



EAGLE GOLD PROJECT

WILDLIFE PROTECTION PLAN

Version 2017-01

JULY 2017

THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT CONTROL

Submission History

Version Number	Version Date	Document Description and Revisions Made
2013-01	Sep 2013	Original submission to the Department of Energy, Mines and Resources in support of an application for a Quartz Mining Licence allowing for preliminary construction activities and submitted to the Yukon Water Board in support of the application to amend Type B Water Use License QZ11-013. The amendment application considered the use of water and deposit of waste associated with preliminary construction activities and included the construction and operation of the Dublin Gulch Diversion Channel.
2014-01	Mar 2014	Revisions made in support of an application to the Yukon Water Board for a Type A Water Use License for the full Construction, Operation and Closure of the Project. Version 2014-01 was also submitted to the Department of Energy, Mines and Resources in support of an application for a Quartz Mining Licence allowing the full Construction, Operation and Closure of the Project.
2017-01	Jul 2017	Revisions made to address conditions of Quartz Mining Licence QML-0011.

Version 2014-01 of the Wildlife Protection Plan (the Plan) for the Project has been revised in July 2017 to update Version 2014-01 submitted in March 2014. The table below is intended to identify modifications to the Plan and provide the rationale for such modifications

Version 2017-01 Revisions

Section	Revision/Rationale
Section 3.1 General: Wildlife- Human Conflicts	<ul style="list-style-type: none"> Revised section in accordance with Schedule C, Section 2.6(b) of QML-0011.
Section 3.2 Land Use	<ul style="list-style-type: none"> Revised section in accordance with Schedule C, Section 2.6(a) of QML-0011.

TABLE OF CONTENTS

1	Introduction	1
	1.1 Potential to effect wildlife.....	1
	1.2 Consultation summary	2
2	Wildlife Resources.....	5
	2.1 Valued Ecological Components	5
	2.2 Focal Species.....	6
	2.3 Overview of seasonal use and habitat for focal species	6
3	Wildlife Protection Procedures	9
	3.1 General: Wildlife – Human Conflicts	9
	3.2 Land Use	10
	3.3 Transportation	10
	3.4 Wildlife Habitat Protection	11
	3.5 Heap Leach / Events Pond Operation and Management	11
4	Monitoring	13
	4.1 Wildlife Records Program	13
	4.2 Heap Leach Facility area and Events Ponds	13
	4.3 Moose Distribution Surveys	14
	4.4 Monitoring Metal Levels in Vegetation	15
	4.5 Regional Wildlife Monitoring Programs.....	15
5	Reporting	16
6	References.....	17

List of Tables

Table 1.1-1:	Potential Project Effects to Wildlife.....	2
Table 1.2-1:	Issues and concerns for wildlife identified through consultation with the FNNND	3

List of Appendices

- Appendix A Environmental Baseline Report: Terrestrial Wildlife
- Appendix B Eagle Gold Late Winter Moose Survey – 2013
- Appendix C Wildlife Encounter Procedure
- Appendix D Wildlife Incident Report Form
- Appendix E Wildlife Observation Form

1 INTRODUCTION

StrataGold Corporation (SGC), a directly held-wholly owned subsidiary of Victoria Gold Corp., has proposed to construct, operate, close and reclaim a gold mine in central Yukon. The Eagle Gold Project ('the Project') is located 85 km from Mayo, Yukon using existing highway and access roads. The Project will involve open pit mining and gold extraction using a three stage crushing process, heap leaching, and a carbon adsorption, desorption, and recovery system over the mine life.

SGC has developed this Wildlife Protection Plan (WPP) in support of applications for a Quartz Mining and a Type A Water Use Licence for the Project. The WPP describes how wildlife disturbance will be minimized at the site through the establishment of wildlife protection policies, employee education, management of traffic on roads and trails, elimination of wildlife barriers and avoidance of disturbance and harassment of wildlife in the Project Area.

1.1 POTENTIAL TO EFFECT WILDLIFE

The Project has the potential to impact wildlife and wildlife habitat. Broadly, three potential effects of the Project were considered during the assessment of the Project pursuant to the *Yukon Environmental and Socio-economic Assessment Act (YESAA)* and during the development of this WPP; on wildlife habitat (through conversion of habitat and sensory disturbance), on the risk of wildlife mortality (through collisions, destruction of residences, hunting, or the control of problem wildlife), and on wildlife movement. These interactions are described below and summarized in Table 1.1-1.

Change in Wildlife Habitat

The *Species at Risk Act (SARA)* makes it illegal to destroy critical habitat; kill, harm, harass or capture listed species; or damage or destroy their residence. No critical habitat has been defined under *SARA* for any species which occurs in the Project area. In addition, the Project location does not overlap with any Wildlife Key Areas (WKA) identified by the WKA Inventory Program developed by Yukon Government.

Project related clearing will be required within the Project footprint and along the transmission line right of way which parallels the existing access road. Clearing of natural vegetation during site preparation can result in habitat loss and fragmentation into smaller, less suitable habitat patches.

Project activities during construction and operations may result in sensory disturbance, causing wildlife to avoid otherwise suitable habitat. These potentially sensory disruptive activities include; site grading, blasting and overburden removal and disposal; camp construction and operations; diesel power generation; the use of large construction vehicles and equipment; the construction of mine site roads and infrastructure; vehicular traffic; crushing and hauling; waste rock disposal; access road upgrades; transmission line construction, and the presence and maintenance of both; and quarry/borrow pit operations.

Change in Wildlife Mortality

Employees are prohibited from firearm possession (unless authorized by the SGC Executive Committee), and hunting and fishing on site; therefore, no new hunting pressure will result from the Project. However, wildlife mortality may result during vegetation clearing during construction (e.g., destruction of breeding bird nests), vehicle collisions associated with increased traffic volumes and speed (e.g., upgrades to the existing access

road), lethal control of problem wildlife (if wildlife are attracted to the Project and pose a health and safety risk to personnel), or potential wildlife contact with toxins.

Change in Wildlife Movement Patterns

Wildlife movement patterns may change as traffic increases and maintenance along the existing access road. While the access road already exists and little additional vegetation will be cleared, increased traffic volumes may deter wildlife from crossing the road. In addition, during construction and operations the access road will be maintained (plowed) during the winter. These changes may affect movement patterns of species such as moose that tend to move over large areas. Sensory disturbance from vehicle traffic, blasting, and camp operations may also influence how wildlife species move within and between habitat types.

Table 1.1-1: Potential Project Effects to Wildlife

Project Activities and Physical Works	Potential Effects		
	Habitat	Mortality	Movement
Construction Phase			
Site clearing and grubbing	✓	✓	✓
Site grading including blasting, overburden removal and overburden disposal	✓	✓	✓
Borrow areas development and use	✓		
Access road upgrades	✓	✓	
Camp Construction (construction and operations camps)	✓	✓	
Diesel power generation	✓		✓
Use of large construction vehicles and equipment		✓	✓
Construction of mine site infrastructure and access roads	✓	✓	
Vehicular traffic	✓	✓	✓
Clearing of transmission line Right of Way	✓	✓	✓
Operations			
Open pit mining (blasting, ore/waste hauling, open pit dewatering)	✓		✓
Ore processing (crushing and hauling)	✓		
Gold heap leach facility operation	✓	✓	
Solid waste management		✓	
Camp operation	✓		
Vehicular traffic		✓	✓
Access road and transmission line presence and maintenance			✓
Quarry/borrow pit operations	✓		
Diesel power generation	✓		✓
Fuel, hazardous materials, and explosives management		✓	

1.2 CONSULTATION SUMMARY

Community and public consultations provided feedback on wildlife protection from private individuals, the general public, territorial and federal employees and the Mayo District Renewable Resources Council. During the scoping and subsequent assessment of the Project under YESAA, the First Nation of Na-Cho Nyäk Dun

(FNNND) provided extensive feedback on key issues and concerns with respect to wildlife protection. The key issues and concerns raised by the FNNND have been addressed by SGC through Project design, construction and operational planning, the Environmental Monitoring and Adaptive Management Plan, and this WPP.

The key issues and concerns for wildlife identified through consultation with the FNNND and the SGC mitigation measures are summarised in Table 1.2-1.

Table 1.2-1: Issues and concerns for wildlife identified through consultation with the FNNND

Issue and concerns	SGC Mitigation	Operational Plan or Project design to address issue or concern
Increased hunting pressure due to presence of SGC employees and contractors.	<ul style="list-style-type: none"> ▪ The possession and use of personal firearms or projectile weapons of any type by employees, management and contractors is prohibited on the Project site. ▪ All Project related employees and contractors are forbidden to hunt, fish, trap, harvest or harass wildlife on the Project site. 	<ul style="list-style-type: none"> ▪ Wildlife Protection Plan ▪ Site and Project General Rules Policy
Passive wetland structures (water treatment systems post closure) may pose a risk to wildlife if water quality within them falls outside of aquatic guidelines or if edible plants surrounding the wetland concentrate metals and are then consumed.	<ul style="list-style-type: none"> ▪ If water quality in passive treatment systems exceeds guidelines, access by wildlife will be restricted until water quality criteria are met and seepage from Project facilities has equilibrated. ▪ Monitoring of metal concentrations in soil and vegetation will be conducted during all phases of the Project and adaptive management steps will be taken as required. 	<ul style="list-style-type: none"> ▪ Wildlife Protection Plan ▪ Environmental Monitoring, Surveillance and Adaptive Management plan ▪ Decommissioning and Reclamation Plan
Impacts on wildlife that may eat berries and plants with elevated metals and metalloids.	<ul style="list-style-type: none"> ▪ Monitoring of metal concentrations in soil and vegetation will be conducted during all phases of the Project and adaptive management steps will be taken as required. 	<ul style="list-style-type: none"> ▪ Wildlife Protection Plan ▪ Environmental Monitoring, Surveillance and Adaptive Management Plan
Negative impacts on wildlife health due to project/human presence and noise.	<ul style="list-style-type: none"> ▪ SGC has committed to monitor wildlife distribution (moose) in the Project area to determine if Project activities alter moose habitat use and distribution and to take mitigative action if warranted. 	<ul style="list-style-type: none"> ▪ Wildlife Protection Plan
Attractants stored in camps and areas with human wastes need to be managed to reduce the mortality risk to grizzly bears.	<ul style="list-style-type: none"> ▪ Putrescible waste and other waste that will attract wildlife (e.g. food containers, recyclables, etc.) will be stored in commercial bear-proof containers and surrounded by an electric fence operational from May 1 to October 31. If there are tracks or other signs of dangerous wildlife attempting to access the waste storage area, the fence will be activated between November 1 and April 30. ▪ Putrescible waste will be disposed of by incineration on a regular basis. 	<ul style="list-style-type: none"> ▪ Solid Waste and Hazardous Material Management Plan ▪ Wildlife Protection Plan

Issue and concerns	SGC Mitigation	Operational Plan or Project design to address issue or concern
Gaps in the snow banks on cleared roads need to be created to facilitate moose movement across roads.	<ul style="list-style-type: none"> ▪ Push-outs will be ploughed on the access road, as required, depending on the presence of wildlife trails or crossings and snow height. ▪ SGC will provide and maintain signage where problems are most likely to occur (blind turns, watercourse crossings, etc.), reminding drivers to be vigilant for wildlife and to give them the right of way. ▪ SGC will implement speed limits for Project related vehicles. 	<ul style="list-style-type: none"> ▪ Wildlife Protection Plan
Ponds constructed for the Project which may contain liquids such as cyanide may attract birds (and other wildlife); their access to these ponds must be controlled to prevent adverse effects.	<ul style="list-style-type: none"> ▪ BirdBalls or a reasonable alternative to deter waterfowl or other birds will be placed in the events ponds at all times whether ponds are in use or not. ▪ Events ponds shorelines will not be reclaimed during operations. 	<ul style="list-style-type: none"> ▪ Wildlife Protection Plan

In addition to the consultation with the FNNND and their Project review, consultation with regulators, stakeholders and the general public was undertaken and three key wildlife management issues were identified:

- Compliance with the *Migratory Birds Convention Act (MBCA)* and *Yukon Wildlife Act* with respect to the destruction of nests and nesting birds;
- Management of species at risk, consistent with the requirements of *SARA*; and
- Management of species important to the FNNND.

2 WILDLIFE RESOURCES

The Project is located in the Mayo Lake-Ross River Ecoregion and contains two ecological zones: the Forested zone and the Subalpine zone. The Forested zone ranges from 600 m asl to 1,225 m asl elevation and covers mid to lower mountain slopes and valley bottoms and is dominated by black and white spruces, subalpine fir, trembling aspen, and Alaska Birch. The Subalpine zone occurs above 1,225 m asl along high plateaus and is characterized by discontinuous tree cover, scrub birch, willows, herbs, mosses, and lichens.

Wildlife baseline information is provided in the Environmental Baseline Report: Terrestrial Wildlife (Stantec 2011) (Appendix A). In addition to this study, winter moose distribution surveys have been conducted that provide additional data. The first aerial survey of moose distribution was conducted by Stantec in March 2011, followed by moose surveys conducted in March of both 2012 and 2013 – see Eagle Gold Late Winter Moose Survey (EDI 2013, Appendix B).

The combined wildlife habitats within the Forested and Subalpine zones support at least 32 wildlife species including moose (*Alces alces*), woodland caribou (*Rangifer tarandus caribou*), black bear (*Ursus americanus*), grizzly bear (*Ursus arctos*), grey wolf (*Canis lupus*), red fox (*Vulpes vulpes*), snowshoe hare (*Lepus americanus*), wolverine (*Gulo gulo*), and American marten (*Martes americana*). Game bird species include Spruce Grouse (*Falcapennis canadensis*), Dusky Grouse (*Dendragapus obscurus*), Ruffed Grouse (*Bonasa umbellus*), and three species of ptarmigan (*Lagopus* sp.). Raptors present may include Golden Eagle (*Aquila chrysaetos*), Red-tailed Hawk (*Buteo jamaicensis*), Northern Hawk Owl (*Surnia ulula*), Great Gray Owl (*Strix nebulosa*), and Gyrfalcon (*Falco rusticolus*). A variety of passerine/songbird species is also present. They include Dark-eyed Junco (*Junco hyemalis*), Gray Jay (*Perisoreus canadensis*), Olive-sided Flycatcher (*Contopus cooperi*), Rusty Blackbird (*Euphagus carolinus*), Tree Swallow (*Tachycineta bicolor*), and Townsend's Solitaire (*Myadestes townsendi*). Waterfowl species include Trumpeter Swan (*Cygnus buccinator*), Mallard (*Anas platyrhynchos*), and Canada Goose (*Branta canadensis*) amongst others. The wood frog (*Rana sylvatica*) is the only amphibian species possibly expected to occur, and no reptile species are suspected to inhabit the area.

The four most important wildlife habitat types in the Project area are wetlands, riparian corridors, old forest, and areas previously disturbed by fire.

2.1 VALUED ECOLOGICAL COMPONENTS

Focal species or Valued Ecological Components (VECs) were selected for detailed consideration in the Project Proposal submitted pursuant to YESAA. Five focal species were chosen based on the following criteria:

- Conservation status (at risk);
- Hunted or trapped;
- Of interest to the FNNND;
- Share life requisites with a broad spectrum of other species; or,
- Of management concern to the Yukon Government.

The focal species were chosen in collaboration with the Yukon Environmental Socio-economic Assessment Board and Yukon Environment (Parry 2009). Moose and grizzly bear received the most attention in the assessment as the FNNND, YESAB, and Yukon Environment indicated they were of particular concern. Species at risk were included when their ranges overlapped with the Project, potential habitat is available, and there is a reasonable potential for an adverse effect.

2.2 FOCAL SPECIES

Moose (*Alces alces*)

Moose were selected as a VEC because they are important both recreationally and commercially and are harvested by both FNNND and non-aboriginal hunters. Moose were also selected due to their abundance in the Project area and they are of management concern for Yukon Government.

Grizzly bear (*Ursus arctos*)

Grizzly bear is a focal species because of its conservation status and importance to the FNNND. Schedule 3 of SARA identifies grizzly bear as a species of Special Concern. Grizzly bears are also a good indicator species because they are a wide-ranging species that utilize a variety of habitat types seasonally. They represent other wide-ranging species that have used the Project area historically (e.g., black bear, and wolverine, are sensitive to disturbance, and may be affected by development activities). While few grizzly bears were detected during baseline surveys (four observations), the Project area includes forested riparian areas, marshland, and subalpine areas that represent suitable habitat.

American marten (*Martes americana*)

American marten was selected because it is important both economically and culturally to local citizens, including the FNNND. The FNNND identify marten as present in, or in the vicinity of, the Project area and have reported a decline in the local marten population, but suggest that the decline may be part of a naturally fluctuating cycle for marten in the region.

Olive-sided Flycatcher (*Contopus cooperi*)

Olive-sided Flycatchers were included as a focal species as they are listed as Threatened on Schedule 1 of SARA. This species, including nests and eggs, is also protected from disturbance, destruction, or possession under the federal *Migratory Birds Convention Act (MBCA)*. The breeding range of the species includes forested regions of northern Canada that overlap with the Project area.

Rusty Blackbird (*Euphagus carolinus*)

Rusty Blackbird were included as a focal species as they are listed as a species of Special Concern on Schedule 1 of SARA and protected under *MBCA*. Breeding range of this bird includes forested regions of northern Canada that overlap with the Project area.

2.3 OVERVIEW OF SEASONAL USE AND HABITAT FOR FOCAL SPECIES

Some habitat types are particularly important to wildlife. The Wildlife Key Area (WKA) Inventory Program has been developed by Yukon Government “to inventory locations important to populations of legally harvested and protected wildlife species”. There are no WKAs within the Regional Assessment Area (defined for the Project as 30km by 30km area that is essentially centered on the Project site and access road) with the closest WKA,

designated because of its importance as moose winter habitat, approximately 55 km northeast of the Project site.

In consultation with the FNNND, local land users, and Project biologists, three important wildlife habitat types identified by their productivity, prevalence and/or contribution to key requirements for certain wildlife species were identified:

- Wetlands – Wetlands are relatively uncommon in the Project area. These areas are generally associated with the Lynx Creek and Haggart Creek valley bottoms and provide important habitats as preferred feeding habitat for moose and grizzly bear as well as other species such as Rusty Blackbird.
- Riparian areas – Riparian areas are the vegetation assemblages occurring immediately adjacent to flowing water. Riparian areas provide productive habitat and are used as travel corridors by a variety of wildlife. Riparian corridors are often attractive to wildlife as they provide food, cover, and relatively homogeneous topography facilitating energy efficient movement. The lower valley bottoms including Lynx Creek, Haggart Creek and the South McQuesten River provide important riparian areas for wildlife in the Project area.
- Old forest - For the assessment of the Project, old forest was defined as structurally diverse stands older than 140 years. Old forest habitat is important for wildlife species such as American marten and may also be used by bears for hibernation with dens dug beneath root wads of large trees. Moose may seek out mature coniferous forest primarily to satisfy winter thermal requirements.

For the focal species selected during the assessment of the Project, the following seasonal uses and occurrence were identified:

Moose (*Alces alces*)

The first 20 km of the South McQuesten River follows a portion of the South McQuesten River valley that is known as excellent calving, summer rutting and late winter habitat. In late fall, moose move from these lowlands to the Potato Hills in the Project area (east of the mine site). The wetlands along Lynx and Haggart creeks are preferred feeding habitat for moose. The riparian corridors are often used by moose and, together with low elevation forests, are an attractive habitat as they provide food and cover, especially in winter. Wildlife trails connecting alpine or sub alpine habitats and lower elevation valley bottoms exist in the Project area and appear to have long term use by moose. Typically, moose in the Project area spend summer and fall on middle to upper slopes including higher elevation alpine and sub-alpine habitats during rutting season.

The majority of preferred habitat for moose is found outside of the direct mine site footprint, and winter shelter habitat is concentrated south of the mine site footprint above and adjacent to Lynx Creek. Winter shelter habitat is found throughout most of the access road corridor. Relatively minor amounts of moose winter feeding habitat was identified within the mine site footprint when compared to thermal habitat presence.

