



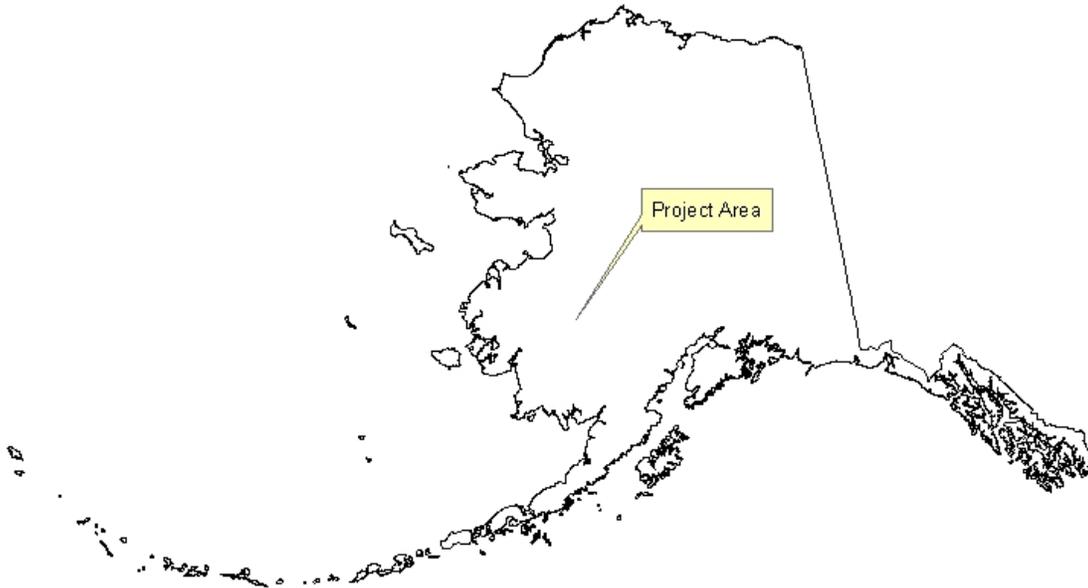
## Bureau of Land Management

Anchorage Field Office  
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<http://www.anchorage.ak.blm.gov>

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### Environmental Assessment Donlin Creek Peat Resource Evaluation

Barrick Gold United States Inc.  
AA-086838  
AK-040-07-EA-011



#### **Location:**

##### Seward Meridian

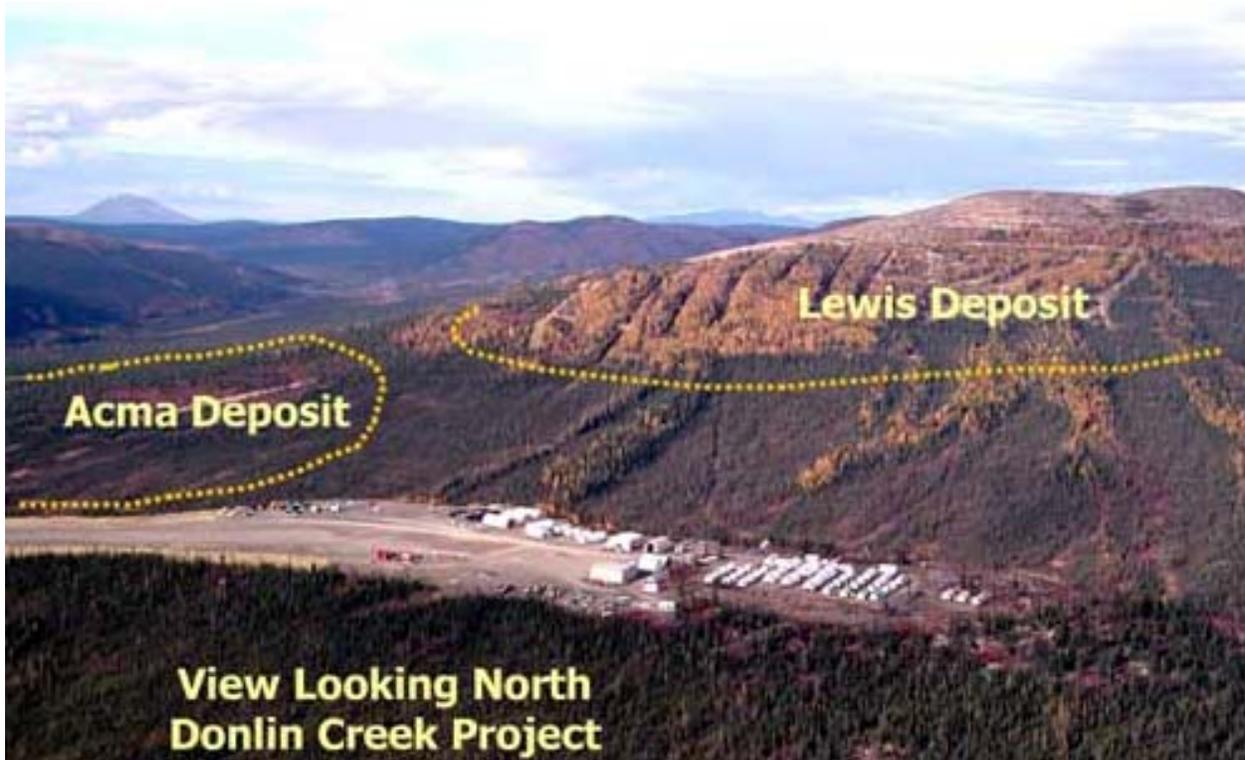
- T19N, R52W, all or part of sections 4-7
- T19N, R53W, all or part of section 1 and 12
- T20N, R52W, all or part of sections 2-4, 8-23, 26-34
- T20N, R53W, all or part of section 36
- T25N, R47W, all or part of sections 7, 8, 18
- T25N, R48W, all or part of sections 1-5, 8-15, 22-24
- T26N, R48W, all or part of sections 25-27, 33-36

