

CUMULATIVE ENVIRONMENTAL EFFECTS AND
SCREENING UNDER THE CANADIAN
ENVIRONMENTAL ASSESSMENT ACT

WORKSHOP PROCEEDINGS
DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
January 28-29, 1993
Vancouver, British Columbia

Prepared For:
The Federal **Environmental** Assessment Review **Office and**
The **Environmental** Assessment Branch, Environment **Canada**

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1. INTRODUCTION

The Canadian Environmental Assessment Act received Royal Assent on June 23, 1992, and will be proclaimed in 1993. Amongst other things, the Act requires that:

“Every screening or comprehensive study of a project and every mediation or assessment by a review panel shall include a consideration of the following factors:

*(a) the environmental effects of the **project...and** any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;*

*(b) the significance of the effects **referred** to in paragraph (a); ”*
(section 16(1)).

The Federal Environmental Assessment Review Office (FEARO) is currently preparing a Procedural Manual which provides guidance on how to conduct environmental assessments under the Act, including the assessment of cumulative environmental effects. As well, a more detailed Reference Guide on addressing cumulative environmental effects has been drafted as a supporting document to the Manual. However, FEARO recognises that approaches and methods for assessing cumulative environmental effects are evolving rapidly and that any guidance offered should reflect best current practice. The Procedural Manual and the Reference Guide will be updated as new information becomes available.

To complement its work to date and to provide the best practical advice possible, FEARO in cooperation with other federal departments and agencies is examining how cumulative environmental effects can be considered in screenings of projects during federal environmental assessments. The departments and agencies that are participating in this initiative are:

- Environment Canada;

- Transport Canada;
- The National Capital Commission (NCC);
- The Canadian International Development Agency (CIDA);
- The Department of Indian Affairs and Northern Development;
- Fisheries and Oceans; and
- Energy, Mines and Resources.

The workshops focus on the assessment of cumulative environmental effects at the screening level of the environmental assessment process. Screening is the most routine of the four tracks of the environmental assessment process (the others are comprehensive study, mediation and panel review) and is required for most smaller projects or projects that are thought to be less likely to cause any significant adverse environmental effects. Class screening, in which the environmental effects of a class of projects is assessed, is part of the screening track. The vast majority of federal environmental assessments (more than 95%) are conducted at this level. Also, **smaller** projects that are subject to screening can be important contributors to cumulative environmental effects. In addition, there are special issues associated with addressing the cumulative environmental effects of small projects as opposed to larger ones.

Each participating department or agency selected several case studies of projects that have been subjected to screening under the Environmental Assessment and Review (EARP) Guidelines Order (1984). For each case study, brief written background materials are prepared (see Chapter 2). The case studies are then presented at a series of 1-2 day workshops with staff from the department or agency involved. The case studies are used as a basis for discussing how the cumulative environmental effects of projects could be addressed in screening.

There is at least one workshop being held by each participating department or agency. The Department of Indian Affairs and Northern Development (DIAND) was the sixth department to hold a workshop. Two departments (i.e., Environment Canada and the Department of Fisheries and Oceans) are holding several workshops in different regions of the country. The Schedule of Workshops is shown in Appendix A.

This report summarises the results of the DXAND workshop, held in Vancouver on January 28-29, 1993. It is intended to summarise the discussions, rather than to provide detailed minutes. The agenda and list of participants for the DIAND workshop are shown in Appendix B. As well as this report, a set of 'consolidated proceedings' will be prepared.

The final 'consolidated proceedings' will be distributed to all participants from all workshops in March 1993. As well, a final interdepartmental workshop will be organised to discuss common themes in assessing cumulative environmental effects in screenings, as well as inter-departmental collaboration and co-operation on this subject. This will probably be in April or May 1993. Subsequently, **FEARO's** Procedural Manual and Reference Guide will be revised to take account of the outcome of this initiative.

2. CASE STUDIES

Each department or agency participating in this initiative was asked to select several recent examples of projects subjected to screening under the EARP Guidelines Order (1984). In most cases, these case studies represented the range of different types of projects screened by the department or agency, as well as different-sized projects and projects in different types of ecosystems.

For each case study, brief written background materials were prepared summarising:

- The project;
- The project's environmental effects;

- The screening decision reached; and
- How, and to what extent could any cumulative environmental effects be addressed.

To assist in the preparation of the background materials and to familiarise the workshop participants with the subject of assessing cumulative environmental effects in environmental assessments, copies of a background paper on cumulative environmental effects and the draft Reference Guide prepared by FEAR0 were distributed to all workshop participants in advance.

The following case studies were presented at the DIAND workshop:

- Base metal mining and milling with acid mine drainage concerns;
- Izok Lake base metal mine, including icebreaking shipping in Lancaster Sound;
- **Fuelwood** harvesting in the Takhini Bum Area;
- Timber harvesting near Watson Lake; and
- Placer mining - Dawson local area assessment.

Base Metal Mining; and Milling with Acid Mine Drainage Concerns

This case study involved examining the cumulative environmental effects of two, and possibly three separate projects on the Pelly River watershed. These are the Faro open pit mine and development of the Grum and Vangorda lead-zinc deposits. The projects have been screened separately under the EARP Guidelines Order.

The screening of these projects considered the cumulative environmental effects on surface water quality and fisheries in the Rose and Vangorda Creeks. Water quality models were used to predict downstream water quality and to assess the effects on aquatic resources of various mitigation/decommissioning options. The cumulative environmental effects on Pelly

River water quality and aquatic resources, as well as the effects on subsistence and traditional use were not considered.

This case study raised several interesting issues including.

