posters on site.

4.3 Emergency Response Procedures (ERPs)

Plans for working around wildlife should include emergency response procedures specific to wildlife encounters. ERPs depend on site location, type of work and type of wildlife involved. Employers must have a plan for wildlife encounters and when workers are injured or incapacitated in the event of a wildlife encounter.

In relation to wildlife encounters the plan should identify what structures or vehicles on site should be used to seek shelter. This plan should also identify the process to safely shut down activities. For example, how to safely stop pumping on a hydraulic fracturing site when a bear enters the worksite.

4.4 Avoiding Wildlife Encounters

It is impossible to predict wildlife behavior in the event of an encounter, so it is worth putting in effort to avoid wildlife encounters in the first place. This is why planning before beginning work is so important.

4.4.1 Avoiding Habituation and Food Conditioning

Habituation occurs when wildlife loses avoidance and escape responses – essentially, when animals get used to human presence. This is a result of frequent, harmless interactions with humans. Attraction can lead to habituation. Subsequently, food-conditioned animals are ones that associate humans with food due to poorly managed food and garbage storage.

Food-conditioned animals are problematic, especially in camp situations. They may enter camp searching for food. It is crucial to manage food/garbage storage to avoid attracting animals and potentially causing food-conditioning. It is especially important to avoid food-conditioning because animals protecting or fighting for a food source are more dangerous.

Food-conditioned animals can become nuisance animals. Nuisance animals may end up being relocated or even destroyed by authorities. Relocation is often ineffective, so nuisance animals are often a direct victim of human impact on their habitats. Protect the wildlife in your area by avoiding food-conditioning and leaving as little trace as possible. It is more effective to focus on prevention.

Every animal needs its own personal space. That distance is different for every animal. Habituated animals may have a smaller personal space requirement than others. In interacting with wildlife, try to stay far enough away that the animal does not show a reaction. Even if the animal seems unaffected by your presence, it may be experiencing stress due to human presence but not outwardly showing it.

4.4.2 Controlling Food and Garbage Storage and Disposal

Controlling food and garbage onsite will minimize human impact and help avoid habituation. Bear resistant food containers are available for small backcountry camps. At larger camps, food must be stored indoors. Garbage and its disposal must also be carefully controlled. Employers are responsible for providing bear safe garbage bins for use around site. It is also crucial to dispose of garbage before it accumulates past the bins' capacities. A disposal schedule must be considered, according to the number of people in the camp. Garbage should be packed out, not burned or buried.

Workers must take personal responsibility for their own actions to avoid habituation. They must store food carefully and commit to using bear safe garbage bins. Note that food smells also attract wildlife. Both workers and employers are responsible to do their part in avoiding habituation of wildlife.

For worksites with no perimeter fencing, disposal of waste food, containers, wrappers, or disposable utensils must be in secured buildings or bear proof containers with automatically closing lids. Once a day before dusk, garbage must be transferred to a bear proof garbage containment area.

For camps or work area parking lots with no perimeter fencing, no waste can be disposed or stored. Signage must be posted in parking lots to indicate that all waste and litter must be taken to waste disposal container locations.

Garbage receptacles must be disinfected with lime daily to reduce attractants. Odour control and pumping out open grey water is also required. Eating in tents is not permitted, nor are open fires for cooking.

4.4.3 Fencing Requirements

Industrial camps should follow certain safe practices to deter bears and wildlife. This includes leaving space for wildlife.

Long-term industrial camps, such as logging camps, should have garbage, waste water, cooking facilities, incinerators and accommodations enclosed by a 6-foot chain link fence with three strands of barbed wire on top, surrounded by a four-strand electric fence controlled with electric gate access.

Other long-term camps, like some gas processing plants, do not have camp or cooking facilities onsite. Chain link fencing should suffice in those cases; however, fencing should be adjusted with increased risk.

Short-term industrial camps, such as drilling camps, should have all garbage, waste water, cooking facilities, incinerators and accommodations enclosed by a seven-strand galvanized steel wire electrified fence OR six-foot chain link fence with three strands of barbed wire on top, surrounded by a four-strand electric fence controlled with electric gate access.

Short-term temporary camps, such as drilling and tree planting camps, with a duration of less than three months, should have all garbage, waste water, cooking facilities, incinerators and accommodations enclosed by a four-strand electric fence controlled with electric gate access.

A cleared area extending at least 2.5 m from the outside of the fence is required. This cleared area, free of brush, allows bears to see and inspect the fence instead of stumbling into it. Bear-proof containment of grey water locations must be enclosed, and bear-proof garbage bins and containers must be provided at the camp. Large bear-proof garbage containment receptacles must be located 1 km from the camp.

4.5 Bear Management Plan

When bears are a hazard in an area, it is necessary to prepare a Bear Management Plan. It should be prepared before any workers are on site, beginning with an initial task-based risk assessment for all phases of the project. The end goal is to provide a site-specific bear management plan that documents all the controls that will be used.

Risk management variables to define include:

- **Bear Populations:** Ask local Fish & Wildlife authorities about the bear population in the area. Have any been sighted recently? Does your site fall within their usual territory?
- **Seasonality:** Within each species' life cycle, is the work occurring at times when bears will be hunting, foraging, breeding or raising young?
- **Terrain Assessment:** Is there a water source nearby? Food sources (berries)? Potential denning sites?
- **Available Prevention Resources:** Deterrents (electric fencing, bear-proof waste containers, etc.) present? Lighting adequate?

Immediate Peril Example:

If a worker employs all appropriate strategies to calm down a defensive bear, and the bear continues to bluff charge or charge, then the worker may escalate his/her response in turn, by using deterrent and any other weapons in order to save his/her life. In the same way, if a bear stalks a worker and begins a predatory attack, then the worker can defend his or her life, potentially at the bear's expense.

- **Define Scope of Work:** Who is doing the work? What work will be performed? When will the work proceed? Where is the work underway?

  - Once the nature of the work has been defined, key definitions must be established regarding risk tolerance. Clear site definitions must be documented and understood by everyone on site.
- **Working Alone:** What protections will be used if working alone is unavoidable? Are there any radio dead zones? What are appropriate check-in intervals?
- **Imminent Danger:** A danger that is not normal to that occupation OR a danger under which a person engaged in that occupation would not normally carry out the person's work (Section 35 of Alberta's OHS Act). Workers can refuse work if they feel they are in imminent danger.

Imminent Danger Example:

A worker performing tasks in a field where a buried carcass was found, indicating the presence of a grizzly bear in the area, would fall under the category of imminent danger because that level of danger would not be normal for that occupation. In this case, the worker could refuse work.

- **Immediate Peril:** When a worker is in danger of losing his/her life and must fight to survive. It is crucial to understand that bear spray is proven to be much more effective than firearms in a bear encounter. In addition, only government agencies, such as provincial Fish and Wildlife, have the authority to permit a bear to be killed.

Note: These variables will have to be taken into account as client requirements for each project. For example, some clients do not allow firearms on site for use by workers and subcontractors, regardless of the immediate peril definition established. Thus, the precautions need to be adjusted accordingly to ensure that worker safety is maximized while balancing the survival rights of both bears and workers.

- **Adequate Egress:** Each site should define its own tolerance for areas where safe exit may be restricted, such as marshy areas.
- **Risk Tolerances:** The site should document in the hazard assessment the point at which the following occur:
  - When to hire a bear monitor and how many are needed? A bear monitor is someone who is solely dedicated to monitor for bears and is equipped and trained to use bear deterrents.
  - At what point will work be shut down because of a high risk of an encounter?
  - In camp settings, how many bear encounters does it take for them to be considered "Frequent" or "Occasional"?
  - At what point should workers work in close groups of four or more?
- **Shutdown Activities:** Each company in conjunction with the prime contractor should have procedures in place to safely shut down activities when a bear encounter is occurring and identify alternate muster points where workers can safely shelter such as vehicles, equipment, etc.

