

CREATING AND DELIVERING BETTER SOLUTIONS

# TAMERLANE PINE POINT PROJECT

## Wildlife Baseline Studies

November, 2005



Tamerlane Ventures Inc.

WILDLIFE BASELINE STUDIES  
PINE POINT PROJECT  
TAMERLANE

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## EXECUTIVE SUMMARY

Tamerlane Ventures Inc. (Tamerlane) retained EBA Engineering Consultants Ltd. (EBA) in September 2005 to complete environmental baseline surveys at the Pine Point Project Property, Northwest Territories. A preliminary wildlife baseline survey was conducted during the period September 19 to 25, 2005, concurrently with an ecological land classification study. The results of the latter study were related to the wildlife survey observations.

The objective of the initial fieldwork was to document biological diversity over a large area employing plot assessments, which represent the best efficiencies for gathering the greatest breadth of species information over a large area within a limited timeframe. Plot assessments were located in each of the community types initially identified by an ecological land classification specialist. Plot assessments and opportunistic observations were completed in representative habitat types, and were distributed in approximate proportion to the amount of the habitat type in the study area. In addition, information on species presence (actual observation, tracks, burrows, browsing sign, and droppings, or scat) was collected opportunistically while moving about the study area, either by all-terrain vehicles (quads), truck, or on foot. UTM coordinates were recorded for each wildlife observation.

Eleven habitat types (ecosites) were classified within the study area, eight of these were naturally vegetated, one was classified as water, one was anthropogenic and one was cloud. Within these different habitat types, a total of 80 bird observations were recorded, comprising 32 different species, including the Whooping Crane and Peregrine Falcon (both which have special status designations). A single Whooping Crane was recorded in a Treed Fen habitat, and the Peregrine Falcon was noted in a Shrubby Fen. In addition, a total of 104 mammal observations, comprising 13 different mammal species were documented as occurring in the study area, including woodland caribou and wood bison (both which have special status designations). Woodland caribou sign was documented in Labrador-tea subhygric and Treed Fens, and wood bison sign was recorded in Shrubby Fen and Treed Fen. Other species of special designation that may occur in the study area include northern leopard frog, Yellow Rail, Short-eared Owl, and wolverine.

Habitat types that exhibited the highest species diversity include Treed Fen and Labrador-tea Subhygric habitat units. These habitat types cover 24% and 15% of the study area, respectively.

Species that appear to occupy multiple habitat types within the study area include moose, black bear, and woodpecker species. In contrast, Whooping Crane, Peregrine Falcon, Bald Eagle, beaver, lynx, woodland caribou, and wood bison appear to be restricted to a few specific habitat types within the study area.

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## 1.0 INTRODUCTION

Tamerlane Ventures Inc. (Tamerlane) retained EBA Engineering Consultants Ltd. (EBA) in September 2005 to complete environmental baseline surveys at the Pine Point Project Property, Northwest Territories. The environmental baseline surveys, conducted during the period September 19 to 25, 2005, were designed to document existing biophysical conditions (including wildlife utilization and diversity, ecosystem classification, fish habitat characterization, and surface water quality) within the study area (Figure 1).

This report serves to describe wildlife diversity and observed habitat utilization within the 36,153 ha study area. The wildlife diversity and habitat utilization survey involved the collection of direct and indirect observations of wildlife and wildlife sign. The wildlife observations obtained were related to the results of an ecological land classification survey that was carried out concurrently. The results of the ecosystem classification study, as well as an aquatic resources study, which examined surface water quality conditions and fish habitat characteristics of selected study area streams, are reported in two separate documents (EBA 2005 a; EBA 2005b).

## 2.0 METHODS

### 2.1 HABITAT ASSESSMENT

Prior to undertaking the field program, recent Quickbird satellite imagery obtained for the Pine Point project area (acquired between August 25, 2005 and September 02, 2005) was carefully reviewed and key habitat features noted. The imagery illustrated different reflectance classes, representing different types of plant communities at a large scale. The information illustrated by the imagery formed a basis for the wildlife field program, including the habitat work and plot assessments conducted by the EBA wildlife team.

### 2.2 WILDLIFE SURVEY

The plot assessments were an extension of the ecological land classification and were collected concurrently. The presence of wildlife (based on actual observation, or inferred from tracks, burrows, browse and droppings or scat) was recorded during vegetation surveys. Additional information was also noted in relation to the associated habitat and how the specific animal was surmised to have been interacting with the habitat such as browsing or digging.

Wildlife and wildlife sign were also documented as encountered during the field survey, *i.e.* outside the formal habitat assessments. This survey method represents the best efficiencies for gathering the greatest breadth of species information, over a large area within a limited timeframe. Photographs were taken of key observations and referenced to UTM coordinates.

## 3.0 RESULTS

The main objective of this survey was to document wildlife species presence in relation to the various habitat types. Survey intensity was limited by time and season.

The reconnaissance survey included 38 habitat plot assessments where wildlife sign was recorded. In addition, 95 wildlife observations (51% of the total wildlife sign recorded) were documented on an opportunistic basis outside regular sample plots. These wildlife observations provide a greater understanding of the presence and distribution of wildlife species occurring in the Pine Point area.

Just over 50 % of the study area is classified as lowland and 47% is classified as upland. A total of 187 wildlife observations were recorded during the September field survey. Approximately 43% of the observations consisted of birds (identified through song, nests, or other sign), 56% of the observations consisted of mammals (primarily through tracks, scat/pellets, and evidence of browsing), and the remaining observations (1 %) consisted of fish sightings. A total of 46 different vertebrate species were observed: 32 species of birds, 13 species of mammal, and at least 1 unidentified fish species. The terrestrial biologist and botanist crew observed fish while conducting the wildlife and ecological land classification (ELC) program; an accurate identification of the fish species observed was not obtained. Fish and fish habitats within the study area are discussed in the Water Quality and Stream Assessment report (EBA 2005b).

### 3.1 LOCAL HABITAT

The wildlife survey was completed concurrently with the ELC program. Information presented in this section has been drawn from the Vegetation/Ecosystem Baseline Studies Report (EBA 2005a). For detailed information on landscape units, stand composition, canopy types, and ecosites refer to the referenced ELC report.

The ecosystem units in the Pine Point study area were defined in broad terms of zone, landform, canopy type, and stand composition through use of Quickbird satellite imagery and field collected data. These ecosystem components were then further divided into ecosites using soils and vegetation data collected during field surveys. In total, eight naturally vegetated ecosites, one water, one anthropogenic (disturbed), and one classified as cloud were identified and mapped in 241 polygons within the study area (Figure 1). The field component for ecosite classification included a total of 19 full plots that were sampled in greater detail, and 19 visual plots (total of 38 sample plots in 241 polygons). The 38 plots sampled within 241 polygons (not including water), resulted in a 16 % sampling intensity for the ecological land classification project, which meets the requirements for a TEM Level 4 survey.

Just over 50 % of the study area is classified as lowland and 47% is classified as upland. Most of the area is forested, and shrub units tended to be present in low-lying areas that had some evidence of previous fire. These same shrub units made up the majority of the mixed wood units. Broadleaf and graminoid units are not common. The most common ecosite is the upland, Labrador tea – mesic ecosite (28%), with the shrubby fens and the treed fens

second and third, respectively (25% and 24%). The bearberry and willow / horsetail ecosites have restricted distribution and each represent less than 1% of the study area.

### 3.1.1 Upland Units

Upland ecosystems were dominated by jack pine, aspen and paper birch in seral communities, and black and white spruce in climax communities. Immediately after fire, these communities were dominated by fast growing deciduous seral species, such as paper birch and alder (*Alnus* species), and the slower growing jack pine became the dominant species a few years after fire. In the study area, there were numerous successional stages observed in areas because of fire. Upland units cover approximately 47 % of the study area.

