[redacted]

ᓄᓇᕗᒻᒥ ᐊᕙᑎᓕᕆᓂᕐᒧᑦ ᑲᑎᒪᔩᑦ/NUNAVUT IMPACT REVIEW BOARD/NUNAVUTMI KANOGILIVALIANIKOT ELITTOHAIYEOPLOTIK KATIMAYIIT

April 22, 1999

VIA: **Fax**

Dear Kivalliq Distribution List

Re:Your comments on a research licence.
NIRB File#99YN011
Environmental Studies at Meliadine West Gold Project
Jack Patalas

Enclosed please find an application for a research licence to conduct environmental studies at Maliadine Lakearea. Please use the NIRB file no.99YN011, and the contact person listed below, in all future correspondence regarding this application.

Please assess the project proposal for the potential effects on the ecosystemic and socio-economic environments, from your knowledge of the area or your field of expertise.

Please forward your comments and recommendations to NIRB by **Tuesday May 25, 1999.**
A comment form has been included with the package.

If you have any questions regarding the application, please do not hesitate to contact our office. Your input is greatly appreciated.

Yours truly,
Gladys Joudrey

Gladys Joudrey
Environmental Assessment Screener
Phone (867) 983-2593
Fax (867) 983-2574 or
(867) 983-2594

ᓄᓇᕗᒥ ᐊᕙᑎᓕᕆᓂᕐᒧᑦ ᑲᑎᒪᔩᑦ/NUNAVUT IMPACT REVIEW BOARD/NUNAVUTMI KANOGILIVALIANIKOT ELITTOHAIYEOPLOTIK KATIMAYIIT

ᐃᐳᕆᓪ 22, 1999

ᐅᑯᓇᙵ: ᑭᐸᓪᓕᕐᒥᐅᑦ ᑐᓂᐅᖅᑕᐅᔪᓐᓇᐃᖅᑐᑦ ᓱᑲᑦᑐᒃᑯᑦ ᑐᓂᐅᖅᑕᐅᓚᖓᔪᑦ

ᐱᔾᔪᑎᖓ: ᐅᖃᐅᓯᒃᓴᑎᑦ ᓇᐅᓇᐃᖅᑑᑎᖃᕈᒪᓂᕐᒧᑦ ᓚᐃᓴᑖᕈᒪᔪᑦ
NIRB: 99YN011
ᐱᓕᕆᐊᕆᐊᓪᓚᒃᓴᖅ: ᓇᐅᓇᐃᖅᑑᑎᖃᕈᒪᓪᓗᑎᒃ ᐊᑯᑎᓕᕆᓂᕐᒧᑦ ᑕᓯᕐᔪᐊᕐ ᓴᓂᐊᓂ ᒎᓕᓯᐅᕐᓂᕐᒧᑦ
ᐱᓕᕆᐊᕆᔭᐅᕙᓪᓕᐊᔪᒧᑦ
ᐱᓕᕆᐊᖃᕈᒪᔪᖅ: **Jack Patalas**
ᓄᓇᓖᑦ ᐊᖏᒃᑐᖅᓯᒪᓂᐊᓂ: ᑭᐸᓪᓕᕐᒥ

ᐆᒪ ᐃᓗᐊᓂ ᑐᒃᓯᕐᑑᑎᓖᑦ ᓇᐅᓇᐃᖅᑐᑎᖃᕈᒪᓂᕐᒧᑦ ᓚᐃᓴᑖᕈᒪᔪᑦ ᓇᐅᓇᐃᖅᑑᑎᖃᕈᒪᓪᓗᑎᒃ ᐊᑯᑎᓕᕆᓂᕐᒧᑦ ᑕᓯᕐᔪᐊᕐ ᓴᓂᐊᓂ. ᑎᑎᖅᑲᑦᑕᕐᓗᒍ NIRB: 99YN0011, ᑎᑎᕋᐅᑎᒥᓂ ᐊᒋᖅᓯᐅᒃ, ᐊᒻᒪᓗ ᑭᓇ ᖃᐅᔨᒥ ᐊᕐᕕᐅᔭᓐᓇᕋᔭᕐᒪᖔ ᐊᑎᖓ ᐆᒪ ᐊᑖᓂ ᑎᑎᕋᖅᓯᒪᔭᖅ ᖃᐅᔨᒥ ᐊᕐᕕᒋᒃᑲᓐᓂᕈᓐᓇᕋᔭᖅᑐᖅ, ᐅᓇ ᑐᒃᓯᕐᑑᑕᐅᔭᖅ ᐱᔾᔪᑎᒥᓪᓗᒍ.

ᕿᒥᕐᕈᓯᐊᓚᐅᖅᓯᐅᒃ ᐱᓕᕆᐊᕆᔭᐅᔭᓗᒧᑦ ᑐᒃᓯᕐᑑᑕᐅᔭᖅ ᐊᐸᑎᒥᐅᑕᓃᑦᑐᓄᑦ ᐆᒪᔭᓕᒫᓄᑦ ᐊᒻᒪᓗ ᐃᓄᐃᑦ ᐱᔭᓪᓕᐊᔾᔪᑕᐅᔪᒃᑯᑦ ᐊᒃᑐᖅᑕᐅᓂᖃᕐᓂᐊᕐᓯᒋᒍᑦᓯᐅᒃ ᖃᐅᔨᒪᓂᒃᑯᑦ ᖃᐅᔨᒪᔭᓯ ᐊᑐᕐᓗᓯᐅᒃ.

ᐅᖃᐅᓯᒃᓴᓯ ᐊᒻᒪᓗ ᐊᑐᓕᖅᑕᐅᕝᕙᔭᓯᓗ ᑐᓂᔭᐅᕙᖅᑕᓯ ᓄᓇᕗᒥ ᐊᕙᑎᓕᕆᓂᕐᒧᑦ ᑲᑎᒪᔩᑦ ᐊᓪᓚᕝᕕᐊᓄᑦ ᑎᑎᕋᕝᕕᐊᓄᑦ ᐅᓪᓗᒥ ᐊᐃᕐᐱᐅᑦ, ᒪᐃ 25, 1999ᖑᓕᖅᐸᑦ. ᐅᖃᐅᓯᒃᓴᖃᕐᓂᕈᑦᓯ ᐅᖃᐅᓯᒃᓴᓄᑦ ᑕᑎᑎᓚᒃᓴᖅ ᐆᒧᖓ ᐃᓚᒋᓯᐅᔾᔭᐅᓯᒪᔪᖅ ᑕᑎᑎᕐᓗᒍ.

ᐊᐱᖅᑯᑎᒃᓴᖃᕈᐊᕈᓯ ᐅᓇ ᑐᒃᓯᕐᑑᑕᐅᔭᖅ ᐱᔾᔪᑎᒋᓪᓗᒍ, ᐅᖄᓗᑐᐃᓐᓇᓂᐊᖅᑐᓯ ᑎᑎᕋᕝᕕᖕᓂ. ᐅᖃᐅᓯᒃᓴᖃᕐᓂᕈᑦᓯ ᐊᑐᕐᓂᖃᓪᓚᑦᓴᕆᐊᖃᖅᑐᑦ ᐊᒻᒪᓗ ᖁᔭᒥᓯᐅᑦᓯᐊᓪᓚᓐᓇᔭᖅᑐᓯ.

ᐃᓚᓐᓇᐃᑦ,

ᒪᓖᑦ ᔪᑦᑐᓇ
ᐊᕙᑎᓕᕆᓂᕐᒧᐊᖑᔪᓂᒃ ᕿᒥᕐᕈᔨ
ᐅᖄᓚᐅᑎᖓ: (867) 983-2593
ᓱᑲᑦᑐᒃᑯᑎᖓ: (867) 983-2574 ᐅᐸᓗᖓᓂᑦ
(867) 983-2594

ᐃᖃᓗᒃᑐᑦᑎᐊᕐᒥ/P.O. Box 2379 Cambridge Bay, NT /EKALUKTUTIAK, NUNATIAMI X0E 0C0 • ᐅᖄᓚᐅᑎᖓ/Phone/HIVAYAOTA: (867) 983-2593 • ᑎᑎᖅᑲᑦ ᐅᖄᓚᐅᑎᖓ/Fax/FAX-KOT: (867) 983-2594

ᓄᓇᕗᑦ ᐊᑦᑎᓐᓄᓂᕐᒧᑦ ᑲᑎᒪᔩᑦ/NUNAVUT IMPACT REVIEW BOARD/NUNAVUTMI KANOGILIVALIANIKOT ELITTOHAIYEOPLOTIK KATIMAYIIT

COMMENT FORM FOR NIRB SCREENINGS

The Nunavut Impact Review Board has a mandate to protect the integrity of the ecosystem for the existing and future residents of Nunavut. In order to assess the environmental and socio-economic impacts of project proposals, NIRB would like to hear your concerns, comments and suggestions about the following project application:

Project Title: _Environmental Studies at Meliadine West Gold Project__________
Proponent: Jack Patalas________________________________
Location: _Melladine Lake______________________, NIRB#: _99YN011______
Comments Due By: __Tuesday May 25, 1999________________________

Indicate your concerns about the project proposal below:

- ☐ no concerns
- ☐ water quality
- ☐ terrain
- ☐ air quality
- ☐ wildlife and their habitat
- ☐ marine mammals and their habitat
- ☐ birds and their habitat
- ☐ fish and their habitat
- ☐ heritage resources in area
- ☐ traditional uses of land
- ☐ Inuit harvesting activities
- ☐ community involvement and consultation
- ☐ local development in the area
- ☐ tourism in the area
- ☐ human health issues
- ☐ Other:______________________________

Please describe the concerns indicated above:

Do you have any suggestions or recommendations for this application?

Do you support the project proposal? YES ☐ NO ☐

Any additional comments?

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Name of person commenting: ______________________ **of** ______________
Position:______________________ **Organisation:**______________________
Signature:______________________ **Date:** ______________________

... NT /EKALUKTUTIAK NUNATIAMI X0E 0C0 • ᐅᖃᓘᑎᖓ/Phone/HIVAYAOTA: (867) 983-2593 • ᓇᑦᑎᖅ ᐅᖃᓘᑎᖓ/Fax/FAX-KOT: (867) 983-2594

ᓄᓇᕗᒥ ᐊᑦᑐᐃᓂᖃᕐᓂᖓᓂᒃ ᑲᑎᒪᔩᑦ/NUNAVUT IMPACT REVIEW BOARD/NUNAVUTMI KANOGILIVALIANIKOT ELITTOHAIYEOPLOTIK KATIMAYIIT

ᐅᖃᐅᓯᒃᓴᓄᑦ ᑕᑎᑎᕈᑦ ᓄᓇᕗᒥ ᐊᑦᑎᓕᖅᓂᖓᓂᒃ ᑲᑎᒪᔩᑦ ᕿᒥᕐᕈᔭᑎᒋᓐᓄᑦ

ᓄᓇᕗᒥ ᐊᑦᑎᓕᖅᓂᖓᓂᒃ ᑲᑎᖅᒪᔩᑦ ᐱᓇᓱᐊᒐᖕᖏᑦ ᑎᑎᕋᖅᓯᒪᔪᒥᑦ ᐃᒫᒃ ᓴᐳᒻᒥᔭᐅᔭᕆᐊᖃᕐᓂᖐᓐᓄᑦ ᐊᑦᑎᒥᐅᑕᓃᑦᑐᑦ ᐅᓗᒥ ᐊᒻᒪᓗ ᑭᖑᓪᓕᕆᔭᐅᓛᖅᑐᓄᓗ ᓄᓇᕗᒥ. ᑕᒪᒃᑯᐊ ᓇᓗᓇᐃᖅᑑᑕᐅᑲᑦᑕᕈᓐᓇᖁᓪᓗᒋᑦ ᐊᑦᑎᓕᖅᓂᖔᓕᖕᖓᑦ ᐊᒻᒪᓗ ᐃᓄᐃᑦ ᐱᕙᓪᓕᐊᓂᒃᑯᑦ ᐊᒃᑐᖅᑕᐅᔪᑕᐅᔪᕕᓃᑦ ᐱᓕᕆᐊᕆᔭᐅᔪᓄᑦ, ᓄᓇᕗᒥ ᐊᑦᑎᓕᖅᓂᖓᓂᒃ ᑲᑎᖅᒪᔩᑦ ᑐᓴᕈᒪᓪᓗᐊᖅᑯᑦ ᐃᓱᒫᓗᑎᖃᕐᓂᕋᐃᒍᑦᓯ, ᐅᖃᐅᓯᒃᓴᖃᕐᓂᕋᐃᒍᑦᓯᓗᓐᓂᑦ ᐊᒻᒪᓗ ᐆᒻᒪᖓ ᐱᓕᕆᐊᕆᔭᐅᔪᒪᔪᖅ ᑐᒃᓯᕐᑐᑕᐅᔪᖅ ᐱᓕᕆᐊᒃᓴᒪᓂᖓᓂᒃ:

