



MUSKWA - KECHIKA MANAGEMENT AREA

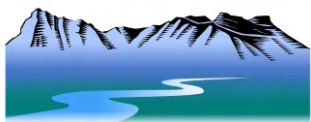
WORKER ORIENTATION GUIDE

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MUSKWA-KECHIKA
MANAGEMENT AREA

**Funding provided by the
Muskwa-Kechika Management Area
Advisory Board**

PURPOSE

The Muskwa-Kechika Management Area (M-KMA) is located in northeastern British Columbia (BC). Resource development such as logging, mineral exploration and mining, and oil and gas exploration and development are allowed though must recognize the high environmental values of the area. The purpose of the *Muskwa-Kechika Management Area Worker Orientation Guide* is to provide information on the history, ecological significance, management and pre-tenure plans that guide oil and gas activity in the M-KMA. The Worker Orientation Guide will provide those working in the M-KMA with a better understanding and appreciation of the significance of the area and the purpose of the goals and objectives outlined in the pre-tenure plans. Although the information in this guidebook is specific to oil and gas activity, the underlying principles of environmental protection apply to all industrial activity.



WORKER RESPONSIBILITIES

This guide is required reading for all workers active in oil and gas exploration and development within the M-KMA. Companies are responsible for ensuring all employees, contractors and sub-contractors read and understand the contents of this Guide prior to beginning work in the M-KMA.

Workers are responsible for:



- Respecting the values of the M-KMA.
- Abiding by environmental protection measures to minimize impacts and protect sensitive sites.
- Complying with all applicable laws and regulations.
- Signing the Declaration at the back of this Guide.

HISTORY AND LEGISLATION

The M-KMA was established in 1997 and links together 11 parks and protected areas (Map 1). The M-KMA covers an area of 6.4 million hectares. The area is recognized as being remote and largely unroaded, and has high wilderness values. The size and ecological diversity make the M-KMA of global significance. Resource activity is not permitted in Parks and Protected Areas.

The M-KMA Act establishes the requirement for pre-tenure planning for oil and gas exploration and development in the M-KMA, and specifies activities shall be consistent with pre-tenure plans. A regulation under the M-KMA Act is the Muskwa-Kechika Management Plan which identifies objectives for management and provides direction for local strategic plans.

"The management intent for the Muskwa-Kechika Management Area is to ensure wilderness characteristics, wildlife and its habitat are maintained over time while allowing resource development and use, including recreation, timber harvesting, mineral exploration and mining, oil and gas exploration and development. The integration of management activities especially related to the planning, development and management of road accesses within the Muskwa-Kechika Management Area is central to achieving this intent. The long-term objective is to return lands to their natural state, as much as possible, as development activities are completed."

The BC Oil and Gas Commission (BC OGC) regulates oil and gas activity in BC, including the M-KMA.

DESIGNATED ACCESS CORRIDORS

A key to preserving wilderness integrity is to limit access. Motor vehicle travel is limited to specific routes within the M-KMA. Four types of routes have been designated under the *Wildlife Act* and the M-KMA Regulation:

- Motor vehicles restricted to 400 m on either side of the route;
- Motor vehicles restricted to a maximum of within 10 m of route;
- Vehicles under 500 kg restricted to 400 m on either side of route;
- Vehicles under 500 kg restricted to a maximum of within 10 m of route.

OIL AND GAS EXPLORATION AND DEVELOPMENT

Oil and gas development in the M-KMA must recognize and balance environmental, social and economic values. Companies operating in the M-KMA should work towards a higher standard of environmental planning and protection than in other areas.

PRE-TENURE PLANS

Oil and gas pre-tenure planning is a requirement under the M-KMA Act before oil and gas tenures can be issued. Pre-tenure plans have been prepared for the following areas of the M-KMA (Map 2):

- Halfway Graham
- Besa Prophet
- Muskwa-West
- Sulpher/8 Mile

The report: *Pre-tenure Plans for Oil and Gas Development in the Muskwa-Kechika Management Area* provides for a results-based, sustainable resource management framework to guide oil and gas development. It provides details on quantifiable indicators and targets and the planning, reporting and monitoring responsibilities of the company. Companies with a tenure in the M-KMA should be prepared to undertake detailed baseline biophysical inventories associated with vegetation, soil, hydrology, wildlife, aquatic ecosystems, archaeological and historical sites within their tenure. As part of the planning process, companies are expected to document "outputs" that report their plans and actions to reach specified targets for achieving sustainable management of the resource values and uses in the M-KMA. Examples of "outputs" are: a pre-disturbance baseline summary or overview; details on the consultation process; an environmental assessment; an access management plan; mitigation measures; monitoring and reporting plans; a restoration plan; and an adaptive management plan.