Grizzly bear (*Ursus arctos*)

Few Grizzly bears were detected during baseline surveys for the Project area (four observations), and no grizzly bears have been recorded harvested while hunting in Game Management Zone GMZ2-62 (which encompasses the mine footprint) during the period of 1999 to 2008. Three individuals were harvested from adjacent Game Management Zones during the same period.

Spring and fall feeding grizzly habitat has been identified in the Project area. Spring feeding habitats are associated primarily with riparian corridors such as Haggart Creek, Lynx Creek, and the South McQuesten River outside of the direct mine footprint. A few relatively small patches of preferred habitat were identified along the access road. Fall feeding habitat was more abundant and widespread through the Project area, concentrated in patches on forested slopes surrounding the mine site footprint. Smaller, isolated patches were noted along the access road, particularly adjacent to and south of the South McQuesten River.

American marten

American marten depend on coarse woody debris, which is often associated with old forest. Ecological land classification baseline field studies revealed an almost complete lack of coarse woody debris on the Project site. However, for the purposes of the environmental assessment, the assumption was made that American marten utilize coarse woody debris for shelter in old forests and feed in riparian areas adjacent to the site. Based on typical marten densities in the Yukon, the anticipated loss of old forest and riparian areas due to Project activities is less than the area required to support a single marten.

Olive-sided Flycatcher

Olive-sided Flycatchers prefer old conifer forest but will use younger forests that are open and in association with edge habitat (proximity to open areas such as wetlands, ponds, lakes, marshes and meadows is preferred). The Project area does contain some potential habitat for Olive-sided Flycatchers and during breeding bird surveys conducted in 2011 a total of 10 Olive-sided Flycatcher were recorded in the Project area. Eight of the observations were in the proposed mine site footprint and two observations occurring along the access road.

Rusty Blackbird

Rusty Blackbird prefer wetlands and riparian areas adjacent to mature or old forests. Three Rusty Blackbirds were observed during the 2011 breeding bird survey adjacent to or near open water wetland habitat along the southeastern portion of the access road. There is only one wetland area that exists on the Project site which is located adjacent to Haggart Creek and will not be impacted by mining activities.

3 WILDLIFE PROTECTION PROCEDURES

SGC will implement the following measures to minimize effects to wildlife and their habitat:

3.1 GENERAL: WILDLIFE – HUMAN CONFLICTS

SGC has implemented the Site and Project General Policy, which restricts employees, management, and contractors from possessing personal firearms or projectile weapons of any type throughout the life of the Project. The policy also restricts Project related employees and contractors from hunting, fishing, trapping, harvesting or harassing wildlife on the Project site.

SGC has also implemented a Wildlife Encounter Procedure to ensure all personnel and independent contractors are aware of proper procedures when encountering wildlife on or around the site. The Wildlife Encounter Procedure is attached as Appendix C.

In addition to these corporate policies and procedures, SGC will implement the following measures to minimize problem wildlife-human interactions:

1. Implementation of a Bear Aware Program as a standard part of the health and safety orientation and will make supporting materials (e.g., pamphlets, videos) readily available on site.
2. To minimize grizzly and black bear conflicts, den site locations will be identified, recorded and avoided until they are no longer in use.
3. Minimize or eliminate the use of vegetation attractive to bears and ungulates (e.g., legumes) in seeding mixtures used along roadsides.
4. Cut brush along roads and facilities early in the growing season, before it becomes an attractant to large wildlife species.
5. Use manual clearing rather than herbicides in vegetation management activities.
6. Store putrescible waste in wildlife-proof containers prior to incineration in a manner that does not attract wildlife.
7. Enclose the solid waste management area with an electric fence and store other attractants indoors.
8. Identify and avoid bird nests during construction activities that overlap bird breeding and nesting periods.
9. SGC will reduce bird mortality risk along the transmission line right of way by following existing design guidelines such as the *Avian Protection Plan Guidelines* and *Suggested Practices for Avian Protection on Power Lines*.
10. Prohibit all Project staff and contractors from feeding wildlife.
11. Prohibit employees and contractors from having personal pets on the Project site.
12. Prohibit littering and ensure all work areas are kept free of waste that may act as an attractant.

3.2 LAND USE

To minimize the impact of the Project on traditional land users and guide outfitters, SGC will:

- Re-vegetate reclamation areas with native species consistent with surrounding vegetation, except where regulatory agencies indicate that natural succession is preferable.
- Maximize use of direct placement techniques (minimizing stockpiling) to minimize the loss of biological activity in reclamation capping materials.
- Follow SGC procedures and regulatory requirements for the safe and prompt cleanup of any spills (per the Eagle Gold Project - Spill Response Plan).
- Ensure that upon closure of the Project, a single lane road remain in place to provide access to the Potato Hills area for FNNND traditional land users.
- Communicate its plans and timing of proposed activities to other resource users including known subsistence harvesters, trappers and outfitters.
- Make opportunities available for FNNND participation in the identification and definition of areas to be banned for hunting.

3.3 TRANSPORTATION

SGC commits to the following measures to mitigate the potential effects of the access road and Project-related traffic on wildlife resources:

- Reduce personnel traffic on the access road by implementing an employee travel policy that prohibits the use of personal vehicles without prior approval and requires employees and contractors to utilize SGC provided charter transportation to and from the Project site.
- Facilitate wildlife movement by:
 - a) providing wildlife crossing and escape points in the plowed snow banks along the access road;
 - b) providing wildlife crossing points along extensive open ditches; and,
 - c) providing direction to Project staff and contractors on methods to avoid interference with the movement of wildlife across roads.
- Promote proactive radio communication among users of the access road to convey safety information, including sightings of large wildlife species along the road.
- Provide and maintain signage where wildlife encounters are most likely to occur (e.g. blind turns, obstructed views, water crossings, etc.), reminding drivers to be vigilant for wildlife and to give wildlife the right of way.
- Report collisions and carcasses of ungulates and other large animals observed on the Project site and along the access road to the Environmental Manager, Mine Manager or designate(s) as soon as possible to ensure prompt removal. Near misses and collisions that result in the death or injury of an ungulate or other large animal must be reported as soon as possible. Measures will be developed in coordination with overall road planning with Yukon Government Highways and Public Works if required.

- Implement a maximum speed limit for Project related vehicles of 50 km/h on the access road to minimize dust and reduce wildlife collisions.

3.4 WILDLIFE HABITAT PROTECTION

SGC will implement the following clearing practices to minimize potential effects on wildlife and wildlife habitat:

- Minimize Project footprint. Site clearing will be minimized to only the area needed to safely construct and operate the Project. Before clearing, wildlife habitat features (e.g., mineral licks, dens, nest trees, snags, rocky outcrops, small ponds/seepages) will be identified and evaluated to determine if they can be maintained. Even if small, these patches will benefit wildlife and contribute to reclamation.
- Clear vegetation outside of the breeding bird windows, being approximately May 1 to July 31. Where this is not possible, SGC will consult with the appropriate regulators (Yukon Environment, Canadian Wildlife Service) and develop management strategies. These strategies are likely to include surveying the area to be cleared for nests a maximum of one week prior to clearing. If active nests or migratory birds are discovered, SGC shall postpone activities in the immediate nesting area until nesting/fledging is complete.

During the implementation of the Reclamation and Closure Plan, SGC will:

- Re-vegetate reclamation areas with native species consistent with surrounding vegetation, except where regulatory agencies indicate that natural succession is preferable.
- Maximize use of direct placement techniques (minimizing stockpiling) to minimize the loss of biological activity in reclamation capping materials.
- Follow SGC procedures and regulatory requirements for the safe and prompt cleanup of any chemical spills.

3.5 HEAP LEACH / EVENTS POND OPERATION AND MANAGEMENT

There is no potential interaction between wildlife and process solution containing sodium cyanide in the Heap Leach Facility in-heap pond as process solution is contained within the ore pore space and will be irrigated via buried drip emitters. Therefore, the in-heap pond will not include open solution accessible to wildlife. However, there is some risk to wildlife from cyanide containing process solution that may be temporarily stored in the events pond. To mitigate the potential for wildlife to be exposed to the open pond containing dilute sodium cyanide solution, the events pond will be fenced, vegetation will be controlled, and Bird Balls™, netting or reasonable alternatives will be used to deter waterfowl or other birds from landing on the pond. To reduce potential wildlife mortality in the Heap Leach Facility area and events pond SGC will:

- Fence and control (minimize) the growth of vegetative cover at any mine site location with compromised water quality (e.g., event pond);
- Not reclaim events pond shoreline to prevent wildlife use of vegetation;
- Use Bird Balls™, or a reasonable alternative to deter waterfowl or other birds from landing on the events pond when temporarily utilized for storage of process leach solution. For several reasons, Bird Balls™ have been selected as the best mitigation option to reduce wildlife mortality in the events pond. Bird Balls™ are hollow, floating plastic balls that create a dense cover over the entire surface or a

waterbody. When deployed, flying waterfowl do not recognize the area as open water and therefore do not land on it. This reduces the risk of contact with untreated water. Bird Balls™ are simple to install, deter a variety of wildlife (e.g. by making the surface of the event pond unrecognizable as water), are effective as water levels change (rising and falling as needed), are not damaged by snow or ice, and minimize free cyanide loss due to volatilization. Bird Balls™ are effective for the size of the Project events pond; and

- Design sediment ponds and associated ditches to reduce potential for entrapment of wildlife (minimum of 2H:1V side slopes).

4 MONITORING

4.1 WILDLIFE RECORDS PROGRAM

The Wildlife Records Program has been designed to provide data to evaluate changes to wildlife distribution and habitat usage as a result of Project activities. This program will involve reporting by all Project related employees and contractors of wildlife observations and incidents during Project construction, operations and closure. Wildlife observations include visual observations of wildlife behavior and other signs of wildlife presence on the Project site (e.g. tracks, scat, dens, nests, etc.). The protocol for reporting wildlife incidents and observations is provided in Appendix C Wildlife Encounter Procedure. The Wildlife Incident Reporting Form (Appendix D) and Wildlife Observation Form (Appendix E) are attached. All Wildlife observations and incidents are to be reported to the site Environmental Coordinator.

SGC commits to the following monitoring of wildlife resources and associated activities:

- SGC will track and report all wildlife incidents to the authorities as appropriate. Wildlife incidents are defined as vehicle collisions, carcasses, nuisance wildlife occurrences, bear encounters or problem bears.
- During construction and operations, the Environmental Coordinator will document observations of focal species (moose, grizzly bear, Olive-sided Flycatcher, Rusty Blackbird) and others on the access road and within 1 km of the mine site using the Wildlife Observation Form (Appendix E).
- Any sightings of Olive-sided Flycatchers and Rusty Blackbirds, or any other SARA- listed species during the life of the Project shall be logged and reported to the Yukon Conservation Data Centre.
- Close collaboration with both the FNNND and YG to understand harvest rates of moose in Game Management Subzones adjacent to the mine site and proposed access route.
- SGC will monitor the implementation of all mitigation measures and employ adaptive environmental management as and where necessary.

4.2 HEAP LEACH FACILITY AREA AND EVENTS POND

As there is no potential interaction between wildlife and process solution contained in the in-heap pond, the monitoring program for the Heap Leach Facility Area with respect to wildlife will follow the procedures and protocols identified for the Wildlife Records Program. Environmental monitoring protocols for other environmental parameters with respect to the Heap Leach Facility are detailed in the Environmental Monitoring, Surveillance and Adaptive Management Plan.

The purpose of the events pond monitoring is to ensure wildlife access is restricted from process solution. The Environmental Coordinator will conduct regular inspections of the area to ensure fencing is not compromised, that vegetation growth is limited, and that Bird Balls™ or alternative measures to deter waterfowl remain in place.

4.3 MOOSE DISTRIBUTION SURVEYS

Annual winter moose distribution surveys are ongoing in accordance with the Decision Document. Decision Document terms and conditions include commitments made by SGC as part of the environmental assessment completed under YESAA. Commitment #35 from Appendix A of the YESAB screening report states:

SGC will implement annual aerial mapping of winter moose distribution within 5 km of the access road and mine site and in adjacent control areas. This will be conducted before construction (in 2011 and 2012), during construction, and during mine operations, to allow assessment of displacement and population reduction resulting from mine activities, and adaptive management measures if negative effects occur.

Subsequent comments received August 24, 2011 from Environment Yukon's Environmental Programs Branch, recommended changes to the commitment (YOR 2010-0267-197-1). The changes specified that the survey transects should extend 10 km from the access road and mine site, and that the area from 5 km to 10 km out was to be treated as the "control" area. These recommendations were received after the completion of the 2011 baseline moose distribution survey, which was conducted in March 2011. The first aerial survey of moose distribution was conducted by Stantec in March 2011, followed by moose surveys conducted in March of both 2012 and 2013 – see Eagle Gold Late Winter Moose Survey (EDI 2013, Appendix B). Consequently, changes to the survey methods were not incorporated in the first year survey but were incorporated into the 2012 and 2013 surveys. SGC will continue to incorporate the recommended changes to the survey study design in subsequent monitoring years.

Survey Methods

Surveys are conducted using fixed wing aircraft over 2-3 days depending upon weather conditions. A total of 4 observers conduct the survey and when possible observers include trained Wildlife biologists, SGC Environmental Team personnel, and the FNNND Environmental Monitor.

Forty transects, spaced 1 km apart are flown at a speed of 120 – 150 km/hr at a range of 100 – 400 m above ground. Aircraft speed, height-above-ground, and ability to fly "true" to transect lines are often variable due to the mountainous terrain of the survey area. When spotted, moose are circled 1 – 2 times to identify sex and age, and to locate other moose potentially in the vicinity. However, given aircraft speed and landscape topography, circling is not always possible. All observed moose are recorded and waypoints taken. An "observation" refers to moose observed within the survey area. Incidental observations are observations occurring outside the survey area and are also recorded.

Analysis for the first survey was limited to compiling and mapping the locations of moose observations including information on number, sex, and whether single animals or calf-cow pairs were seen. Snow accumulation data are incorporated into analysis due to the potential effect that snow depth can have on the distribution of moose. Snow data will continue to be incorporated as a component of the ongoing moose distribution monitoring program.

Survey results are provided to Environment Yukon and SGC will evaluate the survey results with Environment Yukon to determine any required adjustments to survey methods and survey frequency. This evaluation has been the subject of communications with the Yukon Government Regional Biologist when it was discussed that if no effects are observed after five years of monitoring, the frequency of monitoring could possibly be reduced.

4.4 MONITORING METAL LEVELS IN VEGETATION

The vegetation monitoring program has been designed to evaluate changes to vegetation during all phases of the Project. The objectives of the program include measuring potential plant metal uptake during construction and operations and measuring the success of reclamation re-vegetation efforts. The monitoring program will establish permanent sample sites in the Project area and will assess mercury and metals levels in select vegetation tissue. Vegetation monitoring methods are provided in the Environmental Monitoring, Surveillance and Adaptive Management Plan.

4.5 REGIONAL WILDLIFE MONITORING PROGRAMS

SGC will consider supporting other regional monitoring programs once analysis of wildlife mortality and movement trends and vegetation metals concentrations have been established during the construction and operations phases of the Project.

5 REPORTING

In addition to the reporting described above for moose distribution surveys, SGC will prepare an annual report proscribed by permit and license terms to summarize trends that are observed and any changes to the WPP that have been implemented as a result of these observations. The Environmental Manager will assess trends developed by the WPP and adaptive management measures in coordination with the YG Regional Biologist and others as required.

6 REFERENCES

EDI 2013. Eagle Gold Late Winter Moose Survey – 2013.

Government of Canada. 2012. Species at Risk Act Public Registry. Accessed: August 30, 2012 from:
http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=999.

O'Donoghue, Mark. Northern Tutchone Regional Biologist. Yukon Government, Whitehorse, Yukon. Email
November 5, 2012.

Parry, R. 2009. Meeting Notes from the Eagle Gold Wildlife Technical Input Meeting (Yukon Government,
Development Assessment Branch, and YESAB). November 2009.

Puls, R. 1994. Mineral Levels in Animal Health: Diagnostic Data, 2nd Edition. Sherpa International, Clearbrook,
BC.

Resources Inventory Committee (RIC). 1998. Standard for Terrestrial Ecosystem Mapping in British Columbia.
Available at: <http://archive.ilmb.gov.bc.ca/risc/pubs/teecolo/tem/tem1/tem11.htm>

Stantec 2011. Eagle Gold Project, Project Proposal for Executive Committee Review. June 2011.

Stantec 2011. Eagle Gold Project. Environmental Baseline Report: Terrestrial Wildlife.

Stantec 2011. Eagle Gold Project. Environmental Baseline Report: Vegetation.

Stantec 2011. Eagle Gold Project. Technical Data Report: 2011 Aerial Survey of Moose Distribution.

US Geological Survey (USGS). 2012. North American Breeding Bird Survey. Accessed: August 30, 2012 from:
<http://www.pwrc.usgs.gov/bbs/>.

Yukon Environmental and Socio-economic Assessment Board. 2012. Eagle Gold Project Draft Screening Report
and Recommendation. Project Assessment 2010-0267.

Yukon Government 2012. (DRAFT) Plan Requirements for Quartz Mine Licensing.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A
Environmental Baseline Report:
Terrestrial Wildlife

THIS PAGE INTENTIONALLY LEFT BLANK

EAGLE GOLD PROJECT

Environmental Baseline Report: Terrestrial Wildlife

FINAL REPORT



Prepared for:

Victoria Gold Corp
680 – 1066 West Hastings Street
Vancouver, BC
V6E 3X2

Prepared by:

Stantec Consulting Ltd.
4370 Dominion Street, Suite 500
Burnaby, BC
V5G 4L7
Tel: (604) 436-3014 Fax: (604) 436-3752

Project No.:

1231-10377

June 2011



Stantec



AUTHORSHIP

Jason Emery, M.Sc.Author
Doug Mason, Ph.D., M.Sc.Author
Jeff Brokaw, Ph.D. Senior Review
Mike Settington, M.Sc. Technical Support

EXECUTIVE SUMMARY

Stantec was retained by Victoria Gold Corporation to prepare an environmental baseline report to characterize wildlife habitat use in the vicinity of the Eagle Gold Project area. Field programs were conducted in 2009 following a review of current regulatory requirements and historic data from consultant reports written in 1995, 1996, and 2006. This report presents background information, methods, and results for the baseline wildlife assessment.

The study area is located in the Mayo Lake-Ross River Ecoregion and contains two ecological zones, Subalpine and Forested. Both of these zones serve as habitat for wildlife. To characterize wildlife use of these areas, this report draws on information from a number of sources, including existing literature, data gap analyses, terrestrial wildlife studies conducted during 2009 by Victoria Gold; and preliminary discussions with wildlife biologists in the region and with the First Nation of Na-Cho Nyäk Dun (NNDNFN).

A total of thirty-one individual species were recorded using data from all sources. Mammals present include two ungulate species (moose, woodland caribou), two bear species (black bear, grizzly bear), and an assortment of small to medium size mammals including gray wolf, wolverine, red fox, American marten, snowshoe hare, and lemming. Moose was the most commonly detected¹ mammal species. It was found across all survey types and a wide range of habitat types, indicating a relatively wide distribution in the area. Most detections were in lower-elevation forested habitat zones likely used all year long. These areas contain riparian areas, marshes, and deciduous forest stands which contain preferred food sources and offer thermal protection in winter. The study's moose detections are consistent with the reports from the NNDNFN—the area provides winter habitat for moose and is important for moose hunting. Aerial and ground surveys and telemetry data suggest that while woodland caribou make some use of the study area, it does not represent core habitat for them.

Snowshoe hare, red squirrel, and ptarmigan were the most commonly detected mammal species after moose. This is of interest as all three species represent potential prey for a range of larger mammals (e.g., lynx, wolf, and red fox), and raptor species such as Golden Eagle. While formal bird surveys have not been carried out, eighteen bird species were detected in the study area including Golden Eagle, Gyrfalcon, Trumpeter Swan, Dusky Grouse, Common Raven, Ptarmigan, and Grey Jay.

