Inuvik to Tuktoyaktuk Highway Traditional Knowledge Workshops: Inuvik and Tuktoyaktuk, February 2012

FINAL REPORT

July 2012

Prepared for:

Government of the Northwest Territories - Department of Transportation
Yellowknife, NT

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Project Number: 123510689

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Abbreviations

AGM ..... Annual General Meeting
DFO ..... Department of Fisheries and Oceans
EIS ..... Environmental Impact Statement
EISC ..... Environmental Impact Screening Committee
EIRB ..... Environmental Impact Review Board
ENR ..... Environment and Natural Resources
HTC ..... Hunters and Trappers Committee
ILA ..... Inuvialuit Land Administration
ISR ..... Inuvialuit Settlement Region
TEK ..... Traditional Ecological Knowledge
TK ..... Traditional Knowledge
TLU ..... Traditional Land Use

1 INTRODUCTION

The Government of the Northwest Territories – Department of Transportation (DOT), Town of Inuvik and Hamlet of Tuktoyaktuk are proposing to construct a 140 km all-season highway to connect the Town of Inuvik with the Hamlet of Tuktoyaktuk (the project) (Figure 1-1). The project is wholly within the Inuvialuit Settlement Region.

Traditional Knowledge and Traditional Land Use (TK/TLU) studies have become an integral part of the environmental assessment process under the Inuvialuit Final Agreement (IFA). The project is currently undergoing a substituted panel review by the Environmental Impact Review Board (EIRB) pursuant to the IFA and *Canadian Environmental Assessment Act*. The Terms of Reference for the project's Environmental Impact Statement require that "The Developer is expected to demonstrate how TK was used to influence the planning, design and implementation phases of the proposed development. This should include details of how the Developer and TK holders have worked together to share knowledge and gain insight into creating a better development proposal. The Developer shall identify where TK and scientific knowledge differed and how these differences were resolved for the EIS and overall project planning."

After issuance of a Terms of Reference by the EIRB, an Environmental Impact Statement (EIS) was submitted in May 2011. The EIS has undergone a conformity review by the EIRB and reviewers, where a number of deficiencies have been identified. Deficiencies in the EIS must be addressed by the developer prior to the EIRB initiating the technical review of the EIS.

Comments on the EIS were submitted in June 2011 by EIRB, the Wildlife Management Advisory Council, the Tuktoyaktuk-Inuvik Working Group, the Government of Canada and Inuvialuit Land Administration.

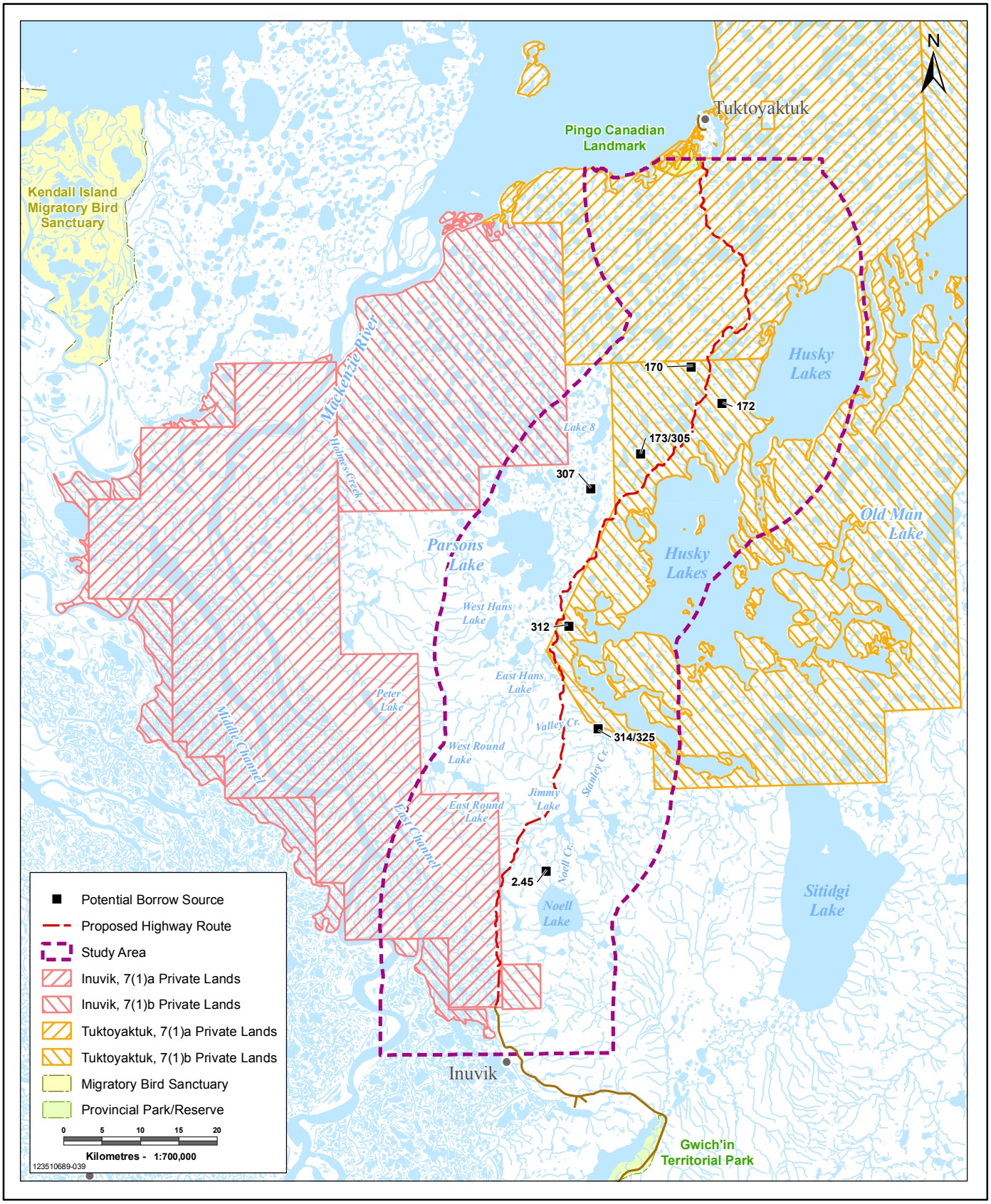
A comment from one of the reviewers reads as follows:

> "An economic analysis was conducted by the GNWT. However, for many other components (social and cultural) the discussion of potential effects lacks depth and analysis. Few links are made between the economic effects of the project, and the social and cultural effects that may result from (1) the project itself, and (2) the economic effects. Further, the absence of TK and TLU studies presents a gap in the identification and mitigation of social and cultural effects." (10.2 Human Environment Components from the MSES conformity review)

KAVIK-STANTEC was contracted by the Department of Transportation, Government of the Northwest Territories to compile Traditional Knowledge and information about Traditional Land Use in the project study area to address the terms of reference and comment by the EIRB in their conformity report.

The compilation of TK and TLU information was conducted in two phases. The first phase was a review of published TK for the Inuvik to Tuktoyaktuk Highway Program and surrounding area. The second phase was to complete two TK/TLU workshops, one in Inuvik and second in Tuktoyaktuk. Phase one was completed and a report (KAVIK-STANTEC 2012) prepared for DOT prior to the holding of the two

workshops. This report provides the results of the two workshops held in Inuvik and Tuktoyaktuk in February 2012.



Inuvik to Tuktoyuktuk Highway Study Area

Base Data provided by Government of Canada; Private Land data provided by the Joint Secretariat

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PREPARED FOR Northwest Territories Transportation

FIGURE NO. 1-1

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2 METHODS

Two TK/TLU workshops were held with a select group of elders and harvesters familiar with the Program area. The first workshop was held in Tuktoyaktuk on February 7 and 8, 2012. The second workshop was held in Inuvik on February 9 and 10, 2012.

The workshop facilitation team consisted of two people (Michael Fabijan and Douglas Chiperzak). Elders and harvesters were selected by the Community Corporation and Hunters and Trappers Committee respectively for each community. Names of the workshop participants from both communities are provided in Appendix A. The workshops were conducted in facilities that allowed space for the interview materials (maps, audio recording and video recording) and to allow participants to be comfortable.

Each workshop began with a short introduction and project overview followed by smaller focus group sessions. The introduction included a summary of results from past TK/TLU studies relevant to the study area. Workshops in both communities were one and a half days in length. Sessions were recorded using digital recordings as well as hand written notes. Focus groups followed a semi-structured, open-ended question format. Maps of the study area were used to facilitate discussion and used by the participants and interviewers to mark features such as harvest areas, trails, camp locations and traditional sites.

A questionnaire was developed for the workshop to be used as a guide and to maintain focus of the purpose and geographic scope of the workshops but was not followed directly question by question. The questionnaire is provided in Appendix B.

3 RESULTS

The results of the TK/TLU workshops are presented in this report according to five environmental and three non-environmental categories. Environmental categories include the general environment, vegetation, mammals, birds, and fish. The remaining three categories included cabins, graves and spiritual areas as one category, general comments and recommendations as the remaining two categories.

Workshop participants felt more comfortable discussing the northern portion of the study area while Inuvik participants preferred discussing the southern component of the study area as these are the areas communities, respectively, use the most and therefore have the greatest knowledge about.

3.1 General Environment

TUKTOYAKTUK

The land near Tuktoyaktuk has a number of pingos, and one workshop participant indicated that the Inuvialuit Land Administration (ILA) has a list of the pingos in the area. Slumping was said to be occurring around some parts of the coast along Husky Lakes. Low lying areas were said to be more affected by warmer weather due to the permafrost in these lower areas, whereas higher areas were said to be less affected. All the creeks in the study area are considered special and sensitive areas.

