



North Liard  
Sustainable  
Resource  
Management  
Plan

2016



# North Liard Sustainable Resource Management Plan



Prepared by the Community of Lower Post  
with the assistance of the Dena Kayeh Institute

2016





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*Tommy Frank's cabin near Smith River (courtesy Charlie Pete)*

This plan is a living document that will be updated periodically based on current land uses every three to five years, or as the situation warrants.





## EXECUTIVE SUMMARY

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### Introduction

The Kaska Dena are working to complete land use management direction for the traditional territory in British Columbia. The approach is to identify community based land uses for specific landscapes and develop the technical management direction to support the choices. The technical management direction will be consistent with Kaska Dena plans and agreements being used in other areas of the territory. Currently Daylu Dena has been working on the North Liard Plan Area and Kwadacha on the Kwadacha Plan Area.

### North Liard Plan Area

The North-Liard plan area covers approximately 1.6 million hectares within the Fort Nelson Timber Supply Area. The plan area is the area east of the Dease-Liard SRMP, north of the Muskwa Kechika Management Area, and east to the traditional territory extent at Nelson Forks (Figure 1).



The topography of the North-Liard is predominantly rolling terrain incised by major rivers into shallow valleys in plateau/plain areas and into steep-walled canyons in mountainous areas. The geography

includes numerous features of glacial origin such as kettle lakes, drumlins, and esker formations. Because the area is east of the Continental Divide, rivers drain northeast to the Liard River and into the Mackenzie River system before finally emptying into the Arctic Ocean. The climate is continental (relatively dry and cold), with low snow depths relative to more coastal areas.

### Plan Purpose Statement

Through interviews with community members, participants all agreed with the following statement to represent the overall approach to land use planning in this area:

We should use some of our traditional territory for its natural resources (such as timber harvesting, tourism, and mining) to better the economic conditions of our communities, as long as we protect some areas for our traditional uses.





### Economic Development Interests

To aid in setting management direction, economic development interests were identified through community interviews for the entire plan area. The understanding is these interests are allowable to benefit Kaska Dena communities. It is not allowable to just have resources leave the traditional territory. Benefits can include employment, Kaska Dena companies doing the work, economic benefit agreements, capacity building, and resource revenue sharing.

a. Timber Harvesting	High Interest
b. Tourism	High Interest
c. Guiding	High Interest
d. Mining	Low to Moderate Interest
e. Agriculture (farms, range)	Moderate to High Interest
f. Oil and Gas	Low to Moderate Interest
g. Trapping	High Interest

For a number of interests, especially Oil and Gas, Mining, and Timber, the importance is to have development that generates benefits but still maintains the environment. There were concerns on the type of logging, mining, and oil/gas systems being used and not enough information on the potential impacts from these systems. The need for direct community engagement on the more detailed planning for these activities was also identified.

Some specific interests identified include a community greenhouse, firewood, mushroom picking, guided fishing, RV/campground at Skook's landing or Liard Hotsprings, and backcountry tourism.

### Management Direction

The North Liard Plan Area has been divided into planning units to assist in developing specific management directions based on the social, cultural, environmental, and resource values in each unit (Figure 1).

The units are based on previous work done on land use options and strategic planning in the traditional territory in the late 1990s and early 2000s (*Kaska 1998 Strategic Natural Resource Development Plan 5-Year Operating Plan for the Kaska Dena Traditional Territory in British Columbia, Kaska Dena Land Use Options 2002*).

The following are the management directions for each planning unit based on community interviews and previous land use reports. The intent is to provide broad resource management directions for each unit as well as additional planning requirements and/or information gaps to be addressed.

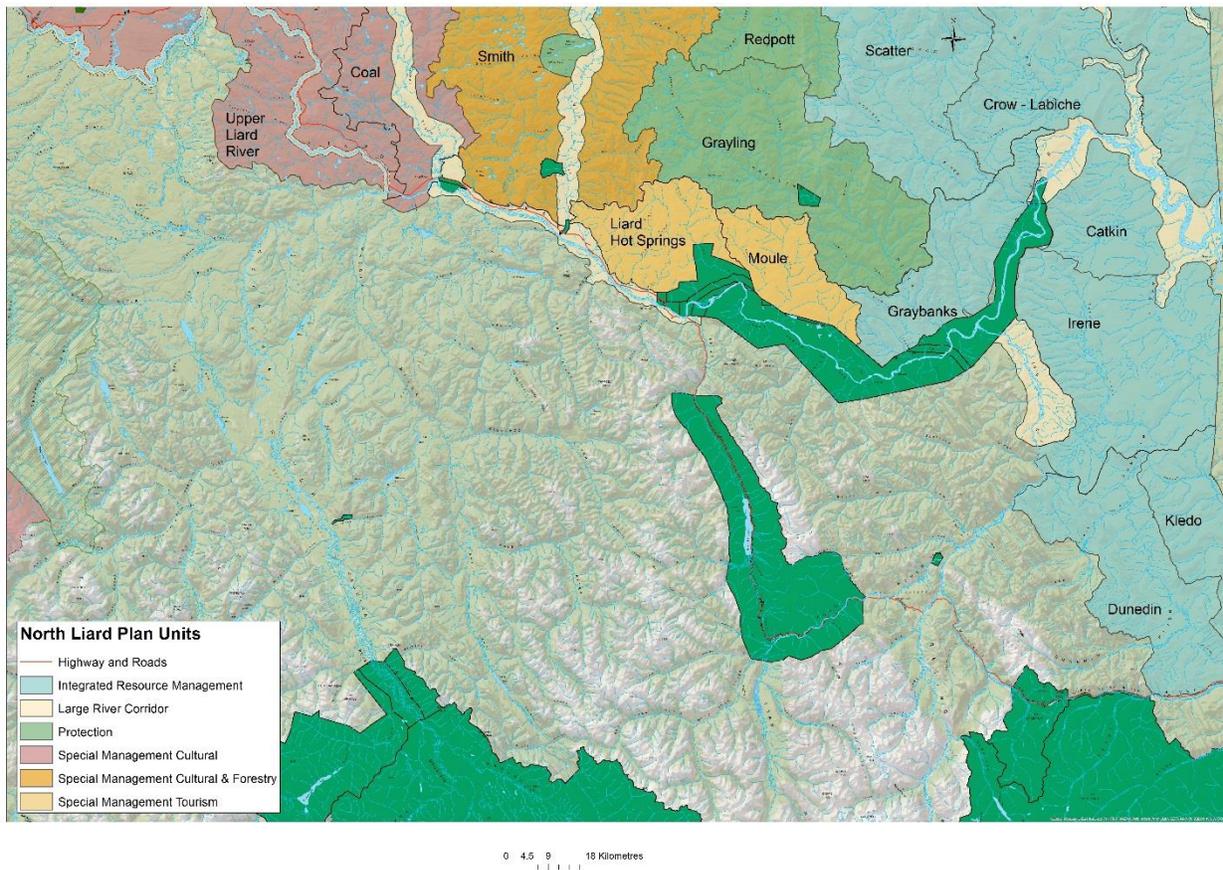




### Upper Liard River Special Management Cultural Area

- Maintain community, cultural, and traditional uses;
- Timber harvesting for local uses, firewood, and economic development;
- At this time, the community is doing site specific planning for placer mining in the area; and
- Protection for Boundary/Sucker Lake area.

