Background paper on incorporating traditional knowledge into mine closure planning

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Ms. Marg Crombie,
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ENERGY, MINES & RESOURCES
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Dear Ms. Crombie:

Re: **40202 – Background paper on incorporating traditional knowledge into mine closure planning**

Attached please find the background paper on the use of traditional knowledge in mine closure planning. I trust this fully meets the needs of your department. I am available at your discretion to meet with you and review the findings presented.

Yours very truly,
GARTNER LEE LIMITED

Heidi Klein
Sr. Environmental Planner
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Table of Contents

Acronyms

DTA - devolution transfer agreement

EIA - environmental impact assessment

EMAB - Environmental Monitoring Advisory Board

INAC - Indian and Northern Affairs Canada

MVEIRB - Mackenzie Valley Environmental Impact Review Board

MVRMA - Mackenzie Valley Resource Management Act

TCA - tailings containment area

TK - traditional knowledge

WKSGP - West Kitikmeot and Slave Geological Provinces

WKSS - West Kitikmeot Slave Study

1. Background

There were seven Type II Mines identified in the *Devolution Transfer Agreement* (DTA) between the Yukon and the Federal Government. Type II Mines refer to major mine sites with the potential of unfunded environmental liabilities at the time of the closure. If these sites are abandoned without proper closure, substantial damage to the environment could result. Currently, four of the seven Type II mines are under Government care, with Government looking at moving three of the four sites to closure as soon as possible: Clinton Creek, Mt. Nansen and Faro.

The concept of traditional knowledge (TK) has been receiving increasing attention in environmental management for over 10 years. The most publicized consideration of TK, which includes cultural and heritage resources in resource planning in the north was the Berger Commission of the mid-1970s. This Commission looked at a potential oil pipeline through the Mackenzie Valley in the Northwest Territories (NWT). More recently, the BHP Diamonds environmental review in the NWT included in its terms of reference the need to give TK full and equal consideration with western scientific knowledge. The integration of TK is considered an essential part of many environmental assessment and management processes of which closure planning is one.

Experience with integrating TK into mine development and closure planning in the Yukon is limited. The Yukon Government, Indian and Northern Affairs Canada (INAC), and the Kaska and Selkirk First Nations have the opportunity to develop a TK strategy to suit their needs and requirements for closure planning of the Faro Mine site. This TK strategy could then be used in the closure planning of other Type II Mines in Yukon. The first step in developing this TK strategy is the preparation of a background paper on approaches used and lessons learned from past experiences in Yukon and in other jurisdictions. Examples featured in this report include:

- the closure work for Colomac Mine in the NWT conducted through INAC Contaminants program;
- consideration of TK in the environmental assessment for Diavik diamond mine and the current use of TK in implementation;
- West Kitikmeot Slave Study process; and
- the MVEIRB draft Guidelines for incorporating traditional knowledge in the environmental impact assessment process.

1.1   Mine closure planning and reclamation

The *Devolution Transfer Agreement* that came into force on April 1, 2003 largely directs the process of closure planning and reclamation of Type II mines in the Yukon. It establishes the arrangement made between the federal and territorial governments for the management of abandoned mines sites and the role of affected First Nations in the Yukon. These First Nations will have a substantive role in the management of reclamation planning and implementation.

Handbooks[1] may guide the actual business of reclamation planning and implementation, but more often it is experience and practice that will result in an effective closure plan. At a minimum, any plan for reclamation, closure and decommissioning should provide detailed information about the measures to be taken for the following mine components:

- buildings and other structures;
- roads and airstrips;
- tailings disposal facilities and management;
- waste rock disposal management;
- quarries and open pits;
- petroleum and chemical storage areas and facilities;
- pipelines and electrical transmission lines;
- mine and site drainage systems;
- mine workings;
- mine shaft, adit and decline openings;
- site hydrology and water quality including water flows leaving the site;
- revegetation of the site where practicable;
- recycling of materials; and
- other site specific requirements (INAC, 2002).

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[1] Examples from the Yukon include:

- *Reclamation Practices and Research on Mineral Exploration Properties in the Yukon Territory 1998*
- *Guidelines for Reclamation/Revegetation in the Yukon. 1993. Yukon Renewable Resources.*
- *Handbook of Reclamation Techniques in the Yukon: Yukon Placer Mining Land Use Regulations/Guide des Techniques de Remise en État des Terres Minières au Yukon: Règlement sur l'utilisation des terres pour l'exploitation des placers au Yukon, 1999*
- *Handbook of Reclamation Techniques in the Yukon: Yukon Quartz Mining Land Use Regulations/ Guide des Techniques de Remise en État des Terres Minières au Yukon: Règlement sur l'utilisation des terres pour l'exploitation du Quartz au Yukon, 1999*

It should be noted that this is not the complete list and not all sites will have the same requirements.

The decommissioning plan should be driven by principles and objectives, such as those arising from the 1994 Whitehorse Mining Initiative, "returning mine sites and affected areas to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities". The plan should also be adaptable to take advantage of new information or new techniques and methodologies.

1.2 How TK contributes to mine closure planning

Traditional knowledge, like western scientific knowledge, contributes knowledge that is acquired through observation, experience and sharing in order to develop a picture or collective understanding of the natural environment (MVEIRB 2003). It is also a specialized knowledge that is openly shared.

In considering TK information in mine decommissioning planning, it can be considered in a couple of different ways. Traditional knowledge contains baseline data and provides information about the natural environment. Traditional knowledge is also interpretive data. It has been synthesized and integrated and can be used to problem solve.

Baseline Data
Baseline data is knowledge related to burial sites; berry picking areas, location of fish and so forth. It is the studies about traditional way of life, land use and occupancy, travel routes, traplines, and hunting and fishing areas. It may also be sites and areas of cultural, spiritual and historical significance including harvesting sites. In the case of mine decommissioning, TK could contribute with respect to observations related to maximum water levels, flood plain areas, snowpack, seasonal water discolouration, and high risk landslide or avalanche areas.

Interpretive knowledge
Interpretative knowledge is the collective knowledge of a TK holder and the ability to use it to solve a problem (see Colomac later in this paper). In this case, TK can be used to predict or understand impact effects. For example, land use and occupancy information may indicate or provide information on suitable locations to place monitoring stations.

2. Yukon's experience with TK inclusion in projects

2.1 Traditional Knowledge Research Guidelines

Background

In 2000, the Council of Yukon First Nations commissioned the preparation of guidelines for the collection and use of traditional knowledge in the Yukon. This document was directed at researchers working in the Yukon. The intention of these guidelines was to ensure:

- that where appropriate, TK received the same weight as scientific knowledge;

- that the TK holder was recognized and the use of TK was respected;

- that the use of TK was governed by the community;

- that the interpretation of TK was properly conveyed; and

- the overall responsibilities of the researcher and the communities was clearly understood.

This guide also acted as general direction to the communities. In the end, it was expected that each community would set-up guidelines suitable for themselves.

Methodology for Collecting TK

The direction to researchers and communities involved in the collection of TK includes, among other things:

- contacting the community before starting collection;

- confirming that TK remains the property of the community from where it originates; permission should be sought and confirmed before the information is used;

- respecting the TK holder at all times, and respect their wishes regarding what information can be shared or used;

- ensuring that communities are involved in the selection of community researchers and keeping the greater community informed;

- ensuring that communities select the most appropriate TK holder;

- finding a means of integrating TK and scientific knowledge; and

- confirming the storage of the TK.

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3. Other jurisdiction experience with TK inclusion in project planning

3.1 Case One: Colomac Mine Closure Planning

3.1.1 Background

Colomac Mine is an abandoned gold mine located 220 km northwest of Yellowknife in the NWT. The presence of gold in the Indin Lake area, the location of Colomac, was known since 1938. For many years, the property was not placed into production because of low gold prices. Neptune Resources Corporation obtained an option on the property and conducted extensive feasibility studies during 1988, and planned development of the site in 1989. Production was achieved at Colomac in May 1990. All operations were suspended in June 1991 due to low gold prices, high fuel costs, mechanical problems at the mill, and Neptune's inability to pay the interest on a $150 million loan.

In April 1993, Royal Oak Mines Inc acquired Neptune Resources Corporation, and thereby the Colomac site and resumed production in May 1994.

Mining operations were discontinued in September 1997 after depletion of reserves. The mine was closed in December 1997 after processing stockpiled ore[2].

Indian and Northern Affairs -NWT (INAC) has been operating the mine in care and maintenance mode since 1999 when Royal Oak Mines became insolvent. The most significant issues at the mine are related to the tailings containment area (TCA)[3].

3.1.2 Closure Planning Process

INAC and the Tli Cho (formerly known as Dogrib) communities have been working cooperatively on a closure plan for the mine for the past 1.5 years. The closure plan will be submitted to the Mackenzie Valley Land and Water Board on March 31, 2004.