Gravel sources were said to be important areas for wildlife. Banks of gravel sources are often used by a variety of animals such as wolverine, bears and wolves for denning. There were concerns raised that if gravel is taken too close to Husky Lakes it may affect water quality in the lake. It was recommended that sources of gravel close to the community should not be used for road construction but saved for future community use. It was said that at some time the gravel will run out at source 177. One participant noted that petrified wood was found in the drilling mud while drilling around Parsons Lake.

INUVIK

Workshop participants discussed how spring is arriving earlier and fall is starting later. A workshop participant mentioned that one year he went boating in late May and had never done that before. The winter period is warmer and windier. It was mentioned that they sometimes now see bear tracks right up to December, whereas normally the bears would be hibernating before that.

The biggest concern on the land is slumping. There is more natural slumping now and sometimes stream beds are being undercut resulting in slumping of these banks. Once the land is disturbed the potential for slumping increases. Old seismic lines are still visible and it was suggested that if a pipeline is also built there will be an increase on the effects on the land. If work is not conducted properly this could affect the land which will affect younger generations use of the land.

Water in the [Mackenzie] Delta is getting lower and some smaller lakes are drying-up. Participants were not sure if water levels are also lower in the study area. Some creeks such as Noell, Stanley and Hans Creek do not freeze to the bottom during the winter and continue to flow all year round..

3.2 Cabins, Graves and Spiritual Areas

TUKTOYAKTUK

There are no known grave sites along the proposed road corridor. It was mentioned that some time ago a reindeer herder disappeared around Jimmy Lake and was never found. Workshop participants knew of no spiritual areas along the proposed road corridor but it was suggested that the ILA should be consulted as they have a list of spiritual areas. East of the study area, in the 500 Lakes area there are a number of very old human use sites.

A workshop participant mentioned that he is aware of two old campsites where people long before this time would go and fish, but that these sites were never documented. There is one site known to the Prince of Wales Heritage Centre. There may be another area near Hans Creek where you can tell there must have been people there long ago because there are a lot of cut trees .

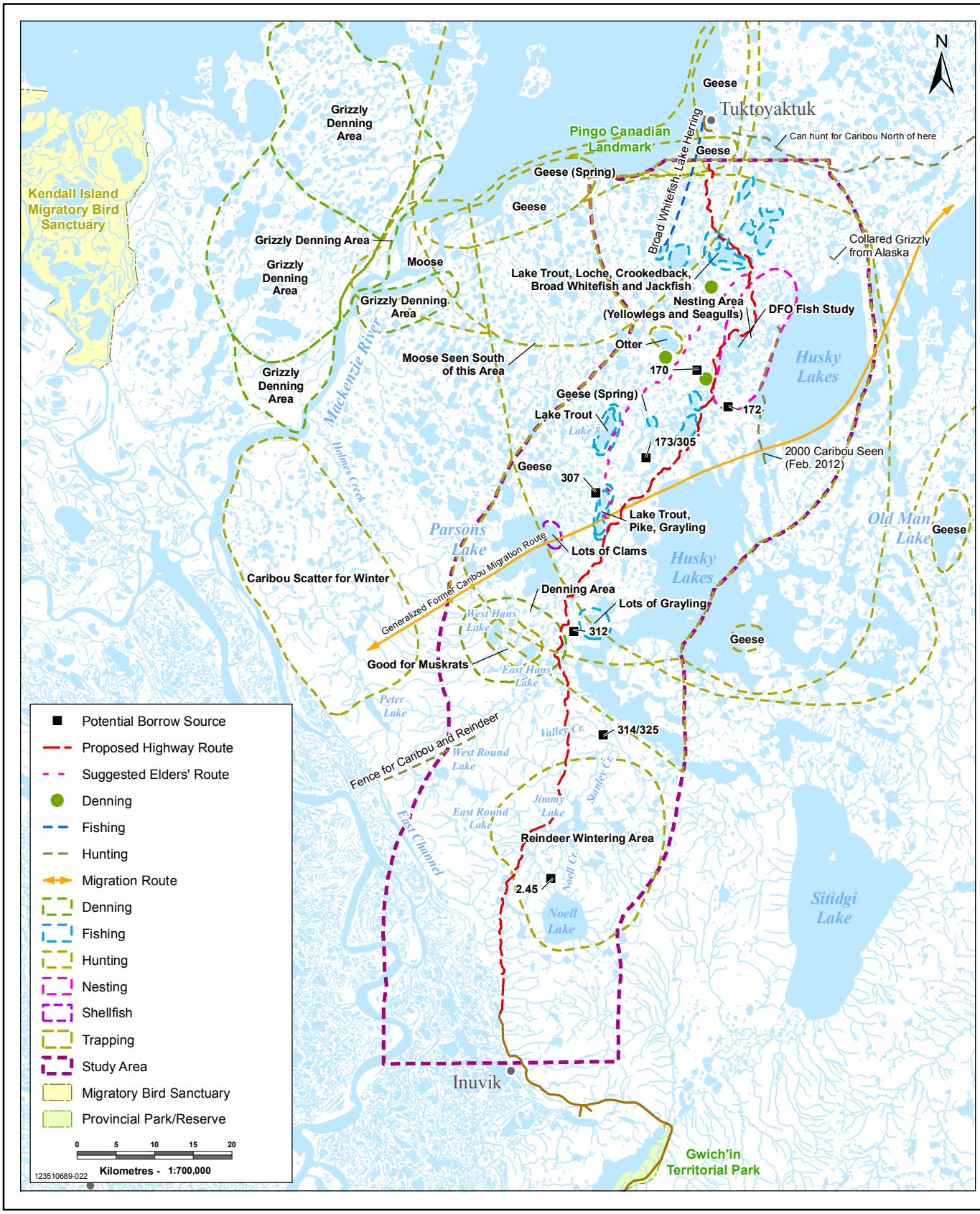
Cabins known by workshop participants are shown in Figure 3-1. Pigolioch [phonetic spelling] is where most of the cabins are (over 30 cabins). It should be noted that ILA has a list of registered cabins and owners, however, not all cabins are registered with ILA (only the ones on private lands are registered). Inuvik Fish and Wildlife have a cabin near Hans Lake. A workshop participant indicated there are some places where cabins on the ILA maps are in the wrong place or out of date. Also, ENR has cabin listings but since they likely come from ILA, they offer no additional information. There might have been a study where someone investigated every cabin with a skidoo and GPS, especially in the Husky Lake corridor.

A workshop participant mentioned that a cabin was not needed to stay in the area but that one could camp anywhere in the Program area using tents.

INUVIK

A number of cabin locations around Husky Lakes and Noell Lake are shown in Figure 3-2 and there are probably cabins on Peter Lake. There is concern about more cabins being built around Husky Lakes and conflicts between the communities of Inuvik and Tuktoyaktuk over the number and locations of where cabins are allowed. There was also concern about garbage being left at temporary camp sites and this may increase with a road. It was suggested that ILA needs to work with the communities and HTCs to control garbage in the area.

There is the potential for grave sites around Husky Lakes. There is also the potential that there is a grave site near the cabin on the north end of Jimmy Lake.



Traditional Knowledge and Traditional Land Use: Areas Identified in the Tuktoyaktuk Workshop

Base Data provided by Government of Canada; Private Land data provided by the Joint Secretariat

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FIGURE NO. **3-1a**

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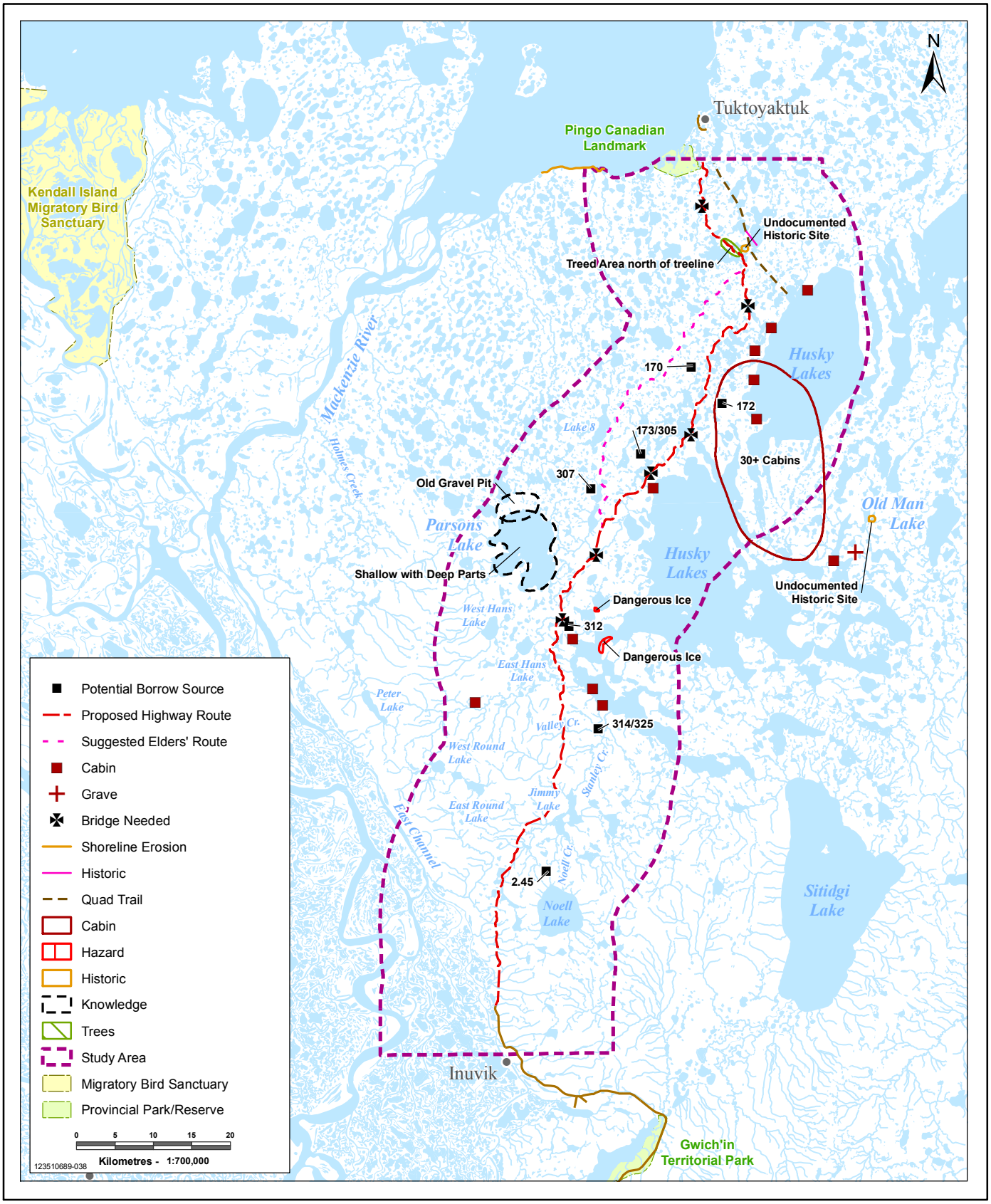