#### **Prepared By:**

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Realty Specialist  
February 6, 2007

I. INTRODUCTION

Barrick Gold United States Inc., in a joint venture with NovaGold Resources Inc., is conducting a feasibility study to determine whether to develop a mine at Donlin Creek, Alaska. The Donlin Creek mine has the potential of producing close to 2 million ounces of gold per year. The 27,000 acre mine site, on land owned by Calista Corporation and the Kuskokwim Corporation, is located 12 miles north of Crooked Creek, Alaska.



Mine site with gold deposits

- A. Purpose and Need for the Proposed Action:  
The feasibility study includes identifying a power source for mine development. Commercial power sources are not readily available in the mine area. Although currently evaluating the wind energy potential in the area, the company is also considering the use of peat fired power plants to operate the mine. The company has identified two potential peat deposits on public lands in the vicinity of the mine site and wants to conduct exploratory work to evaluate the quality and quantity of the peat deposits.
- B. Conformance With Land Use Plan:  
There is no Bureau of Land Management (BLM), resource management plan for the area where the peat deposits are located. However, "... where public lands are not covered by a ... resource management plan, an environmental assessment ...

plus any other data and analysis necessary to make an informed decision, shall be used to assess the impacts of the proposal and to provide a basis for a decision on the proposal.” 43 CFR 1610.8 (b) (1). The following is an environmental assessment of the proposed action.