- There is a shortage of information on ambient water quality in the Pelly River. The only monitoring being done is compliance monitoring of the effluent. This is insufficient to determine baseline environmental conditions comprehensively;
- While it is often relatively straightforward to identify the cumulative environmental effects of a project, it is much more difficult to set the geographic boundaries for an assessment. In this case, should the environmental assessment be limited to examining effects in the Rose and Vangorda Creeks, or should the scope be broadened to include the Pelly River (downstream)? There is a need for more specific guidance on setting geographic boundaries;
- There is a need to clarify the role of First Nations in federal environmental assessments. First Nations concerns are seen as government concerns, not public concerns. How does this fit with the new Act?
- There is a need for more resource planning and management in the North. Land use planning, on its own, may not be sufficient because in the past it has not included the effects of development on the environment as important considerations; and
- Approximately one-third of all the jobs in the area depend on mining/milling in the Pelly River **watershed**, yet any additional projects on this watershed will affect **traditional** activities by native peoples and therefore cause significant adverse cumulative environmental effects in native communities (especially socio-economic). There is a need to balance economic growth and development with the likely adverse cumulative environmental effects.

Izok Lake Base Metal Mine, Including Icebreaking Shipping in Lancaster Sound

A base metal mine is being proposed at Izok Lake (NWT). The proposal is currently under review by the NWT Regional Environmental Review Committee (RERC). The proposal to develop the Izok deposit, in addition to the usual camp, airport, infrastructure etc., includes building an access road (winter or all weather) to the arctic coast near Coppermine, a marine terminal and ice breaking ore carrier activity.

The Izok Lake project could be the key to future development in the area. The development of a transportation link to shipping from the arctic coast would probably make other nearby deposits economically viable.

Following the presentation of this case study, discussion focused on several issues including:

- In this case, the project has been defined very comprehensively as including the mine, as well as construction of the road and the port and transportation and shipping activities. This should facilitate the assessment of cumulative environmental effects;
- The geographic boundaries were defined using nested study areas. They were based on the limit of detection for specific identified environmental effects;
- This project clearly has a lot of ‘growth inducing potential’. How could this be taken into account in the environmental assessment? Could a project not be permitted to proceed- because of its ‘growth inducing potential’?
- There is no land use plan for this area and the environmental assessment cannot be delayed for land use planning to occur, even though such a plan would be very helpful; and
- Under the new Act, the responsible authority is accountable for ensuring the implementation of mitigation measures. Are there any sanctions available if a proponent does not implement the mitigation measures recommended or would the responsible authority have to do it? In some cases, it may be better to include mitigation measures in regulatory approvals (e.g., permits or licenses) this makes them legally binding.

Fuelwood Harvesting in the Takhini Burn Area

Four individuals submitted private timber applications for fuelwood harvesting between September 14 and November 1, 1992. All permits were in the Takhini burn area. Screening reports were prepared for the individual applications. The cumulative environmental effects of these four applications were not explicitly considered.

The cumulative environmental effects issues involved that could have been addressed include:

- The cumulative loss of fuelwood around Whitehorse;
- The cumulative environmental effects of accessing fuelwood;
- The projected costs of reforestation around Whitehorse; and
- The cumulative effects on health of encouraging wood burning.

The presenter of the case study recommended that the cumulative environmental effects of fuelwood harvesting could be addressed by preparing a harvest management plan for the area that would include policies to deal with permits for personal and commercial use, as well as the use of green fuelwood.

Other issues discussed following this case study included:

- The possible use of a class screening report to facilitate screenings for individual permit applications;
- Any requirements for addressing **cumulative** environmental effects should be very simple and straightforward because permits are requested and issued 'on the spot' in only a few minutes;
- The scoping issue - the geographic boundary could be defined as the whole harvested area;
- Mitigation measures would include a buffer zone along the river; and

- There is a need for clarification regarding the liability of Resource Management Officers (RMO) and others who sign screening reports. This matter is discussed in more detail in Section 3 of this report.

Timber Harvesting Near Watson Lake

This case study focussed on a timber harvesting operation near Watson Lake in the Yukon Territory. The area has been logged more or less **continually** since 1969 under a Timber Harvesting Agreement (THA) between DIAND and several successive companies. The most recent THA was agreed to in November 1989 and the project was screened at a Level II assessment. (It should be noted that there are three ‘levels’ of environmental assessment in DIAND, Levels I, II and III. Level I is equivalent to a screening Level II to an ‘initial environmental evaluation’ and Level III to a public review). This THA is in effect for ten years, but there is a requirement for two ‘five year’ operating plans, as well as an annual operating plan. Land use permits are also issued for the THA. These relate mainly to major access roads, landings, cut block access trails, sort yards and campsites. Land use permits are subjected to a Level I screening.

The cumulative environmental effects associated with timber harvesting were partially considered. As this was a long-term agreement, the cumulative environmental effects of several years of timber harvesting were considered, however, the cumulative effects of ten years of the land use activities associated with timber harvesting were not considered, as these were unknown at the time. As a result, a transportation infrastructure has developed with only minimal planning. The ‘growth inducing potential’ of these roads has not been addressed, neither have the cumulative environmental effects on wildlife and local trappers. This concern could be addressed by ensuring that the first five year plan includes a five year land use plan, with mitigation measures.

Discussion following this case study focused on the issue of screening long-term plans. When the project to be assessed consists of a long-term plan, it is inevitable that some things are not addressed, and/or that circumstances change over time. Is there any way to re-do the

screening, either partially or completely? After some discussion, it was agreed that if the whole plan had been subjected to an environmental assessment only the amendment or revision could be re-screened.

Placer Mining - Dawson Local Area Assessment

Screenings were undertaken for six placer mining proposals located within or close to Dawson City. Several environmental and socio-economic issues were raised by First Nations, the City of Dawson and the general public at hearings related to the screenings and/or to the Yukon Territorial Water Board water license applications. These issues were similar for all six placer proposals.

As a result, DIAND initiated a local area assessment to:

- Further assess the common issues; and
- Assist in the EARP screenings.

The local area assessment was not an assessment of all cumulative environmental effects. It was confined to the mining areas and to the issues related to placer mining. It did not consider the effects of placer operations further upstream on the Klondike River or those on its tributaries. However, several cumulative environmental effects of placer operations can be identified. These include:

- Effects on water quality, including sediment;
- Sewage and waste disposal;
- Water use (quantity);
- Land use (erosion); and
- Heritage resources.