#### Bearberry - Pj

This ecosite was not sampled during the field program and the description is based on Beckingham and Archibald (1996). This ecosite is typical of dry sites, with rapidly drained soils on coarse textured glaciofluvial parent material. It has a poor to very poor nutrient regime. Jack pine is the common tree species while bearberry (*Arctostaphylos uva ursi*) is the common shrub. Cushion mosses (*Dicranum* spp.) and haircap mosses (*Polytrichum* spp.) are common, as well as numerous reindeer lichens (*Cladina* species). This ecosite covers less than one % of the study area.

#### Canada buffalo-berry – green alder

This is the most productive forest ecosite of the study area and is generally found on lower slopes or toe positions in the landscape and along the Buffalo River. This ecosystem has a moderate nutrient regime with a submesic to subhygric moisture regime. White spruce is the climatic climax species, but seral communities will contain varying amounts pine, aspen and paper birch. Canada buffalo berry (*Shepherdia canadensis*), common juniper (*Juniperus communis*), saskatoon (*Amelanchier alnifolia*), and rose are common shrubs. Bearberry (*Arctostaphylos uva-ursi*), false toadflax (*Geocaulum lividum*), twinflower (*Linnaea borealis*) and northern bedstraw (*Galium boreale*) are common in the herb layer. This ecosite accounts for less than two % of the study area.

#### Labrador tea - mesic

This ecosite is the most commonly occurring ecosystem and covers approximately 28 % of the study area. It is found on upland sites that have shallow organic deposits. It has a very poor to medium nutrient regime with a mesic to submesic moisture regime. Black spruce is common in mature stands and jack pine dominates mature seral communities. Common juniper, rose (*Rosa acicularis*) and bog cranberry (*Vaccinium vitis-idaea*) are common shrubs.

#### Labrador tea - subhygric

This ecosite covers 15 % of the study area and occurs in transition zones between treed fens and upland Labrador tea – mesic sites. Soils tend to be moist, leading to a well-developed moss layer. The nutrient regime in this ecosite typically ranges from poor to medium. Black spruce and jack pine are common tree species, while Labrador tea (*Ledum*



*groenlandicum*), black spruce, and creeping juniper (*Juniperus horizontalis*) are found in the shrub layer. Stair-step moss (*Hylocomium splendens*) and red-stemmed feather moss (*Pleurozium schreberi*) are common mosses. Reindeer lichens are a common ground cover.

### 3.1.2 Riparian Units

One riparian ecosite was identified in the study area. This ecosite occurs adjacent to streams and rivers flowing through the study area and riparian succession results in a broad range of structural stages from young seral to mature climatic climax.

#### Willow / horsetail

The willow / horsetail ecosite covers less than one % of the study area. It has poor drainage and frequently floods. It has a rich nutrient regime. Common species are willow (*Salix* species), river alder (*Alnus incana*), balsam poplar and red-osier dogwood (*Cornus stolonifera*). The herb layer is dominated by horsetail (*Equisetum* species), reed grass (*Calamagrostis canadensis*) and sedges (*Carex* species). The riparian ecosystem is likely more common than the mapping indicates. Within fens, there is usually a drainage network that directs water into channels that drains the area. In air photo or satellite interpretation, it is often difficult to identify these channels if they are narrow unless the vegetation along the channel varies significantly from the surrounding vegetation.

### 3.1.3 Lowland Units

Wetland ecosystems include graminoid, shrubby, and treed fens. These fens are generally restricted to areas of poorly drained organic soils and the soils tend to be rich in nutrients. Stand composition varies due to the fire regime; early successional stands are dominated by an open canopy of bog birch, while mature stands have a closed canopy of black spruce and larch. Wetland ecosystems represent less than 50 % of the study area.

#### Treed fen

This ecosite occurs in areas with some water movement. It has a rich to very rich nutrient regime and a subhydic to hydric moisture regime. Black spruce and tamarack form an open canopy with willow, bog birch, sweet gale (*Myrica gale*) and shrubby cinquefoil (*Pentaphylloides floribunda*) common in the shrub layer. The herb layer is diverse, with sedges, three leaved false Solomon's seal (*Maianthemum trifolium*), small bedstraw (*Galium tridifum*) and bog cranberry being most common. This ecosite is the second most common wetland type behind shrubby fen, covering approximately 24 % of the study area.

#### Shrubby fen

Shrubby fens are found throughout the study area and are commonly located near open water within larger fen complexes or drainage areas where there is some water movement. They have a medium to rich nutrient regime and a subhydic to hydric moisture regime. Shrubby fens are often mixed wood, with a canopy of bog birch or willow and an understory of larch or black spruce. This is a result of fires in the area. Sweet gale and sedges are common. This ecosite accounts for approximately 25 % of the study area.

### Graminoid fen

Graminoid fens account for 1 % of the study area. They are poorly drained with a hydric moisture regime and a medium nutrient regime. Sedges, reed grass and bulrushes (*Scirpus* species) are common. Graminoid fens are often associated with shallow open water and shrubby fens. Within the study area, there were a number of polygons that contained both graminoid and shrubby fen ecosites. Generally, the shrubby fen was dominant, so it is likely that the graminoid fen is under-represented in the study area.

### 3.1.4 Other Units

Previously mined areas are identified as disturbed, non-vegetated units. Other anthropogenic areas, such as roads, gravel pits, were not identified as part of this baseline report. Previously mined areas account for approximately 2 % of the study area. All open water is classified as water. It was not possible to distinguish shallow open water from lakes. Water accounts for approximately one % of the study area. A portion of the study area (1 %) was covered by cloud during the time the satellite imagery was acquired and could not be mapped.

## 3.2 SPECIES ACCOUNTS

### 3.2.1 Birds

A list was developed for bird species known to occur or those that potentially occur in the study area using Sibley (2003) and government reports. All bird species occurring within a 200 km radius of the study area were included. A total of 210 bird species were identified as confirmed or potentially occurring in the study area, either as breeders or during migration (Appendix A).

A total of 80 different bird observations were recorded during this study, comprising 32 different species (Table 1). These observations included actual sightings, bird calls, or sign. Ten of the most frequently seen bird species observed include the following: American Robin, Tundra Swans, White-winged Scoter, Gray Jay, Common Raven, Spruce Grouse, and Bohemian Waxwings. Bird species observed were classified as migrant, breeding, transient, resident, or accidental in Table 1. A migrant occurs regularly as it passes through during spring or fall migration. A breeder is a species that breeds in the area and is usually present during the spring, summer and fall. A transient is a species that can occur irregularly at any time of the year. A resident is a species that occurs in the area throughout the year.

The most notable bird observations during the September survey included visual recordings of a Whooping Crane and Peregrine Falcons.

#### Whooping Crane

A single Whooping Crane, a species designated as Endangered under the Species at Risk Act (SARA), was observed at a recently flooded beaver pond within the study area. A breeding population of Whooping Cranes is known to exist at Wood Buffalo National Park

and transient non-breeding individuals are known to inhabit marshes, bogs, and shallow lakes between Wood Buffalo National Park and the Mackenzie Bison Sanctuary. The Mackenzie Bison Sanctuary is considered critical habitat for the non-breeding segment of the Whooping Crane population (Decker pers. comm.; Anonymous 1972).

Wild Whooping Cranes are believed to live up to 20 years of age, and reach sexual maturity at approximately age five. They generally lay two eggs a year, but typically only one chick survives to fledge.

The Wood Buffalo National Park population migrates to wintering grounds in the Aransas National Wildlife Reserve in Texas beginning in mid-September and stop en-route throughout the prairies to feed on grain around sloughs and wetlands (SARA 2005). Non-breeding individuals may not occupy traditional nesting grounds until breeding age. Non-breeding Whooping Cranes are known to occur north and west of Wood Buffalo National Park, in particular the Wood Bison Sanctuary.