## II. PROPOSED ACTION AND ALTERNATIVE

### A. Proposed Action:

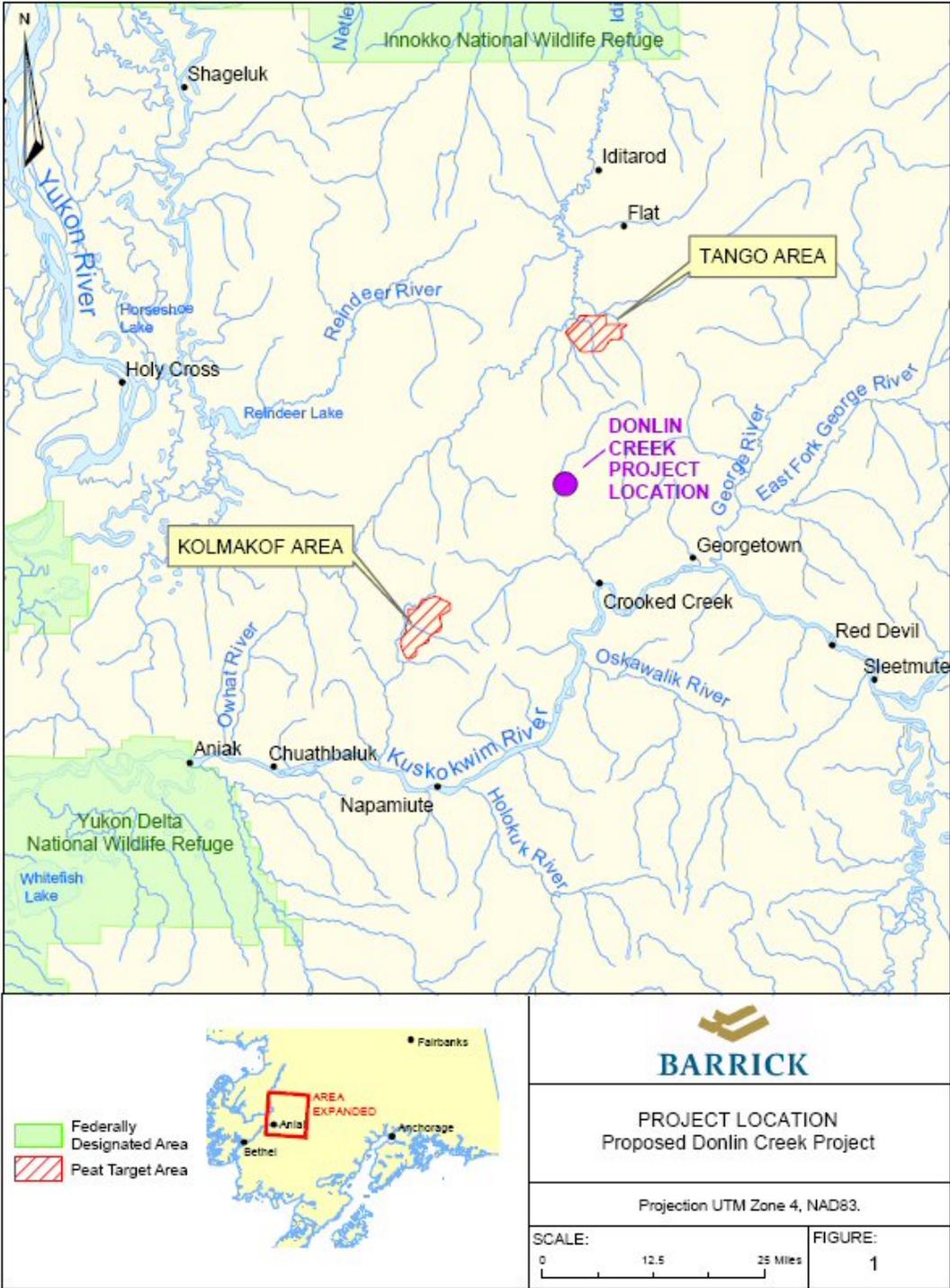
BLM has received an application from Barrick Gold United States Inc. for authorization to sample and test peat deposits on currently unencumbered BLM Federal public lands and State selected land near the proposed Donlin Creek mine. Exploration will take place in the following Townships, Ranges and Sections within the Seward Meridian:

- Kolmakof Area

- T19N, R52W, all or part of sections 4-7 unencumbered BLM
- T19N, R53W, all or part of section 1 (State selected) and Section 12 unencumbered BLM
- T20N, R52W, all or part of sections 8, 18, 19, 30 (State Selected), Sections 2-4, 9-17, 20-23, 26-29 (unencumbered BLM),
- T20N, R53W, all or part of section 36 (State Selected)

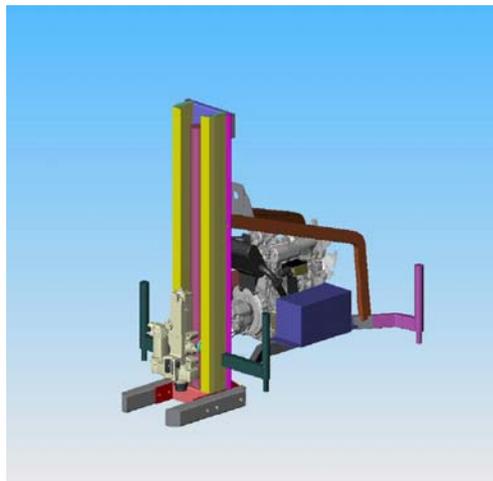
- Tango Area

- T25N, R47W, all or part of sections 7, 8, 18 (all State Selected)
- T25N, R48W, all or part of sections 1, 11-15, 22-24 (State Selected and Sections 2-5, 8-10 (Unencumbered BLM)
- T26N, R48W, all or part of sections 25-27, 33-36 (all State Selected)



Exploration Sites

Barrick Gold United States Inc. will use a helicopter to mobilize two Geoprobe rigs to collect samples within the areas. A third rig will be kept at the Donlin Creek camp as a back up, should one of the two sampling rigs break down during the course of the project. This third rig may also be used during sample collection throughout the project. Snow cover could vary from several inches to several feet, depending on wind, area precipitation and overall weather patterns. Exploration is scheduled to take place between February 15th, 2007 and May 15th, 2007.