The work planning for the closure plan included the incorporation of traditional knowledge. The entire process to submission of the plan was approximately 1.5 years. Key aspects of the process are as follows:

Project management
- a project management team, a senior management team and a science team were established to oversee the operations of the project. These teams included both INAC and Tli Cho members.

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[2] http://www.gov.nt.ca/RWED/mog/minerals/mins_history.htm
[3] http://www.ainc-inac.gc.ca/ps/nap/consit/11csrep0102_e.html

Selection of a community liaison coordinator

- a community liaison coordinator was hired to work with INAC and community leadership and elders. This individual work with the elders included understanding mine site impacts, mine closure planning, technical issues, and bringing traditional knowledge forward. This person also worked with INAC staff in scheduling of meetings and site visits. The engagement of this person was through Tli Cho Logistics with funds transferred by INAC through a contribution agreement.

Selection of elders

- the community Chiefs and councils selected the elders who would participate in the program. These elders were selected in part for their ability to see the project through in order to ensure consistent representation. In all, 3 elders from each of the 4 Tli Cho communities plus 2 from Fort Rae were selected.
- the elders were salaried i.e., put on honoraria for the time spent on the project.
- the elders worked with the community liaison coordinator to convey "how they wanted to proceed and what the outcome should be".
- the elders were able to work in their own language and interpreters were always available to them.

Detailed questionnaire

- in order to develop a chronological picture of past and current land use, a questionnaire was developed and given to elders and trappers who had used the Colomac mine site and vicinity. The questionnaire considered four discrete time phases: 1950s to the end of the pre-mine phase; construction; operation; and post-operation (Appendix A). The intention of the questionnaire was to build a picture of Tli Cho land use and presence. In particular, how did the use of the land change, what are the community concerns and issues - then and now. As a result of the questionnaire, the original findings presented in the environmental assessment report for the mine were called into question and refuted.

Setting priorities and selecting objectives

- in order to establish research priorities, a program was designed around valued environmental components (biological and socio-cultural) with the direct input of the elders (TK perspective). The research scientists undertook a similar exercise (scientific knowledge perspective) and the two lists were almost identical.
- this information was used to set objectives for the site after closure
- options were created for consideration and then evaluated. The research scientists undertook a numerical rating system and the Tli Cho elders ranked according to H, M, and L preferences. The lists were compared and the results with respect to selecting preferred objectives. Acceptable alternatives were also selected through this method. At no time, did any participants feel they compromised to the point that they considered an option harmful.

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3.1.3 Lessons learned

1. Involve communities as soon as possible and make them full participants in the decision-making. Engage a community liaison person as a point of consistent contact with the community and the department. Also arrange for consistent elder participation. That is, arrange for a process where the same elders will be involved in the entire process. This allows for the project to proceed smoothly and reduces the need to "bring people up to speed" with each meeting.

2. Engage the leadership. Involve them in the serious issues that cannot be resolved by the project management team.

3. Arrange for site visits and opportunities for educational experiences so that all members of the team have a full working knowledge of mine closure and mine closure planning. The result of spending time educating the elders meant that they were able to defend the project to the community.

4. Keep evaluation processes simple. An elaborate evaluation process was designed to ensure selections were defensible. This proved to be unwieldy for the elders. Involve elders in the design of the evaluation process and focus on what is important to the elders. In other words, approach scientific evaluations from a traditional perspective.

5. Provide employment opportunities for community members. The provision of employment opportunities to community members had a two-fold benefit to the program. It allowed for the development of community capacity that improved their ability to review new mining projects. It also improved communications with the community, as now more people understood the purpose of mine reclamation and decommissioning, and the activities to be undertaken.

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3.2   Case Study: West Kitikmeot Slave Study

3.2.1   Background

In the early 1990s, there was a significant increase in exploration activity in the West Kitikmeot and Slave Geological Provinces (WKSGP) with the announcement of diamonds being discovered near Lac de Gras. In a short period of time, nearly the entire area had been staked and was subject to mineral claims.

Recognizing that Dene and Inuit peoples had thousands of years of ties to the WKSGP, key players in the region: governments, aboriginal organizations, environmental groups and industry met to discuss research needs in advance of extensive development. Of special interest were possible regional cumulative effects from mining projects and related infrastructure developing in the region. The result was the formation of the West Kitikmeot / Slave Study, a five year research program based on the value of including both traditional and scientific knowledge. The program was run by nine "Partners" or parties with an interest in the area, including representatives from the mining industry. A tenth partner, the Government of Nunavut, joined in 2000 with the creation of Nunavut. The purpose of the program was to provide essential data for decision makers, primarily focusing on regional baseline information. Financing of the program was through three-way matching funding where the Federal Government and the NWT and Nunavut Territorial Governments matched contributions from industry, aboriginal organizations and environmental organizations. At the end of five years, 19 research reports were produced on topics such as caribou and other wildlife, community health, vegetation and water.

3.2.2   Including traditional knowledge

The WKSS arranged for the consideration of traditional knowledge in each proposal where it was appropriate (Appendix A). A leading principle of the research was that traditional and scientific knowledge have equal value and that research would focus equally on each, to the degree possible. Traditional knowledge would be brought into any research done under WKSS in one of two ways. There could be directed traditional knowledge studies, or communities would have the opportunity to develop parallel TK studies to any of the scientific knowledge research, i.e., evaluation criteria had a requirement that scientific and traditional knowledge studies cooperate and compare information in order to gain a fuller understanding of research issues.

Traditional knowledge collection was undertaken in the community of Lutsel K'e, in the Dogrib (now Tli Cho) communities and the Kitikmeot communities utilizing the Bathurst caribou. In general, the communities selected the elders to be involved in these studies to oversee the research, recommended individuals to be involved in the collection of the information, or as a peer review. This work was guided by the TK guidelines developed for this purpose (Appendix B). In the scientific knowledge studies, elders were used to vet the research proposals. A TK steering committee was established to ensure all proposals met WKSS' TK guidelines that they had community support and that communities had the opportunity to develop parallel TK studies.

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3.2.3   Lessons learned

1. Projects were most effective when communities were in control of the TK work. Early in any project, it was essential to establish what information would be available to the public, what information would be retained by the community, rules regarding intellectual property rights, and other principles for TK research.

2. It was important to engage an expert in the collection of TK. This contributed to the efficiency and effectiveness by which the information was collected and avoided burnout of the TK holders and other community participants. These experts also contributed to community understanding of the best way to collect, record and store information so that it could be effectively used in the future.

3. Important to define what is meant by TK at the beginning of a project.

4. It was difficult for TK and scientific researchers to integrate the two types of knowledge. It may have been more effective if the researchers had designed proposals together to improve comparison of results. The intent of the project had been to build on each other's information and to share results.

5. It was important to establish research priorities that matched to objectives of the project and then concentrate efforts and resources on those priorities.

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3.3   Case study: Diavik Diamond Mines and Environmental Monitoring Advisory Board

3.3.1   Background

Diamond production at Diavik Diamond Mine (Diavik) began in January 2003. As part of the mine's operating conditions, the Environmental Monitoring Advisory Board (EMAB) was established. The purpose of the EMAB was to "*provide a meaningful role for each of the Aboriginal Peoples in the review and implementation of environmental monitoring plans in respect of the Diavik Diamond Mine. The Environmental Monitoring Advisory Board will be in place until full and final reclamation of the mine site is completed*" (www.emab.ca).

Diavik is located approximately 300 kilometres northeast of Yellowknife in the Slave Geological Province. The Diavik mine site is on East Island in Lac de Gras occupying an area of approximately

20 km^2. The mine is expected to have an operating life of approximately 20 years. Mining will be primarily open pit with some underground.

3.3.2   Including Traditional Knowledge

The EMAB and Diavik have been working collaboratively with affected communities to ensure adequate community input into Diavik's operating procedures through to post-closure planning. Through EMAB, the communities were asked to select elders best suited to address issues under consideration. That is, some elders are better acquainted with fish than caribou. Each community selected five people to participate in issues being studied. It should be noted that the involvement of elders was not for the purpose of collecting TK. Rather, it is expected that elders will bring their collective understanding and experience of the environment to the issue under consideration and make recommendations based on that experience. EMAB has the same expectations of its western science advisors. As no new research is being undertaken, it has not been necessary to put in place a TK guideline or protocol.

3.3.3   Lessons Learned

1. Arrange for the active participation of community members. This includes arranging for honoraria for elders, ensuring per diems are available, that travel arrangements are made and that translators are available.

2. Allow the communities to select the most appropriate elders / persons to participate with the flexibility to choose people according to expertise i.e., fisheries versus caribou knowledge.

3. Meetings with community members especially elders must be done with ample notice and an opportunity for the participants to inform and educate themselves of the issue to be considered. This can be achieved by allowing elders to sit in on discussions of experts and scientists.

4. Be patient. The successful participation of elders is dependent on taking time and not rushing the process.

5. Understand that not every issue warrants a TK study. There are some issues that are purely western science issues. To get the best out of TK focus your work where you can get the best information.