The presentation on this case study described a stream classification system being used to control sediment releases from placer mining operations. In the system, streams with fishery resources are classified and water quality objectives established for added suspended sediment. The water quality objectives are based on the quality of the fishery habitat and the utilisation of the resource. There are four classifications:

- Streams with salmon spawning habitat - 0 added suspended solids;
- Streams with salmon rearing habitat - 0.2 ml/l added suspended solids;
- Streams with habitat for other freshwater fish - 1-1.2 ml/l added suspended solids; and
- Streams with fish with little or no utilisation and streams with no fish - 5ml/l added suspended solids.

These water quality objectives were established by the Department of Fisheries and Oceans (DFO). They are now being used to control sediment releases of individual placer mining operations, through their water licenses. However, the number of placer operations, the volumes of sediment produced and the patterns of sediment release vary a lot. Thus, sediment releases are not constant over time.

Discussion following this case study focused on the use of the water quality objectives. Even with these objectives, there are likely to be some cumulative environmental effects on the fisheries from placer mining. Since DFO developed the objectives, but they are being used in water licenses issued and screened by DIAND, who is responsible for determining the cumulative effects on fisheries, DFO or DIAND? The relationship between the 'no net loss' policy established in the Fisheries Act and the new Act should be clarified.

3. ISSUES

During the workshop, the participants identified several issues related to addressing cumulative environmental effects in screenings conducted under the new Canadian Environmental Assessment Act. These included:

- Jurisdictional issues;
- Responsibility for addressing cumulative environmental effects in screening;
- Boundaries; and
- Determining whether the project is likely to cause significant adverse cumulative environmental effects.

These are discussed in more detail below.

Jurisdictional Issues

DIAND is responsible for issuing licenses and permits for many activities including:

- Activities affecting land use;
- Mining; and
- Timber harvesting.

As well, water rights permits are issued by the territorial water boards. Indeed, DIAND is the regulatory approvals authority for most activities in the North. Applications for licenses and permits are a regulatory trigger for a federal environmental assessment. Other triggers **include** providing funds for a project and if a project is to be located on Crown lands. Conditions can be attached to permits and licenses.

At present, it is not clear how the new Act will ‘mesh’ with **DIAND's** regulatory approvals processes. For example, to what extent can requirements to implement mitigation measures

for cumulative environmental effects be included as a condition of a permit or license? Since there is nothing in the Act that requires proponents to implement mitigation measures, conditions attached to regulatory permits and licenses can be used as a means of ensuring implementation.

The workshop participants agreed that clarification is needed regarding how the new Act can be integrated into DIAND's existing regulatory approvals mechanisms, so as to protect the environment better. While the new Act is not 'environmental protection' legislation in itself, it will be possible to use it in conjunction with existing regulatory mechanisms to protect and enhance environmental quality. DIAND should consider how this can be done in more detail.

It was also noted that because in many cases DIAND is the regulatory approvals authority, it has to work with only a few government agencies and departments, especially in the North. This is in contrast to, for example, the National Capital Commission which has to work with 39 area municipalities, two regional governments, two provincial governments and numerous other federal departments and agencies. While this is likely to facilitate better assessments of cumulative environmental effects, the large number of applications for permits and licenses for individually small, but cumulatively significant activities that the Department has to deal with makes it harder to assess cumulative environmental effects comprehensively.

It may be easier to address cumulative environmental effects in Level II environmental assessments where guidelines exist. These guidelines were established by the RERC, which also reviews the completed assessments. RERC consists of representatives from all relevant government departments and agencies.

Responsibility for Addressing Cumulative Environmental Effects in Screenings

The workshop participants discussed several issues associated with responsibility for addressing cumulative environmental effects. For Level I environmental assessments it is likely that DIAND, as the responsible authority, will be responsible for addressing cumulative environmental effects. It would be unreasonable to expect proponents of small projects to

assume this responsibility. For Level 11 and III environmental assessments, the proponent can be expected to address cumulative environmental effects. However, it is likely that most proponents will want to limit the scope of the cumulative effects assessment, for example by limiting their consideration to other projects and activities within the same resource sector. Will this constitute an adequate assessment of cumulative environmental effects? A related issue is that proponents may attempt to limit the scope of the project to be assessed.

The workshop participants were also concerned about their accountability for the adequacy of all types of environmental assessments. When signing officers sign environmental assessment reports, are they accountable for the assessment of cumulative environmental effects? In other words, does a signature imply that an adequate assessment of cumulative environmental effects has been conducted? What if the adequacy of the assessment is challenged? Who is responsible, the signing officer, her/his managers or the Minister of Indian Affairs and Northern Development? This matter requires clarification from FEARO. If signing officers are deemed to be entirely responsible for the adequacy of assessments of cumulative environmental effects, then they may become reluctant to sign some assessment reports.

Another point raised was the possibility of using class screening reports as a means of identifying the types of cumulative environmental effects associated with routine, relatively small projects. Many workshop participants were of the opinion that although this would be nice in theory, in practice it is unlikely that DIAND will be able to prepare many class screening reports because it would first be necessary to develop appropriate class screening methods for the diversity of projects handled by DIAND. Method development and preparation of class screening reports would require resources that are already fully committed. As well, the requirement to gazette class screening reports makes the process of preparing them somewhat onerous.

Boundaries

Throughout the workshop there was a lot of discussion about how to set the boundaries for assessments of cumulative environmental effects. Participants were generally of the opinion that they could identify the cumulative environmental effects of a project, but that it would be much more difficult to set the boundaries for the identified effects. Different geographic boundaries may be appropriate for different types of cumulative environmental effects. One suggestion was to set the geographic boundaries at the limit of detection for the particular effect involved. However, for relatively small projects (e.g., Level I), where screenings must be done quickly, a simpler approach may be necessary. Guidance is needed on appropriate boundaries to be used for different types of projects. The following boundaries were discussed:

- Forest and Timber Harvesting - use the boundaries of the forest management unit (except that only a few units have forest management plans)
- Land Use Activities - use the district boundaries. There are ten districts in the Yukon (but these districts vary in size - some are very large)
- Mining Activities - for water-based activities, use the **sub-**watershed or the watershed boundaries. Boundaries for land-based mining are also needed.