5.0 Working Around Wildlife

This section provides advice on working around wildlife, specifically carnivores including cougars, wolves, and coyotes.

5.1 Wildlife Stress Signs

Animals are more predictable than you think. If a human is encroaching on an animal's personal space, it is likely to show signs of stress, which may increase the likelihood of an encounter.

Look out for the following stress signs. More species-specific stress signs are discussed in depth in the following sections. If you notice an animal exhibiting signs of stress, give it more space. Look for an avenue of escape in case the encounter escalates.

Remember to keep three bus lengths between you and large ungulates, and 10 bus lengths between you and a carnivore at all times.

Body language that indicates stress:

- Raised head (carnivores)
- Staring intently, lowered head (ungulates)
- Raised hair on shoulders and back of neck
- Licking lips
- Ears back
- Pawing/stomping the ground
- Blowing air out through nose

5.1.1 Bluff Charges

Sometimes animals escalate from showing stress signs to exhibiting perceived aggression by charging towards humans who are present. Such charges are meant to scare the human away, and are called bluff or warning charges.

Bear behaviour when bluff charging may include:

- Charging towards you
- Clacking jaws
- Stomping and pouncing, landing on front paws
- Ears back

Animals may charge to protect young or a food source or territory. Whatever the reason, experiencing a bluff charge means you are too close to the wildlife in question.

In the event of a charge:

- Prepare pepper spray for use (90-foot guideline – if the animal, specifically bear, is within 90 feet, pepper spray should be unholstered and readied for deployment)
- Stand your ground
- Find shelter if necessary in a tree (ungulates only), vehicle or building

Many animals show bluff charges, including ungulates and carnivores like bears. Ideally, do not put yourself in a position where a charge may occur. Pay attention to stress signs in order to minimize the likelihood of an encounter.

5.2 Example Encounters

The oil and gas industry has a history of wildlife encounters. Read the following Enform Safety Alerts for more information:

- Two Injured in Encounter with Black Bear (2014)
- Bear Mauling – Fatal Incident (2003)
- Cougar Attack (2015)

5.3 Bears

There are three types of bears in North America: black bears, grizzly bears and polar bears.

5.3.1 Black Bears

Black bears are found in heavily wooded areas and dense bush. Their habitat often overlaps with grizzly bears.

Black bears are thickset, with a black coat and a lighter muzzle. They have small eyes and a tapered Roman nose. Their ears are rounded, and bigger than those of a grizzly. Black bears have short claws that are not retractable. They may have a white patch below the throat.

Coat colour may vary. Other colours include brown, dark brown, cinnamon and blonde. The Kermode, or spirit bear, has a white coat. The Blue Glacier bear carries a bluish-grey coat. Both are rare.

Black bears have excellent hearing and a keen sense of smell. If startled, a bear might stand on its hind legs to try to identify a new odour. It might also run to get downwind.

Black bears are solitary, but the bond between mother and cubs is extremely strong. Mothers are very protective of cubs.

Although they are mainly vegetarian (feeding on berries, fruit, and nuts), black bears will eat almost anything, including insects, fish, and sometimes small mammals or young ungulates. Bears drink frequently and are often found at sources of fresh water throughout the year.

Note: Black bears are quick runners (up to 55 km per hour) and excellent climbers. Black bears often climb trees if they feel threatened. Do not climb a tree to get away from a black bear. It is certainly a faster climber than you are.

In the wilderness, black bears are active from dawn to dusk. Closer to human settlements, bears are often nocturnal to avoid contact.

Black bears mate from June to July, and search for a den in the fall (dens are found in stumps, holes, culverts, pipes, etc.). Females line their dens with leaves, grass and ferns. Males do not. Females den earlier, while males wait until after the first snow. Black bears do not truly hibernate. Their heart rate drops, but they may wake in the middle of the winter and wander about in mild weather.

Cubs are usually born in the spring. Black bears begin to eat to gain wait in July, in order to prepare for the winter.

5.3.2 Grizzly Bears

Grizzly bears live in dense forest and subalpine areas. Their range can overlap with other bears. Grizzly habitat has been compromised and diminished greatly due to the expansion of human activities.

Grizzly bears look distinctly different from black bears. They have a large head, small eyes, and a nose that turns upward so it shows a bit of a dip between brow and nose. Grizzlies have smaller ears than black bears.

Grizzly bears, like polar bears, have a hump of muscle over their shoulders. The coat is lighter on the head and shoulders with a dark body and darker feet and legs.

Note: Grizzly bears have long, non-retractable front claws (10+ cm). This means grizzly and black bear tracks are very different. The claws leave marks much further from the toe pads, when compared with the short claws of the black bear.

Coastal bears that eat salmon are larger, with inland bears about 100 kg lighter on average. Grizzlies are solitary and occupy a large home range.

Although classified as carnivores, 80 – 90 percent of grizzly bear diet is vegetation, especially berries. Grizzlies that live in the mountains tend to den at high elevations, and then head down into valleys in the spring where vegetation is more available. However, grizzlies do prey on mammals using their excellent sense of smell.

Grizzly bears are good swimmers and fast runners. Although they climb less than black bears, some grizzly bears can certainly climb trees.

Mating occurs in May to June. Similar to black bears, females den first around November. Males wait until December. Two cubs are born in January or February and emerge in April or May with the mother. Grizzly bears are extremely protective mothers.

Like black bears, grizzly bears are not true hibernators and may be active throughout mild winters.

5.3.3 Polar Bears

This guideline offers a basic outline of polar bear characteristics and behaviour. For more detailed polar bear safety information, please visit the Parks Canada website.

Polar bears live in the Arctic and prefer ice all year round. They use ice as a hunting platform. However, warm weather forces them on shore for two to four months depending on location.

Unlike black and grizzly bears, polar bears do not enter a state of quasi-hibernation for months at a time. Only pregnant females remain in dens throughout the winter, beginning in mid-October. Instead, they remain inactive, slow their metabolism and heart rate, and live off their fat stores after 7 – 10 days of not eating.

Polar bears have a white coat and black skin, with long outer guard hairs and a thick undercoat for warmth. Like grizzlies, polar bears have a shoulder hump. Polar bears are massive, with males reaching 400 – 800 kg and females 150 – 250 kg.

Polar bears hunt by smell, and can locate their main prey, seal, from far away. Polar bears will also scavenge and eat carrion, as well as hunting walrus and beluga on occasion.

Polar bears are extremely protective of young. It is crucial to avoid maternity dens. One of the largest sites for maternity denning is Churchill, Manitoba. Dens are often built of snow on south-facing slopes.

The Arctic does not provide much cover, so it is important to maintain a safe distance from polar bears. Scan the area at regular intervals with binoculars. Watch for tracks, droppings, diggings, carcasses and maternity or temporary dens. Be careful around the coast, where dens can be hidden behind boulders, ice, driftwood or vegetation.

Travel only in daylight for best visibility. Travel in groups when possible, as large as possible for the best chance at deterrence.

Avoid areas inhabited by the ringed seal, which is the polar bear's primary food source. Bears hunt from ice floes, except when they spend time on the coast during the summer. Watch for dens throughout the year, since polar bears can den at any time. Keep an eye out for tracks leading to and from a den site.

5.3.4 Bear Behaviour

Bears behave differently based on the situation. It is important to understand and read bear behaviour to determine your appropriate response.

A threatened or defensive bear (either way, feeling stressed due to human presence) will chomp its teeth, huff, make vocalizations, and potentially bluff charge. It might also stand up on its hind legs to sniff the air to find out who and what you are or sway its head back and forth. Defensive bears may yawn or pop their teeth.

A bear that is testing dominance will approach confidently.

A bluff charge will happen quickly and then subside, accompanied with vocalizations. A bluff charge lets you know that you are in the bear's critical space and it is time to leave.

If a bear is startled and its senses are compromised (i.e. while it is eating) it may strike out without warning. If feeding on a carcass, a bear will be concerned about protecting its food from other bears and might initiate that preconditioned attack if startled.