Figure 1. Map of North Liard Plan Area and planning units.



### Coal River Special Management Cultural Area

- At this time, the community does not support coal mining in the unit;
- Interest in barite mining employment and resource revenue sharing;
- Large River Corridor for the Coal River; and
- Special management of the unit with a focus on maintaining cultural, community, and traditional uses.





### Smith River Special Management Cultural and Forestry Area

- Large River Corridor for the Smith River;
- Tourism with Smith River Falls;
- Special management of the unit with a focus on maintaining cultural, community, and traditional uses; and
- Protection for sites within the unit (e.g., Crooked Lake).

### Redpott and Grayling Protected Areas

- These units are combined as the management direction is the same for both;
- The two units are remote and limited resource development potential; and
- It is recommended the two units provide ecological connectivity with the Yukon and support low impacted ecosystems and culturally important wildlife populations.

### Liard Hot Springs and Moule Special Management Tourism Areas

- Tourism is the focus for this zone;
- More information is required on mining in this plan unit. Fluorspar mining has been identified but there is limited knowledge on how this occurs and the potential impacts to water and wildlife. Mining needs to occur that does not create environmental impacts, impact the water, and provide economic benefits to Kaska Dena. More information is needed on the type of mining being considered for the plan unit; and
- Special management with an emphasis on tourism, recreation, and renewable energy (e.g., geothermal).

### Scatter, Graybank, Crow & Labiche, Catkin, Irene, Kledo, and Dunedin General Management Areas

- General management with emphasis on integrated resource development management for Oil and Gas, and Forestry sectors;
- Large river corridors for Scatter and Crow Rivers;
- Oil and Gas development is to be limited to conventional drilling, and at this time, unconventional drilling (e.g., fracking) is not supported. Further information is needed to be brought to the communities on this topic;
- Large river corridors for Liard, Beaver, Toad, and Dunedin Rivers;
- Oil and Gas development has to make better use of the wood being cleared for exploration, or road building. It should be used to benefit Kaska and not just being burnt on site; and
- Muskwa Kechika Management Area direction to apply to Dunedin Plan Unit which is zoned Special Resource Management. The Muskwa Kechika Advisory Board describes the management intent as “...place emphasis on identified non-extractive values such as commercial recreation. Development of access corridors is possible, with additional roads developed of a temporary and secondary nature. Commercial and industrial activities are managed to maintain the identified 'special' values or features. The Fox and Obo Special Resource Management Zones are managed differently as they allow permanent roads for industrial development.” ([www.muskwa-kechika.com/management-area/resource-management-zones](http://www.muskwa-kechika.com/management-area/resource-management-zones)).





## PLAN PRINCIPLES AND FRAMEWORK

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### Kaska Dena Vision

The Kaska Dena are ready to develop a new relationship with the provincial government. This is a relationship committed to the reconciliation of Aboriginal and asserted Crown titles and jurisdiction, and a concurrence to develop and implement government-to-government agreements based on respect, recognition, and accommodation of Aboriginal rights and title. These rights have been accepted by Canada and the British Columbia Government, and are protected under the Constitution Act (1982). This new relationship with government will need to move to collaborative management approaches that speak to shared management including planning, land protection, implementation, monitoring, revenue-sharing and capacity benefits.



The new relationship for resource development encourages the natural resource industries to engage the Kaska Dena early in the process to seek common understandings, and to develop Impact Benefit Agreements that provide economic, capacity and community benefits.

Natural resource industries and government have accepted that we have a relationship to the land that is of paramount importance to our culture, our communities, our

governance, and our economy. Government and Industry have accepted that we have aboriginal interests and title within our traditional territory. Accomplishing our new relationship can be achieved by also accepting and recognizing Kaska Dena as land stewards, engaged in shared decision making regarding land and resource development in our traditional territory.

Resource development will be consistent with the North-Liard Land Use Plan, which is a Kaska Dena plan. The plan is based on the best science available, traditional knowledge and Kaska community direction. The planning process has identified lands for protection and special management, and provided a defined land base for the Kaska Dena, Province of British Columbia, and industry.

Land use planning is essential, and we are expecting new collaborative management agreements that move beyond land use plans. This includes joint plan implementation, monitoring and enforcement as well as joint fish, wildlife and water management, regulation and enforcement. Mineral development agreements with resource revenue sharing and community benefits are also being sought. In addition,





development must occur using environmentally resilient management practices, monitoring strategies, adaptive management frameworks and reclamation strategies, since our communities will remain long after any project is completed. We expect that the application of our management practices and standards by industry and government will address our concerns.

In summary, our vision can be achieved by implementing:

- A process for shared decision making for land and resources;
- A process for Kaska Dena land use planning at all scales and for the reconciliation of Crown and Kaska Dena land use plans;
- Dispute resolution processes that are mutually determined in order to resolve conflicts as opposed to adversarial approaches to resolving conflicts;
- Financial capacity for the Kaska Dena and resources for British Columbia to develop and implement new frameworks for shared land and resource decision making, resource revenue sharing, and for other components described above; and
- Through the approval and implementation of this plan, the protection of landscapes, watersheds, and/or sites identified by the Kaska Dena will occur.

Respecting our principles for resource development and land management will bring certainty to the land base and enable a smoother transition for new resource development opportunities.





## Principles

The following principles should assist government and industry by providing clarity on what we require for resource development in our traditional territory.

### Shared Decision Making

- Stewardship of Kaska Dena lands and where required leadership in the development of land use management direction in the traditional territory;
- Where possible the collaborative development of Kaska Dena Land Use Plans with British Columbia that define Kaska Protected Areas, Special Management Areas and the application of our management practices;
- Acknowledgement and respect of Kaska using our Sacred Laws and traditional knowledge as core components for Kaska decision making in our participation in implementing land use plans, environmental assessments and permitting of resource development projects;
- Develop agreements with industry associations, and government on management practices, monitoring standards, cumulative effects, adaptive management approaches, and enforcement regulations; and
- Establish collaborative agreements with British Columbia for the management of natural resources.

### Economic Opportunities

- Create viable economic opportunities and assist in the improvement of social conditions of the Kaska Dena through economic diversification. Our first priority is to increase the number of Kaska-owned businesses. In addition, this can be achieved through development of industry agreements which include, but are not limited to:
  - Revenue-sharing, including profit sharing;
  - Shares of equity in projects and companies;
  - Sharing of jobs and contracts;
  - Right of first refusal of qualified contract services;
  - Commitments to use our businesses where possible; and
  - Employment of our monitors;
- British Columbia to provide economic benefits to Kaska Dena through tenures or other economic benefits related to mining, oil/gas/energy development, forestry, or tourism through resource revenue sharing agreements;
- Develop Interim Accommodation Agreements with Kaska Dena; and
- Develop Impact Benefit Agreements with Kaska Dena.