Refer to Section 3.3.1 for further details on the Whooping Crane population status and limiting factors.

#### Peregrine Falcon

Two Peregrine Falcon sightings were recorded at the Pine Point Mine Project Study Area in September. SARA considers Peregrine Falcons a Threatened species. The observations of the Peregrine Falcon occurred along Highway 5 near the eastern boundary of Hay River Reserve, and along a dirt road where the falcon was feeding on a recently killed snow goose (approximately 13 km southwest of the former Pine Point town site).

It is expected the Peregrine(s) observed within the study area were either migrants or non-breeders from a known population in the northeast corner of Wood Buffalo National Park (MacMillagan pers. Comm.). To date, no Peregrine Falcon territories have been documented in the local area.

In the NWT, peregrines live an average of five years and begin breeding in their second year. Between May and early June two to four eggs are laid in a scrap usually on cliff ledges near water. Peregrines have three main habitat requirements. They need proper nesting sites, a nesting range (actively guarded range approximately 1 km from nest), and a home range that can extend up to 27 km from the nest for hunting (not defended) (ENR 2005). Peregrines mainly hunt other birds in the air; so open habitats, such as tundra, grasslands, prairies, and waterways are important.

Refer to Section 3.3.2 for further details on the status and limiting factors affecting Peregrine Falcon populations.

### 3.2.2 Mammals

A preliminary list of all mammal species known or suspected to occur in the study area (*i.e.* within 200 km of the study area) was generated using Banfield (1977) Mammals of Canada. A total of 40 mammal species are known or suspected to occur within the study area

(Appendix B). During the field study, a total of 104 mammal observations, including actual sightings or sign, were recorded. Of the 104 observations, evidence of 13 different mammal species were documented as occurring in the study area during the field program (Table 2).

The most notable mammal observations during the September survey included recordings of woodland caribou and wood bison sign (hair, pellets, tracks, and feeding areas).

### Woodland Caribou

Woodland caribou sign (hair, tracks/trails, and pellets) was observed on four separate occasions within the study area during the September survey. Caribou observations were recorded within poor treed fens and mixed woods.

Boreal caribou prefer mature or old growth coniferous forests (greater than 100 years old) associated with bogs, lakes and rivers that have abundant ground and tree lichens (Veitch 2001; ENR 2005) states that these caribou select old coniferous forests greater than 100 years old. In winter, woodland caribou tend to favour uplands, bogs and south facing slopes where the snow is not too deep. Their winter diet consists of up to 80 % ground and tree lichens. In summer, they prefer areas such as forest edges, marshes and meadows that provide the fresh green growth of flowering plants and grasses. Calving grounds are vital to the well being of all caribou populations. Caribou are known to calve in small prairies within the Mackenzie Bison Sanctuary, and it is probable that caribou inhabiting the boreal forest throughout the southwestern NWT use similar areas for calving (Gray and Panegyuk 1989).

### Wood Bison

Wood bison scat, tracks, and feeding areas were recorded at two locations within the study area: along Twin Creek at the edge of a fen, and along a dirt road near a waste rock pile (approximately 12.5 km west of the former Pine Point town site). The study area is located within a Bison Control Area, where all bison are removed to ensure diseased animals from Wood Buffalo National Park do not migrate and infect other disease-free herds, such as at the Mackenzie Bison Sanctuary.

Wood bison use different habitats depending on the season. Wood bison are grazers, and rely heavily on grasses and sedges that grow in meadow openings, particularly in the winter. In summer, bison can be found in small willow pastures and uplands where they feed on sedges, forbes, and willow leaves and twigs. In the fall, they can be found in forests where they feed on lichens, and in winter, bison move to graminoid fens and lakeshores where they feed on sedges.

Wood bison are normally clustered in herds in response to habitat variations, seasonal weather patterns, and environmental changes. Wood bison favour valley bottoms, recent burns, and deciduous zones (Parks Canada 1984).

### 3.3 SPECIES OF SPECIAL DESIGNATIONS

The Species at Risk Act (SARA) is federal legislation intended to protect species at risk and their habitats in Canada. The Act passed parliament in 2002 and came into full force on June 1, 2004. Through research reviews and considering community and Aboriginal traditional knowledge, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) identifies and assesses the biological status of a species and recommends a species status to SARA's Government in Council so the council can decide whether a species requires protection under the Act.

Once a species is listed under the Act, SARA prohibits the killing, harming, harassing, or capture of an individual listed as extirpated, endangered, or threatened, as well as prohibits the destruction or damage of the residence<sup>1</sup> of a listed species.

Eight species occurring or potentially occurring in the study area have been ascribed, or are currently being assessed for special conservation status by SARA, including the Whooping Crane, Peregrine Falcon, woodland caribou, wood bison, Short-eared Owl, northern leopard frog, Yellow Rail, and wolverine. All of these species are currently protected under SARA, except for the wolverine that has been assessed under COSEWIC and awaiting review from SARA. Brief species accounts are provided as follows in order of conservation status.

#### 3.3.1 Whooping Crane

Whooping Cranes are recognized as an Endangered species under SARA. This is a species that is in imminent danger of extirpation or extinction. Under the Northwest Territories government, Whooping Cranes are considered At Risk. Whooping Cranes within the study area are protected under SARA, Northwest Territories Wildlife Act, Migratory Birds Convention Act, and the Canada Wildlife Act.

The Whooping Crane population at Wood Buffalo National Park is estimated at 141 individuals, and is restricted to a small breeding area where a single event could affect most or all individuals. In 1998-99, over 70% of the world's population of Whooping Cranes belonged to the Wood Buffalo National Park population (SARA 2005). The population trend is slowly increasing from near extinction.

Since Whooping Cranes have a slow reproductive potential (delayed sexual maturity until five years old and small clutch size) and restricted to small breeding and wintering areas, populations could be impacted by a single natural and/or human-caused event (Fournier 1999; SARA 2005).

Habitat quality and availability controls the population's numbers. The main factor limiting the Wood Buffalo National Park Whooping Crane population is the size and location of its

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<sup>1</sup> Residence is defined under SARA as "a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating" [s.2(1)].

wintering grounds in Texas (SARA 2004). Since the wintering ground in Texas is surrounded by human development, crane populations are unable to expand. In addition, the wintering grounds are subject to heavy boat traffic from petrochemical transports that attribute to habitat degradation, contamination, and have the potential for accidental spills (SARA 2004).

### 3.3.2 Peregrine Falcon

SARA ascribes a Threatened status to Peregrine Falcon (*anatum*) populations in the NWT. By definition this is a species likely to become endangered if limiting factors are not reversed. Under the NWT government, Peregrine Falcons are considered At Risk.

There are over 220 documented breeding pairs of Peregrine Falcons in northern Canada (NWT, Yukon, Nunavut, northern Quebec) (Johnstone 1997). In the past, ENR conducted periodic Peregrine surveys along the Mackenzie Valley and has documented 83 nests on a linear 600 km transect along the Mackenzie River (Shank 1996). There has been an increasing trend in Peregrine Falcon numbers since 1980 (Shank 1996; Johnstone 1997).

Historically, the use of agricultural pesticides, particularly organochlorides, was a major threat to Peregrine Falcon populations. Currently, the small population size, human interference at nest sites, habitat alteration and habitat loss threaten populations (SARA 2004). Present threats are particularly limited in the NWT due to the remoteness of the country (Shank 1996; Johnstone 1997).