A predatory bear stalks its prey silently, moving slowly with ears erect, until it charges at the appropriate distance.

The Alberta Government released the Black Bear Response Guide in April 2016. This guide categorizes bears according to behaviour. The definitions below are taken from that Guide and will be used throughout this document. These definitions help clarify what type of bear you are dealing with. Please see the document for complete detail.

- **Habituated bear:** shows little or no perceived reaction to people; presence could be interpreted as or lead to a public safety risk; may frequent developed areas or areas of high human use; use preventative actions on these bears
- **Food-conditioned bear:** has learned to associate people and human activities with food; regularly uses unnatural food materials (garbage, pet food, etc.) that has been reasonably secured; is considered an imminent public safety risk
- **Depredation bear:** has attacked, killed, or is an immediate threat to a pet or livestock animal
- **Offender bear:** presents an apparent threat to human safety or has had contact with, injured, or killed a human after being provoked; may not always require capture (e.g. defensive response and short contact with human)
- **Predator bear:** has killed a human and either fed upon or concealed the body; or has stalked, pursued, chased or ambushed a human (unprovoked) resulting in contact, whether or not the victim was killed or injured

5.3.5 Camp Vs. Field Situations, Mitigations and Responses

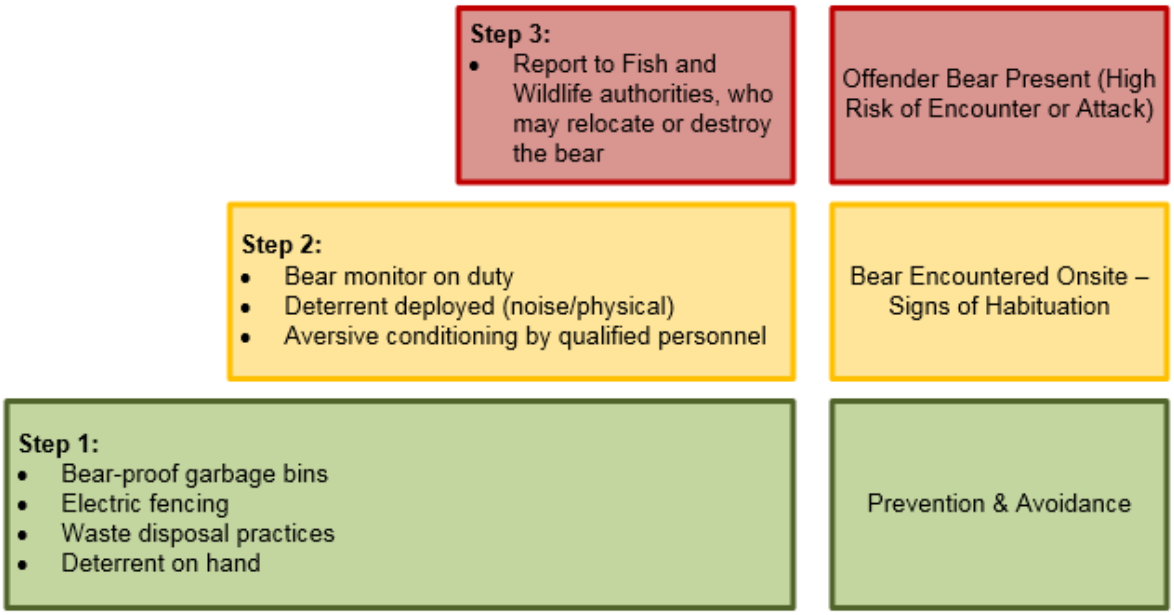
Situations, mitigations and responses change from camp to field settings.

Camp Mitigation:

The camp mitigation staircase below shows how mitigation changes with increased risk of an encounter or with the presence of a nuisance bear.

Note: Step 1 mitigations continue throughout – escalating mitigations means building on what was there already.

Camp Situations and Responses:



If the bear came to camp repeatedly in search of food, then Step 2 mitigation would occur. If necessary (e.g. defensive attack, predatory attack, etc.) then Step 3 mitigation would be initiated.

Camp attacks do occur in the oil and gas industry. An example would be a worker walking from one camp building to another and being stalked and attacked by a predatory bear. In this case, immediate deployment of bear spray and use of weapons by the worker and his/her co-workers in order to save the worker's life is warranted.

Field Mitigations, Situations and Responses

Field mitigations rely on workers being properly equipped, trained and aware of bear behaviour. Workers must be trained in bear awareness and best practices for encounters. Workers must also be provided with and carry bear spray in case of a bear encounter.

Note: Section 6.1, the Spectrum of Bear Engagement – Field, outlines situations and recommended responses for encounters and attacks.

5.3.6 Bear Deterrence

Note: Bear spray is not a true deterrent. It is the last line of defence to be used only in emergency situations. Using bear spray is effective and preferable to contact. The time between a charge and contact can be less than a second, so deploying bear spray should be an automatic reaction in all cases. Remember to unholster and prepare bear spray if a bear is within 90 feet of your position.

Bear spray should be stored at room temperature and usually lasts two years. For most workers, bear spray is the only deterrent you will use. Other types of deterrents are described here but require a permit. Leave those techniques to the professionals.

As discussed earlier, deterrence can include electric fencing in camp settings. If bears become habituated, qualified personnel may be brought in to conduct aversive noise conditioning, another form of deterrence. This means noises are used to create negative experiences for the bear every time it comes to camp, with the end goal of dissuading the bear from hanging out there.

Companies must report nuisance bears that will not be deterred. Authorities like Fish and Wildlife will then capture and relocate the bear. If relocation does not work, or the bear becomes a nuisance bear in another location, the bear may have to be destroyed (by authorities only).

Other deterrents are used in the field. Deterrents may be physical or noise deterrents. Physical deterrents are designed to deter not injure bears, and they include bean bag rounds or rubber slugs. Physical deterrents should only be deployed by trained professionals.

Noise deterrents create a negative experience without harm or injury to the bear. Workers should vary the type of noise deterrents used, so that bears do not become conditioned to one sound. Noise deterrents include pen launchers, bear bangers, screamers, 12-gauge crackers and 12-gauge whistle crackers. All of these are launched from a device, launcher or shotgun. Once launched, the deterrent travels through the air and then explodes with a unique sound, depending on the design of the deterrent. These noise deterrents require training and cannot be used where a risk of a flash fire or explosion may exist from oil and gas exploration and production activities.

Improper use of deterrents can cause injury or property damage. Do not use screamers in dry forest conditions. Pyrotechnic deterrents should only be shot into clear air and are not meant to contact the bear, ground, or anything else. If used properly there is no danger of ricochet. Use of non-lethal projectiles should be restricted to trained professionals.

In the event of an encounter, a worker may deploy bear spray. Section 6.1, the Spectrum of Bear Engagement details when to deploy bear spray in the field. Use of deterrents around camp may require a trained professional.

5.3.7 Responding to a Bear Encounter

If you encounter a bear in any situation:

- Do not feed the bear
- Do not approach the bear or entice it to come closer

If you come upon a bear and it is **unaware of your presence:**

- Ready bear spray if available
- Discreetly leave the way you came
- Double back
- Keep your eyes on the bear (back away)
- Give a wide berth
- Choose route with no other bears
- Make your presence known once you have backed 300 meters away (talk loudly, sing, etc.)
- Keep moving

If you come upon a bear and it is **aware of your presence:**

- Ready bear spray if available
- STOP, stay calm, assess the situation
- Determine your distance from the bear
- DO NOT run or turn around
- Use soft, low voice
- Avoid rapid movements
- Appear non-threatening
- Keep eyes on bear without direct eye contact
- Assess surroundings
- Leave escape route for the bear
- Determine what the bear is doing (food nearby? Young nearby?)
- If the bear bluff charges: STAND YOUR GROUND

If a bear shows stress signs, including yawning, salivating, huffing, hair up on neck, bluff charging, stomping the ground and swatting trees, be ready for a defensive attack. It means that your presence is stressful for the bear, and it is protecting something, either young, a food source, or its territory.