### Training and Capacity Opportunities

- Mentoring for the range of jobs related to the full life cycle of resource development projects (e.g., mining exploration to mine reclamation and closure);





- Scholarships for Kaska Dena seeking qualification at trades, technical and post-secondary institutions;
- Training of Kaska Dena for natural resource development such as forestry management or mine operations, environmental monitoring and enforcement knowledge and skills;
- Joint ventures with the Kaska Dena to provide services and goods during the full life cycle of resource development projects; and
- Commitment to employ qualified Kaska Dena trades, technical and post-secondary graduates.

### Cumulative Effects

- Pace of development: while recognizing that development is driven by resource prices, the Kaska Dena, through agreements with government and industry associations, want to influence how projects are staged to provide long term, stable employment and community benefits without the social and health problems that result from a “boom and bust” resource development cycle; and
- Through agreements with government and industry associations, the Kaska Dena want to assess the current status of cumulative effects of all land uses and estimate the potential future impacts from incremental development. This will be reassessed periodically and will be a tool for environmental assessments as well as amending Kaska Dena Land Use Plans.

### Monitoring and Enforcement

- Using an adaptive management framework, ensure the monitoring and enforcement of Kaska Dena management practices, land use plans and approved environmental assessment certificates and permits;
- Acknowledgement and respect of Kaska Land Stewards and Kaska Sacred Laws and the use in the application for monitoring; and
- A commitment to seek employment of Kaska Land Stewards and qualified Kaska Dena technical personnel for monitoring and enforcement throughout the full life cycle of projects.





### Environmental Standards

Environmental stewardship is the primary criteria when assessing the development of natural resources in Kaska Dena Traditional Territory. It is expected that environmental standards, study designs, thresholds, management practices, monitoring criteria, and permit conditions will be developed in collaboration with the Kaska Dena with the goal of exceeding provincial standards to maintain the environmental conditions of the area.

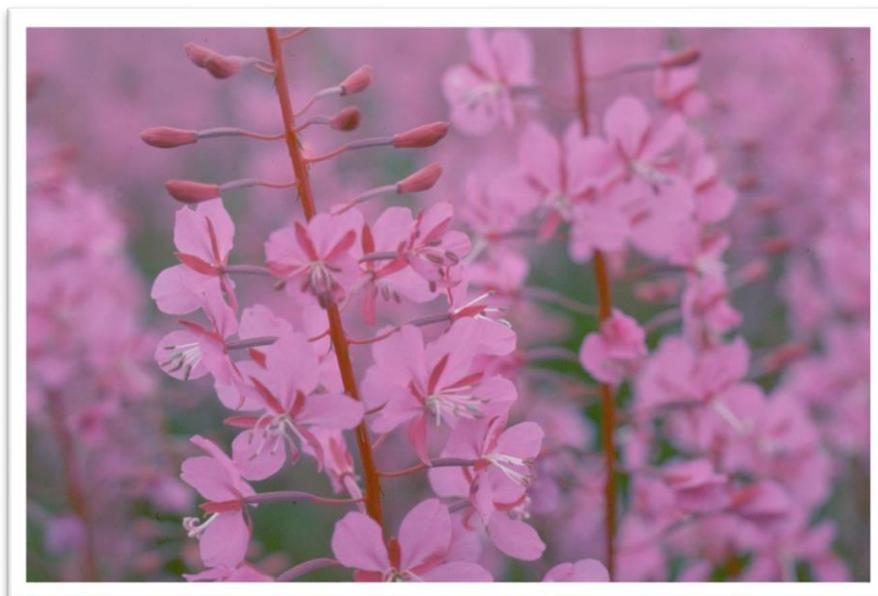
### Co-management and Shared Decision Making

Kaska are prepared to move ahead with an expanded role in the management of lands and resources in our territory. Based on the recent William's case and resounding changes to current case law, the Kaska Dena are expecting governments and industry to respect this change in land and resources management. This plan is based on the concept of co-management of lands and resources in the traditional territory in British Columbia.

### Integrated Resource Development

In northeastern British Columbia there is a history of resource development sectors working on their own requirements and with little interest in integrated resource development.

It is the Kaska Dena's approach that resource industry sectors and government need to develop strategies that benefits natural resource industry needs while minimizing footprints and human disturbance to the area. In addition, road development should be coordinated to reduce road densities and competing road corridors where one is all that is needed.





## Kaska Dena Best Management Practices

The Kaska Dena have developed a suite of Best Management Practices for land and resource development (Appendix 1). It is expected these practices will become General Management Direction with existing federal and provincial legislation and policies for Oil and Gas, Tourism, Forestry, Mineral Exploration and Mines, and Environmental Protection. Where Kaska management practices provide a higher level of environmental standards, it is expected for proponents and government to apply these practices.

Specific management practices will become zoning in this plan such as Large River Corridors and Community Planning Areas.

## Strategic Engagement Agreement and Treaty Negotiations

The Kaska Dena have established a Strategic Engagement Agreement, a government to government agreement, with British Columbia. It establishes the priorities for shared decision making in the traditional territory by resource sector. For the North Liard Plan Area, the Shared Decision Matrix will be used as management direction, and for some planning units there will be recommendations for application of the matrix (Appendix 2). Unfortunately the SEA does not apply to the Oil and Gas Commission who permits oil and gas activities in the province. Management direction will be provided for this sector.

The Kaska Dena are also engaged in treaty negotiations with the province and as interim agreements or final agreement are achieved this plan will be updated as required.

## MANAGEMENT DIRECTION

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**F**or the North Liard Land Use Plan, management direction is being provided by the following categories:

**Integrated Resource Management Direction:** resource development occurs based on existing policies and legislation for these plan units. An example are riparian reserve and management zones under existing provincial legislation are required and applied throughout the plan area. However, the goal is to have coordinated resource development, where possible, across sectors to reduce the land disturbed.

**Special Management Direction:** where for a specific area a value has been identified as the primary management focus then allowable land uses will be defined to minimize impacts to the value or identify land uses to enhance the value. For example, an area could be identified for tourism; this could result in the managing land uses that could affect tourism like timber harvesting.

**Protection Management Direction:** where for a specific area, it has been identified to have it protected from industrial land uses. Management direction would indicate what is allowed and not allowed in the area to maintain it in a natural state.





## INTEGRATED RESOURCE MANAGEMENT DIRECTION

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### SEA Matrix

The SEA Shared Decision Matrix, in Appendix 2, identifies the land and resource activities that are of higher priority to the Kaska Dena. Proponents should be aware of this matrix and be prepared for greater engagement with the Kaska Dena.