ᐱᓕᕆᐊᕆᔭᐅᔪᒪᔪᖅ: ᓇᓗᓇᐃᖅᑎᒃᓴᒪᔪᑦ ᐊᑦᑎᓕᖅᓂᖓᓂᒃ ᑕᓯᕐᔪᐊᒥ ᒧᓕᓯᐅᕐᕕᐅᔪᒪᔪᓂᑦ ᐱᓇᓱᐊᕐᓂᐊᕆᔭᐅᓂᐊᖅᑐᓂᑦ

ᐱᓕᕆᐊᒃᓴᒪᔪᖅ: Jack Patalas

ᓯᓚᑦᓯᕗᒥ: ᑭᕙᓪᓕᕗᒥ

ᐅᖃᐅᓯᒃᓴᑎᑦ ᐅᓪᓗᒥ ᐅᖃᐅᓯᕆᔭᕆᐊᖅᑕᑎᑦ: ᐊᐃᑉᐳᑦ ᒪᐃ 25 1999 NIRB # 99YN011

ᐃᓱᒫᓗᑎᒋᔭᑎᑦ ᐱᓕᕆᐊᕆᔭᐅᔪᒪᔪᓄᑦ ᓴᓂᕐᒧᑦ ᑎᑎᕿᑦ:

☐ᐃᓱᒫᓗᑎᖃᖅᖏᑦᑐᖓ	☐ᐃᓅᓯᓕᕆᓂᖕᓄᑦ ᐅᐸᒃᑕᕐᕕᐅᑲᑦᑕᖅᑐᓂᒃ
☐ᐃᒪᐅᑉ ᐃᒥᖅᓱᐅᓂᖓᓂᒃ ᐃᒥᖅᓱᐅᖕᖏᓐᓂᖓᓂᓪᓗᓐᓂᑦ	☐ᐃᓄᓪᓚᕆᖕᓄᑦ ᐊᖑᓇᓱᐊᕐᕕᐅᑲᑦᑕᖅᑐᓂᒃ
☐ᓄᓇᐅᑉ ᖃᓄᐃᓐᓂᖓ	☐ᐱᕙᓪᓕᐊᑎᑦᓯᓂᕐᒧᑦ ᐱᓕᕆᐊᕐᕕᐅᔫᑉ ᓴᓂᐊᓂ
☐ᓄᓇᓕᒻᒥᐅᔪᒥ ᐃᓄᐃᑦ ᐃᓚᐅᑲᑕᐅᓴᕆᐊᖃᕐᓂᖏᓐᓄᑦ ᐊᒻᒪᓗ ᑐᓴᐅᒪᑎᑕᐅᓴᕆᐊᖃᕐᓂᖏᓐᓄᑦ	☐ᐳᓚᕋᖅᑐᓕᕆᓂᖓᓄᑦ ᐱᓕᕆᐊᕐᕕᐅᔫᑉ ᓴᓂᐊᓂ
☐ᓯᓚᒥ ᐊᓂᕐᓂᖃᕐᓂᖅᑐᑉ ᐱᐅᖏᓐᓂᖓᓂᒃ	☐ᐋᓐᓂᐊᕐᓇᖅᑐᓕᕆᓂᖓᓄᑦ
	☐ᐊᓯᖏᓐᓄᑦ:

☐ᐆᒪᔪᓂᒃ ᐆᒪᔪᓗ ᓇᔪᖃᑦᑕᖅᑕᖏᓐᓄᑦ

☐ᑕᕆᐅᕐᒥᐅᑕᐃᑦ ᐆᒪᔪᑦ ᐆᒪᔪᓗ ᑕᕆᐅᕐᒥ ᓇᔪᖃᑦᑕᖅᑕᖏᓐᓄᑦ

☐ᐃᖃᓗᖕᓂᒃ ᐊᒻᒪᓗ ᐃᖃᓗᓐᓄᑦ ᓇᔪᒪᐅᖃᑦᑕᖅᑐᑦ ᑕᓯᕐᒥ ᑕᕆᐅᒥᓗᓐᓂᑦ

☐ᐃᓄᐃᑦ ᐱᕈᖅᑐᖃᕐᕕᒋᓐᓂᑦᑐᑦ ᐱᓕᕆᐊᕐᕕᐅᓂᐅᓴᔾᔪᑉ ᓴᓂᐊᓂ

ᐅᖃᐅᓯᕆᓚᐅᒃᑭᑦ ᐃᓱᒫᓗᑎᒋᔭᑎᑦ ᑖᒃᑯᐊ ᖁᓚᓂ ᑎᑎᕋᖅᓯᒪᔪᑦ ᐱᔪᑎᒋᓗᒋᑦ:

ᐃᑲᔪᖅᑐᐃᓐᓇᕆᐊᖃᖅᑐᐃᓐᓇᔭᖅᑐᓂᒃ ᐅᐸᕐᓗᒋᓐᓂᑦ ᐊᑐᓕᖅᑎᔭᕐᓂᓗᒋᓐᓂᑦ ᐆᒻᒪᖓ ᑐᒃᓯᕐᑐᑕᐅᔪᒧᑦ ᐅᖃᐅᓯᒃᓴᖅᑭᑦ ?

ᐃᑲᔪᖅᓯᖅᐱᐅᒃ ᐱᓕᕆᐊᕆᔭᐅᔪᒪᔪᒧᑦ ᑐᒃᓯᕐᑐᑕᐅᔪᖅ ? ᐄ ☐ ᐋᒃᑲ ☐

ᐅᖃᐅᓯᒃᓴᖅᑐᑦ ᐊᑎᖓ: __________ ᐅᑯᓂᖓᖅᓯᒪᔪᖅ : __________

ᐃᖅᑲᓇᐃᔭᕐᕕᖓ: __________ ᑲᑐᔾᔭᖅᑎᒋᔾᔪᑎᖓ : __________

ᐊᑏᑦ ᒪᐅᓇ ᑎᑎᕋᒃ : __________ ᐅᓪᓗᒥ : __________

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APR 27 1999

... ᐃᖃᓗᒃᑐᑦᑎᐊᕐᒥ/P.O. Box 2379 Cambridge Bay NT /EKALUKTUTIAK, NUNATIAMI X0E 0C0 • ᐅᖄᓚᐅᑎᒃ/Phone/HIVAYAOTA: (867) 983-2593 • ᑎᑎᖅᑲᑦ ᐅᖄᓚᐅᑎᒃᑯᑦ/Fax/FAX-KOT: (867) 983-2594

Section 3
8. Non-Technical Project Proposal Summary

Detailed aquatic investigations were carried out in 1997 and 1998 to collect baseline data for the potential gold mine development by WMC International Ltd. in the Meliadine Lakearea near Rankin Inlet, Nunavut. The most important findings of these studies were summarized during the Environmental Studies Review meeting in Rankin Inlet on 14 April 1999. (see attached summaries in English and Inuktituk).

The study programs for 1999 and 2000 are designed to continue monitoring of water quality and invertebrate populations at key sampling locations, which will likely be used for long-term monitoring during the mine operation phase. In addition, gaps in our understanding of Arctic char and Arctic grayling movements and critical habitats will be addressed through the continuation of radio telemetry and fish fence operations on the lower Meliadine River. During 2000, fishing will be carried out in Meliadine Lake to collect fish tissues for metals analysis. Seasonal fisheries and habitat surveys will also be completed at the stream crossing sites along the proposed road corridor between Rankin Inlet and the potential mine site. The collected data will be used in the preparation of an environmental impact assessment and will form a baseline for future monitoring activities.

ᐃᓚᖓ 3

8. ᐱᓕᕆᐊᕆᔭᐅᓂᐅᓴᕙᒧᑦ ᓇᐃᓈᖅᑕᐅᓪᓗᓂ ᑎᑎᕋᖅᓯᒪᓂᖓ

ᑕᓯᕐᓂ 1997ᖑᑎᓪᓗᒍ 1998ᒥᓗ ᓇᓗᓇᐃᖅᑑᑎᖃᕙᕙᑦ ᑕᓯᐅᑉ ᓴᓂᐊᓂ ᒧᓕᓯᐅᕐᕕᐅᕙᒥᓇᖅᑐᖅᑕᖃᕆᐊᒥᓐᓂᒃ WMC International Ltd. ᑕᓯᕐᕙᐊᑉ ᓴᓂᒥ ᐊᖓᓂ ᖃᖏᖅᓕᓂᖅ, ᓄᓇᕗᒥ, ᖃᓂᒥᔭᓂ. ᓇᓗᓇᐃᖅᑑᑕᐅᖄᖅᑎᓪᓗᒍ ᓇᐃᓈᖅᑕᐅᓪᓗᑎᒃ ᑎᑎᕋᖅᓯᒪᕙᖅᑕᖃᓕᖅᑐᖅ ᐊᕙᑎᓕᕆᓂᕐᒧᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᒃᑯᑦ ᕿᒥᕐᕈᔭᐅᓂᕕᓂᖏᓐᓂᒃ ᑲᑎᖕᒪᔾᔪᑕᐅᔪᓪᓗᑎᓪᓗ ᑲᖏᖅᓕᓂᒥ ᐃᐳᕆᓪ 14, 1999ᖑᑎᓪᓗᒍ (ᑕᑯᓗᒍ ᐊᑕᕙᑦ ᓇᐃᓈᖅᑕᐅᓪᓗᑎᒃ ᑎᑎᕋᖅᓯᒪᓂᖏᑦ ᖃᓪᓗᓈᑎᑐᑦ ᐊᒻᒪ ᐃᓄᒃᑎᑐᓪᓗ ᑎᑎᕋᖅᑕᐅᓯᒪᔪᓂᕐᓂᖏᑦ).

ᓇᓗᓇᐃᖅᑑᑕᐅᓛᖅᑐᑦ 1999ᒥ ᐊᒻᒪ 2000ᒥᓗ ᓇᓗᓇᐃᖅᑑᑎᒃᐃᓐᓇᕐᓂᐅᓴᕙᑦ ᐃᒪᕐᒥᑦ ᐃᒪᖅ ᓯᓐᓂᖅᐸᓪᓕᐊᖏᒃᑲᓗᐊᕆᐊᖏᓐᓂᒃ ᐊᒻᒪᓗ ᑕᒪᒃᑯᐊ ᓱᐊᕈᓰᑦ ᕿᒥᕐᓗᒃᓐᖏᑦᑐᑦ ᐊᒥᓱᓂᖏᑦ ᓯᓐᓂᖅᐸᓪᓕᐊᖏᒃᑲᓗᐊᕆᐊᖏᓐᓂᒃ ᐃᒪᖅᑕᓖᑦ ᓱᒃᑯᑦᓯᑐᐃᓐᓇᖏᓐᓂ ᓇᓗᓇᐃᖅᑑᑕᐅᖃᑦᑕᕈᒫᖅᑐᐃᑦ ᑕᒪᒃᑯᐊ,ᐃᓪᒪᖄᓗᓐᓃᑦ ᓯᕗᓂᒃᓴᒧᑦ ᓇᓗᓇᐃᖅᑑᑕᐅᖏᓐᓇᕈᐊᖃᕐᓂᕈᑎᒃ ᐊᑐᖅᑕᐅᖃᑦᑕᕈᓐᓇᒫᖅᑐᐃᑦ ᑕᒪᒃᑯᐊ ᓇᓗᓇᐃᖅᓱᑕᐅᔪᓃᖅᑐᑦ ᐅᔭᕋᒃᓯᐅᕐᕕᒃᑕᖃᓕᖅᑳᖅᑎᓪᓗᒍ. ᐊᒻᒪᓗᑦᑕᐅᖅ, ᑕᕆᐅᕐᒥᐅᑕᐃᑦ ᐊᒻᒪᓗ ᓱᓗᒃᐸᐅᓚᐃᑦ ᓅᑦᑕᕐᓂᕆᐊᑦᑕᖅᑕᖏᓐᓂᒃ ᓇᒧᐃᑦᓇᖅ ᑐᑭᓯᕚᓪᓕᕐᓯᐊᕐᓂᐊᕆᓪᓗᑎᒍ ᐊᒻᒪᓗ ᓇᒥᓯᐅᖃᑦᑕᕆᐊᖏᓐᓂ ᑕᓯᕐᓂ ᑕᕆᐅᒥᓗ ᓈᓚᐅᓯᕐᓗᒥᑦ ᐊᒻᒪᓗ ᑕᓯᕐᕙᐊᓗ ᐊᒃᐸᓯᒥ ᐊᖓᓂ ᐊᕙᓗᓕᖅᑐᖅᓯᒪᕙᓂᑎᓪᓗᒥᑦ ᓇᓗᓇᐃᖅᑐᑎᒥᖃᑦᑖᖅᑭᓪᓗᑎᒍ. 2000ᖑᓕᖅᐸᑦ, ᐃᖃᓗᒃᓯᐅᖃᑦᑖᖅᑐᒧᑦ ᑕᓯᕐᕙᐊᒥ ᑲᑎᑦᓯᓗᑕ ᓇᓗᓇᐃᖅᑑᑎᒃᓴᓖᓕᒃᓴᑎᓐᓂᒃ ᓂᕿᖏᓐᓂ ᖃᓄᑎᒥ ᓴᕕᕋᔭᒃᓴᖅᑕᖃᕆᐊᖏᓐᓂᒃ. ᐊᕐᕌᒍᑉ ᐃᓚᖓᓂ ᐃᖃᓕᐊᖅᑕᕐᕕᐅᖃᑦᑕᖅᑐᓂ ᐊᒻᒪᓗ ᐃᖃᓗᖅᓄᓪᓗ ᓇᕙᖅᑕᐅᖃᑦᑕᖅᑐᓂᒃ ᓇᓗᓇᐃᖅᑑᑎᖃᑦᑕᓕᓪᓗᑕ ᑕᑯᓂ ᐊᕐᕌᒍᓴᐃᓐᓇᕐᒥ ᐱᐊᓂᒃᑕᐅᕚᒦᖅᑐᖅ ᑕᒪᓐᓇ ᓇᓗᓇᐃᖅᑑᑎᕐᕕᒥᔭᕕᓂᑦᑎᓐᓂ ᑯᖅᓂ ᐃᑳᕐᕕᓕᖅᓂ ᐊᕐᑯᓯᐅᕐᕕᐅᓂᐊᓴᕚᑦ ᓴᓂᖏᓐᓂ ᖃᖏᖅᓕᓂᐅᓪᓗ ᐅᔭᕋᑦᕕᐅᓂᐅᓴᕚᓪᓗ ᐊᑯᓂᓐᓂᖏᓐ. ᑕᒪᒃᑯᐊ ᑐᓴᒐᒃᓴᓕᐊᑦ ᑲᑎᑕᐅᕙᕕᓃᑦ ᐊᑐᖅᑕᐅᓛᖅᑐᑦ ᐊᕙᑎᒥᐅᑕᓃᑦᑐᑦ ᐊᒃᑐᖅᑕᐅᓂᖃᑐᐃᓐᓇᓇᐊᖃᕐᓇᓯᕆᔭᐅᕙᑦ ᓇᓗᓇᐃᖅᑑᑕᐅᓕᖅᐸᑕ ᐊᒻᒪᓗ ᐊᑐᖅᑕᐅᕙᓐᓇᓖᕆᓪᓗᑎᒃ ᖃᐅᔨᓴᖅᑕᐅᕙᓗᑦ ᖃᐅᔨᓴᖅᑕᖃᓯᐅᑎᔭᕆᐊᖃᕐᓂᖅᐸᑕ ᐊᑐᐃᓐᓇᐅᕙᓐᓇᓖᕐᒪᑕ ᓯᕗᓂᒃᓴᒧᑦ ᓇᓗᓇᐃᖅᑑᑎᖃᕈᒪᕙᖅᑐᖃᓕᕐᓂᕐᒥᒃᐸᑦ.