It is also important to establish temporal boundaries. While long time frames allow a more comprehensive assessment of past and future cumulative environmental effects, there can be a loss of specificity in terms of identifying and assessing small, but important cumulative environmental effects.

Whatever boundaries are set, it is important to realise that they will influence the determination of significance. An adverse cumulative environmental effect may be locally significant but not significant in the larger context. Thus, it is important to consider the

temporal and geographic boundaries established for an assessment of cumulative environmental effects very carefully

Determining Whether a Project is Likely to Cause Significant Adverse Cumulative Environmental Effects

The question of how to determine whether a project is likely to cause significant adverse cumulative environmental effects was discussed by the workshop participants. Specifically, can a responsible authority not allow a project to proceed if it determines that a project is likely to cause significant adverse cumulative environmental effects, in terms of its 'growth inducing potential'. In other words, does the Act allow a responsible authority to determine that a project is likely to cause significant adverse cumulative environmental effects on the basis of its potential to cause or induce other developments? If the future projects and activities considered are limited to those that have been approved (as described in the draft Reference Guide) then a project's 'growth inducing potential' would not be sufficient grounds not to permit it to proceed. However, this is a very narrow view of 'future projects and activities' and would not facilitate comprehensive assessments of cumulative environmental effects. Clarification is needed from FEAR0 on this matter. This also relates to the matter of responsibility for ensuring an adequate assessment of cumulative environmental effects discussed above.

4. STRATEGIES, SUGGESTIONS AND RECOMMENDATIONS

The workshop participants proposed several strategies, suggestions and recommendations for DIAND, FEAR0 and Environment Canada. These are discussed below.

4.1 DIAND

- DIAND should consider examining the implications of the new Act in general, and the requirement to address cumulative environmental effects in particular, for its budgets, operations and activities;

- DIAND should consider developing ‘standard operating procedures’ (SOPs) to facilitate implementation of the new Act, especially for Level I assessments. These SOPs should be consistent with the Procedural Manual and should take into account SOPs, or their equivalents, being prepared by other federal departments and agencies.
- DIAND should consider the training needs within the Department, in relation to the implementation of the new Act. In particular, the feasibility of holding regional training workshops should be considered.
- DIAND, in collaboration with FEAR0 and Environment Canada, should consult with, and provide guidance to, private proponents on the requirement to address cumulative environmental effects in the new Act.
- DIAND should consider the liability/accountability of signing officers in relation to the adequacy of assessments of cumulative environmental effects.
- DIAND should consider identifying ‘development hot spots’ where there are more likely to be significant adverse cumulative environmental effects. Resource/land use management plans could be prepared for them that would facilitate assessment of cumulative environmental effects in screening individual projects.
- DIAND should consider the effects of the devolution of power in the territories on ensuring adequate assessments of cumulative environmental effects.
- DIAND should consider the extent to which conditions attached to licenses and/or permit approvals can be used as a means of ensuring the implementation of mitigation measures for cumulative environmental effects that have been identified in a screening.

4.2 FEAR0 AND ENVIRONMENT CANADA

- FEAR0 in collaboration with DIAND and Environment Canada, should consult with, and provide guidance to, private proponents on the requirement to address cumulative environmental effects in the new Act..

- FEAR0 and Environment Canada should consider providing more training sessions on the requirements of the new Act. They should be targeted at the **operational** and managerial levels. At least some of each should be regional.
- FEAR0 should consider delaying **proclamation** of the Act until federal departments and agencies are better able to implement the requirement to address cumulative environmental effects.
- FEAR0 and Environment Canada should facilitate inter-departmental information exchange about **SOPs** (or their equivalents) for addressing cumulative environmental effects in environmental assessments.
- FEAR0 and Environment Canada should consider establishing a mechanism for feedback on assessments of cumulative environmental effects and other matters from federal departments and agencies that could be used to update and revise the Procedural Manual and the Reference Guides.
- FEAR0 and Environment Canada should consider developing additional mechanisms to link environmental assessment practitioners in different federal departments and agencies. More inter-departmental working level links are needed, such as the regional inter-departmental environmental assessment committees.
- Environment Canada should consider taking into account the needs of environmental assessment practitioners for baseline information on cumulative environmental effects when it establishes environmental monitoring programs or synthesises environmental information e.g., State of the Environment Reporting, and other Green Plan initiatives.

APPENDIX A

SCHEDULE OF WORKSHOPS

<u>DEPARTMENT</u>	<u>LOCATION</u>	<u>DATE</u>
Transport Canada	Ottawa	November 10
National Capital Commission	Ottawa	November 26-27
Canadian International Development Agency	Ottawa	December 8-9
Department of Fisheries and Oceans	Ottawa	January 12
Environment Canada/Department of Fisheries and Oceans	Dartmouth	January 14-15
Environment Canada/Department of Fisheries and Oceans	Vancouver	January 25-26
Department of Indian Affairs and Northern Development	Vancouver	January 28-29
Energy, Mines and Resources	Ottawa	February 4-5
Environment Canada and other federal departments and agencies	Quebec	February 15-16
Environment Canada/Department of Fisheries and Oceans	Burlington	February 18-19

APPENDIX B
DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
WORKSHOP AGENDA AND LIST OF PARTICIPANTS

WORKSHOP AGENDA
CUMULATIVE ENVIRONMENTAL EFFECTS AND SCREENING UNDER
THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

Thursday, January 28, 1993

8:30 am - 4:30 pm

Friday, January 29, 1993

8:30 am - 11:30 am

Department of Indian Affairs and Northern Development
1550 Albemi Street, 5th Floor
Vancouver, British Columbia