**Geoprobe**

#### **Specifications**

- Weight – 2500 lb
- 29 HP diesel motor powering a 20 GPM hydraulic pump
- Onboard hydraulic fluid and fuel tanks, roughly 12 gal. each
- 54" max stroke length.
- 5' by 8' with 3 pts of ground contact roughly 1 sf each.
- Spill kit kept on rig at all times

The drilling method will involve specially designed, helicopter portable Geoprobe drill rigs which will push hollow rods into the ground, producing no drill cuttings. Barrick is planning on using 1.25" diameter rods, but 2.125" or 3.25" rods may be used instead. Hole depth is not known at this time, but is anticipated to be between two and four meters, not penetrating bedrock. No surface disturbance or pad preparation will be required for drilling. Hole locations will be flexible. Drill rig placement will be done in such a way as to minimize, or avoid the need to cut any surface vegetation.

Fuel will be obtained from 110 gallon, double walled “flight tanks”. These “flight tanks” are self contained with a top sided pump, and a spill containment lip around the top of the tank. The unit has a four-point pickup system for helicopter sling loading. Fuel tanks will be filled at the Donlin Creek Camp prior to site transport.



**Specially designed Fuel Tank**

A limited number of holes will be drilled in each area for a preliminary estimate of peat potential in each area (Tango and Kolmakof). The initial reconnaissance will result in approximately 400 to 600 holes per area. These samples will be done in a cross-hair pattern within the Tango and Kolmakof inventory areas.

Based on the reconnaissance drilling, one of the two areas will be selected for further evaluation. Once an area has been selected, 1000 to 1500 additional samples will be taken within the selected area.

According to the proposal, no more than 2700 holes will be drilled within both the Tango and the Kolmakof inventory areas. This is not a firm number as Barrick Gold may only be interested in one of the two designated areas based on sampling results, thereby reducing the overall number of rig placements and holes.

Samples will be extracted from the hollow rods in sleeves and labeled. Once collected, the samples will be examined for overall peat content and a determination will be made as to which of the two areas would be the most viable option for peat extraction. The sampling grid will be determined by ease of helicopter access. Detailed evaluation of both areas is not expected. However, if

one area proves to be lacking in peat resources, the effort will be suspended in that area with the focus shifted to the second area.

A crew of three people (1 driller, 1 drilling assistant and 1 geologist) will accompany each of the two Geoprobe rigs to complete the sampling. There will be two helicopters in use during exploration, with one pilot per helicopter. A surveyor will be on hand to record the sample locations with a GPS and to perform other miscellaneous tasks. Two laborers will be on hand to prepare each sampling location prior to sample collection. Access from one sampling location to another will be by snow machine given adequate snow cover and by helicopter in the absence of adequate snow cover. A total of 11 people will be involved in the operation. Support and lodging will be based from the Donlin Creek Camp. Personnel will commute to the project areas by helicopter.

At the end of each day, the Geoprobe rigs will be slung to a common location and enclosed in a single tent. An emergency shelter tent will also be available at the same locale. In the event that the helicopter is unable to return the crew to the Donlin creek camp at the end of the day, the emergency tent will serve as an overnight shelter. The “common location” will change on a regular basis as the drilling progresses. No ground disturbing activities will occur at these locations.

B. No Action Alternative:

Under the No Action Alternative, permitted exploration of the two potential peat bogs will not take place. If Barrick Gold United States Inc. wished to continue pursuing peat as a source for their power plant, other sources of peat would need to be located. In addition, Barrick Gold United States Inc. could pursue other alternative energy resources or conventional energy sources to fuel their power plant. BLM would continue with current land use management practices of the lands.