If you are the target of a **defensive attack:**

- Ready bear spray if available
- You need to recognize stress signs
- Do not shout or escalate the situation
- Attack will occur quickly and end when the bear sees threat as gone
- Do not move until bear leaves
- If the attack escalates, fight back

If you come across a bear and notice predatory behaviour, it may be targeting you for a predatory attack. Predatory behaviour is characterized by stalking you, watching you intently and approaching with no sign of fear or stress.

If you are the target of a **predatory attack:**

- Ready bear spray if available
- DO NOT be submissive
- Face the bear
- act aggressively
- DO NOT run
- Scan for cover and move there
- Remove pack and use as distraction
- Prepare and use bear spray
- Make yourself large
- Raise arms and stomp feet
- Stand on something
- Use rapid arm/leg movements
- Fight back – DO NOT play dead
- Attack eyes, nose & face

See the Spectrum of Bear Engagement for more information.

5.4 Cougars

Cougars, also known as mountain lions, are large predatory felines. They have short, tan coats and a long, black-tipped tail. There is significant variance in size and weight: males are heavier than females, and some individuals can reach two meters in length.

Three subspecies of cougar inhabit British Columbia and Western Alberta. Their range may extend up to the 60th parallel. Cougars often live in mixed conifer forests.

Cougars are solitary and territorial. They generally travel alone, unless with dependent young. Subadults may also remain with parents if they have not yet found their own territory. Male cougars have large home ranges that do not overlap with the ranges of other males. Females' ranges may overlap with each other. Some cougars rely on migratory prey; those individuals may have more than one home range.

Cougars do not have a specific breeding season. Instead, they breed at any time throughout the year. Females usually produce one to six kittens; however, it is rare that more than two kittens survive to adulthood. Kittens usually remain with their mother for a year to 18 months. Kittens are identifiable by their spotted coats, which fade to tan with age.

Cougars are accomplished hunters and hunt at night. Prey includes large mammals (mule deer, whitetail deer, elk, moose calves). They may also hunt smaller mammals, such as porcupine, beaver, coyote, hare, and birds. Cougars rarely eat carrion. They do, however, bury prey with leaves or snow, similar to grizzlies. They return for a few days to continue to feed on the same buried carcass.

Cougars are elusive: they see you before you become aware of them. They hunt by sight or hearing, not scent. Cougars stalk prey until they are very close, and then attack in a final charge. Cougars kill prey by suffocation: they bite the prey's throat to crush the windpipe.

Usually, cougars avoid humans. However, if working in cougar territory, it is important to be aware and pay attention to the following guidelines:

- Work in groups where possible
- Make noise – do not surprise the cougar
- Be aware of being in a cougar's territory
- Check with Fish and Wildlife Officers to see where cougars have been spotted recently
- Watch for tracks (similar to a large dog's but without claw marks – cougar claws are retractable)
- Watch for buried carcasses
- Carry bear spray

Cougar attacks are rare, but they do happen. All cougar attacks should be considered predatory. It is important to note that cougars do not become food-conditioned. They do not hang around human spaces looking for food/garbage, since they prefer fresh kills. However, cougars will hunt for domestic animals and farm animals.

5.4.1 Responding to a Cougar Encounter

If approached by a cougar:

- Never approach the animal
- Never feed the cougar
- Prepare bear spray/deterrent
- Stay calm
- Speak in a loud, commanding voice
- Do NOT run

- Do NOT turn your back on the animal
- Back away very slowly, facing the animal
- Make yourself larger
- Do NOT climb a tree
- Never take eyes off the cougar
- Make direct eye contact
- Act aggressively
- Stomp feet, wave arms, throw rocks/sticks
- Find a weapon (stick, rock, knife)

If attacked by a cougar:

- Do NOT play dead
- Fight for your life
- Use bear spray
- Use weapons
- Protect the throat and back of the neck

If a cougar is spotted, workers must report the animal to their supervisors and fill out a company *Wildlife Spotting Sheet (Appendix B)*.

5.5 Wolves

Wolves are large predatory canines. They are distinguishable from coyotes in several ways. Wolves are larger overall, with longer legs and a heavier head. When compared with coyotes, wolves have shorter, broader ears. They measure 1.5 – 2 meters in length; the tail makes up one quarter of the total length. The colour of a wolf's coat varies significantly, depending on its habitat and its genetics. Wolf coats range from white to grey to tan-brown, and even reddish.

Although they are found throughout Canada, wolf populations are diminishing. Wolves are not a protected species. Wolves cover broad territories, ranging up to 400 km. They are territorial animals and will defend against other packs.

Wolves are social animals and live in packs with strict social hierarchies. Beta wolves and subordinate wolves do not breed. Subordinate wolves may get expelled from the pack. Only the alpha male and female mate; pups are born between April and June. Although wolves usually range through a massive territory, they stay put near the den site until pups are ready to travel.

Wolves hunt large mammals, including deer, moose, caribou, elk, bison and muskox, as a pack. They surround prey and overcome it. In addition, wolves sometimes consume carrion, as well as smaller mammals like hares. Note that wolves can become human-habituated.

If unhabituated to human presence, wolves are timid and avoid conflict. However, if habituated, the likelihood of a conflict between a wolf and a human becomes much greater. In fact, most wolf attacks involve habituated, sick or injured wolves. It is crucial for workers and employers to control garbage on site, in order to avoid habituating wolves and other wildlife. Appropriate garbage disposal containers as well as appropriate food storage are necessary.

Workers must also be aware that they are entering a wolf pack's territory. Signs of wolf presence include:

- Wolf tracks (look like husky tracks)
- Scat, which often contains fur and bones
- Sounds (howling, yapping)

Howling may be heard any time from sunset to sunrise. It is sometimes a social activity but is often an indication of wolves defending territory.

5.6 Coyotes

Also, predatory canines, coyotes are smaller and slimmer than wolves. They have distinctively larger ears and a black nose. Coyotes exhibit far less variation in coat colour when compared to wolves: coats are always tawny. Coyotes may be found in aspen parkland and prairies, with ranges expanding all over Canada to include other biomes.

Coyotes stay with the same mate for several years, mating between February and March. They construct a den or borrow an abandoned one from another animal. Like wolves, coyotes stay near the den for birth and early care of pups. The young may leave in the fall or stay with their parents to form a pack.

Coyotes hunt both day and night, and prey on small mammals (rabbits, gophers, mice, voles, squirrels), as well as carrion, fish, eggs, nuts, insects and even garbage. Note that coyotes can become habituated to human presence. As with wolves, this increases the likelihood of conflict, although attacks by coyotes are unlikely.

5.6.1 Responding to Wolf or Coyote Encounters

If you encounter a wolf or coyote:

- Do not feed the animal
- Do not entice the animal to come closer, or approach the animal
- Leave a wide berth – 100 metres
- Leave an escape route for the animal
- Do not threaten or corner the animal

If approached or attacked by a wolf or coyote:

- Prepare bear spray
- Stay calm
- Speak in a loud, commanding voice
- Do NOT run
- Do NOT turn your back on the animal
- Back away very slowly, facing the animal
- Make yourself larger
- Act aggressively
- Stomp feet, wave arms, throw sticks/rocks
- Find a weapon (stick, rock, knife)
- Fight for your life

If a wolf or coyote is spotted, workers must report the animal to the supervisor and fill out a company *Wildlife Spotting Sheet (Appendix B)*.

6.0 Wildlife Risk Matrix

The Wildlife Risk Matrix is a tool to help judge the risk of a wildlife encounter. It treats risk as a combination of both likelihood and severity variables.