6. It is not always necessary to collect TK. In the case of problem solving, what is important is bringing experience to the consideration of an issue and use that understanding to solve a problem. This is the same thing that is expected of western science experts.

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3.4 Case study: Gwich'in Social and Cultural Institute

3.4.1 Background

The Gwich'in Tribal Council (GTC) through its Social and Cultural Institute (GSCI) has prepared draft TK guidelines that cover the collection, use and storage of Gwich'in TK. It is expected that these guidelines will be adopted by the summer of 2004 and will be applied by anyone wishing to gather Gwich'in TK. The guidelines will undergo periodic review to ensure that they stay current and relevant.

This guideline covers Gwich'in Knowledge in the Gwich'in Settlement Region including the settlement area in the NWT and the Gwich'in Lands in the Yukon. The GTC through these guidelines is confirming that Gwich'in knowledge belongs to the current Gwich'in population and its future generations.

3.4.2 Including Traditional Knowledge

The guideline directs collectors of TK on how they should proceed with their work. For example, no TK should be gathered until matters of informed consent have been dealt with. The GSCI will review all applications to collect TK and approve its collection.

Features of the guideline are:

- defining the region of application i.e., Gwich'in Settlement Region;
- who should apply it (Gwich'in organizations);
- need for a research agreement that outlines that nature of the research to be conducted;
- need to obtain informed consent on the nature of the research, and the manner in which the information the participant is providing can be used and accessed;
- need to ensure that costs are covered;
- applications to collect TK;
- ownership and use of Gwich'in TK information; and
- reporting back to the community.

3.5 Case study: MVEIRB draft Guidelines incorporating traditional knowledge in the environmental impact assessment process

3.5.1 Background

The Mackenzie Valley Environmental Impact Review Board (MVEIRB or Review Board) is a product of the *Mackenzie Valley Resource Management Act* (MVRMA or Act). The MVRMA legalizes the land use planning, land and water management and environmental impact assessment (EIA) commitments from the Gwich'in and Sahtu land claims agreements. The MVEIRB in meeting its land claim obligations prepares guidelines to direct its operations in the Mackenzie Valley.

In the fall of 2003, the MVEIRB conducted a workshop to investigate the use of TK in its EIA process and what kind of direction should be provided to developers when it came to the inclusion of TK in their Development Assessment Reports (DAR). The guideline was written from the perspective of a Board who would be presented with TK information and wanting to understand how it was collected and used in developer's DAR. The result was a draft guideline that is meant to provide advice to various parties on their obligations with respect to TK in the EIA process. It also outlines the MVEIRB's expectations for the use of TK at each step of the EIA process. Finally, it includes best practice considerations for TK studies in the form of a paper prepared by Peter Usher (Appendix E).

3.5.2 Including Traditional Knowledge

The Review Board, in its guidelines, is trying to assure itself of several things with respect to TK. The first refers to the collection of TK and the process followed to collect it. This included:

- community agreement with the collection of TK and informed consent;
- TK collection methods and community approval;
- access to the TK and what are the sharing conditions; and
- presenting the TK to the Review Board;

The Review Board was also concerned with how TK is used in the EIA process. Among their recommendations are:

- using TK to identify local concerns about the proposed development;
- collecting TK to gain factual knowledge of the environment and make environmental impact predictions;
- using TK to assist with the design of the proposal; and
- using the collection of TK to build trust and cooperation with communities.

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4. Summary

The case studies summarized above fall into one of two categories: collection of new TK or using TK for problem solving. In the former case, TK is collected prior to the installation of a new project such as a mine. In the latter case, TK is used to problem solve after a facility is operating through to the time of decommissioning.

4.1 New traditional knowledge collection

Each of these case studies had nearly identical conditions for the collection, use and storage of TK. Similarly, they tended not to include a discussion of how to integrate TK with any western science knowledge studies being undertaken concurrently.

Each of the protocols, guidelines, or procedures on direction started with the need to have community support and the support from the appropriate aboriginal government. It was also generally agreed that each community define TK and what TK means in this circumstance. It was also important that the communities select or are involved in the selection of the TK holders.

Also consistent in each of the guidelines was the confirmation of how TK would be handled in the study. What TK could be reported, how it should be recorded and documented, and finally who would retain the knowledge once the project is completed. This concept is usually linked with the idea of informed consent. Informed consent is the understanding or agreement between the participant and a researcher that outlines the research to be conducted, and the manner the information gathered would be used and accessed.

Finally, these guidelines or protocols spoke to the question of compensation for costs incurred during the collection of traditional knowledge.

4.2 Collective knowledge: Using traditional knowledge to problem solve

The collective use of TK can also be looked upon as applying TK to solve a problem. The Colomac and EMAB examples feature how TK has been used in this way. For both these mine projects, elders are involved in problem solving. There is no collection of TK per se. They work with holders of western scientific knowledge to solve a problem and come up with solutions. In this case the elders bring their years of observation and experience to solving a problem.

An important comment by the people participating in this kind of TK use is that in order for the elders to participate effectively, they have to receive some basic training in the nature of mines and mine development. Spending time in training people is essential. It is also important to have the same elders involved throughout the project so that basic knowledge about mining builds up.

5. Conclusion

As already mentioned, TK in mining projects would seem to have two distinct roles. While the collection of TK was important and how it was collected was even more important, this was not the focus of operating mines e.g., Diavik, or mine closure planning e.g., Colomac. In these cases, it was generally felt that using TK to problem solve was the most important thing to do. This means bringing TK holders together and letting them apply their collective wisdom to a problem. This also means time must be spent on educating elders about mining so that their input can be most effectively applied.

Further, both the Colomac and EMAB case studies found that there was a general conclusion among the participants that their approaches were success stories and they will continue to apply the approaches developed. In particular, INAC - Contaminants Program said that they would continue to use the Colomac model for all their clean-ups with modifications as may be requested by the communities. However, they both also recognized that it was important to understand that not every problem warranted a TK study. Again, the recommendation was to concentrate efforts on where you can obtain the best information out of TK and the TK holders and to let the elders lead their own problem solving efforts as opposed to imposing a western scientific approach on their discussions.

Therefore, in conclusion, when undertaking mine closure planning it is important to spend time on developing a process that allows TK to be used to solve a problem and not necessarily focus on the collection of new TK.

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Appendices

Appendix A: Voluntary questionnaire on wildlife observations in the Colomac Mine Area

Table 1 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Note: This questionnaire is **voluntarily** and aimed at obtaining additional knowledge on wildlife in the Colomac Mine area before development (before 1987 or longer); and during development and mine construction (1987 - 1989/90); during mine operation (1990 - 1997); and during post closure and the begin of reclamation (1997/98 - 2003); **your participation and information are highly appreciated** and will provide valuable observations of wildlife in this area; **personal information** will be **kept strictly confidential** - only the provided **observations on wildlife will be used** to assist a Summary of Wildlife in the Colomac Area to be used for a Monitoring Plan for the abandoned Colomac Mine; the development of the Monitoring Plan is being administrated by the TliCho First Nation, the Department of Indian and Northern Affairs, and sponsors of the Colomac Mine Terrestrial Ecological Monitoring Program; the questionnaire is addressed to elders who are familiar with the Indin Lake and Colomac areas; this questionaire [sic] was compiled by Joachim Obst, AED Consulting, Yellowknife, and will be **conducted by George Lafferty**, Community of Rae. The **questionnaire includes 11 Tables**.

Name:
Community:
Address:

Questions (1 to 4):	Periods:	prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
1. Please indicate for each period the number of years you hunted or trapped in the Colomac area ?					
2. Please indicate the months and number of weeks or days you usually spent in the Colomac area:					
3. What were your main activities in the Colomac area (hunting, trapping, fishing, berry picking, etc) ?					
4. What were the approximate locations of your hunting/trapping activities in the Colomac area or surrounding areas including Indin Lake ?					

Table 2 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods:			
	prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
Questions (5 to 12) about the <mark>**Barren-ground Caribou:**</mark>				
5. In which months of the year were caribou usually at the mine site and in the area ?				
6. Did caribou only migrate through the area or stay there for some time (if, how long ?)				
7. What were the usual migration patterns in the fall, winter and spring at Colomac ? (e.g. from NE to SW or W to E ?)	fall: winter: spring:			
8. What were your mean estimated numbers of caribou at the mine and surroundings ? (including numbers of calves per cows)	fall: winter: spring:			
9. Did you see any changes in numbers, behavior, migration of caribou ? (if, explain)				
10. How many caribou did you hunt annually at the mine site or in the surrounding area?				
11. Did you observe any changes in the health condition of caribou over the years ?				