III. AFFECTED ENVIRONMENT

A. Critical Elements

The following critical elements are either not present or will not be affected by the proposed action:

- Air Quality
- Areas of Critical Environmental Concern
- Cultural Resources
- Environmental Justice
- Floodplains
- Invasive, Non-native Species
- Native American Religious Concerns

Prime or Unique Farmlands  
Threatened or Endangered Species  
Water Quality (Surface and Ground)  
Wetlands/Riparian Zones  
Wild and Scenic Rivers  
Wilderness

The following Critical Elements are present and may be affected by the proposed action:

1. Migratory Birds

The open forest and shrub habitats of the area of the proposed action provide breeding habitat for numerous species of land birds and waterfowl and raptors. These include several species of special management concern and include Grey-cheeked thrush, Blackpoll warbler, olive-sided flycatcher, rusty blackbird, varied thrush, harlequin duck and trumpeter swans.

Peregrine falcons have been documented breeding along the cliffs of the Kuskokwim River by BLM in 2000-2004. Peregrine falcon nests are known to occur on the Kuskokwim River within 12 miles of the Kolomkof area of the proposed action. Peregrine falcons, a special status species, have been delisted from threatened and endangered status, and are currently being monitored after delisting statewide.

Bald eagles and rough-legged hawks are found throughout the area of the proposed action along forested and cliff habitats of the Kuskokwim River and its tributaries

Breeding pairs of harlequin ducks have been documented by BLM in May 2003 in the small, fast flowing creeks of the area.

2. Subsistence

Very little, if any, subsistence activity occurs in the project area. The moose population is low and hunting is not productive. Salmon fishing is almost entirely along the Kuskokwim River. No trap lines are known to exist in the project area – the areas are a considerable distance from any villages and no trap line cabins have been observed.

3. Wastes, Hazardous and/or Solid:

There are no known solid or hazardous waste sites within the areas under consideration. The activities proposed will use regulated materials which pose some risk in use, and will generate some solid and sanitary wastes.

B. Non-Critical Elements or Other Resources:

1. Fisheries

The following fish species have been identified in various streams in the Donlin Creek area and may occur in streams in the project area. The project will avoid impacting fish spawning, rearing and over-wintering habitat.

- Chinook salmon
- Coho salmon
- Chum salmon
- Dolly Varden
- Arctic grayling
- Round whitefish
- Burbot
- Slimy sculpin
- Nine-spine stickleback
- Longnose sucker

2. Vegetation

The vast majority of the project area is sphagnum peat bog. The water source for the bogs is dominantly rainwater in an area where precipitation exceeds evapo-transpiration, and runoff is restricted. This results in a nutrient poor system that is dominated by sphagnum moss. Peat develops as the sphagnum dies and only partially decomposes due to the anoxic conditions at depth. The peat bogs in the project areas are a mosaic of mostly filled thaw lakes and ridges of peat. The ridges tend to be well drained, and support black spruce with some tamarack and birch. The entire area is thought to be underlain by permafrost of an unknown thickness.

The Tango area is a large lowland. Although there are through-going streams in the Tango area, the streams are not at a significantly different elevation than the surrounding peat bog. The peat bog is thought to be fairly continuous.

### 3. Visual Resources



Kolmakof Area



Tango Area

The landforms in the area of the proposed action are gently rolling and glacially smoothed, with an overall fine texture resulting in a panoramic landscape type. Vegetation varies from fairly dense clusters of black and white spruce and mixed hardwoods on the lowlands and lower hillside slopes, leading to higher open ridges covered with fine lichens, mosses, and grass species. Patches of exposed soil and native rock are occasionally visible on the adjacent low ridges. The actual sample test areas consist of low, featureless sphagnum peat bog ridges surrounded by a maze-like network of thaw lakes and small tributaries. The texture of the land is medium to fine, depending on the numbers of scattered and sometimes evenly dispersed diminutive black spruce trees that litter the landscape. The main vegetation feature in both sample areas consist of low, fine-textured tundra species that exhibit an extremely fine texture when viewed from the ground and the air. Colors range from a white and dark monotone that dominates the visual landscape for over six months during the snow season, to brilliant spring and fall color episodes that fade to pastels and earth tones rapidly.

Views from the ground tend to be long-range due to distant high terrain features and vegetation patterns. Distant ridges and low mountains may be more visible from higher points on peat ridges and generally enhance the visual quality of the scenery. The scenery is typical of the Western Alaska Physiographic Province and is extremely common throughout the area.