### 3.3.3 Boreal Woodland Caribou

Woodland caribou (Boreal population) are listed as Threatened under SARA. By definition this is a species likely to become endangered if limiting factors are not reversed. In the NWT, woodland caribou are considered Sensitive.

In Canada, woodland caribou populations have been decreasing throughout their range (SARA 2004b). The NWT woodland caribou population is estimated at 13,000 individuals (Kelsall 1984).

Caribou have a special significance to indigenous people of Canada for spiritual, cultural, and subsistence reasons. Woodland caribou are sensitive to human activities, habitat alteration and destruction, predator and human hunting pressures, and climate change (SARA 2004b).

### 3.3.4 Wood Bison

Wood bison are recognized as a Threatened species under SARA, and At Risk under the Territorial government. By definition this is a species likely to become endangered if limiting factors are not reversed.

The number of wood bison in the NWT is estimated between 2,500 to 2,850 individuals that are divided up at four locations. Two wood bison herds (Wood Buffalo National Park

and Slave River Lowlands) contain diseased individuals, while the other two herds (Liard River and Mackenzie Bison Sanctuary) are believed to be disease free.

The population trend for wood bison in the NWT is increasing as they are slowly recovering from near extinction. Threats to the population include disease (anthrax, brucellosis, and tuberculosis), predation, highway collision, habitat loss, and drowning during high water seasons and during thin ice conditions (SARA 2004).

### 3.3.5 Short-eared Owl

SARA designates the Short-eared Owl as a species of Special Concern (based on COSEWIC 1994 assessment), however a reassessment by COSEWIC is required. A species listed as Special Concern may become threatened or endangered because its habits that make it vulnerable to human activities or natural events.

Short-eared Owl populations are declined throughout much of Canada; however, population trends in northern Canada still need to be confirmed.

Open habitats, including marshes, prairies, and tundra, that Short-eared Owls prefer for nesting and hunting are threatened by urban expansion, human development and operations (particularly agriculture), and wetland drainage (SARA 2004). Although these threats to Short-eared Owls are limited in the NWT, they occur on winter ranges. Short-eared Owl habitat is present within the study area.

### 3.3.6 Northern Leopard Frog

Northern leopard frogs are listed as a species of Special Concern by SARA, and considered Sensitive by the Territorial government. Populations are declining throughout much of western Canada, however, populations are presumed stable in the NWT (Fournier 1997; Fournier 1999). Northern leopard frogs are known to occur at nine sites within the NWT, most of which are located between the Alberta border and Great Slave Lake (Seburn and Seburn 1998), but possibly more widely distributed than indicated since data is limited in the north (Fournier 1999).

Northern leopard frog populations are threatened by un-seasonal or unusual weather changes (*e.g.* drought, fluctuating winter temperatures, freezing rain, low snow cover), disease, alteration or destruction of habitat, and collection for laboratory demonstration material (Fournier 1997; Fournier 1999).

Northern leopard frogs use various habitat types throughout their life history including lakes, ponds, roadside ditches, and flooded areas during breeding, meadows and grasslands close to water in summer, and unfrozen lake and river bottoms in winter. Northern leopard frog habitat is present within the study area.

### 3.3.7 Yellow Rail

SARA classifies the Yellow Rail as a species of Special Concern. Yellow Rails are listed as May Be At Risk under the Territorial government, and protected under the Migratory Bird Convention Act and the NWT Wildlife Act.

Yellow Rails occupy marshes, damp meadows, estuaries, bogs, and river/stream floodplains, particularly those dominated by sedges, true grasses, and rushes with little or no standing water. Yellow Rail habitat is present within the study area.

It is estimated that 20 – 100 breeding pairs occur in the NWT (Alvo and Robert 1999). The NWT is at the northern limit of the Yellow Rail range, and the population is expected be low. Although, no direct threats to Yellow Rails are known within the NWT, it is recognized populations are more at risk during migration, on southern breeding ranges, and on wintering grounds from habitat loss and alteration (Fournier 1999; Alvo and Robert 1999; Godfrey 1986; SARA 2004).

### 3.3.8 Wolverine

COSEWIC (2003) has ascribed a “Special Concern” status to the western population of wolverine, however is not protected against prohibitions listed under SARA (2005). SARA currently does not protect the western population of wolverine since further consultation with the Nunavut Wildlife Management Board is required (Her Majesty the Queen in Right of Canada 2005). A decision as to the protected status of the western population of wolverine is expected after consultations in 2005 (Her Majesty the Queen in Right of Canada 2005). Wolverine is considered “Secure” by the NWT government. What about

Wolverine fur is valued by northerners and is commonly used for parka trim. Wolverine densities in the NWT are considered variable, but assumed to be greater than 3000 individuals (Mammals Committee 1999). Wolverine’s biological characteristics (*e.g.* low reproductive rates and poor juvenile survival) and the need for large tracts of undisturbed land make them sensitive indicators to environmental change (Mulders 1999; Mulders 1999b). Wolverines are vulnerable to habitat loss/alteration, hunting and trapping pressures, human disturbances, and ungulate population levels (Mulders 1999; Mulders 1999b). Wolverine habitat is present within the study area.

## 3.4 LOCAL HABITAT UTILIZATION

Wildlife sign observed in the study area was documented and mapped in association with the Ecological Land Classification mapping to illustrate wildlife use of differing habitat types within the study area (refer to Figure 1). Table 3 summarizes the frequency of wildlife observations within the designated habitat types described in Section 3.1.

Accurate assessments of species diversity and frequencies within each habitat type were generally limited by small sample sizes. The habitat sampling program was based on an Ecological Land Classification approach and limited by field accessibility. Polygons of common habitat types within the study area were assessed with greater intensity than compared to habitats of restricted distribution. For example, the most dominant habitat



type in the study area was Labrador-tea mesic, therefore, six full (detailed survey) and four visual (partial survey) sites were surveyed as compared to Bearberry – Pj habitat that occurs in less than one % of the study area (n=0 Full and 0 Visual). Recordings of wildlife sign in restricted habitats were limited to chance observations while driving/ walking to other habitat units.

Both the Treed Fen and Labrador-tea Subhygric habitat units had the highest species diversity (nine wildlife species recorded in each), followed by Shrubby Fen and Disturbed Sites (seven wildlife species recorded in each) (Table 3).

Of particular concern, species of special designation were recorded within three habitat types, Treed Fen, Shrubby Fen, and Labrador-tea – subhygric (Table 3). The single Whooping Crane observation was recorded in a Treed Fen habitat type, and the Peregrine Falcon was recorded in a Shrubby Fen. Woodland caribou sign was noted in Treed Fens and Labrador-tea – subhygric habitats, and wood bison sign was noted in both Shrubby and Treed Fens.

Other species of particular interest include those that were recorded in multiple habitat types. Moose sign was recorded in the seven different habitat types, black bear in six, and woodpecker species in six (Table 3). Species that appear to be restricted to only a few habitat types include the Whooping Crane, Peregrine Falcon, Bald Eagle, beaver, lynx, woodland caribou, and wood bison (Table 3).

#### 4.0 CONCLUSION

The wildlife diversity and habitat utilization survey was accomplished through direct and indirect observation of wildlife and wildlife sign while working in close association with the ecosystem classification program. Plot assessments and opportunistic observations were completed in representative habitat types. Plot assessment locations were distributed in proportion to the area of habitat types interpreted in the ecosystem-mapping program.

Eleven habitat types (ecosites) were classified within the study area, eight of these were naturally vegetated, one was classified as water, one was anthropogenic and one was cloud. Within these different habitat types, a total of 80 bird observations were recorded, comprising 32 different species, including a Whooping Crane and Peregrine Falcon (both which have special status designations). A single Whooping Crane was recorded in a Treed Fen habitat, and the Peregrine Falcon was noted in a Shrubby Fen. In addition, a total of 104 mammal observations, comprising 13 different mammal species were documented as occurring in the study area, including woodland caribou and wood bison (both of which have special status designations). Woodland caribou sign was documented in Labrador-tea subhygric and Treed Fens, and wood bison sign was recorded in Shrubby Fen and Treed Fen.