CONSULTATION

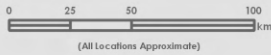
In order to identify and avoid and/or mitigate potential impacts to other users of the M-KMA, consultation is required (i.e., First Nations, guide-outfitters, trappers, recreational groups, government agencies, other tenure holders). Consultation should be initiated in the early planning phase of a project.

YUKON NWT



MAP 2: PRE-TENURE PLAN AREAS

-  Protected Area/Proposed Protected Area/Ecological Reserve
-  Pre-Tenure Plan Area
-  Muskwa-Kechika Management Area Boundary
-  Roads and Trails
-  Populated Place



OVERVIEW ASSESSMENT



In recognition that the M-KMA is a unique area with mountainous terrain that presents specific challenges to resource development, it is critical that oil and gas activities proposed in the M-KMA are well planned in advance. An Overview Assessment is required to set the groundwork for more detailed planning. This ensures the proponent has sufficient information about resource values and uses in

the project area to proceed to more detailed development planning. Conducting an Overview Assessment will identify the range of resource values and uses within the project area, First Nation interests and identify potential impacts on resource values at a broad level.

DEVELOPMENT PLANNING

Development planning identifies the proposed development in detail and identifies potential impacts and measures to avoid or mitigate impacts. This includes preparation of a detailed site-specific environmental assessment that includes an evaluation of well site and access options and potential future development plans. Given the sensitivity of the M-KMA, oil and gas companies are expected to develop innovative adaptive management approaches to minimize and/or avoid impacts. Well sites should be developed such that they facilitate reclamation (*i.e.*, level terrain, feathered edges, snow pads). The use of heliportable drilling technology should also be evaluated.



RESTORATION PLANNING



The objective of restoration is to return lands to their natural state as much as possible. To do so, the natural pre-development condition shall be documented (*i.e.*, vegetation survey). Areas no longer needed for operations should be restored as quickly as possible. Restoration efforts will be monitored over time to ensure successful revegetation of disturbed areas.

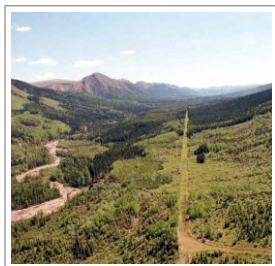
ACCESS PLANNING AND DEVELOPMENT

Access to oil and gas resources in the M-KMA shall be thoughtfully considered and evaluated so that the least environmental impact results. Companies with exploration and development plans in their tenure shall develop an Access Management Plan that evaluates access options, considers future development scenarios and includes consultation with First Nations and other stakeholders.

The M-KMA is characterized by mountainous terrain and access will likely take advantage of valley bottoms that have high historical, cultural, visual and biophysical values. Planning should attempt to find an access alignment that results in the least environmental impact as well as minimizes conflict with other values. Companies should co-ordinate access to the extent possible and implement access control measures (*i.e.*, reduce line of sight, manned gates during drilling).

Winter access during frozen ground conditions is encouraged for exploration activities to minimize long-term impacts. Planning should consider use of areas with higher suitability for low impact winter roads (*i.e.*, minimize grading requirements) such as willow flats and gravel floodplains. The presence of snow cover, weather conditions and the duration of activity all need to be considered for winter drilling programs. The use of snow-making equipment and matting may be required. If the well is successful, it is understood that all-season access will likely be required. The use of heliportable drilling and/or heavy-lift helicopters for some part of the project should be considered as a means to reduce access requirements.

Companies are strongly encouraged to commit the time and resources necessary to access planning and management and to make use of and exceed all appropriate industrial best practices.



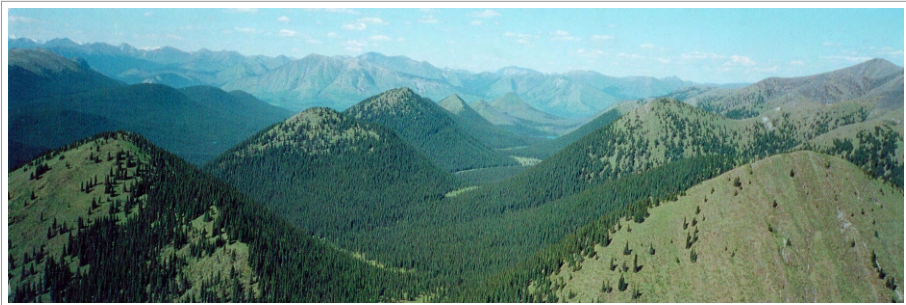
VISUAL QUALITY

Visual quality is an important consideration in planning. A Visual Impact Assessment may be required if the proposed development is near a recreational corridor, river valley, highway or adjacent to a Protected Area. Planning should identify viewpoints where the proposed development will be visible from, and create photographic simulations or 3D renderings to assess potential visual impacts.



and create photographic simulations or 3D renderings to assess potential visual impacts. Mitigation measures include the use of landscape design to mimic natural environments; refining the size, shape and position of the development site on the landscape; designing above ground facilities to minimize visibility (*i.e.*, screen developments from other users, mimic natural openings, use nonreflective surfaces and colors that blend in with natural surroundings); reduce lighting; select locations that are more amenable for reclamation and avoid areas that have long-term reclamation challenges (*i.e.*, alpine, steep slopes, sidehill cuts).