A preliminary visual resource management (VRM) sensitivity level analysis of the Proposed Action sites indicates a low level of sensitivity as virtually no cultural features exist in the immediate area, and use patterns are very low in intensity. A preliminary scenic quality rating results in a Class C rating,

which represents a scenic landscape type that is common and ubiquitous throughout the physiographic province.

A visual resource management inventory has not been completed in the planning area at this time, but is scheduled as part of the upcoming RMP planning process. A preliminary VRM inventory classification based upon similar visual landscapes in the Planning Area results in a VRM Inventory Class III. The objective of this class is to partially retain the existing character of the landscape.

#### 4. Wildlife

Wildlife found in the area include, Moose, Brown and Black bear, martin, red fox, wolf, lynx, mink, river otter, weasel, snowshoe hare, beaver, rough-grouse and willow ptarmigan.

Wildlife studies have not yet been performed in the project areas, but are planned for the winter and summer of 2007. These studies will include wildlife, birds, and fish. General conclusions about the wildlife in the area can be drawn from studies performed in the area and along the proposed access route to the mine site. The discussion below is drawn from the report "2006 Winter Wildlife Tracking Study," May 2006; (lead author Roger Post, retired Alaska Department of Fish and Game).

- Moose – Very few moose tracks were observed in the project area. The moose population appears to be very low in this area. The few tracks observed were in forested areas.
- Martin – Martin appear to be the most abundant species in the area. Their tracks were observed in most habitat types. They prefer forested areas, particularly old or mature spruce forests, but tracks were also found in wetland areas at moderate frequency. Tracks were least often found in more open habitats.
- Squirrels and hares – These two species appear to be the second most abundant species based on winter track studies. Tracks were observed almost exclusively in mixed wood forest and broadleaf forest.

- Fox – Fox tracks were observed at a moderate relative frequency. They were observed in most habitat types, but were observed least in wetland areas.
- Wolf – Wolf track were rarely observed. Where seen, they were generally in forested areas. They were not observed in wetland areas or other open habitat types.
- Lynx – Only a very few lynx tracks were observed. These were in black spruce forest.
- Mink, Otter, and Weasel – Tracks of these species were observed relatively rarely. Mink and Otter tracks were seen almost exclusively in mixed deciduous forests that are generally found adjacent to streams. Weasels tended to be in forested areas, but the track frequency was too rare to draw firm conclusions.
- Grouse and Ptarmigan – Tracks from grouse and ptarmigan were also sparse. As expected they tended to be found in different habitats, with grouse more often in forest areas and ptarmigan in open and brushy areas.
- Black Bear and Beaver – these species are thought to occur in the project area, but were not observed in winter track studies.

#### 8. Noise

The area encompassing Anvik, Iditarod, Flat and Crooked Creek has been subjected to mining related disturbance since the turn of the twentieth century. Currently, the peat bog sampling area is presumed to be serene.

#### C. Land Status:

The land status for the following parcels of land is as follows:

##### Kolmakof Exploration Area

T19N, R52W, all or part of sections 4-7 -  
T19N, R53W, all or part of section 1 and 12  
T20N, R52W, all or part of sections 2-4, 8-23, and 26-34  
T20N, R53W, all or part of section 36

Tango Exploration Area

T25N, R47W, all or part of sections 7, 8, and 18  
T25N, R48W, all or part of sections 1-5, 8-15, and 22-24  
T26N, R48W, all or part of sections 25-27, and 33-36

Based on BLM, Master Title Plat and Public Land Order research, the land is managed by the BLM although the majority of the land is selected for conveyance to the State of Alaska. The remaining lands are unencumbered and will remain in Federal ownership.

IV. ENVIRONMENTAL CONSEQUENCES

A. Impacts of the Proposed Action:

By implementing the Proposed Action during the outlined timeframe, minimal impact would occur within the exploration areas. The tundra would be frozen, with adequate amounts of snow cover to cushion snow machine travel, and track impact on the underlying tundra would be negligible. Geoprobe units will be lifted and placed by helicopter sling loads. The units will rest on the snow-covered surface for short periods of time during sampling, again, with negligible impacts to the tundra.

1. Critical Elements:

a. Cultural Resources:

No cultural resources are known for either Area of Potential Effect. The Bonanza Flat Shelter Cabin (AHRs # IDT-00036) lies just outside the northeast boundary of the Tango area along an early mining trail on Bonanza Creek. Since the proposed testing would occur entirely in low lying areas of wet tundra, the potential for previously unknown cultural resources is low.

