SUMMARY
OF PUBLIC AND FIRST NATIONS PARTICIPATION

ENVIRONMENTAL IMPACT ASSESSMENT

PROPOSAL BY SISSON MINES LTD TO CONSTRUCT AND OPERATE AN OPEN PIT TUNGSTEN AND MOLYBDENUM MINE NEAR NAPADOGAN, NEW BRUNSWICK

Prepared by the Department of Environment and Local Government

January 2016

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Background

In the Environmental Impact Assessment (EIA) Report to the Minister of Environment and Local Government, Sisson Mines Ltd., or the proponent, has proposed to construct and operate an open pit tungsten and molybdenum mine west of Napadogan, approximately 60 kilometres northwest of Fredericton, New Brunswick. Following a two year construction period, the open pit mine would operate for an estimated 27 years and the project development area (PDA) would cover 1,253 hectares (3,096 acres) of Crown lands.

Approximately 30,000 tonnes of ore would be mined and processed on-site per day. The resulting mineral products would be trucked to nearby rail facilities for transportation to customers. Waste rock from the open pit, and tailings as a by-product of the ore processing operations, would be permanently stored in a tailings storage facility (TSF).

The Sisson Mines project (formally Geodex Minerals) was registered under the provincial *Environmental Impact Assessment Regulation* of the *Clean Environment Act* in September 2008. A federal environmental assessment regarding the project was also initiated in 2011 by the Canadian Environmental Assessment Agency (CEAA).

A decision by the Minister of Environment and Local Government on October 24, 2008 required that the proposed Project undergo a comprehensive EIA as per the Regulation. In addition, due to the potential requirement for several federal approvals, the proposed Project required a Comprehensive Study level of assessment under the *Canadian Environmental Assessment Act*.

Initial public consultation on the Project began on December 18, 2008 with the release of the Draft Guidelines which allowed members of the public to provide comment on what should be included as part of the EIA study. Final Guidelines were issued to Sisson Mines Ltd. on March 1, 2009. Sisson Mines Ltd. prepared Terms of Reference which were reviewed by the Technical Review Committee (TRC) and then proceeded to conduct the study.

A Preliminary Draft EIA Report submitted by the proponent was received by the Department of Environment and Local Government (DELG) in July of 2013 for review by the TRC. As a result of additional work identified by the TRC, the Report was revised, and a Final EIA Report satisfying the EIA Guidelines was received from the proponent in March 2015.

On April 16, 2015 copies of the complete EIA Report, a Summary of the EIA Report and the General Review Statement were distributed and made available in both official languages at various locations in the project area, Fredericton and First Nations communities. Information was also made available on the DELG's Internet site. Concurrently, a news release was issued and paid advertisements were taken out to inform citizens that this information was available, of the upcoming public meeting, and where they could view and/or pick up information. Interested parties were encouraged to contact DELG if they intended to make a formal presentation at the public meeting.

The release of the EIA and General Review Statement and the announcement of the date of the public meeting on April 16, 2015, marked the beginning of the second phase of the formal public consultation process. The Minister of Environment and Local Government then proceeded with the appointment of an Independent EIA Panel to preside at the provincially mandated public meeting and the First Nations community meetings.

The 4-person Panel was comprised of Dr. Pierre-Marcel Desjardins, Professor at l'Université de Moncton as chair and socio economic expert, Christine Moore, Senior Project Manager with Intrinsik Environmental Inc. as the health and toxicology expert, Dr. William Wicken, Associate Professor in the Department of History at York University as the heritage and First Nations expert and Dallas Davis, Dalmin Corporation as the mining expert.

Over 300 people attended the public meeting on June 22, 2015 in Stanley, NB. The First Nation community meetings were held on the dates below and the attendance varied between 20 to 40 people at each meeting:

- Madawaska First Nation on May 26, 2015 from 7 pm to 10 pm.
- Elsipogtog First Nation on June 10, 2015 from 7 pm to 11 pm.
- Tobique First Nation on June 11, 2015 from 7 pm to 10 pm.
- St. Mary's First Nation on June 23 from 7 pm to 10 pm.
- Woodstock First Nation on June 24 from 7 pm to 10 pm.

In addition to the input received during the public meeting and First Nations community meetings, DELG received 58 written submissions.

The meetings were recorded to enable the production of verbatim transcripts and simultaneous interpretation services were provided at the public meeting and the Madawaska Maliseet First Nation community meeting.

At the meetings, the independent EIA Panel members heard public comments on the EIA. Each meeting began with a brief introduction of the panel members, the purpose of the meeting, and the mandate of the panel. Following the panel's introduction, individuals or groups who/which had pre-registered were invited to make their presentations. The floor was then opened for comments from the audience in attendance. Prior to the adjournment of the meetings, attendees were reminded that written comments could be submitted to DELG until July 17, 2015. Comment sheets for this purpose were provided at each meeting and made available for download from the DELG Internet site. Attendees were also reminded throughout the evening to provide their contact information to a provided sign-up form if they wished to subsequently receive a copy of the Summary of Public Participation and/or the verbatim transcript of the meeting.

Following the closing date for the 90-day public review and comment period on July 17, 2015, the Panel prepared and submitted a report of public input on the project. This report reflects feedback gathered at the public meeting, at the First Nations community meetings, and via written comments submitted throughout the public comment period. This report was received in November 2015. The Panel report is included in its entirety as part of the Minister's Summary of Public Participation.

EIA Conclusion and Decision

The submission of the Independent EIA Panel's report completed the public participation component of the provincial EIA process. Before making a recommendation on the project, the Minister of Environment and Local Government took into account the public and First Nations input received and summarized in the Panel's report, including any recommendations noted, as well as information provided by the proponent and by the EIA Technical Review Committee. This included a Summary of the Environmental Assessment Report, the General Review Statement containing the opinions of the TRC, and the Panel Report. The Minister was then able to make a recommendation to the Lieutenant-Governor in Council for consideration and decision. This recommendation included a series of 40 detailed operational conditions to be considered.

On December 3, 2015, the Minister of Environment and Local Government announced that the Lieutenant-Governor in Council had decided in favour of the project and the provincial government issued an environmental impact assessment approval to Sisson Mines Ltd. subject to 40 detailed Conditions. This information was posted on the DELG website at http://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/environmental_impactassessment/comprehensive_reviews/sisson.html.

Steps Following the EIA Process

The Panel Report was required to be translated before it could be shared with consultation meeting participants, First Nations and the general public. This Minister's Summary of Public Participation contains the Panel Report and completes the release of consultation information.

It should be emphasized that following EIA approval, the proponent is still required to obtain all other applicable approvals/permits for the project. This is anticipated to be completed as part of the project detailed design phase and must satisfy the 40 conditions imposed by the Lieutenant Governor in Council as part of the EIA approval, including application for an approval to construct and operate.

Federal EIA Process Update

The Canadian Environmental Assessment Agency determined that a Transitional Comprehensive Study was required to be undertaken for the project under the *Canadian Environmental Assessment Act* (CEAA). This study has been undertaken concurrently with the provincial environmental assessment process for the most part. The federal process has not been completed and the Agency is currently taking all information into consideration while drafting the Final Comprehensive Study Report. It is expected that the Final Comprehensive Study Report will be completed in spring after which it will be provided to First Nations and posted for a public comment period of 30 days thus concluding the 365-day federal environmental assessment process. The federal Minister of Environment will make a decision as to whether the project is likely to cause significant adverse environmental effects and will issue a decision statement. Information made available as part of the *Canadian Environmental Assessment Act* (CEAA) process on this project is available online at http://www.ceaa.gc.ca/050/details-eng.cfm?evaluation=63169.

Independent EIA Panel Review

Proposed construction and operation of an open pit tungsten and molybdenum mine near Napadogan, New Brunswick by Sisson Mines Ltd.

November 2015

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Pierre-Marcel Desjardins (Chair), Dallas Davis, Christine Moore and William Wicken (The Panel) provided this report for the New Brunswick Department of Environment and Local Government (DELG) solely for the purpose stated in the report. The information contained in this report was prepared and interpreted exclusively for DELG and may not be used in any manner by any other party. The Panel does not accept any responsibility for the use of this report for any purpose other than as specifically intended by DELG. The Panel does not have, and does not accept, any responsibility or duty of care whether based in negligence or otherwise, in relation to the use of this report in whole or in part by any third party. Any alternate use, including that by a third party, or any reliance on or decision made based on this report, are the sole responsibility of the alternative user or third party.

The Panel does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The Panel makes no representation, warranty or condition with respect to this report or the information contained herein other than that it has exercised reasonable skill, care and diligence in accordance with accepted practice and usual standards of thoroughness and competence for the profession of toxicology and environmental assessment to assess and evaluate information acquired during the preparation of this report. Any information or facts provided by others, and referred to or utilized in the preparation of this report, is believed to be accurate without any independent verification or confirmation by the Panel. This report is based upon and limited by circumstances and conditions stated herein, and upon information available at the time of the preparation of the report.

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1.0 Introduction

The present report pertains to Sisson Mines Ltd's proposed construction and operation of an open pit tungsten and molybdenum mine near Napadogan, New Brunswick. As described in the General Review Statement[1], "[a]n average of 30,000 tonnes per day of ore will be mined by conventional drilling, blasting and hauling methods, then crushed and conveyed to an on-site ore processing plant. The ore will be processed to tungsten and molybdenum concentrates using conventional flotation technology. The tungsten concentrate will be further refined on-site to produce a higher value crystalline tungsten product, ammonium paratungstate (APT). The APT plant design is based on proven metallurgical and chemical processes, using alkali pressure leach technology, in a series of continuous and batch operations. The final mineral products will be packaged and trucked off-site to rail facilities or directly to markets. A new electrical transmission line from the Keswick terminal will be constructed by NB Power to supply the Project with electricity."

Provincial legislation provides for the creation of the independent panel. The Terms of Reference for the panel are presented in Section 2.0. The role of the Panel is not to make recommendations with respect to whether the mine should be approved by the government or not. The Panel's role is to receive comments from the public and First Nation communities, analyze those comments relative to the information and assessment presented in the Environmental Impact Assessment (EIA), and identify shortcomings (if any) in the context of the actual provincial EIA process. If the Panel considers the EIA to be deficient, relative to the concern expressed, recommendations are to be made.

The process is documented in Section 3.0 and the Panel's methodology for the preparation of the report in Section 4.0. Panel members looked at all documents received and all comments made during the consultation process. However, this report does not make reference to all comments, but presents summaries and analyses of those comments which were considered significant in the context of the Final EIA. The Panel did not count how many similar comments were received to consider if they were significant or not. Each comment was judged on its own merit. When the Panel believed that that the EIA had shortcomings with respect to the comments expressed – in the context of present guidelines – recommendations were made.

The four-person Panel was comprised of Dr. Pierre-Marcel Desjardins, Professor at l'Université de Moncton as chair and socio economic expert, Dallas Davis, Dalmin Corporation as the mining expert, Christine Moore, Senior Project Manager with Intrinsik Environmental Inc. as the health and toxicology expert and Dr. William Wicken, Professor in the Department of History at York University as the heritage and First Nations expert. A brief bio of panel members is presented in Section 2.0

[1] New Brunswick Department of Environment and Local Government. 2015. *General Review Statement.* April 2015. http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/SissonProject-ProjetSisson/EIA-2015SissonGeneralReviewStatement.pdf

2.0 Terms of Reference

The panel's terms of reference were:

- To facilitate the EIA meeting(s), consisting of one Public Meeting and five First Nation Community Meetings, employing both official languages as needed;
- To seek clarification from participants on specific questions that they have, in an effort to better understand the query and/or concern and to speak to issues as appropriate drawing on individual expertise and on knowledge of the project;
- To review the input received and determine whether or not issues raised are in fact adequately addressed in the EIA Report, while recognizing that the EIA process is a planning process that typically is completed without all design details having been finalized. In addition, the panel must recognize that a potential EIA decision will include proposed conditions to address specific technical issues identified during the EIA review which may require further work to be completed during the Project implementation phase; and
- To provide a report on public input as provided at the public meeting, the First Nations community meetings, and as well as via written comments, which is to be submitted to the Minister of Environment and Local Government

Following is a brief bio of the panel members.

Dr. Pierre-Marcel Desjardins, Chairperson and Socio Economic Expert:

Pierre-Marcel Desjardins is an economics professor at the Université de Moncton. His research includes focus on regional and rural economic development, public policy, fiscal federalism and trade. He has been called upon by the governments of Canada and New Brunswick, as well as the United Nations, to work on studies pertaining to economic development. Pierre-Marcel has a Ph.D. in Economics from the University of Texas at Austin. He has received both his bachelor and master level degrees in economics from the Université de Moncton. Professor Desjardins served previously as an EIA Panel member in NB (i.e., Liquid Natural Gas Facility, Saint John; Eider Rock Petroleum Refinery and Marine Terminal Project, Saint John).

Dallas Wayne Davis, Mining Expert:

Dallas Davis is the principal of Dalmin Corporation which offers mining sector consulting services to private and public sector clients in NB, Canada and internationally. He received his M.A. (geology) in 1966 from Johns Hopkins University in Baltimore, MD, and his B.Sc. (geology) in 1965 from the University of New Brunswick. He has been a registered Professional Engineer for 45 years, first in Ontario and since 1973 in New Brunswick, and, is a Fellow of Engineers Canada. Dallas has a wealth of experience in the mining sector, including as a mine and exploration geologist for several private sector companies, 8 years with the NB Civil Service as Chief of Planning and Policy for Non-renewable Resources, and, since 1981, in the provision of consulting services on

projects in Canada and internationally (e.g., Canada, USA, Argentina, Peru, Burkina Faso, China, Denmark, Dominican Republic, Fujairah, Indonesia, Kazakhstan, Kyrgyzstan, Lao PDR, Liberia, Malaysia, Mongolia, Namibia, Pakistan, Peru, Sierra Leone, South Africa, etc). He has represented clients in overseeing mine feasibility studies and has participated in resolution of serious production, cost or environmental consequences of insufficient hydrology and geotechnical testing being undertaken during the feasibility study period of three mines.

Christine Moore, M.Sc, Human Health/Toxicology Expert:

Ms. Moore is a toxicologist with over 25 years of experience in human health and environmental toxicology and risk assessment. Ms. Moore has a B.Sc. in Zoology from the University of Guelph, ON, and a M.Sc. in Biology from Concordia University, QC. She is the senior project manager and senior technical lead of all work conducted in the Atlantic region by Intrinsik Environmental Inc. She has extensive experience in the assessment of emissions from mining and metals processing sector, having completed numerous wide area human health, terrestrial wildlife and aquatic wildlife risk assessments of proposed and operating facilities in Canada. Christine Moore is a member of the Science Committee and the Environment Committee of the Mining Association of Canada. Past appointments include adjunct professor at the School for Resources and Environmental Studies at Dalhousie University, Proposal Evaluation Committee for environment effects research related to offshore oil exploration, and the Technical Advisory Group to the CCME for development of ecologically-based Canada Wide Standards for petroleum hydrocarbons.

Dr. William (Bill) Wicken, Heritage/First Nations Expert:

William Wicken is a Professor of History specializing in the history of Canada's indigenous people, at York University (1996-present). He received a Ph.D. in History from McGill University in 1994, and also his bachelor and master level degrees in history from McGill University. He has acted as an expert witness in a variety of contexts and court cases in Atlantic Canada and elsewhere and also has numerous publications to his credit. In 2013, his book The *Colonization of Mi'kmaw Memory and History* published by the University of Toronto Press won the Governor General's Award for Scholarly Research. Professor Wicken is a board member of Canada's History Society.

3.0 Process and Meetings Held

On April 15, 2015, a notice appeared in the Royal Gazette and on April 16, 2015, a news release was issued and paid advertisements were developed (Telegraph-Journal, Daily Gleaner and L'Acadie Nouvelle) to inform citizens that:

- A public meeting would be held on June 22, 2015 at 7 p.m. at the Stanley High School;
- Information about the project was available;
- Locations where the public could view and/or pick up information about the project; and,
- The public review and comment period would end on July 17, 2015.

Interested parties were encouraged to contact the Department of Environment and Local Government if they intended to make a formal presentation at the public meeting. A reminder notice appeared in the same newspapers listed above on June 4, 2015. All of the information, including the complete EIA report, was also made available on the Department's Website.

In advance of the notices appearing, copies of the complete EIA Report, Summary of the EIA Report, General Review Statement and copies of the public notice were distributed and made available to the public at various locations in and around the Stanley area. These locations included the Nashwaaksis, Fredericton and Stanley public libraries, the municipal offices of Florenceville-Bristol, Millville, Nackawic, Stanley and Woodstock, as well as on the Department's website.

These documents were also distributed to the Madawaska Maliseet First Nation, Woodstock First Nation, Tobique First Nation, St. Mary's First Nation, the Oromocto First Nation, the Kingsclear First Nation and the Assembly of First Nations Chiefs in New Brunswick (AFNCNB). A pamphlet briefly describing the project and the process was prepared in partnership with First Nations for distribution to First Nations community members.

The release of the EIA Report, General Review Statement for consultation, and the announcement of the date of the public meeting marked the beginning of the second phase of the formal public consultation process. The Minister of Environment and Local Government then proceeded with the appointment of an Independent EIA Panel to preside over the provincially mandated public meeting and a series of five First Nation community meetings.

Over 300 people attended the public meeting on June 22, 2015 in Stanley. The meeting lasted from 7 pm to 11:30 pm.

The First Nation community meetings were held on the dates below and the attendance varied between 20 to 40 people:

- Madawaska First Nation community meeting on May 26, 2015 from 7 pm to 10 pm.
- Elsipogtog First Nation community meeting on June 10, 2015 from 7 pm to 10 pm.

- Tobique First Nation community meeting on July 11, 2015 from 7 pm to 10 pm
- St. Mary's First Nation community meeting on June 23 from 7 pm to 10 pm
- Woodstock First Nation community meeting on June 24 from 7 pm to 10 pm

All the meetings were recorded to enable the production of a verbatim transcript. Simultaneous English/French interpretation services were provided at the Stanley public meeting and Madawaska First Nation community meeting. As well, at Tobique a Maliseet interpreter was made available to community members.

Prior to the adjournment of the meetings, attendees were reminded that submission of any written comments on the project could be sent to the Department until July 17th. Comment sheets for this purpose were provided at the meetings and attendees were also reminded throughout the evening to provide their names and addresses if they wished to subsequently receive a copy of the Summary of Public Participation and the verbatim transcripts of the meetings.

The Summary of Public Participation and verbatim transcripts will be sent to every person who spoke at the meetings and/or submitted written comments. The Summary of Public Participation will also be available on the Department of Environment and Local Government website at: http://www2.gnb.ca/content/gnb/en/departments/elg.html under the EIA or Sisson Project headings. Copies of the transcripts will be available on request by contacting the Department.

4.0 Methodology

As described earlier, Panel members reviewed all documents received and all comments made during the consultation process. The Panel sorted through all comments and divided them, for analysis, by topics based on members' area of expertise. Panel members did not count how many similar comments were received to consider if the opinions expressed were significant or not. Each comment was judged on its own merit. Analysis of the comments, relative to the information presented in the Final EIA, may have involved additional research, literature review, supplementary meetings, or discussions. If, following this analysis, the EIA assessment was considered to have shortcomings with respect to the comments raised (in the context of final guidelines for the project), recommendations were made.

5.0 Issues Raised and Panel Opinions - Introduction

In the following section, the Panel presents the analysis and, where warranted, its recommendations. Section 6 presents issues related to First Nations, Section 7 socio-economic issues, Section 8 tailings storage, seepage and baseline hydrology concerns, Section 9 with bonding, and Section 10 with health issues. Again, the reader must be reminded that while Panel members reviewed all documents received and all comments made during the consultation process, the report does not make reference to all

comments. In the following section, the reader will find summaries and analyses of those comments which were considered significant in the context of the Final EIA.

6.0 First Nations

6.1 Introduction

As indicated in the overview of the Panel's meetings, a total of five meetings were held in First Nations communities. These meetings were held at Elsipogtog, Madawaska, St. Mary's, Tobique, and Woodstock. Two other meetings were originally scheduled to occur, at Eel Ground and Oromocto but were cancelled for reasons that are unknown to the panel.

6.2 Community Meetings

The panel was pleased that so many First Nation community members took the time to participate in these meetings, despite other commitments they might have had. A participant said:

> 'Here in St. Mary's our community members and our chief and council have worked very, very hard over the past couple of years and the people that you see sitting around this table, they're not getting money to be here like you guys are and they're doing this volunteer like everyone that sits around the table, we have six or seven community meetings a year and it's often times the same faces that are coming out to these meetings and they're passionate about these issues. Well, imagine if you had to do that, they've got families at home. I'm sure that are waiting for them. They've had to have babysitters look after their kids just to be here, right?'[2]

Each meeting began with a prayer, sometimes spoken in the Maliseet language. These prayers informed the Panel members about the strong spirituality that animated community members. At Madawaska First Nation, an Elder began the meeting with a prayer, which he first spoke in his own language and then repeated in English.