### Biodiversity and Wildlife

It is a goal for this Plan to maintain biodiversity over time and across scales. However, it is not possible to manage for each of the native species on the landscape. The approach of maintaining regional, landscape, and stand level features and ensuring their connectivity across scales is considered a suitable method to maintain biodiversity.

This has been done in other northern land use plans by applying management practices for:

- ecosystem representation;
- ecological benchmarks;
- connectivity;
- focal species; and
- special elements.

When resource development is proposed in a plan unit or a significant portion of a plan unit, a coarse filter approach to maintaining biodiversity is required prior to development including:

- Define at a plan unit scale each of the following:
  - The current forest age class, structure, species composition, and the natural range of variability of the forests (natural disturbance);
  - The natural range of ecosystems (if available) or known concentrations of key ecosystems (e.g., wetland complexes, source or headwater watersheds) across elevations;
  - Concentrations of important habitat or range such as moose winter or calving habitats, avian habitats, furbearer habitats, caribou migration corridors; and
  - The same approach should be used for identifying and maintaining Kaska Dena cultural values at this scale;





- Define habitat or ranges at the watershed and sub-watershed scale (for example, winter spruce habitats near feeding areas for moose, lichen winter habitats for caribou, nesting habitats for various forest guilds, or furbearer habitats);
- Identify where wildlife habitats, cultural values, wetlands, lakes, streams, forest interior patches, rare ecosystems/species (SARA), and special elements are located in each watershed. Develop a connected network among the values that should include special features and habitats that are known to contain rare or sensitive species; and
- Overlap the operable timber stands and look to include and link as much of the cultural and ecological values in at least 70% of the watershed. This applies for each watershed unit and each sub-watershed in the major watershed (~4,000-30,000 hectares). Provide a variety of patch sizes, shapes, and types that include elements of the pattern (proportion, frequency, and arrangement) which would have resulted from natural disturbances. In addition, headwaters and source watersheds should be avoided or a lower level of impact applied.

Before establishing large areas for timber harvesting, look at the range of values including current types of forests, their age, and how big their “patch” or area it generally covers in the landscape unit. The sequencing of logging will maintain these features over time and area in the Plan Unit or Forest Stewardship Plan area this approach provides for timber harvesting while maintaining the natural range of forests, ecosystems, concentrations.



### Kaska Focal Wildlife Species

It is important to note that for the Kaska Dena wildlife includes all mammals, birds, reptiles, amphibians, and non-anadromous fish as well as eggs of birds, reptiles and amphibians, including migratory birds.

The main goal for managing all species is to maintain viable populations across all scales in the traditional territory. Where possible population criteria is provided to meet management goals, but the main approach is to provide methods to maintain large contiguous areas of boreal forest ecosystems to





support important habitats at the different levels of management, (traditional territory, major watershed, lower order watersheds, and stand level).

A suite of Kaska wildlife species and their habitats will be the indicators we will use in assessing whether a resource development project is acceptable in the traditional territory and will include, but not limited to large mammals, furbearers, fish, amphibians, specific rodents such as snowshoe hares, marmots, and ground squirrels, waterfowl, raptors, and specific avian species such as grouse. Given the diversity of ecosystems in the traditional territory, the list is quite extensive. It can be provided to proponents upon request.

The practices are specific for each species but, generally, they fall into the categories listed in the above section.

As mentioned in the Kaska Land Stewards section, the Kaska Dena will be using compensation planning for wildlife species populations, habitats, or ranges that cannot be avoided or adequately mitigated. Disruptions of Kaska Dena to access, harvest, or collect will be part of the compensation plans.



A few examples of management direction for Kaska focal species include:

### *Moose*

Moose are one of the most widespread and commonly encountered large mammal species in the traditional territory. They are culturally important to the Kaska, and an integral component of large predator-prey systems.

Moose occupy most of the plan area in one season or another, but most of the winter range occurs in the valley bottoms or on large river floodplains. Moose are associated with riparian habitats, especially floodplains and large wetlands. Generally, areas with a mosaic of habitat types are best for moose, including adequate openings for browse, forested cover for thermal, security and snow interception, and mineral licks. The most critical habitats are winter and calving ranges, since the challenges of winter survival and calf survival are greatly increased when important habitat elements are removed or reduced in quality.

There are large areas of winter range that are regionally important and support a large number of wintering moose such as the Liard Basin, Kechika River, and forested land north of Kwadacha. There are also smaller landscape level concentrations of winter habitat throughout the traditional territory.





## Criteria for Management

Moose habitat in the traditional territory can include the following:

- Winter range for moose is a combination of:
  - Open canopied mixed coniferous, pine or spruce leading forest stands;
  - A mixture of early and mature seral forest classes;
  - Willow shrubs generally within 200 m of riparian coniferous stands;
  - Lakes, wetlands, and riparian features;
  - 10-15 year old burns; and
  - Primarily at low elevations;
- Calving habitats for moose is a combination of:
  - Open to medium canopied cottonwood-coniferous, pine or spruce leading forest stands;
  - A mixture of early and mature seral forest classes;
  - Coniferous stands with high blowdown and structure;
  - Islands on lakes, wetlands, or rivers;
  - Lakes, wetlands, and riparian features;
  - 10-15 year old burns; and
  - Primarily at lower elevations.

Some of the key factors that affect moose populations to consider are:

- Decreases in forest cover and habitat fragmentation at the watershed level which can result in loss of snow interception or security cover and increases in the energy required to move through winter snows; and
- Increases in roads, which can increase direct mortality from vehicular collisions, concentrated hunting efforts, increased predator access, and poaching.

Management strategies to minimize impacts to moose include:

- Managing forest cover removal to provide important attributes of moose winter range and calving habitat (forage, snow interception cover, visual screening);
- Access management to minimize mortality risk to moose;
- Managing the amount of early seral and mature–old seral forest across the land base;
- Aggregating forest cover removal in time and space;
- Seasonal restriction of activities in identified winter or calving range; and
- Winter or calving range in lowland areas or Large River Corridors should be avoided.

**Objective:** To maintain moose habitat at the watershed and stand level within sub-basins of major watersheds





### Management Direction

Assess areas to maintain the natural range of forested ecosystems over time and space, identify contiguous patches of moose habitat, and develop linkages between high value habitats to maintain large areas of moose habitats.

Include Kaska Land Stewards early in the process to identify areas of winter and calving habitat and work collaboratively to maintain the habitat while identifying areas for operational planning.

Jointly identify concentrations of winter and calving habitats and determine the area of lowland and upland forests and the area of Large River Corridors within the winter and calving range. Determine the areas to avoid and the potential range of development in a winter range or calving range area.

A concentrated approach to forest cover removal with large leave areas in an operational area is of more benefit to moose than small openings throughout the area. The result is more contiguous forest and moose habitat is left undisturbed. Resource development should be planned to reduce moose habitat fragmentation at a watershed scale.