The following 'likelihood' variables are assessed in the matrix (columns A – D):

- How close is the wildlife to site (near or on site)? How close are you to wildlife in the field?
- How often is the wildlife sighted (occasional or frequent)?
- What time of day is the wildlife seen (dusk or dawn = more likely to be sighted)?
- Is the wildlife in breeding season or seen with young?
- What kind of foods are attracting the wildlife (natural vs. human food/garbage)?

The matrix also considers whether workers are working in groups or alone. Risk of a dangerous encounter increases when working alone.

Risk can be determined once the wildlife's level of aggression/habituation is determined (rows 1 – 4) – the 'severity' variables. The following variables are assessed:

- What body language is the animal exhibiting?
- What sounds/vocalizations is the animal making?
- What actions, movements, and reactions is the animal showing?
- How does the wildlife react to humans? Is it used to human presence? Is it timid?

How far is the animal? Is it approaching? Is it going about its business normally? Is it on its way out of the area?

				Working in a close group-4+	Working in a close group-4+	Working alone	Working alone
				Natural food	Natural food	Human foods/ garbage	Human foods/ garbage
				No young	No young	No young	Breeding/with young
				Daytime	Dusk or dawn	Dusk or dawn	Dusk or dawn
				Near site OR 300m + away	On site OR 150 m away	On site OR <100 m away	On site OR <50 m away
				Occasional sighting	Occasional sighting	Frequent sighting	Frequent sighting
				A	**B**	**C**	**D**
LIKELIHOOD: As Per Wildlife Aggression Level	Relaxed body language	**Wary**	**1**	LOW RISK Level 1 Response	LOW RISK Level 1 Response	MED RISK Level 2 Response	SIGNIFICANT RISK Level 3 Response
	No sounds/vocalizations						
	On its way out of the area						
	Relaxed body language	**Habituated**	**2**	LOW RISK Level 1 Response	MED RISK Level 2 Response	SIGNIFICANT RISK Level 3 Response	HIGH RISK Level 4 Response
	No sounds/vocalizations						
	Ignores, makes no move to leave						
	Anxious body language (stress signs)	**Defensive and Stressed**	**3**	MED RISK Level 2 Response	SIGNIFICANT RISK Level 3 Response	SIGNIFICANT RISK Level 3 Response	HIGH RISK Level 4 Response
	Some stress sounds						
	Stands its ground/bluff charge						
	Anxious body language (stress signs)	**Defensive or Predatory**	**4**	HIGH RISK Level 4 Response	HIGH RISK Level 4 Response	HIGH RISK Level 4 Response	HIGH RISK Level 4 Response
	Aggressive sounds/ vocalizations						
	Defensive attack OR stalks prey						

Level 1:	Maintain during all field activities (goal: prevention and avoidance of wildlife encounters) • Control food and food wastes • Control garbage: waste management plan • Communicate wildlife in area to workers • Report observation of any wildlife • Follow appropriate safe work practices • Wildlife management plan • Train workers in wildlife awareness • **Supply workers with pepper spray**
Level 2:	Activate upon sighting of carnivore (bear, wolf, cougar, coyote) or large ungulate (deer, elk, caribou, moose, bison) • Continue with Level 1 • Report to authorities, as required for jurisdiction • Assess situation (supervisor) • Assign monitor if necessary (especially for bears) • Mandate working loudly and in close groups of 4+ • Restrict access to where wildlife was sighted • **Pepper spray at hand and ready to use**
Level 3:	Activate upon sighting of carnivore (bear, wolf, cougar, coyote) or large ungulate (deer, elk, caribou, moose, bison) • Continue with Level 2 • Temporary stop work to inform all personnel • Retreat to safe observation area (vehicle, building, etc.) • Continue observation of wildlife until it has left the area • Resume work if/when deemed safe • Wildlife monitors accompany crews in hazardous areas • **Deterrence by authorized individuals ONLY**
Level 4:	Implement if wildlife is considered a potential or real threat to personnel • Continue with Level 3 • Stop all work • Evacuate site • Notify authorities of sighting or encounter • If encounter results in injury, obtain first aid/medical treatment • **Deterrence by authorized individuals ONLY**

6.1 Spectrum of Bear Engagement

The following spectrum describes situations and recommended responses for encountering bears. Bear encounters require specific responses depending on the situation.

Read the spectrum from left to right, and over two pages. Situations are categorized into Prevention & Avoidance (green), Interaction/Encounter (yellow and orange) and Attack (red). Focusing on Prevention & Avoidance in planning for working around bears and other wildlife will help minimize the likelihood that situations will escalate to Encounters or Attacks.

If an encounter or attack does occur, the Spectrum gives advice on how to respond, including actions as well as when to deploy pepper spray. Knowing which species of bear you are dealing with is also crucial, because of differences in bear behaviour based on type of bear present.

Note: It is important to be able to read bear behaviour in order to choose the right response to a situation. Know the stress signs and respond appropriately to avoid escalating the situation.

Similar to the Risk Matrix, the Spectrum depends on a few key variables. Variables include:

- Is the bear aware of your presence?
- Are young present?
- Is a food source (carcass, berries, etc.) present? A water source?
- Are stress signs present? Does the bear see you as a threat? Is the bear simply curious?

Note: Bears, like other wildlife, are extremely defensive of young and of food sources.

6.2 Terminology

Bear sighting: When you see a bear but the bear is unaware of your presence.

Interaction: When the bear is aware of your presence (same thing as encounter).

Incident: Interaction between a bear and a person in which the bear acts aggressively.

Attack: Intentional contact by a bear resulting in human injury.

Definitions taken from “Alaskan brown bears, humans, and habituation” (Smith et al. 2005).

Appendix A: Spectrum of Bear Engagement - Field

Spectrum of Bear Engagement – Field

	Entering Bear Habitat	Bear Sighting: Bear is Unaware of Your Presence
SITUATION		
	Example: Working in the wilderness.	Example: You come upon a bear and her cubs in a meadow as you hike.
RESPONSE	• Be prepared – carry bear spray • Know where you are going, which bears live there • Ask authorities if bears have been seen in the area • Look for signs of bears (tracks, scat, etc.) • Know when/where you are likely to see a bear • Control attractants (waste, food) • Do not entice bears closer to you	• Discreetly leave the way you came • Double back • Keep your eyes on the bear (back away) • Give a wide berth • Choose route with no other bears • Make your presence known once you have backed 300 meters away (talk loudly, sing, etc.) • Keep moving
	Carry Bear Spray (2 canisters, 1.3% capsicum)	Bear Spray at Hand
	PREVENTION & AVOIDANCE	INTERACTION/ENCOUNTER

Spectrum of Bear Engagement – Field

Interaction: Bear is Aware of Your Presence

Bears rely on smell; they might stand up and sniff the air to see who you are

Example: The bear in the meadow turns around and notices you.

- STOP, stay calm, assess the situation
- Determine your distance from the bear
- DO NOT run or turn around
- Use soft, low voice
- Avoid rapid movements
- Appear non-threatening
- Keep eyes on bear without direct eye contact
- Assess surroundings
- Leave escape route for the bear
- Have deterrent ready
- Determine what the bear is doing (food nearby? Young nearby?)

Bear Spray Ready

Incident: Defensive Attack

Stress signs include: yawning, salivating, huffing, hair up on neck, bluff charge, stomping ground, swatting trees

Example: The bear feels threatened by your presence and initiates a defensive attack to protect her cubs, which are nearby,

- You need to recognize stress signs
- Attack will occur quickly and end when the bear sees threat as gone
- Do not shout or escalate the situation further
- If the attack escalates, fight back

If the bear bluff charges: STAND YOUR GROUND

Deploy Bear Spray

Predatory Attack

Characterized by: Stalking you, watching you intently, approaching, no sign of fear or stress

Example: You are taking water samples when you turn and see a bear stalking you.