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FIGURE NO. **3-1b**

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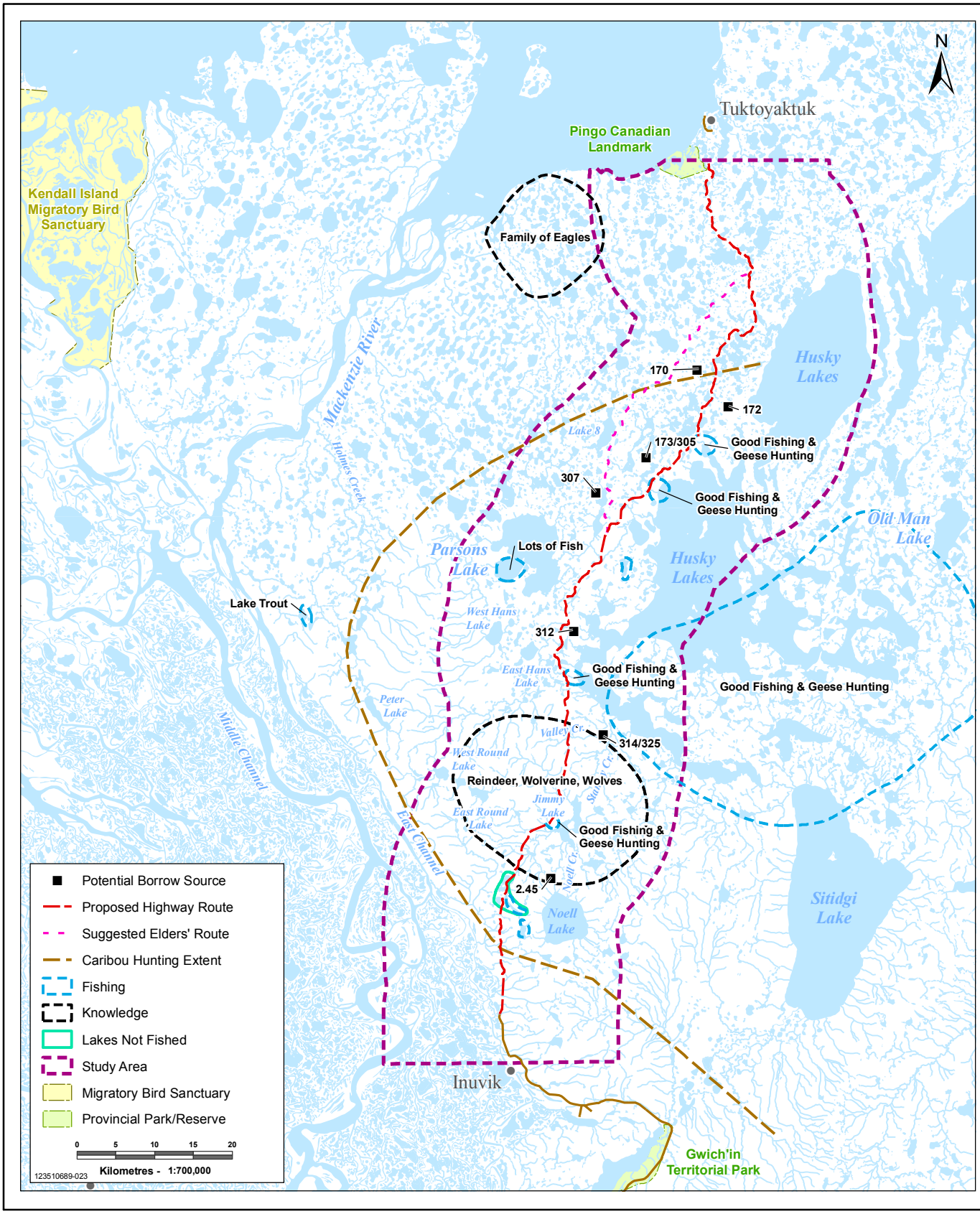

Traditional Knowledge and Traditional Land Use: Areas Identified in the Inuvik Workshop

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PREPARED BY KAVIK-STANTEC

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FIGURE NO. 3-2a

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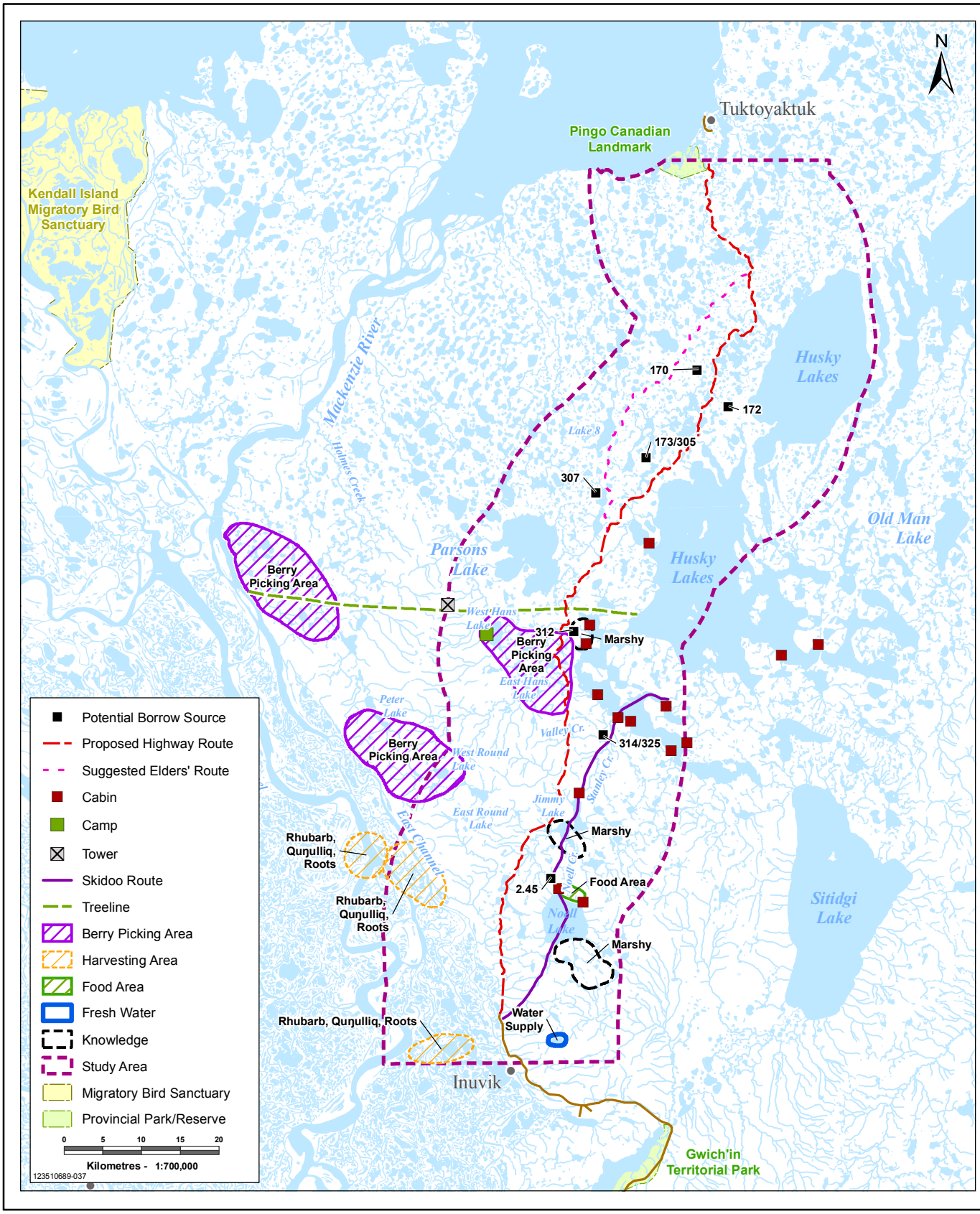

Traditional Knowledge and Traditional Land Use: Areas Identified in the Inuvik Workshop

Base Data provided by Government of Canada; Private Land data provided by the Joint Secretariat

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FIGURE NO. **3-2b**

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3.3 Vegetation

TUKTOYAKTUK

Wild plants were once an important food source and used for medicinal purposes. Plants were widely used and are still occasionally harvested. Harvested plants include wild rhubarb, which can be found along the access road to gravel source 177. The leaf of this plant is eaten, sometimes with whale oil. Wild peas can be found in patches on little knolls. Mushrooms are harvested including what is referred to as puffballs. It was noted that people had to be careful as to what type of mushroom is picked as some are not edible. There are vegetables that resemble turnips. Labrador tea which is widespread throughout the program area and is used to make tea. Other types of edible vegetation were also said to be harvested.