Develop access that avoids permanent access in winter and calving range. If that is not feasible plan the access so it does not bisect the range but is located along the edge of the range.

Develop seasonal windows to avoid natural resource activities in calving range.

At the stand level, apply the following practices, which are best suited for the habitat:

- Retain a diversity of snags and incorporate them into retention patches;
- Use retention patches, riparian corridors, and non-merchantable trees to try and link the interior of the block to the surrounding forest;
- Provide openings of 10-15 years in age over time;
- Apply variable stocking to achieve patchiness;
- Reduce conifer stocking or promoting the minimum conifer density;
- Maintain similar species distribution to natural stands;
- Give preference to manual treatments for vegetation control while enhancing moose winter forage; and
- Use prescribed burning, where appropriate.

Access related to forestry development avoid permanent access in winter and calving range and provide screening to wetlands, south-facing slopes, rivers, and openings along highways, secondary roads, and main forestry roads.

### Recommendation

Within watersheds identified for resource development, consider developing moose habitat mapping with Land Stewards based on traditional knowledge and over time develop mapping for the traditional territory.





### *Woodland Caribou*

Woodland caribou are culturally important species to the Kaska, are a high profile species of the north, and the herds (Northern Mountain Woodland Caribou) in the traditional territory are considered a Special Concern under the Federal Species at Risk program. The herds are of such significance that all herd winter ranges have been designated by the Kaska as Kaska protected areas called Gu Cha Duga (For the Grandchildren) areas.

### *Criteria for Management*

Woodland caribou use a variety of ranges throughout the year. Calving, summer and rutting range are generally in alpine habitats, and as snow levels increase after the rut, caribou will migrate through forested habitats to lower elevation forested winter ranges. Each range is separated by elevation or distance. While maintaining all the ranges are important for survival of the herds, the forested winter range, migration corridors, and calving range are specifically considered for management practices.



Winter ranges are distinct areas with lower snow fall than the surrounding area, have repeated use by the herd, and core use within a range can change to snow conditions, fires, overgrazing, or changes in population. Woodland caribou movements and winter range use are a complex relationship related to snow cover, lichen abundance, moose, predation, direct and indirect disturbances, and forest succession.

Woodland caribou are limited by predation, and the relationship with wolves and moose is not well understood. It is thought that wolves will focus on moose but will prey on caribou opportunistically. It is thought that caribou will use large patches of forest in the winter that provide sufficient lichen abundance for food, but are spatially separated from moose winter habitat. This approach along with staying in small groups could reduce predation. The concern with forestry is the increase in logging in a winter range could increase moose forage and increase the number of wolves in the area. Another factor in this relationship is the impact of deep snow fall years. It is believed that wolf predation is higher on moose and caribou in those years. However, if it could also have a beneficial effect to caribou by reducing wolf numbers if the moose population crashes.





Human effects on caribou are considered both direct and indirect. The direct way is through hunting and reduction in numbers such as easier access to caribou for predators (roads, and trails), or poaching, or loss of range through human activities. In regards to winter habitat or range loss, it is the degree and pattern of habitat loss that is the concern. Indirect ways include roads in winter ranges, aircraft overflights, or snowmobile/ATV use. Roads in winter range are a main concern because of animals being sedentary, limited by snow, attracted to the road salt and then vulnerable to be hit, by traffic, or potentially hunted.

In regards to resource development, the following should be considered to be avoided:

- Key winter habitats, such as:
  - Open canopy pine – lichen stands on glaciofluvial soils, black spruce fens with arboreal lichen, and lakes with mineral overflow (e.g., Liard Plateau or Muskwa Herds);
  - Open canopy spruce – lichen stands, black spruce wetlands or muskegs with arboreal lichen, and lakes with mineral overflow (e.g., Liard Plateau or Muskwa Herds); andPermanent road building in winter range, if required do not cross the core winter ranges but build along the boundary of the range.

Another consideration is using a management approach that provides the most protection to the core winter range and has the most flexibility and opportunity for development the farther away from the core it is located. Seasonal restrictions windows for migration and the winter period should be used for several types of resource development such as forestry.

Calving ranges in the traditional territory are well known and are usually large areas of upper elevation forests and alpine habitats. It is how the caribou use the range that is important to understand as female caribou with calves are usually found at high elevations in alpine habitats with some use in coniferous islands at treeline, and females without calves and males are usually found at lower elevations of alpine and upper slope forests during the peak of calving (May 15 to June 15).

Other forms of resource development can cause impacts to woodland caribou during the alpine range seasons where caribou may be displaced from ranges from mineral exploration activities, seismic line activities, and even commercial tourism, especially when repeated aircraft overflights are occurring. Activities should be limited during the calving season (May 15 to June 30) in known core calving ranges of herds.

#### Management Direction

Many winter ranges already have access in the core winter range but to minimize impacts maintain at least 70-90% of the core winter range as a contiguous zone, design a network of high-quality winter caribou habitat, and reserve it from consideration for development in the extended winter range. The maximum development footprint in non-reserve parts of the extended range should not at any time exceed 30%, and should not exceed 25% in the migration corridors.

Access should be avoided in the core winter range of woodland caribou herds.





Future access into winter ranges needs to be evaluated through a joint Kaska Government process to determine the justification for the access, but if allowed then access corridors should be planned to minimize disturbance to the area by no roads bisecting the core winter range and the access should be planned along the winter range boundaries.

Establish a monitoring program of composition surveys, census-surveys and, where possible, assessment of changing habitat use patterns over time.

Seasonal windows to restrict activities for calving and possibly rut ranges should be considered on a project by project basis especially where core areas of use are known.

Restrict access or linear corridors within 1 km of known core calving range and consider restrictions of ground activities such as advanced exploration during the calving period (May 15 to June 30).

Seasonal restrictions on aircraft use on known core areas for calving should occur by establishing flight corridors for repeated overflights and establish a distance above calving range such as 1.5 km for aircraft from May 15 and June 30.

### *Marten*

Generally, marten are most common in older coniferous forests, but use all forested habitats in the traditional territory and can do well in some younger forests, such as burns. Specific habitat requirements include forests with moderate to dense crown closures ( $\geq 30\%$ ), riparian forests, snags and root wads provide for dens, and forests with blowdown or leaning trees provide access to prey under the snow.

Marten are the most important fur-bearer for Kaska trappers and are culturally important to the Kaska. Marten are found in good numbers throughout all forested areas of the traditional territory but marten densities do appear to go through wide fluctuations over time but a 'cycle' is not well understood. Marten's main prey is microtines such as red backed voles, and snowshoe hares, but grouse, and berries are eaten by the furbearer.

Marten have been identified in management planning throughout Canada not only as an important cultural and economic species but as an indicator for other forest wildlife. The key assumption is that by maintaining marten habitat at all scales will provide for a wide range of other species using similar habitats.