> 'Creator, thank you for bringing us together. Help us to think clearly with open minds. Help us to hear and listen to each other and remove all negativity in order to have meaningful discussions. Open our hearts and help us to work together for everyone.'[3]

At Elsipogtog First Nation, the following prayer was offered to the community and to us.

> 'O great spirit whose voice I hear in the wind,

[2] Sisson Project, EIA Consultation, Community Meeting – St. Mary's First Nation, June 23 2015, p. 20
[3] Sisson Project EIA Consultation, Community Meeting - Madawaska Maliseet First Nation, 26 May 2015, p. 1.

May my hands respect the many beautiful things you have made,
My ears be sharp to hear your voice,
May I always walk in your beauty and let my eyes ever behold the red and purple sunsets,
So when light fades, let the setting sun,
My soul will come to you without shame.'[4]

At Tobique, a young woman, who expressed concern with how the project would affect the environment for future generations, approached us each individually, and offered a small piece of tobacco, so that her peoples' spirit would animate our deliberations.

'So I'm going to offer this tobacco to you guys because I was always taught that if someone is not hearing you, or if you're not hearing somebody, well you just talk it out, offer tobacco so that my spirit is going to tell your spirit because your heads aren't getting it. Your spirit is going to hopefully get it. So I'm going to offer that tobacco.'[5]

At St. Mary's First Nation, an Elder, smudged each person attending the community meeting, including the Panel members, with sweet grass and then spoke this prayer:

'First call on our ancestors, the four directions and the spirit of our relatives from the Natural World. Come here to be with us, guide our thoughts, guide what is in our hearts and what is in our minds and help us to form the words that are needed to make this evening something that will be helpful for our people, for our children and grandchildren and great grandchildren.'[6]

And at Woodstock, we heard the following opening prayer:

Thank you Creator for this gathering here today. I hope that we all treat each other with respect. Let's all listen, think and act with respect and honor each other's ideas. But let us all stand together for what we believe in. And let us not forget the sacrifice of our ancestors who were before us. Amen.[7]

These ceremonial aspects of how First Nation people think about themselves and others, have helped the Panel to appreciate the strong feelings that community members feel for the environment, something that was repeated in the presentations we heard.' At Elsipogtog, an unidentified Mi'kmaw individual said that

'in government, they look at the World, or Mother Earth or the Earth as resources to develop and for us everything is alive, and everything has spirit and everything serves a purpose and has a reason to be there. There's balance. The rocks are alive, the water is alive, the sun is alive, the air that we breathe is alive, everything is alive and in terms of world view and culture and heritage, that's

[4] Sisson Project EIA Consultation, Community Meeting – Elsipogtog First Nation, June 10 2015, p. 1.
[5] Sisson Project EIA Consultation, Community Meeting, Tobique First Nation, June, 11 2015, p. 27.
[6] Sisson Project EIA Consultation, Community Meeting – St. Mary's First Nation (FN), June 23 2015, p. 1.
[7] Sisson Project EIA, Community Meeting – Woodstock FN, June 24 2015, p. 1.

never considered in these kinds of discussions, or talks, or in these kinds of reviews. It's always just about scientific rule and regulations and how that's always set up. I guess all I'm saying is world views, Aboriginal indigenous world views need to be respected and honored when these ideas come up.'[8]

A Saint Mary's Elder told us:

'I realized as I was growing up too that I was taught that there's much more than to the land then, you know, to get our living from it. There's more to it. We have a spiritual connection to this land and territory as well. Our beliefs are rooted deeply in the land and in the rivers and in the lakes. And our relations, our extended family doesn't end with the human family. It extends right into the natural world and we know who those relatives are.'[9]

Many people said they had to think for future generations. One woman from Elsipogtog said:

`They say oh it's so economic, it's going to help your communities. It's going to do this, it's going to do that. But what is it going to do for the next seven generations? It's going to burden them, because like I said, everyone in this room will be gone. It's going to be up to these little ones to deal with the mess, and it is going to be a mess, that's going to be left behind. They're the ones we have to fight for they're the ones we have to speak for and the four-legged that are out there. They're the ones that actually need to be speaking for. Not us. Cause like said, we're going to be gone soon.' [10]

A participant told the Panel that this generation had to ensure that the culture survived, and this meant preserving the land for the next seven generations.

We talk about 7 generations. We talk about our great grandchildren's children, great grandchildren. We have to leave something for them. Companies come here on our territories, extract whatever it is, make humungous promises, you know it will benefit you and your children. We never see that. What we see is out there, our medicines, our way of life, that's what we want to leave behind. The same thing that was left to us. And that's how we view ourselves. We have to leave what has been left to us.[11]

For another speaker of Tobique sacrificing the land for a short-term purpose did not make any sense.

'They come to these open houses with all their fancy talks about promising jobs that will last for 27 years. 27 years is only one generation of children. Do you not know how to look past one generation? Me, I am the seventh generation of the signing of the peace and friendship treaty, and as the seventh generation of

[8] Sisson Project EIA, Community Meeting, Elsipogtog First Nation June 10 2015, p. 20.
[9] Sisson Project EIA – Community Meeting, St. Mary's First Nation, June 23 2015, p. 5.
[10] Sisson Project EIA – Community Meeting, Elsipogtog First Nation, June 10, 2015, p. 17.
[11] Sisson Project EIA – Community Meeting, Elsipogtog First Nation, June 10, 2015, p. 22.

> the peace and friendship treaty which we all are under, have the duty to make sure that the next seventh generation of all our children and great great grand children benefit from what we've had. Sure we're not rich. So what? We have water, we have food we have an environment that's healthy for our children and grandchildren.'[12]

Many First Nations people expressed their opposition to the project. The Chief of St. Mary's First Nation said that she was opposed to the project. 'I'm glad this is being taped because I want it definitely on the record that Chief (name) is against the mine.' [13]

A participant from Woodstock First Nation also voiced her disapproval of the project.

> My concern is you guys are going to make a bunch of very, very wealthy people who are very, very wealthy already, just generate more wealth. I don't care about how much is in the ground. I think it should just stay there. Leave it alone. It's not enough to dig it up and make wealthy people more wealthy. We already have 1% of the world claiming 98% of the money. We don't need to add to that. [14]

A member of Elsipogtog First Nation, and a Ph.D. student, argued that the project was really a 'long-term waste management project.'

> 'The people that are rich and the people that have money. It doesn't happen in their backyard. It happens in somebody else's backyard. And it just so happens it's happening in New Brunswick so we kind of dropped in status to get to that level and for our government to even consider resource extraction of that nature, it's like a sign of desperation to take those resources and leave the province. We're not going to benefit from that. There's no direct benefit to indigenous people and there's very little benefit to New Brunswickers. After Confederation, we've experienced the balkanization of the region, of this area. Canada's National Policy didn't favour Atlantic Canada…. That's what's happening. They're digging this mine, and they're taking out this metal, and it's a very small amount that's leaving. It's a very small amount that leaves the province. What's left behind is the bulk of what's mined. And it's waste. It basically becomes a waste management project. That's what we're dealing with. The province allows a company to come in and extract the value for a small price that makes the books look good and possibly the polls, but other than that it's long term detriment to the environment, and not just the environment, but everything that relies on the environment. So it's a long term waste management plan that we haven't been involved in. To be quite honest I don't think we want to be involved in it. If you went on the street and explained the project to every indigenous person, they

[12] Sisson Project EIA – Community Meeting, Stanley, June 22 2015, p. 43.
[13] Sisson Project EIA – Community Meeting, St. Mary's First Nation, June 23, 2015p. 18.
[14] Sisson Project EIA – Community Meeting, Woodstock First Nation, June 24, 2015, p. 11.

would probably say no. And that's all that I can say is that no, I do not support this one bit.'[15]

6.3 Defining Aboriginal and Treaty Rights

6.3.1 Introduction

A central aspect of the government's regulatory capacity is to evaluate whether the proposed project infringes on the proven (established) or asserted (potential) aboriginal and/or treaty right of New Brunswick's Aboriginal people. Though the Panel members are not lawyers or legal experts, a central aspect of our task has involved hearing from First Nations people and community members about how they think the project will infringe or otherwise interfere with exercising their Section 35 rights. Community members and representatives have also expressed concern about how the Crown and the proponent evaluated their criticisms of the project. Though the Crown has the legal responsibility to protect First Nations' constitutionally protected rights and to evaluate asserted treaty and aboriginal rights, the precise determination of those rights is best left to those who are more qualified to do so. However, because First Nation people referred to their treaty and aboriginal rights, some discussion is necessary, though mainly to situate those comments in context.

6.3.2 Discussion

Section 35 (1) of Canada's 1982 Constitution reads 'The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed." Section 35 (2) then goes on to define 'aboriginal peoples'. In this Act, 'aboriginal peoples of Canada' includes the Indian, Inuit and Metis peoples of Canada.' [16]

For most of the period before 1982, the explicit policy of the Canadian government was to assimilate Aboriginal people into Canadian society. Duncan Campbell Scott, the Deputy Superintendent General of Indian Affairs from 1913 to 1932, articulated this viewpoint in 1914, just prior to the onset of the First World War. 'The happiest future for the Indian race is absorption into the general population, and this is the object of the policy our government. In the Indian communities now under discussion we see the natives advanced more than halfway towards the goal, and the final result will be this complete absorption. The great forces of intermarriage and education will finally overcome the lingering traces of native custom and tradition.' [17] In 1969, Prime Minister

[15] Sisson Project EIA – Community Meeting, Elsipogtog First Nation, June 10, 2015, p. 18.
[16] Canada Act, 1982 (UK), in David Milne, *The Canadian Constitution* (Toronto: James Lorimer Publishers 1991), Appendix 1, 325.
[17] Duncan C. Scott, 'Indian Affairs, 1867-1912,' in Adam Shortt and Arthur G Doughty, eds., *Canada and its Provinces: A History of the Canadian People and Their Institutions* (Toronto: 1914), 622-3.

Pierre Trudeau expressed similar ideas when he initiated the White Paper, a statutory regime, which was meant to eradicate 'Indians' as a separate legal entity.

Section 35 helped to change that policy, beginning a paradigm shift in how governments have interacted with First Nations. In 2003, the Chief Justice of the Supreme Court of Canada (SCC), Beverly McLachlin, explained the import of Section 35.

> 'the doctrine of assimilation with its implicit denial of Aboriginal culture and self-worth has been abandoned. In its place stands the realization that we can move forward as a nation only by encouraging the recognition self-development of the distinct Aboriginal cultures that comprise Canada's First Nations. We must build a secure foundation of identity and entitlement upon which our Aboriginal peoples can reclaim their past and build their future. The concrete testimonial to this new covenant was the enactment in 1982, as part of Canada's constitution, of s. 35 of the Constitution Act, which states, "[t]he existing Aboriginal and treaty rights of the Aboriginal peoples of Canada are hereby recognized and affirmed." Henceforth, Aboriginal entitlements would be protected by the Constitution, and no longer extinguishable by legislation or executive policy.' [18]

Section 35 created a distinct set of rights that First Nations people possess and that other Canadians, who are not 'Indian, Inuit, or Metis,' do not. Section 35 is meant 'to extend constitutional protection to the practices, customs, and traditions central to the distinctive culture of Aboriginal societies prior to contact with Europeans,'[19] though, as the Courts have pointed out, these rights are not frozen. What is meant by that is that the 'practices, customs, and traditions,' must be understood within the context of their equivalent, modern-day practice. Thus, if an aboriginal person has a constitutionally protected right to hunt, and this right stems from a period prior to European arrival on their lands, we would not expect that they practice that right in the same way they had done before European arrival.

The problem since 1982 has been determining how these rights should be interpreted. Section 37(2) of the Canada Act had stipulated that the Prime Minister would convene a meeting of first ministers within a year of the Act's passage to address 'constitutional matters that directly affect the aboriginal peoples of Canada, including the identification and definition of the rights of those people to be included in the Constitution of Canada.' [20]Though three conferences were held and some amendments made, discussions failed to provide any details as to how 'aboriginal and treaty rights' were to be defined.[21] The subsequent failures to ratify the Meech Lake and Charlottetown accords, which would have helped to clarify the rights of Aboriginal peoples, also failed.

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[18] Quoted in Thomas Isaac, *Aboriginal Law: Commentary and Analysis* (Saskatoon: Purich Publishing Limited 2012), 17

[19] SCC, R. v. Adams, quoted in Kirk N. Lambrecht, Q.C., *Aboriginal Consultation, Environmental Assessment, and Regulatory Review in Canada* (Regina: University of Regina Press 2013), 20.

[20] Canada Act, 1982 (UK), in Milne, *The Canadian Constitution,* 326.

[21] Peter H. Russell, *Constitutional Odyssey: Can Canadians Become a Sovereign People?* (Toronto: University of Toronto Press 2004), 3rd edition, 130-1.

The end result has been that since 1982, Section 35 of the Canada Act has become the principal vehicle for defining Aboriginal peoples' rights, and the courts the main interpreter, a situation that has led some lawyers to argue that the Supreme Court has over-ridden the prerogative of elected legislatures. [22]

Section 35 refers to two different sets of rights, aboriginal rights and treaty rights. At the community meeting in Woodstock First Nation, one Panel member explained these rights in the following way: 'there are a bundle of rights contained with(in) the idea of aboriginal rights. There are also a bundle of rights, which are contained with(in) the treaties. And they're separate ideas. And they're separate rights.' [23]

The courts' understanding of how these rights should be interpreted has usually been done in response to a criminal offense or civil suit, which has involved First Nations peoples or communities. For instance, in R. v. Donald Marshall Junior, which came before the Supreme Court of Canada in the late 1990s, the defendant was charged with fishing and retaining fish 'without being authorized to do so under the authority of a license issued pursuant to Maritime provinces Fishery Regulations, the Fishery (General Regulations, or the Aboriginal Communal Fishing Licenses Regulations). Marshall was also charged with fishing eels during closed season and selling eels 'without having obtained a license issued of the purpose of commercial fishing.' [24]

First Nations leaders decided to defend Marshall against the charges. In deciding to do so, they believed they might be able to correct what they considered to be an historic wrong. As the First Peoples of Nova Scotia, the Mi'kmaq had fished and sold fish without interference. However, as the non-native commercial fishery intensified in the 20th century, federal legislation marginalized the Mi'kmaw fishery. By making the selling of fish without a proper license, a criminal offense, the government made it more difficult for families to make ends meet. Mi'kmaw responses to the charges illustrated the frustration that many First Nation people throughout Atlantic Canada have felt towards government policies, which have marginalized their economic output.

At our meetings, First Nation communities in New Brunswick voiced similar attitudes. A speaker of St. Mary's said: 'My father, uncles, cousins, they were all treated like criminals just for fishing and hunting.'[25] A participant from Elsipogtog spoke of how government had stopped First Nations people from fishing.

> "When we talk about resource extraction and historical benefits, I have to agree with (names) and all the previous speakers because there has never been a benefit to a First Nation person in regards to any government, legislation or any policy on resource extraction…. Now I've heard some really horror stories from my family dealing with police or wardens or whatever. I often tell a good story.

[22] For instance, Alex M. Cameron, *Power Without Law: The Supreme Court, the Marshall Decisions, and the failure of Judicial Activism* (Montreal and Kingston: McGill-Queen's University Press 2009).
[23] Sisson Project EIA – Community Meeting, Woodstock First Nation, June 24, 2015, p. 15.
[24] Canada, Province of Nova Scotia, Her Majesty the Queen versus Donald Marshall Junior, 27 June 1996, 1-3.
[25] Sisson Project EIA – Community Meeting, St. Mary's First Nation, June 23 2015, pp. 26-7.

> And (name). His dad. He's my cousin. He was brought up a fisherman by his dad. He was taught how to fish. And he passed it on to (name). And (name) is passing it onto his sons. But ever since he started fishing, ever since his dad gave him the go ahead to now you can earn a living, that means food, feed your children, feed your families, and feed your community. Ever since that started he has been in trouble with the law. And each time they seize their nets, or whatever, and they charged him, the next day he was always back to throwing his nets again. It's a way of life of a native person. We have been on the shores while watching big lobster boats or whatever, carrying the bounty of the sea while we were on the shores. When we had about 5 fishing boats, the province said we depleted the stocks, the lobster stocks. And that was just a few years ago. I mean how many years have the governments been doing that to us". [26]

As in the Marshall case, First Nations communities have responded to what they perceive to be unjust by using Section 35 to challenge government laws, which have affected their access to resources, their people have historically harvested. These communities have done so by arguing that they had an aboriginal right or they had a treaty right to engage in such harvesting activities.

What is the difference between an aboriginal right and a treaty right?

According to Thomas Isaac, 'Aboriginal rights are those rights held by Aboriginal peoples that relate to activities that are an element of a practice, custom, or tradition integral to the distinctive culture of the Aboriginal group claiming such rights, and that have not otherwise been extinguished prior to April 17, 1982, or by treaty.'[27] Aboriginal rights are those rights that stem from the fact that First Nations people are the descendants of peoples who lived in Canada at the time of European contact and/or at the date when a European nation declared sovereignty over the territory in which they lived.[28] In other words, aboriginal rights are those rights that Aboriginal people enjoy as the first peoples of Canada. There are various aboriginal rights, which the courts have identified. However, as the Government of New Brunswick Aboriginal Affairs Secretariat states 'In order for an aboriginal custom, practice or tradition to be considered an

[26] Sisson Project EA – Community Meeting, Elsipogtog First Nation, June 10 2015 p. 21.
[27] Thomas Isaac, *Aboriginal Law: Commentary and Analysis* (Saskatoon: Purich Publishing Ltd. 2012), 24.
[28] Contact refers to the date at which face to face contact occurred. In coastal areas of New Brunswick, such contact occurred in 1534, when the French trader and explorer, Jacques Cartier landed along the Gaspe coast. However, this is the first documented contact and generally historians believe that such contact occurred earlier, and probably with Basque fishermen. Since the Maliseet lived inland, it is probable that contact occurred later than 1534. However, since the Maliseet are known to have participated in the great trading fairs that took place at Tadoussac, on the north shore of the St. Lawrence, face to face contact between Basque fishermen and Maliseet families likely occurred in the early 1500s. The date of sovereignty refers to the date at which, the British claimed sovereignty over an area to the exclusion of other European powers and, which was accepted by these European powers. In R, v. Bernard, which came before the SCC in 2005, the court determined the date of sovereignty in coastal New Brunswick to be 1759. R. v. Marshall, R. v. Bernard, Supreme Court Reports, 2 (2005), 252, at para 71

aboriginal right, it must be integral to the distinctive culture of an aboriginal society. These include the right to hunt, trap, fish, gather and follow Aboriginal customs, practices and traditions on ancestral lands.'[29]

Treaty rights are a distinct set of rights, which are separate from aboriginal rights. Thomas Isaac defines treaty rights in the following way: 'Treaty rights are those rights provided for by treaties and agreements, or subsequently established as a result of judicial interpretation, between Aboriginal peoples and the Crown.' Treaties, writes Isaac, are a 'distinct form of legal instrument' and 'are analogous to contracts, albeit of a solemn, and special, public nature, between the Crown and the particular band or tribe. It is the intention to create obligations and the presence of mutually binding obligations that characterizes a treaty.' [30]

First Nations communities of New Brunswick have aboriginal and treaty rights. They have aboriginal rights because they lived in what is now New Brunswick at the time of contact (circa 1534), and they also lived there at the time when Great Britain established sovereignty over the region (circa 1759). They also have treaty rights, since their ancestors signed a series of treaties with British colonial officials in the 18th century, and the courts have stated that some of these treaties are protected under Section 35.[31]

However, since governments have mainly relied on the courts to interpret how these rights should be defined, First Nations people and governments sometimes have different understandings.

For this reason, the courts and governments have tended to think in terms of proven rights and asserted rights. Proven rights, as Kirk Lambrecht says, are those rights, which have been recognized by a court in Canada that has the 'jurisdiction to do so.' Asserted rights are those rights 'claimed by Aboriginal peoples but have not yet been recognized' by the courts.' [32] Thus, even though First Nations people claim that that they have certain rights, these rights may not be proven. These rights we would therefore call, 'asserted rights'.

6.3.3 Treaties in New Brunswick

The First Nations people of New Brunswick signed treaties with representatives of the British Crown in 1725/6, 1749, 1760, 1778 and 1779. Copies of the 1725/6 and 1760 treaties are appended to this report. What did these treaties say? Generally, the treaties set out guidelines regarding how the British, who then claimed sovereignty over what

[29] Province of New Brunswick, Aboriginal Affairs Secretariat (AAS), 'Duty to Consult Policy,' November 2011, p. 1.
[30] Isaac, *Aboriginal Law*, 108 & 109.
[31] The question of which treaties are protected under section 35, and whether all present-day First Nations communities are signatories to treaties that are constitutional protected is a legal question and one that is beyond the scope of this report.
[32] Lambrect, *Aboriginal Consultation,* 16-17.

would become the Province of New Brunswick, would interact with First Nations people.[33]

The most important of these treaties was signed in 1725/6 and is sometimes referred to as the foundation on which all later treaties were made. However, not everyone shares this opinion, including, at times, New Brunswick's Attorney General's office.[34] Regardless, the First Nations communities of New Brunswick consider this treaty to be central in how their 'treaty rights' should be understood and so some discussion of it is necessary.