12. Did you see any changes in the
ratios of calves per cows ?

Table 3 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods: prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
Questions (13 to 18) about the <mark>**Woodland Caribou:**</mark>				
13. In which months and years did you see woodland caribou in the Colomac area ?				
14. Did woodland caribou migrate and/or stay for parts of the year (if, how long ?)				
15. What were your estimated numbers of woodland caribou in the larger area ?				
16. Did you see any changes in numbers, behavior, migration of caribou ? (if, explain)				
17. How many woodland caribou did you hunt in the Colomac area?				
18. Did you observe any changes in the health condition of caribou or in the ratios of calves per cows over the years ?				

Table 4 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods: prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
Questions (19 to 25) about the <mark>**Moose**</mark>				
19. Were moose common year-round in the Colomac area, or more common at times ?				
20. Were the numbers of moose in the Colomac area high, medium or low ?				
21. Did you see any changes in numbers of moose in the Colomac area ? (if, explain)				
22. How many moose did you hunt annually at the mine site or in the surrounding area?				
23. Did you observe any changes in the health condition of moose over the years ?				
24. Did you observe any changes in the feeding behavior of moose at the mine ?				
25. Did you observe any changes in the number of calves per cows ?				

Table 5 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods: prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
Questions (26 to 32) about the <mark>Muskox</mark>				
26. Have you ever seen muskox in the Colomac area ? (if so, numbers and years)				
27. What other observations have you made on muskox in the Colomac area ?				
<mark>Black Bear</mark>				
28. Were the numbers of black bears in the Colomac area high, medium or low ?				
29. Did you see any changes in numbers of black bears in the Colomac area ?				
30. How many black bears did you hunt in the Colomac area and in which years ?				
31. Did you observe any changes in the health condition or behavior of black bears ?				
32. Do you think the black bear population in the Colomac area is healthy ?				

Table 6 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods: prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
Questions (33 to 39) about the <mark>Grizzly Bear</mark>				
33. Have you ever seen a grizzly bear in the Colomac area ? (if so, numbers and years)				
34. What other observations have you made on grizzly bears in the Colomac area ?				
<mark>Wolf</mark>				
35. Were the numbers of wolves in the Colomac area high, medium or low ?				
36. Did you see any changes in numbers of wolves in the Colomac area ?				
37. How many wolves did you hunt or trap annually in the Colomac area?				
38. Did you observe any changes in the health condition or behavior of wolves ?				
39. Do you think the wolf population in the Colomac area is healthy ?				

Table 7 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods: prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
Questions (40 to 43) about **Furbearers**				
Please indicate how many of the following furbearers you hunted or trapped during each period, or any other information about the abundance and health of populations:				
40. Wolverine				
41. Arctic Fox				
42. Red Fox				
43. Lynx				

Table 8 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods: prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
Questions (44 to 47) about **Furbearers**				
Please indicate how many of the following furbearers you hunted or trapped during				

each period, or any other information about
the abundance and health of populations:

44. Otter

45. Mink

46. Marten

47. Ermine

Table 9 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods: prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003
Questions (48 to 51) about **Furbearers**				
Please indicate how many of the following furbearers you hunted or trapped during each period, or any other information about the abundance and health of populations:				
48. Least Weasel (sometimes confused with Ermine !)				
49. Fisher Have you ever seen or trapped a Fisher in the Colomac area, Indin Lake or within this particular region ? (if so, please elaborate)				

50. Beaver

51. Muskrat

Table 10 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods:			
	prior to development and mine construction before 1987 (or longer)	during development and mine construction 1987 - 1989/90	during mine operation 1990 - 1997	post closure and reclamation 1997/98 - 2003

Questions (52 to 55) about **Mammals**

Please indicate how many of the following
mammals you hunted or trapped during
each period, or any other information about
the abundance and health of populations:

52. Snowshoe Hare

53. Arctic Hare
(are arctic hare in the Colomac area or just
east near the tree line and on the tundra ?)

54. Porcupine

55. Red Squirrel and Small Mammals
(including shrews, voles, mice, lemmings)

Table 11 (of 11). Voluntary Questionnaire on Wildlife Observations in the Colomac Mine Area during pre-development to post closure, before 1987 to 2003.

Wildlife Observations in the Colomac Area:	Periods:			
	prior to development	during development	during mine operation	post closure

	and mine construction before 1987 (or longer)	and mine construction 1987 - 1989/90	1990 - 1997	and reclamation 1997/98 - 2003
Questions (56 to 59) about **Birds**				

Please indicate how many of the following
game birds you hunted during each period,
or any other observations about the number
of species and their abundance:

56. Geese, Swans and Cranes
(Please indicate species names)

57. Waterfowl, Ducks, Grebes and Loons
(Please indicate species names)

58. Grouse and Ptarmigan
(Please indicate species names)

**59. Other Birds: Gulls, Jaegers, Terns,
Hawks, Eagles, Falcons, Owls, Ravens,
Shorebirds and Song Birds**
(Please indicate species names)

Appendix B. WKSS Research Program Proposal Guidelines

Researchers were given the following outline to ensure that proposals submitted to the Study Office provided all the necessary information. Proposals not following this format were returned to the researcher for reformatting. Proposals were expected to be presented in a concise, non-technical manner suitable for translation if required. They were also required to include sufficient information for the Study Office, Project Committees and the Management Board to adequately evaluate the proposal.

Title: A concise, one sentence description of the project.

Submitted By: Name, title, and address of organization or individual submitting proposal.

Background: A statement of the reasons why the work needs to be undertaken. How does the research address a management concern of the Study? What are the implications of not dealing with this priority or concern? What are the resource values either at risk or of unrealized potential which the research will address?

Objectives: What is to be achieved? Identify precise end points for the research.
Study Area: Briefly describe the location(s) of the proposed project. Use appropriately scaled maps where possible.

Project Design: Describe the proposed project including data collection/sampling methods, planned statistical methods, scope of applicability, and other information which will ensure that the Project Steering Committee fully understands the proposed project. Support with citations from literature.

Schedule: Indicate the dates for beginning and completing each season of the project and the total duration of the project. Interim milestones should be indicated on an attached "Resource Summary" page.

Application of Results: Describe how the results may be applied to the management of the physical, biological and/or social environment in the study area. How will the results address the issues being considered?

Literature Cited: As appropriate. Provide support for methodology and analysis, plus background on similar studies and success.

Permits and Licenses: Identify the applicable permits and licenses required for the project. The Study Office can help with identifying the appropriate permits and licenses.

Traditional Knowledge: Provide an outline for how the traditional knowledge guidelines (see Guidelines for Traditional Knowledge Research elsewhere on CD) will be met.

Partners: Identify other participating and/or interested agencies and cooperating persons from those agencies.

Budget: Indicate: 1) the resources that you have committed to the project, 2) the resources that other persons or agencies have committed to the project, and 3) the resources that you are requesting from the Management Board. A value should be assigned to the personnel time that the proponent is committing to the project. Resource requirements should be summarized by year for each year of the proposed project on the basis of a fiscal year from April 1 to March 31. Be specific (i.e., community consultation should show: communities consulted, number of visits, estimated number of people at meetings) and provide a written justification. By WKSS policy, an administration fee cannot be included. Where G.S.T. is applicable to all or part of the funds requested from WKSS, this should be included in the budget. If any funds are requested for capital expenses, each piece of equipment valued at $500.00 or more must be clearly justified and a quote provided. Researchers are encouraged to rent such equipment rather than purchase it.

Personnel and Training: Briefly describe the role and qualifications of the person(s) involved in the project. Identify any opportunities to hire community-based personnel. Also, include any training of community personnel.

Consultation: Outline the community consultation performed for the project. Include meetings or discussions with any community political bodies. Include any letters of support from these organizations.

Deliverables: Identify the expected products (progress reports, completion reports, journal papers, communication/dissemination strategy, etc.) and how the information will be relayed to the Study Office, Management Board, and communities. The Study Office expects to receive an annual progress report on each project. For multi-year projects a draft annual report must be submitted by January 1st to provide the Board with information to determine whether it will provide the subsequent year's funding.

Resource Summary: Provide a detailed breakdown of the annual resource requirements for the project, using this guideline and indicating totals for "person days" and "expenditures". A detailed summary for one year is sufficient if there will be no significant deviation from year to year.

Output or Steps: List all significant steps or expenditures that will be incurred during execution of the project.

Person Days: Indicate the number of person days required to complete each of the identified steps.

Expenditures: Indicate the expenditures associated with each step.

Appendix C. WKSS Traditional Knowledge Research Guidelines

Traditional Knowledge Research Guidelines

Home

About WKSS

Terms of Reference

Partners

Funding

Research Program

Projects and Research Reports

When defining traditional knowledge research, it is important to distinguish between traditional knowledge research and research guided by traditional knowledge. The former is a comprehensive and holistic collection of information held by traditional knowledge holders. The latter is western science guided by a traditional knowledge holder. There is concern that the term traditional knowledge has multiple meanings. The working definition of traditional knowledge used by the WKSS was put forth by the Traditional Knowledge Committee:

> *Traditional knowledge is knowledge that Elders hold from experience and is passed down to them through the generations. It is continuous and grows. Interpretation of knowledge is important. Traditional knowledge is not just the past, but the future combined with the past.*

The format required for traditional knowledge research projects is the same as that for western science research, although the content of each segment may vary. The following guidelines have been drafted by the Traditional Knowledge Committee for those wishing to research traditional knowledge:

1. To be effective, research projects must obtain the support of the appropriate aboriginal political body and of the affected aboriginal communities before they can be approved by the WKSS society.