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APR 27 1999

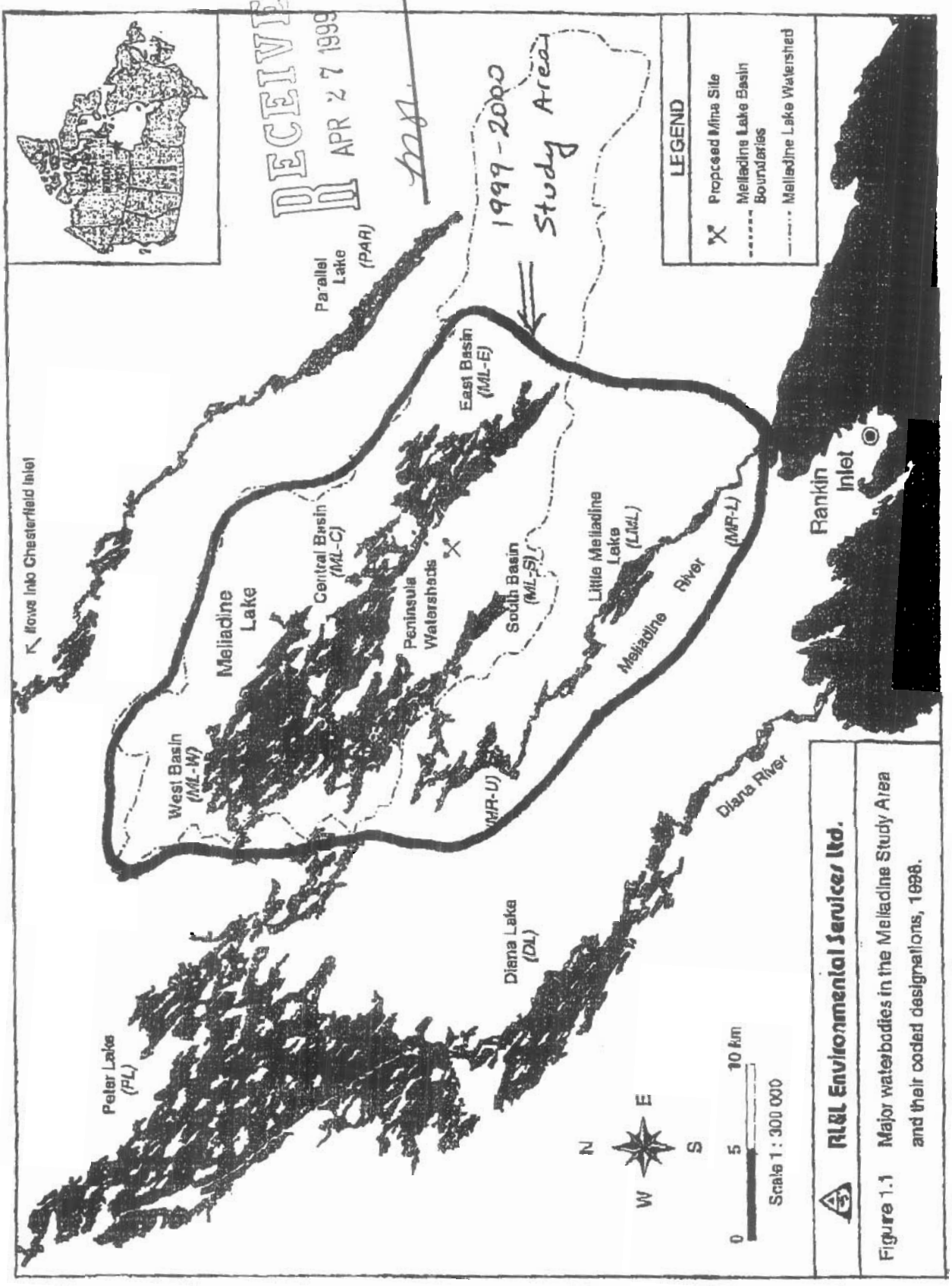

Figure 1.1 Major waterbodies in the Meliadine Study Area and their coded designations, 1998.

Nunavut Research Institute
Nunavummi Qaujisaqtulirijikkut

Box 1720, Iqaluit, NT X0A 0H0
phone: (867) 979-4108 fax: (867) 979-4681
email: slcnri@nunanet.com
www.nunanet.com/~research

SCIENTIFIC RESEARCH LICENCE APPLICATION

(Land, Freshwater & Marine Based Research)

This application fulfills the requirements for NIRB environmental screening

SECTION 1: APPLICANT INFORMATION	
1. Applicant's full name and mailing address: ~~Mark Ash~~ Jack Patalas R.L.& L. Environmental Services Ltd. 17312 – 106 Avenue, Edmonton AB, T5S 1H9	**Fax:** (780) 483 1574 **Phone:** (780) 483 3499 **E-mail:** edmonton@rll.ca
2. Field Supervisor (address, if different from above): ~~Jack Patalas~~ (address same as above)	**Phone (radio or otherwise):**

3. Other Personnel list (name and position):
Jim Campbell – fisheries biologist
Rob Stack – fisheries technician
Unspecified local assistants (Rankin Inlet residents)

Total # of personnel: 4 **Total # of person days: 90**

SECTION 2: AUTHORIZATION NEEDED

4. List the organisations you will contact for necessary authorizations associated with the project. (See Appendix A & B): The following organizations were consulted during the Environmental Studies Review meeting held in Rankin Inlet on 14 April 1999:
Kivalliq Inuit Association, Rankin Inlet
Aqiggiak Hunters and Trappers Organization, Rankin Inlet
Aqigiq Hunters and Trappers Organization, Chesterfield Inlet
Municipality of Rankin Inlet
Keewatin Wildlife Federation, Arviat
Department of Sustainable Development, Rankin Inlet
Department of Fisheries and Oceans, Iqaluit

5. List the active permits, licences, or rights related to the project and their expiry date:
WMC International Ltd. (the funding agency) currently holds a valid KIA Land Use Permit No. KE96P090 and the Nunavut Water Board Permit No. NWB#NWB2MEL.

10. Describe method of fuel transfer:

Not applicable

11. Describe any procedures and materials in place to handle accidental spills. Please attach the spill contingency plan and other appropriate information about the hazardous materials associated with the proposed project.

Not applicable

SECTION 5: WASTE DISPOSAL AND TREATMENT FACILITIES

12. Describe amount and methods of disposal:

Type of Waste	Projected Amount Generated	Method of Disposal	Additional Treatment Procedures
Sewage			
Grey water			
Garbage			
Overburden (organic soil, waste material,tailings)			
Hazardous waste:			
Other:			

SECTION 6: RESTORATION AND ABANDONMENT PLANS

13. Describe or attach the proposed procedure for site restoration upon abandonment of any area associated with the project:

Not applicable

SECTION 7: ENVIRONMENTAL IMPACT

14. Indicate and describe the components of the environment that are near the project area, as applicable. Attach any relevant maps or information:

Type of species (common name, associated herd, etc.)	**Important Habitat Area** (calving, staging, denning, migratory pathways, spawning, nesting, etc.)	**Critical time periods** (calving, post-calving, spawning, nesting, breeding, etc.)
Example:		
Fish: *Arctic char*	*Melladine River mouth*	*Aug-Sep; return migration from the sea*
Caribou:		
Muskox:		
Raptor:		
Migratory Birds:		
Waterfowl:		
Seals:		
Whales:		
Narwhals:		
Canid family (wolves, wolverines, foxes, etc.)		
Bears (grizzly, polar, black):		
Other:		
Eskers:		
Communities:		
Historical/Archaeological sites:		

15. Indicate and describe other known uses of the area such as local development, traditional use (hunting/fishing/spiritual), outfitting, tourism, mineral development, research, etc.:

The study area is presently being explored by WMC International Ltd. to evaluate the potential for developing a gold mine. It is also being used for hunting and fishing by Rankin Inlet residents. Other research activities in the study area include hydrology, wildlife and vegetation components.

16. Describe the impacts of the proposed project activity on the environmental components and uses, in the area listed above:

Because of the proposed use of non-lethal fish sampling techniques, fish mortalities will be minimal. The impacts of the proposed study on the aquatic environment are expected to be negligible or non-existent.

17. What are some suggested mitigation measures for these impacts?

Not applicable

SECTION 7: COMMUNITY INVOLVEMENT & REGIONAL BENEFITS

18. List the community representatives that you have contacted about this proposed project:

Community	Name	Organisation	Date Contacted	Means	Telephone #	Fax #
Rankin Inlet	Tongola Sandy	Kivilliq Inuit Association Lands	14 April 1999	meeting	645 2810	
Rankin Inlet	Louis Pilakapsi	Aqiggiak HTO	14 April 1999	meeting		
Chesterfield Inlet	Leo Mimialik	Aqigiq HTO	14 April 1999	meeting		
Rankin Inlet	Rhoda Karetak	Municipality of Rankin Inlet	14 April 1999	meeting		

19. Describe the level of involvement that the residents of Nunavut have had with respect to the proposed project. Elaborate on local employment opportunity, training programs, contracts, Inuit Impact Benefit Agreements (if applicable):

During all data collection phases of the study, local assistants from Rankin Inlet will be employed as environmental technicians by WMC International. These local assistants were provided training during the previous two years of the study.

20. Describe and attach documentation regarding community concerns or support for the proposed project:

During the Environmental Studies Review meeting held in Rankin Inlet on 14 April 1999, all community representatives (see Section 18 above) voiced strong support of the project. The results of the previous investigations and the work program for 1999 were outlined using and audio-visual presentation.

21. Is there a Traditional Knowledge (TK) component to this research project? If yes, see Appendix C.

The TK component of the study was completed during 1998, and will not form part of the current application.

Applicant:

Signature | Vice President (Title) | 20 April 1999 (Date)

Proposed Agenda: Environmental Studies Review
Meliadine West Gold Project

Date: 09:00 - Wednesday, April 14
Location: Rm. 201 Maani Ulujuk School, Rankin Inlet
Time: 8:30 am - 5:00 pm

Invited Participants:	Kivalliq Inuit Association Lands	Rankin Inlet
	Aqiggiak Hunters and Trappers	Rankin Inlet
	Aqigiq Hunters and Trappers	Chesterfield Inlet
	Keewatin Wildlife Federation	Arviat
	Municipality of Rankin Inlet	Rankin Inlet
	Department of Fisheries and Oceans	Iqaluit
	Department of Sustainable Development	Rankin Inlet
	Department of Transportation	Rankin Inlet

Presentations:

Meliadine Project Annual Status Report	Alan Sexton, Senior Geologist - WMC and Ben Hubert , Environmental Coordinator - WMC
Traditional Knowledge	John Hickes
Climate and Water studies	Ben Hubert
Fish and Water Quality	Jack Patalas
Wildlife	Martin Jalkotzy
Vegetation	Page Burt
Archeology	Ben Hubert
Outstanding issues - air quality	
transportation	
archeology	Ben Hubert
Project Plans for 1999	Alan Sexton and Ben Hubert

Questions and discussion are welcome at any point in a presentation.