The 1725/6 treaty was first negotiated in Boston between four First Nations representatives and several British officials representing the colonies of Massachusetts, New Hampshire and Nova Scotia. (In 1725/26, the colony of Nova Scotia encompassed what is now the Province of New Brunswick.) The Boston treaty was concluded in December of 1725 and messengers sent to convey the news of the 'treaty' with First Nations communities throughout Atlantic Canada, including communities along the St. John River and the eastern coast of present-day New Brunswick. After some discussion, these communities decided to ratify the treaty. They did so at various times between 1726 and 1728, though many did so at Annapolis Royal, Nova Scotia sometime between late June of 1726 and the autumn of that year.

The 1726 treaty ratification is composed of two separate but inter-related documents. The first document is called the *Articles of Submission and Agreement*. Seventy-seven (77) First Nations men signed this part of the treaty. They did so on behalf of their families and their communities. Among those signers were men who are known to have been from present-day New Brunswick. The Maliseet, are identified in the treaty as members of the St. Johns (River Indians). The left hand column of the document, which lists the 'signature' of these 77 men, probably contains the names of many Maliseet men. Indeed, the very first person in that column was identified as 'Nipimoit, Chief of St. Johns.'

The *Articles of Submission and Agreemen*t has seven clauses. Each clause sets out the terms, which would govern First Nations relations with the British. For the British, the three most important clauses were clauses III, IV, and VI as they were meant to create

[33] The two principal extended analysis of the treaties are Stephen E. Patterson, 'Indian-White Relations in Nova Scotia, 1749-61: A Study in Political Interaction,' *Acadiensis* XXIII, no. 1 (Autumn 1993), 23-59; Patterson, William C. Wicken*, Mi'kmaq Treaties on Trial: History, Land, and Donald Marshall Junior* (Toronto: University of Toronto Press 2002). An earlier discussion of the 1725/6 treaty and its importance in changing the determination of Maliseet rights is in Andrea Bear Nicholas, 'Maliseet Aboriginal Rights and Mascarene's Treaty, Not Dummer's Treaty,' in William Cowan, ed., *Actes du dix-septième Congrès des Algonquinistes* (Ottawa: Carleton University 1986), 218-27. Transcripts of some of the treaties are in W.D. Hamilton and W.A. Spray, eds, *Source Materials Relating to the New Brunswick Indian* (Fredericton: Hanray Books 1977), and Wicken, *Mi'kmaq Treaties on Trial*.

[34] Over the last several years, the New Brunswick Attorney General's office has argued that the 1725/26 was terminated by hostilities and therefore is not protected under section 35 of the 1982 Canada Act. For a recent example, see R v. Paul, 2014 NBPC 44, 08-22-2014, Docket: 03832507, Judge Leslie Jackson.

a better environment for those British subjects who traded or lived in Nova Scotia. These clauses are reproduced below. [35]

> Clause III: 'That the Indians shall not molest any of His Majesty's Subjects or their Dependants (sic) in their Settlements already made or Lawfully to be made, or in their carrying on Their Trade & other affairs within the said Province.'
>
> Clause IV: 'That if there Happens any Robbery or outrage Comitted (sic) by any of our Indians the Tribe or Tribes they belong to shall Cause satisfaction to be made to ye Parties Injured.'
>
> Clause VI: That In the Case of any misunderstanding, Quarrel or Injury between the English and the Indians no private Revenge shall be taken, but Application shall be made for redress according to his Majesty's Laws.'

Separate from the *Articles of Submission and Agreement* is another document, which is usually called 'the reciprocal promises.' These are the promises, which the British made in response to the First Nations people assent to the *Articles of Agreement and Submission*.

The reciprocal promises contain four clauses. For the First Nations people, the most important clause has been the one in which the British promised to not interfere in the Maliseet and Mi'kmaw economy.

'That the Said Indians shall not be Molested their in their Persons, Hunting Fishing and Shooting & planting on their planting Ground nor in any other their Lawfull (sic) occasions, By His Majesty's Subjects or Their Dependants (sic) in the Exercise of their Religion Provided the Missionarys (sic) Residing amongst them have Leave form the Government for So Doing.'

First Nations communities in New Brunswick re-affirmed the 1725/6 treaty in 1749, 1760/61, and 1778. Not all communities re-affirmed each treaty. For instance, in 1749, only the Maliseet and the Chignecto Mi'kmaq did so.

Treaties made after 1725/6 were done differently. In 1725/6, the British had prepared one copy of the treaty to which every community affixed their 'signature.' In 1749 and 1760/61, however, the British wrote out multiple copies of the treaties and it is these individual treaties, which community leaders signed. Thus, the Maliseet and Passamaquoddy signed a separate treaty, as did those Mi'kmaw communities who lived along the coastal waters of eastern New Brunswick.

Language is a complicated set of symbols, which we use to transmit ideas and information over time and space. Language, we might say, is the genus of what we are and what we were. Deciphering the meaning that words were meant to convey almost three hundred years later and by men we only vaguely understand, is therefore a

[35] All quotes from the treaties are from Wicken*, Mi'kmaq Treaties on Trial*, pp. 61-4. Though the book deals mainly with the Mi'kmaw people (in New Brunswick, Nova Scotia, Quebec, and Prince Edward Island), the Maliseet are also a main focus of the book since they were signed in common.

difficult task. Add to the mix that one party to the treaties, the Maliseet (and the Mi'kmaq), could not write English (the Maliseet and Mi'kmaq signed their assent with an 'X'), and were not versed in British society and law, only complicates our efforts to disentangle how these clauses might be interpreted today.

Significantly, over the past two hundred years, First Nation communities of New Brunswick have argued that these 18th century treaties are central in how relationships with government should be ordered. By the early 20th century, the Maliseet and Mi'kmaq were arguing before the courts that the treaties overrode provincial legislations regarding when and how their people could hunt.[36] Since 1982, these arguments have been more successful. Though governments have not always accepted First Nations interpretation of the treaties, the courts, since the Supreme Court decision in R. v. Simon (1985), have recognized that the Maritime treaties were treaties even though they did not involve a surrender of land. These treaties, the courts have said, were therefore 'capable of possessing substantive rights'. In Thomas Isaac's view: 'This became a key element in subsequent decisions and… opened the door to the concept that the Maritime treaties need to be revisited to determine what rights they protect.'[37]

The Panel's task is not to determine how these treaties are, or should be, interpreted today, which treaties are protected under section 35, and what communities were signatories to the treaties. This, as we have said, are legal questions and therefore outside the Panel's expertise.

That being said, since the treaties are central in how First Nations people view the proposed project, we also take note of those Supreme Court decisions that have a direct bearing on the 18th century treaties. These include *R. v. Simon* (1985), *R. v. Marshall I and 2* (1999), *R. v. Bernard* (2005), *R. v. Stephen Marshall* (2005), as well as *R. v. Sappier and Polchies* (2006).

Of possible significance in evaluating Maliseet treaty rights is how we should interpret the court's decision in Marshall (1999). According to at least one legal scholar, the decision, when coupled with *R. v. Vanderpeet* (1996), has implications in how the Crown approaches consultation and accommodation.

> 'The significance of Marshall in the context of Crown decision-making affecting treaty lands is clear, particularly when the reasoning in Marshall is coupled with the interpretive approach found in VanderPeet. Consultation processes dealing with treaty rights must take into account oral history and the promises made at the time of treaty regarding the nature and scope of the treaty rights in question. Rigid adherence to the strict written language of the treaty is not in keeping with the general and liberal interpretation of treaties required by Marshall and VanderPeet.

[36] See for instance, Nicholas, 'Maliseet Aboriginal Rights,' 215-18; D.G. Bell, 'The Peter Paul Case, 1946,' vol. 55, *University of New Brunswick Law Journal,* 86-104.
[37] Thomas Isaac, *Aboriginal and Treaty Rights in the Maritimes*, (Saskatoon: Purich Publishing Ltd., 2001), 54-5.

These cases require that the accommodation of treaty rights respectfully consider and incorporate the Aboriginal perspective and the oral history concerning the nature and scope of the treaty right in question. For example, if the oral history of a treaty people provides that at the time of treaty, the Crown promised that the treaty people in question could fish for livelihood purposes over surrendered territory, then land and resources within surrendered territory cannot be "taken up" in a manner that fails to accommodate this treaty promise.'[38]

6.3.4 Infringement and Justification

The panel understands that while Section 35 protects First Nations peoples' 'aboriginal and treaty rights,' those rights are not absolute. As Justice J.A. Blair of the Ontario Court of Appeal wrote in *R. v. Agawa*, and which the Supreme Court of Canada noted with approval in *R. v. Badger* (1996), 'Indian treaty rights are like all other rights recognized by our legal system. The exercise of rights by an individual or group is limited by the rights of others. Rights do not exist in a vacuum and the exercise of any right involves balancing with the interests and values involved in the rights of others.' [39]

Those rights therefore can be breached but the Crown must justify the infringement. The Court first set out this justificatory scheme in *R. v. Sparrow* (SCC 1990), and has subsequently expanded the process. While the panel's mandate does not include explaining how this legal framework should be applied to the present project, it is nevertheless necessary to point out that the current process is meant to address this situation and to determine the strength of the First Nations proven (established) and asserted (potential) aboriginal and treaty rights. Central to that process has been the proponent's, and government's, efforts to engage and to consult with those First Nations communities who have proven rights and/or asserted rights. This engagement and consultation was begun in 2008, when Geodex (the former owner) first applied for a license to develop the project and has continued since then. Indeed, the decision to hold seven meetings of the EIA panel in First Nations communities was part of a concerted effort to hear First Nations opinions about the project. Before describing how that process functioned, we first turn our attention to the broad framework, which was to animate the consultation process.

6.4 The Duty to Consult

As in our discussion on aboriginal and treaty rights, the following section is not a legal analysis of the Crown's obligations but rather presents material from various juridical and scholarly sources to situate the comments which First Nations community members

[38] Maria Morellato, 'The Crown's Constitutional Duty to Consult and Accommodate Aboriginal and Treaty Rights,' (February 2008), 13.

[39] Quoted in Kirk N. Lambrecht Q.C., *Aboriginal Consultation, Environmental Assessment, and Regulatory Review in Canada* (Regina: University of Regina Press 2013), 21.

voiced about the consultation process.

As a result of various Supreme Court decisions, the Crown has an obligation to consult with First Nations when a proposed project may impact or infringe on their proven or asserted rights. This obligation to consult, and if necessary, accommodate, was first set out *in Haida Nation v. British Columbia* (2004), *Taku River Tlingit First Nation v. British Columbia* (2004) and subsequently expanded in *Miskew Cree v. Canada* (2005), *Rio Tinto Alcan Inc. v. Sekani Carrier Tribal Council* (2010), and various other decisions, including *Tsilhqot'in Nation v. British Columbia*, (2014).

In *Haida Nation v. British Columbia*, the Court spoke of why consultation and accommodation is necessary.

> 'Put simply, Canada's Aboriginal peoples were here when Europeans came, and were never conquered. Many bands reconciled their claims with the sovereignty of the Crown through negotiated treaties. Others, notably in British Columbia, have yet to do so. The potential rights embedded in these claims are protected by s. 35 of the Constitution Act, 1982. The honour of the Crown requires that these rights be determined, recognized and respected. This, in turn, requires the Crown, acting honourably, to participate in processes of negotiation. While this process continues, the honour of the Crown may require it to consult and, where indicated, accommodate Aboriginal interests.'[40]

In New Brunswick, the government faces a similar, though also different, situation. The Maliseet assert that the proposed project is on land which is part of their traditional territory, and over which they claim title. As Chief Justice McLachlin wrote in *Haida Nation v. British Columbia*:

> 'The Crown, acting honourably, cannot cavalierly run roughshod over Aboriginal interests where claims affecting these interests are being seriously pursued in the process of treaty negotiation and proof. It must respect these potential, but yet unproven, interests. The Crown is not rendered impotent. It may continue to manage the resource in question pending claims resolution. But, depending on the circumstances, discussed more fully below, the honour of the Crown may require it to consult with and reasonably accommodate Aboriginal interests pending resolution of the claim. To unilaterally exploit a claimed resource during the process of proving and resolving the Aboriginal claim to that resource, may be to deprive the Aboriginal claimants of some or all of the benefit of the resource. That is not honourable.'[41]

The Government of New Brunswick might respond, as the British Columbia government did in the Haida Nation case, that it would be difficult to determine the strength of the right claimed. Chief Justice McLachlin stated in response to British Columbia's argument that: "To facilitate this determination, claimants should outline their claims with clarity, focusing on the scope and nature of the Aboriginal rights they assert and on the

[40] Haida Nation v. British Columbia, *Supreme Court Reports*, (hereafter SCR) (2004), at para. 25, p. 525.
[41] Haida Nation v. BC, at para 27, p. 526.

alleged infringements.'[42] Later in *Rio Tinto v. Sekani Carrier Tribal Council*, the Chief Justice expanded when consultation is necessary.

> Constructive knowledge arises when lands are known or reasonably suspected to have been traditionally occupied by an Aboriginal community or an impact on rights may reasonably be anticipated. While the existence of a potential claim is essential, proof that the claim will succeed is not. What is required is a credible claim. Tenuous claims, for which a strong *prima facie* case is absent, may attract a mere duty of notice.[43]

In the same case, the Chief Justice noted that consultation gave Aboriginal groups an opportunity to protect their established or asserted Section 35 rights without recourse to a more expensive and often less successful legal strategy.

> 'Aboriginal groups seeking to protect their interests pending final settlement would need to commence litigation and seek interlocutory injunctions to halt the threatening activity. These remedies have proven time-consuming, expensive, and are often ineffective. Moreover, with a few exceptions, many Aboriginal groups have limited success in obtaining injunctions to halt development or activities on the land in order to protect contested Aboriginal or treaty rights.'[44]

According to Maria Morellato, further clarification is provided in how the Supreme Court endorsed the following passage in a British Columbia lower court decision.

> The Crown's duty to consult imposes on it a positive obligation to reasonably ensure that aboriginal peoples are provided with all necessary information in a timely way so that they have an opportunity to express their interests and concerns, and to ensure that their representations are seriously considered and, wherever possible, demonstrably integrated into the proposed plan of action.[45]

The Chief Justice also said that consultation did not mean that there had to be agreement. Nor did it mean that Aboriginal people could 'frustrate the process.'

> 'However, there is no duty to agree; rather, the commitment is to a meaningful process of consultation. As for Aboriginal claimants, they must not frustrate the Crown's reasonable good faith attempts, nor should they take unreasonable positions to thwart government from making decisions or acting in cases where, despite meaningful consultation.'[46]

Though agreement was certainly the hope of a consultation process, the Court said that agreement was not necessary. Does this mean that the First Nations could then exercise a veto over a project? The Court was unequivocal in stating that First Nations

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[42] Haida Nation v. BC, at para 36, p. 530.
[43] Rio Tinto v. Carrier Sekani, (2010), 2 *SCR*, at para 40, p. 672.
[44] Rio Tinto Alcan Inc v. Carrier Sekani Tribal Council, at para 33, pp. 669-70.
[45] Cited in Morellato, 'The Crown's Constitutional Duty to Consult,' p. 19; and see Miskew v. Canada, (2005), 3 SCR, at para. 64, p. 421.
[46] Haida Nation v. BC, at para 42, p. 532.

did not.[47]Both parties, said the courts, must make reasonable efforts to make an agreement. [48]

How much consultation is necessary and what are its component parts? The Court was careful to say that every situation will vary and therefore the strength of the right claimed had to be evaluated. However, what was important was the long-term relationship between the Crown and Aboriginal people.

> 'The controlling question in all situations is what is required to maintain the honour of the Crown and to effect reconciliation between the Crown and the Aboriginal peoples with respect to the interests at stake. Pending settlement, the Crown is bound by its honour to balance societal and Aboriginal interests in making decisions that may affect Aboriginal claims.'[49]

In *Miskew Cree Nation v. Canada* (2005), the Court offered further clarification.

> 'The determination of the content of the duty to consult will, as Haida Nation suggests, be governed by the context. One variable will be the specificity of the promises made. Where, for example, a treaty calls for certain supplies, or Crown payment of treaty monies, or a modern land claims settlement imposes specific obligations on aboriginal peoples with respect to identified resources, the role of consultation may be quite limited. If the respective obligations are clear the parties should get on with performance. Another contextual factor will be the seriousness of the impact on the aboriginal people of the Crown's proposed course of action. The more serious the impact the more important will be the role of consultation. Another factor in a non-treaty case, as Haida Nation points out, will be the strength of the aboriginal claim. The history of dealings between the Crown and a particular First Nation may also be significant. Here, the most important contextual factor is that Treaty 8 provides a framework within which to manage the continuing changes in land use already foreseen in 1899 and expected, even now, to continue well into the future. In that context, consultation is key to achievement of the overall objective of the modern law of treaty and aboriginal rights, namely reconciliation.'[50]

Later in *Rio Tinto v. Sekani Carrier Tribal Council* (2010), the Chief Justice wrote:

> Rather than pitting Aboriginal peoples against the Crown in the litigation process, the duty recognizes that both must work together to reconcile their interests. It also accommodates the reality that often Aboriginal peoples are involved in exploiting the resource. Shutting down development by court injunction may serve the interest of no one. The honour of the Crown is therefore best reflected

[47] See Morellato, 'The Crown's Constitutional Duty to Consult,' discussion of *Haida v. B.C*. and of *Taku River Tlingit First Nation v. B.C.*, pp. 26, 28-9.
[48] For instance, as Morellato points out in her review of consultation.
[49] Haida Nation v. BC, at para 45, p. 533.
[50] Miskew Cree Nation v. Canada, at para 63, pp. 420-1.

by a requirement for consultation with a view to reconciliation. [51]

As Kirk Lambrecht explains reconciliation between Aboriginal peoples' interest and the public interest is one of consultation's most important objectives. Without consulting Aboriginal people about a development, which may impact their rights, either proven or asserted, Section 35 potentially becomes an empty shell. This would also put at risk the Crown-First Nations relationship.

Consultation therefore is meant to foster relationships between Aboriginal people and the Crown, as well as with the proponent. Instead of the Crown allowing the proponent to proceed without first evaluating the proven or asserted rights, the Crown, through, and/or with the proponent, should begin by investigating the claims with the intent of fostering an ongoing relationship with the First Nations. In other words, consultation is meant to create stronger relationships. Regardless if the proposed development is approved, the end result of consultation is a better relationship among all parties. [52]

Meaningful consultation can lead to a change in policy or the need to accommodate the First Nations.

> 'the effect of good faith consultation may be to reveal a duty to accommodate. Where a strong prima facie case exists for the claim, and the consequences of the government's proposed decision may adversely affect it in a significant way, addressing the Aboriginal concerns may require taking steps to avoid irreparable harm or to minimize the effects of infringement, pending final resolution of the underlying claim. Accommodation is achieved through consultation, as this Court recognized in R. v. Marshall, [1999] 3 S.C.R. 533, at para. 22: ". . . the process of accommodation of the treaty right may best be resolved by consultation and negotiation".

The Chief Justice suggested that governments create their own guidelines, which would help direct decision makers and 'guard against unstructured discretion.' [53] The Chief Justice also wrote that the duty to consult and accommodate applied not just to the federal government, as the BC provincial government had argued, but also to the provinces. [54]

In February 2008, the federal government released Interim Guidelines, which were used to help train federal officials as well as provincial, territorial and industry representatives in 'their consultation and accommodation activities.' In March 2011, Canada issued an expanded and updated guide.[55] Provincial governments issued their own policies

[51] Rio Tinto Alcan Inc. v. Sekani Carrier Tribal Council (2010), 2 *SCR*, at para 34, p. 670.
[52] See Kirk Lambrecht, *Aboriginal Consultation, Environmental Assessment, and Regulatory Review in Canada* (Regina: University of Regina Press 2013), 55-6.
[53] Haida Nation v. BC, at para 51, p. 536.
[54] Haida Nation v. BC, at para 59, p. 540.
[55] Government of Canada, *Aboriginal Consultation and Accommodation: Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* (March 2011). On the February 2008 'Interim Guidelines, see p. 1.

and/or guidelines, including the governments of New Brunswick and Ontario. [56]

In issuing their draft guidelines, the Government of Ontario stated that the processes outlined would foster better working relationships with First Nations and also provide 'clarity' to industry.