2. For traditional knowledge research to be effective, aboriginal community members must direct and control all stages of research projects, including personnel, project planning and design, budget development, fundraising, data collection, analysis, data and report verification, and report writing.

3. a) Each traditional knowledge project will be screened and guided by the Traditional Knowledge Steering Committee.

b) Research projects drawing on both traditional knowledge and western science will be screened and

guided by the Project Steering Committee made up of western scientists and traditional knowledge holders with the majority being aboriginal.

4. Informed consent must be obtained from all people interviewed as part of the research project, and where requested, the confidentiality of the information which they provide must be strictly respected and adhered to in writing.

5. Research must include a training component in projects in order to develop research skill for those affected communities.

6. Copies of raw data held, including video, audio, written etc., are the property of the community. Raw data held outside and in the community will be subject to conditions of copyright and confidentiality agreements on storage, use, access and release approved by the appropriate political body and by participating communities.

7. Contributions of community people to research projects must be fully acknowledged in all reports and public statements.

8. Traditional knowledge should be fully and effectively incorporated and provide direction in all aspects and phases of the study.

9. Research will be suspended if the guidelines written in to the contract are not met.

10. Protocols/contract research agreements will be established between the researcher and participating partners.

11. The WKSS society will establish agreements with partners on:
- access to information
- confidentiality
- copyright
- reporting/publishing

12. Research proposals must contain:

- title
- background
- study area
- objectives
- methodology
- workplan and timeframe
- partners
- evidence of community support
- training plan
- budget and justification of budget

- deliverables
- licenses required
- project team qualifications and responsibilities

13. Traditional knowledge information that is used must be guided by the Elders and community involved in the original study.

(source: www.wkss.org)

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Appendix D. Gwich'in (draft) TK policy

Working with Gwich'in Traditional Knowledge in the Gwich'in Settlement Region (DRAFT #10   January 21, 2004)

PREAMBLE

The Gwich'in recognize and value the fact that living on the land for many millennia has provided them with an extensive body of knowledge, values, beliefs and practices that many people today refer to as traditional knowledge. This knowledge, which has been passed down orally and through personal experience and spiritual teachings, is the foundation of Gwich'in identity and survival. It continues to have relevance today and draws its' strength from being used, revised and continuously updated to take into consideration new knowledge. The Gwich'in hold this knowledge in trust for future generations in the belief that this knowledge is of benefit to themselves and all humanity. The Gwich'in believe the best way to ensure its survival is to continue to use it and share it in a matter that respects this knowledge.

I: GWICH'IN TRIBAL COUNCIL'S POLICY COMMITMENT

Whereas the Gwich'in, as represented by the Gwich'in Tribal Council, are the holders of Gwich'in Traditional Knowledge in and around the Gwich'in Settlement Region; and,

Whereas the Gwich'in Tribal Council's role is to represent its membership on all matters that will impact the rights of the Gwich'in people, including the issue of protecting and promoting Gwich'in Traditional Knowledge; and,

Whereas the Gwich'in Tribal Council is responsible for ensuring that the cultural and economic relationships between the Gwich'in and government recognize the Gwich'in way of life;

Whereas the Gwich'in Tribal Council is responsible for negotiating self-government arrangements on matters including culture, heritage and language; and,

Whereas the 1998 Gwich'in Annual Assembly passed a motion authorizing the Gwich'in Tribal Council to develop a policy on Gwich'in Traditional Knowledge research that would bring clarity to Gwich'in ownership and control of Gwich'in Traditional Knowledge;

Therefore the Gwich'in Tribal Council hereby commits to take a lead role in the management of Gwich'in Traditional Knowledge issues in the Gwich'in Settlement Region by monitoring and guiding the collection, use and distribution of Gwich'in Traditional Knowledge. In taking on this role, the Gwich'in Tribal Council will work to ensure that Gwich'in Traditional Knowledge is used ethically and safeguarded for future generations of Gwich'in beneficiaries.

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II: GUIDING PRINCIPLES

The Gwich'in Tribal Council will manage Gwich'in Traditional Knowledge issues in the Gwich'in Settlement Region in a manner that:

1. Allows future generations to benefit and learn from Gwich'in Traditional Knowledge;

2. Ensures that informed consent occurs between the Gwich'in and researchers in the process of research;

3. Assists the Gwich'in to restore and maintain control over the use of Gwich'in Traditional Knowledge, and cultural and heritage resources recognizing that they are the stewards of these resources;

4. Encourages appropriate sharing of Gwich'in Traditional Knowledge with others;

5. Ensures the participation of Gwich'in communities in Gwich'in Traditional Knowledge research activities including reporting back to the communities the results of research activities in an appropriate manner and format;

6. Ensures respect for Gwich'in Traditional Knowledge holders and ethical use of Gwich'in Traditional Knowledge in research, giving it an equal standing with western scientific knowledge;

7. Ensures that research dealing with Gwich'in Traditional Knowledge, culture and heritage conducted in the Gwich'in Settlement Region gives equal weight to Gwich'in Traditional Knowledge;

8. Supports the use and preservation of the Gwich'in language; and,

9. Supports the ethical use and application of Gwich'in Traditional Knowledge in heritage, renewable and non-renewable resource management in the Gwich'in Settlement Region.

III: SCOPE OF THE POLICY

The policy applies to the following Gwich'in organizations in the Gwich'in Settlement Area:
- Gwich'in Tribal Council
- Gwich'in Social and Cultural Institute;
- Other Designated Gwich'in Organizations including but not limited to:
  - Ehdiitat Gwich'in Council
  - Gwichya Gwich'in Council
  - Nihtat Gwich'in Council
  - Tetlit Gwich'in Council
  - Gwich'in Land Corporation
  - Gwich'in Settlement Corporation

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iv: Definitions

Collaborative Research Methodologies
Collaborative research methodologies are research approaches that recognize participant socio-cultural values and that invite the research participants and local community members to determine appropriate research areas and approaches. Collaborative research methodologies often involve direct community benefit in the way of training, education, capacity building, elder-youth interaction and employment.

Gwich'in Settlement Area
The Gwich'in Settlement Area is defined as those lands lying within the NWT as described in Appendix A of the *Gwich'in Comprehensive Land Claim Agreement* (1992).

Gwich'in Settlement Region
The Gwich'in Settlement Region includes the Gwich'in Settlement Area as described in Appendix A of the *Gwich'in Comprehensive Land Claim Agreement* (1992) and the lands within the Primary and Secondary Use Areas as described in Appendix C of the *Yukon Transboundary Agreement* within the GCLCA, and other traditional territory as outlined in the Interim Measures Agreement (Appendix C, 8.3.1) signed on April 28, 1999 between the Government of Canada and the Gwich'in Tribal Council (see Maps in Appendix A of this policy document).

Gwich'in Traditional Knowledge
Gwich'in Traditional Knowledge is that body of knowledge, values, beliefs and practices passed from one generation to another by oral means or through learned experience, observation and spiritual teachings, and pertains to the identity, culture and heritage of the Gwich'in. This body of knowledge reflects many millennia of living on the land. It is a system of classification, a set of empirical observations about the local environment and a system of self-management that governs the use of resources and defines the relationship of living beings with one another and with their environment.

Gwich'in Traditional Knowledge Holder
Gwich'in Traditional Knowledge holders are Gwich'in persons who are known, or come to be known, by the Gwich'in Social and Cultural Institute, a Designated Gwich'in Organization or by the Gwich'in Tribal Council to possess Gwich'in Traditional Knowledge. Holders of Gwich'in Traditional Knowledge should be clearly acknowledged for any traditional knowledge they have shared with researchers.

Gwich'in Traditional Knowledge User
Anyone using any part, parts or whole of Gwich'in Traditional Knowledge.

Informed Consent
Informed Consent is a statement or oral agreement between the participant and a researcher (Principal Investigator) that outlines the nature of the research, and the manner in which the information the

participant is providing can be used and accessed. Such consent must be given freely prior to research commencing. The essential elements contained in an Informed Consent Statement can be found in Schedule "B".

Research

Research is an endeavour to study, diligently search for, and obtain knowledge through use of a systematic approach with the intent of clarification. This includes activities that attempt to discover new facts, information, or new applications to existing knowledge. It also includes activities to revise or substantiate existing theories. Research can include, but not be limited to, *Basic Research*, that is, a curiosity driving activity that has the purpose of discovery and the advancement or knowledge; or *Applied Research*, which aims to discover the best ways of using this knowledge in the process or a profession, policy development or a way of life. Research can be conducted using *qualitative*, that is, a belief that theory should be grounded in the day-to-day realities of the people being studied, or *quantitative*, that is, methods that use numerical or statistical methodology. Research methodology can include *primary* and *secondary* research. *Primary* research is information gathered by interacting with people through meetings, interviews, observation, focus groups or surveys. *Secondary* research is information gathered through literature reviews, publications, broadcast media and the use of other non-human sources.