We expect the meeting to be completed by 5:00 pm.

SUMMARY

1998 ENVIRONMENTAL STUDIES AT MELIADINE WEST GOLD PROJECT

INTRODUCTION

Environmental studies for the areas of land and water that may be affected by the Meliadine West Gold Project were initiated in 1997. These studies are a very important part of the overall work by WMC International Limited in the Rankin Inlet area. They will describe the present condition of the land, water , fish, plants and wildlife. This information is necessary to monitor these important elements of the environment for possible changes in the future if a gold mine operates in this area. This summary provides a very brief overview of the environmental information that has been gathered so far. A summary of a study on archeological sites in the exploration area is also included. Complete reports on all studies are submitted to KIA when these are complete.

Also, a report that reviews information on the Meliadine Lake area collected from the elders in Rankin Inlet and Chesterfield Inlet has been done and will be translated. It will also be provided to KIA.

Physical environment

An automatic weather station has been operating at the WMC camp since April 1997. It collects normal weather conditions similar to the information that is collected at most airports; temperature, humidity, wind speed and wind direction, summer rainfall, plus surface ground temperature and energy from the sun. This information is compared to the data collected at the Rankin Inlet Airport. A summer rain gauge at the WMC Peter Lake camp gives us rainfall for that location as well.

A cable with 16 temperature sensors was put into an exploration drill hole in June 1998. This gives us the temperature of the permafrost. The coldest temperature recorded in this hole was -7.7C around 20 m depth. Permafrost depth in this area is measured to be about 450 m deep.

Water volume and Water quality

Water studies concentrate on two different aspects: water volume that flows through the Meliadine Basin and water quality in the Meliadine Basin. Both studies began in 1997.

Annual precipitation in the area of Rankin Inlet is about 50% rain and 50% snow. In 1998 54%

of the total precipitation was lost by run off and drainage to the ocean, 31% left by evaporation, 10% passes through the plants in summer, and 5% was held in the lakes within the basin making up for the low water in 1997.

The Meliadine Lake has two outflows - about 20% of the outflow from Meliadine Lake goes into Peter Lake and down the Diana River. The remainder flows down the Meliadine River.

Detailed measurements on lake levels and water flow were made for the smaller lakes that would be most affected by a gold mine. These locations would contain tailings and waste rock so that contaminated run off could not escape and contaminate downstream lakes and rivers in the basin. These water flow studies are essential so that the barriers holding tailings are designed and build correctly.

Water quality is measured at 27 different sites. These measurements give us information on water quality in the small lakes and the large lakes in both summer and winter, and the sediments on the lake bottom. The information collected from the small lakes in late winter shows that many are frozen completely and in the deeper lakes there is very little oxygen in the water under the ice. There is probably not enough oxygen in these lakes during the winter for most fish to survive. Water temperature is also measured at several locations. It is likely that the water in the "narrows" of Meliadine Lake near the WMC camp freeze to the bottom in some winters that combine low water levels with typical winter temperatures. Generally most water samples showed very high water quality that meets Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life, and the Guidelines for Canadian Drinking Water Quality. Exceptions occurred in winter samples from small lakes which showed elevated levels for some metals like copper, chromium and iron. Some stream and lake samples showed elevated levels of phenols which probably leach out of the organic mat during run off.

Water studies also look at the invertebrates that live in the lake bottom and the small plants and animals floating in the water column.

These data on water quality are important for measuring possible future changes in the water if a gold mine is developed here.

Fish

Fish studies were started in 1997. Nine fish species live in the Meliadine basin: Arctic charr, lake trout, Arctic grayling, round whitefish, cisco, threespine and ninespine stickleback, slimy sculpin and burbot. Studies have concentrated on charr, lake trout, and grayling.

Arctic charr are distributed throughout the basin. But it seems that the distribution of charr depends on the age of the fish. In the summer fish less than 4 years are found mainly in the lower parts of the drainage above Meliadine Lake. Adult fish seem to live in Meliadine Lake and Little Meliadine Lake as well as in the nearby ocean in summer. A fish counting fence near the mouth of the Meliadine River trapped charr during the 1997 and 1998 fall migrations when they return from the sea. 1616 charr have been tagged in the two years that the fence was operated. So far 329 of the small plastic tags have been recovered from local fishermen. These fish have been caught at locations as far away as Corbett Inlet. The spawning areas of these char have not been found but the search continues.

Lake trout have been caught in Meliadine Lake and the Meliadine River. Juvenile fish seem to prefer the shore of Meliadine Lake and streams flowing into the lake. Adult trout do not seem to use the upper lakes in the basins above Meliadine Lake. Lake trout tagged with radios did not seem to travel very far from the locations where they were caught for tagging.

Arctic grayling were found mainly in the small lakes above Meliadine Lake. Grayling eggs were found in several streams from the exploration area flowing into Meliadine Lake. Grayling seem to overwinter in some of the lakes above Meliadine.

In 1998, some of the water crossings of a possible road corridor between Rankin Inlet and the possible mine site were checked for suitable fish habitat.

In addition to the fish population studies, fish tissue from lake trout, round whitefish, cisco and Arctic grayling was also collected to measure the presence of metals in muscle, liver and kidney. These data on fish tissue quality are important for measuring possible future changes fish tissue if a gold mine is developed here.

Wildlife studies.

Wildlife studies started in the fall of 1997 when satellite collars were put on 2 cow caribou near Rankin Inlet. Three additional collars were put on caribou cows between Rankin Inlet and Barbour Bay in March of 1998. Two of the five caribou went north of Chesterfield Inlet for the calving season. These caribou remained north of Chesterfield Inlet for the summer of 1998 and the winter of 1998/99. The other three caribou went to the Qamanirjuaq herd calving ground and spent the remainder of the summer and winter of 98/99 on the Qamanirjuaq herd's range including northern Manitoba.. The collars were put on by government biologists but paid for by WMC. The government and WMC will continue to cooperate in this study as it follows the seasonal movements of caribou throughout the Kivalliq Region. Maps showing the movements of the collared caribou are sent to HTO's on a regular basis.

Caribou surveys using helicopter were flown over the WMC exploration areas in the late winter, spring, summer and fall of 1998. Very few caribou were observed. These surveys will continue in 1999. Surveys were also done for large birds like swans and cranes. Swans, loons, and oldsquaw ducks were observed throughout the survey area. Searches for fox and wolf dens were made by walking. Four fox dens were found and at least two litters of fox were produced in the survey area. No wolves, grizzly bear or wolverine were seen during the surveys. Surveys of known raptor nesting sites were done. Six peregrine, 2 gyr falcon, and three rough-legged hawk nest sites were found. All nest sites were either on the edge or outside the of the intensive study area. No endangered species were found in the study area.

Vegetation

A study of vegetation communities and patterns in the area of the gold exploration activities was done in 1998. No endangered plant species were found during the study. The lowest and wettest ground is usually covered by mosses and sedges with willow forming borders along drainage channels. Active seepage areas can also have a cover of birch thickets. Hummocks and slightly raised areas within a wet sedge meadow are often covered by heather species. Slopes above the lowest ground are covered by heather and lichen. This is the largest - by area - plant community in the area. The plant cover on ridge tops depends on the amount of protection from wind and windblown debris. Protected areas show a cover of lichen and heath species while areas with little or no protection of boulders are bare with little vegetation.

The vegetation study will produce a map showing the distribution of plant communities that have been studied on the ground and can be identified on colour air photos that were made in the summer of 1997.

BH
5/03/99

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ᖃᐃᖁᔭᐅᓯᒪᔪᑦ ᑲᑎᒪᖃᑕᐅᓂᐊᕐᑐᑦ:

ᑭᕙᓪᓕᕐᒥ ᐃᓄᐃᑦ ᑲᑐᔾᔨᖃᑎᒌᖏᑦᑕ ᓄᓇᓕᕆᔨᖏᑦ	ᑲᖏᖅᖠᓂᕐᒥᑦ
ᐊᕐᕕᐊᑉ ᐆᒪᔪᓯᐅᖅᑐᓕᕆᔩᑦ	ᑲᖏᖅᖠᓂᕐᒥᑦ
ᐊᒃᑯᓕᖅ ᐆᒪᔪᓯᐅᖅᑐᓕᕆᔩᑦ	ᐃᒡᓗᓕᒑᕐᔪᖕᒥᑦ
ᑭᕙᓪᓕᕐᒥ ᐆᒪᔪᓯᐅᖅᑐᓕᕆᔨᕐᔪᐊᑦ	ᑲᖏᖅᖠᓂᕐᒥᑦ
ᕼᐋᒻᓚᒃᑯᑦ ᑲᖏᖅᖠᓂᐅᒥᑦ	ᑲᖏᖅᖠᓂᕐᒥᑦ
ᑕᕆᐅᕐᒥᐅᑕᓕᕆᔨᒃᑯᑦ	ᐃᖃᓗᐃᑦ
ᐱᕙᓕᐊᔪᓕᕆᔨᒃᑯᑦ	ᑲᖏᖅᖠᓂᕐᒥᑦ
ᐅᐊᔭᑦᑐᓕᕆᔨᒃᑯᑦ	ᑲᖏᖅᖠᓂᕐᒥᑦ

ᐅᖃᓪᓚᖕᓂᐊᕐᑐᑦ:
ᑕᓯᕐᔪᐊᕐᒥ ᒎᓗᓯᐅᕐᕕᐅᔪᒧᑦ ᐱᓕᕆᐊᑦ ᑐᓴᖅᑎᒃ
ᐋᓚᒃ ᓴᓐᑕ, ᐊᖓᔪᖄᖅ ᓄᓇᓕᖕᓂᑦ - ᑕᐸᕐᔪᐊᕐᔪᒃᑯᓐᓂᑦ ᐊᒻᒪ
ᐹᓐ ᕼᐃᐅᐳᑦ, ᐊᕙᓗᓕᕆᔨ - ᑕᐸᒨᔭᕐᔪᒃᑯᓐᓄᑦ
ᔫᓐ ᕼᐃᓪ

ᐃᓄᐃᑦ ᖃᐅᔨᒪᓂᖏᓐᓂᒃ	ᐹᓐ ᕼᐃᐅᐳᑦ
ᓯᓚᐅᑉ ᐃᒪᐅᑉ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᑦ	ᔫᒃ ᐸᑖᓪ
ᐃᖃᓗᑉ ᐃᒪᐅᑉ ᐱᐅᓂᖏᑦ	ᒫᑎᓐ ᔅᑯᑦᔨ
ᓂᕐᔪᑏᑦ	ᐱᐃᑦ ᔫᑦ
ᐱᕈᖅᑐᑦ	ᐹᓐ ᕼᐃᐅᐳᑦ
ᐃᑦᑕᕐᓂᑕᑦ	

ᐱᓕᕆᐊᖑᔪᓇᐊᓖᑦ ᓱᓕ - ᐊᓂᕐᓴᕐᑐᒐᑦᑕ ᐱᐅᓂᖓ
ᐅᐊᔭᕐᑐᓕᕆᓂᖅ
ᐃᑦᑕᕐᓂᑕᖃᐅᓯᕐᕕᓕᕆᓂᖅ
ᐹᓐ ᕼᐃᐅᐳᑦ
ᐋᓚᒃ ᓴᓐᑕ ᐊᒻᒪᓗ ᐹᓐ ᕼᐃᐅᐳᑦ

ᐱᓕᕆᐊᓯᐅᓂᑦ ᐸᕐᓇᐅᑎᓯᑦ 1999ᒥ

ᐊᐱᕐᑯᑎᒃᑯ ᐅᖃᐅᓯᖃᕐᓗ ᓂᕈᐊᖅᑕᐅᓚᐅᕐᑐᑦ ᖃᐅᔾᔨᓇᖅ ᐅᖃᓪᓚᒃᑎᑦ ᐅᖃᓚᐅᑎᓗᒋᑦ.

ᑲᑎᒪᓂᓕᕐᓂᐊᕐᓂᐊᓯᒃᐸᑦ 5:00ᒧᐊᕐᐸᑦ ᐅᓄᕐᓃᑎᓗᒍ.