Reduce the effects of noise by ensuring all equipment is properly maintained and practical sound suppression equipment is installed.



ENVIRONMENTAL PROTECTION MEASURES

A high standard of environmental protection is expected in the M-KMA. General environmental protection measures for oil and gas companies include the following:

COMPLIANCE

- Comply with all applicable laws and regulations.
- Monitor and report performance in achieving objectives and targets.
- Report any incidents immediately.
- Respect all values of the M-KMA.
- Engage a third party Environmental Inspector to monitor construction and compliance with environmental protection measures.
- Off-site recreational use by industrial workers is prohibited (*i.e.*, recreational use of motorized vehicles, helicopters).

SCHEDULING OF ACTIVITIES

- Activities should be scheduled with consideration of critical wildlife periods; guide-outfitter operations; fish timing windows; First Nation camps; and peak recreational periods.
- Winter construction is preferred to minimize environmental impact, though scheduling should factor in duration of activity, snow availability and shifts in temperature. Companies should prepare a warm weather contingency plan to pro-actively plan for possible unusually warm weather and/or early spring.



VEGETATION

- Conduct a baseline vegetation survey (includes rare plants and weeds).
- Minimize disturbance to standing timber and ground level vegetation.
- Feather well site boundaries to mimic natural meadows.
- Ensure equipment is clean to prevent the introduction and spread of weeds.
- Confine construction activities to the allotted access road, well site and pipeline right-of-way.



SOILS

- Conduct a baseline soil survey.
- Salvage and separately store surface soils (organics and upper mineral soil). Reduce the potential for wind and water erosion.
- Minimize grading to avoid disturbance and damage to soil and vegetation to the extent possible.
- Postpone construction, suspend activity or use construction alternatives in the event of wet or thawed soils to limit soil structure damage and terrain disturbance.

HYDROLOGY AND AQUATIC ECOSYSTEMS



- Conduct baseline water quality surveys and inventories of fish and benthic invertebrates.
 - Avoid removal of riparian vegetation.
 - Implement the appropriate sediment and erosion control measures.
-
- Use identified least-risk windows to conduct instream work. Conduct work outside these windows only when it results in reduced impacts (spring spawners: July 15 to August 31; fall spawners: June 15 to August 31).
 - Abide by standards and best practices for stream crossings and consult with appropriate regulatory agencies.

WILDLIFE

- Conduct baseline wildlife studies. Consult with local biologists, government agencies, First Nations, trappers and outfitters to identify sensitive sites (movement corridors, dens, nests, mineral licks, critical wintering and core wildlife areas, and lambing and rutting areas).
- Abide by timing restrictions and set-backs.
- Follow identified protocols related to aircraft overflights and no-fly zones associated with wildlife.
- Mineral licks should be buffered to the greatest extent possible (500 m).
- Wildlife shall not be harassed or fed.
- In the event bears or other large mammals are repeatedly attracted to the work site, the BC OGC will be notified and their advice sought.
- Workers are not to be accompanied by pets. Horse transportation for accessing the M-KMA is permitted.
- Construction and drilling crews will be encouraged to be vigilant for wildlife and adhere to speed limits when traveling to and from the work site.
- The vandalism or theft of trapper equipment or trapped animals is illegal and will be reported for appropriate action should this occur.



FIRES

- Workers shall know the location of fire-fighting equipment and how to use it.
- No fires shall be permitted when the fire hazard is high. Suspend burning during periods of high winds.
- Fully extinguish and properly dispose of all hot or burning material, including cigarettes.
- A fire contingency plan should be in place detailing fire suppression measures, equipment and emergency contacts in the event of a fire.

WASTE AND HAZARDOUS MATERIALS HANDLING

- Immediately report all spills. Companies shall have a detailed Spill Response Plan.
- Dispose of all waste and hazardous materials at an approved facility outside of the M-KMA.
- Secondary containment will be provided at all fuels and hazardous materials storage areas.
- Spill prevention measures shall be in place when servicing equipment with the potential for accidental spills.

