Kiggavik Project
Final Environmental Impact Statement

Tier 3 Technical Appendix 2L:
All-Season Road Report

September 2014

Executive Summary

AREVA Resources Canada Inc. (AREVA) is proposing a winter road as the preferred means of transportation of goods from the Baker Lake dock site to the Kiggavik site. An all-season road is also included in the assessment as an option in the event that the preferred winter road is not sufficient to meet operational needs. AREVA has evaluated the environmental impacts of both a winter road and an all-season road. This document, Appendix 2L, discusses the evolution of the all-season road alternative; a companion document, Appendix 2K, focuses on the evolution of the winter road alternative.

From the time of AREVA's initial consideration of project feasibility to the current development of a final environmental impact statement, six road alternatives have been evaluated for the project and two options remain. Table 1 below presents the six alternatives considered and the narrowing of alternatives at major Project milestones.

Table 1. Proposed Kiggavik Road Access Alternatives Considered at Major Project Milestones

Alternative	2007 Pre-Feasibility	November 2008 Project Proposal	November 2009 Community Workshops	June 2010 Inuit Elder visit to Proposed Thelon crossing	2008-2010 Terrestrial, Aquatic and Archaeological Studies	Engineering, geotechnical	April 2012 DEIS	November 2012 Open House Tour on DEIS findings	2014 FEIS
1. North All-Season Thelon Bridge	Included	Remains					Removed		Removed
2. North All-Season Cable Ferry	Included	Remains					Remains (alternate option)		Remaining option for approval (alternate option)
3. Winter Road – North Route	N/A	N/A					Added (alternate option)		Removed
4. Winter Road – South Route (Crossing Baker Lake)	Included	Remains					Remains (preferred option)		Remaining option for approval (preferred option)
5. South All-Season Road (not connected to the community)	Included	Remains					Removed		Removed
6. Winter Road – End of Narrows	Included	Removed					Removed		Removed

The “winter road- end of narrows” alternative route (Alternative 6) was removed from further consideration due to feasibility. This route was considered in the pre-feasibility evaluation but removed from consideration prior to submitting the Project Proposal as it did not meet the operational needs of the project; it was not carried forward for evaluation and consideration as a viable option in the environmental assessment.

Four viable alternatives were presented in the Project Proposal that initiated the start of the environmental assessment in 2008. Over the next two years terrestrial and aquatic baseline studies included the alternative routes as well as geotechnical surveys to further evaluate the feasibility. At this time archaeological studies and traditional and local knowledge studies were conducted in order to both locate important areas for protection and also to learn about local conditions.

The potential mine access road was discussed at more than 20 community meetings leading to the submission of the Draft Environmental Impact Statement. For example, in November 2009 AREVA hosted a public open house and held workshops with various groups including the Elders Committee and the Hunter and Trappers Organization to receive feedback that would further inform the alternatives assessment. Each alternative route location was presented on maps and as a simulated video fly-over to give participants good visual representations of the routes. Information such as the number of projected supply trips per day given the seasonal operational windows was presented and the potential use of all-season roads with a bridge or a ferry crossing at the Thelon River were discussed. The connection of the road to the community, potential dust issues, caribou movements, and the potential for controlled public access were also discussed. Participants were asked to indicate their preferred option and provide comments and concerns.

Prior to the submission of the DEIS, feedback received on the south all-season road (alternative 5) during community meetings together with results of geotechnical investigations and wildlife surveys influenced the removal of that alternative. Interestingly, the south all-season road was the only alternative not connected to the community and had the lowest community support. The north all-season road alternative continued to have the most community support. The north all-season road with a bridge (alternative 2) was removed due to engineering complexity and capital cost, despite having the lowest rated risk and best operational cost compared to the others. The north all-season road with cable ferry (alternative 1) remained for further consideration. .

The North winter road (alternative 3) was added based on the recommendation of an experienced, local expeditor knowledgeable in winter road operation. The south winter road (alternative 4) remained as the preferred alternative due to its shorter distance. Feedback received following the DEIS submission and subsequent reviews indicated that there is confusion regarding AREVA’s road options as presented, and the desire was expressed by reviewers for AREVA to have only one winter road option. Upon further comparison, the south winter road (alternative 4) was selected as the preferred option, and the north winter road (alternative 3) has been removed from consideration in the submission of the Final Environmental Impact Statement..

Table of Contents

List of Tables

List of Figures

Attachments

1 Introduction

1.1 Overview

As part of the Kiggavik Project. AREVA Resources Canada Inc. (AREVA) is proposing a winter road as the preferred means of transportation of goods from the Baker Lake dock site to the Kiggavik site. The transportation of yellowcake is not included in the consideration of the roads; yellowcake will be shipped from the Kiggavik site via air transportation departing from the Pointer Lake airstrip. An all-season road is included in the assessment as an option in the event that the preferred winter road is not sufficient to meet the operational needs of the Project.

The enclosed document forms part of the Kiggavik Project Environmental Impact Statement (EIS) submission. The submission has been prepared for the Nunavut Impact Review Board by AREVA Resources Canada Inc. to fulfill the requirements of the "Guidelines for the Preparation of an Environmental Impact Statement for AREVA Resources Canada Inc.'s Kiggavik Project (NIRB File No. 09MN003)" and subsequent revisions to fulfil requirements of the "Pre-Hearing Conference Decision".

1.2 Purpose and Scope

The purpose of this document is to provide a historical overview of the evolution of the all-season road routing and describe how Inuit Qaujimajatuqangit (IQ) and stakeholder engagement played an integral role in the development of the road routing, the use of a cable ferry for the Thelon River crossing and the selection of a winter road as the preferred option over an all-season road.