NN

ᓇᐃᓪᓕᒋᐊᕐᓯᒪᔪᑦ

1998ᒥ ᐊᑉᐳᓪᓕᕆᓂᕐᒧᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᑦ ᑕᓯᖅᔪᐊᕐᒥ ᒨᓯᐅᖅᑎᓪᓗᒥᑦ

ᐱᒋᐊᕐᓂᖓ

ᐊᑉᐳᓪᓕᕆᓂᕐᒧᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᑦ ᓱᓇᒥᒡᓗ ᐃᒪᒥᒡᓗ ᐊᐅᓚᖅᑕᐅᓯᒪᓗᐃᓐᓇᕆᐊᖃᖅᑐᓗᑦ ᑕᓯᖅᔪᐊᕐᒥ ᒨᓯᐅᕐᕕᐅᔪᒧᑦ ᐱᒋᐊᖅᑕᐅᓚᐅᖅᓯᒪᔪᑦ 1997ᒥ. ᑕᒪᒃᑯᐊ ᖃᐅᔨᓴᕐᓂᐅᖃᑦᑕᕐᒥᑦ ᐊᑐᖅᑎᓪᓗᒋᐊᖅᓯᒪ ᑕᑉᐸᐅᖓᖕᓂᖅᑐᑦ ᑲᑎᑦᑎᓂᖅᑐᒥ. ᓇᓗᓇᐃᖅᓯᓂᖅᑎᑦᑎᓂᐊᕐᓯᒪ ᓱᓇᐅᓪᓗ, ᐃᒪᐅᓪᓗ, ᐃᖃᓗᐃᓪᓗ, ᐱᕐᔪ- ᐊᓗ ᐊᒻᒪᓗ ᓂᕐᔪᑎᑦ ᒫᓐᓇ ᓱᕐᕋᓗᐅᖅᑎᖅᑕᐅᓪᓗ ᐃᓕᑦᑎᕐᓇᖅᑐᖅᑐᓂᒃ. ᑕᒪᓐᓇ ᑐᓴᐅᒪᓗᒍ ᐊᑐᖅᑕᑎᐊᓯᒪ ᑲᒪᑦᑎᐊᕐᓂᐊᕐᓂᒋᑦ ᐊᑉᐳᑎᖅᓂᒃ ᐊᓯᐅᔨᕙᓂᐊᖅᑐᑦ ᓯᕗᓂᑎᒍ ᒨᓱᒧᑦ ᐅᔭᕐᖃᖅᑎᐊᖃᕐᓂᐊᕐᓂᐊᖅᑐᑦ ᑎᑎᖃᓂ. ᐅᓇ ᓇᓗᓇᐃᔭᖅᓯᒪᔪᖅ ᓇᐃᓪᓕᒋᐊᕐᓯᒪᔪᓂ ᐅᓂᒃᑳᐃᓐᓇᖅᓯᒪᓂᐊᕐᒪᑦ ᐊᑉᐳᓪᓕᕆᓂᕐᒧᑦ ᑐᓴᐅᒪᔪᓐ- ᓯᒪᔪᓂᒃ ᑲᑎᑕᐅᓪᓗᑐᓂᒃ. ᐃᑦᑕᕐᓂᑕᖃᐃᓐᓇᓗ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᓐᓂ ᑎᑎᖃᖅᑲᖅᑐᑦ. ᐅᓂᒃᑲᐅᓯᒪᔪᐃᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᓐᓂ ᑐᓂᔅᓴᖅᑕᐅᖃᑦᑕᖅᑐᑦ ᑭᐸᓪᓕᕆ ᐃᓄᐃᑦ ᑲᑐᔾᔨᖃᑎᒌᖑᓂᖏᑦ ᑎᑎᕋᖅᑕᐅᓯᒪᓂᓕᖅᐳᑦ.

ᐊᒻᒪᓗᑦᑕᐅᖅ, ᑎᑎᕋᕐᓯᒪᔪᖃᑲᓗᐊᖅ ᑐᓴᒪᔪᓂᑦ ᑕᓯᖅᔪᐊ ᒥᓱᓄᑦ ᐅᖃᐅᓯᐅᓯᒪᔪᑦ ᐃᓐᓇᓂᑦ ᑲᔪᓕᓂᖏ- ᒥᒃᓗ ᐃᓗᓕᓕᒻᒪᕆᒻᒥᒃᓗ ᓂᐱᓕᐅᖅᑕᐅᓂᑯᓪᓗᑐᑦ ᑲᑦᑐᐃᓐᓂᖅᑐᓕᖅᓯᒪᕙᓪᓗᒃᑐ. ᑐᓂᔅᑕᐅᓯᒪᓂᐊᕐᒪᑦ ᑭᐸᓪᓕᕆ ᐃᓄᐃᑦ ᑲᑐᔾᔨᖃᑎᒌᖑᓂᖏᑦ.

ᐊᑉᐳᓪᓕᕐᑕ ᐃᓕᖅᑯᓯᐊ

ᐊᓄᓇᓯᐅᑎᒥᒃ ᐊᐅᓚᖅᑕᐅᔪᖃᑦᑕᖅᑐᑦ ᑕᑉᐸᐅᖓᖕᓂᖅᑐᑦ ᓱᓇᒥᒃᓯᓂ ᐃᓕᔭᐅᓂᖓ ᐃᐱᖕᖑ 1997ᐅᑎᖓᓄᑦ. ᑎᑎᕋᖅ- ᐸᓪᓕᐊᖃᑦᑕᕐᒪᑦ ᓯᓚᐅᑦ ᐃᓕᖅᑯᓯᐊᓂᒃ ᑕᐃᒃᑯᐊ ᓯᓚᐅᓂᐊᕐᑎᐅᖃᑦᑕᕐᒥᑦ ᒥᑦᓯᓐᓂ ᐊᔾᔨᒋᔭᐅᖏᓐᓂᒃ ᓇᓗᓇᐃᔭᖃᑦᑕᕐᒥᑦ ᒪᒃᑯᓐᓂᖓ: ᐆᓇᕐᓂᓂᒃ, ᖃᐅᔨᓂᓂᒃ, ᐊᓄᓇᐅᑦ ᓇᑭᓂᐊᓂᒃ ᐊᒻᒪᓗ ᓇᑭᖕᒋᓐᖏᓗ, ᐊᐅᔭᒃᑯᑦ ᖃᓄᖅ ᒪᑯᓯᒪᑎᒥᓐᖏᓪᓚᑦ, ᐊᒻᒪᓗ ᓱᓇᐅᑦ ᐆᓇᕐᓂᐊᓂᓪᓗ ᐊᒻᒪᓗ ᓯᕐᕿᓂᐅᑦ ᓯᕿᓐᓂᕐᓂᖏᓐᓂ. ᑕᒪᓐᓇ ᖃᐅᔨᔭᐅᔪᖅ ᖃᓄᐃᓐᓂᖅᓴᐅᖏᓐᖏᓚᑦ ᒥᑦᓯᖕᓂᑦ ᖃᐅᔨᔭᐅᖃᑦᑕᖅᑐᓂᒃ ᖃᐅᔨᒋᐊᖅᑕᐅᖃᑦᑕᖅᑐᑦ. ᐊᐅᔭᒃᑯᑦ ᒪᑯᖃᑦᑕᖅᑐᒃ ᖃᒪᓂᖓ ᐅᖓᓯᓪᓕᖓ ᑕᑉᐸᐅᖓᖕᓂᖅᑐᓂ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᑦ ᖃᐅᔨᓯᒪᔪᖅ ᖃᓄᖅ ᒪᑯᖃᑦᑕᖅᓯᒪᓂᒍᓯᒪᖕᖏᓚᑦ ᑕᐅᕙᓂ.

ᓴᐱᒪᐅᔭᖅᑕᖃᓚᑦ 16ᓂᒃ ᐆᓇᕐᓂᓂᒃ ᓇᓗᓇᐃᖅᓯᕙᓇᑐᒥᒃ ᐃᑯᑕᖅᑕᐅᓂᒃ ᐃᓗᐊᓄᐊᖅᑕᐅᔪᖃᓚᐅᖅᓯᒪᔪᖅ ᔫᓂ 1998ᒥ. ᖃᐅᔨᒪᔪᕙᓇᐱᑐᒥᓂ ᓱᓇᐅᑦ ᐃᓗᐊᓂ ᑯᐊᖑᑯᓂᐅᔪᖅ ᖃᓄᖅ ᓂᑦᑎᓇᖅᑎᒋᓚᖓᖕᓂᖏᑦ. ᓂᑦᑎᓇᖅ- ᓂᖅᐳᕐᓯᒪᔪᖅ ᐃᑯᑕᖅᑕᐅᓂᐅᑦ ᐃᓗᐊᓂ -7.7 ᓯᐊᕐᓯᐊᓂ ᐊᒻᒪᖃ 20 ᒦᑕᒥ ᐃᓗᑐᑎᒋᔪᒥ. ᓱᓇᐅᑦ ᐃᓗᐊᓂ ᑯᐊᖑᐃᖅᓇᕐᓂ ᐃᑦᔪᔪᐊᖑᓚᑦ ᑕᐅᕙᓂ ᐊᒻᒪᖃ ᑕᒡᓂ 450 ᒦᑕᒥᑦ ᐃᑦᔪᑎᒋᔪᖅ.

ᐃᒪᐅᑦ ᐊᕐᒥᓂᐊ ᐊᒻᒪᓗ ᐱᐅᓂᖓ

ᐃᒪᖅᑕᐅ ᖃᐅᔨᓴᖅᑕᐅᔪᒥᓚᑦ ᒪᔪᓄᑦ ᐊᑦᔨᒌᙱᑦᑐᓄᑦ: ᐃᒪᐅᑦ ᐊᕐᒥᓂᐊ ᑯᕕᑦᑕᐅᓯᒪ ᑕᓯᖅᔪᐊᕐᒥᑦ ᐊᒻᒪᓗ ᐃᒪᐅᑦ ᐱᐅᓂᖓ ᑕᓯᖅᔪᐊᕐᒥᓗ ᑰᖓᓂᓗ. ᖃᐅᔨᓴᖅᑕᐅᓂᒃ ᑕᒪᒥ ᐱᒋᐊᓚᐅᖅᑐᖅ 1997ᐅᑎᖓᓄᑦ.

ᐅᑭᐅᒧᑦ ᐊᑕᐅᓯᕐᒧᑦ ᑲᑎᖓᓂᐅᑦ ᖃᓂᒋᔭᓂ ᑕᒡᓂ 505ᒥᓕᒥᑐᕐ ᐊᒻᒪᓗ ᐊᐱᓂᐊ 505ᒥᓕᒥᑕᓄᓂ. 1998- ᒥᑎᖓᓄᑦ 545 ᐃᒪᖅ ᐊᓯᐅᓪᓚᐅᓯᒪᖅ ᑯᖏᑦ ᑕᕆᐅᒧᐊᕐᓗᓂ, 315ᓕ ᐸᓂᖅᐸᓕᐊᓂᐊᓄᑦ ᐱᑕᖃᖅ- ᓂᓪᓚᐅᑉᐸᖅ. 105 ᐃᒪᖅ ᐱᕐᔪᓯᐊᓂᒃ ᐃᒪᒋᔭᐅᓪᓚᐅᓯᒪᑦ ᐊᐅᔭᒃᑯᑦ, ᐊᒻᒪᓗ 55ᒥᓕᒥᑦ ᑕᓯᓐᓂᓪᓚᐅᕐᑦ ᑕᐃᒪ- ᐃᓐᓂᖓᓄᑦ ᑕᓯᖓ ᑰᖓ ᐃᒃᓯᓐᓂᖅᓯᒪᓇᐅᓪᓚᐅᕐᑦ 1997ᒥ.

ᑕᓯᖅᔪᐊᖅ ᒪᔪᕐᓂᑦ ᑯᕕᓚᑦ - 205ᒥᓕᒥᑦ ᑰᖓᓂᐅᑉ ᑕᓯᖅᔪᐊᕐᒥᑦ ᖃᒪᓂᖅ ᐅᓚᕐᓕᕐᒧᐊᖃᑦᑕᖅᑐᖅ ᐊᒻᒪᓗ ᐃᖃᓗᖕᓄᑦ. ᐃᒪᐅᑦ ᐊᒥᐊᓗᐊ ᑯᕕᑦᑕᓗᓂ ᖃᒪᓇᐅᒪᒃᑯᑦ.

ᑎᑎᕋᓗᐊᐱᓯᒪᔪᑯᑦ ᓇᓗᓇᐃᖅᓯᒪᔪᑦ ᑕᓯᑦ ᐃᑎᓂᖅᑎᓐᓂᒃᓗ ᐊᒻᒪᓗ ᑯᑦ ᑰᖓᓂᐅᓐᓂᑦ ᑎᑎᕋᖅᑕᐅᓪᓗᑎ- ᒥᓚᑦ ᑕᓯᓄᑦ ᒥᑭᓐᓂᖕᓴᓄᑦ ᐊᐅᓚᖅᑕᐅᓂᖃᑦᓂᖅᓴᐅᔭᕐᓗᓄᑦ ᒨᓗᒥ ᐅᔭᕐᖃᖅᑎᐊᖃᕐᓂᐊᕐᓂᐊᖅᑐᑦ. ᑖᒃᑯᐊ ᐅᔭᕐᖃᖅᑎᐊᑦ ᓱᕈᓯᖅᓄᑦ ᐃᓂᒥᔭᐅᓇᔪᖅᑐᑦ ᐊᒻᒪᓗ ᐃᑯᑕᖅᑕᐅᓂᑯᓂᑦ ᓱᕈᓯᑐᐃᓐᓇᕆᐊᖃᖅ ᓇᑦᑏᓐᓇᖅ ᑯᒍᓐᓇᕐᒥᓯᒪᓪᓚᑦ ᐊᒻᒪᓗ ᐊᖅᑯᑎᑦᔭᒥᓂᒃ ᓯᕿᕐᓯᒍᓐᓇᖅᑐᒥ ᑕᓯᑉᓂᒃ ᑰᖓᓂᒃ. ᑕᒪᒃᑯᐊ ᐃᒪᕐᒧᑦ

ᖃᐅᔨᓴᕐᓂᑦ ᐊᑐᕐᓂᖃᖅᑎᐊᕐᐳᑦ ᐅᓇ ᐱᑦᔪᑎᕐᓗᒍ ᑕᐃᓐᓇ ᖁᐱᕐᑕᕐᐱᐅᖃᑦᑕᖅᐸᕐᒪᑦ ᓴᓇᔪᑦᑎᐊᕐ-
ᓯᒪᕗᑦᓗᒥᑦ ᐊᒻᒪᓗ ᑕᒪᕐᓯᒪᔪᓐᓗᑎᒃ.