¹ Detections refer to all instances in which the presence of a wildlife species is noted. It includes both direct observations of wildlife (e.g. an animal is seen) and evidence of animal sign (e.g. wildlife tracks or scat are noted).

ABBREVIATIONS AND ACRONYMS

ARSA	Access Road Study Area
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
IEE	Initial Environmental Evaluation
LSA	Local Study Area
NNDFN.....	First Nation of Na-Cho Nyäk Dun
RSA.....	Regional Study Area
TEM.....	Terrestrial Ecosystem Mapping
TK.....	Traditional Knowledge
WKA	Wildlife Key Areas
YESAA	<i>Yukon Environmental and Socio-Economic Assessment Act</i>

TABLE OF CONTENTS

1 Introduction 1

2 Methods 2

2.1 Review of Existing Literature 2

2.2 Study Area Boundaries 3

2.2.1 Local Study Area 3

2.2.2 Access Road Study Area 3

2.2.3 Regional Study Area 3

2.3 Field Programs 3

2.3.1 2009 Aerial Survey – Late Winter 4

2.3.2 2009 Track Survey – Late Winter 4

2.3.3 2009 Aerial Survey – Summer 5

2.3.4 2009 Ground-based Surveys – Summer 5

2.3.5 2009 Incidental Detections 5

2.4 Data Analysis 6

2.4.1 Previous Studies Data 6

2.4.2 2009 Ground-based Summer Survey Data 6

2.4.3 2009 Aerial and Track Survey Data 6

2.4.4 Incidental Detections 6

3 Results 7

3.1 Review of Existing Literature 7

3.1.1 Wildlife Key Areas 7

3.1.2 Species at Risk 7

3.1.3 Previous Studies 7

3.2 Field Program Results 9

3.2.1 2009 Aerial Survey – Late Winter 9

3.2.2 2009 Track Survey – Late Winter 9

3.2.3 2009 Aerial Survey – Summer 10

3.2.4 2009 Wildlife Ground-based Surveys – Summer 11

3.2.5 Incidental Detections 13

3.3 Traditional Knowledge 14

3.4 Summary of Baseline Conditions 14

4 Closure 20

5 REferences 20

6 Figures 21

List of Tables

Table 3-1:	Compiled Species Detection List, 1993 – 1995 (Hallam Knight Piésold data)	8
Table 3-2:	Wildlife Track Sets and Sign Recorded on Track Transects, Late Winter, 2009	10
Table 3-3:	Wildlife Aerial Survey Results, Summer 2009	11
Table 3-4:	Wildlife Sign Detections at Ground Survey Plots, Summer 2009.....	12
Table 3-5:	Incidental Wildlife Detections Recorded during Summer 2009 Field Surveys	13
Table 3-6:	Baseline Summary of Past/Present Wildlife Species Detections across Survey Types and Habitat Types.....	16

List of Figures

Figure 2-1:	Study Areas	22
Figure 2-2:	Track Survey Transect Locations (Late Winter 2009)	23
Figure 2-3:	Wildlife Ground-based Survey Plot Locations (Summer 2009)	24
Figure 3-1:	Locaitons of Animals Observed during Late Winter Aerial Survey, 2009.....	25
Figure 3-2:	Locations of Tracks Observed during Late Winter Aerial Survey, 2009.....	26
Figure 3-3:	Locations of Animals Observed during Summer Aerial Survey, 2009.....	27

List of Appendices

Appendix A	Study Area Photographs, 2009
------------	-------	------------------------------

THIS PAGE INTENTIONALLY LEFT BLANK.

1 INTRODUCTION

This report presents results of the wildlife assessment completed by Stantec during 2009 for the Eagle Gold Project (the Project) proposed by Victoria Gold Corporation. The Project is a proposed open pit gold mine within the Dublin Gulch watershed located 85 km northeast of the Village of Mayo, Yukon Territory.

Stantec was contracted by the Stratagold Corporation to begin environmental baseline studies in 2007. In 2009, Stratagold Corporation was acquired by Victoria Gold Corporation. During this time, the project was renamed from Dublin Gulch to Eagle Gold and the local study area was updated to reflect any changes to the geographic extent of the proposed Project.

Wildlife are important due to their value in maintaining functioning ecosystems, providing a harvest resource and for the value and rights associated with First Nations, including the First Nation of Na-Cho Nyäk Dun (NNDNFN). This report characterizes baseline conditions for wildlife in the area of the proposed Project. It draws on information from a variety of sources, including previous studies, baseline field surveys, information provided by the NNDNFN, and wildlife biologists in Yukon. A future report will summarize habitat suitability for key indicator species, using Terrestrial Ecosystem Mapping. It is anticipated that this report will be submitted with the Project Proposal as required by the *Yukon Environmental and Socio-Economic Assessment Act* (YESAA).

The Project is located in the Mayo Lake-Ross River Ecoregion. There are two ecological zones in the study area (see Appendix A for photographs of the area). The Subalpine zone occurs on the ridge tops and high plateaus above 1,225 m. Here tree cover is discontinuous or absent and the vegetation is dominated by scrub birch, willows, ericaceous shrubs, herbs, as well as mosses and lichens. The Forested zone ranges from 600 m elevation to 1,225 m and includes the valley bottoms and the slopes of the mountains below the tree line. In the valley bottoms, forests are dominated by open canopy stands of black spruce. However white spruce is found along creeks and rivers. On the mid to lower slopes, continuous stands of subalpine fir occur along with minor components of white spruce, Alaska birch, trembling aspen, and black spruce. On the upper slopes and up to tree line, open subalpine fir stands are predominant with trees becoming smaller and more spread out with increasing elevation.

Both of these ecological zones serve as habitat for wildlife. To characterize wildlife use of these areas, this report draws on information from a number of sources, including:

- Information from existing literature, including studies conducted between 1993 and 1996 for the Dublin Gulch Project
- A data gap analysis completed in 2007 by Stantec for StrataGold in support of the Project. The gap analysis examined previous wildlife surveys conducted for the Dublin Gulch Project in the 1990s prior to ownership by StrataGold. This analysis identified three gaps, each of which was addressed in the 2009 field surveys—(a) winter track surveys (ungulates, furbearers, and other mammals); (b) summer aerial surveys (ungulates, raptors, Trumpeter Swan, and grizzly bear); and (c) summer ground-based surveys for wildlife (habitat features, wildlife sign, movement corridors, and habitat evaluations)

- Terrestrial wildlife studies conducted during 2009 by Victoria Gold as part of the Project
- Discussions with wildlife biologists familiar with the area
- Preliminary discussions regarding Traditional Knowledge (TK) with the First Nation of Na-Cho Nyäk Dun (NNDNFN), held November 2 – 6, 2009.

This report describes both the methods for the various studies and their results.

2 METHODS

The methods described below fall into three broad categories: a review of existing information, wildlife field surveys, and the analysis of information from both. The baseline report compiles existing information on all wildlife species while focusing on several of particular interest. Of particular interest are moose (the most harvested species that occurs in the study area, and of interest to regulators, NNDNFN, and the public), woodland caribou (boreal populations are listed in Schedule 1 of the *Species at Risk Act*), grizzly bear (which is also of interest to the groups mentioned above), and furbearers such as American marten (which are present and trapped in the study area).

2.1 Review of Existing Literature

The first step in characterizing the area was to review existing information. While the amount of published information for the area is limited, key sources include the following:

- Previous reports on work conducted in the Dublin Gulch Project area (Hallam Knight Piésold Ltd. 1994, 1996, Northern Affairs Program 1995, Rescan 1997)
- Gap analyses for the Dublin Gulch Project (Jacques Whitford AXYS 2007 and Madrone Environmental Services Ltd. 2006), which emphasize the large time frame that has elapsed since some of the initial survey work was completed
- Government of Yukon Department of Environment Wildlife Key Areas' digital-map files of identified wildlife key-areas within Yukon
- Government of Canada Species at Risk Public Registry website (Government of Canada 2009) database, which provides information on species at risk
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC) website, which provides the most up-to-date list of COSEWIC assessed species in Canada (Government of Canada 2009)
- Canadian Endangered Species Conservation Council (CESCC), which provides information on where Canadian species occur and what their status is (CESCC 2006)
- Environment Yukon website, which summarizes species at risk and those provided status under *Yukon Wildlife Act*, 2002.

2.2 Study Area Boundaries

2.2.1 Local Study Area

The Local Study Area (LSA) consists of an approximately 18 square km area encompassing the proposed project site and a surrounding buffer ranging from 0.5 to 1 km (Figure 2-1). The LSA was chosen to encompass the area in which direct effects on wildlife could occur.

2.2.2 Access Road Study Area

The Access Road Study Area (ARSA) is designed to assess the potential effects associated with the access road (Figure 2-1). The ARSA was created by buffering the South McQuesten Road and the Haggart Creek Access Road by 500 m on each side up to the existing Eagle Gold camp site. The ARSA is approximately 44.8 km in length and 45.8 km². The access road study area is intended to provide a baseline for potential disturbance to wildlife resources that may occur due to realignment of the Project access road and use of the road during the Project.

2.2.3 Regional Study Area

The Regional Study Area (RSA) consists of a 23 km by 21 km (483 km²) area surrounding the Project site. This area was chosen because it is large enough to potentially encompass a grizzly bear home range, raptor nest sites (e.g., cliff habitat), and movement corridors (riparian drainages). It includes the Lynx Creek watershed to the south (which is relatively undisturbed when compared to the majority of the placer-mined drainages in the area), the McQuesten River watershed to the north, and the major habitat types present in the region (Figure 2-1).

2.3 Field Programs

Field surveys were conducted to update information and address gaps identified during the literature review and gap analysis (Section 3.1). In 2009, a wildlife field program was conducted over two separate periods. Late winter aerial surveys and ground-based track transects were completed between April 21 – 22, 2009. Summer aerial surveys and ground-based surveys were conducted between August 26 and September 3, 2009.

Program Objectives:

- Rate ecosystem units/habitats for their wildlife value, focusing on the species identified as key indicators (final results of this work are dependent upon modelling and will be presented in a subsequent document)
- Identify and assess key wildlife features (such as cliffs for raptor use) that may be of importance to wildlife
- Record all wildlife observations and wildlife sign (e.g., trail locations, stick nests, dens, and mineral licks) to characterize the present wildlife communities.

The surveys made note of all wildlife species detected. Detections include both direct **observations** of wildlife (e.g., a moose) and **evidence of animal sign** (e.g., moose tracks or scat).

Special focus was placed on species that may occur in the area and are at risk, are hunted or trapped, and/or are of particular interest to the NNDFN or regulatory agencies. These species include grizzly bear (*Ursus arctos*) and woodland caribou (*Rangifer tarandus*) which are both listed as Special Concern by COSEWIC (2009), moose (*Alces alces*), and American marten (*Martes americana*). It is important to note that not all of these species may use the area extensively. For example, in preliminary discussions wildlife biologists familiar with the area noted that while woodland caribou are wide ranging, telemetry data indicate that the project area is peripheral to the range of the Clear Creek herd (which is largely on the opposite side of the North McQuesten River, O'Donoghue, pers. comm. 2009). Nonetheless, given the importance of woodland caribou, field programs described below sought evidence of their use of the area.

2.3.1 2009 Aerial Survey – Late Winter

The aerial survey methods were based on protocols developed for British Columbia (Resources Inventory Committee 2002). The late winter aerial survey's main objectives were to determine whether there is any use by woodland caribou (*Rangifer tarandus caribou*) of the RSA, and to gain information on potential moose (*Alces alces*) abundance. In the RSA a total of 21 transects, of 23 km in length spaced 1 km apart (flight transect grid), were surveyed using a Bell 206 helicopter on April 21, 2009 (Figure 2-1). Transects were flown at a height of approximately 100 m above ground level at approximately 90 km per hour. All species observed were recorded, including group composition and number of individuals observed at each location. In addition to animal observations, tracks were recorded and identified where possible. Coordinates were recorded for each observation using a hand-held GPS. Weather conditions were recorded at the beginning and end of the survey. Species observed while flying outside transects were recorded as incidental observations (see below).

2.3.2 2009 Track Survey – Late Winter

Furbearers were the principal focus of the track surveys, as they are an important socio-economic and cultural resource in the general area. Winter is the only time when furbearer tracks can be easily observed and identified during ground-based searches.

The track survey methods were based on protocols developed for British Columbia (for medium sized carnivores, see Resources Information Standards Committee 1999). These protocols consolidate information on survey techniques from a variety of sources and for a range of species, and are considered applicable to Yukon. These protocols consolidate information on survey techniques from a variety of sources and for a range of species, are readily applicable to other geographic regions including Yukon.

Eight track transects ranging in length from 200 to 250 m were surveyed in or just outside the RSA on April 21 and 22, 2009 (Figure 2-2). The first transect began at 08:15 and the last was completed by 16:30. Transects were surveyed on foot by two biologists. All animal sign (tracks, pellets, scat) was recorded for 25-m sections along each transect. Transect locations were selected

to sample each of the broad habitat types identified in the RSA (e.g., subalpine forest, riparian zone, mature boreal forest, shrub, and burn) plus one that was run along an existing road.

2.3.3 2009 Aerial Survey – Summer

In addition to detecting large mammals, the summer-aerial survey of the RSA was used to identify potential habitat for cliff-nesting raptors and wetland use by nesting Trumpeter Swans.

The aerial survey methods were based on protocols developed for British Columbia (Resources Information Standards Committee 2002). A Bell 206 helicopter was used to survey 21 aerial transects following a grid pattern of 23-km transects set 1 km apart (Figure 2-1). Due to weather conditions, part of the survey was conducted on August 26, 2009, and the remainder on August 27, 2009. The transect grid was centered on the study area and included portions of Lynx Creek to the south, and the East McQuesten River to the north. Transects were flown at a height of approximately 100 m above ground level at approximately 90 km per hour. There were two biologists on board making observations, one on each side of the helicopter. Coordinates were recorded for all observations of animals or animal tracks using a handheld GPS unit. Species identification, number of individuals, and group composition were recorded. Wildlife observations made while flying outside the transect grid were recorded as incidental observations (see below).

2.3.4 2009 Ground-based Surveys – Summer

Wildlife biologists visited 73 plots that were also surveyed by the Terrestrial Ecosystem Mapping (TEM) crew (see Figure 2-3). TEM plots were chosen to ensure coverage of the majority of different habitat types potentially occurring within the LSA, ARSA, and small portion of the RSA. This work was conducted within a variety of ecosystem/habitat types represented primarily within the LSA, centered on the proposed project infrastructure site, and the access road. The ground-based survey methods were based on protocols developed for British Columbia (Resources Inventory Committee 1998). For additional details on the Terrestrial Ecosystem Mapping methodology and results see Stantec 2009.

To assess wildlife use within selected TEM plots, two biologists conducted systematic surveys of animal signs centered on a 10m radius circular plot.

Plot boundaries were marked with flagging tape. The plot was divided in half between the two biologists who searched and recorded any evidence of wildlife presence or habitat usage. Within each plot, any wildlife sign such as scat, tracks, browse evidence, etc., were recorded and identified to species when possible.

2.3.5 2009 Incidental Detections

Incidental detections are those that are not recorded as part of a formal survey protocol. They were recorded during the field studies and included direct visual observations of wildlife (e.g., birds and mammals) and evidence of wildlife sign (e.g., den sites, tracks, or feces) outside of formal ground survey plots or off transect during the aerial surveys.

2.4 Data Analysis

2.4.1 Previous Studies Data

The baseline survey work, from previous studies (Hallam Knight Piésold Ltd. 1993 – 1996) and the current 2009 work, provided information on the presence/absence of wildlife species in the RSA. The data collected from previous studies were not geo-referenced, and contained only verbal descriptions of wildlife detection (visual and sign) locations, and associated species. As such, all data collected from the previous studies were grouped together to form a “master” species list and corresponding numbers of detections recorded (Table 3-1). The total number of detections was counted by adding discrete tracks, scat, and visual observations, which were each considered a discrete detection (e.g., seven moose detections may have been comprised of a mix of two pellet groups, four visual observations and one track detection across more than one survey type).

2.4.2 2009 Ground-based Summer Survey Data

The 2009 summer ground-based surveys focused on assessing wildlife use of the previously delineated TEM mapping sites within the LSA, ARSA, and RSA. For data summary (see Table 3-4 in Section 3.2.4) not every detection type within a discreet plot was presented but rather the number of surveyed plots in which sign of the individual species was detected is summarized. This presents an overall measure of how commonly detected a given species was relative to others across all plots surveyed, but does not necessarily indicate how common a species is, as some species are more easily detected than others.

2.4.3 2009 Aerial and Track Survey Data

Winter and summer aerial survey data and winter track data from 2009 were summarized and presented in both text and tabular format, providing the total number of detections per species (Tables 3-2, 3-3). These detections were also summarized with respect to the habitat or vegetation type they occurred in. Survey detections were mapped to illustrate their relation to both the LSA and RSA (Figures 3-1, 3-2, 3-3). Where wildlife sign was not identifiable to a specific species, the detection was listed by species group (e.g. unidentified raptor).

2.4.4 Incidental Detections

Incidental detections from the summer 2009 field program were summarized in text and tabular format, presenting the total number of each individual species/species group detected (Table 3-5). Detection types were also presented. Although these data represented information collected outside of formal survey protocols, they were considered supplemental and useful in fully characterizing wildlife presence in the both the LSA and RSA.

Data from all sources were compiled to form a “master” baseline summary table (Table 3-6) of species and species groups detected in the LSA, ARSA, and RSA.

3 RESULTS

3.1 Review of Existing Literature

3.1.1 Wildlife Key Areas

The Yukon Government recognizes that to maintain wildlife populations, good quality habitat must be conserved. As such, a digital database of “key areas” for wildlife is maintained and managed by Yukon Department of Environment, Habitat Programs Section. Wildlife Key Areas (WKAs) are defined as “geographical locations used by wildlife for critical, seasonal life functions” (Government of Yukon 2009). The key area concept is most applicable to species that use key areas seasonally each year and less applicable to more generalist or widely distributed species. WKAs have been identified throughout the Territory, although they do not reflect an exhaustive survey of habitat within Yukon.

The nearest WKA to the project lies in the South McQuesten River and McQuesten Lake area. It includes summer nesting-habitat for ducks in the wetlands upstream of McQuesten Lake, for Peregrine Falcon and/or Osprey and/or Bald Eagle on McQuesten Lake, and for Gyrfalcon and/or Golden Eagle immediately north of McQuesten Lake. No WKA is recorded in the LSA, ARSA, or RSA (Government of Yukon 2009).

3.1.2 Species at Risk

Species that are provided status in Yukon by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC, 2009) that may occur in the three study areas include:

- **Special Concern:** woodland caribou (Northern mountain population – *Rangifer tarandus caribou*), grizzly bear (*Ursus arctos*), wolverine (*Gulo gulo*), Short-eared Owl (*Asio flammeus*), and Peregrine Falcon (*Falco peregrines anatum/tundrius*), Rusty Blackbird (*Euphagus carolinus*), Horned Grebe (*Podiceps auritus*)
- **Threatened:** Olive-sided Flycatcher (*Contopus cooperi*), Common Nighthawk (*Chordeiles minor*).

Species which are considered “specially protected” only in Yukon (identified by the *Yukon Wildlife Act*, Government of Yukon 2009) include:

Specially Protected: mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), cougar (*Puma concolor*), Gyrfalcon (*Falco rusticolus*), Peregrine Falcon (*Falco peregrines anatum*), and Trumpeter Swan (*Cygnus buccinator*).

3.1.3 Previous Studies

Previous inventories of wildlife and habitat resources in the study areas are limited in number and scope and the results are not geo-referenced. The primary study of wildlife and habitat was completed between 1993 and 1995 by Hallam Knight Piésold Ltd. as a component of an Initial Environmental Evaluation (IEE) (Hallam Knight Piésold Ltd. 93 – 95).