DAY ONE

- | | |
|------------|--|
| 8:30 am | Welcome and Introductions |
| 8:45 am | Update on Canadian Environmental Assessment Act (CEAA) <ul style="list-style-type: none">• Regulations• Procedural Manual |
| 9:15 am | Overview of this Initiative and Purpose of Workshop |
| 9:30 am | Cumulative Environmental Effects and the CEAA |
| 10:20 am | Review of Previous Workshops |
| 10:40 am | Coffee |
| 11:00 am | Case Study 1: Base Metal Mining and Milling with Acid Mine Drainage Concerns |
| 12:00 noon | Discussion of Case Study 1 |
| 12:30 pm | Lunch |
| 1:30 pm | Case Study 2: Izok Lake Base Metal Mine, Including Icebreaking Shipping in Lancaster Sound |
| 2:20 pm | Discussion of Case Study 2 |

2:40 pm Case Study 3: Fuelwood Harvesting in the Takhini Burn Area
3:00 pm Discussion of Case Study 3
3:15 pm Case Study 4: Timber Harvesting near Watson Lake
3:45 pm Discussion of Case Study 4
4:00 pm Coffee
4:10 pm Case Study 5: Placer Mining - Dawson Local Area Assessment
4:40 pm Discussion of Case Study 5
5:00 pm Adjourn

DAY TWO

8:30 am Procedures and Methods for Assessing Cumulative Environmental Effects
 • Setting Boundaries
 • Examining Interactions
 • Identifying Past and Present Projects
9:00 am Discussion of Procedures and Methods and Future Directions
10:15 am Coffee
10:30 am Recommendations to DIAND, FEAR0 and Environment Canada
11:30 am Adjourn

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APPENDIX C
DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
CASE STUDIES

1. BASE METAL MINING AND MILLING WITH ACID MINE DRAINAGE CONCERNS

This case study includes two and possibly three separate projects. Each of the projects has been screened under the EARP Guidelines Order as individual projects. The projects involve base metal mining and milling operations **with** acid mine drainage concerns.

BACKGROUND

Curragh Resources owns and operates the Faro open pit mine and concentrator near the community of Faro in the Yukon Territory. Curragh is mining additional ore bodies on the Vangorda Plateau located approximately 13 kilometres southeast of the Faro Mine. Development of the Vangorda and Grum deposits will supplement and eventually replace production from the Faro Pit and will extend project life by 13 years.

The Faro mine tailings facilities are located in the Rose Creek valley. The facilities consist of a number of dams and impoundments totalling about 250 hectares. Tailings from Faro and Vangorda operations were deposited within the Rose Creek Down Valley tailings system and are now being placed within the mined out Faro pit.

The Faro operations are located in the vicinity of Rose Creek, a tributary of Anvil Creek, which flows into the Pelly River. Vangorda operations are located at the headwaters of Vangorda Creek, a tributary to the Pelly River. See maps for site locations.

Other existing or potential mine developments on the Pelly River watershed include a gold mine on Ketz River, and the Swim lead-zinc deposit on Blind Creek. The community of Ross River (population 300) is also located on the Pelly River watershed.

Vangorda Proposal

The Vangorda proposal involves the development of the Grum and Vangorda lead-zinc deposits, with two open pits and waste dumps, as well as milling ore at Faro concentrator and depositing the tailings at the Faro mine. There are acid mine drainage concerns with sulphide rich waste rock and open pits. Vangorda Creek diversion. EARP screening for new project. Permits - water license, surface leases.

Faro Tailings Decommissioning Proposal

This proposal involves decommissioning the Rose Creek Down Valley tailings facility by removing and reprocessing two thirds of the tailings for base metal recovery, pumping secondary tailings to Faro pit and eventually mix with water. Rose Creek Valley submerged under water cover with dam. Acid mine drainage concerns. Existing mine operation since 1969. Overall mine complex decommissioning under development. EARP screening to incorporate tailings decommissioning plan into existing water license.

SCREENING DECISION

Vangorda Project Characteristics/Effects

- **Vangorda/Grum** open pits, waste rock dumps have the potential to generate acid mine drainage. Detailed mitigation for pits, dumps, including company commitment to treat seepages after decommissioning to control acid mine drainage. Security required. Consideration of long term impacts of metal rich waters seeping into local Vangorda Creek receiving waters and impacting on downstream water quality and aquatic resources. Town of Faro located downstream. Impacts on drinking water considered. Salmon rearing habitat in lower Vangorda Creek and spawning in Pelly River. Chronic toxicity of metals to salmon to be researched.
- Stability of pits, dumps containment structures considered in structure design.
- Existing wildlife habitat present with furbearer use. Impacts on sheep habitat considered, along with effects of metals on wildlife health.

- Socio-economic considerations addressed.
- Screening determination 12(c).

Faro Tailings Decommissioning Proposal Characteristics/Effects

- Significant volume of potentially acid generating tailings deposited within Rose Creek valley. Large physical containment structures with Rose Creek diverted around tailings facility. Risk analysis of structural failure. Long term impacts of metal rich seepage on local surface and groundwaters with potential impacts on downstream water quality and fisheries resources.
- Overall Faro mine complex lacks a comprehensive and integrated decommissioning plan. Plan under development. Land use and restoration concerns to be addressed.
- Socio-economic concerns with native resource use loss.
- Screening determination 12(d).

CUMULATIVE EFFECTS CONSIDERED

Each project was reviewed and assessed separately. Cumulative effects to surface water quality and fisheries resources within each watershed (Rose and Vangorda Creeks) considered. Water quality models used to predict downstream water quality and assess impacts on aquatic resources of mitigation/decommissioning options considered. Inputs to models based on field studies and lab testwork. Selection of mitigation based on impact assessments.

The cumulative effects on Pelly River water quality/aquatic resources, subsistence and traditional use was not addressed. Need to note existing and potential mine developments on other rivers within Pelly River watershed.