5. T&E Species:

There are no species in the area that are currently listed as threatened and endangered under the Federal Endangered Species Act.

c. Subsistence:

The lands proposed for the site are BLM administered but a portion are validly Selected by the State of Alaska and do not meet the definition of Federal Public Lands as per ANILCA Sec. 102 (3). These areas do not fall under the authority of the Federal Subsistence Board and the various Subsistence Regulations for the Harvest of Fish and Shellfish and Wildlife on Federal Public Lands in Alaska. The remaining lands as identified in the proposed action as unencumbered BLM Federal public lands do meet the aforementioned definition and do fall under the regulatory authority of the Federal Subsistence Board and the aforementioned regulations.

The subject lands are remote with limited accessibility but of size to produce numbers of harvests of black bear, moose, caribou and other subsistence resources that are mobile and could be harvested on Federal Public Land on and off site. Some of the adjacent lands have been under intensive mining operations and exploration activities for the last century. The proposed activity consists of very minor clearing for exploratory sampling sites accessible by helicopter and snow machine. Currently the region is experiencing extremely low subsistence resources such as moose and caribou populations and is in a subsistence crisis situation. The proposed action involves intensive noise (helicopter and drill rigs, snow machines and human voices) and human disturbance from sample drilling and machinery and crew transportation actions to as late as May 15. These activities could displace and further stress the few moose that are wintering in the area.

Potential impacts to a subsistence based lifestyle could occur past May 15<sup>th</sup> should the project activities continue. Sample collection in the project areas may interfere with waterfowl (trumpeter swans, Tule White-front and other geese species, ducks, shorebirds) and other migratory bird courtship and nesting territory formation and nesting activities as well as alter the movement of pregnant moose from offsite winter areas to calving sites within the proposed area. Helicopter activity cumulatively increases the comprehensive footprint of the operational area both on and off BLM administered lands to and from the sites and the Donlin Mine base camp.

Sample holes larger than 2.5 inches present a hazard to numerous mobile animals. Stepping in such unplugged holes with frozen rims can injure or break legs of animals ranging from coyotes and wolves to yearling moose.

Currently, the actual sites do not experience subsistence activities of trapping, fishing or hunting due to remoteness, access, and the current low levels of subsistence resources; however, fish rearing, large mammal production, migratory bird and fur bearers occupying the sites do provide for subsistence harvest off site due to seasonal migration to other areas.

d. Migratory Birds

The proposed peat exploration will occur in late winter/early spring and, therefore, will not directly or immediately affect breeding or migrating peregrine falcons. However activities in late April and May using helicopters may potentially impact nesting peregrines on the Kuskokwim River, and affect breeding pairs that are establishing nesting territories and their hunting areas important for the support of nest sites.

Peregrines will return to the area in mid to late April and begin establishing nesting territories. Helicopter activities near the Kuskokwim River should be avoided from April 30<sup>th</sup> to June 30<sup>th</sup>, when peregrines may abandon nest sites from disturbance.

e. Waste, Hazardous and/or Solid:

The proposed action has potential to negatively impact the environment:

Oil Pollution – The drilling equipment will require significant amounts of diesel fuel and lubricating/hydraulic oils. The fuel will be transported to/around the areas via helicopter external/sling-load in 110 gallon “flight tanks”. Fuel spills could occur during transfer into the equipment and by accidental damage caused by the helicopters dropping, and/or other malfunctions of the containers. Oil may spill from the equipment during operation or storage via leaks and/or mechanical breakdown; i.e. rupture of hydraulic lines, failure of engine seals, etc.

Sanitary Waste – Operators will generate human sanitary wastes during their duty day and at the emergency shelter and temporary cache areas.

Solid Waste – Operators will generate some solid waste as a result of meals, equipment maintenance and repairs, grouting drill holes (if the larger size drill pipe is used), etc.

2. Non-Critical Elements or Other Resources:

a. Fisheries

The proposed action will occur during the winter months in areas of tundra bog. There will be neither point nor non-point source pollution generated by the proposed action. The following fish species have been identified in various streams in the Donlin Creek area and therefore may occur in streams in the project area. The project will avoid impacting fish habitat.