It was noted that Hairy Rockcress is a rare plant that only grows around Bailey Island, but it might be found near the highway route too. Participants suggested confirming this.

The one form of vegetation that is still widely harvested is berries. Berry picking is an important family activity and the berries provide an additional food source. Berries were said to be abundant in low lying areas around Lake 8 and between Tuktoyaktuk and gravel source 177. Workshop participants thought that berries would likely be abundant in low lying areas all along the proposed highway route. Berry abundance varies from year to year and it is thought this is a result of differing weather conditions between years. People pick berries a couple of hundred metres to a couple of kilometres either side of the 177 access road. Harvested berries here include cranberries and cloudberries. There are more and more people picking berries now because of the higher cost of living. The picking is easy because the people don't have to walk far - in the past they couldn't reach these areas. People coming from places other than Tuktoyaktuk pick in this area as well.

The importance of the vegetation in the study area to birds and animals was also discussed. Ptarmigan were said to feed on willows and berries. Geese feed on the submerged roots in lakes. Muskrats feed on vegetation and store food for the winter in push-ups. Caribou sometimes will eat from the push-ups during the winter, however the main food for caribou is lichen.

INUVIK

Workshop participants talked about berries being plentiful – along roads, around lake edges and along creeks in the study area. Berry picking occurs along the shore of the Mackenzie River; along Devil Lake and Devil Creek; near Caribou Hills; near Reindeer Station and at Lucas Point (west of study area). To reach these areas, people travel by boat up channels then walk back into berry picking areas. Workshop participants commented that the road would be good for berry picking for the elders and the people who cannot go on a boat.

Harvested berries include: black crowberries, blackberries, yellow berries, blueberries and cloudberries in late July and August; and cranberries and red currants in September. Berry numbers are dependent on weather - need rain and warm weather but that a longer season does not seem to matter.

Participants were concerned that chemicals used to keep the dust down on the road will travel in the dust and will land on the berries near the road, and that people would move father away from the road to pick berries because of the dust. So, while the road will open up good places to go berry picking, people will want to go some distance away from the road to avoid the dust.

People also harvest Labrador Tea – which is abundant in the area, as well as rhubarb and quŋulliq (*Oxyria digyna*) Quŋulliq and rhubarb are found near Reindeer Station. Rhubarb is harvested at the end of July, and mashu (roots) in late August and September. Rhubarb is harvested near Campbell Lake as well.

The southern portion of the study area is largely covered in spruce as well as some grass-like vegetation. There are lots of bushes near the water. Willows around lakes and streams are growing bigger and faster as well as other smaller trees in the area.

3.4 Bugs

TUKTOYAKTUK

Workshop participants noted seeing different kinds of bugs not seen in the past. Workshop participants have seen bumblebees, grasshoppers and different kinds of beetles which they do not normally see. The amount of mosquitoes present is dependent on the weather. When it is warm there are a lot of mosquitoes and when it is cool there are fewer mosquitoes. In the last couple of years there have been fewer mosquitoes due to the drier and windier weather.

INUVIK

There appear to be changes in the types of mosquitoes occurring in the general area. Mosquitoes seem bigger and some are green in colour. The sand flies also seem different and are brown in colour.

3.5 Mammals

3.5.1 Caribou

TUKTOYAKTUK

Caribou are important food for the people of Tuktoyaktuk. The northern portion of the study area has caribou from both the Bluenose West and Bathurst herds. Caribou numbers are said to be small but this may be because they divide the caribou into two herds. Some in the community feel these animals are actually all part of one herd. Workshop participants have observed that caribou numbers are now increasing. Caribou were once found all along the coast of Husky Lakes and now they are coming back. It was suggested that there are more animals now because there is less activity in the area. If activity levels increase, caribou numbers may decrease again. The largest numbers of caribou are seen in the fall (October/November) and in the spring (April/May). In the fall the caribou are migrating from the East and

return East in the spring. They currently seem to be staying around the Ikinilik [?] area during the winter. Caribou have trampled the ground extensively in this area so it is difficult to travel there. A small number of animals may stay in the area all year. Some caribou will calve in the spring-time in the study area, others calve near Horn River, but most calve further up the peninsula in May and June. Every cow has a calf, and there are about 3 to 4 bulls for every 100 cows. Some of the bulls migrate slightly earlier than the cows and yearlings (approx. March). Some bulls come across Sitidgi and Miner River in the fall with the cows (after rutting season, in October and November).

Caribou appear to like the current 177 access road in the spring because the road provides good footing. However, caribou have stopped passing through some areas. They have changed their routes (they do that every 30 years or so), and have not been in this area for 15 to 20 years. They used to come down during the fall and would migrate across the lake toward the Mackenzie River. They would stay in the area during the winter, and head up again (toward Anderson River) between Parsons Lake and Caribou Hills during the spring (October to March). Caribou would go about 20 km either side of the migration route. Participants noted that caribou are not moving around as much. They are staying in the area near Husky Lakes possibly because there is no hunting allowed there. About 2,000 caribou were seen crossing Husky Lake recently (during the first week of February, 2012).

The potential effects of the road on caribou were discussed. Participants thought that the road may have an initial effect on the caribou but over time the caribou will eventually habituate to it, but with large herds moving across there would likely be some effects. Caribou have adapted to the Dempster Highway and are using their usual routes, but they tend to act nervous and will avoid the area when large machinery is in the area for construction or maintenance. Some speculate that the mountains have left the caribou little choice but to try and maintain the Dempster Highway migration route.

There was concern raised that there could be increased harvesting of caribou if the road is constructed as some may use the road to hunt from. To mitigate against over-harvesting of the caribou if a road is constructed, there will need to be more or improved by-laws related to caribou harvesting and that regulatory agencies will have to step-up and enforce these regulations.

The Program area was once part of a reindeer range, but the range has now changed although one still gets the odd reindeer in the area. A workshop participant noted that in the 1950s he saw a woodland caribou.

The timing of the construction of the road is a trade-off for what is good for the land and what is good for the caribou. It would be preferable to construct the road in the summer when there is no caribou in the area however this would cause greater impact to the land itself. Participants concurred that the best time for construction is the winter. Using monitors during construction might help, but it is hard to slow down the construction crews. Caribou will change their route during that time. This could be okay if the hunters are aware of the change and can predict it.

Participants felt that more caribou than any other species would be killed by road traffic. However, since the road (such as the 177 access road) will be so crooked, the traffic will only be able to go about 50 km an hour. Wildlife kills on the highway are expected to be few because there are no trees to obscure the

view of people driving or of the animals passing. South of Parsons there are some trees that could obscure the view.

INUVIK

Caribou are also harvested by Inuvik residents. The harvesting area has changed and now residents usually travel east towards Sitdigi Lake and the Miner River or out towards Reindeer Station in October. People used to hunt in the study area as well as along the coast, but now there are none to few caribou in the study area. Sometimes woodland caribou are harvested east of Sitidgi Lake and the Miner River and it is thought that these caribou may stay all year in that area.

In the spring the caribou are on the west side of Sitidgi Lake (Figure 3-2). Long ago the caribou would come in October but are now normally arriving in November. The Bluenose West caribou calve east of the the study area before arriving and use the study area mainly for grazing. Some reindeer mix with caribou in the southern portion of the study area and calve around Inuvik. Caribou numbers are said to be quite cyclic and the health of the caribou is improving, so that last year the caribou were healthy.

If the caribou return to the study area and the road is constructed, caribou may stay away from the area due to noise from construction, but that they may return. Some may stay away for 10 years before coming back. Participants suggested that to keep caribou from moving away, construction should be stopped while caribou are migrating through the project area. Caribou numbers may also be affected due the potential of increased harvesting and road traffic. Currently hunting of caribou in the area is not allowed due to their reported low numbers and it there was some concern that if the road is built perhaps the caribou may not return to that area. It was suggested moving the caribou harvesting area further south. The caribou management plans should be revised if the road is constructed.

3.5.2 Wolves

TUKTOYAKTUK

The whole area is good wolf territory. Wolves are nomadic and generally follow the caribou on their migrations. They move into the area in October and November when lakes and rivers freeze over. They migrate back east in February and March. There are some wolves which spend all year in the study area. Caribou is an important prey species for wolves although they will feed on smaller animals if there are no caribou around. When the caribou numbers are high the wolf numbers also increase. Some wolves were said to stay with the reindeer herd. The wolf population was considered to be healthy.

Workshop participants did not think the Inuvik to Tuktoyaktuk highway would have much effect on wolves. Wolves would be most sensitive when denning and it was recommended that construction activities should stay at least one mile from den sites. Wolf den sites are generally found in quitter areas, and in high, dry places along rivers and stream banks. Wolf pups appear in May to June.

Wolves will most-likely stay away from the road as they prefer to move and den in quiet places. The main impact to wolves will be from easier hunting access. Windrows and snowbanks created by snowplows

might affect the good hunting spots for traditional hunters, and there is some concern that people will come into established trapping areas.

INUVIK

There appear to be more wolves now, especially in the [Mackenzie] Delta. Wolves move around depending on food availability. Wolves used to move with, and feed a lot on caribou but now that there are fewer caribou and are now feeding more on moose and have moved into the Delta. People can see wolves on the Dempster Highway and the highway provides easier access for people to hunt them. They move north/south through the Delta. Wolves use to be seen in large packs of 20-30 animals but now normally see them in smaller groups of 3 to 4 animals. They den in sheltered, dry areas.

3.5.3 Grizzly Bears

TUKTOYAKTUK

Workshop participants said there are more grizzly bears now then there were 15 years ago and that numbers have been increasing particularly in the last few years. There are now many grizzly bears in the spring around Husky Lakes and east of the study area. There is plenty of food for grizzly bears in the Husky Lakes area including berries, roots and ground squirrels and they stay near creeks to fish.