Technical Appendix 2L of the Draft Environmental Impact Statement (DEIS) contained an all-season road report prepared by EBA engineering. This report should be considered as a design reference. After completion of this report, the south all-season road was removed from consideration and the Thelon River bridge was replaced with a cable ferry. . This document is intended to provide an accurate depiction of the current all-season road option and provide context around the rationale for route selection and road preference. The original EBA all-season road report is contained within this document to provide relevant design information for the all-season road. Updated road crossing information for the all-season road can be found in Tier 2, Volume 5, Table 5.5-16.

1.3 Related Documents

AREVA is assessing the potential environmental impacts of both a winter road and an all season road alternative. This document presents the all-season road only, with references to the winter road

where appropriate. Technical Appendix 2K represents the winter road routing selection. Technical Appendix 2M provides an overview of the road management plan and gives guidance on the decision to maintain solely a winter road, or when an all-season road may be developed.

2 Work Prior to 2008 Project Proposal

2.1 2007 Prefeasibility Study

In support of the 2007 Pre-feasibility Study, AREVA commissioned EBA Engineering to evaluate road options for the Kiggavik Project. Early engagement proposed a road near an existing ATV trail (EN-BL CLC Mar 2007[1])Several road options were presented in EBA's report including all-season roads, causeway roads and a winter road.

The road options presented in the 2007 EBA report are shown in Figure 2.1-1 below.

[1] EN-BL CLC Mar 2007: *stated between Baker Lake and halfway hills the ATV trail looks good for the new road, because the route has already been marked and the tundra damaged by Hondas. There are no archaeological sites along the ATV route. Most old campsites and some archaeological sites would be found on the other side of the Thelon River.*

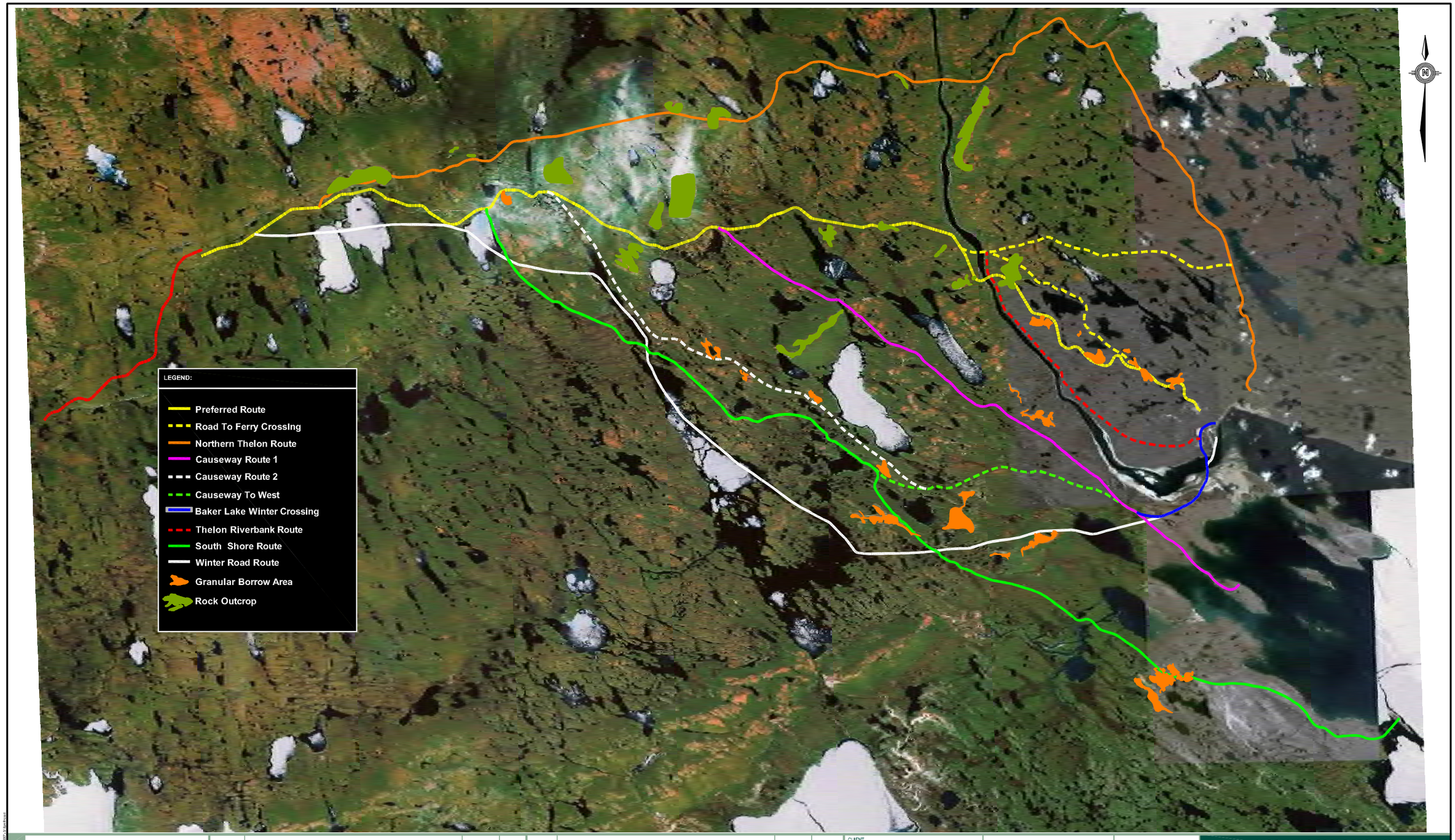


Figure 2.1-1 Road Options Presented in 2007 EBA Report

DRAWING No.	DRAWING TITLE	DATE	REV
REFERENCE DRAWINGS			

No.	DESCRIPTION	DATE	APPROVED
REVISION			

CLIENT: AREVA

PERMIT

PROFESSIONAL SEAL

EBA Engineering Consultants Ltd.