> 'Ontario believes that better processes will mean clearer communication, better decisions and lasting outcomes that benefit both Ontario and Aboriginal peoples.
>
> We also recognize that industry is looking for clarity on the consultation process and wants to ensure it can move ahead with its initiatives in a timely way'.[57]

In keeping with the Supreme Court directives, the GNB's consultation policy states that the province will consult with First Nations when 'decisions or actions of the Crown regarding Crown land and resources that may adversely affect asserted or judicially established Aboriginal and treaty rights. The duty to consult may also extend to decisions or actions of the Crown regarding unoccupied or undeveloped private land, where there are asserted or established Aboriginal and treaty rights.'[58]

Though the Province 'remains responsible for decision-making and fulfilling legal requirements related to the duty to consult', it 'may delegate aspects of the duty to consult process to third parties (e.g. technical experts, project proponents). [59]

6.5 Consultation Process

At the community meetings and in the submissions made to the Minister of the Environment and Local Government, several people complained about the consultation process. For purposes of consistency, these issues are first explained and are later discussed on pages 38 under the section 'Panel Discussion.'

Issue # 1: Consultation should include the proviso that there is Free Prior and Informed Consent (FPIC)

A number of people voiced concerns about how consultation with the First Nations had unfolded. The most substantive issue concerned the steps, which should govern the relationship among First Nations, government, and industry. This was probably best expressed in a submission made on behalf of the Maliseet Grand Council. The panel understands that this organization is the 'traditional' council, uniting all Maliseet people but which has only limited authority today.

The writer said that consultation should adopt the policy of being free, prior, and

[56] Province of New Brunswick, Aboriginal Affairs Secretariat, *Government of New Brunswick Duty to Consult Policy* (November 2011); Province of Ontario, *Draft Guidelines for Ministries on Consultation with Aboriginal Peoples Related to Aboriginal Rights and Treaty Right*s (June 2006).
[57] Ontario, *Draft Guidelines*, (June 2006), 3.
[58] GNB, *Government of New Brunswick Policy to Consult*, (November 2011), 3.
[59] GNB, *Government of New Brunswick Policy to Consult* (November 2011), 4.

informed consent (FPIC). [60]In her submission, she argued for a four-step consultation process. This plan, which draws its inspiration from the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), introduces elements that are specific to the Maliseet people. The real focus of the submission, however, is that there should be a broad-based consultation process, include all community members, should be based on a consensus-making model, and would effectively give First Nations people a veto power over a proposed project.[61]

Issue # 2: It doesn't matter what we say, the government will approve the project.

A number of people said that the process was to ensure that consultation occurred and regardless of what the First Nations said, the project would be approved.

A Woodstock community member said:

> My name is (name). I'm also a band member here. Perhaps I'm quite confused about the whole process here. We just met with the environmentalists last Monday and they pretty well told us we have no say in what goes on. Now having said that I'm wondering why we're here again tonight. Because it seems to me the bottom line is it's going to be the Province whether they say goes or goes because they said in Alberta and BC the government put it out there that no matter you First Nations say, no matter what you environmentals say, what's best for the Province is best for the Province. And that was the bottom line. Is that what we're going through here too? [62]

Issue # 3: The consultation process is too rushed.

Some people thought that the process was too rushed and they did not have the time to digest the Final EIA report. This sentiment was expressed in two different ways.

First the Assembly of First Nations Chiefs in New Brunswick (AFNCNB) felt that the time period between when the GNB accepted the 2015 EIA Report for consultation in March 2015 (officially released to the public on April 16 2015) and the end date of the review and comment period (17 July 2015) was too short.

> 'given the realities of the complexity of the issues raised by both the proposed Sisson Brook Mine Project, the related Environmental Impact Assessment process and Crown's duty to consult with First Nations and accommodate their rights and interests, we are unable to meet the public period comment deadline

[60] On FPIC, see Boreal Leadership Council, *Understanding Successful Approaches to Free, Prior, and Informed Consent in Canada. Part I* (September 2015).
[61] Maliseet Grand Council, 'Free, Prior & Informed consent applies to all Chiefs and Councils, and both Federal & Provincial Governments.'
[62] Sisson Project, EIA, Community Meeting, Woodstock First Nation, 24 June 2015, p. 2.

unilaterally set by the Government of New Brunswick'.[63]

Second, in two communities, Elsipogtog and Tobique, we heard from community members that either they had not seen the EIA or they had only just received it and so could not adequately comment on it.

At Elsipogtog, a speaker for that community's consultation delegation, read into the record a letter (and later submitted to the panel for their review), voicing his peoples' displeasure with the EIA process.

> This letter in front of you is mandated by our delegation. I have been instructed to communicate to you that we feel that once again we have been listened to but not heard. In recent weeks we were approached to engage in consultation with the province regarding Sisson Brook Mine. Some of the basic tenants, we set out for valid and respectful consultation have already been ignored. Provincial staff members have shown inflexibility with the process saying it was already underway and we have to fit into the existing plans or our community members will be omitted from the process. We are rushed into a date and a meeting agenda that is not our own. They, independently under the wing of the Assembly of First Nations Chiefs in New Brunswick, your government is still using a third party to do consultation with us, I am referring to both the AFNCNB and your panel of experts for the EIA. It is clear that they will be no provincial decision makers present at the proposed June 10th meeting.
>
> You must be fully aware of by now that Elsipogtog First Nation is not represented by AFNCNB regarding resource development and land treaty matters. Our ultimate decision to permit the meeting about the Sisson Brook Mine proposed on June 10th as planned by AFNCNB for Elsipogtog is not to be interpreted by you or your government as a sign of weakness. We are allowing this meeting to go forward because we want it clear that despite the roadblocks constructed and the disrespect shown by your government, we take our duty to engage in consultation seriously. We fear few people in Elsipogtog will be informed enough to engage in this process at this point but we want our views on your "steamroller" record which seems intent to move forward with or without us. [64]

There were similar, though also different, complaints at Tobique. There, one person interrupted the presentation a representative of the Assembly of First Nations Chiefs in New Brunswick was making to voice their disapproval.

> `Like (name) said, nobody came to our community to talk about this mine or the impacts or anything. You want people to respond to an EIA, they don't even know what it's about. And you come here and think that we're going to have

[63] Assembly of First Nations Chiefs in NB to Department of Environment and Local Government, l, 17 July 2015.
[64] EIA Project EIA – Community Meeting, Elsipogtog, June 10 2015, pp. 9-10; Letter to Honourable Mr. Ed Doherty, June 8 2015.

responses for you? Some of these people haven't even read that document.'[65]

Issue # 4: Insufficient Funds provided to First Nations

An important component of the FPIC programme is that sufficient funds be provided so that First Nations people can meaningfully participate in the consultation process. This was one of the issues, which a representative from the AFNCNB mentioned in the community meetings.

> 'So at the main consultation table that was set up although by agreement through the First Nations, the consultation table was established for this project but again, no funds so they didn't meet like they should have.'[66]

This complaint was reiterated in a letter sent to the panel from a representative of the Assembly.

> 'This unfortunate reality is exacerbated by inadequate financial, technical, human and other resources of the Assembly and its member First Nations. We intend to provide the panel with supplementary comments, materials and documents as our limited capacity allows. We intend to do this as soon as we are able, but regret we cannot commit to a specific time.'[67]

The Assembly did make a more substantive submission but reiterated the organization's lack of funding and capacity to properly respond to the EIA.

> The Assembly of First Nations Chiefs in New Brunswick has been working with limited resources, capacity and information from the outset. This is due to the attitude of both SML and GNB. [68]
>
> In order to be meaningfully involved in an adequate consultation process for a major resource project, the AFNCNB requires capacity funding to conduct an Indigenous Knowledge Study, review complex technical documents from a variety of perspectives and make them understandable so we can engage with and inform our member communities about the potential impacts on their rights, to gather their feedback on the Project, and in turn to share this information with SML and the Crown. All of these things require a significant expenditure of time and resources by AFNCNB staff and consultants. [69]

The consultation coordinators for Madawaska, St. Mary's, and Woodstock also complained about the lack of funding, and said that this made it difficult for them to meaningfully participate in the Information Request rounds done after the proponent's

[65] Sisson Project, EIA, Community Meeting, Tobique, June 11 2015, p. 15.
[66] Sisson EIA Project – Community Meeting, Tobique, June 11 2015, p. 15.
[67] AFNCNB to Department of Environment and Local Government, July 17 2015. See 'Submission to Sisson Review Panel from the Assembly of First Nations' Chiefs in New Brunswick' (July 2015).
[68] AFNCNB, 'Submission to Sisson Review Panel,' (July 2015), 13.
[69] 'Submission to Sisson Review from the Assembly of First Nations' Chiefs in New Brunswick,' (July 2015), 39.

July 2013 Draft EIA report. This also created angst in replying to the February 2015 Final EIA report.

> We are also very concerned that the limited budget provided to review the Final EIA Report and all rounds of Provincial IRs has resulted in the technical review completed by MSES being less detailed and comprehensive than what he had hoped for at this critical stage of the EA review process.[70]

Throughout the consultation process, which began in 2011 and which has continued since then, First Nations representatives stressed that they were unable to adequately respond to the proponent because they lacked the capacity to do so. This statement focused on two separate but inter-related issues. Since the project was so large, they lacked the expertise to be able to respond to the EIA and sometimes to meaningfully participate in the working groups, which met throughout the process. They argued therefore that they required a funding package so they could hire qualified consultants who had the educational background and experience in order to interact substantively with the proponent's experts.

Issue # 5: Consultation Occurred only with The Chiefs and Council and not with the community

As a previous comment quoted above suggests, prior to the EIA panel meeting at Tobique on 13 June 2015, a meeting had not been held to explain the project to that community. At that meeting and in response to a statement that the consultation 'table' had been done through agreement with the First Nations, a community member responded:

> The First Nations people did not give consent to the Assembly [the Assembly of First Nations Chiefs of New Brunswick which at that time represented Tobique in discussions with SML and GNB] to consult for us and I don't know where that statement came from but it's false. The Chiefs gave consent, not the people. Not the people. So if you're going to say statements like that, at least speak the truth. Let these people know that it was the Chiefs that agreed and it wasn't the people.[71]

The same speaker explained later what she meant.

> 'The levels of consultation vary. More stringent consultation is required when projects could potentially have long-term adverse effects on aboriginal groups. PNB failed the Wolastoqiyik in its consultation because its consultation thus far has been very limited and only with a few select individuals and organizations that claim to represent the Wolastoqiyik and Wabanaki people. They do not recognize the need to consult with the grassroots people who are the true title holders. Our consent is required before any activity takes place including

[70] Letter from Woodstock, St. Mary's and Madawaska First Nations to GNB, July 17 2015.
[71] Sisson Project, EIA, Tobique, p. 15.

> Environmental Impact Assessments and traditional knowledge studies. The Wolastoqiyik have not relinquished title to the Crown, to the Chiefs or any organization. All Wolastoqiyik should be allowed to have a say in how our land is being used and how it will be used to protect the future generations.'[72]

This issue that consultation should involve all the people, instead of just a few individuals, was an issue as well for a St. Mary's Elder.

> If we are going to have a fair and open and proper process, it has to be an open forum. It has to be an assembly of the people. All the people, not just the band because a band is a Federal Institution. The title holders, our rights holders are the people. Wolastoqiyik. And that's how it has to happen, there has to be a collective assembly. There has to be, they have to participate in the decision making. They have to have a clear process that everybody understands otherwise, we're not going to have the trust of the people. If they turn around and behave like the AFNCNB did down there in Elsipogtog, nobody's going to trust them.[73]

Issue # 6: Only Maliseet communities should have been consulted about the Project since the proposed site lies within their ancestral (or traditional) territory.

People also asked why the EIA consultation process involved Mi'kmaw communities. At Madawaska, the Chief said that if the proponent consulted some Mi'kmaw communities then it should have consulted all other First Nations who may have historically sought passage through the area in which the PDA and LAA are located.

> I know you don't have the answer to this, but when I look at the location of where this mine is going to be, it's clearly on Maliseet traditional territory. And I know you are engaging and consulting with Mi'kmaw communities in New Brunswick, and my understanding is that their claiming that they would have had passage through this territory and that therefore they have a claim or some sort of stake in consultation, in clearly what is Maliseet territory. I know you don't have an answer to this and I would just like it to be on record, that it is a concern. Why are you actually consulting with Mi'kmaq? And if you are consulting with Mi'kmaq, why are you not consulting with all other First Nations that are not Maliseet that may have had safe passage through our communities and our territory?[74]

A member of Tobique First Nation, put the matter more forcefully. However, the comments were directed more at the Assembly of First Nations Chiefs in New Brunswick, who, the speaker suspected were negotiating without the consent of the Maliseet communities and in ways that were inimical to their long-term interests.

> So I'm concerned that this organization, the Assembly of First Nations Chiefs, is

[72] Sisson Project, EIA, Tobique, , p. 19.
[73] Sisson Project EIA, St. Mary's, June,23 2015, p. 5.
[74] Sisson Project EIA, Community Meeting, Madawaska Maliseet First Nation, May 26 2015, p. 4.

> even here. I'm concerned that they've gone to the Mi'Kmaq communities whose land this is not on, the Sisson mine is not on their land. I would like to know why any Mi'Kmaq communities are being asked about that matter. It's not going to affect any of them. It's going to only affect the watersheds that feed into the Saint John River, and that's us, and that's our salmon, and that's all of the brothers and sisters that walk with us on this land.[75]

Issue # 7: The proponent and GNB did not consult New Brunswick Aboriginal Peoples' Council.

In a letter submitted, the writer explained that the New Brunswick Peoples' Aboriginal Peoples' Council (NBPAPC) represents 'approximately 28,260 Off-reserve status and non-status Aboriginal peoples. These individuals were of Maliseet, Mi'kmaq and Passamaquoddy, who lived in various parts of the province. The organization was founded in 1972 and is an affiliate of the Congress of Aboriginal Peoples, which represents more than one million off-reserve people of aboriginal descent. As in the case of the NBAPC, the Congress of Aboriginal Peoples speaks for a broad array of peoples who are of Aboriginal descent and who live off reserve. [76]

At the public meeting in Stanley, a representative of the NBPAPC said that the Crown had an obligation to consult with them. However, no-one had done so.

> I work with New Brunswick Aboriginal Peoples Council. And I just have a point of clarity for you. First Nations does not mean only people who live on reserves. First Nations means also aboriginal people who live off reserve. Our organization, no one has approached us, the government has not approached us, has not consulted with us, the industry has not contacted us for any of our input, our observations. I just wanted to point that out and make that statement.[77]

Issue # 8: The Proponent Has Been Unresponsive Throughout the EIA Process

Finally, First Nations representatives complained that the proponent had been unresponsive throughout the EIA process. Though there are many instances in which this disquiet was expressed, the Panel mentions two specific ways.

First, the First Nations said that the proponent did not adequately address their concerns about the Draft Terms of Reference. These draft terms were issued in August 2011. As part of the process, which had been established regarding the EIA process, the First Nations stakeholders could respond to the draft.

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[75] Sisson Project, EIA, Tobique, June 11 2015, p. 28.

[76] The precise identity of the people the Congress represents is unclear. For instance, the Congress claims to represent Metis people, but this claim, we would think, would be disputed by the Metis National Council as well as the Manitoba Metis Federation.

[77] Sisson Project, EIA, Community Meeting, Stanley, June 22 2014, pp. 45-6.

Second, the First Nations were also unhappy with how the proponent responded to their Information Requests, which had been sent after the July 2013 EIA report. A letter to the Canadian Environmental Assessment Agency (CEAA) explained.

> In general, we are very disheartened by the proponent's responses to our technical questions and concerned that the dismissive tone set by Northcliff is not conducive to good faith relations or a meaningful review of the proposed project.[78]

David Coon, the provincial leader of the Green Party and Member of the New Brunswick's Legislative Assembly, echoed these words in his comments at the community meeting in Stanley on 22 June 2015.

> A couple of things. One is clearly the kind of consultation with First Nations that is supposed to happen according to the Supreme Court of this country is not happening and accommodation around aboriginal rights that is supposed to happen according to the Supreme Court is not happening, and is not happening in this case and continues not to happen. I know that's not the mandate of this panel. As an MLA, like all MLAs, I took an oath when I was sworn in to uphold the honor of the Crown, so I guess that means that's partly my job, and that's something I will work on to ensure that that changes.[79]

6.6 Project Guidelines and The Final Terms of Reference

As the Final Terms of Reference sets out, Geodex (the previous owner) had initiated discussion with First Nation communities and organizations in 2008. Northcliff continued these talks after assuming ownership in 2010. This process included meeting with various First Nations representatives. From these meetings, the proponent identified several First Nations concerns about the project, which then became a central focus of the proponent's engagement with these communities.[80]

In the Final terms of reference, the proponent proposed various ways that they would engage First Nations people and 'inform the Crown's duty to consult process.'

The key point of contact for some communities would be the Assembly of First Nations Chiefs in New Brunswick (AFNCNB) while other communities, notably Woodstock and St. Mary's, would 'represent their own interests.'

The proponent outlined several different ways that this engagement would take place. This included:

- Face to face meetings with Chiefs and Councils,
- Community open houses,

[78] Letter from St. Mary's to CEAA, [June 2014].
[79] Sisson Project EIA, Community Meeting, Stanley, June 22 2015, p. 46.
[80] TOR, April 16 2012 p. 40. See Summary of Crown Consultation Milestones in 'First nations Federal Consultation Plan for the Environmental Assessment of the Sisson Project' (21 June 2013), p. 8.

- Community newsletters,
- And other means deemed appropriate by council and community employees.

The proponent also agreed to incorporate, 'where applicable and available… the traditional and local knowledge to which it has access or that it may reasonably be expected to acquire through appropriate due diligence.' [81]

To engage First Nations, the proponent stated that they would 'follow the guidance of the Chiefs and their Councils.' [82]

In undertaking to engage First Nations communities and organizations, the proponent was helping to inform the Crown's 'duty to consult' and would use whatever information obtained from the First Nations in their EIA report.

> 'the EIA Report must describe the concerns raised by Aboriginal peoples in respect of the Project, and where applicable, how they have been or will be considered and where appropriate addressed. That description should include a summary of discussions, the issues or concerns raised, and should identify any asserted or established Aboriginal and treaty rights as conveyed to Northcliff by Aboriginal peoples or the Crown. Where applicable, the EIA Report must document any significant adverse environmental effects of the Project on the current use of land and resources for traditional purposes by Aboriginal persons as well as any measures taken or recommended that would prevent, mitigate, or otherwise accommodate such environmental effects, as applicable. This information will be then used by governments towards fulfilling any duty to consult Aboriginal peoples regarding the Project.'

However, the 2012 Terms of Reference also said that governments would be involved in the process of consultation 'and may undertake additional engagement activities directly with Aboriginal peoples regarding the Project.'[83]

To facilitate the consultation process, the federal government drafted a 'First Nations Consultation Plan for the Environmental Assessment of the Sisson Project'. This plan was written 'with input from First Nations and the Province of New Brunswick.' The plan gave a general framework for consultation. For instance, the plan established timelines for First Nations submissions on the EIA report, the possibility of meetings in order to discuss First Nations comments, timelines for the proponent's replies to information requests (IRs), and further meetings to discuss these replies.[84]

[81] TOR, April 16 2012, pp. 37-8.
[82] TOR, April16 2012, p. 41.
[83] TOR, April 16 2012, pp. 43-4.
[84] 'First Nations Federal Consultation Plan for the Environmental Assessment of the Sisson Project,' (update 21 June 2013), pp. 2-5.

6.7 Panel Discussion

The Panel's mandate is not to determine if the Government of New Brunswick has fulfilled its duty to consult with those First Nations whose proven or asserted rights the proposed project would potentially affect. The legal determination as to whether the GNB and through them, the proponent, has properly discharged their obligation properly resides elsewhere. Despite this, the panel does have the mandate to *comment* on the consultation process, in light of concerns raised.

This is for two reasons. First, the Project Guidelines, which the GNB issued in 2009, says that the proponent must actively engage the First Nations Communities.[85] In the 2012 Final Terms of Reference, the proponent outlined how they would do so in order to inform the Crown's duty to consult. Second, community members and political leaders expressed concerns about the consultation process.

In the Panel's opinion, to not comment on the consultation process would be a breach of the duty to consult. The panel understands that the GNB's decision to hold seven community meetings in First Nations communities was to ensure that community members had an opportunity to comment about the project.[86] To not comment on First Nations concerns about the 'duty to consult' would undermine one of the purposes of the Panel's mandate.

As the Supreme Court of Canada has stated, the degree of consultation is determined on a case-to-case basis. Like many of its decisions on Section 35, the court's pronouncements on consultation have evolved from issues arising between First Nations in British Columbia and Alberta and the federal and provincial Crowns. Since the historical context is different there than in the Maritimes, it is not always possible to translate concepts across time and place. This is true when we come to consider the Maliseet people.

The Panel is aware of the unique historical and political context in which the First Nations communities of New Brunswick have lived. The Maliseet, like the Mi'kmaq, were among the first peoples to have contact with European fishermen and traders in the 1500s. The Maliseet also made a series of treaties with British colonial officials, which did not involve a surrender of land but rather affirmed 'peace and friendship.' These treaties were meant to create a means for both peoples to live together. Finally, the Maliseet and Mi'kmaq have been exposed to a longer and more systematic assimilation policy than most other First Nations people. This has formed them in ways, which are unique.