Research Agreement

A research agreement is a contract entered into between the Gwich'in Tribal Council (or one of the Designated Gwich'in Organizations or the GSCI) and a researcher that outlines the conditions for the conduct of research in the Gwich'in Settlement Region.

Researcher

A researcher is any person, agency, institution of public government, government body or a public or private organization proposing a research project in the Gwich'in Settlement Region for which a license or permit is required pursuant to the *Scientists Act* (R.S.N.W.T. 1988), *Wildlife Act* (R.S.N.W.T. 1988), *NWT Act* Archaeological Sites Regulations (NWT Act, Chapter 1237, 1978), *Fisheries Act* (R.S.C. 1985), the *Yukon Scientists and Explorer's Act* (R.S.Y. 1986), or *Yukon Act* Archaeological Sites Regulations (C.R.C. c.1612, 1978)

V: AUTHORITY AND ACCOUNTABILITY

1. Gwich'in Tribal Council:
a) Authorizes the Gwich'in Social and Cultural Institute to implement the policy on behalf of the Gwich'in Tribal Council.
b) Represents the rights and interests of the Gwich'in beneficiaries on any matters arising that will promote and protect their Gwich'in Traditional Knowledge.
c) Ensures that the Gwich'in Social and Cultural Institute and other Designated Gwich'in Organizations have the resources required to manage and apply this policy.

2. Gwich'in Social and Cultural Institute will:

a) Review all research permits and licences issued pursuant to the *Scientists Act*, (R.S.N.W.T. 1988), *Wildlife Act*, (R.S.N.W.T. 1988), the *NWT Act Archaeological Site Regulations* (NWT Act, Chapter 1237, 1978), Fisheries Act,(R.S.C. 1985), the *Yukon Scientists and Explorer's Act,* (R.S.Y. 1986) or the *Yukon Act Archaeological Sites Regulations* (C.R.C. c.112, 1978) for compliance with the policy guidelines prior to providing advice to the authority issuing the permit or licence.

b) Ensure that research has gone through an ethical review process before research begins.

c) Reserves the right to enter into research agreements to collaborate with researchers for proposed Gwich'in Traditional Knowledge research or other socio-cultural research in the Gwich'in Settlement Region (see Schedule A). The Gwich'in Social and Cultural Institute shall ensure that a plain language description of the project is provided to the community in which the research is proposed, and that informed consent has been gained before the research proceeds.

d) Monitor Gwich'in Traditional Knowledge projects, studies and other initiatives inside and outside the Gwich'in Settlement Region to improve general understanding of the methodology of incorporating Gwich'in Traditional Knowledge into education, environmental assessment, heritage management and land, water and resource management and planning.

e) Participate in the on-going exchange of information about Gwich'in Traditional Knowledge research and development and its incorporation into decision-making.

f) Identify areas where Gwich'in Traditional Knowledge can be successfully incorporated into the design or delivery of Gwich'in Tribal Council governance and Board decision-making.

g) Develop guidelines for researchers seeking to conduct research on Gwich'in Traditional Knowledge in the Gwich'in Settlement Region that reflect the values and traditions of the Gwich'in as expressed through this policy.

h) Encourage the use of collaborative research methods in Gwich'in Traditional Knowledge and Scientific research.

i) Communicate the objectives of this policy and its guidelines to all Gwich'in organizations, government departments, researchers, and institutions of public government identified within the Gwich'in Comprehensive Land Claim Agreement and the Mackenzie Valley Resource Management Act,

j) Provide the Gwich'in Tribal Council with advice on all matters which fall within the scope of this policy.

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k) Work with Designated Gwich'in Organizations and Renewable Resource Councils to identify Gwich'in individuals who are qualified Gwich'in Traditional Knowledge holders in specific topic areas and interested in working with researchers.

l) Educate elders and other beneficiaries about their individual rights with respect to their participation in all research, including Gwich'in Traditional Knowledge research.

m) Recover costs related to the provision of information to researchers, wherever possible. The Gwich'in Social and Cultural Institute will provide the most current Rate Schedule upon request.

3. Other Designated Gwich'in Organizations will:
Review research permits and licences that affect Gwich'in beneficiaries in their communities and provide advice to the Gwich'in Social and Cultural Institute.

4. Gwich'in Tribal Council will:
a) Review research permits and licences with regard to Private and Crown lands. The Gwich'in Social and Cultural Institute will provide advice to the Gwich'in Tribal Council concerning these permits and licences.

b) Apply this policy within any Impact Benefit Agreements negotiated between the government or industry and the Gwich'in Tribal Council.

VI: PERIODIC REVIEW

The policy will be reviewed subsequent to any self-government agreements which might affect the management of cultural and heritage resources.

The Gwich'in Social and Cultural Institute will review the guidelines issued pursuant to the policy as necessary and not less than once every three years.

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Gwich'in Social and Cultural Institute
RESEARCH AGREEMENT FRAMEWORK

The terms of all Research Agreements are to be negotiated between the researcher and the Gwich'in Social and Cultural Institute in accordance with the Gwich'in Traditional Knowledge Research Policy and attached Guidelines on a project-by-project basis.

RESEARCH AGREEMENT WITH THE
GWICH'IN SOCIAL AND CULTURAL INSTITUTE

Date of Agreement:
Principal Investigator: **Name:** **Address:** **Telephone:**   **Fax:** **Email:**
Associated Institution: **Name:** **Address:** **Telephone:**   **Fax:** **Email:**
Gwich'in Organization: **Name:** **Address:** **Telephone:**   **Fax:** **Email:**
Project Title:
Permit Types and Numbers:
Ethical Review Conducted: **Yes ___**   **No ___** **If yes, provide written proof from University Committee, SSHRC, NSERC etc.** **If no, detail steps that will be taken to obtain Ethical Review:**
Copy of Informed Consent Statement using Schedule "B" as a template is attached: **Yes ___**   **No ___**

List purpose, goals and objectives of this Research Project:
List sources of funding obtained:
Duration of Research **(number of field seasons/dates in Region):**
Identify Community Advisory Body **(Gwich'in Social and Cultural Institute / Elders Council / Gwich'in Land and Resource Advisory Committee / Renewable Resource Council /other)**
Detail benefits to community **(education, training, employment, capacity building):**
Detail research methodology to be used:
Detail any Ownership Agreements for Data Collected:
Detail how data will be accessed in future and any storage agreements:
Detail methods of consulting with and communicating results to community members during and after the project:
Detail how you propose to incorporate Gwich'in Traditional Knowledge into the research:
Detail how confidentiality will be maintained during and after this project if requested:
Detail any Media Relations Agreement:
Termination:
Statements: *The Principle Investigator agrees that any copies of future publications, reports or products of the research will be forwarded to the Gwich'in Social and Cultural Institute.*   *The Principle Investigator acknowledges receipt of a copy of the document entitled "Working with Gwich'in Traditional Knowledge in the Gwich'in Settlement Region" and agrees to abide by all guidelines contained therein.*   *The Principle Investigator indemnifies and saves harmless any of the Gwich'in organizations from any liability and hereby waives any legal claim against it for any event that might occur during the course of the project.*

Signature of Principle Investigator:

Signature of Gwich'in Social and Cultural Institute:

Copies of this form must be submitted to both of the following GSCI offices:

Gwich'in Social and Cultural Institute	Gwich'in Social and Cultural Institute
Executive Director	Research Director
P.O. Box 46	50 Rycon Drive
Tsiigehtchic, NT	Yellowknife, NT
X0E 0B0	X1A 2V6
Phone: 867-953-3613	Phone: 867-669-9743
Fax: 867-953-3820	Fax: 867-669-7733
gsciexecutivedirector@learnnet.nt.ca	Ingrid_Kritsch@learnnet.nt.ca

SCHEDULE 'B'

Essential Elements Of An Informed Consent Statement

1. Identify interviewer (name, company/university they represent);

2. Date;

3. Identify interviewee (name and any affiliation they may have with community/ company/university);

4. Identify community of interviewee as well as community where interview is taking place;

5. Brief statement about goals/rationale of project and specifically, what the interviewer wants from the interviewee and why;

6. Identify what this information will be used for;

7. Identify who will benefit from this information;

8. Identify who will be using this information;

9. Identify who will have access to the information;

10. Identify how this information will later benefit the interviewee, their community and future generations of that community;

11. Identify what the interviewer is gaining from this information (i.e. University degree, Government contract, etc. – if payment for future sales of information in book form, where proceeds will go from the sale of this information, etc.)