- DO NOT be submissive
- Face the bear
- Act aggressively
- DO NOT run
- Scan for cover i.e. tree and move there
- Remove pack and use as distraction
- Prepare and use deterrent
- Make yourself large
- Raise arms and stomp feet
- Stand on something
- Use rapid arm/leg movements
- **Fight back – DO NOT play dead**
- Attack eyes, nose & face

Deploy Bear Spray

INTERACTION/ENCOUNTER

ATTACK

Appendix B: Applicable Regulations

This section includes a breakdown of applicable federal and provincial regulations. Appendices A and B are forms, to be used as templates for companies to modify as needed. Appendix C is a poster for companies to print and post around site. Appendices D through F offer more detail on other types of wildlife encounters, including large ungulates, noxious plants, insects, snakes, and zoonoses (vector-borne diseases).

Federal Entity	About	Regulations
Department of Fisheries and Oceans (DFO)	Lead federal role in managing Canada's fisheries and safeguarding its waters. Legislation protects fish and fish habitat, oceans and other bodies of water, and marine mammals. It covers pollution, fishing, spills, etc.	• Oceans Act • Fisheries Act • Species at Risk Act (SARA) • Coastal Fisheries Protection Act • Canada Shipping Act, 2001
Environment and Climate Change Canada	Protection of ecosystems, species at risk, and enforcement of legislation. Administration of protected areas.	• Species at Risk Act (SARA) • Migratory Birds Convention Act • Canada Wildlife Act
Canadian Wildlife Service	Under the administration of Environment and Climate Change Canada. Protection, research, control of international trade, and enforcement of legislation.	• Species at Risk Act (SARA) • Migratory Birds Convention Act • Canada Wildlife Act
Committee on the Status of Endangered Wildlife in Canada (COSEWIC)	Independent stakeholder group. National network of scientists and conservationists; researches status of species and recommends classifications under SARA.	• Species at Risk Act (SARA)
Fisheries Act	Legislation for the protection of fish and fish habitat. Key sections address conservation and protection of bodies of water (against pollution, etc.).	• Projects must avoid causing serious harm to fish • Work must not result in the release of a deleterious substance (anything that renders water harmful to fish) – e.g. petroleum products, chemicals, sediment, grey water, sewage, chlorinated water, etc. • Some types of work must not proceed without approvals (e.g. removing vegetation, allowing gravel in streams, redirecting stream flow, conducting construction around bodies of water, etc.) • Violations punishable by fines or imprisonment
Species at Risk Act (SARA)	Provides a framework for actions to ensure survival and biodiversity of wildlife species. Provides Effective protection of wildlife and habitat to avoid extinction due to human activities. Decides which species are a priority for action and what to do to protect a species.	• It is an offence to kill, harm, harass, capture, take, possess, collect, buy, sell or trade protected species • Illegal to destroy or damage the residence or critical habitat of a protected species (den, nest, etc.) • See Sections 32 and 33 for more detail

Federal Entity	About	Regulations
Migratory Birds Convention Act	Protects and conserves migratory birds and their nests, both populations and individuals. Some migratory birds are at risk or endangered.	• Affects all stages of petroleum industry operations (planning, construction, operation, decommissioning, and abandonment) • No disturbance to nests or nesting birds during breeding and nesting periods (April to August) • Section 35: no depositing of oil or oil wastes in waters frequented by migratory birds
Canada Wildlife Act	Legislates the creation, management and protection of wildlife areas.	• Prohibits activities that could be harmful to species and their habitat unless a permit is issued

Issue	Regulation
Property/Ownership of Wildlife	Wildlife is a crown resource and owned by the government. Rights of property are only acquired by buying permits. Dead wildlife remains government property (i.e. roadkill). Fish and Wildlife Officers must dispose of dead wildlife.
Possession of Wildlife	Unless authorized by a permit/license, possessing wildlife is an offense. This counts for both live and dead wildlife. For example, rescuing perceived “orphaned” wildlife is unlawful; so is picking up roadkill.
Feeding of Dangerous Wildlife	Intentionally feeding or attempting to feed a bear, wolf, cougar, coyote (or other species prescribed to be dangerous) is an offense. It is also an offense to leave food or food waste around with the intent of attracting dangerous wildlife.
Dangerous Wildlife Protection Order	If an Officer believes on reasonable grounds that dangerous wildlife may be attracted to any premises other than a private dwelling, they can enter and search it without a warrant. If an Officer believes on reasonable grounds that an attractant exists on the premises, they may issue a Dangerous Wildlife Protection Order, which requires the land owner/occupier to move the attractant. Attractants include food, food waste, compost, or other waste or garbage that could attract dangerous wildlife.
Accidental Killing of Wildlife	If a person accidentally kills or wounds wildlife, they must report in to an Officer. Not reporting is an offense. Here, wildlife includes grizzly bear, wolf, black bear, badger, lynx, wolverine, bobcat and all large ungulate species.
Use of Vehicles, Boats and Aircrafts	A person who uses a vehicle, aircraft or boat with intent to harass, injure or kill wildlife commits an offense.

Summary and Example of Provincial/Territorial Regulations:

Alberta Wildlife Act

Important Sections in Alberta Wildlife Act:

- Section 33 Use of vehicles, boats and aircraft
- Section 36 Disturbance, etc., of wildlife habitation
- Part 6 Enforcement, specifically sections 66 Entry on and the passing over of land, 67 Power to stop and order movement of vehicles, etc. and animals, and 68 Power to demand license, permit, etc.
- Section 81 Closing of areas to the public and Orders respecting wildlife attractants

Appendix C: Wildlife Management Plan

Date	Company/Operator	Company/Operator Rep
Species Present	☐ Black bear ☐ Grizzly bear ☐ Cougar ☐ Ungulate(s) (elk, deer, caribou, etc.) ☐ Wolf(ves)/coyote(s) ☐ Other	
Protection Status of Species	Does SARA apply? Yes ☐ No ☐	
Time of Day Most Likely to Encounter	☐ Dusk/dawn ☐ Night ☐ Day	
Season Most Likely to Encounter	☐ Fall ☐ Winter ☐ Spring ☐ Summer	
Season when Most Aggressive	☐ Fall rut ☐ With young (spring) Other breeding considerations: _____	
Deterrent Required in case of Encounter	☐ Bear spray ☐ Noisemaker ☐ Firearm ☐ Other	
How to Report Encounters	☐ To supervisor ☐ To Fish & Wildlife authorities Form used for reporting: _____	
Plan for Controlling Food Storage	☐ Wildlife-proof food storage containers ☐ Locked building	
Controlling Garbage Storage and Disposal	☐ Bear-proof garbage bins ☐ Schedule for garbage disposal	
Notes		

Appendix D: Wildlife Spotting Sheet

Date of Observation	Time of Observation	Location of Observation
Species Observed	☐ Black bear ☐ Grizzly bear ☐ Cougar ☐ Ungulates (elk, deer, caribou, etc.) ☐ Wolf(ves)/coyote(s) ☐ Other	
How Did You Identify the Animal?	☐ Sighted ☐ Heard ☐ Tracks ☐ Scat ☐ Scratches ☐ Other	
How Many Animals Were Observed?		
Was the Animal Alive?	*Note that roadkill must be disposed of by authorities.*	
Describe the Animal's Behaviour		
Additional Comments		

Appendix E: Working Around Wildlife Poster

The poster on the next page is intended to be printed off and used around site. It can also be used for a safety meeting topic and info sheet.