Despite the vicissitudes to which they have been exposed, the Maliseet have survived as a distinct people. If they do not speak their language in the same numbers as other First Nations people, or do not engage in similar 'traditional' work or activities in the

[85] GNB, Minister of the Environment, *Final Guidelines for an Environmental Impact Assessment: Geodex Sisson Brook Project (open pit mine)* (March 2009), p. 10.
[86] This point is central to our reasoning and is explained below.

same number, the reasons have to do with the ways French and later British colonialism affected their communities.

Issues # 1 & # 2.

Community members believe that the government will ignore whatever they say. For this reason, they have come to rely on Section 35 of the 1982 Canada Act, and the lawyers who argue on their behalf, to assert their political views. The proposed project has become a way to increase their presence within the political system, by insisting that the project should only go forward with their consent, by requesting sufficient monies so they can meaningfully participate in consultation, and by maintaining that any discussions regarding the project be held on a nation-to-nation basis.

The root cause of this discontent is multi-faceted and is not confined to this one project. The colony of New Brunswick, the Government of Canada, and the Province of New Brunswick have had a long history of ignoring and marginalizing the province's Aboriginal people.

However, the GNB is attempting to establish more meaningful relationships with First Nations communities. These efforts to reconcile the government's broader public interest with First Nations' interests, is precisely the purpose, which underlay the Supreme Court's decisions on consultation. The fact that the GNB decided that extensive consultations were a necessary part of the EIA process illustrates their commitment to building stronger relationships with the province's First Nations communities. We note, for instance, that holding five EIA panel community meetings on First Nations reserves is part of that effort and is unprecedented in New Brunswick's history.

Because of the unprecedented nature of the EIA, and the character of past Crown-First Nations relations in New Brunswick, the Panel is not surprised that consultation has not been a smooth one, and that the proponent, Government officials and First Nations representatives have expressed frustration, with each other, and with the process.

First Nations organizations and community members appear to have a different understanding of how consultation should work from the GNB's understanding. Though there was a consultation agreement, there is now disagreement about how well it worked. There are many reasons for this, including the fact that some First Nations communities have an incomplete understanding of the jurisprudence, which provides the broad framework for the consultation process. However, the GNB must also take responsibility since they did not issue guidelines regarding the duty to consult until September 2011, long after most provinces had done so. [87]

[87] See Maria Morellato, 'Crown Consultation Policies and Practices Across Canada,' National Centre for First Nations Governance (at fngovernance.org), (April 2009), 2-3. As of April 2009, Canada, British Columbia, Nova Scotia and Ontario had issued policies regarding aboriginal title and treaty rights and Alberta, Manitoba, Quebec and Saskatchewan had polices addressing aboriginal rights but only within the

Recommendation # 1:

The GNB could do more to articulate how the process might work. For this reason, the Panel recommends that to move forward on these issues, the GNB should inform themselves and the First Nations about the duty to consult. This might be done in a number of ways, and might include:

a. providing a clearer and more comprehensive overview of the consultation process on the Aboriginal Affairs Secretariat (AAS) website. At the present time, the website provides little information and does not refer the reader to the Supreme Court decisions, lower court decisions (such as from the British Columbia Supreme Court), articles, and websites (such as fngovernance.org), which would help government, and First Nations leaders and community members to understand the 'duty to consult.'
b. holding workshops with designated community consultation coordinators. These workshops might involve inviting respected and informed First Nations representatives, government and academic scholars who could provide a broader perspective on the Crown's duty to consult obligation.
c. Participating with First Nations in developing a strategy to streamline the Duty to Consult process, and which would also assist in making First Nations participation more effective. This might be accomplished through examining how other provincial governments have developed procedures or memorandums of understanding with First Nation communities. For instance, the GNB might develop a procedure, as did the Government of Nova Scotia with that province's thirteen Mi'kmaw communities. [88]

First Nations communities also have a responsibility to ensure that those who are employed as consultation coordinators are qualified to do the work, have the proper educational background, and are also trained in the process. The First Nations can also help to make consultation more effective by:

a. ensuring that those employed as consultation coordinators have university or college degrees in an area that has some applicability to their employment,
b. ensuring continuity in the employment of consultation coordinators, especially when an EIA process concerns a large industrial project,
c. discussing with government and the proponent when a large industrial project is proposed, the feasibility of appointing one individual or individuals, at the beginning of the consultation process from the affected First Nations community or communities (Maliseet or Mi'kmaq), whose principal responsibility would be to act as the principal intermediary with the proponent and also to inform the other affected communities about the ongoing EIA process.

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context of such harvesting activities as fishing and hunting. As Morellato noted 'It is unclear whether the provinces of New Brunswick, Newfoundland or Prince Edward (Island) do or do not follow particularly consultation and accommodation policies that address Aboriginal title and/or rights as their policies are not available for public review.' (p. 2)

[88] See 'Terms of Reference for a Mi'kmaq-Nova Scotia-Canada Consultation Process,' (September 2010) at http://novascotia.ca/abor/docs/MK_NS_CAN_Consultation_TOR_Sept2010_English.pdf

First Nations people feel powerless, a feeling born from a long history of discrimination against them. Regardless of present government policy, there will be difficulties in building relationships with them. The key issue that requires addressing is that these relationships need to be built and nourished. Governments, at the provincial and First Nation level, will come and go but throughout those changes, the relationships must endure. Government and First Nations need to develop working relationships, so as to facilitate and maintain effective and respectful communication. In order to create and maintain these relationships, the GNB might have to devote more financial and human resources. Specific recommendations related to this issue are outlined in the bullets above.

Issue # 3: Was the Consultation Process Rushed?

While the Panel is aware of the difficulties in reconciling two different and opposed views of the project, we are also conscious that both the government and the proponent held extensive talks with all concerned First Nations communities, and that these discussions began before 2012. Indeed, the proponent has compiled a 302-page spreadsheet, which lists every phone call, phone conversation, letter, and email in which they attempted to engage First Nations leaders and in some cases, community members. What is apparent from this communication log is that the proponent attempted to inform First Nations about the EIA. While there were certainly disagreements over how the project would impact Section 35 rights, there is nonetheless proof the proponent started consulting with First Nations communities and organizations early in the process and continued to do so up to the submission of the February 2015 EIA report.

However, this is an important issue and is part of a broader question about how community members were informed about the project as well as the funding given to the First Nations to participate in the consultation process and to respond to the two EIA reports. For this reason, our comments later in this section and the next section should be read in order to appreciate our view of this important issue.

Issue # 4: Funding and the Lack of Capacity

The Panel understands that the First Nations communities were provided funding to hire their own consultants to assess the proponent's project. This technical advice would then assist the government in evaluating whether the project infringed on proven or asserted Section 35 rights. We also understand that the First Nations were provided funding to do an Indigenous Knowledge Study (IKS), and were given monies for other purposes as well. These monies came from various sources. In total, the First Nations communities were given $682,454 to do these studies.

In addition, the New Brunswick government provided monies to assist communities with duty to consult costs. These funds, however, were not specifically tied to the Sisson

project but were meant to assist First Nation communities generally on consultation files.

The First Nations have complained that they did not receive sufficient funds to engage meaningfully in the EIA process. The monies cited above would seem to contradict that assertion. Over a four-year period, between July 2011 and July 2015, the First Nations were provided $682,454. This amounts to an annual total of $170,613.50. In addition, they were also provided monies for consultation, which included meetings with the proponent and Crown representatives.

While the Panel appreciates the complexities of responding to the technical aspects of the EIA, the figures cited show that the First Nations received substantial funding. How they spent that money is unclear.

The decision to hire MSES no doubt increased the cost incurred and created difficulties to meaningfully engage in a dialogue with the proponent and the Crown. By way of example, we point to a discussion, which occurred soon after the July 2013 EIA report was issued. MSES did a complete review of the initial EA report. This led to meetings held in Fredericton on September 30 and October 1, 2013. One of the consultants, which MSES engaged, was not able to attend the meeting in person. This may have been cost prohibitive based on their location.

The Panel also recognizes that for everyone concerned, namely the proponent, the GNB, and the First Nations communities and organizations, the EIA was a new process, which has transpired over a longer time period than any individual party probably contemplated when the process began. For this reason, the Panel is also not surprised that the proponent, the GNB, and the First Nations have expressed frustration at how much, or how little, money was provided.

For example, representatives for the Assembly and the three other communities, have all expressed disappointment that so little money was available to respond to the February 2015 EIA report.

The Panel would make two comments. First, some provision might have been made to reserve funds so that they would be able to respond. Given the amount of monies provided, the First Nations might have reasonably expected that their requests for additional funds would be rejected. Second, the Crown has an obligation to assist First Nations so that they can respond effectively. In this instance, the Crown might have used its own resources to assist the First Nations to find the requisite skill and expertise needed to evaluate the project.

Why is this necessary? The First Nations and their consultants have complained about the lack of capacity. What this means is that the First Nations people do not have people in their offices who have the requisite skills, education, and/or training. As well, the demands placed on their staff are so overwhelming that they cannot accomplish all that needs to be done. Some of New Brunswick's First Nations communities have small on reserve populations, as Table 1 illustrates (see p. 45). For these reasons, the Crown

should assist First Nations when and if necessary so that they can respond effectively to the EIA.

There are many historical reasons why First Nations communities may not want to cooperate with the GNB. However, reconciling interests does not mean a refusal to cooperate. The First Nations economies are dependent on a healthy and robust provincial and federal economy. The failure to cooperate can only mean a diminution of everyone's standard of living. That is not in the public's general interest, nor is it in the interests of First Nations.

Recommendation # 2:

Recognizing the highly technical and multidisciplinary nature of Environmental Impact Assessments, First Nations should explore mechanisms by which capacity can be built in house for some aspects of these reviews. In addition, development of partnerships with regionally based firms (in Atlantic Canada and/or Quebec), which could include local universities and colleges, is also recommended. These approaches will increase direct involvement of First Nations, and will also save costs.

Funding and Capacity to Consult with Community Members

A separate but inter-related issue is whether First Nations communities had the capacity and funding in order to inform their members about the project.

This is an important issue but which is intimately connected the internal dynamics within each community. The Crown cannot demand that people attend community meetings. The Crown cannot demand that people be informed. As well, the Crown, and we would suspect the proponent, cannot invite themselves into a community event without first receiving approval from the Chief and Council.

At best, the Crown can only provide monies to the Chiefs and Council, or the representative organization in order to inform their communities. Yet, if the Council or organization fails to do so, the Crown and the proponent, are left with a difficult situation.

This is a problem. On the one hand, the Crown has a duty to consult and has provided the monies so that community members are informed, and who therefore can make reasonable and educated responses. What happens, however, when those monies are not used in the way intended? What recourse does the Crown, and the proponent, have? What recourse do community members have when they are not properly informed? What responsibility does the Chief and Council and/or organization bear for not fulfilling their 'duty to consult'?

These are legitimate concerns and ones that First Nations and the Crown need to resolve.

Recommendation # 3:

For this reason, the Panel recommends that the GNB and the First Nations determine an equitable process that would provide a framework for how community members may be consulted about a project in the future.

Issue # 5: Consultation Occurred only with The Chiefs and Council and not with the community

From the beginning of the process in 2009, the GNB, and through them, the proponent took an expansive view of who should be consulted and began discussing the project with various organizations. Initially, this included the Union of New Brunswick Indians, the St. Johns River Tribal Council and other organizations. Afterwards, the Assembly of First Nations Chiefs in New Brunswick, which was formed to discuss comprehensive issues with the province and the federal government, assumed more prominence in First Nations politics and they appear to have become principal intermediary between individual communities and the Crown. As a result, this organization superseded the older political organizations, such as the Union of New Brunswick Indians, that had previously represented individual bands in discussions with the provincial and federal Crown.

Though theoretically, the Assembly was meant to represent all fifteen First Nations communities, they did not always have their full confidence. This was evident in the 2012 Terms of Reference for the Sisson Project, which referred to four separate points of contact with whom the proponent was to be engaged:

- St. Mary's First Nation
- Woodstock First Nation
- Assembly of First Nations Chiefs in New Brunswick
- Chiefs and Councils

At the time when the 2012 Terms of Reference were issued the Assembly represented thirteen of the fifteen First Nations communities in New Brunswick. This included four of the six Maliseet communities, Kingsclear, Madawaska, Oromocto, and Tobique. Significantly the two Maliseet communities, who would be potentially affected by the project, St. Mary's and Woodstock, were not members. Soon after, Madawaska withdrew from the Assembly. Consequently, the proponent was forced to discuss their proposed project with four separate political entities: the Assembly of First Nations Chiefs in New Brunswick, Madawaska First Nation, St. Mary's First Nation, and Woodstock First Nation. Theoretically the Assembly was to represent the three other Maliseet communities, Kingsclear, Oromocto, and Tobique.

There are several problems with this model, which may not have always been apparent. The first problem is that the proponent was forced to deal with many First Nations representatives from multiple political bodies. The second problem is that First Nations governance, like other political bodies, is not stable and so personnel and elected

officials come and go. And the third problem is that one organization, the Assembly, represented three communities, and became the principal intermediary between the proponent and those communities.

In the Panel‘s opinion, these problems made effective communication difficult. To take one example: in most bureaucracies, a change in government or personnel does not radically undermine governance. Regardless of the elected government in power or a change in employed personnel, government continues to govern. This is possible because the bureaucracy is the institutional memory of the government and thus is able to continue to function effectively. Such changes in First Nations governing bodies, however, have more significant impacts since their populations are small and they may not always have a large staffing complement.

The consultation model had additional problems. As Table 1 shows, the three communities who were not members of the Assembly represented a significant proportion of the province’s registered Maliseet population but also have two of the smallest on reserve populations.

Table 1: Registered New Brunswick Maliseet Population (August 2015)

Community	Living On Reserve		Living Off Reserve		On Reserve	Off Reserve	Total Registered Population	% of Population on Reserve	% of Total Maliseet Population	% of Total On Reserve/ Maliseet Population
	M	F	M	F						
Kingsclear	329	379	138	161	708	299	1008	70.2	14.1	18.7
Madawaska	82	73	106	104	155	210	355	43.7	5. 0	4.1
Oromocto	155	151	148	200	306	348	656	46.6	9.2	8.1
St. Mary’s	417	423	433	531	840	964	1848	45.5	25.9	22.2
Tobique	728	769	357	408	1497	765	2269	66.0	31.8	39.5
Woodstock	171	113	295	410	284	705	993	28.6	13.9	7.5
Totals	1882	1908	1477	1814	3790	3291	7129	53.2	99.9	100.1

Source: Aboriginal Affairs and Northern Development, Aboriginal Peoples & Communities, First Nation Profiles, ‘Registered Population as of August, 2015.’

Together, these three communities (Madawaska, St. Mary’s and Woodstock) have 44.8 per cent of the total registered population (3196 of 7129) but only 33.7 per cent of the total on reserve population (1279 of 3790). In other words, the proponent was asked to discuss and negotiate issues with communities with relatively small on reserve populations. Madawaska has an on reserve population of 155 people and Woodstock an on reserve population of 284. These numbers include children and youth so that the adult population would be less than these numbers indicate. (For instance, the 2011 census for Madawaska showed that 61 per cent of the population was between the ages of 20 and 64. If we apply that figure to the 2015 on reserve population, we would have 95 people between the ages of 20 and 64 living on reserve). These small numbers

limited the capacity of the First Nations to meaningfully engage in consultation, and therefore must have also affected the ability of the communities to meaningfully understand how the project might affect their section 35 rights. However, we would also suspect that these small populations created additional problems for the proponent. [89]

What these figures also reveal is the important role that the Assembly of First Nations Chiefs in New Brunswick played in the consultation discussion. From 2012, they represented 55.2 per cent of the total registered Maliseet population. However, this figure does not adequately convey the Assembly's importance, since the three communities they spoke for formed 66.3% of the total on reserve Maliseet population. In other words, the Assembly represented a greater number of people who might exercise their constitutional rights in the PDA and RAA. For this reason, it was important for those community members to be informed about the project.

The Panel views this situation with some disquiet since we are unsure as to how much these three communities were properly informed about the project and whether or not they had an adequate amount of time to digest the EIA Report and respond to it.

We say this for three principal reasons. First, the panel did not hold a community meeting at Kingsclear, even though the co-chair of the Assembly was from that community. The Panel understands that despite repeated communications, the Chief and Council of Kingsclear did not respond to the GNB's request that a community meeting be scheduled in their community. Second, though a community meeting was to be held at Oromocto on the evening of Tuesday, 9 June 2015, GNB officials were informed on or about June 4, that the community wished to cancel the meeting. Finally, the Panel believes, based on comments made at Tobique, as well as our own perceptions of that community meeting and the one at Elsipogtog, that the Assembly did not adequately inform community members about the project.

Our understanding of the Assembly's inadequate consultation with Tobique and Elsipogtog is clearly evident in the transcripts of those meetings. Representatives of the Assembly attended both meetings and on both occasions, two individuals made presentations. The Panel understands that one of the representatives from Thrive Consulting (of Fredericton), advised the Assembly about the proposed project, through to what degree she evaluated the EIA is unclear. Regardless, at both Elsipogtog on June 10, 2015 and on June 11, 2015, an Assembly representative gave a broad overview of the project, as well as the criticisms, which MSES (the Alberta based consulting company which assessed the July 2013 and February 2015 EIA reports) had made of the EIA report. An assembly employee also spoke at those meetings and has been intimately involved in the discussions with the Crown and the proponent regarding

[89] Of course, it is entirely possible that there are many people who do not live on reserve but live close to the reserve, allowing them to participate actively in community activities. This might be the case of all communities but particularly Madawaska (Edmundston), St. Mary's (Fredericton), and Woodstock (Woodstock).

the project. This employee spoke at both community meetings of the Assembly's concerns about how the project would interfere with Section 35 rights.

The panel was concerned that these two individuals were at the community meetings principally to inform the communities about the project. In other words, their presentations on 10 June at Elsipogtog and 11 June at Tobique, were the first times when the Assembly had presented to those communities information about the project as well as the Assembly's concerns about the EIA reports[90].

Though literature was available at both community meetings, including summaries of the report, the Panel understands that this was the first time that such information had been distributed.

Whether or not the Assembly held meetings or otherwise attempted to inform the other two communities whom they represent, Kingsclear and Oromocto, about the project, is something that the Panel does not know. Given that little information had been distributed to the Elsipogtog and Tobique community members, we suspect that a similar situation prevailed in the other two communities.

We are also aware that there were complaints about the Assembly, and the lack of information provided to communities.

From the review of material provided and from the panel's own observations, we do not support the Assembly's view, contained in a submission made to the Panel, that they did not have sufficient time to 'brief our communities on its contents prior to the community meetings. As such, our communities were not sufficiently informed of the Project prior to the community meetings.'[91] As presentations at Elsipogtog and Tobique suggested to the panel the Assembly had not, prior to either community meeting, presented materials in a public forum to community members. This, they might have done any time in the twenty-month period between the release of the July 2013 EIA report and the February 2015 EIA report. However, they appear to have not done so.

As well, even though there was a two-month period between the GNB's acceptance of the February 2015 EIA report and the scheduled community meetings, the Assembly did not use that window to brief their communities.

To determine why such information was not distributed to the concerned communities is not within the panel's mandate. However, as we explain below in discussing the indigenous knowledge study, one factor contributing to this situation is that First Nations communities do not have the capacity to deal with the issues that their leadership confronts. As well, they may be overwhelmed with the amount of work that consultation and other responsibilities entail. Therefore, in thinking about these issues in the future,

[90] We also note that the presentations made, were based on the July 2013 EIA and not the February 2015 EIA, which was the basis of our panel meeting.

[91] 'Submission to Sisson Review Panel from the Assembly of First Nations' Chiefs in New Brunswick,' (July 2015), p. 33.

the GNB will need to develop more effective measures to ensure that First Nations communicate with their community members about proposed projects.

Recommendation # 4:

The GNB should inquire if the communities of Kingsclear and Oromocto have been properly informed about the project, and if necessary, canvas community concerns and/or views about it. This might include the proponent organizing an open house at both communities where the company's experts can answer questions about the project. A similar open house should be held at Tobique. We also would refer readers to the panel's recommendation regarding issue # 4, above.

Issue # 6: Only Maliseet communities should have been consulted about the Project since the proposed site lies within their ancestral (or traditional) territory.

At the beginning of the EIA, the Crown and the proponent included Mi'kmaw communities in the consultation process. This was done partly because the Assembly represented both Maliseet and Mi'kmaw communities and this inevitably led to broader discussions with how the Mi'kmaw leaders felt about the proposed project. As well, it is reasonable to assume that the Mi'kmaq may exercise some treaty and aboriginal rights in the PDA and LAA, since this area may have been an area through which people historically moved[92]. For these reasons, both GNB and the proponent were reasonable in assuming that in order to fulfill their duty to consult, discussions should also occur with the Mi'kmaq who might have used the region historically, or who currently do so. The strength of that claim may be weak, and would not be as strong as those Maliseet who live closer to the PDA. However, the proponent and the Crown had an obligation to determine the strength of that claim. For this reason, the Panel believes that the proponent, and the Crown, was right to consult with the Mi'kmaq.