ᐃᒪᐅᑦ ᐱᐅᓂᖓ 27ᓂ ᐃᓂᓂ ᖃᐅᔨᓴᕐᑕᐅᓚᐅᕆᒪᑕ. ᑕᒃᑯᐊ ᖃᐅᔨᓴᕐᑕᐅᓂᐅᓚᐅᖅᑐᑦ ᖃᐅᔨᓐᓇᓕ-
ᓯᖃᑦᑕᕆᒪᑕ ᖃᓄᑦ ᐃᒪᕐᑎᐊᕆᐅᑎᓕᖓᖏᑦ ᑕᓯᐊᓖᕐᓂᓗ ᑕᓯᕐᔪᐊᓂᓗ ᑕᒪᕐᒥᑎᐊᕐ ᐊᐅᔭᒃᑯᓐᓗ ᐅᑭᐅᒃᑯᓐᓗ,
ᐊᒻᒪ ᑕᓯᐅᑦ ᓇᑎᖏᑦ ᓯᓇᑕᖃᐅᕆᖓᓖᑦ. ᓇᓂᔭᐅᓂᑯᑦ ᑕᓯᐊᓖᕐᓂᑦ ᐅᑭᐅᓚᐅᑎᓪᓗᒍ ᓯᑯᖃᑦᑕᕆᒪᑕ
ᓄᓇᓐᓂᑦ ᑎᑭᓯᒪᕐᒥᓗ ᐊᒻᒪᓗ ᐊᓂᕐᓴᕐᑐᓕᖃᑦᑎᐊᕐᕆᓚᖕᖑᑦ ᐃᒪᑐᐊᓇᓕᖃᑦᑕᕐᑖᓂ ᐊᑖᓂ. ᐊᓂᕐᓴᕐ-
ᑐᓕᖃᓗᐊᕐᑯᕆᓯᒪᑦ ᐃᖃᓗᓐᓄᑦ ᐆᒪᔾᔭᐅᔭᓇᐊᖕᓴᕐ ᐅᑭᐅᒃᑯᑦ. ᐃᒪᐅᑦᑕᐅᕐ ᐆᓇᕐᓂᕐᒃ ᖃᐅᔨᓴᕐᑕ-
ᓚᐅᕆᕐᒪᑕ ᐃᓂᓂ ᐊᕐᕕᕐᒃᑐᓂ. ᐃᒪᕐ ᑕᓯᐅᑦ ᖁᕆᒪᕐᓂᐊᓂᖑᑦ ᑕᓯᕐᔪᐊᕐᒥ ᑕᑉᐸᐊᕐᓯᕐᑯᑦ .
ᓄᓇᒥᔭᕐᒃᑕ ᖃᓂᒥᔭᓂ ᖁᐊᖃᑦᑕᕐᒥᐅᔭᕐ ᓇᑎᐊᓄᑦ ᓇᓕᕐᓂ ᐅᑭᐅᑯᑦ ᐃᑲᕐᓂᐅᔪᑎᒍᑦ
ᓂᕐᓇᕐᓗᐊᑲᕐᖃᒪᑕ. ᐃᒪᐃᑦ ᑲᑎᑕᐅᓚᐅᕐᓯᒪᔪᑦ ᑕᒪᕆᓕᑦ ᐃᒪᕐᑎᐊᕐᐅᓚᐅᖅᑐᑦ ᐊᕐᕌᒍᓯᒪᓗᑎᒃ ᑲᓇᑕᒥ
ᐃᒪᐅᑦ ᐱᐅᓂᐊᓂᒃ ᐊᑐᒪᔪᑦ ᓴᐳᕐᓂᐊᕐᔪᐊᕐᑎᓗᒥᑦ ᐃᒪᕐᑎᐊᕐᓂᒃ ᐃᒪᕐᕆᐅᑕ ᐱᓗᒥᑦ, ᐊᒻᒪᓗ ᐊᑐᒪᔪᑦ
ᑲᓇᑕᒥ ᐃᒥᖅᑕᐅᔪᕐᓇᕐᑎᐊᕐᓂᕐᔪᕐᓄᑦ ᐃᒪᕐᑐᑦ ᐃᒪᕐᑎᐊᕐᐅᔭᓇᐊᖅᑯᕐᓂᐊᓄᑦ. ᐃᓚᖏᓐᓄᑦ ᐅᑭᐅᖑᑎᓪᓗᒍ
ᖃᐅᔨᓴᕐᓂᐅᖃᑦᑕᓚᐅᖅᑐᓂᑦ ᑕᓯᐊᓖᕐᔪᓐᓂᕐᓂᑦ ᓇᓂᓯᖃᑦᑕᓚᐅᖅᑐᑦ ᓴᐱᕐᓂ ᑖᑯᑎᒍᓐᓇᕐ ᑳᐳᓂᕐᓗ.
ᕿᓂᕐᑐᕐᓴᐃᓗ ᐊᒻᒪᓗ ᓴᐱᓕᕐᑖᓂ. ᐃᓚᖏᑦ ᑯᓚᖏᓗ ᑕᓯᕐᓗ ᐸᕐᓯᕐᐱᐅᓚᐅᖅᑐᑦ ᓯᓇᑦᑕᖅᑕᖅᑯᖅ-
ᔨᓚᐅᕆᑦ ᐃᒪᖃ ᖁᑭᑯᑦ ᑕᐃᒪᐃᑦᑐᕐᓴᐅᔪᒥ.

ᐃᒪᕐᒍᑦ ᖃᐅᔨᓴᕐᓂᑯᑦ ᑭᓂᓚᐅᓯᕐᐳᑦ ᐃᒪᖁᐱᓂᒃ ᖁᐱᕐᐃᑦ ᑕᓯᑦ ᓇᑎᕐᒥᓂ ᓇᓂᔭᐅᖃᑦᑕᖅᐳᑦ ᐊᒻᒪᓗ
ᐱᐳᕐᓯᐊᓂᒃ ᓂᕐᔪᑎᓂᓗ ᐃᒪᕐᓄᐊᖃᑦᑕᖅᑐᓂᑦ.

ᑕᒃᑯᐊ ᑎᑎᕋᕐᓯᒪᔪᑦ ᐃᒪᐃᑦ ᒥᒃᓵᓄᑦ ᐊᑐᕐᓂᖃᕐᑎᐊᕆᒪᑕ ᓯᕗᓂᖓᓂ ᐊᑦᔨᒌᖕᖏᓐᓂᐊᓂᕐᓂᕐᐸᑕ ᖃᐅᔨ-
ᓇᖏᒪᑕ ᐅᔭᕋᑦᓴᖃᕐᓂᐊᕐᑎᓗᒍ ᑕᒫᓂ.

ᐃᖃᓗᐃᑦ

ᐃᖃᓗᖕᓂᒃ ᖃᐅᔨᓴᕐᓂᖅ ᐱᒋᐊᓕᐅᕐᓯᒪᓪᓚᑦ 1997ᐅᑎᓪᓗᒍ. 9ᖑᓪᓗᑦ ᐊᕐᕌᒍᕐᓯᒪᔪᑦ ᐃᖃᓗᐃᑦ ᑕᓯᕐᔪᐊᕐᒥ-
ᖃᑦᑕᕆᒪᑕ: ᑕᕆᐅᕐᒥᐅᑕᑦ, ᐃᓴᕈᑦ, ᐊᒥᕐᓘᑦ, ᑲᐸᓰᑦ, ᑲᐸᓰᓪᓗ ᒪᕐᕈ ᐊᕐᕌᒍᕐᓯᒪᔪᑦ ᐊᒻᒪᓗ ᑎᕐᑖᓕᖃᕐ-
ᓗᓂ. ᖃᐅᔨᓴᕐᓂᐅᓚᐅᖅᑐᑦ ᖃᐅᔨᓴᓗᐊᓚᐅᖅᐳᑦ ᑕᕆᐅᕐᒥᐅᑕᓂᒃ, ᐃᓴᕈᓂᒡᓗ ᐊᒻᒪᓗ ᑲᐸᓰᓐᓂᒃ.

ᑕᕆᐅᕐᒥᐅᑕᑦ ᑕᓯᐅᑦ ᕿᑎᐊᓂᖃᕐᔪᐊᕆᒪᑕ ᐃᑎᓂᐊᓂᕐᓗᑎᒃ. ᑭᓯᐊᓂᑦᑕᐅᕐ ᐅᑭᐅᕐᓯᑎᒍᑦ ᐃᓂᖃᐅᕐᔪᕆᒪᑕ,
ᐊᐅᔭᒃᑯᑦ ᐃᖃᓗᐃᑦ ᐅᑭᐅᒦᑦ ᑕᓖᓂ 4ᓂᒃ ᓇᓂᔭᐅᓚᕆᒪᑕ ᑯᑦ ᖃᓂᒥᔭᓂ ᑕᓯᕐᔪᐊᕐᒥ. ᐃᖃᓗᐃᑦ ᐃᓇᑦ
ᑕᓯᕐᔪᐊᕐᑎᐅᑕᐅᖃᑦᑕᕐᐳᑦ ᕿᕐᓕᐅᓕᖕᒥᓗ ᐊᒻᒪᓗ ᑕᓯᐅᑦ ᖃᓂᒥᔭᓂ ᐊᐅᔭᒃᑯᑦ. ᐊᕙᓗᕐᖑᔪᓕᐅᕆᒪᑕ
ᑕᓯᕐᔪᐊᑦ ᑯᒥᐊᓂᐊᓂᑦ ᒪᕐᕌᖅᐱᐅᖃᑦᑕᓕᐅᕆᒪᑕ ᑕᐃᑦᓯᒪᓂ 1997ᒥᓗ 1998ᒥᓗ ᐅᑭᐊᕐᑯᑦ ᒪᔪᐊᕐᓂᕐᑎᑦ-
ᓗᒥᑦ ᑕᕆᐅᕐᒥᐅᑕᑦ. 1616 ᑕᕆᐅᕐᒥᐅᑕᑦ ᓇᓗᓇᐃᒃᑯᑎᕐᑕᐅᓯᒪᓕᐅᕆᒪᑕ ᐅᑭᐅᓂ ᒪᕐᕉᓂ ᑕᐃᒪᓐᓇᑦ
ᐊᕙᓗ ᐃᓕᔭᐅᓕᐅᕐᓯᒪᓗᒍ. ᒫᓐᓇᓕᒃᑲᓐᓂ ᑎᑭᑦᓗᒍ 329ᓂᒃ ᐃᓕᐅᑕᐅᔪᕐᑐᓂᑦ ᓇᓗᓇᐃᒃᑯᑕᓂᒃ ᐅᑎᕐᑎ-
ᑕᐅᓯᒪᓕᕐᑐᑦ ᑕᓖᓂ ᓄᓇᓕᕐᓂ ᐃᖃᓕᐊᕐᐸᑐᓂᑦ. ᐃᖃᓗᒃᑕᐅᖃᑦᑕᓯᒪᔪᑦ ᑕᒃᑯᐊ ᓇᓗᓇᐃᒃᑯᑖᑦ
ᖃᐃᕐᓂᖁᖃᑦᑕᖅᑐᑦ. ᐃᕐᓂᐅᕐᐱᐅᕙᖅᑐᑦ ᑕᕆᐅᕐᒥᐅᑕᓄᑦ ᓇᓂᔭᐅᕐᑕᐃᓐᓇᕐᑐᑦ ᑭᓯᐊᓂ ᓯᓕ ᕿᓂᕐᑐᑦ.

ᐃᓴᕈᑦ ᑕᓯᕐᔪᐊᕐᒥ ᐱᑕᕐᑕᐅᖃᑦᑕᕐᑯᑦ ᐊᒻᒪᓗ ᐃᖃᓗᒃᑯᑦ. ᐃᓇᕐᐸᕐᓕᐊᓕᐅᑦ ᑕᓯᕐᔪᐊᑦ
ᓯᓈᓂᑯᒪᑕ ᑯᕐᒥᐊᓂᓗ ᑕᓯᕐᒪᓗᕐᒪᐅᓱᒃ. ᐃᓇᐅᔪᑦ ᑕᓯᐅᑦ ᕿᑎᐊᓂᐊᓂᖑᐅᖃᑦᑕᕆᒪᑕ ᑕᐃᒃᑯᐊ
ᓇᓗᓇᐃᒃᑯᑖᓗ ᓈᓚᐅᕐᓯᒪᔪᓗ ᐊᓯᐊᓄᑦ ᓅᓯᒪᓗᐊᕐᔪᕐᑐᑦ ᐊᒻᒪᓗ ᐱᑕᕐᑕᐅᔭᕐᓗᑎᑦ ᑕᓯᕐᔪ-
ᐊᕐᒥᓇᓕᕐᒥ.