Grizzly bears den in the banks along rivers or in high ridges. Some dens are located along Devil's Creek and many are on Richards Island. Some bears come uphill from the Delta to den too, generally during the end of September. Grizzly bears hibernate all winter and come out of their dens in April. A workshop participant noted that during a period of really warm weather in February he observed a grizzly bear that was out of its den. The Husky Lakes area also has a high grizzly bear den concentration. ENR is identifying grizzly bear den sites throughout the study area. Good places for denning include areas with grasses. Dens usually face south; for warmth from the sun in the spring. Some of the gravel sources are potential denning sites, but not many.

Grizzly bears were said to have large home ranges and are territorial. One bear came from Alaska, near the end of April about 4 years go with a collar on it (see number 15 on the map). Young grizzly bears will avoid the older grizzlies. It was mentioned that grizzly bears are getting closer to the community. Bear hunting is generally during September or in the spring when they first come out from hibernation. There were some big tracks (like a polar bear but with the claws of a grizzly).

Concerns were raised that noise during construction of the highway may force grizzly bears from their dens. Crews should watch for bears and should not blast to get the gravel if possible (as has been done before because of frozen substrate). Bears may also not want to den close to the road because of traffic. Concerns were also raised about the potential of increased bear attacks when people are berry picking off the highway. There is a quota in effect for grizzly bears. When a nuisance bear is shot this is taken from total allowable harvest quota for the community. There was concern that the road may lead to more nuisance bears, with these nuisance bears being shot, thereby reducing the quota available to the community for harvesting.

INUVIK

There are now more grizzly bears seen in the [Mackenzie] Delta. Grizzly bears have large home ranges. Home ranges which are in the study area can extend outside the study area as well. Grizzlies will mark their territories by making bite marks in trees. Bears hunt caribou as they move through the area, but do not follow the caribou as they migrate out of the area. Bears eat berries, eggs on Kendall Island in the spring, muskrat off the pushups close to the coast, eat ground squirrels and sometimes mashu (roots).

Grizzly bears den on the south side of creek banks, with steep slopes, often protected by willows or trees. Dens are located where it is easy to dig a stable den. Bears will return to their dens more than once. Bears will bring in grass for bedding before hibernating and will clean out grass in the spring. The bed of grass will be higher up than the opening of the den and the den will have a vent. It was mentioned that there are lots of grizzly bear dens on Richards Island.

Workshop participants said that grizzly bear numbers may decline after the highway is built due to increased hunting pressure related to easier access the highway provides. Some participants thought that the grizzly bears will likely move away from the road while others thought bears may use the road for hunting when the caribou are around.

3.5.4 Black Bears

TUKTOYAKTUK

There are no black bears around Tuktoyaktuk; they are generally found closer to Inuvik near treeline. It was thought that black bears are more dangerous than grizzly bears as they have less fear of humans.

INUVIK

Workshop participants noted they do not see as many black bears as before. They used to see more black bears in the Delta but now there are more grizzly bears. Black bears are mostly seen around the road and dump.

3.5.5 Wolverine

TUKTOYAKTUK

There appear to be more wolverine now in the study area. This may be due to fires to the south which may have affected their habitats and forced them to move northward. Wolverines live in both treed and tundra habitats. They are sometimes seen on the ice along the coast hunting seals or can be found following muskox in the Mason River area. Wolverine are strong animals and can kill a caribou. They have also be seen to scare a grizzly away from its kill. A wolverine will sometimes pack its meat by carrying it over its shoulder. Wolverine will take advantage of any food source (e.g., mice, ptarmigan, caribou, berries) and are also scavengers. Like wolves, there appears to be more wolverine in the area when caribou numbers are high. Some wolverine will follow the caribou while others remain in the study

area all year. They can travel 100 to 200 km a day but don't appear to have a pattern to their movements. Wolverine are mostly harvested in the winter (December to April) when their fur is at its best quality. The wolverine dens in high dry places along banks of lakes and streams. The females will have between 2-3 pups.

Generally it was thought that the highway would cause no long-term effects to wolverine and that population numbers appear to be stable. It was mentioned that the highway may lead to some increased harvesting of wolverine. When people spot a wolverine they tell people in town. When someone is driving the highway and sees a wolverine, people may come out and try and harvest it having heard about the sighting. Some though that wolverine numbers in the study area might increase if people were hunting along the highway, since the wolverine would scavenge the remains of kills.

INUVIK

Wolverine numbers appear to be higher now. They are often seen in association with caribou and reindeer or chasing down other prey such as rabbits, squirrels and young birds. They can take down and kill a caribou. Wolverine will also take kills away from grizzly bears and wolves. Wolverines have large home ranges . They are considered shy animals and normally try and stay away from humans. They like deep snow as they can tunnel into the snow. Wolverine den in the same types of areas as grizzly bears (hilly areas) and these areas should be protected. Wolverine are solitary animals, and they stay in small family groups when young and in pairs when mating.

Wolverine are generally harvested between November and April. Workshop participants thought that the highway may lead to increase harvesting of the wolverine. Wolverines will also be effected if there are impacts on caribou and reindeer.

3.5.6 Moose

TUKTOYAKTUK

Moose were only discussed briefly at the workshop. Moose were said to be mainly found in the southern portion of the Program area but residents of Tuktoyaktuk are seeing more moose now. Moose appear to be extending their range northward.

Some people still hunt moose in the fall. Moose are generally seen south of the line indicated in Figure 3-1 but there are a few sightings north of this line. Moose calve anywhere. In June, moose have been seen at Atkinson Point.

INUVIK

Moose are found throughout the study area including the Hans Creek area. However, moose are more abundant in the Delta. A workshop participant mentioned seeing a moose swimming from Pullen Island (northwest of the Program area) to the mainland.

3.5.7 Muskrats

TUKTOYAKTUK

Muskrats can be found all along the proposed highway route. There are more muskrats now and this may because they are not trapped as much anymore. Muskrats are used for both their fur and as a food item. They are found mainly in small lakes or small bays of larger lakes. In the summer muskrats may move to new lakes. The road is not expected to have any effect on muskrat populations.

INUVIK

Muskrats are prey for otters and fishers. Some workshop participants thought muskrat populations are declining. Some workshop participants spoke of muskrats getting sick and of skinning a muskrat a couple seasons ago and finding a big black tumor inside the muskrat.

3.5.8 Beaver

TUKTOYAKTUK

Beaver appear to be moving further north which may in part be related to forest fires in the south. There are not many people who trap beaver anymore although a few still do occasionally. Beavers can live quite long. The activities of beavers such as building dams, can alter stream habitats, but there is little concern over this. Workshop participants noted that beavers damming streams and creeks could affect the road by causing flooding in some areas. People will need to use caution around the dams because sometimes the water comes right up to the top of a 2-m dam and can easily flood out roads (and hunters) if the dam breaks.

INUVIK

Inuvik workshop participants see more beavers now than before. Beavers can be found throughout the study area. The damming of creeks by beavers is spoiling some fishing areas, and affecting the ability of fish to leave the creeks in which they were spawned. One workshop participant recalled children getting beaver sickness (“beaver fever”) from water at Campbell Creek.

3.5.9 Other Fur Bearing Animals

TUKTOYAKTUK

Workshop participants in Tuktoyaktuk briefly mentioned other fur bearing animals such as lynx, fox, rabbits, otter, mink and ground squirrels. There are very few lynx in the Tuktoyaktuk area as they prefer treed areas. Fox numbers seem to be up lately and foxes were said to likely adapt well to the highway. There are small numbers of otter in the study area as well as Husky Lakes and the 500 Lake. Mink can

also be found in the study area but are mostly found on the east side of Husky Lakes. Ground squirrels are abundant and widespread - they are a very tough and adaptable animal and the populations will not be affected by the highway.

Several traplines run near Parsons Lake, but there are few serious trappers now. Some people still trap for recreation. Where there is trapping, it tends to be along the bay – outside of the study area. Some trappers will like the increased access created by the highway and may trap more as a result. Martens and weasels are not trapped much anymore.

INUVIK

Lynx can be found wherever there are rabbits. The southern portion of the study area from Noell Lake south has abundant lynx. Black and red foxes are also abundant in the study area. Foxes eat rabbits, squirrels, ptarmigan,muskrat mice and fish and populations cycle along with the food they eat. Foxes like to den in steep banks on the southerly side of the slope, will den in spring when they have young. Foxes like to hang around camps and if there are more camps after road is put in, they will eat scraps from the camp. Overall, the road will not impact the foxes but they may travel up and down the road looking for garbage. People used to trap coloured fox, but now only as a hobby.

Otters and fishers are moving northward. They feed on muskrats, fish and rabbits. The road may bother these animals at first as they would not be used to the noise but over time would probably get used to the road.

Martens are seldom seen and it has been a long time since a weasel has been seen. A porcupine was seen several years ago. One participant noted that coyotes are coming further north now.

3.6 Birds

3.6.1 Waterfowl (geese, ducks, swans and loons)

TUKTOYAKTUK

Waterfowl discussed included geese, ducks, swans and loons. The Husky Lakes area is an important area for harvesting geese. Areas often used for geese hunting include Hans Bay, Face Point, Zed Lake and anywhere along the shore of Husky Lakes. Some geese will nest in the study area, such as yellow-legs and Canada geese, but only in small groups. Seagulls, swans, ducks and likely ptarmigan also nest along the road. Snow geese do not nest in the program area but nest further north. By the time the birds are nesting on the peninsula the trail is not good, so there is not a lot of hunting up there and it is difficult to say where the specific nesting sites are. Geese migrations have been changing. Geese now nest on Victoria Island when in the 1940s they did not. Waterfowl in general are now arriving earlier and leaving later although the exact timing can vary from year to year. Workshop participants reported seeing more geese and ducks now. They speculated whether this was related to the reduced helicopter traffic in the area. Helicopter traffic was said to negatively affect the number of birds in the area. The decline in industrial activity which caused the decline in helicopter traffic has allowed the geese and ducks to return

to the area. The amount of air traffic might decrease with the road because people will use the road instead.