Other species of special designation that may occur in the study area include northern leopard frog, Yellow Rail, Short-eared Owl, and wolverine.

Habitat types that exhibited the highest species diversity include Treed Fen and Labrador-tea Subhygric habitat units. These habitat types cover 24% and 15% of the study area, respectively.

Species that appear to occupy multiple habitat types within the study area include moose, black bear, and woodpecker species. In contrast, Whooping Crane, Peregrine Falcon, Bald Eagle, beaver, lynx, woodland caribou, and wood bison appear to be restricted to a few habitat types within the study area.

## 5.0 CLOSURE

EBA is pleased to present Tamerlane with this Preliminary Wildlife Study report for the Pine Point Project. We hope everything is found to be satisfactory. If there are any questions, please do not hesitate to contact us.

Respectfully submitted,  
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# TABLES

TABLE 1 - BIRD SPECIES RECORDED AT THE PINE POING MINING PROJECT STUDY AREA, SEPTEMBER, 2005<sup>1</sup>

Common Name	Scientific Name	Classification
Greater White-fronted Goose	<i>Anser albifrons</i>	Migrant
Snow Goose	<i>Chen caerulescens</i>	Migrant
Canada Goose	<i>Branta canadensis</i>	Breeder
Tundra Swan	<i>Cygnus columbianus</i>	Migrant
Lesser Scaup	<i>Aythya affinis</i>	Breeder
White-winged Scoter	<i>Melanitta fusca</i>	Breeder
Ruffed Grouse	<i>Bonasa umbellus</i>	Resident
Spruce Grouse	<i>Falcapennis canadensis</i>	Resident
Ptarmigan species	<i>Lagopus lagopus</i>	Winter Resident
Common Loon	<i>Gavia immer</i>	Breeder
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Breeder
Northern Harrier	<i>Circus cyaneus</i>	Breeder
Rough-legged Hawk	<i>Buteo lagopus</i>	Migrant
American Kestrel	<i>Falco sparverius</i>	Breeder
Peregrine Falcon	<i>Falco peregrinus (anatum)</i>	Migrant or Transient
Whooping Crane	<i>Grus americana</i>	Transient
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Breeder
Black-backed Woodpecker	<i>Picoides arcticus</i>	Resident
Northern Flicker	<i>Colaptes auratus</i>	Breeder
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Resident
Gray Jay	<i>Perisoreus canadensis</i>	Resident
Common Raven	<i>Corvus corax</i>	Resident
Horned Lark	<i>Eremophila alpestris</i>	Breeder
Bank Swallow	<i>Riparia riparia</i>	Breeder
Boreal Chickadee	<i>Parus hudsonicus</i>	Resident
American Robin	<i>Turdus migratorius</i>	Breeder
Bohemian Waxwing	<i>Bombycilla garrulus</i>	Breeder
Orange-crowned Warbler	<i>Vermivora celata</i>	Breeder
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Breeder
Dark-eyed Junco	<i>Junco hyemalis</i>	Breeder
Rusty Blackbird	<i>Euphagus carolinus</i>	Breeder
Pine Siskin	<i>Carduelis pinus</i>	Breeder

<sup>1</sup> Species organized in phylogenetic order.



TABLE 2 – MAMMAL SPECIES RECORDED AT THE PINE POINT MINING PROJECT STUDY AREA, SEPTEMBER 2005

<b>Common Name</b>	<b>Scientific Name</b>
Snowshoe Hare	<i>Lepus americanus</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
American beaver	<i>Castor canadensis</i>
Common Porcupine	<i>Erethizon dorsatum</i>
Coyote	<i>Canis latrans</i>
Gray Wolf	<i>Canis lupus</i>
Black Bear	<i>Ursus americanus</i>
Ermine (Stoat)	<i>Mustela erminea</i>
Mink	<i>Mustela vison</i>
Lynx	<i>Lynx canadensis</i>
Woodland Caribou	<i>Rangifer tarandus caribou</i>
Moose	<i>Alces alces</i>
Wood Bison	<i>Bison bison athabascaae</i>





**TABLE 3. FREQUENCY OF WILDLIFE OBSERVATIONS WITHIN EACH HABITAT TYPE IN THE STUDY AREA**

Species	Total No. Obs.	Frequency within Habitat Vegetation Types <sup>1</sup> (%)									
		Bearberry – Pj <sup>2</sup> (n=0F, 0V)*	Canada Buffaloberry - Green Alder (n=3F, 2V)*	Disturbed <sup>2</sup> (n=0F, 0V)*	Graminoid Fen (n=1F, 1V)*	Labrador Tea - mesic (n=6F, 4V)*	Labrador Tea – subhygric (n=1F, 1V)*	Shrubby Fen (n=3F, 2V)*	Treed Fen (n=5F, 9V)*	Water <sup>2</sup> (n=0F, 0V)*	Willow/ Horsetail (n=1F, 0V)*
<b>Bird Species</b>											
Tetraoninae species (Ptarmigan/ Grouse)	11	18%	0	0	0	27%	45%	0	9%	0	0
Bald Eagle	3	0	67%	33%	0	0	0	0	0	0	0
Peregrine Falcon	1	0	0	0	0	0	0	100%	0	0	0
Whooping Crane	1	0	0	0	0	0	0	0	100%	0	0
Woodpecker species	18	0	28%	5%	0	22%	17%	0	11%	0	17%
<b>Mammal Species</b>											
Beaver	4	0	0	75%	0	0	0	25%	0	0	0
Coyote	5	0	20%	0	0	20%	40%	20%	0	0	0
Wolf	3	0	0	33%	0	0	33%	0	33%	0	0
Black bear	37	0	16%	19%	0	24%	22%	8%	11%	0	0
Mustelidae species (Ermine, mink)	9	0	0	11%	0	0	44%	22%	11%	0	11%
Lynx	1	0	0	0	0	0	100%	0	0	0	0
Woodland Caribou	3	0	0	0	0	0	33%	0	67%	0	0
Moose	22	0	9%	9%	0	23%	23%	9%	18%	0	9%
Wood Bison	2	0	0	0	0	0	0	50%	50%	0	0

<sup>1</sup> Habitat Vegetation Types are described in further detail in Section 3.1.