- Chinook salmon
- Coho salmon
- Chum salmon
- Dolly Varden
- Arctic grayling
- Round whitefish
- Burbot
- Slimy sculpin
- Nine-spine stickleback
- Longnose sucker

b. Vegetation

The Geoprobe will extract 1.25” to 3.25” diameter by 2 to 4 meter length samples from areas with tundra ground cover. Once break-up occurs, it is anticipated that the holes will fill in with mud and water, and will not be discernable as the sphagnum moss peat sampling area is within a wetland. The amount of vegetation disturbed by the sampling would be negligible as the vegetation would be dormant during the sampling inventory. Minor clearing of black spruce and brush will occur as needed to safely position Geoprobe rigs on the ground.

c. Visual Resources

The visual impacts of the Proposed Action are consistent with the objectives of a VRM Inventory Class III which seeks to partially retain the visual characteristics of the land. Drilling equipment will be delivered to the sample sites by helicopter and snow machine and all drilling activities will occur during periods when the ground is snow-covered and frozen. Drilling operations and team activities should result in no lasting impact to the visual landscape as all equipment will be removed and the coring operations will produce no cuttings. Drilling sites will be chosen that do not require vegetation removal and the existing snow cover should prevent any surface disturbance at individual core sites.

d. Wildlife

Impacts to wildlife will be minimized if the proposed activities are completed before migratory birds return to the project areas in spring.

e. Noise

The noise produced by multiple daily helicopter flights from the Donlin Creek mine site to the sampling areas, along with other ancillary sampling activities will disturb the presumed serenity of the sampling areas. It is likely that game animals such as moose will avoid the sampling areas during exploration. Whether the noise level will result in permanent displacement is unknown.

B. Impacts of the No Action Alternative

Under the No Action Alternative, permitted exploration of the peat bogs would not take place and there would be no impacts to the BLM managed lands outlined in this EA.

C. Cumulative Impacts:

The proposed action is a single event and a low level of human intrusion on the environment. It will take place on frozen tundra in an uninhabited area. Overall stress on the project area will be minimal. The ability of the project area to recover is high. Sampling and testing will be performed in such a manner as to minimize impacts. Snow cover will serve as temporary “ice pads” through which

the Geoprobe will be collecting samples of frozen tundra bog. No major amounts of surface or brush clearing will be necessary. The overall impact to the underlying tundra ground cover will be low.

The discovery of an adequate peat source to supply power to the mine is but one variable in Barrick Gold United States Inc.'s feasibility study of the Donlin Creek mineral deposits. It may or may not result in the development of a power plant, or mine development.

D. Mitigation Measures:

1. Exploratory operations involving snow machines must occur with an adequate hard-pack of snow cover, frozen tundra, and ground frost such that snow machine travel would not damage the underlying tundra or result in surface damage within the inventory areas.
2. Limit activities to November 1-May 15 to avoid interfering with migratory bird nesting and breeding cycles.
3. BLM will receive duplicate copies of the exploration data for our records once Barrick Gold United States Inc. has compiled and interpreted the collected data. Data acquired by Barrick Gold United States Inc. would be protected under the Freedom of Information Act – Exemption 4.
4. Except when conducting sling load operations, it is recommended that helicopter guidelines and regulations set forth in US DOT Advisory Circular AC No.: 91-36D and 14 CFR 91.119 be followed during ingress and egress to the project area. Flight paths should be altered if wildlife is observed in the area (e. g. moose, caribou, etc.) to avoid harassment.
5. All holes with a diameter 2 inches or greater will be plugged to avoid injury to mid size and large animals.
6. Risk of fuel spill is greatly reduced by use of the impact resistant, double walled “flight tanks”. The drilling machine’s need to have drip pans or pads placed under them during operations and storage to prevent oil leaks onto the ground. Having on-hand appropriate spill response kits, and employees trained in emergency spill response (HAZWOPER, etc.) will mitigate any damage to the environment caused by accidental releases of oil/fuel. Solid and sanitary waste pollution will be prevented by daily backhaul of all trash, worn equipment parts, and use of a properly maintained toilet facility at the shelter sites.

V. CONSULTATION AND COORDINATION

A. Persons and Agencies Consulted:

Steve Teller – Tundra Consulting

B. List of Preparers:

Harrison Griffin – Realty specialist

Bruce Seppi – Wildlife Biologist

Jeff Denton – Subsistence Specialist

Chuck Denton - Hydrologist

Donna Redding – Archaeologist

James Moore – NEPA Coordinator

Larry Beck – Environmental Protection Specialist