ᑲᐸᓰᑦ ᓇᓂᔭᐅᓕᕐᓂᐊᕐᔪᓕᐅᔪᑦ ᑕᓯᐊᓖᕐᓂᖕᓂ ᑕᓯᕐᔪᐊᑦ ᖃᓂᒥᔭᓂ. ᑲᐸᓰᑦ ᓯᐸᓯᑦ ᓇᓂᔭ-
ᐅᖃᑦᑕᖅᐳᑦ ᕿᓂᖕᓱᐱᐅᔪᑦ ᖃᓂᒥᔭᓂ ᑕᓯᕐᔪᐊᕐᒧᑦ ᑯᑐᓄᑦ. ᑲᐸᓰᑦ ᐅᐱᖃᑦᑕᖅᐳᑦ ᑕᓯᕐᔪᐊᑦ
ᐅᖓᑕᓂ ᑕᓯᕐᓂ.

1998ᖑᑎᓪᓗᒍ, ᐃᓚᖏᑦ ᐃᒪᑦ ᐃᑳᕐᑕᐅᒥᐊᓖᑦ ᐊᑯᓯᐅᑐᐃᓐᓇᕐᓇᐊᖃᕐᓯᒥᔭᒥᐊᖕᖏᕐᓂᒃ ᐃᓯᒪᒋᔭᐅᓯᒪ-
ᓕᐅᑐᑦ ᑲᖏᕐᓗᓂᕐᒥᑦ ᑕᐃᑯᖓ ᐅᔭᕐᑕᓇᖃᑐᐃᓐᓇᐊᖃᕐᑐᒥᑦ ᑕᒃᑯᐊ ᐃᖃᓗᒃᓂᖏᑦ ᖃᐅᔨᓴᕐᑕ-
ᔪᑕᐅᓗᑲᓕᐅᑐᑦ.

ᐃᖃᓗᐃᑦ ᓈᓴᖅᑕᐅᖃᑦᑕᓂᖏᑦᑕ ᖃᖓᓂ. ᐃᓅᓚᐃᑦ ᐊᒥᖏᓐᓂᑦ, ᖃᓄᖅᑐᓂᒃᑯ ᑕᕆᐅᕐᕆᐅᑕᓂᒃᑯ ᑲᑎᑦᑎᔪᖃᓚᐅᕐᒪᖔᑦ ᖃᓄᖅ ᓴᐱᕐᕆᖅᑕᖅᑎᕆᒪᖔᑕ ᐊᒥᖏᑦ ᓄᕐᖏᓐᓂᒃᑯ. ᑎᖅᓱᓂᖅᓂᒃᑯ ᐊᒻᒪᓗ ᑕᒃᑐᖏᓐᓂᑦᑕᐅᖅ. ᑕᒪᒃᑯᐊ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᑦ ᐋᑎᖃᓗᐊᕐᐳᑦ ᓯᕗᓂᒃᓴᖏᓐᓂ ᐊᓯᔾᔨᓂᐊᕐᒪᖔᑕ ᖃᐅᔨᓴᕈᑕᐅᓇᓱᓐᓂᐊᕐᒪᑕ ᐃᖃᓗᖏᑦ ᐅᔾᔨᖅᑲᐃᓐᓇᖃᑦᑕᕐᓂᐊᖅᑐᑦ.

ᓂᕈᐊᑎᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᑦ

ᓂᕈᐊᑎᓄᑦ ᖃᐅᔨᓴᖅᓂᐅᓚᐅᖅᑐᑦ ᐅᑭᐊᖕᖓᒍᑦ 1997ᒥ ᖃᓪᓕᑦᑕᖅᑎᑕᐅᓯᒪᔪᒍᑦ ᓈᓚᐅᑎᓕᖅᑐᐃᑎᓗᒋᑦ ᓚᔪᓄᑦ ᑐᑐᓄᑦ ᐊᖑᓇᓱᓐᓄᑦ ᐃᓕᓐᓂᐊᕐᕕᒃᑯᓗᐊᒥᑦ ᑲᖏᖅᓱᓂᐅᑦ ᑲᓂᖅᓴᓂ. ᐱᓪᓗᐊᖅᑲᓐᓂᑦ ᑐᑐᓄᑦ ᐃᓕᓴᐅᓚᐅᓇᖓᑦ ᐊᖑᓇᓱᓐᓄᑦ ᑲᖏᖅᓱᓂᐅᓗ ᐃᒡᓗᓕᒫᒥᒎᓗ ᐊᑯᓐᓂᖓᓂ 1998ᖑᑎᒍᑦ. ᓚᔾᔨ ᑖᒃᑯᓇᖓᑦ ᑖᓐᓇᒪᓂᑦ ᐃᒡᓗᓕᒫᒍᑦ ᐅᖓᑖᓄᐊᓚᐅᖅᐳᑦ ᐃᓂᐅᕐᓇᐅᑐᖅᑐᑎᒃ. ᑖᒃᑯᐊ ᑐᑐᑦ ᐃᒡᓗᓕᒫᒍᑦ ᐅᖓᑖᓂᖏᓐᓇᓚᐅᖅᐳᑦ ᐊᐅᔭᒃᑯ 1998ᒥ ᐊᒻᒪᓗ ᐅᑭᐅᒃᑯᑦ 1998/99ᒥ. ᐱᓪᓕᕆᓕ ᑕᓂᕈᐊᑦ ᑐᑐᕈᑎᖏᓐᓄᓪᓚᐅᖅᑐᑦ ᐊᐅᔭᖅᑐᑎᒃ ᐅᑭᐅᖅᑐᑎᒃᑯ ᑕᐃᒃᓂ 98/99ᒥ ᒫᓐᓇᒧᑦ ᐃᓇᖓᓂᓪᓚᖅ. ᑯᓪᓕᓯᕆᑎᒃ ᓚᕿᓕᒃᑯᓂᑦ ᐃᓕᓴᐅᓚᐅᖅᑐᑦ ᓂᕈᐊᑎᓕᕆᔨᐊᓄᑦ ᑭᓯᐊᓂᓕ ᑕᑉᐹᓂᐊᕐᔪᒃᑯᓂᑦ ᐊᑭᓕᖅᑕᐅᖅᑐᑎᒃ. ᓚᕿᓕᒃᑯᓗ ᑕᑉᐹᓂᐊᕐᔪᒃᑯᓗ ᑲᔪᓯᓂᐊᖅᑐᑦ ᐱᓕᕆᖃᑎᖃᖅᑐᑎᒃ ᖃᐅᔨᓴᖅᑎᓄᑦ ᒪᓕᒃᐸᓕᐊᓗᓂᒃᑯᑦ ᑐᑐᑦ ᐃᖏᕐᕋᓂᖏᑦ ᑭᓕᕐᓕᕐᕕᒃᑎᒍᑦ. ᓄᓇᕗᐊᑦ ᓇᓗᓇᐃᖅᓯᓯᒪᔪᑦ ᓄᐊᑲᓕᐊᓂᕆᓯᒪᔭᖏᓐᓂᒃ ᖃᕋᓴᐅᔭᒃᑯᑦ ᖃᐅᔨᓴᐅᑎᓕᕆᓂᐊᖅᑐᓗ ᐆᒪᔪᓂᐊᑎᑦ ᑲᑎᒪᔨᖏᓐᓄᐊᖅᑕᐅᔪᑎᒃ ᐊᖏᖅᓯᒪᓕᖅᑕᖅ.

ᑐᑐᓂᒃ ᖃᐅᔨᓴᖃᑦᑕᖅᓯᒪᔪᑦ ᑯᓕᒧᓕᖅᑯᑦ ᑕᑉᐹᓂᖅᑯᑦ ᓄᓇᒥᖃᑦᑕᑦᑕᓪᓚᓂ ᐅᑭᐅᒃᑯᑦ, ᐅᐱᕐᖓᒃᑯᑦ, ᐊᐅᔭᒃᑯᑦ ᐊᒻᒪᓗ ᐅᑭᐊᖕᖓᒍᑦ 1998ᒥ. ᑐᑐᖃᑎᐊᖏᑦᑕᒪᓂᖅᑐᖅ. ᖃᐅᔨᓴᖅᓂᑦ ᑕᒪᒃᑯᐊ ᑲᔪᓯᓂᐊᖅᑐᑦ 1999ᒥ. ᖃᐅᔨᓴᕐᓂᐅᒋᓪᓗᑕ ᑎᖏᐊᔪᐊᓂᒃ ᑕᒪᒃᑯᓂᖓ ᑯᐊᔭᐃᓗ, ᑕᑎᓯᔪᐊᓗ, ᖃᓯᐅᓗ ᐊᒻᒪᓗ ᒥᑎᑦ ᖃᐅᔨᓴᖅᑕᐅᖃᑦᑕᕐᓂᐅᒋᓪᓗᑕ. ᖁᓂᖃᑦᑕᕐᓂᐅᒋᓪᓗᑕ ᑎᓴᒪᓂᐊᓗ ᐊᓪᓚᓗ ᓯᑎᕐᖏᓐᓂᒃ ᐱᒋᐊᖅᑐᑎᒃ. ᓯᑕᒪᑦ ᑎᓴᒪᓂᐊᒃ ᓯᑎᖏᑦ ᓇᓂᔭᐅᓚᐅᖅᑐᑦ ᐊᒻᒪᓗ ᒍᐱ ᓴᓕᐊᕐᕕᐅᓚᐅᖅᓱᑎᒃ. ᐊᓗᕐᕌᖅᑲᓚᐅᖏᑦᑐᖅ, ᐅᐸᒐᓱᓐᓂᑦ ᖃᖅᐱᒃᑕᖃᖅᓯᓇᓗ. ᑎᖏᕐᔭᖅᑕᐅᖅ ᓂᕈᐊᓂᒃ ᐊᖑᓇᓯᐊᕐᑐᑦ 6 ᑳᐟ, 2 ᑭᓪᓚᐃᑦ ᐊᒻᒪᓗ ᐱᓪᓕᕆᑦ ᓇᖅᑐᖅᓯᕐᓂᒃ ᑕᑯᔭᐅᓚᐅᖅᑐᑦ. ᐃᐸᑎᐱᖏᑦ ᐅᔭᖃᑦ ᑭᒡᓕᖏᓐᓂᒍᓐᓂᑦ ᓯᓚᑎᐊᓂᖃᑦᑕᓚᐅᖅᐳᑦ ᖃᐅᔨᓴᖅᑕᐅᔫᑉ.

ᐱᔾᔪᑦ

ᐱᔾᔪᑦᑕᐅᖅ ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᑕᐅᕙᓂ ᒍᓗᓯᐅᑉᐱᐅᓯᒪᔪᒥ 1998ᖑᑎᒍᑦ. ᐱᔾᔪᑎᑦ ᓄᖑ-ᐃᓇᓇᐊᖃᕐᔪᑎᑦ ᓇᓂᓯᓚᐅᕐᒪᑕ ᖃᐅᔨᓴᖅᑎᒍᓯᑦ. ᐊᑦᑎᖅᓂᖏᓪᓗ ᖃᐅᔨᓂᖏᓪᓗ ᑎᓕᐅᔭᖃᐅᖃ-ᑕᕝᕙ ᐃᓚᐱᓚᐃᓗ ᐊᑦᑕᓛᖅᑲᓗ ᒫᓚᓪᓗ ᑭᓕᕐᓂᖃᑦᑕᖅᑐᑦ. ᒫᓚᕐᑐᓕᕆᓗ ᓯᓂᖏᑦ ᐃᑦᑎᕐᓂᒃ ᐊᑦᑕᕿᐊᖃᐅᑎᓪᓗᑎᒃ. ᖃᑦᑎᖅᓂᓂ ᖃᑦᑎᖅᓂᓚᓗᐃᓇᓂᒃ ᒪᓴᐅᓂᖏᓐᓂᑦ ᕿᔪᒃᑲᐅᑦ. ᓯᑐᖃᐅ-ᓂᐊᑦᔪᐃᑦ ᕿᔪᒃᑲᐅᑎᐊᑦ ᐊᒻᒪᓗ ᐅᔭᖃᑦ ᖃᐃᕐᓂ ᐱᔾᔪᑦᖃᐅᓯᓗᔪᑎᒃ. ᐅᓇ ᐊᖏᓂᖅᑲᖑᔪᖅ - ᓄᓇᖅ ᑕᐅᑐᒐᑦ - ᐱᔾᔪᑎᒃᐸᖅᑕᐅᔪᖅ. ᐱᔾᔪᑎᓗ ᓄᓇᐅᑦ ᖃᑦᑎᖅᓂᖏᓐᓂ ᐱᔾᔪᑎᖏᑦ ᒪᓕᒃᑕᐅᔪᑦ ᐊᒡᒍᑎᓂᒋᓄᓐᓄᑦ ᐅᐸᒍᓐᓂᑦ ᐊᓄᕆᐊᔪᑦ ᐊᖑᑖᓂᑦᑕᖅᓯᒪᒥᑦ ᐱᔾᔪᑎᐊᓗᐊᖃᑦᑕᖅᑐᑦ. ᐅᖅᑯᐊᕐᑐᖅ ᐱᔾᔪᑎᐊᓯᒪᔪᑦ ᐊᒻᒪᓗ ᑕᐃᒃᑯᐊ ᐊᒡᒍᕐᖃᑦᑕᖅᑐᑦ ᐱᔾᔪᑎᐊᖏᓐᓂᖅᓴᐅᖃᑦᑕᕐᓂᑦ ᐊᒻᒪᓗ ᐅᔭᕋᕐᔪᐊ ᐱᔾᔪᑎᐅᓯᒪᓗᐊᖅᑎᒃ.