ISSUE SUMMARY

Key issues regarding both projects is the effect of acid mine drainage on water quality, and fisheries resources of both the Vangorda and Rose Creek drainages and ultimately the Pelly

River. Physical stability concerns with dams, pits, and waste dumps during operations and at decommissioning. Socio-economic concerns with potential loss of fisheries, wildlife resources due to development.

Note that each project addressed separately, therefore the potential cumulative effects on Pelly River water quality, fisheries resources and local effects on native and recreational use of other resources in the area were not assessed together.

Questions

Should existing projects be considered when on a particular watershed trying to assess cumulative effects of a new project?

How are cumulative effects addressed for existing projects that occasionally require EARP screening?

2. IZOK LAKE BASE METAL MINE, INCLUDING ICEBREAKING SHIPPING IN LANCASTER SOUND

BACKGROUND

Izok Lake is the location of a base metal mine proposal under review by the NWT Regional Environmental Review Committee (RERC). The ore body is located at 65°39'N and 112°49'W, approximately mid-way between Yellowknife and the arctic coast. The ore body is in the centre of the Slave geological province. The proposal to develop the Izok deposit, in addition to the usual camp, airport, etc. infrastructure, includes building an access road (winter or all weather) to the arctic coast near Coppermine, a marine terminal and ice breaking ore carrier activity.

The Izok Lake project could be the key to future development of the entire Slave geological province which has several other identified ore bodies (gold and base metal) and major diamond exploration activity.

The development of a transportation link to shipping from the arctic coast may make other deposits economically viable. It is entirely possible that in the next twenty years, the Slave province will have several base metal and gold mines linked by winter and all season roads to a marine terminal on the arctic coast, hydro development on the Coppermine and/or **Burnside** Rivers to provide power, and an all season road to Yellowknife to the diamond fields, to Izok Lake and then to the coast. This would constitute a major change, occurring in increments, in the character and land use of this area.

Additional Factors

Land Claims:

This project falls within the Nunavut Settlement Region. The Nunavut Agreement provides for wildlife and impact management boards that will be responsible for environmental assessment in the claim area. The boards should be activated within 6 months to 2 years.

Land Use Planning:

A plan is not in place for the Kitikmeot region although some preliminary work has been done. A Nunavut Planning Commission is in place but it has limited funding. It is anticipated that a land use plan for the area will be developed with the implementation of the Nunavut Agreement. The plan probably won't be developed before the Izok mine and infrastructure is in place unless TFN (the Nunavut political organization) blocks the Izok project until the land use plan is completed.

SCREENING DECISION

The project and related infrastructure is under review by NWT RERC. NWT RERC is preparing IEE Guidelines.

CUMULATIVE EFFECTS

The review in progress addresses all proposed activity (mine, road, port and marine **transportation**) as one project. Aspects of the proposal (e.g. increased shipping in the arctic) is to be addressed **cumulatively** in relation to existing and proposed shipping.

SUMMARY

What can we do to address the triggering or growth inducing aspect of this project?

Should we request the proponent to monitor long term ecosystem health and social health indicators compatible with State of the Environment reporting variables? What are some appropriate indicators for this monitoring?

LANCASTER SOUND ICEBREAKER TRAFFIC

BACKGROUND

The Izok Lake mineral development proposal in the Kitikmeot region of the NWT will require icebreaking shipping of ore concentrate and resupply. The route to eastern markets and suppliers is via Lancaster Sound. At production levels this will entail 16 to 20 (8-10 round trips) per year. Existing icebreaking, to service **Nanasivik** and **Polaris** mines, is 1 or 2 round trips per year.

Lancaster Sound is a highly productive marine ecosystem that supports the harvest of marine mammals by the residents of Pond Inlet and Arctic Bay, is home to a resident population of ringed seal and polar bear, is a summering area for beluga, narwhal and **bowhead** whale, and is a migration route for populations of **bowhead**, narwhal, beluga and harp seals in the spring and fall. The **bowhead** is an endangered species (Appendix I of CITES). In the spring, an ice edge (ice arch) extends from the south side to the north side of Lancaster Sound. This ice edge temporarily stops the westward migration of all the central arctic beluga, narwhal, **bowhead**, etc. until the ice edge breaks up. The migrating marine mammals accumulate in high densities and are hunted from the ice edge.

SCREENING DECISION

This activity is under review by the NWT Regional Environmental Review Committee (RERC) as part of the review of the Izok Lake proposal. RERC is currently drafting IEE Guidelines.

The effects of ship traffic and ice breaking in Lancaster Sound have been addressed in previous reviews; the MV Arctic (Nanasivik and Polaris mine supply and ore carrier), the Arctic pilot project (LNG icebreakers), and the Canadian Coast Guard Polar 8 ice breakers. The Arctic Pilot Project and the Polar 8 were cancelled at the IEE stage and an EARP review was not completed.

The main concerns that were identified in the early stages of review are:

- The effects of ship noise on marine mammals;
- The **ship** track as a barrier to travel on ice;
- The destruction (by squishing) of seals; and
- The possible change in the pattern and timing of ice sheet breakup because of ice breaking.

The Arctic Pilot Project stated that the effects of ice breaking was unknown and recommended that a low level of shipping (i.d., one or two icebreaking transits per year by the MV Arctic) be allowed to provide an opportunity to study the effects before more frequent shipping was permitted.

The effects of the **MV** Arctic have been studied, however, these studies have not addressed all the concerns.