However, whether holding a community meeting with the EIA panel at Elsipogtog was necessary is unclear. Though there may be valid legal reasons to canvass how the proposed project may infringe Mi'kmaw Section 35 rights, holding a panel meeting may be less necessary and useful.

Recommendation # 5:

For the future, the GNB should develop a protocol with the province's First Nations about when consultation should occur with what First Nations communities.

[92] Some Mi'kmaw communities have challenged the GNB's interpretation of where they can hunt and have argued that historically their people had harvested resources in Maliseet territory. Maliseet people have argued that same about their relationship to lands, which the Mi'kmaq have historically occupied and which they claim to be their 'traditional territory.'

In thinking about this protocol, the GNB and the First Nations might ask the following questions:

If a major project is located on lands, which are part of traditional Maliseet territory, does the Crown need to consult with Mi'kmaw communities? If the answer is yes, what communities should be consulted? What level of consultation is necessary? What role, if any, should Maliseet communities play in this consultation process?

The same question might be asked regarding a major project proposed to be developed on traditional Mi'kmaw lands. To what degree should Maliseet communities be consulted? What Maliseet communities? And what level of consultation should occur?

Finally, the GNB and the First Nations might also consider what constitutes a 'major project'?

Issue # 7: The proponent and GNB did not consult New Brunswick Aboriginal Peoples' Council.

The proponent did talk with the New Brunswick Aboriginal Peoples' Council early during the consultation process but the results of that discussion are unclear. Regardless, the legal rights, if any, that people who are represented by the Council, and whether they represent off reserve registered First Nations people, is a determination, which is best left to the Crown. As well, the Panel notes that the Supreme Court of Canada heard oral arguments in Daniels v. R, on 8 October 2015. This court's decision in that case will hopefully provide clarity on the Crown's responsibilities towards non-status 'Indians,' who may include individuals, who have status but live off reserve. A decision from the Supreme Court of Canada in this matter is expected in 2016.

Issue # 8: The Proponent Has Been Unresponsive Throughout the EIA Process

The Panel takes note of First Nations concerns regarding the information requests, which their hired consultant, MSES forwarded to the proponent. We wonder why the First Nations undertook such an exhaustive analysis of the proposed project without first determining if the Project would infringe on proven or asserted Section 35 rights.

The Panel understands that the consultation process should proceed by first evaluating the claim. As we explain later, one critical aspect of that evaluation is the Indigenous Knowledge Study (IKS). The IKS done by Moccasin Flower Inc was inadequate. Thus, the Panel wonders how the First Nations then proceeded to hire MSES to conduct such a thorough review of the proposed project. Should they not have first established a reasonable claim about the First Nations Section 35 rights? Would this not have then been the basis to determine how the project might infringe on those rights?

The GNB apparently mentioned to MSES their concern on this issue just prior to that consultant's July 2015 submission to the panel.

> 'It was recently brought to the attention of the First Nations and MSES that it remained unclear to GNB how the suite of technical issues raised by MSES throughout the EA review process are directly related to First Nations concerns regarding impacts to Aboriginal and Treaty rights.' [93]

MSES's response to this concern is inadequate. They state that 'each expert involved in writing the report had meaningful input from First Nations'. In their June 2014 report, they explain that MSES uses a unique framework that incorporates First Nations concerns and for this reason, the reports, though authored by MSES, 'should be considered to have been submitted by the First Nations.' This approach urges us to evaluate their report in the following manner: "Even though we (MSES consultants) are writing from a scientific perspective, we have talked to First Nations people and understood their viewpoints, and therefore we are thinking through a First Nations lens." The Panel, while agreeing with the importance of understanding First Nations use of 'traditional resources' questions this tautology.

The point of the consultation process is to ensure that those resources to which First Nations have constitutionally protected rights to harvest are properly accommodated. MSES has not engaged in that exercise but evaluated all aspects of the project, regardless of whether or not a Section 35 right is impacted or infringed. In some cases, the issue is clearly stated. For example in Stantec's May 2014 Responses to MSES's Information Requests, there is a reference to 'First Nation concerns regarding deposition of contaminants on berries and medicinal plants' (7.2.22).[94] The relationship between the right and the infringement is clear: the berries and medicinal plants are resources which the First Nations communities claim to harvest and therefore might be Section 35 rights. However, other Information requests do not have such relevance. For example, section 7.2.6, concerns visibility (Aesthetic clarity).[95] What has 'visibility' got to do with a Section 35 right? The Panel has similar concerns regarding Information Request 7.2.28 which deals with hydrogeological assumptions regarding the release of metal contaminants from the Tailings Storage Facility (TSF) and which may run into 'waters used by the First Nations.' [96] In this case there is a lack of specificity. What waters? What fish would the First Nations be catching? What documentation is being used to support this usage? Do the First Nations have a Section 35 right to fish in these waters? How extensive is such fishing?

If not, then the issue is not about the First Nations but about a common law right to fish in the unidentified water systems. Indeed, the volume of information requests, and the lack of specificity of what Section 35 right is potentially being infringed, has *frustrated* the consultation process, by increasing the proponent's, the TRC's, and this Panel's efforts, to respond. This has resulted in less time focused on the crucial questions about

[93] MSES, 'Review of the Final EIA Report for the SISSON Mine Project,' (July 17, 2015), 3.
[94] Stantec, 'Information Requests Received from MSES' (May 2014), 7-33.
[95] Stantec, 'Information Requests Received from MSES,' (May 2014), 7-20.
[96] Stantec, 'Information Requests Received from MSES,' (May 2014), 7-44-5. For other unspecified impacts, see 7.2.58 Sampling for Unionid Mussels

how the project infringed or would impact Section 35 rights. At the same time, however, the Panel recognizes that the Terms of Reference for MSES's review may have been broader than just Section 35 rights and this may have resulted in the types of issues that we underline.

The duty to consult is an obligation that the Crown has to ensure that the proposed project does not infringe on Section 35 rights. These rights can either be proven or asserted. However, the first step in that process is to determine if there are such rights and to evaluate the strength of the asserted rights.

For instance, we would expect that this determination to have asked some of the following questions:

What is the strength of the Maliseet claim that the PDA was on land over which they had an asserted aboriginal title claim?

Do the Maliseet have aboriginal rights over the PDA? Or LAA?

Do the Mi'kmaq exercise any aboriginal rights over the PDA? Or LAA?

What proven treaty rights do the Maliseet exercise in the PDA? And LAA?

Once that determination had been made, the First Nations would then have determined how, if at all, the project would impact those rights, either proven, or asserted.

The Panel's reading of the relevant reports, do not speak to the strengths of those claims. Though the proponent and the First Nations did some historical reports on this subject, there does not appear to have been any subsequent discussion among the interested parties about the strength of the proven or asserted Section 35 rights. If this had been done, a more focused response to the EIA report would have resulted, and one that made a direct linkage between the asserted or proven right and possible infringement. In contrast, MSES evaluated the entire project regardless of whether or not the project would impact proven or asserted Section 35 rights. The Panel finds this approach strange (but could be in keeping with the consultants' Terms of Reference but to which the Panel does not have access), given the Supreme Court of Canada's guidance on these matters.

However, the Panel also wonders whether the approach is because the GNB did not issue their own guidelines regarding the duty to consult until September 2011, in other words two years after the Project Guidelines had been finalized and a month after the draft Terms of Reference (TOR) were issued.

The GNB's tardiness in explaining how the proponent should consult with the First Nations, and the government's responsibilities, may have helped to create an adversarial atmosphere. The GNB may also have been at fault by not insisting that the consultation process would first involve a discussion with First Nations about the proven or asserted Section 35 claims. This might have been accomplished in several ways but certainly funding and capacity should have only been given once the Crown was satisfied about the strength of the claim.

Recommendation # 6:

The Panel recommends that the GNB and the First Nations determine the process by which proven and assertion Section 35 rights might be evaluated when considering future projects.

6.8 Aboriginal and Treaty Rights: Current Use

6.8.1 Summary of Community Meetings

At each of the meetings held in First Nations communities, people spoke about how the project would interfere with their current rights to fish, to hunt, and to gather wild foods and medicines. Sometimes, people referred to this current use as rights that they, as the First peoples of New Brunswick, could exercise and were anxious about how the project would affect those rights. Other times, community members stated that they still held aboriginal title to the land on which the proposed project is located. These are separate issues and therefore are dealt with separately. In this section, we discuss 'aboriginal and treaty rights' and comment on aboriginal title afterwards.

A representative of the Assembly of First Nations Chiefs in New Brunswick, put those concerns in general terms.

> The Assembly has a number of concerns about the impacts of the mine project on our aboriginal and treaty rights and aboriginal title and on our environment, the culture, society and our economies. A healthy environment, culture, society and economy are needed to sustain our peoples and our rights. Existing information, which is incomplete, suggests this is both a site with significant use…. for current rights users. [97]

A councillor at Tobique, voiced similar concerns.

> I'll be talking as a councillor of our community here. We are responsible for the health and welfare of our communities here and also creating employment and opportunities for our people. So I have questions here. The mine will have impact on proven aboriginal and treaty rights and asserted aboriginal title. Will government seek consent of First Nations? If not, what steps will be taken to avoid or minimize these impacts. How will First Nation rights be accommodated?[98]

In discussing these rights, the councillor explained how fishing salmon was an integral part of his and his family's cultural identity.

> I was taught by my father as a fisherman. I've been fishing for over 40 years and I've been to a lot of places in New Brunswick, Quebec, Maine, Nova Scotia. And I've been to a lot of places to fish and I really thank my father for teaching me

[97] Sisson Project EIA – Community Meeting, Tobique, June 11 2015, p. 13.
[98] Sisson Project EIA – Community Meeting Tobique, June 11 2015, p. 18.

> how to fish because I provide my family and my extended family with what I do catch and I also hunt, but I don't go as far to hunt. But I do love my fishing and I've listened to many stories that my father told me about the salmon that we used to have in our waters here in (?) And he tells me of how much salmon we used to have. It used to be so plentiful and how he used to guide people from Germany, England, California, the State of New York, throughout everywhere really, and it was not uncommon for them to be landing a 30 lb. salmon here and we really took a lot of pride in doing all that. It was a way of life and it was part of our diet. So having said that my concern is with the project is the destruction that might happen with the spillage or the seepage because I think these streams or brooks are headponds for the Nashwaak River and the Nashwaak right now is I believe the last natural habitat for spawning salmon. The rivers we have, like our Saint John right now, we have five dams that are blocking the salmon from spawning naturally to our spawning grounds and I really hate to see what happens to the Nashwaak if something drastically happens for our salmon to come back. Like if that happens, there goes all our chances for any salmon to be coming back in our community.[99]

At Madawaska, one community member who had participated in discussions with the proponent wasn't happy with the company's response to concerns about how the project would affect access to moose.

> We were told that well the moose will move off somewhere else, you can just go hunt the moose somewhere else. The area that they're talking, the First Nations located in that area, St. Mary's, Tobique and Woodstock, they've been fishing and hunting and gathering for an awfully long time and for the proponent to say, well you can just move somewhere else, then might as well just turn around and say, well then move your mine somewhere else. It wasn't concerning to them.[100]

Most comments focused on how the TSF would impact the environment. Some people asked how the presence of the TSF in an area with a large wildlife population would affect them. Would they swim through it? Would they drink from its waters? What about migrating waterfowl, they asked? People also wondered how seepage from the TSF would contaminate the soil, the plant life, and fish life. Many people viewed with alarm the potential damage to resources their people had historically used. For instance, a councillor from Tobique, questioned the mine's cumulative effects on the region's ecology.

> I mean if this was to go through, and that's a big if, it's going to affect our food chain. The dust just from the mining itself is going to go for miles and miles. And it's going to affect our plants, it's going to affect everything. Our medicines

[99] Sisson Project EIA – Community Meeting, Tobique, June 11 2015, p. 17.
[100] Sisson Project EIA – Community Meeting, Madawaska Maliseet First Nation, May 26 2015, p. 11.

> especially, it's really, you have to be there, you have to be on the land, you have to feel the pain that's there. It's really hard for me to describe that.[101]

At St. Mary's, people spoke more specifically how they used the land in the PDA, LAA, and RAA. A speaker told us that 'the men continue to go there and hunt moose…and we collect our medicine there (too). [102] Another participant expressed concern whether or not they would be able to continue to gather fiddleheads along the Nashwaak River. [103]

Two St. Mary's members have camps near the PDA. One of them spoke at a community meeting.

> I own a camp out there in the Napadogan cluster. And it's only two minutes away from where I have my camp. And I'm not the only one up there that has a camp there. We have another Native that has a camp beside me and his name is (name). And down the road from me, a few camps down, there's another Native from our reserve and his name is (name). To say we are not using that land is, no I don't think so. We use that land quite a bit for our hunting and fishing and gatherings and we use it for medicine…We do a lot of fishing out there too and a lot of berry picking. I just used it last weekend. I use it a lot during the summer and I wish I had access to it and I do by skidooing in the winter. But in spring and fall and summer, we use it quite a bit. And not just me. A lot of people and friends and relatives. And for you guys to turn around and make that open pit mine that's only two minutes down the road from me that's bad.[104]

In sum, people voiced apprehension about how the proposed project would impact peoples' current use. Though many individuals spoke about the land and its floral and faunal life as resources, which they wanted to be able to harvest, they also expressed a spiritual connection to the lands and its inhabitants. They said maintaining that connection was an integral part of their culture. Thus, the Panel recognizes that First Nations communities' concerns about the project area is not simply utilitarian but also reflects anxiety about how to maintain their community's culture in the face of industrial development.

6.8.2 Assessing Current Use: The Indigenous Knowledge Study

To assess how the project might affect treaty and aboriginal rights, in the Final Terms of Reference, the proponent agreed to seek First Nation support in doing an Indigenous Knowledge Study (IKS). This, the proponent said, would assist in understanding any effects 'on current use of land and resources for traditional purposes by Aboriginal

[101] Sisson Project EIA – Community Meeting, Tobique, June11 2015, p. 29.
[102] Sisson Project EIA – Community Meeting, St. Mary's, June 23 2015, p. 5.
[103] Sisson Project EIA – Community Meeting, St. Mary's, June 23, 2015, p. 18.
[104] Sisson Project EIA – Community Meeting, St. Mary's, June23 2015, p. 6.

persons.' [105]

Only three of six Maliseet communities participated in the IKS. The three participating communities were Madawaska, St. Mary's and Woodstock. Three communities, Kingsclear, Oromocto, and Tobique, were not involved in the IKS. As well, none of the nine Mi'kmaw First Nations who are resident in New Brunswick participated. Because only three communities participated, the IKS only reflects these communities' current and historic use of the PDA and LAA.

The three First Nation communities, Madawaska, St. Mary's and Woodstock, hired an outside consultant, Moccasin Flower Consulting to do the Indigenous knowledge Study (IKS). The panel understands that Moccasin Flower Consulting submitted the study to the three communities in January 2013.

The study was based on two main sources of information: forty interviews done with members of St. Mary's and Woodstock communities, and various primary and secondary sources.

To inform the communities about the IKS and to elicit information about current use, three information sessions were organized. These sessions also involved the proponent and were held at Madawaska on 23 April 2012, Woodstock on 24 April 2012, and St. Mary's on 26 April 2012.

An initial set of interviews was completed in June 2012. These interviews were done at Woodstock from 18 June to the 20th of June 2012 when twenty-three people were interviewed. Another set were done at St. Mary's on June 22, 25, and 28th, 2012. At St. Mary's, fourteen individuals were interviewed. The consultation coordinator for St. Mary's did these interviews in July 2012 and January 2013.

Afterwards a smaller group was selected to visit the site and to document species-specific information. This data was plotted using 'a hand held GSP and digital camera' in August 2012. Fieldwork with ten St. Mary's community members was done from 21 to 24 August 2012 and with five Woodstock members on 27-28 and 30 August 2012.

Verification meetings were subsequently held at St Mary's on 12 November 2012, at Madawaska on 14 November 2012, and at Woodstock on 15 November 2012. [106]

Moccasin Flower Consulting contends that more people might have been interviewed but time and individuals' lack of familiarity with Indigenous Knowledge Studies hindered more community participation.

The report touches three different target areas, the Project Footprint, which refers to the 'physical extent of the project,' the Project Area, which denotes 'the area approximately

[105] TOR, April16 2012, p. 41.
[106] 'Indigenous Knowledge Study for the Proposed HDI Northcliff Sisson Brook Mine in New Brunswick,' (January 2013), 10-11.

five km around the Project Footprint, and the Regional study Area, by which she meant the Crown land which surrounds the Project.[107]

Though Moccasin Flower Consulting concluded that First Nation community members used each area for hunting, fishing, and gathering traditional plants, she nonetheless qualifies her conclusions with the following statement:

> 'This study is based on research conducted by Moccasin Flower Consulting, which was limited by budget, number of participants, and time in which it could be completed. It integrates information from primary interviews as well as secondary sources that were available to Moccasin Flower Consulting, and presents analysis and interpretation of those interviews and secondary sources by the author.
>
> 'It is not intended as a complete depiction of the entirety of use and knowledge maintained by Maliseet elders and land users. Absence of data does not mean an absence of use, or value. A greater number of participants involved both in interviews and fieldwork would have improved this study. Many key individuals were either unavailable or not willing to be involved in the study. Some were unwilling to participate because an IKS was a new and unfamiliar process for them. Furthermore, where participants mentioned other members' use in the area, constraints of time and budget did not allow these people to be interviewed nor did it allow for additional interviews with original participants to provide greater clarity and explore some topics further. Fieldwork was largely limited to areas accessible by road and within short walking distances of roads. A thorough assessment of the brooks within the PROJECT FOOTPRINT was not completed.' [108]

The author also contends that the study was written before the archaeological 'baseline report' was completed and that any complete overview would be enhanced once that work had been finished.

The report is thirty-three single-spaced pages long (pp. 4-36 inclusive).

- pp. 4-11: introduction and description of methods
- pp. 12- 20: past use of the Project Area from secondary and primary materials
- pp. 21- 3: description of rights and environment
- pp. 23-4: impact of forest cutting on environment
- pp. 25- 31: discussion of First Nation present-day use of area

Though there are a several pages of appendices (from page 37), these pages furnish only limited evidence about the communities' use. In other words, the IKS only offers material about community use on pp. 26 to 31 and this data is limited. Discussion about

[107] How these terms coincide with those used within the EIA is somewhat problematic. The Project Footprint refers to the PDA, which totals 1,253 hectares. The Project Area, however, does not coincide with the LAA. Why the author chose not to use the terminology used in the April 2012 Terms of Reference is curious.

[108] 'Indigenous Knowledge Study,' p. 4. Capitalized letters as they appear in the original.

current use is contained on pp. 27-30 while there are only two paragraphs discussing 'generational use.'

The Panel notes that much of the information, which might have helped to clarify community use, was not provided to us. This includes Figure 9, which the IKS indicates shows Maliseet land and transcripts of the interviews done with community members. The Panel is entirely dependent therefore on the author's interpretation of what was said and is unable to verify the veracity of the information contained within the IKS.

On pp. 25-9, the report refers to four different ways community members from St. Mary's and Woodstock currently harvest resources found within the Project Footprint and the Project Area. Since this material in its present format is difficult to comprehend, we have created two tables to better conceptualize it and so be able to appreciate its significance. Table 2 lists the four main harvesting activities mentioned in the IKS as well as every individual who said they engaged in these activities.

The numbers in column 2 (Saint Mary's) and column 3 (Woodstock) refer to the number which were assigned to the individuals she interviewed from each community. Thus, in column 2, #1 refers to the individual from Saint Mary's who is identified as 'Interviewee # 1'.[109]

Table 2: Summary of Harvesting Activities, Saint Mary's and Woodstock Members According to IKS (January 2013)

Activity	Saint Mary's (SM)	Woodstock (W)	Total # Activities Reported
Hunting	#1,2,3, 4,5, 9, 10, 12, 16,17, 18	4,6, 9, 10, 13, 16	11 SM + 6 W =17
Fishing	#1,2,3,8,9,10,12, 15,17	4, 10, 16, 18, 19	9 (SM) + 5 W = 14
Cutting Wood	#2,3, 4,5,8, 9, 10, 11, 12, 15, 17,	4, 6, 10, 11, 12, 13, 18, 19	12 (SM) + 8 W = 20
Gathering	#2, 3, 6, 9, 10, 12, 14, 15	NONE	8 (SM) + 0 W = 8
Totals	40	19	59

Source: 'Indigenous Knowledge Study (January 2013), pp. 28-9

[109] The author assigned a number to each individual interviewed and also an abbreviation, which denoted their home community. Thus, she was able to cite specific individuals as the source of information. SM 001, for instance, denotes an individual from Saint Mary's and W 001, an individual from Woodstock.