The species detected are listed below in Table 3-1, based on:

- Winter tracking survey (February 1996)
- Wildlife observation log (1993 June – August, 1995 May-Sept)
- Wildlife observations November 1995 (local trappers line #81)
- Various pellet counts, wildlife sign inventory (July 1995).

Table 3-1: Compiled Species Detection List, 1993 – 1995 (Hallam Knight Piésold data)

Common Name	Scientific Name	Number of Detections ³
Moose	<i>Alces alces</i>	49
Woodland caribou	<i>Rangifer tarandus</i>	1
Grizzly bear	<i>Ursus arctos</i>	2
Black bear	<i>Ursus americanus</i>	7
Bear species	<i>Ursus sp.</i>	5
American marten	<i>Martes americana</i>	10
Wolverine	<i>Gulo gulo</i>	6
Grey wolf	<i>Canis lupus</i>	1
Fox species	<i>Vulpes sp.</i>	13
Great Gray Owl	<i>Strix nebulosa</i>	2
Gyrfalcon	<i>Falco rusticolus</i>	1
Golden Eagle	<i>Aquila chrysaetos</i>	2
Northern Hawk Owl	<i>Surnia ulula</i>	1
Grouse ¹	N/A	17
Ptarmigan ²	<i>Lagopus sp.</i>	42
Bird species	N/A	28
Hare	<i>Lepus americanus</i>	18
Lynx	<i>Lynx canadensis</i>	2
Squirrel	<i>Tamiasciurus hudsonicus</i>	8

NOTES:

¹ Three species likely to occur in the area: Spruce Grouse, Ruffed Grouse, Dusky Grouse

² Three species likely to occur in the area: White-tailed Ptarmigan, Willow Ptarmigan, and Rock Ptarmigan

³ Detections include any discrete finding of sign (tracks, scat) and discrete visual observations of animals

Yukon Renewable Resources completed moose surveys in 1988 and 1993 in the area between the South McQuesten and the Mayo-Elsa-Keno Road (Northern Affairs Program 1995). The estimated moose density was:

- In 1988: 104 moose per 1,000 km²
- In 1993: 119 moose per 1,000 km².

3.2 Field Program Results

3.2.1 2009 Aerial Survey – Late Winter

Three species were observed during the aerial survey: moose (n = 7), grouse² (n = 5), and ptarmigan³ (n = 6). Five of the moose were observed in the East McQuesten River drainage, and two in the Haggart Creek drainage, including one just outside the RSA (Figure 3-1). All moose were observed in spruce or mixedwood forest. Ptarmigan were seen east of the study area in subalpine habitat (on and east of the Potato Hills area), and in the headwaters of Haggart Creek (Figure 3-1). Grouse were observed in mature spruce or mixedwood forest, west and north of the RSA (Figure 3-1).

Tracks observations were also recorded during the aerial survey although identification to species was not always possible. Tracks of the following species were identified on the flight transect grid within the RSA: wolf, wolverine, snowshoe hare, red fox, Canada lynx, marten, and red squirrel. Track observations were distributed throughout the RSA within the flight transect grid and included moose, ptarmigan, snowshoe hare, and lynx tracks (Figure 3-2). A concentration of unknown ungulate tracks were observed outside of the flight transect grid in an old burn in the East McQuesten River drainage. This area was investigated on the ground the following day (see section 3.2.2).

A high number of unidentified ungulate tracks were recorded on Red Mountain on the western edge of the RSA during the aerial survey. Moose are expected to occur in the RSA, and moose pellets and individual animals were recorded during track surveys and a reconnaissance flight over Red Mountain. Local knowledge indicates that woodland caribou herds have been present on Red Mountain for the last 20 years (D. Buyck, 2009 pers. comm., August 2009). A bull woodland caribou was killed by a wolverine at the head of Red Creek 1994 (D. Buyck, 2009 pers. comm., May 2009) indicating that this species may make use of the area.

3.2.2 2009 Track Survey – Late Winter

A total of 146 track sets, or wildlife sign, were recorded during the late winter track survey. These surveys detected signs from six identified and three unidentified species (Table 3-2). All transects are in the LSA with the exception of 3, 5, and 6 (which fall in the RSA, see Figure 2-1).

Moose records were the most common, followed by snowshoe hare, red squirrel, and unknown ungulate (Table 3-2). No woodland caribou tracks were observed. Transects 7 and 8, which were located in an old burn and in riparian habitat along Lynx Creek respectively (Figure 3-2), had the highest number of species (n = 4) (Table 3-2). Moose, snowshoe hare, red fox, and ptarmigan were recorded along these transects.

The records of unknown ungulates were from Transect 7. This transect location was selected based on the observation of a concentration of unknown-ungulate tracks from the air the day before. The

² Three species likely to occur in the area are Spruce Grouse, Ruffed Grouse and Dusky Grouse.

³ It was not possible to distinguish ptarmigan species during the aerial surveys, although individuals sighted would belong to one of three species likely to occur in the area: White-tailed Ptarmigan, Willow Ptarmigan, and Rock Ptarmigan.

tracks were old and could not be positively identified. However, there were winter moose pellets present and a few moose were seen in the vicinity later that day. The burned area was shrubby, with willow species present, indicating a potential desirable food source for moose on winter range.

Table 3-2: Wildlife Track Sets and Sign Recorded on Track Transects, Late Winter, 2009

Transect ID	Habitat Type	Number of Track Sets/Sign Records									
		Moose	Grey Wolf	Snowshoe Hare	Wolverine	Red Fox	Red Squirrel	Ptarmigan	Ungulate Species	Bird Species	Small Mammal Species
1	Shrub	17	1	6							
2	Riparian	1	1	1							
3	Subalpine					1					
4	Mature Conifer/shrub	21								1	2
5	Mature conifer	10		4							
6	Road	14		7							
7	Burn			1			1		19 ^b		1
8	Riparian	11		2	5 ^a		18				
Total		74	2	21	5	1	19	1	19	1	3

NOTES:

^a Likely the same individual as all tracks were in close proximity to each other

^b Old tracks, very likely moose

3.2.3 2009 Aerial Survey – Summer

A total of ten animals were observed during the 2009 summer aerial survey: five moose (*Alces alces*), two Trumpeter Swans (*Cygnus buccinator*), and three raptors. All of the moose observed were adults (one male, three females and one unidentified sex). The two swans observed together were assumed to be a breeding pair. One of the raptors was a Great Gray Owl (*Strix nebulosa*), one a species of hawk, and the third was unidentified. No cliff or rock-outcrop raptor nesting was found during the aerial survey.

Table 3-3 below summarizes the observations made during the aerial survey. Figure 3-3 shows the locations of the observations made.

Table 3-3: Wildlife Aerial Survey Results, Summer 2009

Common Name	Scientific Name	Number Counted	Group Composition	Vegetation Type	Comment
Trumpeter Swan	<i>Cygnus buccinator</i>	2	adults	fen/wetland	wetland complex/low lying
Trail	NA	NA	NA	lichen/spruce	extensive trails/wetland complex
Raptor Species	NA	1	adult	forest/conifer	unidentified species
Raptor Species	NA	1	unidentified	conifer forest	unidentified species
Great Grey Owl	<i>Strix nebulosa</i>	1	adult	conifer forest	perched, treetop
NA	NA	NA	NA	NA	significant game trail
Moose	<i>Alces alces</i>	1	adult male	subalpine	running/mountain top
Moose	<i>Alces alces</i>	1	adult female	wetland/open water	feeding in water
Moose	<i>Alces alces</i>	1	adult female	river/wetland	feeding, head repeatedly under water
Moose	<i>Alces alces</i>	1	adult female	conifer/open	standing
Moose	<i>Alces alces</i>	1	adult	wetland	feeding (incidental, off transect)

3.2.4 2009 Wildlife Ground-based Surveys – Summer

Sign evidence for 24 unique wildlife species was recorded during the ground survey work in 2009 (Table 3-4). Moose represented the most commonly detected mammal species in survey plots (51% of all plots), followed by snowshoe hare (29%), red squirrel (25%), and grey wolf (4%). Moose sign was most evident within open, black spruce forests and 76% of detections were in habitat types broadly classified as forest vs. 24% in subalpine habitats. Woodland caribou sign was located in one survey plot (fresh pellets-coniferous/subalpine fir) confirming that this species does move through the LSA periodically, possibly only single individuals making larger movements away from core herd areas elsewhere. Three woodland caribou herds occur in the general area (Clear Creek, Hart River, and Bonnet Plume) (Government of Yukon 2005).

While formal surveys for birds were not conducted, a total of 13 unique species were recorded during the ground survey work (Table 3-4). All detections were visual or identified by call. For bird species, Dusky Grouse (5% of all plots), and Gray Jay (6%) (both non-migratory residents) were the most commonly observed avian species (Table 3-4). Seasonally, most migratory bird species would have been preparing to leave, or left the area, by late August/early September or potentially passing through on migration routes (e.g., Northern Waterthrush). One pair of Trumpeter Swans was recorded flying overhead during the ground survey work.

Table 3-4: Wildlife Sign Detections at Ground Survey Plots, Summer 2009

Common Name	Scientific Name	Sign Detections Forest Eco Zone Plots	Sign Detections Subalpine Eco Zone Plots	Total Number Plot Detections	Dominant Habitat Classification	Detection Occurrence Among Surveyed Plots (N=73)
Mammal Species						
Moose	<i>Alces alces</i>	28	9	37	Coniferous: black spruce, open; moist to wet	51%
Grey wolf	<i>Canis lupus</i>	2	1	3	Various ³	4%
Woodland caribou	<i>Rangifer tarandus</i>	1		1	Coniferous: Subalpine-fir	1%
Lemming	<i>Lemmus sp.</i>	3		3	Coniferous: black spruce, open; moist to wet	4%
Snowshoe hare	<i>Lepus americanus</i>	21		21	Coniferous: black spruce, open; moist to wet	29%
Muskrat	<i>Ondatra zibethicus</i>	1		1	Marsh	1%
Red squirrel	<i>Tamiasciurus hudsonicus</i>	18		18	Coniferous: Subalpine-fir, Graminoid	25%
Black bear	<i>Ursus americanus</i>	1		1	Coniferous : white spruce	1%
Grizzly bear	<i>Ursus arctos</i>	1		1	Graminoid	1%
Bear species	<i>Ursus sp.</i>	1		1	Coniferous: black spruce, open; moist to wet	1%
Small mammal species	N/A		1	1	Coniferous: open forest – shrub	1%
Bird Species						
Mallard	<i>Anas platyrhynchos</i>	1		1	Marsh	1%
Common Raven	<i>Corvus corax</i>	2		2	Coniferous: black spruce, open; moist to wet	2%
Trumpeter Swan	<i>Cygnus buccinator</i>	1		1	Marsh	1%
Dusky Grouse	<i>Dendragapus obscurus</i>	3	1	4	Coniferous: Subalpine-fir	5%
Grouse Species ²	N/A	1		1	Coniferous: black spruce, open; dry	1%

Common Name	Scientific Name	Sign Detections Forest Eco Zone Plots	Sign Detections Subalpine Eco Zone Plots	Total Number Plot Detections	Dominant Habitat Classification	Detection Occurrence Among Surveyed Plots (N=73)
Ptarmigan ¹	<i>Lagopus sp.</i>		2	2	Shrub: intermediate to tall	2%
Varied Thrush	<i>Ixoreus naevius</i>	1		1	Coniferous: Subalpine-fir	1%
Gray Jay	<i>Perisoreus canadensis</i>	4	1	5	Various ³	6%
Boreal Chickadee	<i>Poecile hudsonicus</i>	1		1	Coniferous: Subalpine-fir	1%
Ruby-Crowned Kinglet	<i>Regulus calendula</i>	1		1	Deciduous	1%
Northern Water Thrush	<i>Seiurus noveboracensis</i>	1		1	Deciduous	1%
Northern Hawk Owl	<i>Surnia ulula</i>	2		2	Coniferous: Subalpine-fir, Coniferous: black spruce, open	2%
Sparrow Species	N/A	1		1	Coniferous: Subalpine-fir	1%
Sapsucker species	N/A	2		2	Coniferous: white spruce	2%

NOTES:

¹ Three species likely to occur in the area: White-tailed Ptarmigan, Willow Ptarmigan, and Rock Ptarmigan

² Three species likely to occur in the area: Spruce Grouse, Ruffed Grouse, Dusky Grouse

³ various refers to different eco-type for every detection (no one common type)

3.2.5 Incidental Detections

Twelve species were recorded as incidental observations (Table 3-5). Moose represented the most commonly detected species (7), followed by grey wolf (3). Grizzly bear, red fox, and Dusky Grouse each had (2) detections.

Table 3-5: Incidental Wildlife Detections Recorded during Summer 2009 Field Surveys

Common Name	Scientific Name	Number of Detections	Detection/Sign Type
Moose	<i>Alces alces</i>	9	Observed (2 cows), tracks, pellets
Woodland caribou	<i>Rangifer tarandus caribou</i>	1	Scat
Black bear	<i>Ursus americanus</i>	3	Tracks, observed (2)
Grizzly bear	<i>Ursus arctos</i>	2	Scat

Common Name	Scientific Name	Number of Detections	Detection/Sign Type
Bear species	NA	1	Scat
Grey wolf	<i>Canis lupus</i>	3	Scat, tracks
Wolverine	<i>Gulo gulo</i>	1	Visual (1)
Red fox	<i>Vulpes vulpes</i>	2	Scat
Canada Lynx	<i>Lynx canadensis</i>	1	Observed
Porcupine	<i>Erithizon dorsatum</i>	1	Observed
Beaver	<i>Castor canadensis</i>	1	Lodge
Canada Goose	<i>Branta canadensis</i>	1	Observed (13 individuals)
Dusky Grouse	<i>Dendragapus obscurus</i>	2	Observed (4 individuals)
Ptarmigan	<i>Lagopus</i> sp.	1	Scat
Spruce Grouse	<i>Canachites canadensis</i>	1	Observed (3 individuals)

3.3 Traditional Knowledge

Studies of Traditional Knowledge (TK) with the First Nation of Na Cho Nyäk Dun (NNDNFN) are currently underway. The following results are therefore preliminary. NNDNFN citizens report that the general project area is very important for moose habitat and moose hunting. This is especially true near the South McQuesten River near Haggart Creek, particularly in NNDNFN Category B Lands just north of McQuesten Road. The Dublin Gulch valley also provides winter moose habitat, and the access road is frequently used for hunting, although some people report less moose there in recent years. Cougar have been observed in undisclosed locations relative to the general project area in recent years, even though they were thought to be extremely rare in the past.

3.4 Summary of Baseline Conditions

Habitat types occurring within the LSA, ARSA, and RSA are varied and may be broadly classified as Forest and Subalpine zones (Stantec 2009). Please refer to Appendix A for representative habitat photographs. The Forested zone includes the valley bottoms, and the slopes of the mountains below the treeline. The elevation range of this zone is from the lowest point in the project area (600 m) to the Subalpine zone – about 1,225 m. In the valley bottoms, forests are dominated by open canopy stands of black spruce, however white spruce is found along creeks and rivers. On the mid to lower slopes, continuous stands of subalpine fir occur along with minor components of white spruce, scrub birch, trembling aspen, and black spruce. On the upper slopes and up to treeline, open subalpine fir stands are predominant with trees becoming smaller and more spread out with more elevation (Stantec 2009).

The Subalpine zone occurs on the ridge tops and high plateaus above 1,225 m. Tree cover is discontinuous or absent at this elevation, and the vegetation is dominated by scrub birch, willows, ericaceous shrubs, herbs, as well as mosses and lichens. Alpine dwarf-shrub heath and herb

communities are common at the highest elevations. High elevation areas with large amounts of rock and rubble are vegetated by lichens (Stantec 2009). Riparian corridors along small tributaries and medium size streams, such as Haggart Creek, are plentiful in the RSA, providing dense cover and food resources for many wildlife species. Exposed rock outcrop and steep cliff habitats (often utilized by nesting raptor species such as Golden Eagle) are virtually absent from the RSA. Human disturbance within the study area is relatively low. One primary road leads into the area where sporadic placer mining activities are present on a small scale. Noise levels and access road traffic volumes are low.

The area provides habitat for a wide range of wildlife species that typically inhabit the central Yukon area. These include mammal species such as moose, woodland caribou, black bear, grizzly bear, grey wolf, red fox, snowshoe hare, wolverine, and American marten. Game bird species include Spruce Grouse, Dusky Grouse, Ruffed Grouse, and three species of ptarmigan. Raptors present may include Golden Eagle, Red-tailed Hawk, Northern Hawk Owl, Great Gray Owl, and Gyrfalcon. A variety of passerine/songbird species are also present. They include Dark-eyed Junco, Gray Jay, Tree Swallow, and Townsend's Solitaire. Waterfowl species include Trumpeter Swan, Mallard, and Canada Goose amongst others. The wood frog (*Lithobates sylvaticus*) is the only amphibian species likely to occur and no reptile species are expected to inhabit the area.

Table 3-6: Baseline Summary of Past/Present Wildlife Species Detections across Survey Types and Habitat Types

Common Name	Scientific Name	Survey Type						Habitat Class											Total Observed			
		Late Winter Transects ¹	Summer Ground Plots ²	Late Winter Aerial ¹	Summer Aerial ²	Summer Incidental ²	Hillam Knight Piésold ³	Road	Burn	Wetland/ Riparian	Marsh	Graminoid	Shrub	Coniferous Forest				Deciduous Forest		Subalpine Zone	Unknown ⁴	
														Mixed Coniferous	Black Spruce	White Spruce	Subalpine Fir					
Moose	<i>Alces alces</i>													X	X				X			181
Woodland caribou	<i>Rangifer tarandus</i>		X			X	X										X					3
Ungulate species	N/A	X		X				X														20
Black bear	<i>Ursus americanus</i>		X			X	X	X								X						12
Grizzly bear	<i>Ursus arctos</i>		X			X	X				X											4
Bear species	<i>Ursus sp.</i>		X			X	X								X							7
Canadian lynx	<i>Lynx canadensis</i>			X			X													X		3
Grey wolf	<i>Canis lupus</i>	X	X	X		X	X			X			X									8
Red fox	<i>Vulpes vulpes</i>	X		X		X													X			4
Beaver	<i>Castor canadensis</i>					X														X		1
Wolverine	<i>Gulo gulo</i>	X		X			X			X									X			12
Lemming	<i>Lemmus sp.</i>		X												X							3
Snowshoe hare	<i>Lepus americanus</i>	X	X	X			X	X	X	X			X	X								61
American marten	<i>Martes americana</i>			X			X													X		11
Muskrat	<i>Ondatra zibethicus</i>		X								X											1
Porcupine	<i>Erithizon dorsatum</i>					X														X		1
Red squirrel	<i>Tamiasciurus hudsonicus</i>	X	X	X			X		X	X		X				X						46

Common Name	Scientific Name	Survey Type						Habitat Class											Total Observed					
		Late Winter Transects ¹	Summer Ground Plots ²	Late Winter Aerial ¹	Summer Aerial ²	Summer Incidental ²	Hallam Knight Pieśold ³	Road	Burn	Wetland/ Riparian	Marsh	Graminoid	Shrub	Coniferous Forest						Deciduous Forest	Subalpine Zone	Unknown ⁴		
														Mixed Coniferous	Black Spruce	White Spruce	Subalpine Fir							
Fox species	<i>Vulpes</i> sp.						X															X	13	
Small mammal Species	N/A	X	X										X											3
Mallard	<i>Anas platyrhynchos</i>		X							X														1
Golden Eagle	<i>Aquila chrysaetos</i>						X															X	1	
Canada Goose	<i>Branta canadensis</i>					X																X	13	
Spruce Grouse	<i>Canachites canadensis</i>					X																X	1	
Common Raven	<i>Corvus corax</i>		X												X									2
Trumpeter Swan	<i>Cygnus buccinator</i>		X		X					X	X													3
Dusky Grouse	<i>Dendragapus obscurus</i>		X			X											X							8
Gyrfalcon	<i>Falco rusticolus</i>						X															X	1	
Ptarmigan ¹	<i>Lagopus</i> sp.	X	X	X		X	X					X									X			52
Varied Thrush	<i>Ixoreus naevius</i>		X														X							1
Gray Jay	<i>Perisoreus canadensis</i>		X																					5
Boreal Chickadee	<i>Poecile hudsonicus</i>		X														X							1

Eagle Gold Project
 Environmental Baseline Report:
 Terrestrial Wildlife
 Final Report
 Section 3: Results

Common Name	Scientific Name	Survey Type						Habitat Class											Total Observed		
		Late Winter Transects ¹	Summer Ground Plots ²	Late Winter Aerial ¹	Summer Aerial ²	Summer Incidental ²	Hallam Knight Piésold ³	Road	Burn	Wetland/ Riparian	Marsh	Graminoid	Shrub	Coniferous Forest				Deciduous Forest		Subalpine Zone	Unknown ⁴
														Mixed Coniferous	Black Spruce	White Spruce	Subalpine Fir				
Ruby-crowned Kinglet	<i>Regulus calendula</i>		X														X				1
Northern Water Thrush	<i>Seiurus noveboracensis</i>		X														X				1
Northern Hawk Owl	<i>Surnia ulula</i>		X				X									X		X			3
Great Gray Owl	<i>Strix nebulosa</i>				X		X						X								3
Grouse ² species	N/A		X	X			X						X	X							23
Raptor species	N/A				X								X								2
Sparrow species	N/A		X														X				1
Sapsucker species	N/A		X													X					2
Bird species	N/A	X					X						X								29

NOTES:

¹ Late Winter Ground-based Transects and Aerial Surveys were conducted by Stantec on April 21 to 22, 2009.

