

New Land Use Permit and Water Licence for Pointed Mountain Attachment “A”

February 2021



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Project Background

Paramount Resources Ltd. (Paramount) currently holds Land Use Permit (“LUP”) MV2014X0011 for the Pointed Mountain project area. Paramount had applied for a new Water Licence (WL) from the Mackenzie Valley Land and Water Board (MVLWB). The application (MV2020L1-0001) for the WL was never deemed complete, despite numerous efforts by Paramount and the MVLWB to come to an understanding on the scope of the WL and associated documents. Based on the feedback from the MVLWB and affected parties during the engagement process for MV2020L1-0001 Paramount will be withdrawing the application and moving forward with a new LUP and WL application.

Site Description and History

The Former Pointed Mountain Gas Field (the Site) is located west of the Liard River within the Liard Range of the Franklin Mountains, approximately 30 km northwest of Fort Liard, NWT (Figure 1). The Site is located on Crown land and is an area of interest to the Acho Dene Koe First Nation (ADK). It includes decommissioned and abandoned components including a Plant Site, Airstrip, six gas well sites (A-1, A-2, A-3, A-4, B-1, and B-2), a disposal well, five water supply wells, pipelines and associated rights of way. Roads which provide access to the various locations have not yet been decommissioned and reclaimed. A network of groundwater monitoring wells are in place to provide monitoring results, which have been included in annual reports on the site. Equipment and material are transported to the Site via the barge landing on the north side of the Liard River (Figures 1 through 9).

The Field was developed by Pan American (Amoco), which merged with BP Canada Energy (BP) in 1998; the assets were acquired from BP by Apache in 2010. Work is currently conducted under LUP MV2014X0011, issued by the Mackenzie Valley Land and Water Board (MVLWB) to Apache Canada Limited (ACL) in June of 2014. The permit holder name was changed to Paramount Resources ACL in October of 2017 and then to Paramount Resources Ltd. (“Paramount”) in January of 2018. The permit was set to expire on June 4, 2019. Paramount sought and was granted extension for the MV2014X0011 to June 4, 2021. The information contained herein supports the application for a new LUP and WL.

The Site has been undergoing decommissioning and abandonment activities because the gas field has been determined to be uneconomic (Figures 1 and 2). The initial discovery occurred in 1966 and the field commenced operation in the early 1970s. The plant has been shut down since September 2001. The goal of this project is to decommission remaining components (roads), remediate any impacts to land and water and to reclaim the plant and well sites as per Paramount and regulatory requirements and achieve final site rehabilitation and closure.

Environmental Setting

The area surrounding the Site is largely an undeveloped natural area situated within the Level III Boreal Cordillera Mid-Boreal (MB) Ecoregion and within this ecoregion there is the Level IV Liard Range MB boreal-subalpine (bs) Ecoregion (Ecosystem Classification Group [ECG] 2010). Long sinuous shale and sandstone ridges separated by broad valleys with vigorous mixed-wood, deciduous and conifer forests and locally extensive wetlands define the Liard Range MBbs Ecoregion (ECG 2010) and the Site.

The following section summarizes existing environmental components in the Liard West Project area, potential ongoing project effects, and mitigations and best management practices aimed at reducing or

eliminating project effects. Key environmental components include land (terrain, soil and permafrost), vegetation, ground and surface water, and wildlife.

Terrain, Soil and Permafrost

The Fort Liard Project area coincides with three different Level IV Ecoregions (Liard Plains MB Ecoregion, Liard Upland MB Ecoregion and the Central Mackenzie Plain Boreal Northern Cordilleran), which are ecologically distinct areas based on climate, physiography, vegetation, soil, water and fauna (Ecosystem Classification Group, 1997). The Liard West Project itself, situated immediately east of the Liard River, is located within the Central Mackenzie Plain Boreal Northern Cordilleran. This Project area's local terrain, soils and vegetation are representative of the Cordilleran Ecoregion, while wildlife in the Project area may include those species associated with the three neighbouring Ecoregions. The Liard Plains MB Ecoregion includes the broad, flat alluvial plains of the Liard River. The Liard Upland MB Ecoregion includes the undulating to rolling upland areas south of the Liard Plains MB Ecoregion. The Central Mackenzie Plain Boreal Northern Cordilleran Ecoregion takes in parts of the Liard Plateau physiographic unit. Many summits and hills are flat, but extensive remnants of former erosion surfaces are evident.