WORKING AROUND WILDLIFE
Rules to Remember

Be Aware
- Know your responsibilities
- Respect the animals whose habitat you are entering
- Know what to do in case of an encounter
- Know the applicable regulations

Take Care
- Dispose of garbage
- Control food and food smells
- Comply with site rules

Be Prepared
- Dress for the weather and the work you do
- Boots, pants (tucked in), long sleeves
- Carry deterrent (bear spray)
- Means of communication (satellite phone)

Higher Risk of a Wildlife Encounter

At dusk or dawn
Animals are more active at these times

In breeding season or with young
Animals are more aggressive when breeding, and more protective with young

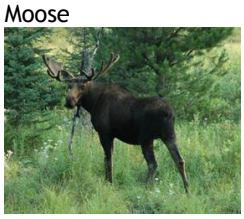
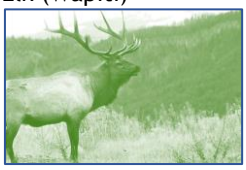
On roadways
Animals are attracted to roads due to salt, food and easier migration routes

ENERGY SAFETY CANADA

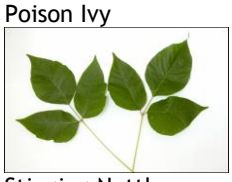
Appendix F: Large Ungulates Fact Sheet

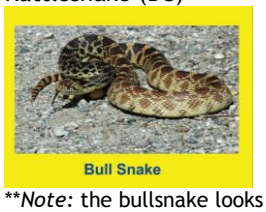
Working Around Moose, Elk, Deer, Caribou and Bison				
Season	Signs of Animals Present	Stress Signs	Defensive Attacks	What to do in Case of an Encounter
Fall means rutting season: • Bulls/bucks more aggressive • Ready to protect harem/mate Spring means birthing season: • Cows/does ready to protect young	Look for: • Wallow pits • Antler scrapes • Tracks • Scat Listen for: • Vocalizations (grunts, bellowing, coughing) • Fighting/stomping Antler rubbing	• Ears back • Snorting • Pawing ground • Stomping • Hairs raised on neck • Staring • Head down **If you see stress signs, find an escape route.**	Occur if an animal feels you are threatening its: • Young • Territory • Food, Or if an animal is trapped or cornered. Characteristics: • Kick with front legs • Use horns or antlers • Stomp with front feet	1. Do not approach the animal. 2. Stay calm and back away. Look for something solid to hide behind/in, like a tree or a rock. 3. Stay behind the rock or in the tree until the animal loses interest. 4. When the animal moves a safe distance away, leave the area. Report the incident to your supervisor and to your local wildlife agency.

Driving Collisions with Moose, Elk, Deer, Caribou or Bison			
Key Facts	Animals and Roadways	Safe Driving Practices to Avoid Collisions	What to do in Case of a Collision
• Collisions can be fatal • Thousands yearly • Most collisions occur at dusk or dawn More collisions occur during the rut (November has the highest rate of collisions)	Animals are attracted to roadways: • Easy routes for migration • Winter/spring: salt source This means risk of collision increases with more animals in the area.	• Clean windshield • Seatbelt fastened • Headlights on (high beams where possible) • Scan roadway and ditches for eye reflections • If you see one animal, expect others • Slow down, especially at wildlife crossings Be especially careful at dusk, dawn and during rutting season	If a collision is unavoidable: • Stay on the road: do not swerve into the other lane or off the road • Brake firmly • Keep hands on the steering wheel • Come to a controlled stop After the collision: • Hazard lights on • Reflective vest on • Check car for damage • Notify supervisor • Get help if necessary • Only move the animal off the road if you are certain it's dead • Report incident to wildlife agency • Leave the animal at the scene

Working Around Moose, Elk, Deer, Caribou and Bison				
Animal	Habitat	Characteristics	Behaviour	Helpful Links
Moose 	• Rocky wooded hillsides • Lakes, muskeg • Tundra • Aspen parkland	• Dark brown to blackish coat • Long legs • 2.5 m at the shoulder • Bulls: antlers • 350 – 500 kg	• Grazers • Solitary • Rut: September to November • Bulls aggressive during rut • Cows very protective of calves • Calves born in May – June	http://www.hww.ca/assets/pdfs/factsheets/moose-en.pdf
Elk (Wapiti) 	• Mountainous areas • Coastal old growth rainforests • Grassy interior valleys	• 1.5 m at the shoulder • 300 – 350 kg • Bulls: antlers • Dark brown head and neck with mane	• Grazers • Migratory • Travel in herds • Rut: September to mid-October • “Bugle” in rutting season • Cows very protective of calves • Calves born in May – June	http://www.hww.ca/en/wildlife/mammals/north-american-elk.html
Caribou (SARA) 	• Three subspecies • Peary Caribou: Northern Canada only • Barren-ground Caribou: 50% of caribou population in Canada, tundra • Woodland Caribou: northern forests from BC to NL	• Both males and females carry antlers • Peary: small (70 kg), light (almost white) coat • Barren-ground: larger, darker coat • Woodland: largest and darkest	• Grazers • Migratory (up to 4 migrations each year) • Travel in herds • Rut: fall • Calves born May – June • Unlikely to attack humans unless cornered	http://www.hww.ca/assets/pdfs/factsheets/caribou-en.pdf
Wood Bison 	• North West Territories • Sedge meadows • Lakeshores	• North America’s largest land mammal • 500 – 1000 kg • 2 m at the shoulder • Shoulder hump • Shaggy dark brown coat	• Grazers • Travel in herds • Migratory • Bulls aggressive during rut • May protect or abandon calf in face of danger	http://www.hww.ca/assets/pdfs/factsheets/north-american-bison-en.pdf
Deer 	• Two most common species: • Mule Deer • White-Tailed Deer • Widespread of all of Canada	• White-Tailed: all over Canada, most numerous, white tail underside • Mule: Western Canada only, tail is black tipped • 110 – 200 kg	• Grazers • Travel in herds • Rut: fall until November • Does very protective of fawns • Fawns born May – June	http://www.hww.ca/assets/pdfs/factsheets/white-tailed-deer-en.pdf

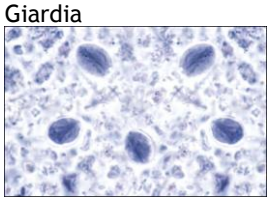
Appendix G: Noxious Plants, Insects and Snakes Fact Sheet

Identification	Habitat	Symptoms	Treatment	PPE/ Avoiding Contact
Noxious Plants				
Poison Ivy  Stinging Nettle 	• Western Canada • Thickets in borders of forests • Edges of beaches • Can be trailing or climbing vine (poison ivy) • In ditches (stinging nettle)	• Severe itching • Sap causes rash • Red and inflamed • May blister • Oozing sores • Watch for infection • Rash lasts 24 – 48 hours	• Wash with soap and cold water • Calamine lotion • If severe, see First Aid attendant	• Pants and long sleeves • Gloves • Sap transfers easily from clothing to skin • Be careful when taking off clothes that contacted poison ivy • Let coworkers know where you saw it
Insects				
Bees, Wasps and Hornets 	• Widespread • June – July	• Sting: pain, burning, red ring/bump, localized swelling • Some people are allergic • Anaphylaxis: hives, wheezing, swelling, abdominal cramps, low blood pressure	• Remove stinger • Wash with soap and water • Ice pack • Can apply a wet tea bag, anti-itch medication **In case of anaphylaxis:** • Epipen • Oral antihistamine to slow symptoms	• Insect spray with DEET • Light colored, loose clothing, maybe netting • Long sleeves and pants • Avoid nesting sites • Report nest locations to supervisor • Avoid scented products
Ticks 	• Tall grass • March – June • May carry Lyme disease • Live on blood	• Tick attaches to skin and stays there (for days to weeks) • Bite may be red and ringed at site	• Remove tick carefully • Use tweezers to grasp the tick as close to the skin's surface as possible • Pull up with steady pressure (don't twist or jerk) • Clean bite area with alcohol/iodine • Dispose of tick: submerse in alcohol, wrap in tape	• Long pants (tucked in) and long sleeves • Walk in pairs, check each other for ticks as you walk