12. Indicate if information is to be recorded, either by audio tape or video tape and if so, what is to be done with this tape, where will this information be stored, how many copies of the information will be made, who will have access to this recorded information now and in the future;

13. Does the interviewee want to be cited or credited for any information being given? If yes, cited in general (such as in a bibliography) or specifically (such as at the end of all quotes). If no, does the interviewee want a pseudonym created and used? If not cited, the interviewer must assure confidentiality of all information received. This point is crucial in traditional knowledge collection;

14. Crucial to informed consent is the clause that the interviewee understands that they do not have to answer any questions they do not want and that they can stop the interview at any time;

15. Assure that a draft of information collected will be presented again, either personally or in a community forum for verification and any suggestions at that time will be considered and incorporated into the final report;

16. Copy of the report will be forwarded to interviewee when available, or alternatively to the community when available;

17. Ensure that written consent is given to the above elements once it has been read and explained in English or in Gwich'in. Alternatively, if the interviewee does not read or write, the Consent Statement should be read to them in English, and/or in Gwich'in, any questions answered and a verbal consent recorded on tape. Any exceptions to the above should also be noted in the Consent Statement.

Gartner Lee

Gwich'in Traditional Knowledge Research Guidelines

The Gwich'in Traditional Knowledge Research Guidelines fall under the Gwich'in Tribal Council Traditional Knowledge Research Policy. These guidelines may be reviewed and amended from time to time by the Gwich'in Social and Cultural Institute and must be approved by the Gwich'in Tribal Council. Current Guidelines will be posted to the Gwich'in Tribal Council and Gwich'in Social and Cultural Institute web sites.

The Gwich'in Social and Cultural Institute will, in accordance with the policy, provide these guidelines to all researchers proposing to work on Gwich'in Traditional Knowledge research or working on other issues related to Gwich'in Traditional Knowledge in the Gwich'in Settlement Region.

The Gwich'in Social and Cultural Institute will review all research permit applications for compliance with these policy guidelines prior to providing advise to the responsible permitting authority.

Research Licensing

1. All persons proposing to do research on Gwich'in Traditional Knowledge in the Gwich'in Settlement Area must obtain the appropriate authorizations pursuant to the *Scientists Act*, (R.S.N.W.T. 1988), *Wildlife Act*, (R.S.N.W.T. 1988), the *NWT Act* Archaeological Site Regulations (NWT ACT, Chapter 1237, 1978), *Fisheries Act* (R.S.C. 1985)**.**

    Researchers are advised to consult "*Doing Research in the NWT: A Guide for Researchers"* published by the Aurora Research Institute, available at www.nwtresearch.com.

    Researchers are advised to consult and review the "Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans" available at httphttp://www.ethics.ubc.ca/code.

2. All persons proposing to do research on Gwich'in Traditional Knowledge in the Primary Use Area, Secondary Use Area, or other traditional territory of the Teetl'it Gwich'in must obtain the appropriate authorizations pursuant to the *Yukon Scientists or Explorer's Act* (R.S.Y. 1958), or the *Yukon Act Archaeological Sites Regulations (C.R.C. c.1612, 1956).*

    Researchers are advised to consult with the Heritage Branch, Department of Tourism of the Yukon Government to obtain a copy of "*Guidebook on Scientific Research in the Yukon*".

Collaborative Research Methodologies

3. The Gwich'in Social and Cultural Institute supports and encourages the use of collaborative research methodologies in all research activities conducted in the Gwich'in Settlement Region.

4. Collaborative research methodologies enable the researcher and research participants to use Gwich'in Traditional Knowledge appropriately throughout the research process and ensure that the project is completed to the satisfaction of all the parties.

5. Collaborative research methodologies imply that wherever possible, the research project supports community capacity building, including education, research training and employment opportunities for local residents.

6. To encourage collaborative research methodologies, the Gwich'in Social and Cultural Institute will ensure that, when appropriate, an existing community advisory body (for example, Elders Councils, Renewable Resource Councils) is identified for the researcher. The advisory body will establish an appropriate framework with the researcher for consultation and advisory support throughout all stages of the project.

Research Agreements

7. Except as otherwise agreed, a researcher must have concluded a valid research agreement with the Gwich'in Social and Cultural Institute setting out the rights and obligations of the parties for which the Designated Gwich'in Organizations' and beneficiaries' collaboration is being sought. Without limiting their generality, the terms and conditions in the agreement must include those matters set out in Schedule 'A.'

Confidentiality

8. Designated Gwich'in Organizations and beneficiaries must be informed about the degree of confidentiality that will apply to the information they provide before the research process starts.

9. Methods of ensuring confidentiality must be approved prior to any research.

Ownership and Use of Gwich'in Traditional Knowledge Information

10. Ownership and use of information must be negotiated between the researcher and GSCI prior to the commencement of the research process and contained in the research agreement.

11. Copies of research materials and final products including relevant field notes, photographs or slides, audio tapes, video tapes, maps, archival materials, reports, journal articles, manuscripts, or books resulting from Gwich'in Traditional Knowledge research must be sent to the Gwich'in Social and Cultural Institute.

12. Quotations and other oral, written and pictorial contributions of those people or group of people who provide Gwich'in Traditional Knowledge information must be acknowledged in any report or publication that may arise out of the research project. Direct references must be cited for Gwich'in Traditional Knowledge holders, persons or groups who provide information that is recorded and then used in a report, providing consent to do so has been obtained.

13. The product of the research containing or derived from Gwich'in Traditional Knowledge must be reviewed by the Gwich'in Social and Cultural Institute and affected Designated Gwich'in Organization before distribution to a third party. The product will be reviewed within 30 days of receipt. If verification of information is required, this time frame must be negotiated. The review and/or verification process is meant to provide the Gwich'in Social and Cultural Institute and community with an opportunity to comment on the findings, identify gaps and make corrections before the research is made public.

Gwich'in Language

14. Researchers should ensure that they use and apply the appropriate Gwich'in dialect when working in the Gwich'in language. For research of a regional nature, both Gwichya Gwich'in and Teetl'it Gwich'in dialects should be properly represented in research reports or products of research in order to ensure both respect and effective communication.

Compensation

15. All holders of Gwich'in Traditional Knowledge should be compensated, if they wish, for their time working with researchers. Compensation can be in the form of a cash payment, an in-kind contribution or a fair exchange (gas, food, etc.). Compensation will be determined between the researcher and the holder of Gwich'in Traditional Knowledge. Researchers should inform the Gwich'in Social and Cultural Institute how they plan to compensate Gwich'in Traditional Knowledge holders. The Gwich'in Social and Cultural Institute will provide the most current Rate Schedule upon request.

Reporting Back to the Community

16. As part of the follow-up process, all researchers working with Gwich'in Traditional Knowledge should return to the community to present the findings of their research. Research results should be presented or displayed in the Gwich'in communities in culturally relevant and creative ways. An example of the latter would be poster or audio-visual formats.

Appendix E: Best Practices in Traditional Knowledge Inclusion

Issues and current best practice in incorporating TK in EIA processes:
TK studies and reports
Prepared by Peter J. Usher for the Mackenzie Valley Environmental Impact Review Board

This appendix provides a summary of the basic standards or best practice for conducting TK studies for the purpose of environmental impact assessment according to the processes established by the MVRMA. It is included as helpful background material for the public consideration of these draft guidelines. TK study methods continue to evolve based on the experience of communities and researchers working together. TK studies conducted according to these methods will carry considerable weight with the Review Board, however the inclusion of this appendix does not necessarily imply complete endorsement by the Review Board.

A.1 What kind of TK, and how to present it in the EIA process?

TK evidence can be introduced, or made available to the EIA Process in several ways:

1. Statements by individuals, e.g. at community hearings. These statements may consist of knowledge about the environment, or of the use of the environment, but normally emphasizes values, preference, and impact significance.

2. Introduction of published or publicly available TK information already compiled (see A.2). This information would generally consist of knowledge about the environment or of the use of the environment, and could be introduced in the DAR or by any other participant.

3. New TK information based on community knowledge not previously compiled or published This would summarize and integrate community knowledge in a way that cannot be attested to by any single individual, and would most likely consist of knowledge about the environment, or the use of the environment. This may need to be documented in the form of a TK study that is verifiable to the Review Board in terms of its authenticity, consistency, and reliability.

The question of which form or forms of TK evidence will be required for any particular EIA process, and especially whether new TK research is necessary, will depend on the issues identified and the questions that need to be answered. This appendix outlines some key considerations in preparing new TK research in the form of a TK study.

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A.2 Sources of TK

In some cases, TK for a particular community or region may already be documented, for example through specific TK studies or ongoing community-based environmental or social monitoring programs. If so, relevant TK may already be in the public domain, or at least obtainable with permission from institutional sources such as hunters and trappers associations, 15 cultural institutes, or local or aboriginal governments.

However, these sources may not necessarily address the issues appropriate to a particular EIA process, especially with respect to a specific geographic area of impact or in relation to a particular development description. As a general rule it should be assumed that any major EIA would require new TK research.