KIGGAVIK SISSONS PROJECT
PRE-FEASIBILITY STUDY

EVALUATED ROAD ROUTES
POTENTIAL MATERIAL SOURCES

PROJECT NO./FILE NO.	DWN	CKD	REV	DRAWING NO.
E14100009 E14100009M02c.dwg	MM	KJ		E14100009-D1
OFFICE: EBA-EDM	DATE: July 25, 2007			

For the pre-feasibility study, the road options were narrowed down from the EBA report to include a winter road, north all-season road, and a south all-season road. No causeway roads were included to minimize disturbance to the aquatic environment. The north all-season road followed closely the existing ATV trail and started at a dock site located to the west of Baker Lake. The south all-season road started at a dock site located on Sagliq Island. . The all-season road routings met up part way through the route. For the latter portion of the route to the Kiggavik site, the north and south all-season roads had the same routing. The north all-season road with bridge was considered the best industrial option and the south all-season road was considered the second best industrial option. The all-season road with cable ferry was considered an intermediate option.

For the Thelon River crossing on the north all-season route, both a bridge and cable ferry were included as options. The crossing location is in a similar location to the currently proposed all-season road.

The all-season road options presented in the 2007 prefeasibility study are shown in Figure 2.1-2. In the figure, the all-season road is referred to as an all weather road.

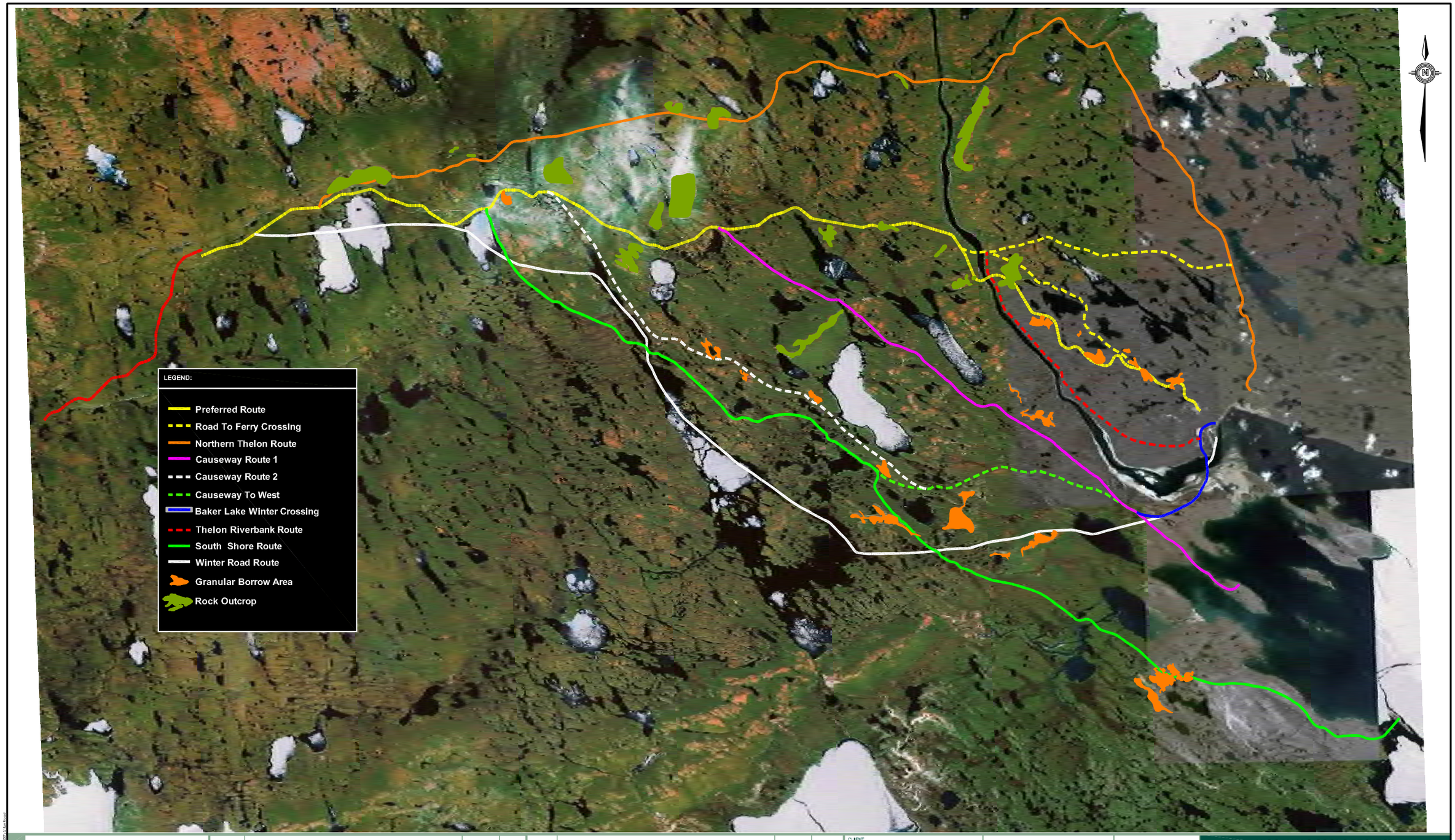


Figure 2.1-2 Road Options Presented in 2007 Prefeasibility Study

DRAWING No.	DRAWING TITLE	DATE	REV
REFERENCE DRAWINGS			

No.	DESCRIPTION	DATE	APPROVED
REVISION			

CLIENT: AREVA

PERMIT

PROFESSIONAL SEAL

EBA Engineering Consultants Ltd.