² Summer Ground-based Plots, Aerial Surveys, and Summer Incidental observations were conducted by Stantec on August 26 to September 3, 2009.

³ Observation records from field surveys conducted by Hallam Knight Piésold Ltd. (Hallam Knight Piésold) 1993 to 1995.

⁴ Unknown Habitat Class is designated for wildlife observations that did not specifically include descriptive habitat (i.e. Hallam Knight Piésold surveys and Incidental Observations).

A total of 32 individual species were recorded when all data were combined (Table 3-6). Mammals consisted of two ungulate species (moose, woodland caribou), two bear species (black bear, grizzly bear), and an assortment of small to medium size mammals including grey wolf, wolverine, red fox, American marten, snowshoe hare, and lemming.

Moose were more commonly detected than any other species when all sign detection data available were combined (Table 3-6). Moose were detected across all survey types and in the widest range of habitat types indicating a relatively strong presence within the RSA. Most detections were in lower elevation forested habitat zones. The lower elevation forested zone is likely used all year long as riparian areas, marshes, and deciduous forest stands provide preferred food sources for moose. These low-elevation forest habitats and valley bottoms are also preferred in winter for both thermal protection and feeding. These observations are consistent with the reports from the NNDFN that the area provides winter habitat for moose and is important for moose hunting. Some NNDFN citizens report fewer moose in the area in recent years.

Woodland caribou are identified to three herds in the general area (Clear Creek, Hart River, and Bonnet Plume) (Yukon Department of Environment 2005). All key woodland caribou areas are outside of the RSA. Preliminary discussions with wildlife biologists familiar with the area noted that while woodland caribou are wide ranging, telemetry data indicate that the project area is peripheral to the range of the Clear Creek herd (which is largely on the opposite side of the North McQuesten River (O'Donoghue, pers. comm. 2009). No key woodland caribou areas have been identified within the RSA (Clear Creek is the closest mapped herd with 900 individuals, but it does not overlap with the RSA). Field surveys supported these observations. Only three caribou detections were recorded when combining past and present data (Table 3-6). All detections occurred within subalpine habitat types in the RSA, with only one detection (2009) within the LSA.

Grizzly bear are a wide ranging species that seasonally uses a variety of habitat types. The study area provides a variety of potentially attractive habitats for grizzly, including forested riparian gullies, marsh habitats, and subalpine areas. The combined data only indicates four detections for grizzly bear (Table 3-6). Only one of these detections was in the LSA. This is not entirely surprising as grizzly tend to avoid humans and associated disturbance, and both the LSA and RSA do not contain a seasonally attractive "magnet" food resource, such as spawning salmon, that would potentially attract many individuals to a concentrated area. Anecdotal information from a local guide outfitter indicated that a grizzly bear may have been using a riparian gully in the LSA (Bawn Boy Gulch) during late summer/early fall 2009 as indicated by track sign and visual observation. Combined data does not reflect high numbers of black bear detections, however they did outnumber grizzly detections by nearly double.

American marten is often a commercially valued species for trapping and was of interest during 2009 wildlife survey work. No detections were recorded in 2009. However, past data (Hallam Knight Piésold Ltd. 1994, 1996) provided a total of ten detections not linked to any specific habitat type. The LSA and RSA contained few habitat elements typically associated with this species (e.g., course woody debris and large mature coniferous forest).

Snowshoe hare, red squirrel, and ptarmigan were the most commonly recorded species outside of moose. This is of interest as all three species represent potential prey for a range of larger mammals expected to occur in the LSA, ARSA, and RSA (e.g., lynx, wolf, and, red fox) and raptor species such as Golden Eagle. Snowshoe hare and red squirrel detections were limited to forest habitat zones, while the majority of Ptarmigan detections were in subalpine zones.

Although no bird data was collected via formal survey between 1993 and present, (18) species were detected in the study area including Golden Eagle, Gyrfalcon, Trumpeter Swan, Dusky Grouse, Common Raven, Ptarmigan, and Gray Jay. Observations of grouse and ptarmigan species were high relative to other bird species.

4 CLOSURE

Stantec has prepared this report for the sole benefit of Victoria Gold for the purpose of documenting baseline conditions in anticipation of an environmental assessment under the Yukon *Environmental and Socio Economic Assessment Act*. The report may not be relied upon by any other person or entity, other than for its intended purposes, without the express written consent of Stantec and Victoria Gold. Any use of this report by a third party, or any reliance on decisions made based upon it, are the responsibility of such third parties.

The information provided in this report was compiled from existing documents and data provided by Victoria Gold, field data compiled by Stantec (formerly Jacques Whitford AXYS Ltd.) The report represents the best professional judgment of our personnel available at the time of its preparation. Stantec reserves the right to modify the contents of this report, in whole or in part, to reflect any new information that becomes available. If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

5 REFERENCES

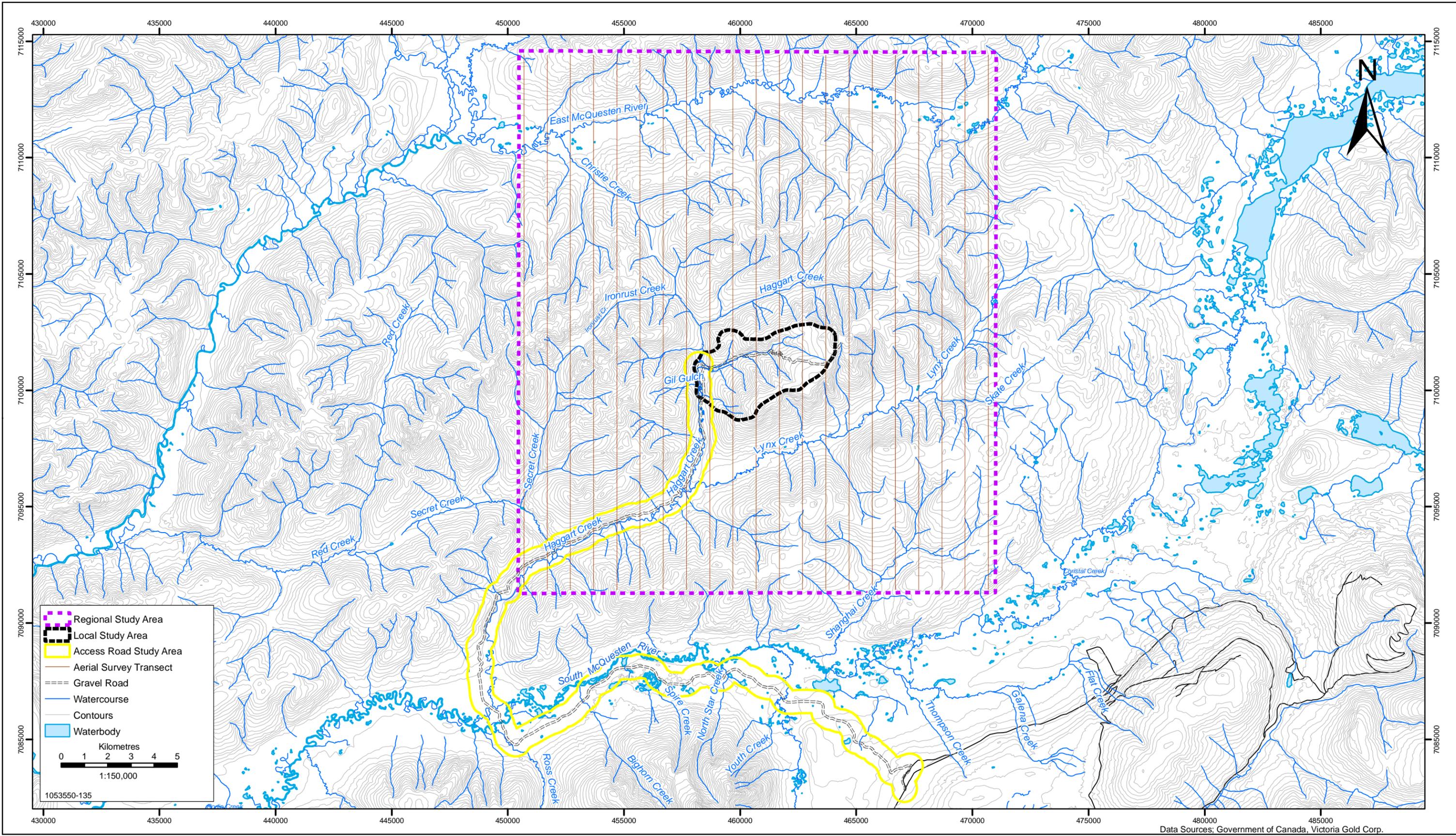
- Canadian Endangered Species Conservation Council (CESCC). 2006. Wild Species 2005: The General Status of Species in Canada. Available at: http://www.wildspecies.ca/wildspecies2005/GS2005_site_e.pdf. Accessed November 2009.
- Canadian Status of Endangered Wildlife in Canada (COSEWIC). 2009. Canadian Wildlife Species at Risk. Available at: http://www.cosewic.gc.ca/eng/sct0/rpt/dsp_booklet_e.htm Accessed November 2009.
- Government of Canada. 2009. *Species at Risk Act*. Public Registry. Available at: http://www.sararegistry.gc.ca/background/default_e.cfm. Accessed December 2009.
- Government of Yukon. 2005 Caribou Herd Ranges Map. Available: <ftp://ftp.geomaticsyukon.ca/Environment/pdf-maps/ENV.009%20-%20Caribou%20Herds/ENV.009.pdf> Accessed December 2009.

- Government of Yukon Department of Environment. 2009. Wildlife Key Area Inventory User's Manual. Whitehorse, Yukon.
- Hallam Knight Piésold Ltd. 1994. Ivanhoe Capital Corporation Ivanhoe Gold Fields LTD Dublin Gulch Project Data Report 1993.
- Hallam Knight Piésold Ltd. 1996. Initial Environmental Evaluation Volume II. Environmental Setting Dublin Gulch Project
- Jacques Whitford AXYS. 2007. *Data Gap Analysis for Dublin Gulch*. Report prepared for StrataGold Corp., Vancouver, BC by Jacques Whitford AXYS, Burnaby, BC.
- Madrone Environmental Services Ltd. 2006. Dublin Gulch Project Gap Analysis: Environmental Baseline Information. Prepared for Strata Gold Corporation. 32 pp.
- Northern Affairs Program. 1995. Compilation of Baseline Environmental Information, McQuesten River Watershed.
- O'Donoghue, Mark, Regional Biologist, Yukon, Environment, personal communication, November 2, 2009 teleconference.
- Resources Information Standards Committee (RISC). 1998. Ground - based Inventory Methods for Selected Ungulates: Moose, Elk and Deer. Standards for Components of British Columbia's Biodiversity No. 33. BC Ministry of Environment, Lands and Parks Resources Inventory Branch. 59 pp.
- Resources Information Standards Committee (RISC). 1999. Inventory Methods for Medium-sized Territorial Carnivores: Coyote, Red Fox, Lynx, Bobcat, Wolverine, Fisher & Badger. Standards for Components of British Columbia's Biodiversity No. 25. BC Ministry of Environment, Lands and Parks Resources Inventory Branch. 64 pp.
- Resources Information Standards Committee (RISC). 2002. Aerial - based Inventory Methods for Selected Ungulates. Standards for Components of British Columbia's Biodiversity No. 32. BC Ministry of Environment, Lands and Parks Resources Inventory Branch. 70 pp.
- Stantec. 2009. Environmental Baseline Report: Eagle Gold Project. Vegetation Resources.
- Yukon Government/Environment Yukon 2009. Wildlife Key Areas. Available: Website- http://environmentyukon.gov.yk.ca/mapspublications/wildlife_key_areas.php . Accessed December 2009.
- Yukon Government/Environment Yukon 2009. Yukon Species at Risk. Available: Website- <http://www.environmentyukon.gov.yk.ca/wildlifebiodiversity/speciesrisk.php#species> Accessed December 2009.

6 FIGURES

Please see the following pages.

THIS PAGE INTENTIONALLY LEFT BLANK



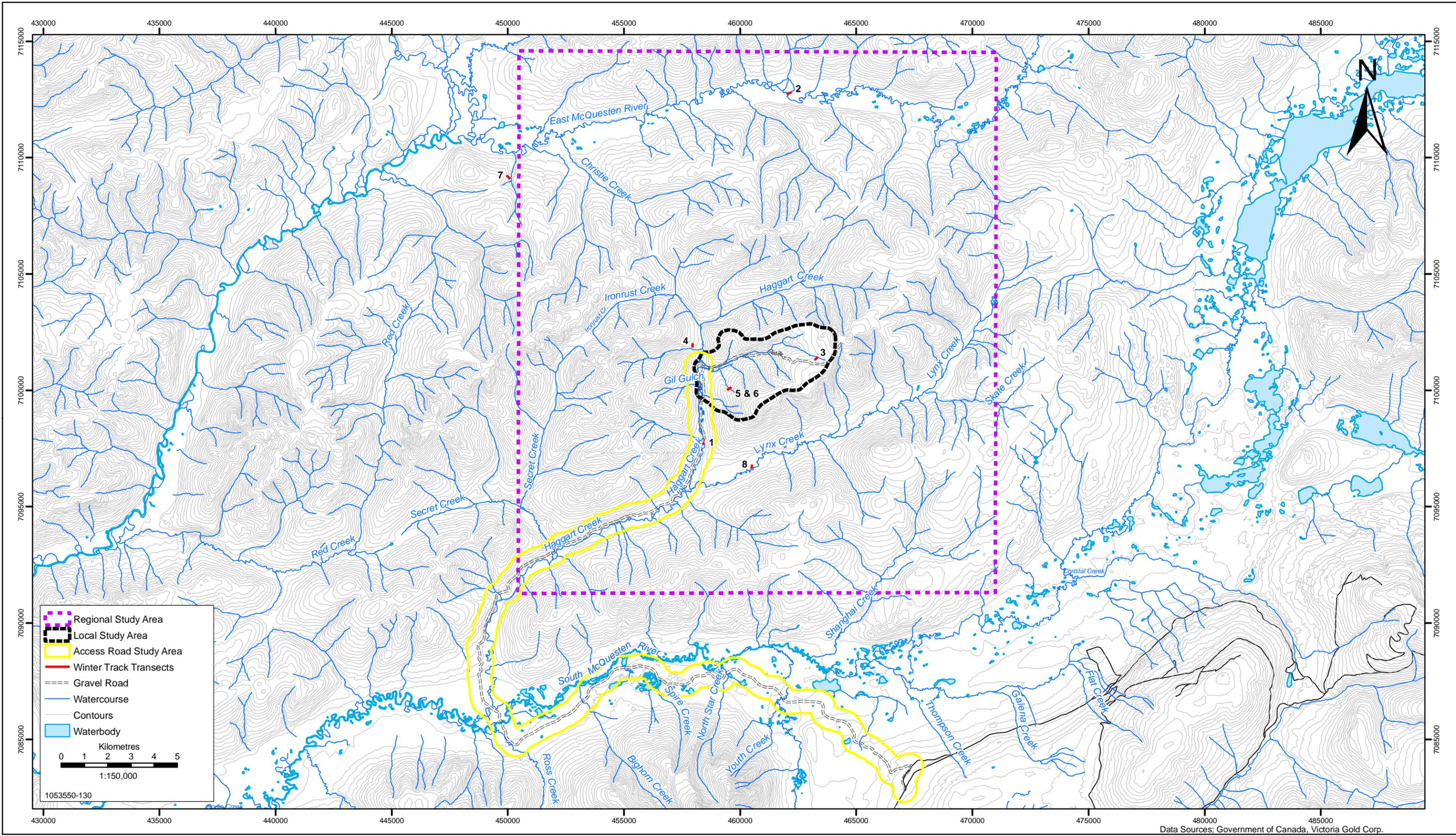
Stantec
4370 Dominion Street
Burnaby, British Columbia
V5G 4L7
Tel. (604) 436 3014
Fax. (604) 436 3752

Victoria
GOLD CORP

STUDY AREAS
EAGLE GOLD PROJECT
YUKON TERRITORY

PROJECTION	UTM - ZONE 8	NP	NP
DATUM	NAD 83	CHECKED BY	
DATE	04-Mar-10	FIGURE NO.	2-1

R:\2009\Fiscal\1053550_EagleGold\GIS\MXD



 Regional Study Area
 Local Study Area
 Access Road Study Area
 Winter Track Transects
 Gravel Road
 Watercourse
 Contours
 Waterbody

Kilometres
 0 1 2 3 4 5
 1:150,000

1053550-130

Data Sources: Government of Canada, Victoria Gold Corp.