Brunisols, Luvisols, and Gleyed Luvisols underlie boreal coniferous, deciduous and mixed-wood forests in valley bottoms. Gleysols and organic soils occur with wet shrublands, sedge fens and black spruce fens. Organic Cryosols occur with peat plateaus scattered throughout the Ecoregion and mineral Cryosols underlie solifluction terrain mainly on northerly slopes. Permafrost is defined as being discontinuous sporadic, and primarily is confined to lower, north-facing slopes and some organic deposits in the northwestern part of the Ecoregion.

Terrain, soils and permafrost in the Project area have experienced relatively low levels of impacts prior to clearing and development undertaken for previously approved project components; these include well leases, pipeline right-of-ways, access roads, sumps, camps and other facilities, as described earlier. Typical sources of potential impacts included contamination resulting from spills and/or poorly managed waste; altered, local terrain features (surface topography, site elevation, drainage patterns) resulting from soil movement; soil erosion resulting from the removal of vegetative ground cover; and disruption of permafrost resulting in slumping and erosion.

To mitigate any ongoing risk of impacts to terrain, soil and permafrost, Paramount will continue to employ specific industry best management practices and applicable mitigation measures outlined in the Fort Liard EPP, previously submitted to the MVLWB. Within the existing EPP are resource or issue-specific plans, some of which pertain specifically to terrain, soils and permafrost, including the Fort Liard Spill Contingency Plan. Additional mitigation and best management practices that will be employed include:

- The GNWT, 1993. Environmental guidelines for the construction, maintenance and closure of winter roads in the Northwest Territories (Prepared by Stanley Associates Engineering Ltd., Yellowknife and Sentar Consultants Ltd., Winnipeg Prepared for The Department of Transportation, Yellowknife. 73 pp. + apps.);
- The Liard Area Emergency Response Plan;
- The Spill Contingency Plan Liard, NWT;
- The Operating Guidelines for Permafrost Areas;
- The Waste Management Plan Celibeta, Fort Liard and Pointed Mountain, NWT

Vegetation

Several different forest cover types exist within this region of the boreal forest. Alluvial flats are

dominated by white spruce and balsam poplar. White birch may also be found throughout this habitat. Jack pine, lodgepole pine and trembling aspen can be found growing on the sandy soils of the uplands. Black spruce and tamarack are dominant species in the lower, wetter sites (Reynolds et al. 1980). Between 25-50% of the Ecoregion is covered by wetlands, which support open stands of stunted black spruce with some white birch and various shrub species (Ecological Stratification Working Group, 1995).

The status of rare plant species occurring in the region was reviewed by MacJannet *et al.* (1995). Those that are rare and occur in the Liard Valley are usually associated with riparian habitat and are typically outside the areas of existing development footprints.

Water and Aquatic Species

In the Liard Plain Ecoregion abutting the western boundary of the Project area, water covers only 5% of the total Ecoregion land base. In the immediate area, the Liard River is the dominant aquatic feature, with numerous ponds, channel marshes, and fens occurring (GNWT 2007). In the Boreal Cordillera, encompassing the Liard West Project area, tributaries of the Liard River have developed narrow braided alluvial deposits in response to steeper streambed slopes and higher-energy waterflows. There are few lakes, while wetlands are common in broad valley bottoms. Fisherman Lake is the largest standing water body in the local Project area.

Both ground and surface water have the potential to be impacted through changes in water quality and water volumes. Primary sources of impacts may include spills and/or releases, soil erosion, and water withdrawal from specified lake sources. Water withdrawals, and the effects and management of withdrawals, will continue to be addressed and managed as part of the new Type B Water License, pending approval. To mitigate the ongoing risk of impacts from erosion, spills, and releases, Paramount will continue to employ specific industry best management practices and applicable mitigation measures based upon activities undertaken.