KIGGAVIK SISSONS PROJECT
PRE-FEASIBILITY STUDY

EVALUATED ROAD ROUTES
POTENTIAL MATERIAL SOURCES

PROJECT NO./FILE NO.	DWN	CKD	REV	DRAWING NO.
E14100009 E14100009M02c.dwg	MM	KJ		E14100009-D1
OFFICE: EBA-EDM	DATE: July 25, 2007			

2.2 Community Engagement

In December 2006, a Baker Lake Community Liaison Committee (CLC) was formed to establish an ongoing dialogue with the community of Baker Lake regarding AREVA's Kiggavik Project. The committee is made up of appointees from organizations in Baker Lake. Road options were discussed at several of the CLC meetings. It became evident early on that roads were a topic of importance, and road options should be discussed with Elders, hunters, and community members and a map of routes should be available (EN-BL CLC Mar 2007[2], EN-BL CLC Feb 2008[3]). This led to the discussion of road options during community engagement sessions and IQ meetings, and more specifically, transportation workshops were held to focus discussions on road options.

2.3 Best Value Decision Workshop

In February 2008, a best value decision workshop was held on transportation alternatives. The alternatives which were assessed are as follows:

- Winter road (south)
- All-season road with bridge
- All-season road with cable ferry / ice bridge
- South all-season road
- Winter road from the end of the narrows

The road options were evaluated on cost effectiveness, local acceptance, ease of approval, operational flexibility, contribution to local infrastructure, and minimizing potential effects to the Thelon River. The north all-season road with bridge ranked the highest and the winter road from the end of the narrows scored much lower than all other options and was no longer considered as an option. All other alternatives were carried forward to the project proposal.

2.4 November 2008 Project Proposal

In the November 2008 project proposal, both a north and south all-season road were listed as potential options, noting that a final selection would be proposed in the DEIS, based on additional

[2] EN-BL CLC Mar 2007: *We should use elder IQ before we decide on a route*

[3] EN-BL CLC Feb 2008: *Also thought IQ questions should be asked about Huqliq Island. A map of routes should be provided for IQ sessions.*

studies on suitable dock locations, and additional community consultation. No preference was indicated by AREVA between the all-season roads and a winter road at that time.

For the north all-season road, both a bridge crossing and a cable ferry/ice bridge option were considered. The selected location for the bridge was chosen based on the advice of the Baker Lake Community Liaison Committee and the following items:

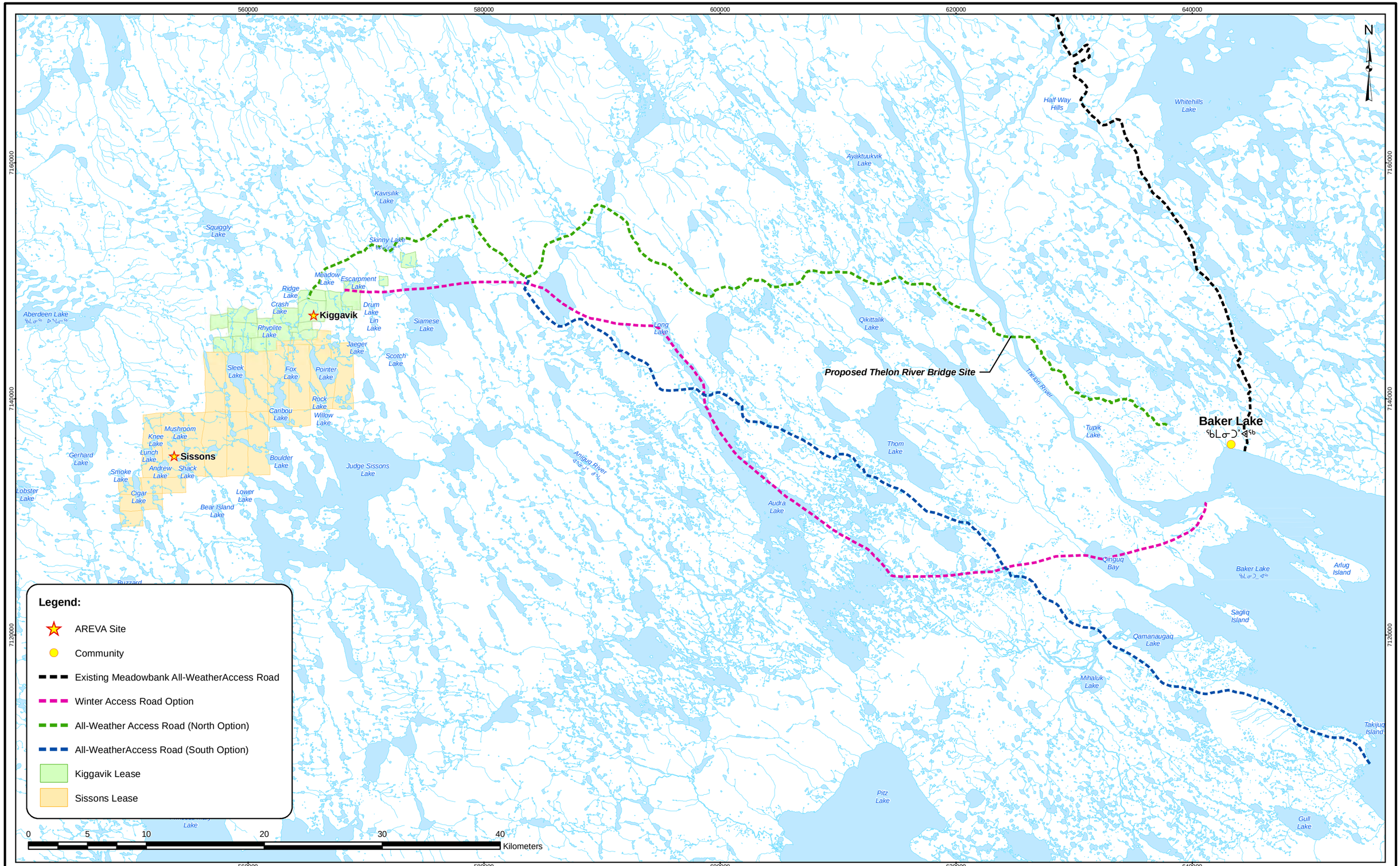
- • Shortest feasible crossing
- • Stability of the river banks
- • Hydrological conditions
- • Ice conditions at breakup
- • Access to the location

It was noted that alternative water crossing methods have been investigated, with the most feasible option being use of a cable ferry in the summer, and an ice bridge in the winter.