Stantec
 4370 Dominion Street
 Burnaby, British Columbia
 V5G 4L7
 Tel. (604) 436 3014
 Fax. (604) 436 3752

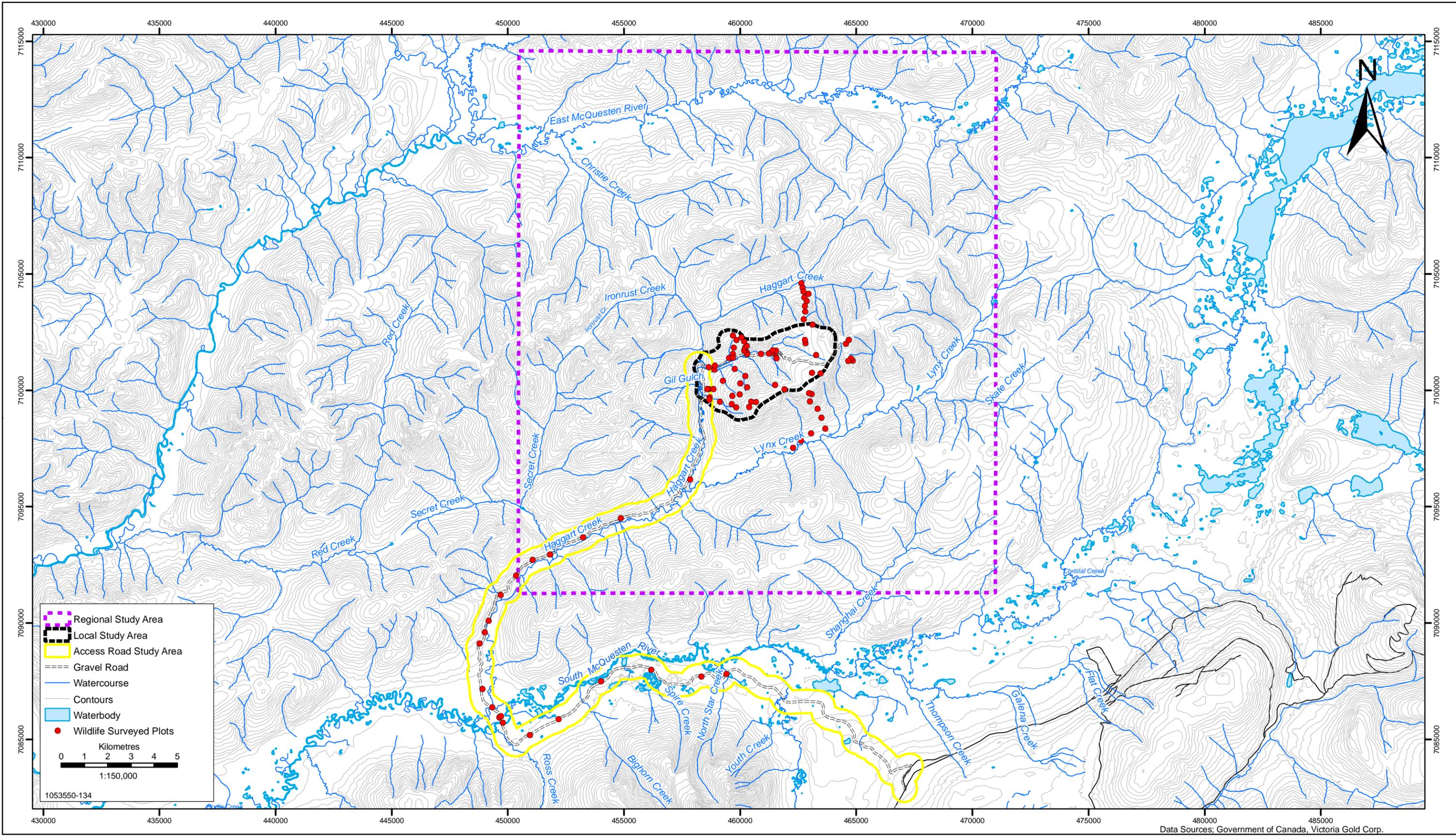


Victoria
 GOLD CORP

TRACK SURVEY TRANSECT LOCATIONS (LATE WINTER 2009)
 EAGLE GOLD PROJECT
 YUKON TERRITORY

PROJECTION	UTM - ZONE 8	NP	NP
DATUM	NAD 83	CHECKED BY	
DATE	04-Mar-10	FIGURE NO.	2-2

R:\2009\Fiscal\1053550_EagleGold\GIS\MXD



1053550-134

Data Sources: Government of Canada, Victoria Gold Corp.



Stantec
4370 Dominion Street
Burnaby, British Columbia
V5G 4L7
Tel. (604) 436 3014
Fax. (604) 436 3752

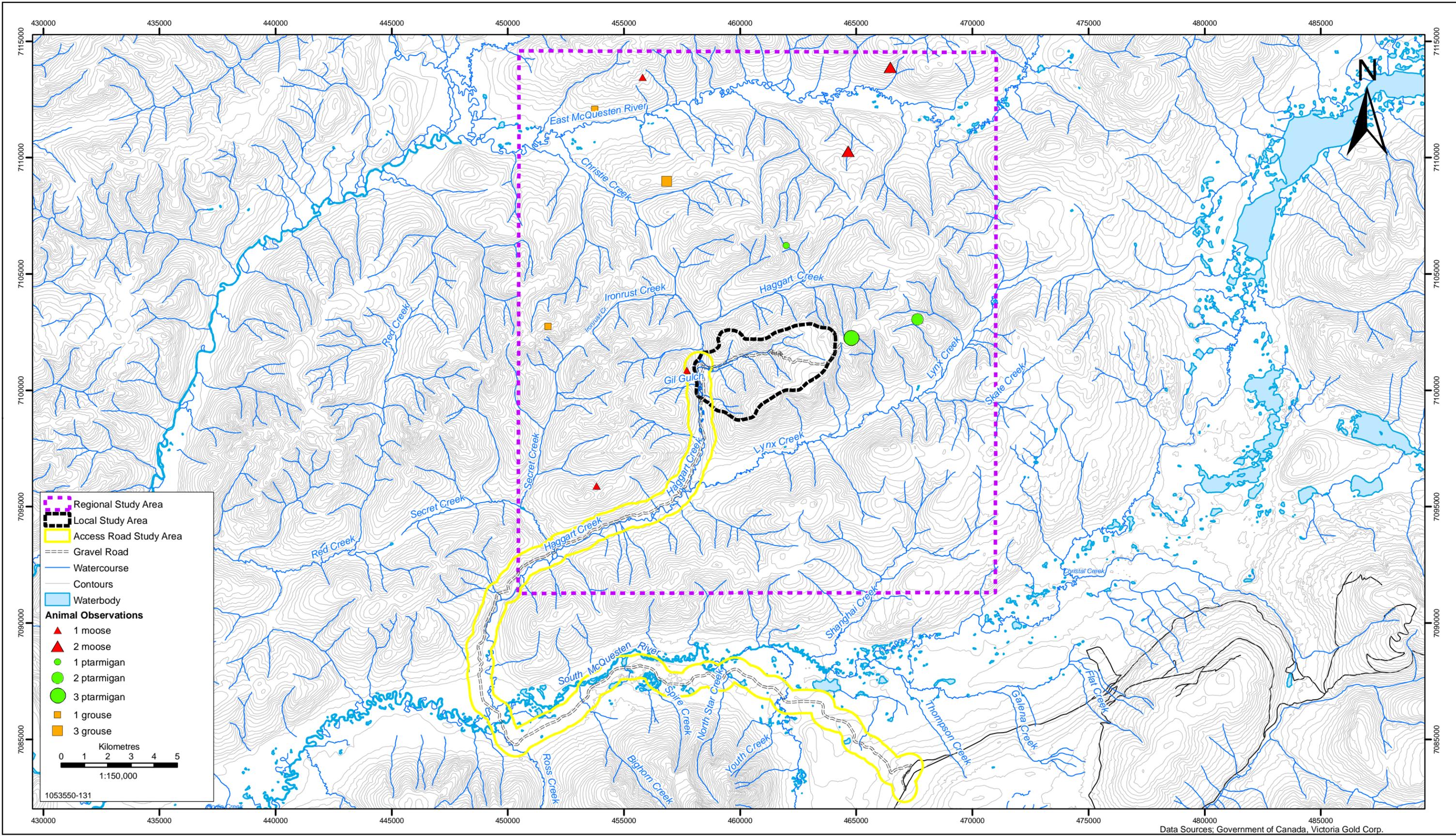


Victoria
GOLD CORP

WILDLIFE GROUND BASED SURVEY PLOT LOCATIONS (SUMMER 2009)
EAGLE GOLD PROJECT
YUKON TERRITORY

PROJECTION	UTM - ZONE 8	NP	NP
DATUM	NAD 83	CHECKED BY	
DATE	04-Mar-10	FIGURE NO.	2-3

R:\2009\Fiscal\1053550_EagleGold\GIS\MXD



Data Sources: Government of Canada, Victoria Gold Corp.



Stantec
 4370 Dominion Street
 Burnaby, British Columbia
 V5G 4L7
 Tel. (604) 436 3014
 Fax. (604) 436 3752

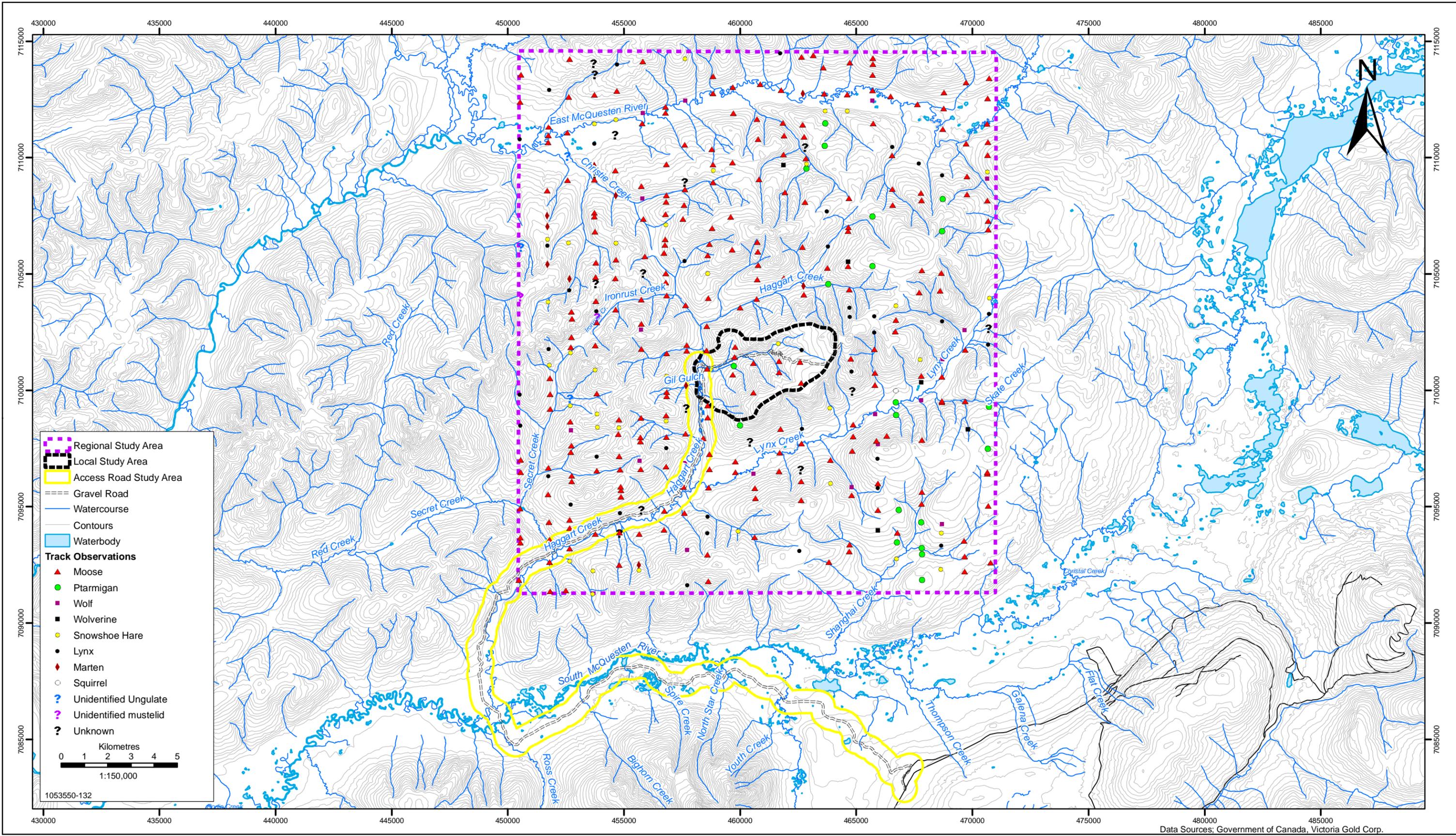


LOCATIONS OF ANIMALS OBSERVED DURING LATE WINTER AERIAL SURVEY (2009)

EAGLE GOLD PROJECT
 YUKON TERRITORY

PROJECTION	UTM - ZONE 8	NP	NP
DATUM	NAD 83	CHECKED BY	
DATE	04-Mar-10	FIGURE NO.	3-1

R:\2009\Fiscal\1053550_EagleGold\GIS\MXD



Data Sources: Government of Canada, Victoria Gold Corp.

Stantec
4370 Dominion Street
Burnaby, British Columbia
V5G 4L7
Tel. (604) 436 3014
Fax. (604) 436 3752

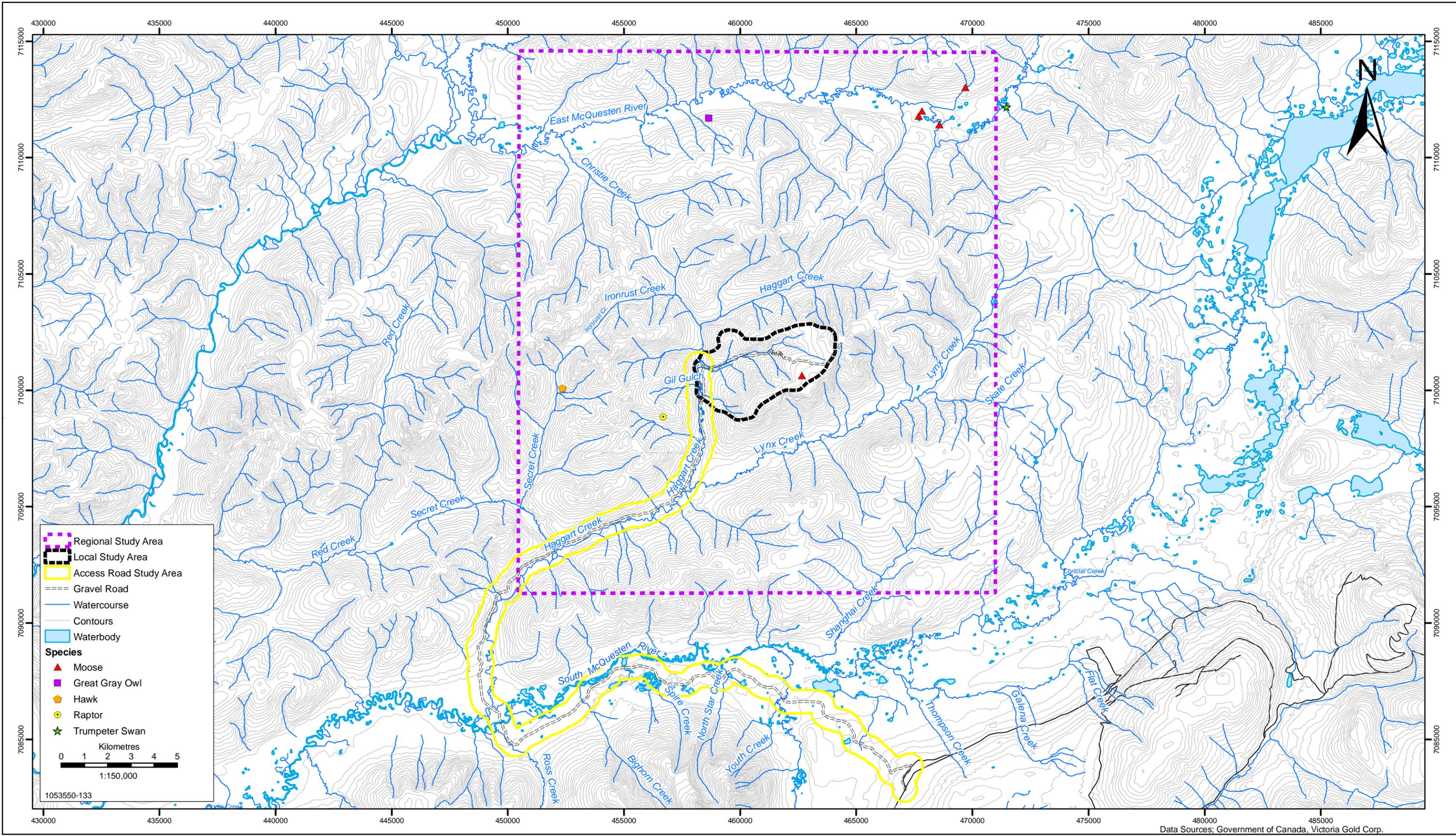
Victoria
GOLD CORP

LOCATIONS OF TRACKS OBSERVED DURING LATE WINTER AERIAL SURVEY 2009

EAGLE GOLD PROJECT
YUKON TERRITORY

PROJECTION	UTM - ZONE 8	NP	NP
DATUM	NAD 83	CHECKED BY	
DATE	04-Mar-10	FIGURE NO.	3-2

R:\2009\Fiscal\1053550_EagleGold\GIS\MXD



Data Sources: Government of Canada, Victoria Gold Corp.



Stantec
 4370 Dominion Street
 Burnaby, British Columbia
 V5G 4L7
 Tel. (604) 436 3014
 Fax. (604) 436 3752



LOCATIONS OF ANIMALS OBSERVED DURING SUMMER AERIAL SURVEY 2009

EAGLE GOLD PROJECT
 YUKON TERRITORY

PROJECTION	UTM - ZONE 8	NP	NP
DATUM	NAD 83	CHECKED BY	
DATE	04-Mar-10	FIGURE NO.	3-3

R:\2009\Fiscal\1053550_EagleGold\GIS\MXD



APPENDIX A

Study Area Photographs, 2009

THIS PAGE INTENTIONALLY LEFT BLANK



Photo 1: Typical alpine habitat, showing terrestrial lichen for caribou forage



Photo 2: Spruce bog habitat with terrestrial lichen



Photo 3 Wildlife trail leading to watering pond



Photo 4: Mature coniferous forest with lichen ground cover, providing forage for caribou



Photo 5: Valley bottom riparian habitat within the RSA.



Photo 6: Mature coniferous forest with abundance of terrestrial lichen.



Photo 7: Coniferous forest altered by forest fire.

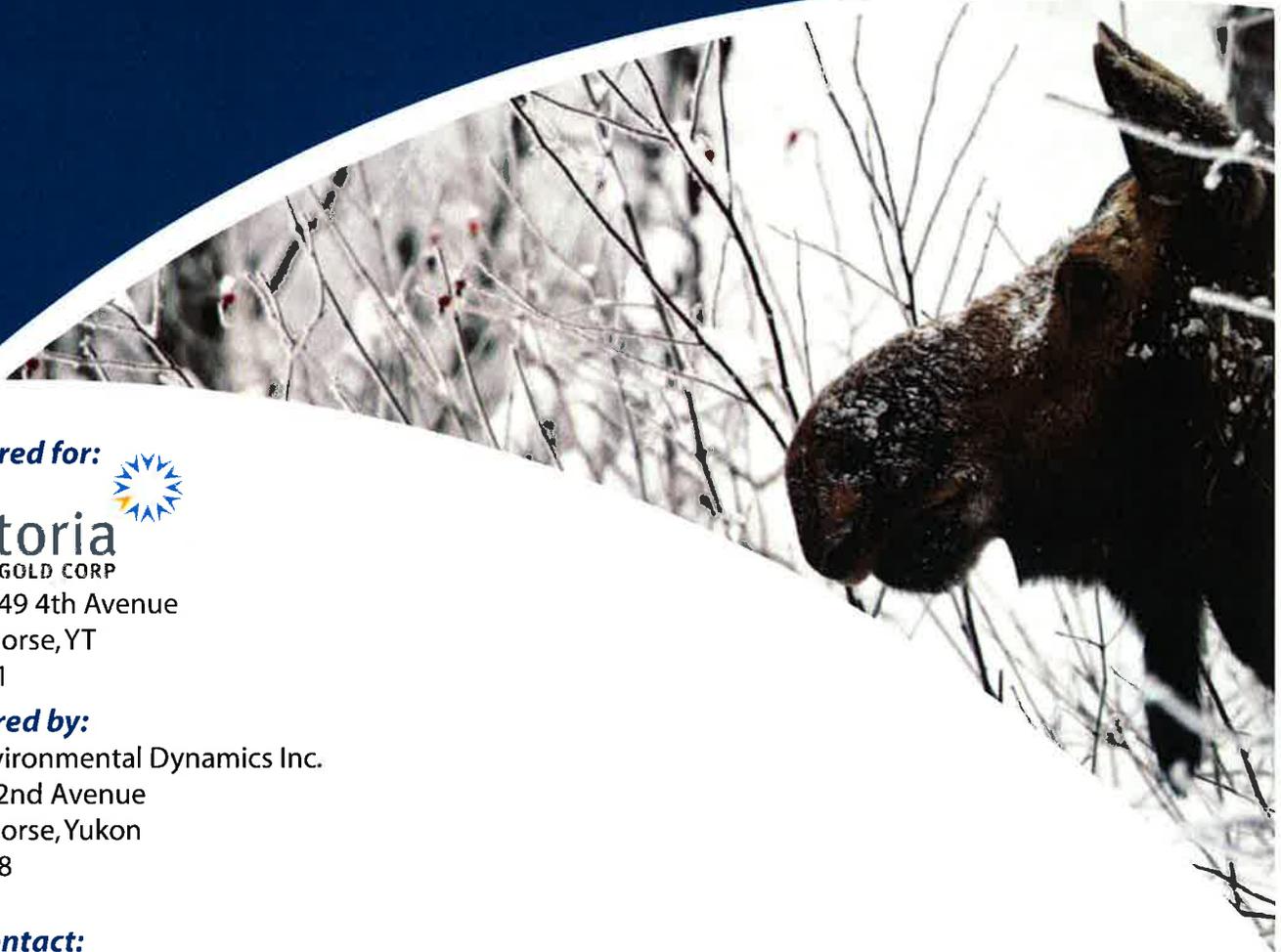


Photo 8: Aerial view of Dublin Gulch looking south.