As Table 2 shows, several individuals engaged in multiple harvesting activities. To pinpoint the most common harvesting activities, Table 3 has been created. As in Table 2, columns 2 and 3 refer to the number assigned to each individual interviewed for the IKS.

Table 3: Individuals Engaging in Multiple Harvesting Activities According to IKS (January 2013) in St. Mary's and Woodstock

Activity	Saint Mary's (#)	Woodstock (#)	Total # of Individuals
Hunts Only	#16 & 18	#9	3
Hunts & Fishes	#1	16	2
Hunts & Cuts Wood	#4,5	#6 & 13	4
Hunts, Fishes & Cuts Wood	#17	#4 & 10	3
Hunts, Fishes, Cuts Wood & Gathers	#2,3, 9, 10, 12	0	5
Fishes Only	0	0	0
Fishes & Cuts Wood	#8	#18, 19	3
Fishes, Cuts Wood & Gathers	#15	0	1
Cuts Wood Only	#11	#11,12	3
Gathers Only	#6, 14	0	2
Total # of Individuals	16	10	26

Source: 'Indigenous Knowledge Study (January 2013), pp. 28-9

Table 3 suggests that hunting was the principal harvesting activity done in the Project Footprint and Project Area. There were 16 people from Saint Mary's and ten people from Woodstock who said they used the area. Eleven of sixteen St Mary's people listed hunting as one of their activities while six of ten people from Woodstock said they did. [110] We would assume that hunting included those species highlighted in the IKS, a list that included 'moose, deer, partridge, woodcock, and rabbits.' This hunting, the author notes, 'occurs year round although moose are generally harvested in fall.' In contrast, trout appears to be the only species fished.'[111] Both tables also show that cutting wood is important. Whether or not wood cutting is incidental to the principal harvesting activity, however, is unclear. For instance, someone hunting moose or

[110] Though nine of 16 SM individuals and five of ten Woodstock people said they fished, it is indicative that no-one said they fished only. In contrast, three people said they only hunted. This would suggest that hunting was the principal activity, which drew people to the area and not the fishing.
[111] 'Indigenous Knowledge Study,' p. 28.

fishing might also cut wood and we would not list wood cutting as their principal purpose for being in the area.

Besides these harvesting activities, the IKS underlines that the area is used for recreational purposes and also serves as an important method for the inter-generational knowledge transfer regarding the region's ecology and to imbibe succeeding generations with an appreciation and understanding of Maliseet culture.

Finally, the IKS also mentions that two Saint Mary's members have camps near the Project Footprint and three other members share a camp nearby. One camp is 1.3 km. from the proposed project.

> (name) has owned the camp for the last 10 years but has used the camp for the last 35 years. He hunts moose, deer, partridge and rabbits close to his camp. He pipes water from a nearby spring to his camp that he uses as his drinking water […]. (name) camp is considered to be a community camp because it is frequently visited by St. Mary's members (SM#012). For example, SM#15 uses the camp while hunting. [112]

The report concludes that 'today the PROJECT AREA is very significant to the Maliseet's ability to practice their livelihood because, after centuries of environmental impact in their territory, this is one of the last areas' with

- 'a high level of quality, quantity, and diversity of resources;
- accessibility including a reasonable travelling distance from home;
- little to no competition with non-Aboriginal land users for resources in the area;
- a large and intact piece of Crown land;
- an area that was introduced to them by their older relatives;
- provides peace and quiet;
- study participants have camps in the area; and
- clean drinking water sources.'[113]

In other words, the author argues that there are few areas where the Maliseet can still practice their 'traditional activities.' This is mainly because much of the land that they once used is privately owned. However, the area in which is PDA is located is sufficiently large to accommodate their numbers. As well, the Crown Land Block (CLB) is accessible to five of six Maliseet communities. For this reason, the project, which would remove a significant amount of land from use, will have a significant impact on the ability of community members to practice their 'traditional activities.'

[112] 'Indigenous Knowledge', 31. Figure 9, which is referenced in this paragraph was not provided to the Panel. Capitalized letters are as they appear in the original.
[113] 'Indigenous Knowledge Study,'35-6.

6.8.3 EA Guidelines and Terms of Reference

The First Nations voiced concern regarding current use during public information sessions, held after Geodex had registered the project in 2008. In the community meetings, First Nations had stated that the proposed project was in Maliseet territory and were worried about how the project would impact Aboriginal peoples' 'traditional hunting, fishing, trapping and gathering activities.' [114] To allay those concerns, the proponent agreed to engage with the First Nations communities as well as seeking 'Aboriginal support in conducting an Aboriginal Traditional Use Study that will contribute to understanding potential effects on current use of land and resources for traditional purposes by Aboriginal persons. Northcliff will work with the Province of New Brunswick and the Government of Canada to improve understanding of Aboriginal interests regarding the Project.'[115]

Section 4.9 of the Final Guidelines of March 1, 2009 outlined that the proponent must evaluate how, if at all, the project would affect First Nations current use of the land and resources in the PDA.

> 'Effects on the Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons
>
> Assess the effects of all aspects of the project (including any associated infrastructure) on the current use of lands and resources for traditional purposes by Aboriginal persons. This includes traditional hunting, fishing, snowshoeing, and gathering of food or medicine by Aboriginal communities.'[116]

In the Final Terms of Reference (Final TOR), issued on 16 April 2012, the proponent undertook to actively engage First Nations peoples in making this assessment. This would allow the company to 'determine current use, and to document any asserted or established Aboriginal or treaty rights, as conveyed to it by Aboriginal peoples.' As the Final TOR indicates, this information would then form the evidentiary basis of how First Nations used the land and resources and would be used by the provincial (and federal) governments 'in fulfilling its duty to consult (and accommodate, as required) with Aboriginal peoples.'[117]

In other words, the government had a legal obligation to determine if, and how, the project infringed on the ability of First Nations people to exercise their aboriginal and treaty rights. This was to be done through consultation with the potentially affected First Nations communities. However, the proponent would undertake to make that determination and from this information the government would then make the necessary accommodation, if necessary. The Panel understands that various government departments have been involved in assisting the proponent in making that assessment,

[114] TOR, April 16 2012, Table 3.1, p. 40.
[115] TOR, April16 2012, p. 41.
[116] PNB, Minister of the Environment, 'Final Guidelines for the Environmental Impact Assessment: Geodex Sisson Brook Project (Open Pit Mine),' 1 March 2009, p. 20.
[117] TOR, April 16 2012, p. ??

an issue that is discussed in the EIA report.[118]

The proponent undertook to outline in their proposed Environmental Assessment Report what steps they had taken to engage with First Nations and what they learned from them. This was indicated in the Final Terms of Reference (TOR):

> To assist the federal and provincial governments in their consultation processes, the EIA Report must describe the concerns raised by Aboriginal peoples in respect of the Project, and where applicable, how they have been or will be considered and where appropriate addressed. That description should include a summary of discussions, the issues or concerns raised, and should identify any asserted or established Aboriginal and treaty rights as conveyed to Northcliff by Aboriginal peoples or the Crown. Where applicable, the EIA Report must document any significant adverse environmental effects of the Project on the current use of land and resources for traditional purposes by Aboriginal persons as well as any measures taken or recommended that would prevent, mitigate, or otherwise accommodate such environmental effects, ;as applicable. [119]

6.8.4 Engaging First Nations Communities in Preparing the EIA

As the proponent states in their Final Environmental Impact Assessment (EIA) Report,

> `As required by CEAA, this VEC focuses on the environmental effects of the Project on the current use of lands and resources by Aboriginal persons to carry out their traditional activities; it does not consider potential infringement of the Project on Aboriginal and Treaty Rights, which is a matter for consideration by the Crown.'[120]

As part of that process, and in accordance with the GNB 2009 Final Guidelines and the 2012 Final Terms of Reference, the proponent financed an Indigenous Knowledge Study (IKS). However, for reasons that are unclear, only three communities, Madawaska, St. Mary's and Woodstock participated in the study.

As the EIA report indicates, as part of the IKS, community meetings were held in the three communities participating in the study. The panel understands that the proponent participated in these meetings.

The purpose of these community meetings was to provide information about, and discuss, the Sisson Project and the associated EIA process, and to raise awareness about the plans to undertake an IKS. Northcliff staff and consultants participated in

[118] 'Final Terms of Reference for an Environmental Impact Assessment For Sisson Project Northcliff Resources Ltd. Pursuant to Section 10(1) of the New Brunswick Environmental Impact Assessment Regulation – Clean Environment Act and Sections 15 (1) and 16 (3) of the Canadian Environmental Assessment Act' [hereafter TOR], April 16, 2012, pp. 36-7.
[119] TOR, April 16 2012, 43-4.
[120] 8.13: Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons in Stantec*, EIA Report*, 8-858.

these events. Information presented was similar to that presented at the public open houses held in September 2011, and covered topics such as Project and Proponent information; geochemical studies; water quality and management including tailings management; aquatic environment; and EIA (including regulatory processes, Terms of Reference, and key Project-environment interactions and planned studies). Additionally, other information specific to the IKS and heritage resources was presented. Specifically, the IKS was introduced to community members, and the consultant retained to conduct the IKS (Moccasin Flower Consulting) was on-hand to provide information, answer questions, and collect information and feedback from those in attendance.

These open houses were held at Madawaska on April 23, 2012, at Woodstock on April 24, 2012, and at St. Mary's on April 26, 2012.[121]

As well, the proponent engaged the affected First Nations in other ways. This included the formation of the First Nations Environmental Assessment Working Group (FNEAWG). This group was created, according to the EIA report, from First Nations interest about being 'actively involved in the EIA process.' Participating in this group were various First Nation representatives, as well as individuals employed by CEAA and GNB. A representative from Northcliff/SML chaired the meetings. The First Nations individuals attending the group's meetings were from Madawaska, St. Mary's, Woodstock, as well as the Assembly of First Nations Chiefs in New Brunswick (AFNCNB).

6.8.5 EIA Report (February 2015)

The proponent's principal line of inquiry was to determine whether or not the project would lead to a change in the current use of land and resources for traditional purposes by Aboriginal persons. The EIA report concluded:

> The Project will result in the temporary or permanent loss of a portion of 1,446 ha of Crown land that is within the traditional territory of the Maliseet First Nations. Aboriginal persons report that they use the lands and resources of the general area of the Project, and within the Project site. The geographic extent of land and resources that will be used by the Project is small compared to the larger asserted Maliseet traditional territory (about 0.16% of the Crown land within that territory, and about 1.9% of the contiguous block of Crown land within which the Project is sited), and the Project site contains no resources that are not common throughout the encompassing contiguous Crown land block…. As well, as evidenced by the environmental effects assessment of other VECs, potential residual environmental effects to biophysical resources (e.g., fish, wildlife) will not be significant. Consequently, while there is the potential for residual environmental effects to the Current Use of Land and Resources for Traditional

[121] 4.3.1.2.2: "Project Information and Traditional Knowledge Study Open House Events,' in Stantec, *EIA Report*, 4-27.

> Purposes by Aboriginal Persons from the presence of the Project itself and the activities carried out in support of it, those environmental effects, including cumulative environmental effects, have been rated not significant.[122]

Despite the relatively large piece of land that First Nations members would no longer use for traditional activities, the proponent found this reduction would not have a significant impact or change on their current use.

The proponent's assessment that the project would not have a 'significant impact on current use, was based on information that had been provided through the IKS and the First Nations Environmental Assessment Group. Though both forums provided useful information, the EIA report concluded that there were technical limitations. The EIA was critical of the IKS:

> 'the assessment of Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons include the lack of a defined, documented body of knowledge concerning what lands or resources are currently being used by Aboriginal persons and communities for traditional purposes within the PDA, LAA, or the larger RAA.'[123]

Though providing information about usage in the Crown Land Block (CLB), the EIA report concluded that the IKS failed to give similar data for the PDA and LAA. 'The IKS did not identify any sites of particular cultural or spiritual importance within and around the LAA, and no such sites have otherwise been identified to SML.'[124]

The EIA suggested that most of the information obtained through 'word of mouth', which included data provided through the First Nations EA Working group, was not always reliable. [125]

6.8.6 Panel Discussion

Discussion of the Indigenous Knowledge Study

One central issue concerning the First Nations that the proponent was required to address was to determine if the proposed project would affect the First Nations historic and current use of the land and resources within the PDA and LAA. Research on this topic would assist the government in two different ways: first to determine if the project infringed on First Nations treaty and aboriginal rights, and secondly, to determine if

[122] 8.13: 'Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons,' in Stantec, EIA Report, 8-858.
[123] 8.13.1.5 'Administrative and Technical Boundaries,' in Stantec, *EIA Report*, 8-592.
[124] 8.13.2.3 'Indigenous Knowledge Study (IKS),' in Stantec, *EIA Report*, 8-601.
[125] 'since the information that forms this body of knowledge relating to Current Use was collected through engagement and interviews, during the IKS and otherwise by SML, there is no means of verifying it or to ensure that it is a comprehensive record of all information available on the subject.' 8.13.1.5 'Administrative and Technical Boundaries,' Stantec, *EIA Report*, 8-592.

there was sufficient evidence to show that the PDA was on land over which the Maliseet could make a title claim.

The central piece of evidence needed to make this judgment was the Indigenous Knowledge Study (IKS). However, for reasons that are unknown, the resulting study only involved three communities, Madawaska, St. Mary's, and Woodstock.

As the EIA report indicates, planning of the IKS began before the Final Terms of Reference were issued on 16 April 2012.[126] Indeed, the first open houses in which information about the IKS was presented were April 23, 2012, (Madawaska), April 24, 2012 (Woodstock) and April 26, 2012 (St. Mary's). The IKS was completed in late January 2013.

Curiously, however, this report remained in a 'Draft' format. At the time when the Consultant submitted her report, there may have been an intention to complete the work. Indeed, in her report, she noted that there were probably many people who might have pertinent information but because of their unfamiliarity with the process, chose not to participate. For this reason, the Panel is left wondering if the original intent of the three communities who managed the IKS, Madawaska, St. Mary's and Woodstock, was to do more research and more interviews.

Regardless, the proponent had been given a copy of the IKS, which the three communities, had managed, at the time when the proponent submitted its first EIA report in July 2013.

Discussion of Moccasin Flower Consulting IKS report

As defined by Firket Berkes, indigenous knowledge (IK) is 'broadly defined as the local knowledge held by indigenous peoples or local knowledge unique to a given culture or society.' Traditional ecological knowledge, on the other hand, is 'a cumulative body of knowledge, practice, and belief, evolving by adapting processes and handed down through generations by cultural transmissions about the relationship of living beings (including humans) with one another and with their environment.' As Berkes argues, indigenous peoples are not the sole carriers of traditional ecological knowledge but others 'such as inshore cod fishers of Newfoundland and users of Swiss Alpine commons no doubt also hold traditional ecological knowledge.' [127] In other words, indigenous knowledge is the knowledge, which indigenous people possess and traditional ecological knowledge (TEK) is the 'ecological part of indigenous knowledge,

[126] Discussions to hire Moccasin Flower Consulting began in January 2012.
[127] Firket Berkes, *Sacred Ecology: Traditional Ecological Knowledge and Resources Management* (Philadelphia: Taylor & Francis 1999), 8.

the land-based, practical knowledge of species, and the beliefs regarding human interaction with the eco-system.' [128]

Some, if not most, indigenous and non-indigenous scholars counterpoise traditional ecological knowledge against dominant utilitarian views of the environment. Thus, in their book published by the United Nations University Press, promoting the UN's International Year of Bio-Diversity (in 2010), Suneetha Subramanian and Balakrishna Pisupati wrote:

> Traditional knowledge as a dynamic knowledge system distinguishes itself from mainstream knowledge in its methods of knowledge generation, transmission and the principles and values related to its use for various purposes. It advocates, in general, a respectful and reciprocal relationship with natural resources, including habitats and plants and animals that humans interact with. With this in mind, customary norms for use, governance and access to resources are evolved and adhered to. [129]

An Indigenous Knowledge IKS is a crucial method for a proponent (as well as for government and First Nations) to learn about First Nations communities. An important part of the IKS is the TEK, through which the proponent can understand more about how communities used the area, both in the past, and in the present. This is, as Berkes suggests, the practical application of an indigenous knowledge study. Thus, the TEK might 1) discuss and analyze the peoples' harvesting work through reference to the historical record, and as much as possible to draw a direct link between these harvesting activities and the PDA and/or LAA, 2) analyze and, if possible, document, how communities might have been prevented from engaging in such harvesting activities (for instance, though government criminalization of resource harvesting by passing game laws, which leads to the subsequent prosecution of First Nations people for violating these statutes), 3) document through oral interviews with current members of the community about how they, or their families *had* used the PDA and/or LAA, 4) document, through oral interviews with current members of the community about how they *currently use* the lands and/or resources within the PDA and/or LAA, 5) document through oral interviews as well as historical sources, peoples' cultural relationships with one another and their environment.

Though the panel recognizes that Moccasin Flower Consulting's report provides a useful starting point of how Maliseet from Madawaska, St. Mary's and Woodstock communities have used the PDA and surrounding Crown land, the report is incomplete. There are at least five major problems with the report,

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[128] Charles R. Menzies and Caroline Butler, 'Introduction: Understanding Ecological Knowledge,' in Charles R. Menzies, ed., *Traditional Ecological Knowledge and Natural Resource Management* (Lincoln and London: University of Nebraska Press 2006), 6.

[129] Suneetha M. Subramanian and Balakrishna Pisupati, 'Introduction' in Subramanian and Pispupati, eds., *Traditional Knowledge in Policy and Practice: Approaches to Development and Human Well-Being* (New York: United Nations University Press 2010), 4.

1) An incomplete historical overview of how the Maliseet used the PDA, LAA, or were unable to use it,
2) the lack of site-specific and species-specific references to how current community members had used the PDA, LAA, etc . As an example, and has indicated above, there are only two short paragraphs which discuss 'generational use',
3) the lack of site-specific references to how current community members use the PDA, LAA, etc.
4) These problems are accentuated by the lack of a rigorous methodology. For instance, the panel is puzzled by the fact that the author did not identify either the gender or the approximate age of those interviewed[130], even though she tells us that about half of the participants were between 35 and 55 and the other half were over the age of 55.
5) Finally, the Panel feels that these problems might have been partially addressed if the proponent and the panel had had access to the raw data on which the report was based. At the very least, the interviews should have been transcribed and submitted.

In her report, the author spends some time discussing the period before 1982. This section of her report is on pages 12-21. As an historical survey, the report is inadequate. This section is not well researched and is lacking most of the secondary and primary materials that normally would be used to study Maliseet history. The author mistakenly represents what the New Brunswick anthropologist, Vincent Erickson said about the Maliseet seasonal cycle and attributed the statement to John Gyles, a well-known New Englander who had been held captive by the Maliseet in the late 1600s.[131] As well, the report provides an incomplete overview of how government policies affected Maliseet fishing and hunting. In sum, the historical overview is incomplete.

Though the Panel understands from reading the report, that the emphasis was on interviewing community members, we are puzzled by the fact that little substantive data and information resulted. The comments regarding where people trapped, hunted, and gathered medicines, currently or in the past, lacks the kind of specificity we would have expected the interviews to provide.

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[130] The Panel might have been able to evaluate the report more effectively if each individual was identified by gender and age

[131] On p. 12, the author writes: 'Gyles' account from the 1690s provides a depiction of Maliseet life.' She then quotes the following passage which begins "On returning from their winter hunting territories…." She attributes this long passage to John Gyles, who had been captured by a Wabanaki community and kept by the Maliseet. However, the passage that she quotes is actually from Vincent Erickson's 1978 opinion of the Maliseet household economy. See Vincent O. Erickson, 'Maliseet-Passamaquoddy,' in Bruce G. Trigger, ed., *Handbook of North American Indians: Northeast, volume 15* (Washington: Smithsonian Institution 1978), 126-7. Erickson makes reference to the Gyles account, p. 83 of the 1851 edition of Gyles captivity (published originally in 1736). The passage on p. 83 only refers to the St. John River Indians' planting corn, fishing, and then moving up river to hunt. This passage makes no reference to traveling over a large area to hunt game in Maine, New Brunswick, or the Gaspe Peninsula, to camping on islands in the St. John River, fishing by torchlight, etc. See, John Gyles, Memoirs of Odd Adventures, Strange Deliverances, etc. in Samuel G. Drake, ed. *Indian Captivities or Life in the Wigwam* (New York: Derby and Miller 1851), 83.

Nor does the report discuss the complex relationships, which may have underscored peoples' relationship with each other and the environment, and which animated their culture. Nor did we find that the report provided some sense of the integral nature of the area for maintaining the community's sense of identity and culture.

To be fair, the Panel is also conscious that the report was a 'draft' and there was an expectation that a more complete report would be submitted. However, as we will explain below, the fact that the IKS remained in a 'draft' stage is curious, given that its findings are critical for helping the government to determine if the project would infringe on peoples proven or asserted aboriginal and treaty rights.