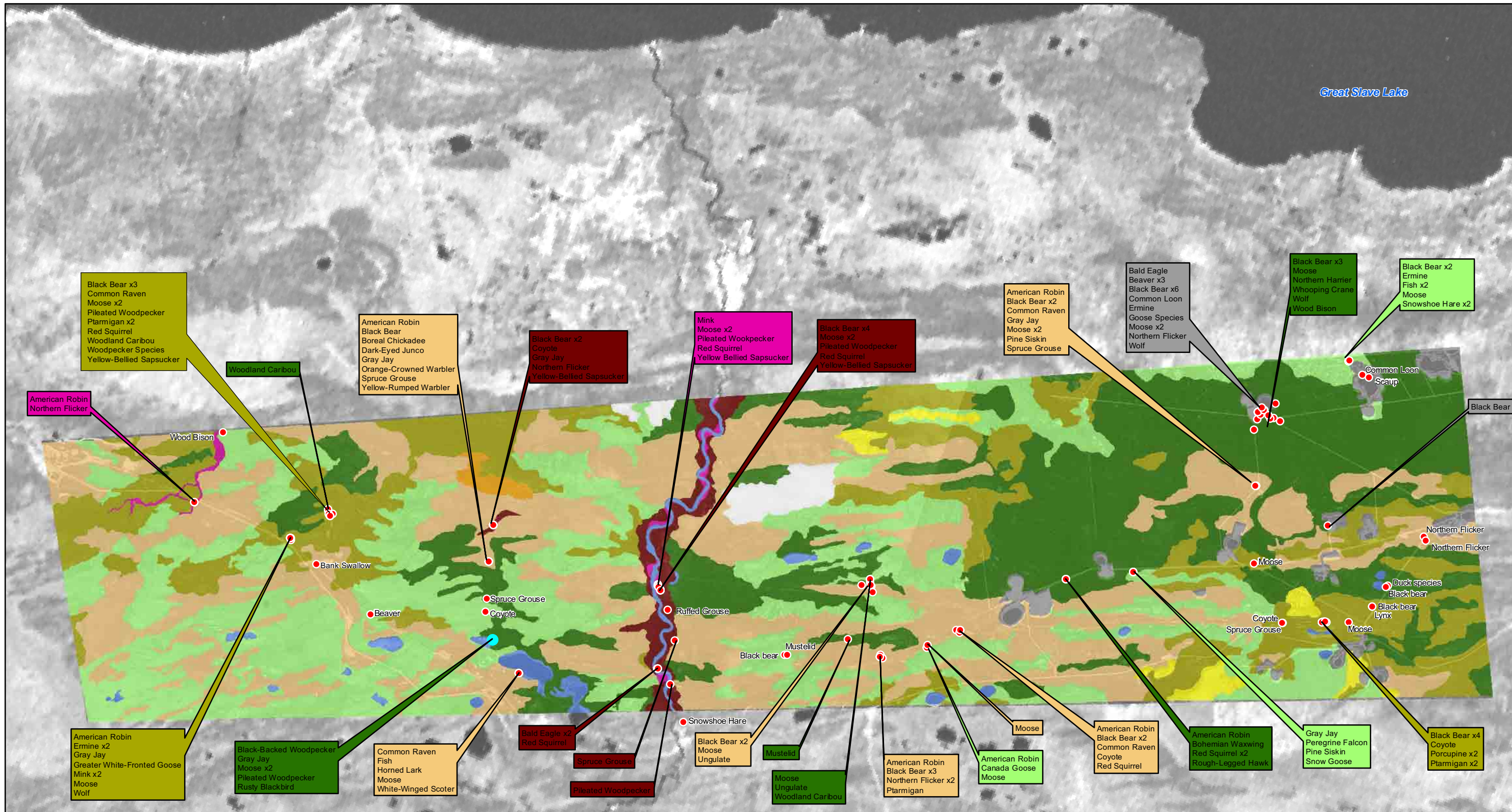
<sup>2</sup> Habitat types were not assessed as part of the ELC program, however, wildlife sign was recorded while driving/ walking to other habitat units.

\* n defines the total number of habitat polygons surveyed, either as Full (F) (detailed assessment), or Visual (V) (partial assessment).



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# FIGURES



Legend				Pine Point Project	
<b>UPLAND</b>	<b>LOWLAND</b>	<b>RIPARIAN</b>	<b>OTHER</b>	<p>Sources: Landsat TM bands 7,4,1 (GLFC) QuickBird-Pacific GeoAnalytic</p> <p>Scale: 1:110,000</p>	
Bearberry Pj	Treed Fen	Willow/Horsetail	Water		
Canada Buffalo-Berry-Green Alder	Shrubby Fen		Disturbed		
Labrador Tea- Mesic	Graminoid Fen		Unknown (cloud cover)		
Labrador Tea-Subhygric					
				Wildlife Observation Location	
				<p><b>Wildlife Observations Within Habitat Units</b></p>	
				<p>November, 2005</p>	<p><b>Figure 1</b></p>



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# APPENDIX

## APPENDIX A BIRD SPECIES OCCURRING OR POTENTIALLY OCCURRING IN THE PINE POINT PROJECT STUDY AREA, NWT

Appendix A. Bird Species Occurring or Potentially Occurring in the Pine Point Project Study Area, NWT

<b>Scientific Name</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Common Name</b>
<i>Anser albifrons</i>	Greater White-fronted Goose	<i>Botaurus lentiginosus</i>	American Bittern
<i>Chen caerulescens</i>	Snow Goose	<i>Ardea herodias</i>	Great Blue Heron
<i>Chen rossii</i>	Ross's Goose	<i>Ardea alba</i>	Great Egret
<i>Branta canadensis</i>	Canada Goose	<i>Bubulcus ibis</i>	Cattle Egret
<i>Cygnus columbianus</i>	Tundra Swan	<i>Pandion haliaetus</i>	Osprey
<i>Anas strepera</i>	Gadwall	<i>Haliaeetus leucocephalus</i>	Bald Eagle
<i>Anas penelope</i>	Eurasian Wigeon	<i>Circus cyaneus</i>	Northern Harrier
<i>Anas americana</i>	American Wigeon	<i>Accipiter cooperii</i>	Cooper's Hawk
<i>Anas rubripes</i>	American black Duck	<i>Accipiter striatus</i>	Sharp-shinned Hawk
<i>Anas platyrhynchos</i>	Mallard	<i>Accipiter gentilis</i>	Northern Goshawk
<i>Anas discors</i>	Blue-winged Teal	<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Anas cyanoptera</i>	Cinnamon Teal	<i>Buteo lagopus</i>	Rough-legged Hawk
<i>Anas clypeata</i>	Northern Shoveler	<i>Aquila chrysaetos</i>	Golden Eagle
<i>Anas acuta</i>	Northern Pintail	<i>Falco sparverius</i>	American Kestrel
<i>Anas crecca</i>	Green-winged Teal	<i>Falco columbarius</i>	Merlin
<i>Aythya valisineria</i>	Canvasback	<i>Falco rusticolus</i>	Gyr Falcon
<i>Aythya americana</i>	Redhead	<i>Falco peregrinus anatum</i>	Peregrine Falcon
<i>Histrionicus histrionicus</i>	Harlequin Duck	<i>Coturnicops noveboracensis</i>	Yellow Rail
<i>Aythya collaris</i>	Ring-necked Duck	<i>Porzana carolina</i>	Sora
<i>Aythya marila</i>	Greater Scaup	<i>Fulica americana</i>	American Coot
<i>Aythya affinis</i>	Lesser Scaup	<i>Grus canadensis</i>	Sandhill Crane
<i>Melanitta perspicillata</i>	Surf Scoter	<i>Grus americana</i>	Whooping Crane
<i>Melanitta fusca</i>	White-winged Scoter	<i>Pluvialis squatarola</i>	Black-bellied Plover
<i>Clangula hyemalis</i>	Long-tailed Duck	<i>Pluvialis dominica</i>	American Golden-Plover
<i>Bucephala albeola</i>	Bufflehead	<i>Charadrius semipalmatus</i>	Semipalmated Plover
<i>Bucephala clangula</i>	Common Goldeneye	<i>Charadrius vociferus</i>	Killdeer
<i>Bucephala islandica</i>	Barrow's Goldeneye	<i>Tringa melanoleuca</i>	Greater Yellowlegs
<i>Lophodytes cucullatus</i>	Hooded Merganser	<i>Tringa flavipes</i>	Lesser Yellowlegs
<i>Mergus merganser</i>	Common Merganser	<i>Tringa solitaria</i>	Solitary Sandpiper
<i>Mergus serrator</i>	Red-breasted Merganser	<i>Actitis macularius</i>	Spotted Sandpiper
<i>Oxyura jamaicensis</i>	Ruddy Duck	<i>Limosa haemastica</i>	Hudsonian Godwit
<i>Bonasa umbellus</i>	Ruffed Grouse	<i>Arenaria interpres</i>	Ruddy Turnstone
<i>Falcapennis canadensis</i>	Spruce Grouse	<i>Calidris canutus</i>	Red Knot
<i>Lagopus mutus</i>	Rock Ptarmigan	<i>Calidris alba</i>	Sanderling
<i>Lagopus lagopus</i>	Willow Ptarmigan	<i>Calidris pusilla</i>	Semipalmated Sandpiper
<i>Tympanuchus phasianellus</i>	Sharp-tailed Grouse	<i>Calidris minutilla</i>	Least Sandpiper
<i>Gavia stellata</i>	Red-throated Loon	<i>Calidris fuscicollis</i>	White-rumped Sandpiper
<i>Gavia pacifica</i>	Pacific Loon	<i>Calidris bairdii</i>	Baird's Sandpiper
<i>Gavia immer</i>	Common Loon	<i>Calidris melanotos</i>	Pectoral Sandpiper
<i>Podilymbus podiceps</i>	Pied-billed Grebe	<i>Calidris alpina</i>	Dunlin
<i>Podiceps auritus</i>	Horned Grebe	<i>Calidris himantopus</i>	Stilt Sandpiper
<i>Podiceps nigricollis</i>	Eared Grebe	<i>Limnodromus scolopaceus</i>	Long-billed Dowitcher
<i>Podiceps grisegena</i>	Red-necked Grebe	<i>Limnodromus griseus</i>	Short-billed Dowitcher