To further mitigate potential impacts to water and aquatic species, Paramount will employ the mitigation measures as presented in the documents listed below:

Fisheries and Oceans Canada (DFO) Standards and codes of practice
Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association and Canadian Gas Association. 2005. Pipeline Associated Watercourse Crossings (Prepared by TERA Environmental Consultants and Salmo Consulting Inc. Calgary, AB);

Wildlife

Wildlife species that occur in the region encompassing the Liard West Project area are those adapted generally and/or more specifically with the topography, hydrologic systems and vegetation communities occurring in the Boreal Cordilleran Ecoregion, as well as the adjacent Liard Plain and Liard Upland Ecoregions. Characteristic mammal species of the Cordilleran Ecoregion include moose, black bear, beaver, fox, wolf, lynx, marten, mink, snowshoe hare, wolverine, weasel and red squirrel. To a lesser degree species such as woodland caribou occur throughout the region, and mule deer and elk are known to utilize the area to the southwest of Fort Liard along the border of NT, BC and Yukon. Common bird species include bald eagles, hawks, falcons, chickadees, northern shrike, redpolls, ravens, Canada jays, woodpeckers, sandhill cranes, grouse and owls. Common fish species include northern pike, grayling, walleye, burbot, suckers, whitefish, and a number of species of forage fish (i.e. minnows).

Overall, wildlife species' habitats and populations have been exposed to relatively low levels of impacts from approved developments that comprise the existing Liard West Project. Sources of impacts have

included the clearing and construction for well leases, pipeline ROWs, the battery site, access roads, sumps, camps and other facilities. Subsequent facility operations also contribute to ongoing impacts to wildlife in the Project area. The main ways in which industry development can impact wildlife include:

- Loss or alteration of habitat;
- Sensory disturbance;
- Habitat fragmentation; and
- Direct or indirect mortality.

To eliminate and/or mitigate the ongoing risk of impacts to wildlife, Paramount will continue to employ best management practices and applicable mitigation measures. Additional best management practices in place include:

- GNWT. May 2017. Safety in Grizzly and Black Bear Country. Department of Environment and Natural Resources; and the
- Canadian Pipeline Environment Committee. 2004. The pipeline industry and the Migratory Birds Convention Act.

Faunal Species at Risk

Twelve wildlife species with ranges that overlap the Liard West Project area have been listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (ECCC and GNWT, 2010). Eight of these species are legally protected under the federal *Species at Risk Act* (Table 2). An overview on each species' habitat requirements is provided below. As for all other wildlife species, residual impacts to these species will continue through the life of the existing project, but these are considered of low magnitude and not significant. No additional clearing is required in future years for the existing approved project.

Table 1 Species at Risk with ranges that overlap the Project area

Scientific Name	Common Name	NWT Assessment	COSEWIC Status Rank	SARA Status
<i>Asio flammeus</i>	Short-eared owl	Not assessed	Special Concern	Special Concern on Schedule 1
<i>Bison bison athabasca</i>	Wood bison	Threatened	Threatened	Threatened on Schedule 1
<i>Bombus bohemicus</i>	Gypsy Cuckoo Bumble Bee	Data Deficient	Endangered	Endangered on Schedule 1
<i>Bombus occidentalis mckayi</i>	Western Bumble Bee	Data Deficient	Special Concern	Under Consideration
<i>Bombus suckleyi</i>	Suckley's Cuckoo Bumble Bee	Not assessed	Threatened	Under Consideration

Scientific Name	Common Name	NWT Assessment	COSEWIC Status Rank	SARA Status
<i>Bufo boreas</i>	Western toad	Threatened	Special Concern	Special Concern on Schedule 1
<i>Chordeiles minor</i>	Common Nighthawk	Not Applicable	Threatened	Threatened on Schedule 1
<i>Coccinella transversoguttata</i>	Transverse Lady Beetle	Not assessed	Special Concern	Under Consideration
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Not Applicable	Threatened	Threatened on Schedule 1
<i>Euphagus carolinus</i>	Rusty Blackbird	No Status	Special Concern	Special Concern on Schedule 1
<i>Gulo gulo</i>	Wolverine	Not at Risk	Special Concern	Special Concern on Schedule 1
<i>Hirundo rustico</i>	Barn Swallow	Not Applicable	Threatened	Threatened on Schedule 1
<i>Myotis lucifugus</i>	Little Brown Myotis	Special Concern	Endangered	Endangered Species on Schedule 1
<i>Myotis septentrionalis</i>	Northern Myotis	Special Concern	Endangered	Endangered Species on Schedule 1
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Not Applicable	Special Concern	Special Concern on Schedule 1
<i>Podiceps auritus</i>	Horned Grebe	Not Applicable	Special Concern	Special Concern on Schedule 1
<i>Rangifer tarandus caribou</i>	Boreal woodland caribou	Threatened	Threatened	Threatened on Schedule 1
<i>Riparia riparia</i>	Bank Swallow	Not Applicable	Threatened	Threatened on Schedule 1
<i>Ursus arctos</i>	Grizzly bear	Special Concern	Special Concern	Special Concern on Schedule 1
<i>Wilsonia canadensis</i>	Canada Warbler	Not Applicable	Threatened	Threatened on Schedule 1