1. Ship noise does affect the behaviour of bowhead whale, narwhal and beluga at the ice edge. The meaning of the observed behavioural changes (fleeing and vacation of the area) and the significance of the impact remain unknown.
2. The ship track usually refreezes (except when transited in warm weather) and is crossable by snowmachine according to proponents, however, Inuit in Arctic Bay have encountered difficulties and there is some level of concern. This concern is likely mitigable with a residual impact in some weather conditions.
3. A few squished seals are considered insignificant at the population level. The increased roughness of a refrozen ship track may improve seal habitat.
4. The break-up of the ice sheet in **spring** follows a somewhat predictable pattern but the timing is variable and unpredictable from year to year. Break-up is strongly Influenced by the pattern and timing of freeze-up and by the spring wind direction. Studies of icebreaking activity on the break-up pat-tern in Lancaster Sound have not been able to predict annual break-up let alone identify icebreaker induced changes in break-up. Factors influencing the effect of a ship track on break-up are: how strongly the ice refreezes and knits itself together and the geometry of the ship track in relation to the ice sheet. The proponent (Canarctic Shipping) suggests icebreaking may cause the ice to break up a few days early. It would seem that although no dramatic changes have been observed in the ice regimes, the effects of ice breaking are still largely unknown.

Mitigation measures that address the above concerns at the current shipping activity levels include:

- No shipping when marine mammals congregate at the ice edge in spring (approximately one month);
- No ice breaking in areas traversed by Inuit when air temperature is above 0°C (same time as above); and
- No shipping when the ice does not refreeze (as above) and navigational manoeuvres when **entering** the ice sheet cause the ice to interlock like a puzzle.

The above mitigation measures are feasible, however, a restricted shipping window may create the need for more ships to be built to meet the shipping needs.

CUMULATIVE EFFECTS

Canarctic Shipping, industry, some communities, some government agencies and the public have come to consider the existing shipping regime, that includes shipping at sensitive times, as operational, not experimental as suggested in the Arctic Pilot Project. The proponent proposes an increase in this activity. Many of the effects are unknown. Options include:

1. Closing sensitive window to all shipping.
2. Closing sensitive window to new shipping.
3. Permitting increased shipping and study and monitor effects.
4. ???

3. FUELWOOD HARVESTING IN THE TAISHINI BURN AREA

BACKGROUND

Four individuals submitted timber applications for **fuelwood** harvesting (360m³ per permit) between the periods of September **14** to November **1, 1992**. All permits were in the Takhini bum area and screening reports resulted in 12(d) decisions.

SCREENING DECISION

Issues impacting the screening decision are as follows:

- Destruction of pine regeneration to access fuelwood;
- Extent of rot within the standing pine is 50% or greater;

- First Nations land selections; no desire to have logging on R blocks and no renewal of existing permit holders;
- Closure of Long Lake area for **fuelwood** by the Yukon Territorial Government; and
- Availability of greenwood for **fuelwood** harvesting.

CONSIDERATION OF CUMULATIVE EFFECTS

No cumulative effects were considered.

SUMMARY

The issues to be resolved are complex. The questions to answer include:

- Are there alternate **fuelwood** areas?
- What are the health implications of encouraging wood burning?
- What are the projected costs of carrying out subsequent reforestation on old burns once the **useable** wood is removed?

The recommended course of action would include:

- Defining the productive land base in the Greater Whitehorse area which would contribute to the accessible volumes of dry or green fuel wood; would consider impact of selected lands, elevation (i.e., productive vs. unproductive land base);
- Compiling the volumes (dry and green) within a 25, 50, 75 km radius of Whitehorse;
- Develop **fuelwood** policy to deal with:
 - permits for personal use;
 - permits for commercial use; and
 - permits for green fuelwood; and

- Launch a public education program on wood burning and viable alternatives.

4. TIMBER HARVESTING NEAR WATSON LAKE

BACKGROUND

The area in question has been logged more or less continually since 1969 under a Timber Harvesting Agreement (THA) between the Department of Indian Affairs and Northern Development and several successive companies. The most recent THA was agreed to in November 1989, and the project was screened at Level II of the Environmental Assessment and Review Process (EARP). This THA is in effect for 10 years, and there is a requirement for two 'five year' operating plans plus an annual operating plan.

The THA pertains to harvesting rights and the Level II EARP screening dealt mainly with mitigating resultant effects of a logging operation. Land use activities were not considered a major component of the operation which is understandable considering the nature of the project; however, land use permits have been issued on a regular basis to support the harvesting. Land use permits can be issued for a maximum of two years with the option of a one year extension. The present holder of the THA has been unable to provide the land use section with a two year plan, so as a result land use permits are presently being issued for a one year period only. These permits are subjected to a Level I screening. Land use permits for this THA pertain mainly to major access roads, landings, **cutblock** access trails, sort yards and campsites.

HOW WAS ORIGINAL SCREENING DECISION REACHED

The original screening decision was reached via a Level II review. The characteristics of the project and existing environment were covered in the 'background section'. The environmental effects that were considered were those associated with a timber harvesting operation which in large scale continuous project can be quite significant.

WERE ANY CUMULATIVE EFFECTS CONSIDERED

The answer to this question is subject to debate; however, in my opinion the cumulative effects were only partially considered. As this was along term agreement (10 years) the cumulative effects of several years of timber harvesting were considered; however, the effects of 10 years of land use activities were not considered as this was an unknown factor at the time of the review.

ISSUES, QUESTIONS, AND SUGGESTIONS

The problem is that although the THA was screened at Level II there are subsequent cumulative environmental effects from successive land use operations. The main problem is that there is a transportation infrastructure developing with only minimal planning. This road network is opening up the country and having an effect on the wildlife resources with a subsequent serious economic effect on the local trappers. There is also going to be increased recreational concerns, unauthorized occupant concerns, etc.

The concerns of cumulative land use effects can be addressed by ensuring that the THA holder completes the first 'five' year plan which includes a five year land use plan. Thoughtful planning in this stage would probably mitigate a majority of the detrimental effects of successive land use operations.

5. PLACER MINING -DAWSON LOCAL AREA ASSESSMENT

BACKGROUND

EARP screenings were undertaken for six placer mining proposals all located within or close to Dawson City (see attached map). At hearings related to the EARP screenings and/or to Yukon Territorial Water Board (YTWB) water licenses applications, a number of environmental and socio-economic issues were **raised** by First Nations, the City of Dawson, and the general public. These issues were similar for all six placer proposals.