<b>Scientific Name</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Common Name</b>
<i>Gallinago delicata</i>	Wilson's Snipe	<i>Lanius excubitor</i>	Northern Shrike
<i>Phalaropus tricolor</i>	Wilson's Phalarope	<i>Vireo solitarius</i>	Blue-headed Vireo
<i>Phalaropus lobatus</i>	Red-necked Phalarope	<i>Vireo gilvus</i>	Warbling Vireo
<i>Stercorarius pomarianus</i>	Pomarian Jaeger	<i>Vireo olivaceus</i>	Red-eyed Vireo
<i>Stercorarius parasiticus</i>	Parasitic Jaeger	<i>Perisoreus canadensis</i>	Gray Jay
<i>Stercorarius longicaudus</i>	Long-tailed Jaeger	<i>Pica hudsonia</i>	Black-billed Magpie
<i>Larus pipixcan</i>	Franklin's Gull	<i>Corvus brachyrhynchos</i>	American Crow
<i>Larus philadelphia</i>	Bonaparte's Gull	<i>Corvus corax</i>	Common Raven
<i>Larus canus</i>	Mew Gull	<i>Eremophila alpestris</i>	Horned Lark
<i>Larus delawarensis</i>	Ring-billed Gull	<i>Tachycineta bicolor</i>	Tree Swallow
<i>Larus californicus</i>	California Gull	<i>Riparia riparia</i>	Bank Swallow
<i>Larus argentatus</i>	Herring Gull	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow
<i>Larus hyperboreus</i>	Glaucous Gull	<i>Hirundo rustica</i>	Barn Swallow
<i>Xema sabini</i>	Sabine's Gull	<i>Poecile atricapillus</i>	Black-capped Chickadee
<i>Rissa tridactyla</i>	Black-legged Kittiwake	<i>Poecile hudsonica</i>	Boreal Chickadee
<i>Sterna caspia</i>	Caspian Tern	<i>Sitta canadensis</i>	Red-breasted Nuthatch
<i>Sterna hirundo</i>	Common Tern	<i>Cistothorus palustris</i>	Marsh Wren
<i>Sterna paradisaea</i>	Arctic Tern	<i>Regulus calendula</i>	Ruby-crowned Kinglet
<i>Chlidonias niger</i>	Black Tern	<i>Sialia currucoides</i>	Mountain Bluebird
<i>Columba livia</i>	Rock Dove	<i>Catharus minimus</i>	Gray-cheeked Thrush
<i>Zenaidura macroura</i>	Mourning Dove	<i>Catharus ustulatus</i>	Swainson's Thrush
<i>Bubo virginianus</i>	Great Horned Owl	<i>Catharus guttatus</i>	Hermit Thrush
<i>Bubo scandiacus</i>	Snowy Owl	<i>Turdus migratorius</i>	American Robin
<i>Surnia ulula</i>	Northern Hawk Owl	<i>Sturnus vulgaris</i>	European Starling
<i>Strix varia</i>	Barred Owl	<i>Toxostoma rufum</i>	Brown Thrasher
<i>Strix nebulosa</i>	Great Gray Owl	<i>Anthus rubescens</i>	American Pipit
<i>Asio otus</i>	Long-eared Owl	<i>Bombcilla garrulus</i>	Bohemian Waxwing
<i>Asio flammeus</i>	Short-eared Owl	<i>Bombcilla cedrorum</i>	Cedar Waxwing
<i>Aegolius funereus</i>	Boreal Owl	<i>Vermivora peregrina</i>	Tennessee Warbler
<i>Chordeiles minor</i>	Common Nighthawk	<i>Vermivora celata</i>	Orange-crowned Warbler
<i>Selasphorus rufus</i>	Rufous Hummingbird	<i>Dendroica petechia</i>	Yellow Warbler
<i>Ceryle alcyon</i>	Belted Kingfisher	<i>Dendroica magnolia</i>	Magnolia Warbler
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker	<i>Dendroica tigrina</i>	Cape May Warbler
<i>Picoides pubescens</i>	Downy Woodpecker	<i>Dendroica coronata</i>	Yellow-rumped Warbler
<i>Picoides villosus</i>	Hairy Woodpecker	<i>Dendroica palmarum</i>	Palm Warbler
<i>Picoides dorsalis</i>	Three-toed Woodpecker	<i>Dendroica castanea</i>	Bay-breasted Warbler
<i>Picoides arcticus</i>	Black-backed Woodpecker	<i>Dendroica striata</i>	Blackpoll Warbler
<i>Colaptes auratus</i>	Northern Flicker	<i>Mniotilta varia</i>	Black-and-white Warbler
<i>Dryocopus pileatus</i>	Pileated Woodpecker	<i>Setophaga ruticilla</i>	American Redstart
<i>Contopus cooperi</i>	Olive-sided Flycatcher	<i>Seiurus aurocapilla</i>	Ovenbird
<i>Contopus sordidulus</i>	Western Wood-Pewee	<i>Seiurus noveboracensis</i>	Northern Waterthrush
<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher	<i>Oporornis agilis</i>	Connecticut Warbler
<i>Empidonax alnorum</i>	Alder Flycatcher	<i>Geothlypis trichas</i>	Common Yellowthroat
<i>Empidonax minimus</i>	Least Flycatcher	<i>Wilsonia pusilla</i>	Wilson's Warbler
<i>Sayornis phoebe</i>	Eastern Phoebe	<i>Piranga ludoviciana</i>	Western Tanager
<i>Tyrannus tyrannus</i>	Eastern Kingbird	<i>Spizella arborea</i>	American Tree Sparrow