GARBAGE

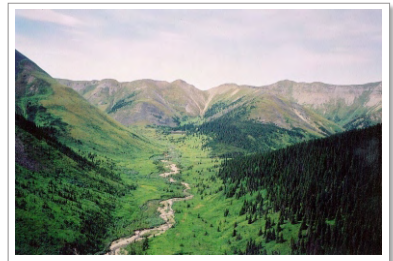
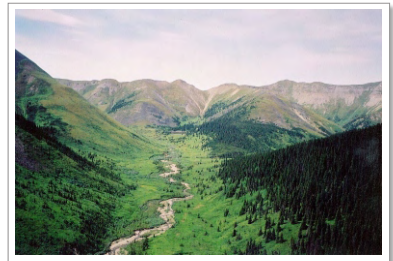
- All construction garbage shall be continuously collected and disposed of at an approved facility outside the M-KMA.
- If a camp is located within the M-KMA, bear-proof waste containers shall be used and/or garbage shall be incinerated.

HERITAGE AND CULTURAL RESOURCES

- Conduct an Archaeological Impact Assessment.
- Stop all work if any suspected heritage resources such as bones, fossils, culturally modified trees or other artifacts are discovered.
- Consult with First Nations to identify sites of significance.

RESTORATION

- The goal of restoration is to return lands to their natural state as much as possible. Conditions on a reclaimed site should be similar to preconstruction status.
- Prepare a Restoration Plan based on baseline studies and develop site-specific reclamation plans.
- Provide maintenance and monitoring plans that include an expected time-frame for a Certificate of Restoration.
- Restore any watercourse crossings and recontour slopes.
- Monitor and manage for weeds.
- Reseed with a native seed mix and a short-lived cover crop that will quickly revegetate the site and provide erosion control, while allowing native plants to establish.



WORKER SAFETY

It is understood that each oil and gas company has their own Health, Safety and Environment Plans that outline worker responsibilities and procedures. Each company operating in the M-KMA is responsible for the health and safety of their workers.

Particular hazards in the M-KMA include severe weather, bear encounters, distance to emergency facilities, rugged terrain and remote unroaded wilderness.

All workers will comply with Work Safe BC regulations.



WILDERNESS SKILLS

Workers should be prepared for all weather conditions and be equipped with necessary clothing, equipment, emergency food and satellite phone or radio. Given the remote location of the M-KMA, survival skills, the appropriate gear and means of communication in the event of an emergency are critical – particularly during scouting and routing reconnaissances.



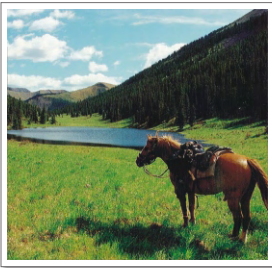
BEAR ENCOUNTERS



Be cautious of the possibility of encountering bears. Although they are most likely to run at the sight of a human, bears are unpredictable and may become aggressive if they feel threatened. Watch for bear signs such as tracks, droppings, digging and food sources like carcasses and berry patches. Follow the precautions listed below:

- Avoid working solo in bear country. When a team may be physically separated, carry portable communication equipment.
- Avoid traversing closely to or stopping for lunch at watercourses, unless essential to the activity. These areas are often prime feeding/loafing areas for bears and have background noise that masks sound.
- Make noises while walking or working in forested areas. This will alert bears to your approach and prevent them from being surprised.
- Never harass or chase a bear. If your vehicle is nearby, get in as soon as possible.
- If approached by a bear, do not run away, and instead slowly back away and talk in a calm voice. Use a flare or noise device. If that doesn't work, dropping your pack may distract the bear and provide enough time to leave the area and/or prepare an alternate response.
- Move to a tree or rock to shield yourself. Climbing a tree is not a sure escape, but it may cause the bear to feel less threatened.
- If there is no possible escape and an attack looks possible, play dead. Curl up on the ground, protect your vital parts, especially your head and offer no resistance. The bear may leave once it realizes you are not a threat.
- If the bear is a black bear, people have successfully defended themselves by fighting back.
- If you are travelling through the bush and detect a strong rotting odour, backtrack and avoid the area.
- If you see bear cubs, it is likely that you will encounter a protective female bear. Leave the area immediately.

CONTACTS



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To report an incident, please call:
1-800-663-3456 (24 hours a day)

Website: <http://www.ogc.gov.bc.ca>

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Maps were created using data available from the BC Ministry of Environment, Lands and Parks and the BC Ministry of Sustainable Resource Management. Copyright 2007.

DECLARATION

I have read the Muskwa-Kechika Management Area Worker Orientation Guide and I agree to comply with all of the environmental requirements therein.

Name

Company or Affiliation

Signature

Date



MUSKWA KECHIKA MANAGEMENT AREA

WORKER ORIENTATION GUIDE

Name

Company or Affiliation

Signature

Date



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