The proposed south all-season road route begins on the southwest shore of Baker Lake and continues to the west to Kiggavik. The south all-season road route avoids major river crossing and has reduced disturbance to the community of Baker Lake compared to a north route. The routing shown differs from the routing shown in the 2007 feasibility study. The dock site was moved from Sagliq Island to near Takijuq Island. The name on project maps is Sagliq Island. This Island has been referred to by different names in engagement sessions including Huqliq, Hakliq, Haqpik, Haqliq. Engagement data in the paragraph below has not been changed.

The removal of Sagliq Island as the southern dock site was based on feedback received from the community. Community members noted that *Hakliq Island is used by the hunters and fishers and campers and is used by goose hunters and is a goose nesting place.* (EN - BL CLC Feb 2007). Community members also stated that *the shore to the south of Haqpik has many archaeological sites and traditional use areas* (EN- BL CLC Mar 2007). Community members noted that *Haqliq Island is precious to everyone* (EN – BL CLC Apr 2008) and *there would be lots of opposition to Haqpik Island* (EN – BL CLC Mar 2007). Prior to submission of the project proposal, the routing of the all-season route was modified to avoid Sagliq Island.

Figure 2.4-1 shows the road options presented in the November 2008 project proposal.



KIGGAVIK PROJECT	Scale: 1:290,000	Figure 2.5-1 Road Options Presented in November 2008 Project Proposal
ACCESS ROAD ROUTE OPTIONS FIGURE 2.25 XXXXXXX	Creator: CDC Date: 10/31/08 Drawing:	

AREVA Resources Canada Inc
P.O. Box 9204
817-45th Street West
Saskatoon, Sk. S7K 3X5

3 2008 Project Proposal to DEIS

3.1 Integration of Valued Ecosystem Components (VEC's) into DESIGN

3.1.1 Community Input on VEC's

During 2009, AREVA led an open house tour. An interactive display was set up for participants to identify broad ecological and socioeconomic areas they valued highly and/or had concerns about in relation to the Kiggavik Project.

The eight broad VEC categories were: air quality and noise, fresh water, freshwater fish and fish habitat, marine environment, permafrost and groundwater, soils, landforms and vegetation, wildlife, and birds

All VECs were identified as having importance. The most important VEC's were fresh water, wildlife, freshwater fish and fish habitat, and birds.

3.1.2 Incorporation of VEC's Into Design

The roads have been designed with consideration for the VEC's and environmental protection. Some examples of consideration for the VECs include the following:

- The preference for a winter road will reduce dust generation, and habitat loss
- The roads have been designed for best visibility to reduce the potential for wildlife-vehicle collisions, and with appropriate gradients to accommodate wildlife crossing.
- Portage locations were selected to minimize the disturbance of the tundra soil and its vegetation, while providing grades that are acceptable to traffic.
- Fill construction will be used where the road passes over overburden soils. The minimum depth of embankment fill is designed to be sufficient to construct a stable road embankment and to protect the underlying permafrost.
- For the all-season road, defined, but still minor stream crossings will be accommodated using culverts. Larger streams will be spanned with bridges. Culverts and bridges are designed to permit fish passage.
- Unique landforms and archaeological sites have been identified and the road alignments routed around these areas.
- Materials selected for road construction will be of appropriate size to facilitate wildlife crossings, while minimizing dust and protecting permafrost.

3.2 Archaeology Studies

The preservation of archaeological sites is of high importance to the Inuit. Any archaeological sites located in the Project area must be protected. Mitigation is required for any archaeological sites which are disturbed. Kivalliq residents have noted the presence of archaeological sites along the proposed road routes and are concerned about the preservation of archaeological sites (EN-BL CLC Feb 2010[4,5], EN-RI RLC Feb 2009[6]) . *Along the Thelon River were caribou crossing points, and former camps used by nomadic hunter groups of the region which are considered important. Concerns for the protection of the sites have been noted.* (Geovector, 2008)

The preferred method of mitigation is to avoid disturbance of the archaeological site. Archaeology studies were conducted between 2007,2008, 2009, and 2013 to provide information about the existing archaeological conditions in the Project area and to help refine the road routings. Where possible, road routings were altered to avoid disturbance to archaeological sites. The information collected in conjunction with past investigations between 1955 and 2006 and data collected through Inuit Qaujimajatuqangit (IQ) and Traditional Land Use (TLU) interviews forms the current understanding of known archaeological sites. Details of the archaeology are presented in Tier 3, Volume 9, Technical Appendix 9B. The sections below provide an overview of the archaeology as it relates to the all-season road options.

3.2.1 North All-Season Road

In 2007, a helicopter reconnaissance was flown along the proposed route to document areas of moderate and high heritage potential. The reconnaissance resumed the following field season in 2008. The segment of the road corridor from the Kiggavik site to east of Skinny Lake was examined on foot, as was the eastern portion extending from the Thelon River to the Baker Lake airport. The west side of the Thelon River was also examined on foot. The central portion of the corridor between Siamese Lake and the Thelon River was examined by low-level helicopter survey. Several landforms determined to have heritage potential along this section were then examined by pedestrian reconnaissance. The north all-season road was examined again in 2009. Areas included potential quarry locations along the route, revisions to the previously assessed route, and various road options at the eastern terminus of the corridor extending west from potential ports along the northwest shore of Baker Lake. A low level helicopter survey was conducted of each quarry location, while a

[4] EN-BL CLC Feb 2010: *Proposed bridge site is too shallow, and there is old archaeological site just above it*.