In regards to resource development such as forestry, Marten tolerate some cut-blocks in their range, and use their edges but do not use the interiors of openings that do not include any retention or corridors linking the retention to the adjacent forest. There is a concern that marten populations respond more negatively at higher degrees of forest cover removal.





### Criteria for Management

As mentioned, marten are found in most coniferous leading forests, habitat use outside of root wads and snags for reproduction and denning is linked to its prey primarily voles and hares. Generally, voles are found in medium-wet to wet spruce leading coniferous stands with high coarse woody debris and blow down, limited shrub layer, and dense forest crown closures. Hares are found in similar medium to wet, dense crown closure forests, but with a higher shrub layer with increased openings of willow thickets.

Marten do show a degree of sensitivity to disturbance from resource development such as timber harvesting and management approach should maintain contiguous patches of forests as part of planning resource development. There have been studies that show marten populations being negatively impacted as forest cover is removed. Studies have reported that as more than 30-40% of forest cover is removed results in negative impacts to marten. However, the studies occurred on marten populations in intensively managed forests, with a high level of timber harvesting and were outside of the traditional territory. Further work is required on this threshold but should be considered until new information is available.

**Objective:** To maintain marten habitat at the watershed and stand level

### Management Direction

Assess watersheds to maintain the natural range of forested ecosystems over time and space, and identify contiguous patches of marten habitat. Place resource development outside of these areas or ensure forested linkages between high value habitats are maintained.

Include Kaska Land Stewards early in the process to identify areas of marten habitat and better define marten habitat in a watershed and work collaboratively to maintain marten habitat while identifying areas for operational planning.

A concentrated approach to resource development with large leave areas in an operational area is of more benefit to marten than a small openings throughout the area. The result is more contiguous forest and marten habitat is left undisturbed.

Improve information about marten distribution prior to harvesting using simple methods such as working with the trappers, the Kaska, and consider conducting a snow track surveys or using soot plates to record marten presence/absence.

At the stand level, the following practices should be applied for marten:

- Retain a diversity of snags (includes tall wide snags and recruitment snags) and incorporate them into retention patches;
- Use retention patches, riparian corridors, and snags to link the interior of openings to the surrounding forest; and
- Retain coarse woody debris throughout the opening, with a higher density along corridors or edges. This will increase prey in the block and in areas where marten will use.





### Recommendation

Within watersheds identified for resource development consider developing marten habitat mapping with Land Stewards and trappers based on traditional knowledge and over time develop mapping for the traditional territory.

There is a range of thresholds related to marten and resource development with most of the work occurring outside of the traditional territory. It is recommended the Kaska develop a process to test the range of thresholds with an initial range of 25-30% limits to forest cover removal be considered in the subbasins of major watersheds; however, where possible, remove forest cover outside of high value marten habitats.

### Special Elements

At the regional and landscape levels, special elements were identified and included into the zoning approaches. For future planning and operational resource development activities, the following should be considered as an initial list to be mapped and maintained:

- Fish spawning habitats;
- Mineral licks;
- Thermal/mineral springs;
- Raptor nests;
- Medicinal plants and culturally important plants;
- Kaska culturally important sites and trails;
- Unique lakes or wetlands;
- Avalanche chutes;
- Dry, steep, south facing slopes;
- Mountain ungulate escape terrain;
- Rare grass/shrub habitats;
- Eskers/esker complexes;
- Denning areas;
- Lake outlets;
- Rare, moist, productive sites; and
- Rare plant communities.





## Access Management

Access management is one of the key issues in the plan area. Most of the land base is currently unroaded and this section provides some general management direction to be applied for access related to natural resource development.

Access management in the plan area will include:

- Coordinate access to use existing access first before constructing new access;
- Coordinate construction and planning of access to use the same right-of-way, and limit main trunk roads to one side of a watershed;
- Deactivation schedules;
- Restoration plans for access corridors will indicate how the sites will be restored using boreal species best suited ecologically for the site;
- Consider winter or temporary roads as a priority;
- Evaluate the use of low-impact vehicles to reduce overall environmental impacts (e.g., lower ground pressure vehicles);
- Do not create circle routes that connect two or more main road networks;
- Locate roads to avoid the following generally site specific identified habitats. Only consider exceptions to this strategy after assessing and weighing all implications (e.g., ecological, economic, safety):
  - Avalanche chutes;
  - Dry, steep, south facing slopes;
  - Flood plains of rivers;
  - Critical riparian habitats (e.g., instream upwellings, alluvial fans);
  - Mountain ungulate escape terrain;
  - Rare grass/shrub habitats;
  - Wetlands/wetland complexes;
  - Eskers/esker complexes;
  - Adjacent to streams and wetlands;
  - Denning areas for wolves and bears;
  - Lake outlets;
  - Rare, moist, productive sites; and
  - Unique features (licks, dens).





## Integrated Resource Management

The management direction for natural resource sectors, and provincial agencies to work cooperatively with the Kaska Dena to reduce costs by coordinating road development, logging in advance of well pad or mine site development and minimize the access density and industrial footprints.

Apply the Access and Forest Management Directions and consider the following direction:

- Coordinate access to use existing access and seismic lines first before constructing new access;
- Wherever environmentally feasible, plan for aerial access or winter season access to minimize overall impacts of road construction for oil and gas and mineral exploration purposes;
- Evaluate the use of low-impact vehicles to reduce overall environmental impacts (e.g., lower ground pressure vehicles);
- Apply low impact seismic lines that are approximate 2-3 meters in width, meandering lines, and apply a pattern to minimize the area disturbed;
- Use Multi Well Pads and directional drilling;
- Use existing seismic lines or pipelines for access or apply low impact seismic standards for new access;
- Coordinate timber harvesting schedule with other resource project development scheduling in the area; and
- Restoration plans for projects will indicate how the sites will be restored using boreal species best suited ecologically for the site.





## Oil and Gas

Conventional oil and gas development is an allowable activity in plan units in the northeast portion of the plan area. Unconventional gas development is not supported due to community concerns on the environmental uncertainties with the development. Additional information on shale gas development including water management is required by the community prior to increased oil and gas development in the Liard Basin.

Recently the Oil and Gas Commission has proposed an Area Based Analysis for the Liard Basin shale gas area. There is opportunity for the Kaska Dena provide input into the analysis to capture values described in this plan. It is expected the zoning and management direction from this plan to be incorporated in to the analysis.

The key for management direction for this sector is the collaboration with other sectors and access management to minimize road density, greenhouse gas emissions, and industrial footprint.

In regards to water management for oil and gas development, the following management directions are required:

- Mapping of groundwater reserves prior to increased development;
- Water management plan for the Liard Basin for all natural resource sectors that limits cumulative effects and provides protection of water resources;
- Water licences for groundwater withdrawal to address information gaps in water allocation information;
- Public disclosures of chemicals and additives used in oil and gas development, especially unconventional shale gas development; and
- Auditing of water use in the Liard Basin to ensure full compliance for reporting water use by the industry.