Goose hunting in the spring it is mostly along the coast. Before the oil companies came there was more hunting near Husky Lakes, too. Geese hunting in the highway corridor is mainly the end of April and the first half of May. However, some people hunt all spring. The species found in this area are: snow geese, yellowlegs, swans and some ducks. People from Inuvik come up the river to hunt geese in the spring. Brants are hunted along the coast. Eider ducks travel along the coast and avoid the corridor, generally.

Nesting is begins around May 25th, and extends until June. Some waterfowl drop their eggs trying to reach the nesting ground (depending on weather) - it seems like they are in a rush to reach the nesting grounds lately. They sometimes come early and leave late.

The sensitive times that people should consider along the highway (other than spring hunting and nesting) are fledging times (June – about a week after hatching). June is the busy nesting and fledging time for all species. Eggs are in the nests for about 3 weeks. Eggs are harvested for food, along the coast.

Geese moult from July to the middle of August. By about August 20th they are flying. Swans can wait for their young ones until freeze up. No-one hunts them when they are moulting unless the really have to. Generally, people do not need the meat at that time.

Fall hunting requires that they go north by boat. If the people coming up on the highway do not have a boat, they cannot go that far. The highway is not expected to change the fall hunting in the corridor because there is not much of that anyway (the birds are all on the coast or up north)

Swans nest in lakes throughout the study area with small numbers nesting in larger lakes and only single pairs in smaller lakes. Swans are also occasionally harvested. Ducks and loons can be found in almost any lake. Loons need more space to take-off from the water than other waterfowl.

If the highway is constructed during the winter then there should be no effect on waterfowl, apart from the indirect effects of construction equipment noise, which will temporarily scare off the geese. If some construction were to occur in the spring, summer or fall then it should be conducted at times to avoid bird migrations and moulting. If a bird is disturbed while moulting it would move to the next lake to avoid the disturbance. Geese tend to nest in the places where the snow disappears early, so it will be important to figure out where those places are.

The road might not have much effect except that the waterfowl will nest farther away from the road. The road will increase access for hunting geese, and there might be a lot of hunting along the highway generally, once it goes in. This will be difficult to control.

INUVIK

Geese have changed their migration route and are now migrating further east towards the Anderson River. People used to hunt geese on the Mackenzie River but now hunt geese further east along the coast of Husky Lakes, in the 500 lakes area, or along the Miner River which is east of Husky Lakes.

Some still hunt geese around Douglas Creek. The weather affects when geese migrate. Last year (2011) geese arrived early but they also left early. Each year migration times are different. Nesting is a sensitive time for geese as predators go after their eggs. Geese moult from mid to late July to mid-August.

There are a number of types of ducks seen in the area including, mallards, American widgeons, pintails, long-tail duck and black ducks. Ducks are found throughout the study area. Swans nest on many of the lakes between Inuvik and Tuktoyaktuk.

Geese hunting in the 500 Lakes area occurs from the end of April to the middle of May. While hunting geese, ptarmigan, ducks (mallards, Goldeneye, Teal, canvasback, and eider) and swans will also be harvested at the same time.

3.6.2 Birds of Prey (eagles, hawks, falcons and owls)

TUKTOYAKTUK

In general more birds of prey are now being seen and this may be due to an increase in waterfowl numbers. Eagles are seen throughout the program area. There are more bald eagles than golden eagles with bald eagles numbers increasing. Workshop participants say they do not see eagles nesting in the study area. Eagles seem to prefer high places such as trees to nest in. Falcons are seen around Husky Lakes. Falcons also need high places to nest. Snowy owls are sometimes seen in the study area but are normally found only north of Tuktoyaktuk, not near the route. Snowy owls nest along the coast on the top of knolls or areas with gravel. Often, one can see lots of snowy owl droppings on the top of knolls.

Birds of prey can be sensitive and any human activity may result in birds of prey moving further away from the highway. If owls or other birds of prey are nesting at a gravel site, any disturbance may cause them to leave that site. Also if there are any effects on food sources such as mice or lemmings this could affect birds of prey numbers.

More of eagles and hawks species are noted every year. Some think they are overpopulated in British Columbia and are coming up north for the fish during the summer.

Other smaller and larger owls as well as hawks are occasionally seen in the study area, but there are no trees for most of them. Big dry lakes will have willows for hawks and ravens, sometimes eagles. There are eagles in the trees south of Hans Creek, on the south side. The rough-legged hawks nest along the corridor north of Hans Creek and south of Tuktoyaktuk, all the way to the peninsula.

Peregrine falcons nest in abandoned buildings and cliffs, but their specific nest locations are not known.

Yaegers (3 types) pass through in large numbers (up to 200 at a time) in the spring. They eat eggs, so they go to other areas where eggs are abundant. They nest far north, near Atkinson Point. Nests are generally right on the ground (flat spots and banks).

INUVIK

Bald eagles are common and their numbers appear to be increasing. Bald eagles first arrive in March and seem to be arriving earlier. Depending on the weather in the spring they may arrive 3-4 weeks early. Bald eagles used to leave in early September but now are staying until late September. They feed on muskrats, ducks, small animals and fish. In the fall when water levels are lower you can see eagles fishing in the creeks. Eagles nest in high trees and mostly in the Delta. One workshop participant indicated that for the last 2-3 years there has been a family of eagles in the area near Whitefish Pingo.

Hawks are mostly found on the west side of the Delta. Falcons can be found around Airport and Campbell Lakes; they usually arrive by the end of June. Some species, like jaegers, arrive later, in late July. Populations of falcons and owls remain about the same.

Owls are seen more in the west side of the Delta. Some owls found close to Inuvik or along the Dempster Highway. The occasional snowy owl is seen but not in the past couple of years. Short-eared owls and great-horned owls have also been seen.

3.6.3 Other Birds (Ptarmigan, ravens, cranes, songbirds etc.)

TUKTOYAKTUK

Ravens are found in the Program area all year round. In early fall, ravens will gather in large flocks. Some of these large flocks fly between Tuktoyaktuk and Inuvik. Seeing ravens is sometimes an indication of a kill location.

Cranes and ptarmigan are seen all over. Workshop participants say they see more non-native birds now. At some time someone saw a pelican and another time a hummingbird. See more smaller birds and sometimes yellow and blue coloured birds. It was suggested that strong winds may sometimes blow birds large distances and that is how some of these birds may have arrived in the area.

INUVIK

There has been no noticeable change in types and numbers of songbirds. About 10 years ago one of the workshop participants saw a pelican during the summer.

3.7 Fish

TUKTOYAKTUK

Fish are fragile and important among the species being discussed. Fish meat is the main source of food, moreso than birds - whereas caribou is the most important for some other reasons. Along the road, and in the study area, you can catch trout and many other species.

Any lake or stream with a connection to Husky lakes or the coast will have fish using them. There is likely spawning potential in most lakes and lakes which are deep enough would provide overwintering habitat. Common fish species in the lakes include grayling, crookedback, lake and broad whitefish, herring (ciscoes), lake trout, burbot, jackfish, northern pike, and loche. Freshwater shrimp are also in some lakes. Hans Bay is good for fishing. East and West Hans Lakes contain mainly whitefish. Parsons Lake is a common fishing place, but there are not too many fish are there (numbers and species). It is shallow, with about 8 feet of ice, so there is not a lot of water for fish to overwinter. Ikinilik [?] is also a fishing area. It is very popular and sometimes there are so many people it is difficult to fish. Fish go up Jimmy, Parsons, Hans, and other creeks. Fish populations are considered healthy but can fluctuate from year to year. Fish migrations are changing by 1 – 2 weeks in spring and fall due to the warmer weather.

The Tiktaliktuk Lake fish population is declining with the increased access to the lake from the access road to gravel source 177. With increased access from the highway there is a concern there could be long-term impacts on fish populations due to overfishing. Currently there is limited access to many of these lakes during parts of the year.

People travel to fish-bearing lakes with skidoos during winter and sometimes with all-wheelers during the summer. There are different trails that are used at different times of the year.

Bridges are better than culverts for the fish in the creeks. Construction timing is important because at least once culverts were used rather than bridges because it was too late in the season (the ground was not favourable) to construct the bridge.

The road will make access to the lakes very easy and fishing will increase.

INUVIK

Important areas for fishing within the project area include Husky and Jimmy lakes, the creeks in the areas around Husky Lakes and on the skidoo route from Inuvik to Husky Lakes. Noell and Jimmy lake have whitefish, jackfish (northern pike) and lake trout. Noell Lake also has arctic grayling. The mouth of Hans Creek has lake trout and arctic grayling. Peter Lake and Husky Lakes have lake trout. There are fish in both West and East Hans Lakes. Workshop participants were not sure where spawning areas were located, but some suggested in all the creeks including those north of Sitidgi Lake. Dog (chum) salmon are occasionally captured in the Mackenzie River. Workshop participants indicated they did not did not fish in Parsons lake, and did not travel north of Parsons Lake when fishing.

Fishing in Noell and Husky lakes occurs in the spring from the end of April to the middle of May, and in the fall in October and part of November, when the ice is thin (6-12” thich). It was noted by workshop participants that some people will fly up to Noell and Husky lakes in the summer to fish, while some people fish year-round. Fish will overwinter in lakes and creeks that do not freeze right to the bottom.

There is a concern that people will use the road to fish in Husky Lakes. It was felt that more fish surveys were required in waterbodies and creeks including those creeks which drain beyond the study area. A concern was raised regarding quarry site #2.45 that it is close to a fish bearing lake and stream. If the

quarry is used slumping may occur and slumping material may end up in the lake or creek and affect fish habitat.