<b>Scientific Name</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Common Name</b>
<i>Spizella passerina</i>	Chipping Sparrow	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak
<i>Spizella pallida</i>	Clay-colored Sparrow	<i>Agelaius phoeniceus</i>	Red-winged Blackbird
<i>Pooecetes gramineus</i>	Vesper Sparrow	<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird
<i>Passerculus sandwichensis</i>	Savannah Sparrow	<i>Euphagus carolinus</i>	Rusty Blackbird
<i>Ammodramus leconteii</i>	Le Conte's Sparrow	<i>Euphagus cyanocephalus</i>	Brewer's Blackbird
<i>Ammodramus nelsoni</i>	Nelson's Sharp-tailed Sparrow	<i>Quiscalus quiscula</i>	Common Grackle
<i>Passerella iliaca</i>	Fox Sparrow	<i>Molothrus ater</i>	Brown-headed Cowbird
<i>Melospiza melodia</i>	Song Sparrow	<i>Leucosticte tephrocotis</i>	Gray-crowned Rosy-Finch
<i>Melospiza lincolni</i>	Lincoln's Sparrow	<i>Pinicola enucleator</i>	Pine Grosbeak
<i>Melospiza georgiana</i>	Swamp Sparrow	<i>Carpodacus purpureus</i>	Purple Finch
<i>Zonotrichia albicollis</i>	White-throated Sparrow	<i>Loxia curvirostra</i>	Red Crossbill
<i>Zonotrichia querula</i>	Harris's Sparrow	<i>Loxia leucoptera</i>	White-winged Crossbill
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	<i>Carduelis flammea</i>	Common Redpoll
<i>Junco hyemalis</i>	Dark-eyed Junco	<i>Carduelis homemanni</i>	Hoary Redpoll
<i>Calcarius lapponicus</i>	Lapland Longspur	<i>Carduelis pinus</i>	Pine Siskin
<i>Calcarius pictus</i>	Smith's Longspur		
<i>Plectrophenax nivalis</i>	Snow Bunting		



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# APPENDIX

APPENDIX B MAMMAL SPECIES OCCURRING OR POTENTIALLY OCCURRING IN THE PINE  
POINT PROJECT STUDY AREA, NWT



Appendix B. Mammal Species Occurring or Potentially Occurring in the Pine Point Project Study Area, NWT

<b>Scientific Name</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Common Name</b>
<i>Sorex cinereus</i>	Masked Shrew	<i>Zapus hudsonius</i>	Meadow Jumping Mouse
<i>Sorex monticolus</i>	Dusky Shrew	<i>Erethizon dorsatum</i>	Common Porcupine
<i>Sorex palustris</i>	Water Shrew	<i>Canis latrans</i>	Coyote
<i>Sorex arcticus</i>	Arctic Shrew	<i>Canis lupus</i>	Gray Wolf
<i>Sorex hoyi</i>	Pigmy Shrew	<i>Vulpes vulpes</i>	Red Fox
<i>Myotis lucifugus</i>	Little Brown Bat (Myotis)	<i>Ursus americanus</i>	Black Bear
<i>Myotis septentrionalis</i>	Northern myotis	<i>Martes americana</i>	American marten
<i>Lepus americanus</i>	Snowshoe Hare	<i>Martes pennanti</i>	Fisher
<i>Eutamias minimus</i>	Least Chipmunk	<i>Mustela erminea</i>	Ermine (Stoat)
<i>Marmota monax</i>	Woodchuck	<i>Mustela nivalis</i>	Least Weasel
<i>Tamiasciurus hudsonicus</i>	Red Squirrel	<i>Mustela vison</i>	Mink
<i>Glaucomys sabrinus</i>	Northern Flying Squirrel	<i>Gulo gulo</i>	Wolverine
<i>Castor canadensis</i>	American beaver	<i>Mephitis mephitis</i>	Striped skunk
<i>Peromyscus maniculatus</i>	Deer Mouse	<i>Lutra canadensis</i>	River Otter
<i>Clethrionomys rutilus</i>	Northern Red-backed Vole	<i>Lynx canadensis</i>	Lynx
<i>Clethrionomys gapperi</i>	Southern Red-backed Vole	<i>Rangifer tarandus caribou</i>	Woodland Caribou
<i>Synaptomys borealis</i>	Northern Bog Lemming	<i>Odocoileus hemionus</i>	Mule Deer
<i>Phenacomys intermedius</i>	Heather Vole	<i>Alces alces</i>	Moose
<i>Ondatra zibethicus</i>	Muskrat	<i>Bison bison athabascae</i>	Wood Bison
<i>Microtus pennsylvanicus</i>	Meadow Vole		
<i>Microtus xanthognathus</i>	Chestnut-cheeked (Taiga) Vole		



# APPENDIX

## APPENDIX C EBA TERMS AND CONDITIONS

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## ENVIRONMENTAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these “General Conditions”.

### 1.0 USE OF REPORT

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of EBA’s client. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA’s client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

### 2.0 LIMITATIONS OF REPORT

This report is based solely on the conditions which existed on site at the time of EBA’s investigation. The client, and any other parties using this report with the express written consent of the client and EBA, acknowledge that conditions affecting the environmental assessment of the site can vary with time and that the conclusions and recommendations set out in this report are time sensitive.

The client, and any other party using this report with the express written consent of the client and EBA, also acknowledge that the conclusions and recommendations set out in this report are based on limited observations and testing on the subject site and that conditions may vary across the site which, in turn, could affect the conclusions and recommendations made.

The client acknowledges that EBA is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the client.

### 2.1 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of this report, EBA may have relied on information provided by persons other than the client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

### 3.0 LIMITATION OF LIABILITY

The client recognizes that property containing contaminants and hazardous wastes creates a high risk of claims brought by third parties arising out of the presence of those materials. In consideration of these risks, and in consideration of EBA providing the services requested, the client agrees that EBA’s liability to the client, with respect to any issues relating to contaminants or other hazardous wastes located on the subject site shall be limited as follows:

1. With respect to any claims brought against EBA by the client arising out of the provision or failure to provide services hereunder shall be limited to the amount of fees paid by the client to EBA under this Agreement, whether the action is based on breach of contract or tort;
2. With respect to claims brought by third parties arising out of the presence of contaminants or hazardous wastes on the subject site, the client agrees to indemnify, defend and hold harmless EBA from and against any and all claim or claims, action or actions, demands, damages, penalties, fines, losses, costs and expenses of every nature and kind whatsoever, including solicitor-client costs, arising or alleged to arise either in whole or part out of services provided by EBA, whether the claim be brought against EBA for breach of contract or tort.

#### 4.0 JOB SITE SAFETY

EBA is only responsible for the activities of its employees on the job site and is not responsible for the supervision of any other persons whatsoever. The presence of EBA personnel on site shall not be construed in any way to relieve the client or any other persons on site from their responsibility for job site safety.

#### 5.0 DISCLOSURE OF INFORMATION BY CLIENT

The client agrees to fully cooperate with EBA with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The client acknowledges that in order for EBA to properly provide the service, EBA is relying upon the full disclosure and accuracy of any such information.

#### 6.0 STANDARD OF CARE

Services performed by EBA for this report have been conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Engineering judgement has been applied in developing the conclusions and/or recommendations provided in this report. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of this report.

#### 7.0 EMERGENCY PROCEDURES

The client undertakes to inform EBA of all hazardous conditions, or possible hazardous conditions which are known to it. The client recognizes that the activities of EBA may uncover previously unknown hazardous materials or conditions and that such discovery may result in the necessity to undertake emergency procedures to protect EBA employees, other persons and the environment. These procedures may involve additional costs outside of any budgets previously agreed upon. The client agrees to pay EBA for any expenses incurred as a result of such discoveries and to compensate EBA through payment of additional fees and expenses for time spent by EBA to deal with the consequences of such discoveries.

#### 8.0 NOTIFICATION OF AUTHORITIES

The client acknowledges that in certain instances the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by EBA in its reasonably exercised discretion.

#### 9.0 OWNERSHIP OF INSTRUMENTS OF SERVICE

The client acknowledges that all reports, plans, and data generated by EBA during the performance of the work and other documents prepared by EBA are considered its professional work product and shall remain the copyright property of EBA.

#### 10.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by EBA shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancies, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by EBA shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. The Client warrants that EBA's instruments of professional service will be used only and exactly as submitted by EBA.

The Client recognizes and agrees that electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.