ᐱᔾᔪᑎᑦ ᖃᐅᔨᓴᖅᓂᐅᓚᐅᖅᑐᖅ ᓄᓇᕘᑉ ᓇᓄᓇᐃᖅᓯᒪᓂᐊᖅᑐᑦ ᓇᐅᒃ ᐱᓯᒪᕝᕕᒋᓇᓱᒋᕙ ᑕᐃᒃᑯᐊᓗ ᓄᓇᒥ ᐱᔾᔪᓯᒪᔪᑦ ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᓇᓄᓇᐃᖅᑕᐅᓯᒪᓂᖏᑦ ᑕᒡᒐᖏᓪᓗ ᐊᐃᕙᓂᐅᖅᑕᐅ-ᓯᒪᓪᓚᑦ ᐊᖏᕐᓯᖅᑕᐅᓂᖓᑦ 1997ᒥ ᐊᐅᔭᐅᑎᒍᑦ.

R L & L Environmental Services Ltd.
17312 - 106 Avenue • Edmonton, Alberta T5S 1H9
Telephone (403) 483-3499 • Fax (403) 483-1574

20 April 1999

Department of Fisheries and Oceans
Nunavut Area Office
PO Box 358
Iqaluit, Nunavut
X0A 0H0

Our File No.: 558

ATTN: Jeff Maurice
Scientific Licensing Coordinator

Dear Mr. Maurice:

RE: Licence to Fish for Scientific Purposes in the Meliadine Lake Area

R.L. & L. Environmental Services has been retained by WMC International Limited, to carry out baseline fisheries assessments for the proposed Meliadine Lake Gold Mine, northwest of Rankin Inlet, Nunavut. This study is a continuation of work undertaken in 1997 and 1998 under Scientific Licences SLE-97/98-010 and SLE-98/99-004. The data reports summarizing these previous studies have been submitted to Margaret Keast (DFO, Iqaluit). Attached are a completed application for a Licence to Fish for Scientific Purposes and an Animal Protocol Form.

An application for a Land, Freshwater and Marine Based Research Licence has been concurrently submitted to the Nunavut Research Institute in Iqaluit. The local stakeholders (Kivilliq Inuit Association, Aqiggiak HTO, Aqigiq HTO, Municipality of Rankin Inlet) were consulted during the Environmental Studies Review meeting conducted in Rankin Inlet on 14 April 1999.

If you have any questions please do not hesitate to contact me.

Sincerely,

R.L. & L. ENVIRONMENTAL SERVICES LTD.

Jack Patalas.
Fisheries Biologist

cc. Pam Coffin-MacAulay

RECEIVED
APR 27 1999

APPLICATION FOR A LICENCE TO FISH FOR SCIENTIFIC PURPOSES

Name of Agency or Individual:
R.L. & L. Environmental Services Ltd., Mr. Gary Ash

Nature of Research:
R.L. & L. Environmental Services Ltd. has been requested by WMC International Limited to continue baseline fisheries and aquatic habitat assessments in the vicinity of the proposed gold mine development at Meliadine Lake near Rankin Inlet, Nunavut (approx. 63°03'N, 92°12'W). The study program for 1999 includes fisheries assessments in the Meliadine Lake watershed, enumeration of fish migrations from Hudson Bay into the Meliadine River (fall 1999), and investigations of fish movement patterns within the study area

Personnel:
Mr. Gary Ash, Senior Fisheries Biologist, R.L. & L. Environmental Services Ltd.
Mr. Jacek Patalas, Fisheries Biologist, R.L. & L. Environmental Services Ltd,
Mr. Jim Campbell, Fisheries Biologist, R.L. & L. Environmental Services Ltd.
Biological technicians from R.L. & L. Environmental Services Ltd., as well as local assistants from Rankin Inlet.

Duration of Field Program:
We are planning to conduct the field studies during the period of June to December 1999.

Location:
Meliadine Lake, Meliadine River, Little Meliadine Lake, and numerous small lakes and streams within the Meliadine Lake watershed (see attached Figure 1.1).

Species:
We anticipate to encounter the following species in the Meliadine Lake study area: Arctic charr (*Salvelinus alpinus*), lake trout (*Salvelinus namaycush*), cisco (*Coregonus artedii*), round whitefish (*Prosopium cylindraceum*),Arctic grayling (*Thymallus arcticus*), slimy sculpin (*Cottus cognatus*), burbot (*Lota lota*), threespine stickleback (*Gasterosteus aculeatus*), and ninespine stickleback (*Pungitius pungitius*).

Sample Size:
Based on our catches during 1997 and 1998, we anticipate to capture, live sample, and release the following numbers of fish: 1300 Arctic char, 200 lake trout, 200 Arctic grayling, 100 round whitefish, and 100 cisco. While every effort will be made to minimize capture-related mortalities, all fish that incidentally succumb during sampling (if any) will be dead sampled to collect life history and ageing information. Based on our previous experience, the incidental mortalities will not exceed 1% of the numbers of live sampled fish.

Sampling Methods:
The fish capture methods will include backpack electrofisher, short-duration gill net sets, angling, and fish fence installations (near the mouth of Meliadine River). The captured fish will be measured (length and weight), examined (externally) for sex and maturity, marked with a Floy tag, and released at their capture locations. Non-lethal ageing structures (scales and fin rays) will be collected from a small subsample of each species. In addition, five Arctic char adults will be implanted with radio tags to allow tracking of their spawning movements (see the attached Animal Protocol Form).

FRESHWATER INSTITUTE SCIENCE LABORATORY
ANIMAL CARE COMMITTEE
ANIMAL PROTOCOL FORM

PROJECT TITLE:
Environmental baseline studies of the aquatic resources and habitat in the Meliadine Lake Project Area, Nunavut

COLLATOR: **PROJECT NO:** 558

PROJECT LEADER:
Mr. Gary Ash
R.L. & L. Environmental Services Ltd.
17312 - 106 Avenue
Edmonton, Alberta
T5S 1H9

PHONE: (403) 483-3499 **FAX:** (403) 483-1574

OTHER PERSONNEL:
Mr. Jack Patalas (R.L.& L. Environmental Services Ltd.)
Mr. Jim Campbell (R.L. & L. Environmental Services Ltd.)
other R.L. & L. Environmental Services Ltd. staff and local assistants from Rankin Inlet

LOCATION OF STUDY:
Meliadine Lake Project Area, northwest of Rankin Inlet, Nunavut (approx. 63°03'N, 92°12'W).

FUNDING AGENCY:
WMC International Limited
22 Gurdwara Road
Nepean, Ontario
K2E 8A2

START DATE: 10 June 1999 **COMPLETION DATE:** 15 December 1999

OBJECTIVE OF STUDY:
Through the use of radio telemetry, determine Arctic char movements in the Meliadine Lake study area and locate Arctic char spawning areas.

ACUTE OR CHRONIC STUDY:

SPECIES AND NUMBER OF ANIMALS TO BE USED:
Five (5) Arctic charr (*Salvelinus alpinus*)

CATEGORY OF INVASIVENESS:
Category C

DESCRIPTION OF STUDY AND PROCEDURES:
See attached description from a previous study conducted by R.L. & L. Environmental Services Ltd. in the Meliadine study area during 1997.

CAPTURE SCENARIO FOR WILD ANIMALS:
Fish will be captured using a variety of methods including angling, gill nets, and backpack electrofishing. No mortalities are expected.

ANAESTHETICS AND ANALGESICS:
Clove oil (40 ppm concentrations) will be used as an anaesthetic.

BIOHAZARDS AND PRECAUTIONS:
Not applicable

METHODS FOR EUTHANASIA AND DISPOSAL:
Not applicable

FINAL DISPOSITION OF UNUSED ANIMALS:
All animals (tagged or untagged) will be released back into the waterbody that they were captured in.

PROJECT LEADER: Gary R Ash **DATE:** April 20, 1999

ACC APPROVAL: **DATE:**

2.3.3 Radio Telemetry

The radio telemetry program involved two components: surgical implantation of radio transmitters in fish and subsequent tracking to determine seasonal movements and identify critical spawning, summer feeding, and overwintering habitats. Arctic grayling and lake trout were implanted during the spring and summer field sessions, whereas most Arctic charr were implanted during the fall fish fence operations in Meliadine River. Seven radio tracking flights were carried out between 21 July and 25 October 1997; additional tracking flights are also planned for spring and summer of 1998. The following description briefly summarizes the radio telemetry procedures.

Surgical Implantation

Radio transmitters were manufactured by Lotek Engineering Inc. of Aurora, Ontario. Two models of transmitters were used for implantation. The larger model (MCFT-7A) was 83 mm in length, 16 mm in diameter, and weighed 29 g; it was used in lake trout and Arctic charr. The smaller model (MCFT-3BM) was 43 mm in length, 11 mm in diameter, and weighed 8 g; it was used in Arctic grayling. Both models were equipped with a 435 mm trailing whip antenna. Each transmitter was equipped with a microprocessor to control its activation time (time on and off). The smaller transmitter (8 g) operated 12 h on and 12 h off with a minimum life span of 358 days, while the larger transmitter (29 g) operated 18 h on and 6 h off for a minimum life span of 415 days. Both models operated on high frequencies in the 149.70 to 149.76 MHZ range. The external capsule material of the transmitters was nalgene; it was designed not to bond to protein and thus reduce the potential for rejection or expulsion from the body of the fish.

Surgical implantation procedures used during this study were based on techniques described by Bidgood (1980) and Knecht et al. (1981). A 60 L anaesthetic tank was positioned close to the river or lake. Fish selected for transmitter implantation were placed individually in the anaesthetic tank. Clove oil at a concentration of 40 ppm

was used to induce rapid anaesthesia. Inducement time was normally from 2.5 to 5 minutes. Fish were then removed from the anaesthetic tank and placed on the operating table in a wetted, sponge-lined trough.

A short, longitudinal incision (approximately 3 cm in length) was made in the body wall. A sterilized No. 16 hypodermic needle was then inserted through a point in the body wall to the side and posterior to the incision. The transmitter antenna wire was inserted into the hollow needle, the needle removed, leaving the antenna wire exiting the body wall of the fish. The radio tag (sterilized in zephiran chloride and rinsed in distilled water) was placed in the body cavity of the fish, and the incision closed. A simple interrupted suture pattern was used to rejoin the incision using a monofilament absorbable suture. VetBond™ (n-butyl cyanocrylate tissue adhesive) was applied to the outside of the incision and the antenna wound. Oxygenated water was directed over the gills during the surgical procedure, and continued until the fish exhibited voluntary respiration and caudal movements. The fish was then placed in the river or lake and supported by hand until equilibrium could be independently maintained.

Tracking

Tracking was accomplished primarily from helicopter (Bell 206 Jet Ranger). A single four element Yagi antenna was mounted on the landing strut (using a specially designed mounting bracket) of the passenger's side of the aircraft in an approximately 45° forward position. Flight altitude varied from 80 to 150 m depending on the area searched, weather conditions, and signal reception. Flights at higher altitudes increased the range at which audio signals could be detected, but in most instances low level passes were needed to acquire the transmitter code. A scanning receiver model SRX-400 (manufactured by Lotek Engineering Inc.) was utilized during surveys. The location of each radio tagged fish encountered during tracking surveys was recorded on 1:50 000 scale maps and tabulated for reference purposes.

Distribution List for NIRB File #:99YN011
Project Name: :Environmental Studies at Meliadine West Gold Project

Kivalliq List
# of Pages 28

	Contact Name:	Phone #:	Fax #:
Nunavut:			
NTI	Environmental Manager	983-2517	983-2723
Kivalliq IA	Chief Land Administrator	867-645-2810	867-645-3855
NPC	Executive Director	613-238-1155	613-238-5724
NWB	Executive Director	867-360-6338	867-360-6369
NWMB	Executive Director	867-979-6962	867-979-7785
Keewatin Wildlife Federation	Chairperson	867-857-2695	867-857-2990
Inuit Heritage Trust		867-979-0731	867-979-0269
Federal:			
DIAND - Nunavut	District Manager	867-979-4405	867-979-6445
DIAND - Kivalliq	Regional Inspector	867-645-2831	867-645-2592
DFO - Eastern Arctic	Regional Biologist	867-979-6274	867-979-8039
DOE	Mgr. Environmental Protection Branch	867-920-6050	867-920-6648
CCG	Ken Brant	519-383-1862	519-383-1989
Territorial Government:			
Sustainable Dev.	Ian Ellsworth	867-857-2828	867-857-2986
CGHT	Shawn Maley	867-645-5042	867-645-2321
CGHT	Jason Brown	867-645-5087	867-645-3357
PWNHC	Charles Arnold	867-920-8084	867-873-0205
Other:			
BQCMB	Chairperson	867-	867-873-0293

Communities:

Rankin Inlet: X0C 0G0			
Hamlet	SAO	867-645-2953	867-645-2146
Aqiggiak HTO	Chairperson	867-645-2350	867-645-3257
Chesterfield Inlet: X0C 0B0			
Hamlet	SAO	867-898-9926	867-898-9108
Aqigiq HTO	Chairperson	867-898-9063	867-898-9079