As a result of the similarity of the proposals and of the issues raised, DIAND initiated a Local Area Assessment (LAA) in order to:

- Further assess common issues; and
- Assist Level I and II screenings of applications.

The LAA is more comprehensive than an individual environmental screening but is *not an* assessment of cumulative effects. The LAA is confined to the areas outlined on the attached map and to issues directly related to placer mining. The LAA did not consider placer operations further upstream on the Klondike River nor those on tributaries such as Bonanza and Hunker Creeks.

The issues raised include:

- i) Municipal/Domestic Water Resources: Sediment loading of Klondike River and increased potential for siltation of the City's "infiltration" wells. The City replaced one well in 1992 and attributes **drawdown** of older wells to siltation due to increased sediment loads in Klondike River.
- ii) Sewage/Waste Disposal: Lack of control over sewage and waste disposal on placer claims. Lack of consistency in applying restrictions and in enforcement of Public Health regulations. Lack of enforcement of Yukon Territorial Government's Gasoline Handling Act.
- iii) Land Disturbance: Slope stability, particularly on bench claims above roads and buildings. Aesthetic concerns especially vis-a-vis tourists. Need for reclamation plans to be designed prior to mining so that possible future land uses can be accommodated.

- iv) Heritage Resources: Existence of heritage resources m/on at least two of the claims. Need for a Heritage Resources Assessment by the Yukon Territorial Government prior to mining, and for established reporting procedures to be followed if bones or artifacts are discovered.
- v) Land Claims drawn under the land claim (interim protection) cover most or all of the six placer claims. The Dawson First Nation (DFN) has indicated their intention to pursue all these claims. The Lousetown placer claims occupy a traditional fish camp. The DFN has asked that the downstream reach of the Klondike River near Dawson City be declared a Heritage River.
- vi) Land Use Planning placer mining on these six claims with other possible future land uses. Need for closer adherence to previously drawn up land use plans for the area and for reclamation plans for the placer claims that take possible future uses into account. Previous land use plans recommended that no placer mining occur within Dawson City limits and that mining in other areas close to Dawson be permitted only after reclamation plans have been prepared that account for possible future uses of the land.

CUMULATIVE EFFECTS

Cumulative environmental effects were not explicitly considered in the LAA but the very act of carrying out an area assessment entailed some **implicit** consideration of the cumulative impacts, particularly of sediment discharge into the Klondike River. No attempt was made to specifically assess and/or quantify the cumulative impact of the six placer proposals.

Cumulative effects issues are:

- Water quality (including sediment);
- Sewage/waste disposal;

- Water use (quantity);
- Tourism;
- Land use (erosion); and
- Heritage resources.

An explicit cumulative assessment would need to consider the potential cumulative impact of *all* placer operators on the Klondike River. This would include consideration of impacts on fish and on the Dawson City water supply. To date there has been no direct evidence that placer operations are compromising Dawson water *quality*; claims that water *quantity* has been hampered by placer operations have not been substantiated to the satisfaction of the Yukon Territorial Water Board, although a consultant has determined that sediment may be one of several factors impacting the Dawson City wells.

The cumulative effects of active placer mining in and around Dawson on the tourist industry would also have to be considered. These effects might be both positive and negative.

PROJECT REGISTER AND SCREENING DECISION SUMMARY

Proposal Title _____ Date / / Project File: _____
(dd/mm/yr)

Is this an Amendment? Yes No Date of Previous Screening / /
(dd/mm/yr)

Reserve/Location: _____ Region: _____

Instructions

1. Prepare a proposal description outlining the activities to be **undertaken**, time frames, etc.
2. Determine if the proposal is on the MP **Exclusion List**. **If it is**, check off appropriate box in Part A and proceed to instruction 6.
3. Check appropriate space for each environmental feature in **Part A**, using the **Environmental Screening Handbook**.
4. Attach a brief description of significant, unknown or related social impacts, or mitigation plans where indicated.
5. Indicate the information sources used by checking the appropriate boxes in Part B, and attach a list of titles/names.
6. Indicate the screening decision by checking one of the **11** decision codes in Part C.
7. Add the completed form and attachments to the proposal description for processing.

Part A: Exclusion

YES NO

Part B: Initial Screening	Summary of Impact				INFORMATION SOURCES
Environmental Feature	None	Significant	Mitigable	Unknown	
Water Quality/Quantity
Air Quality
Climate
Terrain Condition
Permafrost
Soil Condition
Flora
Fauna
Habitat/Land Use
Aesthetics
Archaeology/Culture
Human Health & Safety
Public Concern

Part C. Screening Decision

- 0** Initial Assessment under way - no decision yet
- 1** Automatic Exclusion; proposal **proceeds**
- 2** No significant adverse effects or public concern, proposal proceeds with mitigation in place;
- 3** Potentially adverse effects may be mitigated with known technology; proposal proceeds with mitigation in place;
- 4** Assess the proposal in greater detail; adverse impacts unknown
- 5** Further study (**IEE**) required; ability to mitigate adverse effects unknown
- 6** Refer proposal for public review by a panel -- adverse impacts significant
- 7** Refer proposal for public review by a panel -- significant public concern
- 8** Automatic referral for public review by a panel -- **potentially** significant adverse impacts
- 9** Impacts unacceptable -- either modify, rescreen or abandon proposal
- 10** Potentially significant impacts -- EIS requested by Canadian International Development Agency (**CIDA**)

Prepared/Recommended by: _____
Project Officer/Consultant Signature Date

Reviewed by: _____
Band/Tribal Council Signature Date

Approved by: _____
Responsible **Manager** (RCM) Signature Date

Project No.	Location:	Project Proposal:	Department:	Screening Code:
Project Title:		Project Manager/Officer:	Telephone:	*Interim Decision:
Project Description:				
Relevant Project Action:		Environmental Concerns:	Protective Measures Recommended:	

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Review and Approval:		*When there is more than one decision in the same three month period	
_____		_____	
Project Manager/Officer	Date	Responsible Manager	Date