Asio flammeus (Short-eared Owl)

Northern populations of short-eared owls are believed to be highly migratory: short-eared owls arrive in the NT during April or May and leave by late October (ECCC & GNWT, 2010). Short-eared owls are birds of open-country, favoring habitats such as grasslands, tundra, bogs, and marshes but opportunistically inhabit areas where small mammals are abundant. Crude ground nests consisting of a scratch lined with grasses and down are not used year after year (NWT 2006a). This species is absent from the Project area during winter. Because no new clearing will occur, impacts to this species from the existing, approved project during spring and summer are considered negligible.

Bison bison athabascaae (Wood Bison)

The Fort Liard West Project area overlaps a free ranging herd of wood bison, known as the Nahanni population, which occurs in the Liard Valley between Fort Liard and Nahanni Butte and extending south into British Columbia.

Wood bison use small willow pastures and uplands during summer where they feed on sedges, forbes and willows (NWT 2013). In winter, they move to frozen wet sedge meadows and lakeshores where they feed on sedges. In the fall, they can be found in the forest where they feed on lichens. The main factor limiting recovery of the wood bison in the NWT is disease. This species is resident throughout the Project area; however, disturbance from the existing project operations will be negligible.

Bombus bohemicus

Gypsy Cuckoo Bumble Bee is a medium-sized bumble bee. The upper segment of the hind leg has a convex, densely hairy outer surface and lacks a pollen basket. Females usually have a white-tipped abdomen or at least a white patch on the back of the abdomen. Sides of the thorax are mostly black in both sexes. The Gypsy Cuckoo Bumble Bee can be distinguished from other cuckoo bumble bees found in the NWT by black hairs on the top of the head.

In the past 20 to 30 years there have been large population declines in eastern Canada and the species has disappeared from many of its former sites. However, Gypsy Cuckoo Bumble Bee can still be found in western Canada. Population size and trend in the NWT is unknown (NWT 2020). Due to the nature of the threats to this species, future impacts to this species from the existing, approved project are considered negligible.

Bombus suckleyi

Suckley's Cuckoo Bumble Bee is a medium-sized bumble bee with a black head. The upper segment of the hind leg has a convex, densely hairy outer surface and lacks a pollen basket. Suckley's Cuckoo Bumble Bee looks similar to the Gypsy Cuckoo Bumble Bee (page 94), but its thorax is mostly yellow on the sides. There are prominent triangular ridges on the underside of the last segment of the abdomen.

Populations of their host species have declined in Canada, therefore Suckley's Cuckoo Bumble Bee populations have probably declined also. Population size and trend in the NWT are unknown (NWT 2020). Due to the nature of the threats to this species, future impacts to this species from the existing, approved project are considered negligible.

Bombus occidentalis mckayi (Western Bumble Bee)

Western Bumble Bee is a medium-sized bumble bee. It has a short head and a band of yellow hair across the thorax in front of the base of the wings. Between the wings there is a black band or a large black central spot. The tip of the abdomen is almost always white. The subspecies found in the NWT is the northern long-haired subspecies *mckayi*, which has yellow hair behind the wings and on the third segment of the abdomen.

The northern subspecies *mckayi* of Western Bumble Bee is found in the western mountains of the NWT as well as northern British Columbia, Alaska and Yukon. Recent surveys suggest the northern subspecies is still common. (NWT 2020). Impacts to this species from the existing, approved project are considered negligible.

Bufo boreas (Western Toad)

The Western toad is found in the Dehcho region of the NWT, with known records along the Liard River in the vicinity of the Liard West Project area. In the NT, this species is at the extreme northern limits of its North American distribution. Western Toads are nocturnal and are difficult to locate outside of the spring breeding season when they congregate at breeding ponds (NWT 2013). This species hibernates in the Project area during winter, and disturbance from the existing project operations during the spring and summer months will be negligible.