[5] EN-BL CLC Feb 2010: *I am wondering if they can look somewhere else which would be a narrower river where they are interested in. There are three tent rings and camp grounds right there.*

[6] EN-RI RLC Feb 2009: *Old homes made from sod and whale bone [frames] need to be protected if encountered during road construction*

combination of helicopter and pedestrian reconnaissance was carried out along corridor revisions and road options near Baker Lake. The proposed ferry crossing at the Thelon River was re-examined in 2013. Four sites recorded in 2008 were revisited as well as surrounding areas. A review of the IQ, Engagement and TLU data (Technical Appendix 3A and 3B) indicate that no archaeology sites were reported specifically along the proposed road corridor itself. However, the All-Season Road will cross the Thelon River. As the *Thelon River is recognized as a Heritage River* (EN-BL CLC Feb 2007), special consideration with respect to archaeological sites must be made. Concerns were expressed by community members regarding the protection of any archaeology sites identified along the Thelon River (IQ-GeoVector 2008[7]) As a result of previous baseline studies, 18 archaeology sites have been identified in the All-Season Road local study area..

3.2.2 South All-Season Road

In 2009, the south all-season Road was examined. A low-level helicopter reconnaissance was flown along the entire route. A pedestrian reconnaissance was also carried out in areas of high heritage potential including: the shore and inland areas adjacent to Baker Lake through to the Aniguq River, the interlake areas between Audra and Thom Lake through to the south shore of Long Lake, and the final 5 km near the northern terminus where the road corridor shares the North all-season corridor to the Kiggavik site. A total of 38 archaeology sites were identified in the vicinity of the south all-season road. Of these 38 sites, 5 were found prior to 2009, and 33 were found in 2009.

3.3 Wildlife Studies

There were mixed concerns about the potential effects of the access road on caribou. It was noted by residents that the importance of water crossings, annual migration routes (summer as well as winter ranges) needs to be considered especially regarding the road option. (EN-BL NIRB Apr 2010). Some residents were concerned that if AREVA builds a road, it may cause changes to the caribou migration and limit hunter access (IQ-BLHT 2011). Some residents were concerned that the road may cause a change in caribou migration routes (EN-RB NIRB Apr 2010[8]). Some residents were more concerned about migration impacts from the road than the mine site (EN-CH OH Nov 2010). There has been mixed opinions about the effects to caribou from other developments. Some residents have noted that the opening of Meadowbank Mine has negatively impacted the Caribou and made it harder for hunters (EN-BL OH Nov 2013[9], IQ-BLHT 2011[10]), while others have noted

[7] IQ-GeoVector 2008: *Along the Thelon River were caribou crossing points, and former camps used by nomadic hunter groups of the region which are considered important. Concerns for the protection of the sites have been noted.*

[8] EN-RB NIRB Apr 2010: *Concerned that wildlife migration routes might be impacted if the roads were built.*

[9] EN-BL OH Nov 2013: *We are concerned that this will affect the hunting since Meadowbank started Caribou hunting has been hard.*

that the Meadowbank Mine has not negatively impacted the hunting of Caribou and many caribou can be found along the Meadowbank Road (EN-RI RLC Feb 2009[11],EN-BL OH Nov 2013[12]). The road design considers embankments with slopes suitable for caribou crossings

Wildlife studies were conducted between 2007 and 2010 to collect baseline data for the Local and Regional Study areas of the Kiggavik Project, including the access roads. Details of the wildlife studies are presented in Tier 3, Volume 6, Technical Appendix 6B, Terrestrial Wildlife Baseline. The following survey methods were included in the wildlife studies: ground surveys, aerial surveys, caribou satellite collaring studies, raptor nests, waterbird surveys, breeding bird surveys, hunter harvest study, camp log and wildlife monitors, incidental observations and tissue chemistry.

Residents have expressed interest in what will occur in the event that the road alignment is along the caribou migration route (EN-KIV OH Oct 2009[13], EN-BL HTO Mar 2009[14], EN-BL CLARC Apr 2013[15]). Preliminary mitigation measures for wildlife mitigation on the roads have been developed. These wildlife specific mitigation measures are outlined in Technical Appendix 6D, Wildlife Mitigation and Monitoring Plan.

3.4 Aquatic Studies

Kivalliq residents have expressed concerns related to the aquatic environment as it relates to road. Specific concerns included the level of the Thelon (EN-BL CLC Feb 2010[16]), loss of fish habitat (EN-BL CLC May 2008[17]), and the impacts of bridges and stream crossings on the environment (EN-AR NIRB May 2010[18], EN-CH NIRB May 2010[19]).

---

[10] IQ-BLHT 2011: *Traffic on Meadowbank road day in day out is affecting caribou.*

[11] EN-RI RLC Feb 2009: *Meadowbank road construction…has not made things harder for hunters. There are many caribou along the road.*

[12] EN-BL OH Nov 2013: *Caribou cross all over the Meadowbank road*

[13] EN-KIV OH Oct 2009: *If there is a migration route with caribou, if there is an impact on that and people don't like that, how would you respond?*

[14] EN-BL HTO Mar 2009: *When you look at the area, caribou do wander all over the place, and what would happen if the caribou come around? The reason I asked that questions is because when there is a herd, the leader of the heard is followed quite closely by the rest of the herd, and nobody tries to disturb the heard to not disrupt the migratory route.*

[15] EN-BL CLARC Apr 2013: *Says here Qaminirjuaq herd uses site the most. What will you do during major migration?*

[16] EN-BL CLC Feb 2010: *It is very shallow up there. It is not like down south. Some years Thelon River is very high and some years it is not*.

[17] EN-BL CLC May 2008: *I would like to ask how about at Mamautit at the very mouth of Thelon River? It is very deep; I don't want any fishing spots to be destroyed*.