Identification	Habitat	Symptoms	Treatment	PPE/ Avoiding Contact
Spiders and Scorpions				
Black Widow 	• SW Canada • Only bites if web disturbed • Sheltered, dimly lit areas • Stumps, woodpiles, burrows • April – October	• Venomous • Pain at site of bite • Muscle cramps • Pain, chills, fever, nausea, vomiting	**Seek medical attention immediately** • Identify the spider, note its location • Collect sample of spider and bring to hospital	• Gloves • Pants and long sleeves • Tuck sleeves in, pants into socks • Brush spider away if it's on clothes • Be prepared and know habitat
Wolf Spider 	• BC and SW Alberta • Light to mid brown • Live at ground level • Wood or debris • Air vents • Funnel-shaped web	• Hard red bump • Blister, may open to ulcer • Risk of infection • Risk of necrosis • Numb, tingling headache • Dry mouth • Nausea, weakness, dizziness • Joint pain • Hallucinations	**Seek medical attention immediately** • Identify the spider, note its location • Collect sample of spider and bring to hospital	• Gloves • Pants and long sleeves • Tuck sleeves in, pants into socks • Brush spider away if it's on clothes • Be prepared and know habitat
Northern Scorpion 	• Small and shy, delicate • Dry eroded riverbanks • Southern AB (Dinosaur Provincial Park, Lethbridge, Medicine Hat) • Okanagan • Nocturnal	• Intense immediate pain • Swelling and itching • Change in skin color • Nausea and vomiting • Anxiety, drowsiness • Tongue numbness • Increased blood pressure	**Seek medical attention immediately** • Remove jewelry (e.g. wedding band) • Ice sting site • Take Tylenol (acetaminophen) • DO NOT take Advil (ibuprofen)	• Wear work boots and pants tucked in • Leave scorpions alone • Be aware when in their territory
Snakes: Prairie Rattlesnake (AB)  Northern Pacific Rattlesnake (BC)  **Note:* the bullsnake looks similar and imitates rattlesnakes by shaking its tail against the ground; although it is aggressive, it is not poisonous.	• Alberta and BC • Brown/tan/olive/grey • Diamond pattern, broad head • Dry, rocky, rugged land • March – May (hibernate) • Dens in rocky outcrops, old dens of other animals • AT RISK: protected species with shrinking habitat • Do not destroy dens	• Severe burning pain at site • Swelling at site (spreads) • Fang can break off and remain in tissue	**Seek medical attention immediately** • Report bite to your supervisor • Lie down and stay quiet • Do not cut the bite site • Call Poison Control to ID the snake • Take off jewelry If a doctor is over an hour away: • Tie a band/cloth 5 – 10 cm above bite • Fit 2 fingers under band • Make sure band not too tight	• Listen for the rattle • Don't provoke • Give snakes a wide berth • Boots to mid-calf • Be cautious and alert when climbing rocks • Look before putting hands in crevices, holes • Be aware of foot placement (logs and rocks)

Appendix H: Zoonose Fact Sheet

Virus	Transmission	Symptoms	Treatment	PPE/ Avoiding Contact
West Nile Virus 	• Infected mosquitoes (through saliva) • Not transmitted human-to-human or animal-to-human	• Mild or no symptoms • If symptoms present, then flu-like (fever, head and body aches) • In extreme cases: encephalitis (stiff neck, disorientation, tremors, convulsions, muscle weakness, paralysis)	• Seek medical attention • IV, respiratory support, antibiotics	• Avoid mosquito bites • Long sleeves and pants • Nets • Tuck pants into boots • Use insect repellant with DEET (<30%) • Avoid working at dusk and dawn • Reduce mosquito breeding grounds: get rid of standing water
Hantavirus 	• Carried by deer mice • Hantavirus Pulmonary Syndrome (HPS) • 38% of cases fatal • Breathe in tiny airborne particles with mouse urine or saliva	• 2-week incubation period • Headache, chills, nausea, vomiting, difficulty breathing • Leads to pulmonary edema, then death	• Hospitalization	• Be aware of mice nesting areas and droppings • Report droppings to supervisor • HEPA mask • Rubber gloves • Eye protection • Boots • Soak contaminated material (1:10 bleach solution) • Decrease nesting by controlling garbage, keeping grass short, setting rodent traps
Lyme Disease	• Carried by ticks (deer and wood ticks) • Tick habitat: tall grass and woods • Increased risk May – June, but risk all summer • Increased chance of Lyme disease if tick on body over 24 hours	• Stage 1: flu-like symptoms; some people experience an expanding circular red rash • Lasts 1 – 4 weeks • Stage 2: large organs affected; fatigue, pain, paralysis of facial nerves • Lasts 1 – 4 months	• Need antibiotics early on • Untreated Lyme disease can cause long-term disability	• Avoid ticks • Remove ticks ASAP • Report tick sightings to supervisor • If bitten, remove tick and bring it with you to hospital to help ID species for accurate treatment • Long sleeves and pants • Tuck pants into boots

Virus	Transmission	Symptoms	Treatment	PPE/ Avoiding Contact
Rocky Mountain Spotted Fever 	• Carried by Rocky Mountain wood ticks • High risk April – September	• Symptoms occur 2 – 14 days after bite • Flu-like, nausea, lack of appetite; hard to diagnose • 3 – 5 days in: skin rash with small flat pink spots that rise and turn red later on	• Seek medical attention • Need antibiotics	• Avoid ticks • Remove ticks ASAP • Report tick sightings to supervisor • If bitten, remove tick and bring it with you to hospital to help ID species for accurate treatment • Long sleeves and pants • Tuck pants into boots
Giardia 	• Giardiasis • Parasite in feces in water (cysts) • Can be spread human-to-human (poor hygiene) • “Beaver fever” • Risk if drinking untreated water	• Can have no or mild symptoms and still pass on to others • Diarrhea, cramps, tenderness, nausea, loss of appetite, bloating, fatigue, vomiting, flu-like • Symptoms can last a month or be chronic (episodes of diarrhea)	• Seek medical attention • Requires medication to kill parasite	• Treat all water • Boil drinking water, water for cooking, for ice, etc. • Rinse dishes with treated water
Rabies 	• Fox, bat, raccoons, skunks, dogs • Rare in Canada • Carried in saliva, brain and spinal fluid • Transferred via bite	• Last 2 weeks to months • Tingling, pain, weakness • Heightened senses • Excessive saliva, difficulty swallowing • Eventual paralysis and death	• Seek medical attention • Bite: clean and flush wound, use antiseptic • Immunization after contact (or prior if going into a high-risk area)	• Avoid animals acting strangely • Be aware of nocturnal animals active in daytime hours • Reportable disease (required by law): report suspect animal to wildlife authorities

Appendix I: Resources

The following links will be helpful for those contacting provincial Fish and Wildlife authorities before beginning work. Fish and Wildlife authorities can provide direction on whether wildlife or bears are present in an area and can also make recommendations on a company's plan. In addition, bear and cougar sightings must be reported to Fish and Wildlife authorities. The other links below include more information on bear safety from each government body.

Alberta

- Alberta Environment and Parks – Fish & Wildlife
- Alberta BearSmart

British Columbia

- Ministry of Forests, Lands and Natural Resource Operations – Fish & Wildlife Branch
- Safety Guide to Bears in the Wild
- Bear Safety
- Bears and Cougars

Saskatchewan

- Ministry of Environment
- Staying Safe in Bear Country

Parks Canada

- Bears in the Mountain National Parks

CALGARY
T 403 516 8000 5055 11 Street NE
F 403 516 8166 Calgary, AB T2E 8N4

NISKU
T 780 955 7770 1803 11 Street
F 780 955 2454 Nisku, AB T9E 1A8

FORT MCMURRAY
T 780 791 4944 Box 13 – 8115 Franklin Avenue
F 780 715 3945 Fort McMurray, AB T9H 2H7

BRITISH COLUMBIA
T 250 785 6009 2060 – 9600 93 Avenue
F 250 785 6013 Fort St. John, BC V1J 5Z2

SASKATCHEWAN
T 306 842 9822 208 – 117 3 Street
F 306 337 9610 Weyburn, SK S4H 0W3

Info@EnergySafetyCanada.com
Enrolment Services and Certificate of Recognition:
1 800 667 5567

EnergySafetyCanada.com

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