Chordeiles minor (Common Nighthawk)

Common nighthawks arrive in the NWT in mid-May to early June and leave in mid-August to mid-September (ECCC & GNWT 2010). Common nighthawk breeding habitat includes open habitats where the ground is devoid of vegetation, such as sand dunes, beaches, logged areas, burned-over areas, forest clearings, rocky outcrops, rock barrens, prairies, peatbogs and pastures (Savignac 2007). Eggs are laid directly on the ground (*i.e.* no nest is built). This species is absent from the Project area during winter. Because no new clearing will occur, impacts to this species from the existing, approved project during spring and summer are considered negligible.

Coccinella transversoguttata (Transverse Lady Beetle)

Transverse Lady Beetle is a small, round beetle that can be distinguished from other lady beetles by its colour pattern. Its wing covers are red to orange with black markings: a 'transverse' black band across the front and four elongated black spots toward the back. The head is black with two separate pale spots. The plate behind the head is also black with pale markings on either side.

The Transverse Lady Beetle is still common in the NWT, Yukon and British Columbia where there are fewer non-native lady beetle species. Impacts to this species from the existing, approved project are considered negligible.

Contopus cooperi (Olive-sided Flycatcher)

Olive-sided flycatchers arrive in the NT during late May and early June and leave by late July to early August (ECCC & GNWT 2010). In the boreal zone, the olive-sided flycatcher is most common in open spruce and tamarack muskeg, bogs, and swamps. It is strongly associated with openings and edges in coniferous forest habitats. Thus, it responds favorably to logging and fires if sufficient snags and residual trees remain to provide foraging and singing perches (Boreal Songbird Initiative 2007). This species is absent from the Project area during winter. Because no new clearing will occur, impacts to

this species from the existing, approved project during spring and summer are considered negligible.

Euphagus carolinus (Rusty Blackbird)

Preferred rusty blackbird breeding habitat is characterized by forest wetlands, such as slow-moving streams, peat bogs, sedge meadows, marshes, swamps, beaver ponds and pasture edges. The rusty blackbird breeds throughout a range of 7.6 million km², which corresponds closely to the boreal forest and includes most Canadian provinces and territories, the state of Alaska, several Great Lakes states and most New England states (ECCC 2006). This species is absent from the Project area during winter. Because no new clearing will occur, impacts to this species from the existing, approved project during spring and summer are considered negligible.

Gulo gulo (Wolverine)

The wolverine inhabits a diversity of ecozones, including the Boreal Forest and Subalpine regions. Home ranges typically cover hundreds of square kilometers and encompass a variety of habitat types (Petersen 1997; NWT 2006b). Wolverines live in a variety of habitats as long as there is enough game and carrion to supply food (NWT 2013). A wolverine's home range is large, generally covering several hundred square kilometers. Given this species' vast home range requirements, impacts to this species' populations will continue to be non-significant for the existing project.

Hirundo rustico (Barn Swallow)

The barn swallow utilizes open areas to forage and suitable sites for nesting, including buildings, bridges, or other man-made structures. They generally avoid unbroken forest and very dry areas. Barn swallows were previously recorded during wildlife surveys of the Project area. This species is absent from the Project area during winter. Because no new clearing will occur, impacts to this species from the existing, approved project during spring and summer are considered negligible.

Myotis lucifugus (Little Brown Myotis)

The Little Brown Myotis (*Myotis lucifugus*) (also called Little Brown Bat) is a common, insect-eating bat found throughout much of Canada and the United States. Approximately 50% of its global range is in Canada, and it occurs in every province and territory. The Little Brown Myotis is believed to be the most common bat in Canada. Due to its being relatively common and widespread, limited effort has been made to determine overall population size. Information on overwintering sites (hibernacula) are generally well known in central and eastern Canada, but less so in western Canada.

Small-bodied bat species that winter in caves or mines are dying from White-nose Syndrome (WNS), caused by a fungus, *Geomyces destructans* (Gd), that is hypothesized to have originated in Europe (Pikula et al. 2012, Turner et al. 2011), and was first detected in North America in 2006 (Lorch et al. 2011) [COSEWIC February 2012]. Future impacts to this species from the existing, approved project are considered negligible.