Several workshop participants mentioned that it may not be good to eat fish from Noell Lake because of pollution or higher contaminant levels. Other Workshop participants have mentioned that they have found several lakes, including Noell and Jimmy Lakes, to be overpopulated because people are worried about contaminants and will not eat the fish from them as some people are getting sick from them. Fish from Husky Lakes, however, are considered okay to eat.

3.8 General Comments

A variety of general comments were made at the workshops. Comments ranged from support of the highway, to value of the land to people to economics. The following are general comments from both the Tuktoyaktuk and Inuvik workshops.

TUKTOYAKTUK

- All want an all-weather road however it needs to be built the best way possible.
- There are different types of costs, not just money such as the cost to people and the environment.
- Cost of losing a species and loss of subsistence harvesting outweighs the costs of the highway.
- Some problems will come with the road but it will be used and overall be a benefit to the community.
- Our children and grand-children should have the same ability to use and experience Husky Lakes like we do now. If the road is built too close to Husky Lakes our grandchildren will not have this opportunity.
- No one wants their kids to come back and say that the people participating today made a mess of the process and deprived them of their traditional hunting areas.
- People are not listening to elders
- A report was prepared for the government that said the Tuktoyaktuk people were in favor of the road they're proposing right now. But the people didn't want this, they were really against this road, they are in favor of the upland road or the Elders' Road. Husky Lake is sacred to a lot of people, and they're trying to protect it.
- The upland route, it's all on top of the hill, there's no creeks to cross and it's all gravel.
- Different people, organizations talking differently
- Sometimes cheaper ways cost more in the long-run
- Creek crossings are very important - many creek crossings should be bridges rather than culverts
- How much will it cost to maintain the road and who pays?
- Is the road going to be the same kind of gravel? If you look at that existing road that's been made, it seems like it's sinking into the ground.
- Concerns related to mining the gravel are minimal.

- The gravel sites will have to be left in a well-managed way so that it does not create another lake where they have taken the gravel out. They cannot just leave it because it will create ponds and small lakes because the drainage is not good. They need drainage or a slope or to cover it up so the permafrost does not melt and create these ponds.
- There are few or no traplines in the corridor, although [name removed] still traps occasionally from Kitti Creek to Parsons.
- More daylight has been noted. The sun is higher now compared to years ago.
- Moon used to come up [water?] creek, and when it went down it was on the south side. Now it comes up on the south side. It has changed position – the earth is tilting.
- Sun used to come up at 9 a.m. and set at 6 p.m. ; those times have changed. The sun comes earlier in the year also (January 6 vs. January 10).
- Sunspots and northern lights are changing. There are more northern lights.
- There is a concern that there be some return for the surface rights. Relates to discussion about surface rights and subsurface rights on private lands vs. Crown lands.

INUVIK

- There is general support for the road but it requires to be constructed in an environmentally sound way.
- Culverts tend to freeze-up and cause problems during break-up.
- Concern that people will leave garbage along the road or near Husky Lakes. Even if access to Husky Lakes is restricted, if the road is close people will find a way to access this area.
- There is a need to protect the land and its resources.
- If the road is not built properly it will negatively affect younger generations' use of the area and its resources.
- Once the highway is completed people will take advantage (use) of it.
- With an all-year highway boot-legging of liquor may then occur all year long instead of only when the ice road is in.
- Supplies may now come by ship to Tuktoyaktuk and then sent south to Inuvik by the highway.
- There will be benefits to tourism and businesses because of the highway.
- Probably more trapping for wolves, fox and wolverine after the road is built

3.9 Recommendations

Workshop participants in Tuktoyaktuk and Inuvik had a number of recommendations regarding construction of the highway and wildlife management related to the highway and monitoring.

TUKTOYAKTUK

- Move highway west further away from Husky Lakes
- Community wants road but it needs to be built in an environmentally friendly way to preserve wildlife resources
- There should be a gathering of all interested parties and people to know how decisions are made, understanding of the road route, construction etc. Should include organizations like IRC, IGC, HTCs, co-management committees, governments, etc.
- Post signage on highway for areas of trap lines or where people cross over a lot
- ENR and DFO will need to step-up to monitor and enforce regulations etc.
- DFO and ENR must ensure road is constructed properly (in terms of environment)
- Save sources of gravel close to the community for community use
- Do not take gravel close to Husky Lakes
- Take extra care when working around camps/cabins
- Use lessons learned from access road to source 177 when constructing road Problems with culvert blocking fish movements
- The access road to 177 should be widened
- There should be no construction between April to mid-June and between November and December
- Consider harvest times when planning construction
- Listen to elders – use elders' route
- Recover areas where gravel is taken to prevent permafrost from melting
- Complete construction in a timely manner, if late the company should be penalized
- There should be a good grizzly bear denning study (by ENR or Fish and Wildlife) to check for dens. There was a quick survey last year, but the person was form Inuvik and might not know all the sites. Someone local should do this study.
- When blasting the gravel out of the quarries (because the gravel will be frozen), it should be done away from the bear dens
- With all these sites, when they do make the highway, somewhere down the road they will have a problem with nuisance bears. Monitoring or compensation to HTC should be considered to help manage this problem. Protocol for bear encounters should also be in place.
- A vegetation survey (plant study) should be done along the corridor to check those areas for rare and special plants. Trees are even starting to come out along the route.
- They have to make sure that they have enough money to finish that highway in a period of time, rather than temporary solutions over 3 or 4 years. Whatever contractors are working on the highway need to finish in the time scheduled and using the gravel sources they need.

- Parts of the route near 177 need to be wider. It is not safe because it is not finished properly.
- There should be studies on some of the lakes and creeks and monitoring after the highway is built to check how the fish are doing, especially during the summer when people are not actively fishing there.
- Maintenance plan in place to make sure the highway is safe. Resources should be in place: money, gravel, people. There should be more monitoring once the road is built.
- The communities should always have information about what is going on.

INUVIK

- There should be a meeting with all interested parties together including the, communities of Inuvik and Tuktoyaktuk, DOT, and government regulators.
- When constructing the road, keep the overburden wherever possible to prevent damage to the permafrost
- Do not take too much gravel from any one source as this may cause permafrost to melt and slumping to occur.
- Creeks around Parsons Lake area and Valley creek should have bridges for the stream crossings.
- ENR will need to do more patrols when road is open.
- Revise caribou plan to reflect effects of the highway
- Fishing plans relevant to area should be revised
- Take lessons learned from constructing and maintaining the Dempster Highway and apply them to the Inuvik to Tuktoyaktuk Highway.
- Concerns of road need to be brought-up with the HTCs and at the AGM. There is a need to talk to regulators regarding monitoring and enforcement requirements for the highway.
- During important periods of migrations (e.g. caribou migrations) more conservation officers should patrol the road as is done in the Yukon.
- Same rules that apply for the Dempster regarding hunting should also apply for this highway.
- Inuvialuit need to get together to determine cabin issues (how many, where) for Husky Lakes.
- People need a say on how the highway is built. It is our land.
- Should stop construction to allow the caribou to migrate through the southern end of the program area, for the last 2 weeks in September and the first week of October – but because they change routes so much it would be better to conduct surveys to determine when or if the caribou would come through the area

4 SUMMARY

Workshop participants from both communities were generally accepting or positive towards the construction of an Inuvik to Tuktoyaktuk Highway. However, the road needed to be built to minimize any environmental effects. In Tuktoyaktuk, workshop participants were strongly supportive of the elders' route. The importance of the land and maintaining its integrity for future generations was an important element in many discussions.

The major land related topics discussed were regarding slumping and permafrost. Both of which are connected. There has been an increase in natural slumping in the study area. Concerns were raised about increased slumping that could occur due to highway construction. Recommendations were made to help reduce slumping potential such as not removing the overburden or when overburden must be removed to replace it whenever possible. Also it was recommended to not remove all the gravel from a borrow source and to remove gravel in a manner that would not cause deterioration of the permafrost and subsequent slumping.

Workshop participants provided information on the life history and habitat uses within the study area. Denning locations for wolves, bears, wolverine and other animals are important areas to avoid during construction and it was noted that borrow sites often provide good denning habitat. Populations of animals in the study area are mainly healthy. Low numbers of caribou in the stdy area has resulted in a hunting ban but numbers of caribou seem to now be increasing. There were several recommendations made regarding the construction and operation of the highway and caribou. Most other animals would likely be less impacted from the road, especially if den sites are not disturbed.

Winter construction of the highway would eliminate most effects on waterfowl. If any construction were to occur other than in winter then it should avoid times of waterfowl migration and moulting. Swans, ducks and loons are the main nesting waterfowl species within the study area. Smaller numbers of geese, mainly yellowlegs, do nest in the area.

Fish are an important resource to both communities. Most if not all streams and lakes which are connected either to the ocean or Husky Lakes could be used by fish. Larger named creeks such as Hans Creek should use bridges as the preferred crossing technique when constructing the highway. Important fish species mentioned were whitefish, herring (ciscoes), lake trout, northern pike and Arctic grayling.

There are numerous cabins in the study area, mainly along the shore of Husky Lakes. Care will have to be taken when working near cabin sites. No grave sites were positively identified although there may be a grave site at the north end of Jimmy Lake. There are likely to be some grave sites close to Husky Lakes.

Workshop participants from both communities felt strongly that a joint meeting with all interested stakeholders be held so that everyone received the same information and understood each other's concerns.

5 REFERENCES

5.1 Literature Cited

KAVIK-STANTEC. 2012. Summary of existing Traditional Knowledge for the Inuvik to Tuktoyaktuk road Study Area. Prepared for the GNWT Department of Transportation 25 p.