[18] EN-AR NIRB May 2010: *Concerns over the potential impacts of the bridges/crossings that would be built over the rivers to the Kiggavik site when the road is built.*

The level of the Thelon has been monitored, and road design considers the potential changes in the level of the Thelon River. For the all-season road, crossings are designed to allow for fish passage and to minimize erosion.

Several different road corridors have been examined during the 2007 to 2010 sampling period. Fish sampling and habitat assessments were conducted where the proposed road corridors crossed the streams. Surface measurements of DO, temperature, pH and conductivity were taken to provide supporting environmental characteristics.

In 2008, foreshore habitat of Baker Lake was characterized at five potential dock sites to document environmental values that could be affected by the development of docking facilities and an access road. A bathymetric survey of the Thelon River crossing for the all-season road was completed in fall 2010

Habitat assessments were performed for crossings along the proposed road alignments. Many watercourses were undefined, seasonal or dry channels. Small streams were generally characterized by organic substrate and low habitat diversity (i.e., few habitat types present). Large streams or rivers contained more instream and overhead cover and had a greater diversity of substrates and habitat types present.

Details on the aquatics studies can be found in Tier 3, Volume 5, Technical Appendix 5C Aquatics Baseline.

3.5 November 2009 Community Workshops on Road Alternatives

In November 2009, AREVA held community meeting to discuss road options. Details of the transportation workshops are provided in Tier 3, Volume 3, Technical Appendix 3A. Engagement specific to road options occurred in a series of workshops for establishing community road option preferences. The Community Liaison Committee (CLC), Baker Lake Elders, and the District Education Authority (DEA) were consulted specifically on roads in late November, 2009. Augmented with the Baker Lake open house, the consultations gathered community information for road options. Figure 3.5-1 below shows the road options presented during the community workshops

[19] EN-CH NIRB May 2010: *Question regarding the proposed route and whether the Proponent will be building a lot of bridges to cross the rivers and tributaries.*

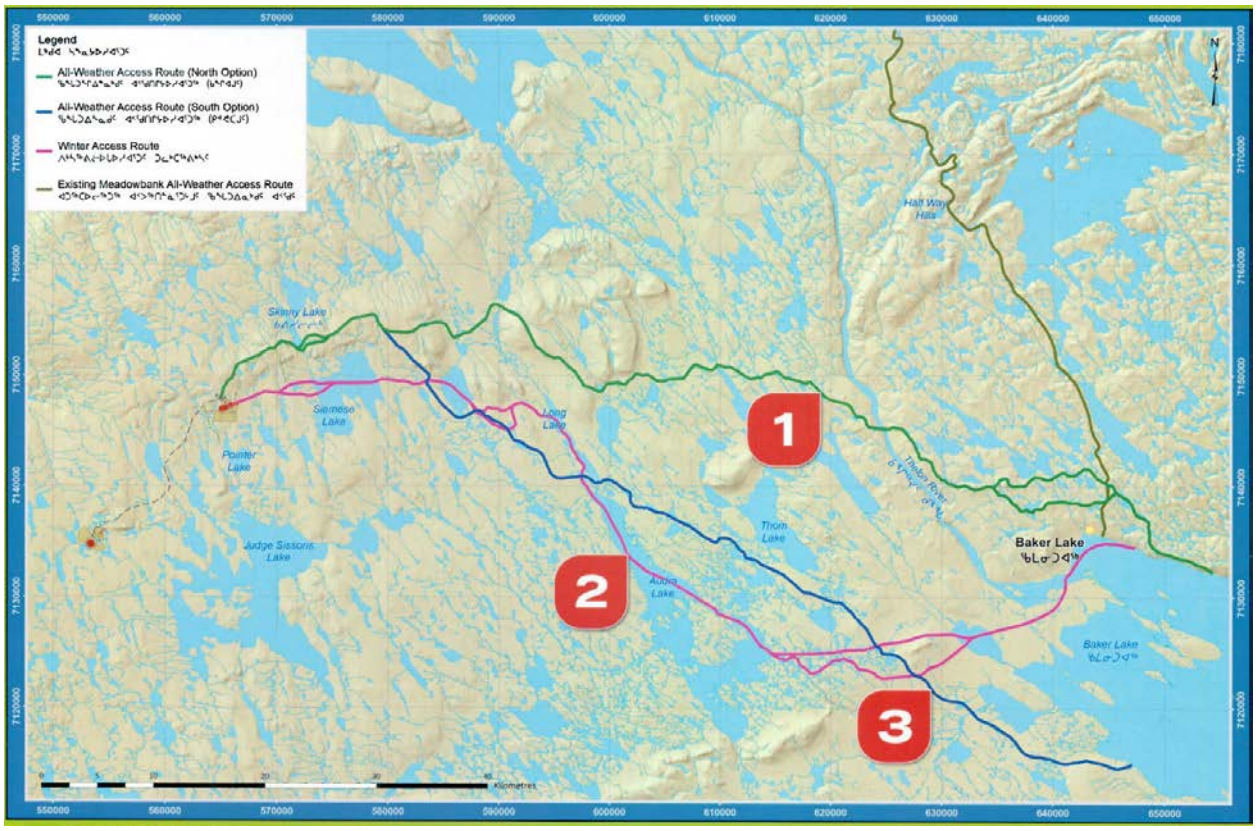


Figure 3.5-1 Road Options Presented in the November 2009 Community Workshops

Information on the three road alternatives was presented at the Transportation Workshops, with comments collected from participants. As illustrated in Table 3.5-1, community feedback shows that the north all-season road was the preferred route by participants. The south all-season road and winter road were the second and third place preferences.

Table 3.5-1 Community Preferred Road Options (Baker Lake Transportation Workshops)

	Community Liaison Committee	Baker Lake Elders	Baker Lake Open House	District Education Authority	Total
North All-Season Road	3	9	7	1	20
Winter Road		1	1		2
South All-Season Road	1	1	1		3

The Baker Lake Open House provided a public forum for members of the community to learn more about the road options, to share any concerns they might have and to indicate their preference. Informational posters in the Inuktitut and English language enabled community members to read about the various options and to indicate their preferred road access option. Children wanting to participate were provided a smaller version of the road options poster so not to skew the preferences selected by adults in the community.