Myotis septentrionalis (Northern Brown Myotis)

The Northern Myotis is very similar in colour and size to the Little Brown Myotis (page 26), but the ears are longer (extend beyond the nose when pressed forward) and the tragus (fleshy projection which covers the entrance of the ear) is long, slender and pointed. Sometimes the Northern Myotis and Little Brown Myotis use the same roosts or hibernacula and it is difficult to tell the species apart. (NWT 2020).

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Phalaropus lobatus (Red-necked Phalarope)

The Red-necked Phalarope is a small shorebird with a thin, needle-like bill. Both sexes have a dark head with a white spot above the eye, white throat and a dark back with bold, buff-coloured streaking. The bright, chestnut-red stripe that extends down the sides of the neck from behind the ear is distinctive. Females have brighter and bolder colours overall and are slightly larger than males (NWT 2020). Potential threats include direct disturbance at nest sites and habitat degradation due to industrial development. Because no new clearing will occur, impacts to this species from the existing, approved project during spring and summer are considered negligible.

Podiceps auritus (Horned Grebe)

During the breeding season, horned grebes are found primarily on boreal freshwater lakes and marshes. This species' spatial focus on ponds, marshes and lake habitats will largely remove them from proximity to project facilities, thus reducing most sources of potential disturbance from the existing project. This species is absent from the Project area during winter. Future impacts to this species from the existing, approved project are considered negligible.

Rangifer tarandus caribou (Woodland Caribou – boreal population)

The Fort Liard West Project area occurs along the boundary between the range of the Northern Mountain and Boreal Caribou herds. The Northern Mountain population is found on the east slopes of the Mackenzie Mountains to the NWT-Yukon Border, and directly overlaps the Boreal Cordilleran Ecoregion within which the Project area occurs. The Boreal population is primarily found in the NWT's boreal forest, and occurs from the Liard River east to the Canadian Shield (NWT 2013). In general, wooded bog is believed to be important caribou habitat (Bradshaw et al. 1995; Stuart-Smith et al. 1997; Brown and Hobson 1998; Anderson et al. 2000; Rettie and Messier 2000 cited in Salmo et al. 2004). Future impacts to this species from the existing, approved project are predicted to be negligible. To ensure this positive outcome continues, Paramount will continue to employ applicable mitigation measures, including:

- Instructing vehicle and equipment operators to maintain appropriate speeds and to be aware of potential encounters with wildlife; and
- Not feeding or harassing wildlife, should an encounter occur, and allowing animals to disperse at their own rates.

Riparia riparia (Bank Swallow)

The Bank Swallow is a small, slender songbird that feeds on flying insects. It can be recognized by its small head, thin wings and long, slender, notched tail. It has pale brown upper-parts and rump, white under-parts and throat, and a well-defined dark band across its chest. Males and females have similar plumage (NWT 2020). Threats include Habitat loss and degradation from human activities. Because no new clearing will occur, impacts to this species from the existing, approved project during spring and summer are considered negligible. Project activities are not expected to cause impacts to this species given their potential threats.

Ursus arctos horribilis (Grizzly Bear)

Grizzly Bears are habitat generalists, and can be found from sea level to high-elevation alpine environments (Government of Canada, 2009). Grizzly bears in the NT primarily occur in open alpine or tundra habitats, but they can also be found in forested areas (NT 2006d). Suitable grizzly habitat must provide an adequate food supply, appropriate denning sites, and isolation from human disturbance (Government of Canada, 2009).

The development of roads, railroads, power lines and other linear features within grizzly bear habitat is a particular threat. Roads themselves pose little harm, but their use by humans, and the avoidance of a buffer zone around the roads, makes large amounts of habitat much less available to the bears. In addition, roads provide access for humans with firearms who, legally or illegally, kill bears that would otherwise be less vulnerable (Government of Canada, 2009). Future impacts to this species from the existing, approved project are predicted to be negligible. To minimize pressure on grizzly bears as a result of hunting, project personnel are forbidden to hunt.

Wilsonia canadensis (Canada Warbler)

The species is found in a variety of forest types, but is most common in moist, mixedwood forest with a well-developed shrub layer. It is also often found in shrub marshes, and black spruce and tamarack bogs (GC 2011). This species is absent from the Project area during winter. Because no new clearing will occur, impacts to this species from the existing, approved project during spring and summer are considered negligible.