APPENDIX A Tuktoyaktuk and Inuvik Workshop Participants

TUKTOYAKTUK

Angus Cockney	Adam Emaghok
Lennie Emaghok	David Nasogaluak
Jean Gruben	Barry Jacobson
William Raddi	John Dick
Sam Pingo	Lucky Pokiak
James Pokiak	

INUVIK

Richard Dick	James Rogers
Angus Alunik	Hank Rogers
Frieda Alunik	Ernie Dillon
Bertha Joe	Jerry Rogers
Tommy Smith	Abel Tingmiak
Clara Day	

APPENDIX B Traditional Knowledge Questionnaire

Inuvik to Tuktoyaktuk Highway TK Questionnaire

Approach:

- Small workshops will be held in Inuvik and Tuktoyaktuk with participants selected by the respective HTCs.
- The workshops will obtain information on both traditional land use and traditional ecological knowledge.
- Workshops will include plenary sessions and break-out groups
- A summary of existing published Traditional Knowledge for the study and surrounding area has been prepared and will be used as a starting point in updating and collecting new information focused on the study area for the Inuvik to Tuktoyaktuk proposed highway.
- A variety of visual tools will be used at the workshop including pictures, maps, power point summaries of published Traditional Knowledge etc.
- Questions are a guideline only and may be adapted depending on whether workshop participants feel existing published traditional knowledge is complete and on how discussions develop within the workshop.

Questions:

General Environment (terrain, weather etc.):

- Are there special land features within the study area? If so where and why are they special?
- Are there areas which are more sensitive to disturbance than other areas? Where and why?
- Are there specific areas with features such as ice-polygons, pingos or other special features?
- Have you seen any changes in the landscape, water bodies etc. over the last 10-20 years? Where and what changes? Any comments on what caused these changes?
- When approximately is freeze-up? Have there been any changes in when freeze-up occurs and how?
- When approximately is break-up? Have there been any changes in when break-up occurs and how?
- Are there any streams which stay open or run during the winter? If so which ones?
- Can you describe weather conditions during the summer time? Have there been any changes in general summer weather conditions?
- Can you describe weather conditions during the winter time? Have there been any changes in general winter weather conditions? (same for spring and fall)
- Are there any other comments, suggestions or recommendations you would like to make regarding the general environment?

Vegetation:

- Are there areas of special importance to you for plants (medicinal etc) or berries?
- What type of plants do you collect/pick?
- What areas do you go for berry picking?
- When do you normally harvest berries or other types of plants?
- Are there other areas which are good for berries but not often visited for harvesting?
- Are there plants which need to be avoided (rare or of significance)? Where and why?
- Here are some photos of rare plants which may occur in the study area – has anyone seen these plants in the area and where?
- Have you seen changes in the types or abundance of vegetation? If so describe.
- Would a road (construction and operation) have any effects on vegetation?
- Would a road (construction and operation) have any effects on harvesting of plants (e.g., berry picking) in the area?
- If there are potential effects from a road on vegetation or plant harvesting, how could these effects be reduced or eliminated?
- Are there any other comments, suggestions or recommendations you would like to make regarding vegetation?

Mammals:

- **Caribou**
  - What types or herds of caribou use the area and where?
  - When do caribou use the area?
  - Has caribou migration patterns changed through the study area
  - How do caribou use the area?
  - Do caribou use the area differently at different times of year?
  - Does calving occur in the study area?
  - Are there factors which affect caribou use of the area?
  - Have population numbers of caribou changed? Why?
  - What areas are the used for hunting caribou and when?
  - Would a road have any effects on caribou in the area or your ability to hunt them?
  - If there are potential effects from a road, how could these effects be reduced or eliminated?

- **Wolverine**
  - What areas are important to wolverine
  - How do wolverines use the area?
  - What makes these areas good or not good for wolverines?
  - Do wolverines reside all year within the study area?
  - Do wolverines use the same area all year or move seasonally?
  - Where do wolverine den?
  - Have population numbers of wolverine changed? Why?
  - What areas are used for hunting wolverine?
  - Would a road have any effects on wolverine in the area or your ability to hunt them?
  - If there are potential effects from a road, how could these effects be reduced or eliminated?
- **Grizzly and black bears**
  - What areas are important to grizzly/black bears?
  - How do grizzly/black bears use the area?
  - What makes these areas good or not good for grizzly/black bears?
  - Do grizzly/black bears reside all year within the study area?
  - Do grizzly/black bears use the same area all year or move seasonally?
  - Where do grizzly/black bears den?
  - Have population numbers of grizzly/black bear changed? Why?
  - What areas are the used for hunting?
  - Would a road have any effects on grizzly/black bears in the area or your ability to hunt them?
  - If there are potential effects from a road, how could these effects be reduced or eliminated?
- **Wolves/foxes**
  - What areas are important to wolves/foxes?
  - What type(s) of foxes use this study area?
  - How do wolves/fox use the area?
  - What makes these areas good or not good for wolves/fox?
  - Do wolves/fox reside all year within the study area?
  - Do wolves/fox use the same area all year or move seasonally?
  - Where do wolves/fox den?
  - Have population numbers of wolves/fox changed? Why?

- What areas are the used for hunting wolves/fox?
- Would a road have any effects on wolves/fox in the area or your ability to hunt them?
- If there are potential effects from a road on wolves/fox, how could these effects be reduced or eliminated?

- **Other animals (fur bearing or food)**
  - What other animals use this area and are important to you?
  - What other animals are harvested for fur?
  - Is the study area critical or important to these animals and if so how and why?
  - What other animals are harvested for food?
  - Is the study area critical or important to these animals and if so how and why?
  - Are there important denning or calving areas for these other fur bearing or food related animals within the study area? If so when does denning or calving occur?
  - Would a road have any effects on these animals in the area or your ability to hunt or trap them?
  - If there are potential effects from a road on these animals, how could these effects be reduced or eliminated?
- Are there any other comments, suggestions or recommendations you would like to make regarding mammals?

Birds:

- **Waterfowl (ducks, geese, swans etc.)**
  - Are there specific areas used within the study area for harvesting ducks? Where?
  - Are there specific areas used within the study area for harvesting geese? Where?
  - Are there specific areas used within the study area for harvesting other waterfowl (e.g., swans)? Where?
  - What types of ducks, geese, swans and other waterfowl are found in the study area?
  - When is harvesting conducted for ducks, geese and other waterfowl?
  - When do ducks, geese, swans and other waterfowl first arrive in the study area?
  - When do ducks, geese, swans and other waterfowl leave the study area?
  - Do ducks, geese, swans or other waterfowl nest within the study area? If so where and when?
  - Are their periods which are sensitive to ducks, geese, swans etc.? When? Where?
  - When does moulting occur and for how long?
  - Have there been any changes in population numbers of ducks, geese, swans or other waterfowl? If so why?

  - Would a road have any effects on waterfowl in the area or your ability to harvest them?
  - If there are potential effects from a road on waterfowl, how could these effects be reduced or eliminated?
- **Raptors (hawks, falcons, eagles, owls)**
  - What type of raptors (hawks, falcons, eagles, owls) might you find in the study area?
  - Are falcons found in the study area and if so where?
  - Do any raptors (hawks, falcons, eagles, owls) spend all year in the area?
  - When do raptors (hawks, falcons, eagles, owls) arrive into the study area?
  - When do raptors (hawks, falcons, eagles, owls) leave the study area?
  - Are there known nesting areas or habitat types for nesting of hawks, falcons, eagles or owls within the study area?
  - What type of areas do hawks, falcons, eagles, or owls use for nesting?
  - When do hawks, falcons, eagles, or owls nest?
  - Are there any other sensitive areas or times for hawks, falcons, eagles, or owls?
  - Have there been any changes in population numbers of raptors? If so why?
  - Would a road have any effects on raptors in the area?
  - If there are potential effects from a road on raptors, how could these effects be reduced or eliminated?
- **Other birds (song birds ptarmigan, ravens etc.)**
  - What other bird species do you find within the study area?
  - Are there areas known of importance to these bird species?
  - Have there been any changes in bird (e.g., song bird) populations or species?
  - Would a road have any effects on birds in the area or your ability to harvest them?
  - If there are potential effects from a road on birds, how could these effects be reduced or eliminated?
- Are there any other comments, suggestions or recommendations you would like to make regarding birds?

Fish:

- Where are the important fishing areas?
- What species are targeted in these fisheries?
- When does fishing occur in these areas?
- Are any spawning locations known along the proposed road corridor?

- How are the creeks used by fish?
- Are there some creeks that are more important than others?
- Do fish overwinter in any of the creeks within the study area?
- What lakes are deep enough for overwintering fish?
- Aside from Noell Lake, Jimmy Lake, Parsons Lake and Husky Lakes, are there any other lakes which are fished or important to fish? Identify the lake, fish species, and importance to fish or fishing.
- Have there been any changes to fish populations (abundance) or timing of migrations?
- Would a road have any effects on fish or fishing in the area?
- If there are potential effects from a road on fish or fishing, how could these effects be reduced or eliminated?
- Are there any other comments, suggestions or recommendations you would like to make regarding fish?

Potential quarry sites/Special Areas

- Quarry Sites
    - These areas on the map are potential quarry sites. Can you describe any features, specific to these sites – in terms of animals, birds, vegetation, other?
    - Are there any special concerns related to these quarry sites?
    - Are there any recommendations on use of these or any specific quarry location?
- Camps and trap lines
    - Are there any other camps along the proposed road corridor that are not already identified on the map?
    - Are there trap lines along the proposed road corridor? Where ?
    - Are there any comments, concerns, recommendations regarding camps and traplines along the proposed road corridor.
- Are there any areas of special interest or concern along the proposed road corridor? Where, why etc?

Traditional and Current Land Use

- Harvesting in the study area has been discussed earlier, is the study area used for other purposes? If so what, where and when?
- These are cabins previously identified in the study area? Are there any new cabins or cabins no longer used?
- Are there trap lines in the study area?

- Identify common travel routes and when used.
- Are there any other comments, suggestions or recommendations you would like to make regarding traditional or current use of the study area?