Table 3.5-2 indicates that community preference was for the north all-season road. This is in line with the preference indicated in workshops with Elders and members of the CLC and DEA.

Table 3.5-2: Community Preferred Road Options (Baker Lake Open House)

	Inuktitut Poster (Adults)	English Poster (Adults)	Total	Kids' Poster
North All-Season Road	4	53	**57**	4
Winter Road	0	6	**6**	10
South All-Season Road	0	5	**5**	0

3.6 Thelon Crossing Location

The location of the Thelon River crossing was influenced by feedback received from Elders, hunters, and community members. Some of the comments related to the crossing location are shown below:

- *I don't agree with the second proposed area. I think it a protected area, although it is a great area for the bridge, it is a nesting area for birds.* (EN-BL HTO Mar 2009)
- *The proposed bridge is not in a good place, because of the ice, the spring run off, and below the bridge, I witnessed with the CLC about this. I proposed the bridge to be moved here and continue the road up north and begin again on the original proposed road. We need to have the bridge in a more narrow area for the bridge to be built.* (EN-BL HTO Mar 2009)
- *I support the proposed bridge but where they are looking at is way too wide a river. I am wondering if they can look somewhere else which would be a more narrow river where they are interested in. There are three tent rings and camp grounds right there.* (EN – BL CLC Feb 2010)
- *Proposed bridge site is too shallow, and there is old archaeological site just above it.* (EN-BL CLC Feb 2010)

- *North route – thought better if a little south on west side of river* (EN-BL OH Nov 2010)
- *Where is the bridge located? Has a cabin north of Baker Lake, concerned that road will interrupt caribou movements.* (EN-BL OH Nov 2010)
- *We looked at the first location and it made it easy to make decision where to put the bridge. Should be good to put on the rock. Engineer agreed. Better than lower area. Lower area is best for ice crossing.* (EN-BL CLC Jul 2010)
- *They showed us the location of the proposed bridge. I like one proposed area. The first proposed area was shallow.* (EN-BL CLC Oct 2010).

Ice breakup along the Thelon River has been a concern for community members (EN-BL CLC May 2008[20]). Community members have expressed that there is a large amount of ice during the break-up and that the bridge may be subject to damage when the ice breaks up and melts. (EN-BL CLC Feb 2008[21], EN-BL CLC Mar 2009[22] EN-BL CLC Aug 2009[23]). *People were concerned that a bridge over the Thelon River would cause problems with ice being pushed up on shore, or possible damage to the bridge by ice.* (IQ-BL04 (2008); IQ-BL10 (2008)).

A resident suggested that *the location should be monitored every spring by engineers and local people.* (EN-BL CLC Mar 2010). AREVA respects the concerns raised regarding ice break-up on the Thelon and has monitored break-up over the last several years in order to ensure that any infrastructure is designed appropriately.

3.7 EBA All-Season Road Report

In April 2009, AREVA commissioned EBA Engineering to conduct additional work on the all-season road options. The winter road report was completed in October, 2010. A copy of the all-season road report can be found as Attachment A.

The consultant report for the north all-season road includes development of the location of the dock facility, refining the routing, including the location of the Thelon River crossing, assessment of potential acid rock drainage and a field program to confirm the road alignment corridor. At the time,

[20] EN-BL CLC May 2008: *I am concerned about Thelon River during the ice melting and ice floating*

[21] EN-BL CLC Feb 2008: *Thelon River is very dangerous, ice flows occurs in the spring time and piles up very high; when ice would break up and flows down fast, it would break up the bridge right away. The bridge will be damaged by the ice bergs; the river and the current is very strong; and the big ice bergs piles up along the river bank all the way up. by the river bank will be damage.*

[22] EN-BL CLC Mar 2009: *The bridge proposed at Kiggayuk is too shallow and the bridge would be plugged with ice bergs in no time; perhaps deeper spot would be safer place to put it in; if the bridge is build where it is shallower it would break in no time at all; and the big broken part would be too costly and too much to take them out of the strong current of the Thelon River.*

[23] EN-BL CLC Aug 2009: *If the river is plugged up with icebergs it will break up the bridge*

the Thelon crossing was expected to be a bridge, and no work was done on the cable ferry by EBA at that point in time.

For the south all-season road, the consultant report summarized the existing information on the route and provided background data to the overall Project.

In June 2010, two Elders were taken along with representatives from AREVA and EBA to the proposed locations of the Thelon River crossing of both the north winter road, and the north all-season road. The location for the proposed Thelon crossing for the all-season road was appealing to the Elders. Some of the comments made by the Elders were:

- The river is changing from year to year these days so predicting is difficult even for IQ. Wind and snow change a lot. Used to be possible to build igloos on the ice now the snow if often too hard.
- Bars on the bottom are created by ice.
- There is very little snow so the ice might be to the bottom.

The all-season road report presented a north all-season road and a south all-season road. The north all-season road included a bridge crossing the Thelon River. The road routing presented in the all-season road report is shown in Figure 3.7-1 below.

For the north all-season route, numerous options and variations were developed during the course of the study. The selected route was generally located on higher ground, which provides fewer issues during construction and operation of the roads. Areas of geotechnical instability, environmental and archaeological constraints also guided the route selected. The location of the Thelon River crossing was also considered in the development of the road routing.

For the south all-season route, the last 20km of the route was the same as the north all-season route. The port location selected was on the south shore of Baker Lake. The dock site was selected based on shortest causeway length and a navigable shipping approach.

A general comparison of the north and south all-season roads was completed by EBA. Table 3.7-1 below is a copy of the comparison of the north and south all-season roads conducted by EBA.