## Forestry

While areas have been identified where forestry can occur, the key general management approach is community based planning for landscape and operational forestry plans to ensure berry patches, hunting areas, access to cabins, mineral licks or spawning areas are maintained.

In addition, the following should be used in developing timber harvesting plans:

- Apply silvicultural systems including multi-block assessments that are suited to the ecological condition of the sites and the cultural and environmental values in the area including logging that protects undergrowth, and provides for increasing the amount in block grouped retention, snags, wildlife trees, wildlife corridors and coarse woody debris as opening size increases;
- Apply a concentrated landscape approach to logging by using a single pass system to minimize the industry footprint, road density, and maintain large patches of contiguous forest for ecological needs such as for forest interior conditions. The distribution of logging and access needs to be considered through engagement with other land users (see Kaska Land Stewards and Trappers general forest management);





- Apply a range of silvicultural systems including selection, cutblock, shelterwood, and variable retention best suited to the environmental conditions of the site;
- Slopes greater than 30% should not be logged;
- Winter harvesting is preferred but if summer timber harvesting occurs then harvesting must be done during dry soil conditions to minimize site degradation;
- Minimize duff disturbance (i.e., use a dispersed skidding pattern, do not blade skid trails, if available, use rubber tired skidders);
- Forested areas on permafrost should be avoided where possible for logging or road building; and
- Wet areas (soils saturated year round) should be buffered and not logged and reduce access in these areas.

## Climate Change

Climate change is a global, national, and local issue, presenting a range of challenges for land use planning. For example, the Intergovernmental Panel on Climate Change considers global climate change to be the most significant ecological threat today. In their Fifth Assessment Report on Climate Change released in 2013, it confirmed that changes to the climate are occurring including atmosphere and ocean warming, snow and ice extents are reduced, the sea level has risen, and Greenhouse Gas (GHG) concentrations have increased (IPCC 2013). The IPCC has also reported that the evidence warming is unequivocal and the human influence on the climate is virtually certain.



Nationally, weather trends show evidence of an increase of 5.4 °C for winter temperatures from 1948-2013 for the Yukon and Northern British Columbia ([Environment Canada Climate Trends and Variations Bulletins](#)). Other climate changes expected to occur include changes in total precipitation amounts and types of precipitation (rain vs. snow), changes to water peak and low flows, and a higher pace of

changes occurring in the North. Climate change is expected to cause changes in the distribution and abundance of vegetation, fish, and wildlife.

Both the Yukon and British Columbia government have been developing climate change policies and adaptation strategies that can be used at a community level (see Yukon Environment and BC Ministry of





Environment websites). General strategies focus on adaptation to climate change where land use activities and management in response to or preparation to climate change; apply mitigations to minimize greenhouse gas emissions and enhancing carbon sinks; and research to support adaptation and mitigation strategies.

Management direction specific to this plan include:

- Maintain conservation areas that are:
  - large enough to observe natural processes and ecosystem reactions to climate change; and
  - represent a variety of boreal ecosystems;
- Maintain connectivity between conservation areas from north to south and low to high elevations;
- Maintain older forest in fire-resistant areas for biodiversity refugia (such as the Large River Corridors and in the lowland forests);
- Use a mixed strategy of fire management (some hands-off, some protection, some stand management);
- Minimize permanent conversion of land;
- Consider the potential for higher precipitation and erosion in land use activities;
- Minimize the size of road networks and minimize soil erosion; and
- Minimize greenhouse gas emissions from resource development activities.



## Mineral Exploration and Mining

Historically, mineral exploration, development, and placer mining have been issues for the Kaska Dena. Even today, there are still issues with individual companies. We have found that the economic benefits from mining have frequently left our traditional territory. There are several orphaned mining towns and sites left behind from finished or financially failed mines. Cassiar and Churchill are examples of orphaned mining towns. In addition, many old placer sites can be found within the Hyland River watershed.

Specifically, we have serious concerns with online mineral staking, environmental practices, the reclamation process, and the structure of the Environmental Assessment process.

It is also recognised that mineral exploration and mine development can be positive when companies and the Province engage the Kaska Dena in shared decision making and agreements such as Impact Benefit





Agreements. The Strategic Engagement Agreement sets out the priorities for mineral exploration and mine development reviews that form the basis of the general management direction for this sector (Appendix 1). In the review of applications that come forward through this agreement for the plan area, Kaska Dena can make recommendations for permitting based on best practices developed in the province.

For the plan area, the best practices proposed by the Fair Mining Collaboration (*Fair Mining Practices: A New Mining Code for BC*) are endorsed for application with proposed permits in the plan area. It is recommended proponents and the Province should be aware of the code and proposed practices as applications are prepared and submitted for Kaska Dena review ([www.fairmining.ca/fair-mining-code/](http://www.fairmining.ca/fair-mining-code/)). In addition, recent best management practices for placer mining developed by the Taku River Tlingit First Nation and the Province are a component for general management direction and will be used for setting permit conditions.

For greater certainty, exploration companies are encouraged to contact the Kaska Dena prior to staking claims and submitting applications for work and enter into exploration agreements with the Kaska Dena.

### Kaska Land Stewards and Community Engagement

Traditionally, Kaska lands were occupied by families along maternal lineages who held loose tenures to areas within the traditional territory (this became the initial basis for individual trapline concessions across the southern half of their territory). It was here that family groups met many of their traditional needs. Sacred laws also dictated that family heads had responsibility, on behalf of the nation, for land stewardship within these areas that they occupied.

Engagement approaches supported for this plan include:

- Land stewards and communities should have the opportunity to participate throughout the planning process, and at all scales – regional, subregional, landscape, and development;
- Land stewards and communities should have the opportunity to identify the location of important sites and areas, including important hunting, trapping and gathering areas, cabins, trails, caches, etc.;
- Plans must be committed to avoid or mitigate these interests;
- Land stewards and communities should also have the opportunity to reveal current land use activities, and plans must be committed to avoid disrupting these patterns of land use;
- Land stewards and communities should have the opportunity to be involved in the development of management practices; and
- Land stewards and communities should have the opportunity to participate in the development of access management plans, which should include the location of, the use of, the maintenance of, and the decommissioning of, primary and secondary roads.





## Water Management

### Fish and Aquatic Ecosystems

It is recognised that provincial and federal legislation and policies regarding fish and aquatic ecosystem management and will be the basis for application in the plan area; however, where Kaska management practices provide a higher level of environmental standards, it is expected for proponents and government to apply these practices.