APPENDIX B
Eagle Gold Late Winter Moose Survey –
2013

THIS PAGE INTENTIONALLY LEFT BLANK

Eagle Gold Project Late Winter Moose Distribution Survey—2013



Prepared for:



Victoria
GOLD CORP

102-4149 4th Avenue
Whitehorse, YT
Y1A 1J1

Prepared by:

EDI Environmental Dynamics Inc.
2195 - 2nd Avenue
Whitehorse, Yukon
Y1A 3T8

EDI Contact:

Graeme Pelchat
867-393-4882

EDI Project No:

13-Y-0027
July, 2013



PRINCE GEORGE • VANCOUVER • NANAIMO • GRANDE PRAIRIE • WHITEHORSE

www.edynamics.com

This page is intentionally left blank.



ACKNOWLEDGEMENTS

The 2013 Victoria Gold moose survey was completed with the assistance from Chris Buie (Victoria Gold Corp.), Ron Peter (First Nation of Na-Cho Nyäk Dun), and Gerd Mannsperger (Alpine Aviation). Their professionalism, vigilance, and companionship during the survey were greatly appreciated.

AUTHORSHIP

This report was prepared by the EDI Environmental Dynamics Inc. EDI staff who contributed to this project include:

Graeme Pelchat (MSc, P.Biol) Wildlife Biologist.....	Primary Author
Kelsey Russell (B.Sc.) Wildlife Biologist.....	Data Analysis and Summary
Mike Settingington (MSc, R.P.Bio.) Senior Biologist.....	Senior Review
Laura Grieve (BSc) GIS Technician	Mapping

TABLE OF CONTENTS

1	BACKGROUND	3
2	METHODS	4
2.1	SURVEY AREA.....	4
2.2	SURVEY DETAILS.....	4
2.3	SURVEY CONDITIONS.....	5
3	RESULTS AND DISCUSSION	6
3.1	INCIDENTAL OBSERVATIONS	8
4	CONCLUSIONS.....	10
5	REFERENCES.....	13



LIST OF TABLES

Table 1. Survey intensity from 2011 to 2013 in the Project survey area.5
Table 2. Moose observations within the Project survey area from 2011 to 2013.6
Table 3. Snow depths at climate stations within the Project survey area from 2011 to 2013.8

LIST OF FIGURES

Figure 1. Count of the observations of moose at 1 km intervals within 10 km of the Eagle Gold Project infrastructure during late-winter 2011, 2012, and 2013 moose surveys. Brown line shows extent of survey area.7
Figure 2. Eagle Gold Project 2013 late-winter moose distribution survey: moose and moose tracks observations 11
Figure 3. Eagle Gold Project 2013 late-winter moose distribution survey: incidental observations 12



1 BACKGROUND

Victoria Gold Corp.'s (VIT) proposed Eagle Gold Mine (the Project) is currently operating as an advanced exploration operation near Mayo, Yukon. VIT is preparing license and permit applications to advance the Project to the construction stage. As part of the environmental assessment completed under *YESAA*, VIT committed to performing annual winter moose distribution surveys. VIT's commitment #35 from the Project Proposal states:

VIT will implement annual aerial mapping of winter moose distribution within 5 km of either side of the access road and mine site and in adjacent control areas. This will be conducted before construction (in 2011 and 2012), during construction, and during mine operations, to allow assessment of displacement and population reduction resulting from mine activities, and adaptive management measures if negative effects occur.

Commitment #35 is re-iterated in the Final Screening Report and Recommendation issued by YESAB February 13, 2013. However, the YESAB recommendation specifies that the survey area be extended to 10 km from Project infrastructure. This recommendation was initially proposed August 24, 2011 by Environment Yukon's Environmental Programs Branch (YOR 2010-0267-197-1). It was recommended that the study design change to delineate a zone of influence (ZOI) extending 5 km from the Project area and access road and that a survey area extending from 5 km to 10 km beyond the ZOI be treated as the "control" area. This study design, referred to as before-after control-impact (BACI), is intended to detect changes in moose distribution near Project infrastructure due to unanticipated Project effects. The 2011 baseline moose distribution survey conducted in March 2011 by Stantec (Stantec 2011) used a 10 km buffer from the Project area and access road notwithstanding the Project Proposal commitment to map winter moose distribution within 5 km of the Project area and access road. The second aerial survey of moose distribution was completed using the recommended survey methods by Environmental Dynamics Inc. (EDI) in March 2012 (EDI 2012). This report presents the results of the third year of late-winter moose distribution surveys.

Monitoring was planned for a total of five years including 2 years pre-construction, 2 years of construction phase, and the first year of operations.

Moose are the most common large game species in the region and occur in the Project area during all seasons. The most critical season for moose is late-winter (January–April) when availability and access to food is most limited. The Project area is identified as important moose habitat by local residents, and contains some higher quality early successional and lower elevation winter habitat. Winter habitats of particular importance are the South McQuesten River and Haggart Creek valleys (Stantec 2010).



2 METHODS

2.1 SURVEY AREA

The Project is located approximately 85 km northeast of Mayo. In 2011, a 1,130 km² survey area was generated by applying a 10 km buffer to the proposed mine site and current access road footprints. In 2012, the size of the survey area was increased by 10 km² to accommodate a modified Project footprint.

2.2 SURVEY DETAILS

The survey took place 4–6 March 2013. Surveyors included Gerd Mannsperger (pilot/observer, Alpine Aviation), Chris Buie (observer, VIT), Ronald Peter (observer, FNNND), and Graeme Pelchat (navigator/observer, EDI). The survey was completed with a Cessna 185 flown at 120–150 km/hr and an elevation of 100–200 m above ground. A total of 11.0 hours was required to complete the survey of the 1,140 km² area.

The design of the 2011 moose survey included forty east/west transects spaced at 1 km intervals, resulting in 1,139 km of transects. Flight lines followed the planned transects to the extent possible due to flight conditions. During the 2012 survey, east/west transects used in the previous survey were not followed when steep terrain required increased altitude for safety that made observing moose difficult. By adjusting the survey transects to account for steep terrain, the aircraft was able to fly at a consistent elevation above ground, thus increasing sightability of moose relative to the 2011 survey. Transects spacing remained at approximately 1 km intervals.

In 2013, survey blocks were used to guide survey intensity, while providing flexibility to fly according to terrain (Figure 2). Survey block were sized at 5 minutes longitude by 2 minutes latitude (approximately 4 x 4 km at the survey latitude). Four passes were flown through each block, which is equivalent to 1 km transect spacing and similar to previous surveys. The addition of blocks at the edge of the survey area increases the size of the survey area from 1,140 km² to 1,320 km². This alteration in methodology improves comparability among years and other moose surveys in the Yukon. Based on the larger survey area, the survey intensity was 0.50 minutes/km²—somewhat lower than the previous years (Table 2).

Moose tracks and observations were recorded as waypoints using a handheld GPS (Garmin GPSMAP 60CSx). All observations of animals were recorded. Wildlife observations documented the species and number of animals in the group, and when possible age class (adult/calf) and sex of the animals. The distance and direction of animals from the GPS marked waypoint were estimated to correct the spatial location. Only fresh tracks that crossed directly under the flight path were recorded during the survey, tracks observed outside of the flight path were not recorded. The track recording protocol is consistent with methods developed by Environment Yukon for collecting moose track data (Environment Yukon 2011a).



The observed tracks sets were categorized as 1 set, 2 sets, 3 to 5 sets, or more than 5 sets to indicate the relative number of animals.

Table 1. Survey intensity from 2011 to 2013 in the Project survey area.

Year	Survey Intensity (minutes/km ²)
2011	0.53
2012	0.52
2013	0.50 ¹

¹Calculated using a survey area of 1,320 km²

2.3 SURVEY CONDITIONS

Weather, snow, and visibility conditions in 2013 were ideal for aerial wildlife surveys; however, the survey start time was delayed March 4 and 5 due to low fog. During the survey it was generally calm, clear, and cold, with temperatures ranging from -10 to -27°C.

During the 2012 survey, weather conditions, snow conditions, and visibility were excellent for identifying fresh tracks and for finding moose both days. Weather during the survey started as clear and sunny, but became somewhat overcast by the end of the survey. Temperatures ranged from -10 to -30°C. Mayo received considerable snowfall during the days prior to the survey.

During the 2011 survey, weather conditions were generally stable over the three-day survey. Morning temperatures were approximately -35°C, warming to -17°C by early afternoon. No new snow had been reported for at least two weeks prior to the survey. Each day skies were clear with good ground lighting conditions until mid- to late-afternoon when high-ceiling cloud cover created flat light conditions. In general, morning wind speeds were calm to low, but increased by mid- to late-afternoon.



3 RESULTS AND DISCUSSION

In total, 74 moose were observed (37 observations) during the survey inside and outside of the survey area. A total of 46 moose were observed (31 observations) within the survey area and 26 moose (6 observations) were located outside the survey area. Relatively high concentrations of moose were observed on the eastern side of the survey area around Shanghai Creek drainage (block 43 and surrounding blocks) and in a burned area on a high plateau near the eastern edge of the survey area (block 27). Moose and/or tracks were observed throughout the survey area (Figure 1, Figure 2), with the highest densities near disturbed areas such as stream margins, burns, current and historic placer operations, and the current Project footprint. In winter these types of habitat areas are commonly selected over other habitat types by moose because they tend to contain abundant high quality browse (i.e. willow).

The number of moose observed within the survey area in 2013 was greater than 2011 and less than 2012 totals (Table 2). Potential factors for the variation in moose number could include a change in the regional distribution of moose, or increased wolf activity observed in 2013 (see section 3.1) could have caused moose to temporarily move to areas outside the survey area. The proportion of observed cow/calf pairs decreased from previous survey years (Table 2). The cause of the decrease in both cow/calf pairs and total moose observed from 2012 to 2013 is unknown.

Table 2. Moose observations within the Project survey area from 2011 to 2013.

Year	Cow/Calf pairs	Total
2011	7	30
2012	13	57
2013	4	46

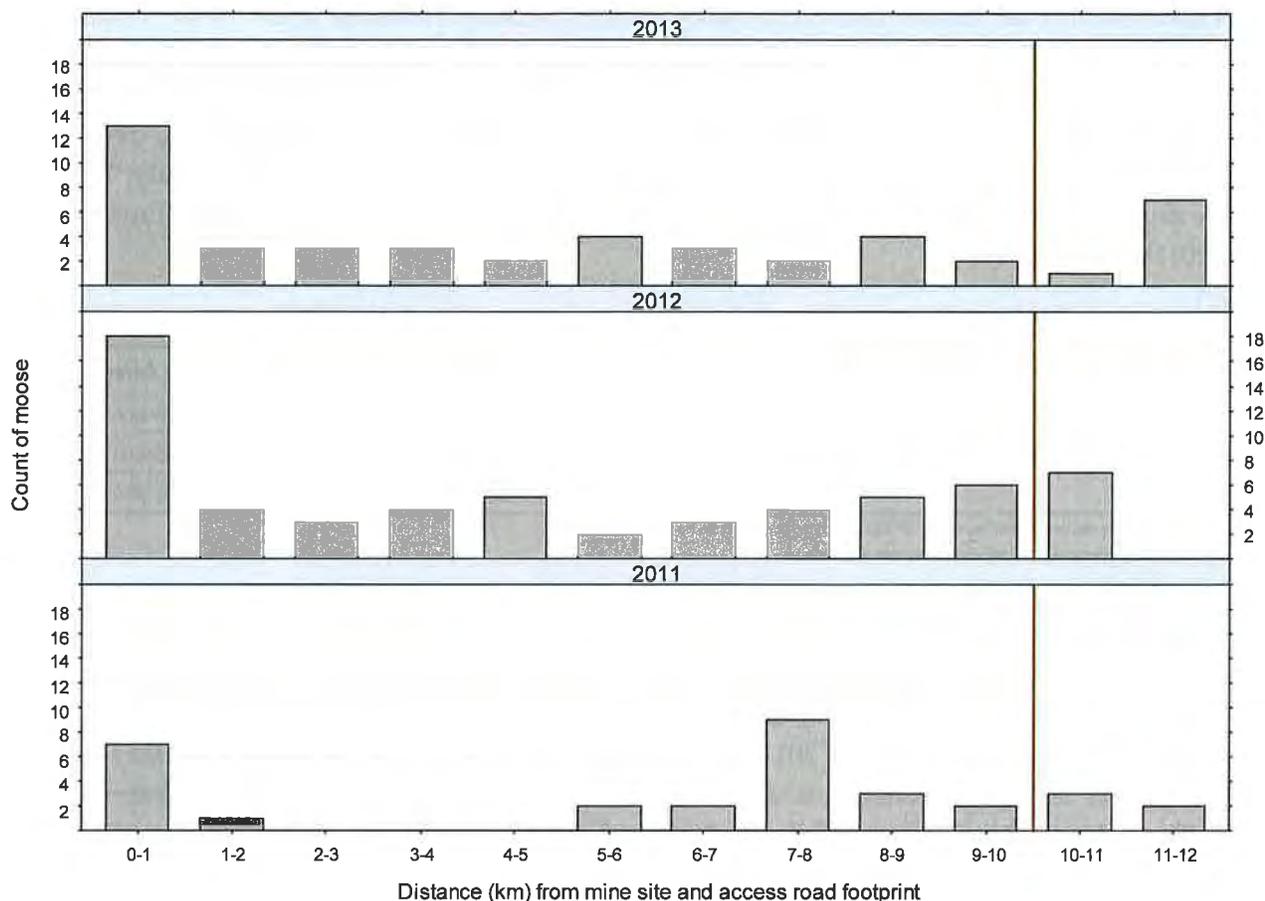


Figure 1. Count of the observations of moose at 1 km intervals within 10 km of the Eagle Gold Project infrastructure during late-winter 2011, 2012, and 2013 moose surveys. Brown line shows extent of survey area.

The distribution of moose observed within the survey area changed throughout the three survey years. During the 2011 survey, moose were observed scattered throughout the survey area with the majority of animals occurring at mid to lower elevations east and south-east of the mine site between Lynx Creek and the South McQuesten River. During the 2012 survey, moose continued to be observed using the mid to low elevations, but were primarily observed in old burns, and west of the Haggart Creek Access Road and the existing advanced exploration camp operated by VIT. In 2013, moose were again observed in mid to low elevation areas; however, most observations were east of the Haggart Creek Access Road and the camp (Figure 2).

Yearly variation in the distribution of large ungulates is common. Food availability, snow depth, and risk of predation affect late-winter moose distribution (Dussault et al. 2005). Food availability is assumed to be constant year over year because there have not been major changes to moose habitat in the survey area



during the survey years. In 2011 and 2012, snow depth was measured at two climate stations within the Project area: Potato Hills (alpine) and Camp (valley bottom) stations. The snow sensor at the Potato Hills climate station was not functioning at the time of the 2013 survey. Snow depth measurements were obtained from snow course surveys established in close proximity to the Potato Hills and Camp climate stations. There was more snow at the higher elevation Potato Hills climate station in 2012 compared to other years, but snow depth at the Camp climate station was comparable during all years (Table 3). Regionally, 2013 was a slightly above average year for snowfall, while 2011 and 2012 were somewhat below normal (Environment Yukon 2011b, 2012, 2013).

Table 3. Snow depths at climate stations within the Project survey area from 2011 to 2013.

Year	Camp Station	Potato Hills Station	Mayo Airport ¹
2011	55 cm	105 cm	55 cm
2012	50 cm	126 cm	58 cm
2013	61 cm ²	96 cm ²	61 cm

¹ Averaged values from snow course surveys at Mayo Airport A and B.

² Data was collected manually using snow course surveys.

Thirteen moose (6 observations) were observed within 1 km of the proposed Project footprint along the Haggart Creek Access Road and existing advanced exploration camp in 2013, compared to 18 moose in 2012 (12 observations), and 7 moose in 2011 (5 observations) (Figure 1). The Haggart Creek valley contains abundant browse and cover that moose select for winter habitat. Human disturbance adjacent to the Haggart Creek Access Road has created similar high quality habitat because of clearing associated with the road right of way and historic placer mining operations. Moose are likely to continue to use these areas as late-winter habitat.

A limitation of the moose distribution survey was sightability bias toward open habitat. Moose are commonly observed in open habitats (burns and other disturbed habitats) because open habitat with early seral stage vegetation contain higher quality browse (i.e. shrubs) and moose are easier to observe in open habitat compared to dense cover. Sightability bias can result in overestimation of open habitat selection. This bias is not accounted for in the survey results.

3.1 INCIDENTAL OBSERVATIONS

A group of five woodland caribou was observed in an alpine area on Red Mountain (Figure 3, block 28), on the western edge of the survey area approximately 5 kilometers from the Haggart Creek Access Road. Caribou or caribou tracks were not observed during the 2011 and 2012 late-winter surveys. Caribou were noted to occur in the Red Mountain area (Stantec 2010, Appendix 12), however based on the distribution of herds in the region caribou are expected to be an uncommon occurrence. The closest woodland caribou



herd to the survey area is the Clear Creek Caribou Herd. A 2001 survey estimated the herd be composed of 900 caribou (Environment Canada 2012).

In 2013, three groups of wolves (totalling 21 wolf observations) were observed in the southwestern portion of the survey area (these may be repeat observations of the same wolf pack):

- 8 were observed in block 47 near the confluence of the South McQuesten River and Haggart Creek Access Road,
- 8 were observed in block 66 near the southern boundary of the survey area,
- 5 were observed in block 32 at a moose kill on Haggart Creek

No wolves were observed in 2011 or 2012, three sets of wolf tracks were observed in 2012.

One wolverine was observed in block 18 during the 2013 survey.