Who has TK? What are the right sources? Harvesters, i.e. people hunting, fishing, or gathering on the land, gain much TK by experience over time. The people who process the harvest (often women) also gain much TK, for example about animal condition. Where people do similar things in more or less the same area or circumstances, they add to their personal experience by sharing stories and information. Elders may have accumulated such knowledge over a greater depth of time and variety of circumstances, even though it may not be as current. Elders or others may have specialized knowledge about such matters as medicine, ethics, or spirituality. Keeping in mind that TK is not simply about past or "traditional" practices, women may have particular knowledge relating to the socio-economic effects of development on family and community.

The process of shared and accumulated experience is what validates TK among the people who use it, and some people become recognized within the community as having the most authoritative knowledge about particular subjects. Elders place this knowledge in context and transmit it.

A.3 Sharing/obtaining TK

Although the EIA process seeks to incorporate TK, neither the knowledge holders themselves, nor the organizations that represent them, are compelled to provide it. It is the prerogative of the knowledge holders to share or transmit knowledge, and to determine under what circumstances they wish to do so. However, TK also has a collective or community dimension. It is acquired, reinforced, and transmitted in a group context, not in an isolated manner by each individual. In this sense TK, even though held by individuals and not located in a central repository, is the heritage of the community. The community therefore has a substantial stake in how it is used.

Obtaining TK thus requires a negotiated agreement based on informed consent. The principle of informed consent is well known in research in the social and health sciences, where it is generally required. Research permitting requirements in the NWT also require informed consent at the community level. This means that whoever wants TK will have to advise in advance on the nature and purpose of the

project, how the research will be conducted, and how the information will be used and protected. There may be a need to protect sensitive, site-specific information [*see Rules of Procedure 23 and 24*]. People need to know whether the information they provide is intended to be public, or could otherwise become public, and what would happen if it did become public. Clarification may be needed around copyright in Developer's Assessment Reports, or other reports submitted in the EIA process that make use of TK, and about the implications of placing TK information on the public registry.

As a rule, TK used in Developer's Assessment Reports should be sufficiently general that 16 problems of personal privacy should not arise, but there may be community concerns. There is also the issue of how TK is used, and what some would regard as inappropriate "decontextualization" of TK.

Formal protocols or letters of agreement covering these matters will generally be required in order to conduct original TK research for environmental assessment. Authorizations will likely be required from both the community in which the research is being done, and from the individuals who participate in the research program. It is possible to develop a general template for such agreements, but there may need to be variations depending on the project and on community and regional policies.

Anyone seeking TK from outside the local circle in which it is generated and used will need permission and authority to do so. TK research projects are commonly either initiated by an aboriginal community for its own purposes, in which case it hires its own researcher on its own terms, or it is done as an academic project on the initiative of a university-based researcher who obtains approval for the project from the community. Sometimes these circumstances combine to mutual advantage. Where TK is used in environmental assessment, communities may also do their own research, sometimes paid for by intervener funding or by the development proponent. TK research is thus generally a community-based project to collect and integrate community knowledge, but it requires appropriate research methods and quality standards if it is going to be useful outside the community, and especially for the purposes of public deliberation.

The general pattern is that those who want TK for some purpose outside of the community will need to pay for it, but the community retains control over the design, conduct, and use of the research. The community's contribution to the project is its knowledge and its willing participation in and assistance to the project. This willing participation requires respect and trust between researchers (whether they are from inside or outside the community), participants, and the community as a whole. Undertaking a TK study generally requires the informed consent of both the community, through its authorized representatives, and of the individual participants.

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A.4 Protecting TK information

Informed consent requires clear protocols on data control, data access, and data release. These protocols normally address such matters as:

- conditions of sharing of knowledge (may include provision for payment);
- protecting the privacy of individual TK holders if they want, for example ensuring that information is presented at the aggregate, community level, rather than the individual level;
- how sensitive information will be used and to whom it is made available (implies need for restrictions on access to some forms of TK);
- ownership of TK including copyright and/or protection of "intellectual property rights", where applicable;
- community control of the dissemination and use of TK (both personal, and in aggregated or synthesized form); and
- storage and archiving of TK information to ensure confidentiality.

Balanced against these considerations is the fact that the EIA Process is public and must be transparent. Unless there are overriding concerns about site sensitivity and protection (e.g. the exact location of heritage sites or rare species), or individual privacy concerns, TK submitted for the Review Board's consideration should be available to all parties and to the public, in the complete form in which it is submitted (*see "Rules of Procedure" 23 on federal Access to Information and Privacy legislation, and 24 on filing of confidential information*).

A.5 Funding

Depending on the size and scope of TK to be documented and presented, the funding requirements may be substantial. At the early stages, (scoping, issues identification), little if any funding may be required. Major TK studies are usually commissioned at the Developer's Assessment Report (DAR) stage. Developers normally fund such studies by entering into a contractual arrangement with the affected community. However, developers need assurance that they are funding a product that will be provided to the MVEIRB at the appropriate stage that meets the needs of the MVEIRB, and fulfills these guidelines.

A.6 Documenting TK

This information could consist of:

17. (with values and preferences) the summary of issues identification based on interviews, workshops, meetings.

18. (with knowledge about the environment or the use of the environment) synthesis and interpretation of a formal program of interviews with the appropriate knowledgeable and experienced persons in the community, e.g. elders, harvesters, or others.

The second category may consist of baseline information (or reconstruction of some previous baseline through memory), and involves longer, semi-directed interviews. If done properly, this method enables unrecorded and uninstrumented observations to be accurately reconstructed and, if not quantified, at least calibrated. In both cases, careful attention to research design, interview procedures, reporting format and protocols, study methods, and quality control will produce information consistent with and complementary to scientific data so that both can be used effectively in the EIA process. However done, it must satisfy the Review Board or a Panel by meeting the criteria of these guidelines.

If the collection and use of TK involves new research using these methods, the cost for any single research exercise would generally be in the order of tens or hundreds of thousands of dollars. Actual costs will depend on the complexity of matters to be assessed, the number of persons that need to be interviewed, the scale of the study, and many other factors.

Including the time required for community approvals and informed consent, which depends on establishing a relationship of trust between researcher and community, a significant research program may take several months or even a year.

A TK research project is not necessarily any longer or more expensive than a typical environmental field research program that developers routinely undertake for large projects, and 18 it may help to reduce the need for certain types of scientific research or focus the study more precisely. If begun at the same time as the DAR is commissioned, it should not delay the typical developer's schedule at this stage.

For TK, and particularly knowledge about the environment, to be usable in the EIA process, it must be validated, organized and synthesized to answer particular questions. It needs to be systematically recovered and organized to provide information, not just data. To meet this standard, the normal social scientific considerations and survey methods apply. Without going into detail, current best practice requires:

1) An appropriate target list or sampling frame This is required to ensure completeness or sufficiency of coverage in relation to the research question.

2) An appropriate interview guide The interview guide should include questions on the key issues identified with respect to the development, and ensure that all information is grounded at least in qualitative context, and if possible, details of location and time. Consequently the use of recall aids including maps and community or personal chronologies is essential. Questioning should always ascertain

whether category 1 TK is based on observation or inference, and if the latter, whether there are or might be other explanations, and why.

3) Skilled interviewers In addition to having basic interviewing skills and techniques, interviewers must be familiar with local environmental terminology and place names, and with local resource use practices and their changes over time. Sufficient local knowledge on the part of the interviewer is a first check on authenticity and reliability of the information provided. Interviewers must be able to probe responses for clarification and amplification. Facility in the local language may be required, and depending on the complexity of the project, interviewers should be able to conduct interviews using maps and audio recorders. If audiotapes are used, transcriptions and if necessary translations will be required.

4) Effective analysis, synthesis, and integration of information, including assessment of variation in TK At this point, the TK study has only assembled raw data - the equivalent, in effect, of scientific field notes or observation logs. In both cases, the data need to be organized and analyzed, to be useful for the EIA process. A TK study should thus include the equivalent of a "results and discussion" that would normally be found in a scientific study, and the TK holders should be part of the analytic and interpretive process. The data must be assessed for inconsistencies and omissions, organized around particular questions or issues, and analyzed and interpreted for what they say about those issues. TK research should, so far as is possible, incorporate methods of crosschecking and independent verification. It is also necessary to undertake verification of preliminary results in the community of research. For a study to be credible in the community, it is essential to have interviewed the right people, to have gotten their information right, and to have involved the TK holders in the interpretation of the data. The wrong way to use TK in the EIA process is to use isolated, unverified, and decontextualized anecdotes. If TK is treated merely as a random collection of statements, it may appear to both Review Board or Panel members, and to other participants, as no more than anecdotes which, although interesting, are of unknown reliability and generalizability, and therefore of limited if any use for prediction and assessment.

These methods, along with the required consultation, informed consent, and study protocols described in this appendix, constitute what is sometimes referred to as Participatory Action Research (PAR).

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Gartner Lee