Heritage Resources

New ground disturbances are not expected over the term of the applied for Licence and Permit. Nonetheless, in the unlikely event that an archaeological specimen is encountered, activities will be suspended and the Prince of Wales Northern Heritage Centre, the responsible authority, will be notified along with the MVLWB and the Land Use Inspector.

Socio-economics

Given the current status of the Pointed Mountain Project, socio-economic benefits are seasonal in nature. Periodic monitoring is the only sustained activity associated with the Pointed Mountain Project in the current state, most of which is handled by Paramount employees and contractors.

Previously, Paramount had been providing business and employment opportunities for Acho Dene Koe and Fort Liard community members. A list of the northern and/or alliance companies that provided related services to the Projects in the past is provided below.

- Acho Horizon North Camp & Services LP
- Acho Real Estate Limited Partnership
- ADK Formula
- ADK Pipeline
- Beaver Enterprises Limited Partnership
- Cooper Barging Services Ltd.
- Great Slave Helicopters Ltd.
- Hope's Ventures

- Liard Fuel Centre
- Liard Valley General Store
- North Cariboo Air
- Northwestel Inc.
- RD Trucking

Project Activities

1. Environmental investigations, monitoring, sampling and modelling. Activities within the project area will include annual monitoring, a tracer test, soil testing, sampling (including the use of an environmental drill), water sampling. Current site information along with the new information gathered will be used to support environmental monitoring work and the development of Site-Specific Remediation Guidelines.
2. Vegetation management. This could include the use of handpicking, mowing and /or the use of herbicides (subject to screening and approval processes).
3. Waste disposal and waste transport. This could include incineration (camp waste only), surge pond water treatment/removal/disposal, soil removal and the removal of other wastes at or generated in the project area over the next five years. This could include the use of heavy equipment
4. Camp activities. A camp maybe required to support the activities of the site. It would be a maximum of 50 persons.
5. Fuel storage to support activities and the camp (if utilized). Fuel on site is expected to be diesel, propane and gasoline.

Project Equipment

Equipment	Proposed Use
Vacuum Truck	Water Removal
Water Truck	Water Hauling
Truck	Transporting personnel
Side by side ATV	Transporting personnel
Helicopter	Transporting personnel and equipment mobilization
Grader	Access maintenance
Hydrovac	Soil Work
Dump Truck	Soil Removal
ATV	Transporting personal
Dozer	Soil Work
Ambulance Vehicle	Health and Safety
Camp	Personnel lodging
Portable Generator	Power
Environmental Drill Rig	Environmental Assessment
Fuel Truck	Fueling
Track Hoe	Environmental Assessment and soil work
Mower	Vegetation Management

Project Timeline

A projected timeline including activities can be found in the table below:

Action	General Timeframe
<ul style="list-style-type: none"> • Calibrate and complete initial version of surge pond fate and transport model • Select groundwater and surface water sampling locations essential for MNA program/model refinement and develop appropriate analytical schedule • Conduct annual monitoring program 	Year 1
<ul style="list-style-type: none"> • Initiate Tracer test in the surge pond area to confirm aquifer characteristics relevant to conservative contaminant fate and transport • Conduct annual monitoring program 	Year 2
<ul style="list-style-type: none"> • Continue with annual monitoring program • Complete Tracer test (assuming it has had sufficient time) • Continue to refine modeling of remedial options • Collection of additional metals background data 	Year 3
<ul style="list-style-type: none"> • Continue with annual monitoring program • Investigate remaining APECs • Finalize new SSRGS • Engage with regulator to present results of modeling and risk assessment to date. 	Year 4
<ul style="list-style-type: none"> • Planning for remedial activities. 	Year 5

MNA - monitored natural attenuation

SSRGS – site specific remediation guidelines

APECs – Areas of Potential Environmental Concern

Fuel and Fuel Storage

Type of Fuel	Number of containers	Capacity of containers (e.g., litres, pounds)	Type of container (barrel, tank, tidy-tank)	Proposed storage or staging location(s)
Diesel (temporary):	4	400-barrel tank	Tank	Camp and Plant Site
Gasoline (temporary):	1	400-barrel tank	Tank	Camp and Plant Site
Propane (temporary):	5	100 pounds or 1000 gallons	Bottles/Tank	Camp and Plant Site