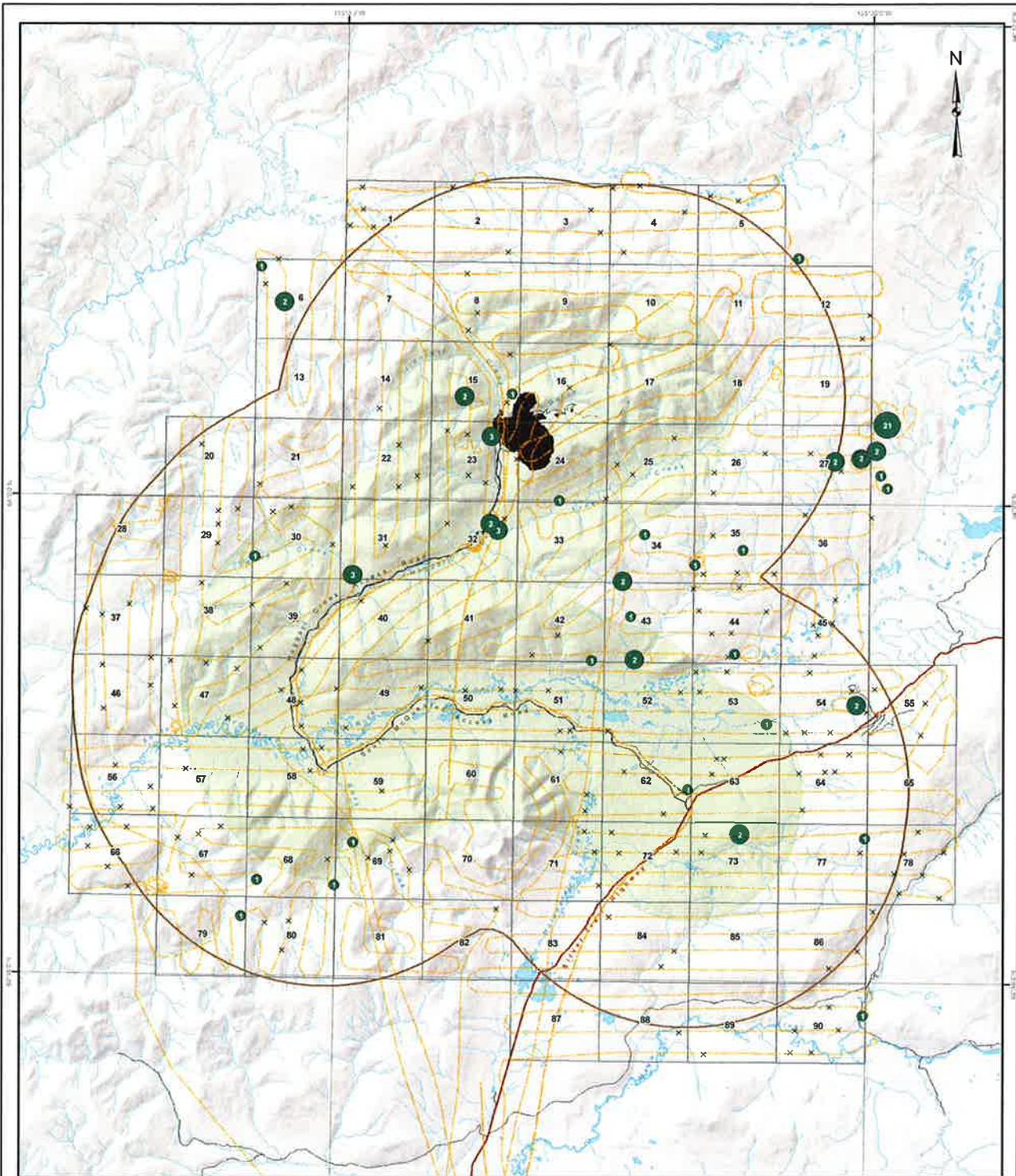
4 CONCLUSIONS

Moose were widely distributed throughout the survey area during the pre-construction surveys. Slight changes in distribution and density are expected among years, likely as a result of dynamic habitat variables and predation risk. The study was designed to monitor moose distribution within the expected zone of influence (ZOI) of the proposed mine site, and to include a control area outside of the ZOI.

Surveys were agreed to be conducted for the pre-construction phase, the construction phase (two years) and the first year of operations. If no effects are observed after five years of monitoring, the frequency of this monitoring may be reduced during subsequent years of the operations phase (pers. comm. M. O'Donoghue, e-mail, August 5, 2010). Data obtained from the surveys will be used to inform adaptive management measures if negative effects occur.

The current data are intended to reflect the baseline, pre-construction moose distribution. A potential effect of mine construction and operation activities may be sensory disturbance which could result in the avoidance of habitat within the mine site and access road ZOI. Importantly, if avoidance of habitat due to mining related activities are observed, they are predicted to result in not significant effects to the regional moose population. In addition survey data will be useful in understanding moose distribution near and on the access road to implement additional mitigation measures if necessary to reduce traffic/moose interactions and increased potential for vehicle strikes.

Monitoring of moose distribution via aerial surveys provides a snapshot-in-time comparison of moose distribution data collected pre-construction to distribution data collected during the construction and initial operational phases of the Project. The 2013 survey represents the third survey (baseline – pre-construction) upon which subsequent surveys will be compared for changes in moose distribution and abundance in the survey area.



Legend

- Moose Observation
- × Moose Tracks
- Aerial Survey Tracklog (March 4 to 6, 2013)
- Silver Trail Highway
- Local / Access Road
- Survey Grid
- Eagle Gold Project Footprint
- Zone of Influence
- Extent of Study Area

**Eagle Gold Project 2013 late-winter
moose distribution survey:
Moose and moose tracks observations**

Data sources:

1:50 000 Topographic Spatial Data and 30 metre Digital Elevation Model provided by Geomatics Yukon via online source (Corporate Spatial Warehouse) www.geomatics.yukon.ca

Project data is site specific. Late-winter survey data collected by EDI Environmental Dynamics Inc.

Disclaimer:
This document is not an official land survey and the spatial data presented is subject to change.

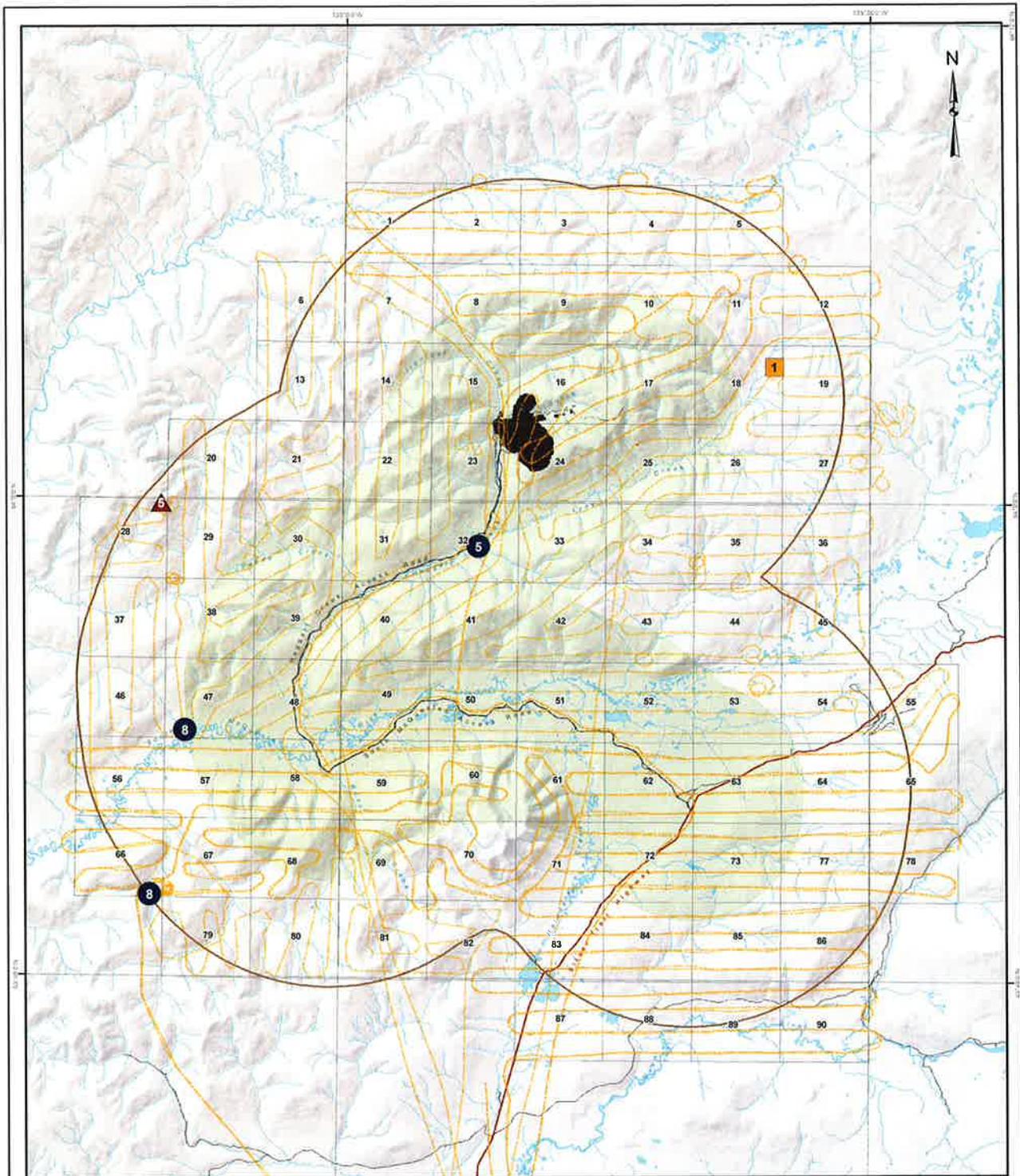


Map Scale = 1:175 000 (printed on 11 x 17)
Map Projection: North American Datum 1983 UTM Zone 8N



Drawn: GPLG Checked: GP Date: 28/06/2013 **FIGURE 2**





Legend

-  Caribou
-  Wolf
-  Wolverine
-  Silver Trail Highway
-  Local / Access Road
-  Aerial Survey Tracklogs (March 4 to 6, 2013)
-  Survey Grid
-  Eagle Gold Project Footprint
-  Zone of Influence
-  Extent of Study Area

Eagle Gold Project 2013 late-winter moose distribution survey: incidental observations

Data sources
 1:50,000 Topographic Spatial Data and 30 metre Digital Elevation Model provided by Geomatics Yukon via online source (Corporate Spatial Warehouse) www.geomatics.yukon.ca

Project data is site specific. Late-winter survey data collected by EDI Environmental Dynamics Inc.

Disclaimer
 This document is not an official land survey and the spatial data presented is subject to change.



Map Scale = 1:175,000 (printed on 11 x 17)
 Map Projection: North American Datum 1983 UTM Zone 6N

Drawn: GP/LG Checked: GP Date: 28/06/2013 **FIGURE 3**





5 REFERENCES

- Dussault, C., J. P. Ouellet, R. Courtois, J. Huot, L. Breton, and H. Jolicoeur. 2005. Linking moose habitat selection to limiting factors. *Ecography* 28:619–628.
- Environmental Dynamics Inc. (EDI). 2012. Eagle Gold Project Late Winter Moose Distribution Survey. Prepared for Victoria Gold Corp. 17pp.
- Environment Canada. 2012 Management Plan for the Northern Mountain Population of Woodland Caribou (*Rangifer tarandus caribou*) in Canada. Species at Risk Act Management Plan Series. Environment Canada, Ottawa. vii + 79 pp.
- Environment Yukon. 2011a. Collecting track data during early and late winter moose surveys. Government of Yukon, Fish and Wildlife Branch. 2 pp.
- Environment Yukon. 2011b. Yukon snow survey bulletin and water supply forecast. Government of Yukon, Water Resources Branch. 28 pp.
- Environment Yukon. 2012. Yukon snow survey bulletin and water supply forecast. Government of Yukon, Water Resources Branch. 28 pp.
- Environment Yukon. 2013. Yukon snow survey bulletin and water supply forecast. Government of Yukon, Water Resources Branch. 28 pp.
- Stantec. 2010. Environmental Baseline Report: Terrestrial Wildlife. Prepared for Victoria Gold Corp. 27 pp.
- Stantec. 2011. Technical Data Report: 2011 Aerial Survey of Moose Distribution. Prepared for Victoria Gold Corp. 8 pp.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

Wildlife Encounter Procedure

THIS PAGE INTENTIONALLY LEFT BLANK



WILDLIFE PROTECTION PLAN

Wildlife Encounter Procedures

Department:	Environment	Document No.:	SGC-ENV- PEC-WPP-001
Section:	Permitting and Compliance	Revision:	
Prepared by:	Todd Goodsell / Hugh Coyle	Effective Date:	April 15, 2013

PURPOSE

The purpose of this procedure is to provide guidelines for employees and contractors at the Eagle Gold Project site on the required actions and reporting in the event of wildlife encounters. The data collected is vital in supporting adaptive management approaches for the protection of wildlife resources and to ensure the safety of staff and wildlife in the Project area. In addition, black bears and grizzly bears may be active in the area from early May to late October. Due to the potential risk that a bear poses to human safety, it is important that all sightings or encounters with bears be reported immediately for camp personnel to take appropriate actions.

SCOPE

This procedure applies to all employees and independent contractors working at the Eagle Gold Project site.

DEFINITIONS

Wildlife Encounter: any interaction with wildlife including incidents and observations.

Wildlife Incident: vehicle – wildlife collision, problem / nuisance wildlife (bears in trash), and wildlife observation/ interaction with humans when wildlife is observed within 1 km from the camp perimeter, and less than 100 m from any area of human activity.

Wildlife Observation: wildlife is observed further than 1 km from the camp perimeter, and more than 100 m from any area of human activity.

PROCEDURES

1. General

The following activities are prohibited:

- Hunting, fishing and firearm possession is not permitted unless prior authorization is obtained from SGC management.
- Feeding wildlife - may result in wildlife that are habituated to human contact. The consequences of feeding may result in serious harm to humans, and/or the animal being relocated or destroyed.
- Personal pets on site – may result in harassment of or wildlife attractants into work or camp areas.
- Littering – all work areas must be kept free of food or food containers that may serve as animal attractants.

The following activities are mandatory:

All staff members are responsible for ensuring that they are using the latest version of this document.

Date: April 15, 2013

Department:	Environment	Document No.:	SGC-ENV- PEC-WPP-001

- Employee orientation that includes Bear Aware Program training
- Store putrescible waste in wildlife-proof containers prior to incineration in a manner that does not attract wildlife.
- Enclose the solid waste management area with an electric fence and store other attractants indoors.

The following Personal Protective Equipment specific for wildlife encounters will be provided by SGC:

- Standard compressed air blast horns
- Standard 225g canisters of Bear Spray
- Pen Launcher Bear Bangers
- 12 gauge pump action shotgun (for use by Camp Manager or designate only)

2. Land Clearing and Use

The following activities are mandatory:

- If you encounter a fox, wolf, wolverine, bear or moose on foot:
 - Back away slowly and do not make direct eye contact.
 - Do not make sudden movements.
 - Call in the sighting by radio as soon as possible without alarming the animal.
 - Stay in radio contact until you are at a safe distance and return to a safe area (e.g., inside a vehicle or building) as soon as possible.
 - Minimize grizzly and black bear conflicts, by avoiding and recording any den or nest sites.
- Minimize or eliminate the use of vegetation attractive to bears and ungulates (e.g., legumes) in seeding mixtures used along roadsides.
- Cut brush along roads and facilities early in the growing season, before it becomes an attractant to large wildlife species.
- Use manual clearing rather than herbicides in vegetation management activities.
- Identify and avoid bird nests during the bird breeding and nesting period (May 1 – July 31).

3. Vehicle and Equipment Use

The following activities are mandatory:

- Vehicle users to abide by all posted speed limits. South McQuesten and Haggart Creek Access Roads = 50 km/hr unless posted otherwise. Site roads = 30 km/hr unless posted otherwise.
- Slow down at sections of the road with obscured view (e.g. turns, poor visibility due to inclement weather, etc.) and near watercourses or at watercourse crossings as these are often areas where animals may be found.
- Use headlights at all times to increase visibility.
- If encountering wildlife on the road, stop the vehicle and allow wildlife to pass. Take the following actions:
 - Remain in the vehicle.

All staff members are responsible for ensuring that they are using the latest version of this document.

Date: April 15, 2013

Department:	Environment	Document No.:	SGC-ENV- PEC-WPP-001

- Avoid using the horn.
- Avoid provoking the animal(s).
- Call out the sighting on the radio to alert other road users and provide road kilometer location where animal last observed.
- Wait for the animal(s) to pass before continuing.
- Report collisions and carcasses of large animals observed on the Project site and along the access road to the Environmental Manager, Mine Manager or designate(s) as soon as possible to ensure prompt removal. Near misses and collisions that result in the death or injury of an ungulate or other large animal must be reported as soon as possible.
- Site operations to facilitate wildlife movement by:
 - Making cuts in the plowed snow banks along the access road to allow animals to escape the road way and oncoming vehicles in winter.
 - Leveling road way snow banks to allow for animal passage.
 - Providing wildlife crossing points along extensive open ditches.

4. Reporting – Wildlife Incident

Wildlife incidents include interactions of aggressive, unusual or erratic behavior; vehicle collisions and near misses; damage of equipment by wildlife; and injured or dead wildlife.

Incidents involving wildlife are to be reported to the Environmental Coordinator or immediate Supervisor as soon as is practicable. The information which is required when reporting the incident will include:

- Date and time of the incident
- Species and number of animals involved
- Location of the incident
- Type of Incident (e.g., nuisance wildlife interaction, vehicle collision, use of deterrents)
- Incident outcome (e.g. injury, death, unusual behavior)
- Description of event
- Habitat type
- Corrective actions suggested

After reporting any wildlife incident to the Environmental Coordinator or immediate Supervisor, the reporting party must complete the SGC Wildlife Incident Form.

5. Reporting - Wildlife Observation

Wildlife observation reporting is required when wildlife an incident report is not required but wildlife is observed further than 1 km from the camp perimeter, and more than 100 m from any area of human activity and for observation of wildlife signs (e.g., tracks, scat, dens, nest, etc.).

Observations involving wildlife are to be reported to the Environmental Coordinator or your Supervisor as soon as is practicable. The information which is required when reporting the observation will include:

- Date and time of the incident or observation

All staff members are responsible for ensuring that they are using the latest version of this document.

Date: April 15, 2013

Department:	Environment	Document No.:	SGC-ENV- PEC-WPP-001

- Species and number of animals involved
- Location of the observation (e.g. UTM coordinates, facility, etc.) including a description of the habitat
- Weather conditions
- Type of observation
- Description of event

After reporting any wildlife observation to the Environmental Coordinator or your Supervisor, the reporting party must complete the SGC Wildlife Observation Form.

FOLLOW-UP PROCEDURE

Environmental Coordinator or designate:

1. In the case of a wildlife incident that may pose a significant threat to the health and safety of staff or the animal advise onsite staff of the appropriate action to be taken (e.g., direct staff to remain indoors);
2. In the case of a wildlife incident that may require the removal of an animal or the use of lethal force immediately contact the Mayo District Conservation Officer (867-996-2202).
3. If the response to an incident is not clear, contact the Environmental Manager and/or the Conservation Officer to discuss the appropriate response;
4. Advising the Environmental Manager of wildlife incidents as they occur; and
5. Ensuring the SGC Wildlife Incident Form or SGC Wildlife Observation Form is complete and institute follow-up responses, if required, and document follow-up actions.

REVISION HISTORY

Noted below is the revision history of this document.

Revision	Date	Comments

All staff members are responsible for ensuring that they are using the latest version of this document.

Date: April 15, 2013

APPENDIX D
Wildlife Incident Report Form

THIS PAGE INTENTIONALLY LEFT BLANK



WILDLIFE INCIDENT FORM

Observer(s): _____

Name of Supervisor or Manager: _____

Incident reported to: _____

Date: _____ **Time:** _____

Incident type (circle one): Vehicle collision Encounter Near miss Nuisance interaction
Other _____

Incident outcome (circle one): Mortality Injury Defensive behaviour Management Action
Other _____

Weather (sun, rain, snow, etc.): _____

Location (i.e., in UTM's, facility, road km, etc.): _____

Habitat (e.g. wetland, old forest, riparian, road etc.): _____

Species: _____ **Number of animals:** _____

Description of Incident and outcome: _____

Could the Incident have been avoided? _____

If yes, describe how: _____

Additional comments: _____

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX E
Wildlife Observation Form

THIS PAGE INTENTIONALLY LEFT BLANK



WILDLIFE OBSERVATION FORM

Animal Observation:

Animal Sign observation:
(tracks, scat, den, etc.)

Observer(s): _____

Date: _____ **Time:** _____

Location / site description: _____

GPS coordinates: N: _____ **E:** _____

Nearest facility: _____ **Estimated distance from facility:** _____

Weather: clear cloud rain snow fog

Wind: approximate speed _____ direction _____

Type of animal: _____

Number of animals: total male female young

Type of sign (e.g. track, scat, etc.): _____

Behavior: curious feeding resting moving away fleeing (running away)

Other : _____

Observation reported to:

Environmental Coordinator Site Operations General Manager Other : _____

Comments: _____