This includes increasing riparian management and reserve zones to maintain the structure and function of riparian habitat, including:

- Maintaining riparian vegetation and microclimate;
- Maintaining stream temperature;
- Providing adequate canopy closure to provide shading and leaf litter input to the stream;
- Allowing for natural channel morphology and ensuring stream bank stability;
- Providing sources of large woody debris in streams;
- Adjacent important habitat attributes such as wildlife trees, snags, coarse woody debris, and nesting/rearing sites;
- Areas of sensitive fish habitat such as streams at lake inlets and outlets and spawning and rearing areas;
- Providing connectivity to adjacent wetland complexes;
- Adjacent high value habitat areas such as moose winter range, marten habitat, avian habitats, and major stream confluences;
- Adjacent Kaska cultural values and traditional sites;
- Unique riparian habitats and creeks; and
- Ephemeral streams.





## Watershed Assessment

A watershed assessment will include but is not limited to the:

- Distribution, abundance, and status of cultural values;
- Distribution, abundance, and status of terrestrial/wildlife environmental values;
- Distribution, and density of roads (including non-status roads), permanent loss of forest cover (mine sites, housing), orphan mine sites, current mining projects (including placer), other industrial activities, and reclaimed sites;
- Percentage of forest cover removal and seral classes;
- Distribution and density of fish-bearing streams, fish critical habitats, wetland complexes, or high quality lakes; and
- Degree of protection or the potential impact on the drainage and flow of source or headwater watersheds as well as the overall hydrology of the watershed(s).

In addition to conducting watershed assessments for resource development projects, the following operational practices will occur with the Kaska to maintain water quality and quantity:

- Where resource development is planned, conduct basic watershed inventories based on Kaska standards;
- Develop monitoring programs for water quality and quantity for development areas. In particular, set thresholds after baseline watershed inventories are completed to maintain stream flow, and set measures to maintain forest cover as ways to mitigate increases in stream flow effects by watershed. Stream flow effects are incremental and increase with reduced forest cover and human disturbance;
- Reduce impacts by roads by managing road density and placement. Lower road densities translate to fewer stream crossings and limits access to some portions of a watershed. Also by placing roads away from rivers, lakes, and wetlands can prevent erosion and sedimentation; and
- Apply appropriate stream crossings to control erosion and point source sediment discharges at stream crossings and locating roads on watershed divides can reduce stream crossings and maintain riparian habitat.

## Renewable Energy

Kaska Dena are working towards the development of an Energy Strategy to identify and capture areas that can provide current and future energy benefits. Once the strategy is finished this plan will be updated to incorporate the information.





## SPECIAL MANAGEMENT DIRECTION

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There are several categories of special management direction in the plan area.

**Special Management Cultural** are plan units where the management focus is on maintaining community, cultural, and traditional uses, sites, and trails. It does not preclude resource development like forestry but additional engagement and planning with the community is required to ensure berry patches, hunting areas, access to cabins, mineral licks or spawning areas are maintained. Plan units with this designation include Liard, and Coal Plan Units.

**Special Management Cultural and Forestry** continues the focus on is on maintaining community, cultural, and traditional uses, sites, and trails but also indicates areas where forestry development could occur. Plan units with this designation include Smith Plan Unit.

**Special Management Tourism** are plan units where the focus on tourism and recreational opportunities both existing and potential. It includes both front and back country tourism activities. In addition, these plan units have high geothermal potential that could be developed as a renewable resource energy source. The Moule and Liard Hot Springs are designated as this type of special management area.

**Large River Corridors** were developed as management zones as large rivers are found throughout the traditional territory, and play an important function in supporting boreal ecosystems and cultural values. Large rivers tend to be at lower elevations, with broad floodplains, riparian habitats, mosaic of wetlands, lakes, or oxbows, and with critical habitats for many of the Kaska culturally important animal and plant species. Large rivers are also important for wildlife movements or migrations. Trails, hunting and fishing places, gathering areas, sacred areas, grave sites, and communities are predominantly found adjacent to large rivers.

The Kaska see large rivers as critical elements to protect biodiversity, cultural values, and be a tool to link Kaska values across the traditional territory. We see Large River Corridors as a management practice to maintain and protect the water, land, and traditional practices.



Large River Corridors have been defined as a river generally greater than 20 m in width with the boundaries of the zone based on the historical flooding events, river morphology, alluvial ecosystems, enclosed or adjacent focal species habitats, and enclosed or adjacent Kaska cultural values. The boundaries will be set as landscape and operational planning occurs over time, a current management approach of a 500 m buffer or a sixth or higher order watershed





is the basis for the zone. It is important when defining a corridor to modify the boundaries to include adjacent areas of ecological or cultural values.

Generally, the level of disturbance will be small with the management intent to maintain over 80% of a corridor in a contiguous forested zone.

Access will be reviewed for each zone, and it is possible some areas may be allowed for crossings. However, the current position is not to have permanent access across large rivers.

Timber harvesting may occur for small commercial volume needs (for example, building logs) in special management areas but with a management objective to avoid focal species habitats and Kaska cultural values. Other management objectives include giving preference for timber harvesting and access that is located closer to the zone outer boundaries, applying small openings for timber harvesting, and maintaining forest interior conditions.

For more information on Large River Corridors, please refer to Appendix 1.

For all these special management zones, it is expected to have higher engagement with proponents, and requirements for higher shared decision making and co-management with the Province.

## PROTECTION MANAGEMENT DIRECTION

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The following areas have been selected for protection designation in the plan area:

- Crooked Lake – Smith Plan Unit;
- Redpott Plan Unit;
- Grayling Plan Unit; and
- Boundary/Sucker Lake – Liard Plan Unit.

The type of protection (e.g., conservancy) has not been recommended but the areas, but the management direction for these areas are:

- Mineral exploration and mine development is not an allowable land use;
- Timber harvesting for commercial purposes is not an allowable land use;
- Development of industrial access is not an allowable land use;
- Oil and gas development is not an allowable land use;
- Tourism and recreation are allowable land uses;
- Trapping, guide outfitting are allowable land uses; and
- Hunting and fishing are allowable land uses.

### Crooked Lake

It is approximately 7,237 hectares of boreal forest and has a high density of Kaska traditional sites and cabins. Community members wanted it protected while still allowing forestry in the plan unit.





### Redpott

It is a major watershed in the plan area and is 42,500 hectares. It is a remote watershed with intact boreal ecosystems and supports ecological connectivity to the Yukon and the Muskwa Kechika Management Area.

### Grayling

It is a major watershed in the plan area and is 166,166 hectares. It is a remote watershed with intact boreal ecosystems and supports ecological connectivity to the Yukon and the Muskwa Kechika Management Area.

### Boundary/Sucker Lake

It is a small protected area north of Lower Post and near the Yukon border. It is approximately 100 hectares and is a culturally important area near the community.







## Appendix 1: Kaska Dena Best Management Practices

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Kaska Dena Management Practices: Kaska Dena Land Use Framework by the Dena Kayeh Institute (2010)

Available from:

<http://www.kaskadenacouncil.com/lands-and-resources/best-management-practices/kaska-dena-management-practices>







## Appendix 2: Shared Decision Matrix

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To be added after community review