In sum the Panel finds that a more thoroughly researched and thoughtful analysis might have provided better results and also would have been useful for the proponent to have.

We are left to wonder why the study did not result in a report that would have been useful for understanding how the Maliseet community used the PDA and LAA. We note that a total of 40 interviews were done. This, no doubt, took much time and energy.[132] However, we are still left wondering: does the lack of site specific results reflect that community members do not and have not used the PDA and LAA, extensively?

What is equally curious is that the First Nations communities were aware by July 2013 that the proponent had concerns about the IKS. Since the IKS was completed in January 2013, the proponent used the study in their EIA report, which was submitted to the government in July of that year. In the 2013 EIA, the proponent made the following conclusion.

> The Project will unavoidably result in a loss of access to land and resources in the LAA that are identified in the IKS as being used by Aboriginal persons for traditional purposes; however, the LAA does not contain any unique features or ecological characteristics that would not be accessible in the Crown land and resources of the surrounding RAA. [133]

The proponent also made the following comment in the 2013 EIA, which also appeared in the February 2015 EIA report.

> Technical boundaries relating to the assessment of Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons include the lack of a defined, documented body of knowledge concerning what lands or resources are currently being used by Aboriginal persons and communities for traditional purposes within the PDA, LAA, or the larger RAA. First Nation knowledge of current use of land and resources of the area for traditional purposes has been identified and obtained largely through discussion with Aboriginal persons, the IKS, engagement activities (*e.g*., First Nations EA Working Group, open houses),

[132] The consultant organized open houses at each community in April 2013, then did a series of interviews in June 2013, did a walk through of the Project Footprint in August, 2013, and finally held verification meetings in each community in November 2013.
[133] Stantec, EIA Report, July 2013, 8-584.

> and submissions related to the Terms of Reference and through communication by word of mouth. Since this knowledge is largely obtained through engagement and through interviews with Aboriginal knowledge holders, this form of data collection presents a technical limitation as to the comprehensiveness of the information provided.[134]

The proponent concluded that the IKS had not demonstrated that the PDA and LAA contained specific resources, which could not be obtained within the CLB. As well, the proponent questioned the reliability of the IKS as the basis for understanding current use.

Such concerns were also contained in the proponent's May 2014 responses to MSES's Information Requests.

> In the absence of specific information provided by local First Nations on plants or species of importance to them (*e.g.*, through a traditional use study), it is difficult for EIA practitioners to presume what might be of value or of importance to them. In this case, an IKS was conducted, but very few specifics in terms of which species were used, where they are collected, and how they might be lost, were provided. Regardless, the normal practice is to focus on the environmental effects the Project may have on these species in terms of how it may affect their abundance, productivity, or conservation status, and to a lesser extent on their use—use is assessed in the Current Use chapter (Section 8.13).[135]

An illustration of this problem is summarized on p. 7-132 (7.2.89) where MSES states that 'Northcliff does not discuss and target Butternut (*Juglans cinera*), one of the Key Plant Resources of the First Nations, during field surveys.' MSES indicated that it was a key resource for First Nations. It might have been. However, that determination should have been contained with the IKS. It wasn't. Therefore, how was the proponent to know that Butternut was a 'key resource?' The only reference to 'butternut' is on p. 24 of the Indigenous Knowledge Study, which we quote below.

> One participant explained the use of herbicides by forestry to kill hardwoods and enhance soft wood generation (W #009). The end result has been a decline in the cultural significant species of black ash and butternut (SM # 004, SM # 014, W # 008, W # 009). For the last 30 years, participant SM #018 has had to go to Maine to find black ash to that is suitable for basket making.' [136]

MSES makes similar comments about how black ash is also a 'Key Plant Resource.' [137] However, as noted above, the IKS does not specifically identify black ash as a 'Key Plant Resource'.

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[134] Stantec, EIA Report, July 2013, 8-566.
[135] Stantec, 'Responses to Information Requests from MSES,' (May 2014), 7-128.
[136] 'Indigenous Knowledge Study for the proposed HDI Northcliff Sisson Brook Mine in New Brunswick' (January 2013), 24.
[137] 'Indigenous Knowledge, Study,' p. 24. The author also makes reference to black ash on p. 28 and that it is used for making baskets. However, she makes no special mention of it as a key resource.

The Panel finds this lack of specificity puzzling. Yet an assumption is made that the proponent should have understood that specificity is not required and should have understood what the author meant or meant to say.

What is curious about the IKS and the MSES response is that they failed to provide a credible argument as to why they may not be able to provide the proof that might be required. The panel finds this absence of argument surprising.

While the Panel takes note that there is an array of resources, which the IKS identified, the lack of specificity of when, how often, and what is harvested is not detailed. This lack of detail would seem to challenge arguments that the PDA and Project Footprint are unique areas in which resources can be found.

As well, and as we have already noted, the IKS also does not show how usage of these areas contributes to maintaining Maliseet cultural practices or enhance the community's sense of identity.

What is surprising is MSES's criticism of the proponent for not incorporating more information about First Nations harvesting in the PDA and LAA, both current and historical. [138] As the panel has already explained, this lack of detail in the 2013 and 2015 EIA Reports should not be surprising since the IKS was meant to do that, but didn't. What is surprising is MSES's continual defense of the IKS as a substantive document.

> Sisson disappointingly responds to the IR by stating it was not required in the EIA ToR. Sisson goes on to criticize the IKS stating that "*with response to points i. through v. above, this is precisely the type of information that Sisson expected would be provided in the IKS and through engagement activities to date*". Given that Sisson has seemingly ignored most of the existing content of the IKS and, through their IR responses, have shown their general lack of commitment to following best practices to better understand impacts to traditional land and resource use, their expectations from the IKS study are not relevant in furthering the understanding of how to mitigate impacts to traditional resource use. [139]

MSES criticizes the proponent for criticizing the IKS. The Panel believes the proponent's criticisms are justified, yet MSES defends the IKS. Such statements undermine First Nations concerns and also any legitimate Section 35 rights that they might have, by claiming proof, when there is little proof offered.

Discussion of Andrea Bear Nicholas's Report

Fortunately, the work submitted by Professor Andrea Bear Nicholas provides a partial remedy to the lack of an historical analysis in the Indigenous Knowledge Study.

[138] Stantec, Sisson Project, 'Responses to Information Requests,' (20 May 2014), 7-186, item, 7.2.132
[139] MSES, 'Adequacy Review of Responses to Information Requests form MSES on the EIA Report for the Sisson Mine Project,' (June 2014), 48, item 7.2.132.

Professor Bear Nicholas's report was submitted under cover of a letter Dominque Nouvet sent to Northcliff Resources on 18 November 2013. Ms. Nouvet, the panel understands, was acting on behalf of St. Mary's First Nation. Though Professor Bear Nicholas's report is mostly concerned with rebutting Professor Patterson's assertion that there is little to support an aboriginal title claim in the area in which the mine would be developed,[140] she also provided more substantive data concerning how the Maliseet used the area as well as how they were denied access to it. For instance, on pp. 19-20, Professor Bear explains in some detail how more restrictive fishing and game laws rendered such work more and more untenable for Maliseet people.

> As for the imposition of restrictive hunting and fishing regulations on Maliseets, that process began in 1850 with a law that closed the season on moose from February through April, and in another law in 1851 that closed most of the year to salmon spearing, the traditional method of fishing preferred by Maliseets. By 1888 the increasingly restrictive trend culminated in a law making it illegal to hunt moose or deer at all for three years.[i] Though this latter law was eventually repealed, the regulations continued to become more and more restrictive for Indians in New Brunswick until fishing, hunting and trapping on Crown Lands without a license was completely outlawed. As well, a wide network of fish and game wardens was put in place to enforce the law on both private and Crown lands. One letter written by Edward I. Paul of St. Mary's in November of 1930 articulates the despair and frustration of Maliseets and raises the point that such regulations constituted a violation of Maliseet treaty rights:
>
> *"… I am asking for assidence [sic.] for fall hunting. Which I am not able to buy hunting license which requires for hunting, you know Indians are not supposed too pay any fees for hunting because Indians are the ones should hunt because I use to here my grandfather talking about hunting where Indians and whites made treaty that time the law was as long as the Sun rise from east and sets the west the treaty shall not break. The treaty was Indians hunt and whites to buy fur as long as they remain in the (illegible) world. So now here we are at last little hunting. Indians hunt, they rest him if he didn't pay for license and us poor Indians could not affort to pay 50 dollars or more for fines hunting without license, so now I want you to help me to get free hunting permit which I could hunt to sell fur to feed my family and hunt year any time the fur is prime and fit to sell and I want the permit that I could hunt any kind animal that I could sell for my family to feed. The treaty did not say was to hunt only one kind it didn't make any difference what kind fur [how?] long the pelt or hide of animal, you know that Indians never leave any thing in the woods what he could eat to feed is family. [We] always look ahead to get along for is family to something to eat. Is there or is not much chance to look for any assidence from our Indian agent cause we*

[140] Professor Stephen Patterson submitted a written report to the proponent regarding the strength of the Maliseet claim of aboriginal title in the PDA and LAA.

couldn't get it. He would not give us any satisfaction, so now I am asking your Department of Indian affairs for assidence."[141]

Professor Bear Nicholas also discusses the various families who currently live in Maliseet communities and who probably hunted along the Nashwaak River and its tributaries, including the Napadogan Brook. Here, she refers to the notes, which E. Tappan Adney, the well-known writer of New Brunswick, wrote in 1948.

> *"We are inclined to think that Napadogan is a mistaken name for that place. Oromocto Peter Polchies of Woodstock, a source of many old traditions, has told the present writer that his father John Paul [mistake for Polchies] had a hunting ground at what is known as Napadogan, but he always spoke of it by another name, never spoke of Napadogan, but as well as Oromocto could remember, tup-ka-de-gun. In this boyhood recollection (Oromocto is past seventy, in 1948) we recognize the word dup-sko-di-gun, the Indian's mark or signature. His father had probably put his mark there as his hunting-ground. About the word Napadogan, Oromocto thought it was a funny name because in his father's time, an old Indian might be asked where he had got some game or furs, and he didn't want other Indians to know so they would give some other word, some fancy, maybe funny name, which in that day could probably be read in its original meaning. There is just a possibility that old John Polchies used a figure of the sling-stone as his personal mark. Old John used to hunt sometimes with Henry Braithwaite [who went with Edward Jack through the region in 1883 as cited above]. No Indian of the present living generation recognizes the word Napadogan other than the name of the place. But there has trickled through a kind of tradition: that one time an Indian killed a moose there by the lake and 'set his mark on it.' And Napadogan explained as meaning that. I am now satisfied that this was enough to explain a place-name, and I found the explanation at last in old Oromocto Peter Polchies."*[142]

Though the intent of Professor Bear Nicholas's report is to rebut Professor Patterson's claim that there is little support for a title claim, her report also gives voice to Maliseet assertions that the land in and around the PDA and LAA were areas that families historically used, to hunt, to fish, and for other purposes.

The problem with the report, however, is that Professor Bear Nicholas's apparently was asked to rebut Professor Patterson's claim and not to analyse and document Maliseet historic use of the region. This is unfortunate, since a study focused on that topic, combined with a thorough and detailed current use study, garnered through interviews with members of the six Maliseet communities, might have demonstrated that these, were areas that community members had historically used.

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[141] Andrea Bear Nicholas, 'Assessment of Stephen Patterson's "Preliminary Assessment of the Potential for Aboriginal Interest in Lands at the Sisson Project."' (November 2013), 19-20. The quote from Edward Paul of St. Marys is from Library and Archives of Canada, RG 10/8862, file 1/18-11-5(1), C-9742.

[142] Nicholas, 'Assessment of Stephen Patterson's,' 23. The source of the quotation in Professor Bear's report is Salem Massachusetts, Peabody Essex Museum, Adny Mss, Box 33, pp. 39-40.

Discussion about why other communities did not participate in the IKS

The problem with the IKS was compounded by the fact that three of six Maliseet communities were not involved. Their decision not to participate in the study devalued the report and made it less than it might have been. This must have impacted how the proponent responded to Maliseet claims that they used the PDA and LAA, or possible arguments that certain species were unique.

At the panel's community meeting in Tobique, two community members referred to the Indigenous Knowledge Study and complained that their community had not participated. One person expressed outrage that a process had begun but had been selective about who was invited.

> we were completely excluded from the traditional knowledge studies and AFNCNB claims to have consulted with elders in our community, but it is only with a select few that were paid to sit and listen or paid to have lunch with representatives of AFNCNB. In essence, industry is buying consultation with food and honorariums.[143]

In response, another individual referred to a recent conversation with the community's chief. 'He wanted me to mention that a traditional knowledge study is crucially important for Tobique to take place in. He wants to make sure that the Province or the proponent funds this before anything else happens.[144]

The panel was surprised by this comment. If the Chief and Council had wanted to be included in the IKS, why then did they not participate in the study, which had begun in April 2012? While the panel understands that the present Chief and Council may be comprised of different people than in April 2012, for the purposes of consultation, the First Nations need to respond in a timely way, and cannot, three years after the fact, complain that they need to be included in the IKS. There may be good reasons for this state of affairs. However, as much as First Nations feel that government needs to be held responsible for their actions, so too do First Nations need to be accountable for their decisions.

We also heard from a representative of the Assembly of First Nations Chiefs in New Brunswick that such a study was needed, and criticized Moccasin Consulting's report.

> 'The indigenous knowledge study is critical in identifying the land use and cultural values related to this site. Without this information it is impossible for the Assembly to determine what rights our members are exercising on the project area.
>
> 'I think the question was, well sometimes you hear that there is an indigenous knowledge study. There is a small one that St. Mary's did, they did it for themselves, Woodstock and Madawaska but one has not been done for anybody

[143] Sisson Project EIA – Community Meeting, Tobique, June 11 2015, p. 20.
[144] Sisson Project EIA – Community Meeting, Tobique, June 11 2015, p. 21.

else. And there's been mass confusion around that entire process. So it was very limited in scope and looked only at the immediate project footprint. Given the nature of the project it is likely that there will be impacts on aboriginal and treaty rights outside of the project area, due to water pollution, air pollution, etc. And the activities outside the project area were not included in that indigenous project study that was done by St. Mary's.[145]

'We need a traditional knowledge study. We need one. And they should not be able to proceed until we have one. How are we going to know, I mean if they're supposed to look at the impacts of this mine how are they to know the impacts if they don't even know who is using the land or what's there for us, right? [146]

The panel is puzzled as to why a study, which would have involved Tobique and the two other Maliseet communities, was not done. The Terms of Reference of 16 April 2012 indicated that the proponent would finance such a study. From material provided to the panel, it was clear that there were extensive discussions regarding the IKS. As well, there is clear evidence that the proponent was keen to hear from the First Nations regarding current use.

In September 2013, a representative for the Assembly indicated that the IKS study (done by Moccasin Consulting) would be updated. However, there is no evidence to show that such an update was made. Based on information provided to the Panel, there was a common understanding that Tobique should be involved in the process but there were difficulties in making that possible.

From the Panel's perspective, the simplest and most effective solution would have been for the Assembly, which in April 2012 represented the three other Maliseet communities (Kingsclear, Oromocto and Tobique) to do a joint IKS with the other three communities, i.e. Madawaska, St. Mary's and Woodstock. The Assembly joined with the three communities to hire MSES to evaluate the EIA report. The Panel is surprised therefore why the Assembly did not adopt a similar strategy for doing the IKS.

The Panel cannot determine why a more inclusive study was not done, or why the Assembly did not do a study. Indeed, there is clear evidence that they intended to do so, but did not. What reasons prevented them from doing an IKS are unclear.

The fact that the IKS study that was done, is incomplete and poorly done is not the proponent's responsibility. Nor is it their responsibility that the other three communities failed to do such a study, though again, the panel does not know the exact details of why such a study was not completed. However, the fact that the proponent consistently requested additional information that might be used to help them understand current use suggests that there was an ongoing effort to collect information.

[145] Sisson Project EIA- Community Meeting, Tobique, June 11 2015, pp. 14-15.
[146] Community Meeting, Tobique, June 11 2015, p 16. .

Discussion of Current Use and EIA Report (2015)

The EIA report states there will be no significant impact on First Nations current use of the Local Assessment Area (LAA). This was defined as 'an area of approximately 1,446 hectares that encompasses the PDA (1253 hectares) and any adjacent areas within which an exclusion zone will be established for the Project during the Construction and Operation phases, for safety reasons' This area, the proponent, states will not be accessible to First Nations for current use. This, they call, an exclusion zone where First Nations will not be able to access.[147]

This conclusion is, as we have already indicated, based on information provided to the proponent. This included the IKS, which was completed in January 2013 and subsequent discussions held with the FNEAWG. As the EIA report, states, one of these meetings in September 2014, was specifically organized to discuss how the proposed project would impact the community's current use of land and resources within the PDA and LAA.

To the best of the panel's knowledge, no additional information was provided to the proponent, which would have changed the assessment they initially made in the July 2013 EIA Report. This is reflected in how the proponent addressed the same issue in the February 2015 EIA report. From reading this section of the EIA, the Panel believes that First Nations communities did not provide the proponent with any additional information. For instance, the Assembly did not do an IKS. As well, the First Nations did not supply more information to the panel, which would further enlighten how we might evaluate current use as contained in the EIA report. Therefore, based on the information we have before us, the Panel believes the concerns expressed in community meetings about how the project will infringe on current use, are adequately addressed in the EIA. Whether or not, the project will negatively affect First Nations proven or asserted Section 35 rights and if so, whether such an infringement is justified, is another matter and is an issue that is properly the Crown's responsibility.

Tobique Community Members and the IKS

However, as we have already noted, Tobique was not included in the IKS. Community members said this was the case and so too did a representative for the Assembly of First Nations Chiefs in New Brunswick. The Assembly in their submission has also requested that a more comprehensive IKS be done, which would include Tobique and, we would assume, Kingsclear and Oromocto. The panel is particularly sensitive to the fact that Tobique has not been included in the IKS, which we explain below.

At the community meeting at Tobique, the Panel heard the term 'mothers and grandmothers' multiple times. This seemed a quaint manner for some community members to validate their ideas. However, on reflection, the Panel recognizes that these

[147] Stantec, Responses to Information Requests on the EIA Report, July 2013: 14.0 Infomaton Requests Received from the Canadian Assessment Environmental Agency (CEA), 14.1.1

words are deeply imbedded in the history of Tobique and other Maliseet communities. These words in some measure speak to the pain that multiple generations of Maliseet women have felt.

The community of Tobique is today remembered as the site where women banded together to fight against the discriminatory features of the Indian Act. This is the statute, which defines who is an Indian, who is not, and attempts in other ways to regulate 'Indian lives.' That Act, first passed in 1876, said that at marriage, an Indian woman's identity would become merged into her husband's. She would become what he was, and so too, would her children. This meant that from henceforth she would become disenfranchised from her home community if she married a man from another band or from another community. She couldn't own land. And she also might not be able to own housing or qualify for other social monies, which might otherwise support her family.

The insidious aspect of the statute was that women who married non-Indian men lost their status. They were no longer, in the eyes of the law, "Indian.' They became at marriage, non-Indian. As the twentieth century progressed and the intersection of white and First Nations communities expanded, the number of Indian women who married non-Indian men increased. Nowhere perhaps were those intersections so widespread than in the Maritimes and other parts of eastern Canada where there had been centuries of interactions between and among communities.

At a practical level, this created problems for women who had married out. Sometimes, it forced them to stay in abusive relationships because if they left they had few financial resources. In the early twentieth century, many non-Aboriginal women faced the same situation. For Indian women, however, the situation was likely more stark, since they were often poor and they also had fewer alternatives other than to merge into white society. By the 1960s, women were more sanguine, and fought against the discriminatory measures which regulated their lives and their identity. They fought back and forced the Canadian government to repeal that section of the Indian Act.

The women of Tobique were at the centre of that struggle and today their names are iconic in Canadian history. Ph.D students write dissertations about them, University professors lecture about them. And we too easily, forget about them. But their names remain: Cheryl Bear, Shirley Bear, Caroline Ennis, Mavis Goeres, Lilly Harris, Ida Paul, Bet-te Paul, Glenna Perley, Juanita Perley, Karen Perley, Joyce Sappier, and Sandra Lovelace Sappier. [148]

Among the women who spoke at the Panel meeting in Tobique were the children or relatives of those women. Each woman spoke about the importance of maintaining a spiritual connection to the land. That might sound like rhetoric to Non-Aboriginal peoples because we can't relate to that idea. However, one should not so easily dismiss ideas and perspectives just because they are different. And for these women, we have an historical document, which helps us to explain who they are and why they think the

[148] This is likely a partial list of the women involved in that protest. Their names come from Janet Silman, ed., *Enough is Enough: Aboriginal Women Speak Out* (Toronto: The Women's Press 1987).

ways they do. This is mainly because we know something about what their mothers and relatives said thirty-two years ago.

In 1983, Glenna Perley, and the mother of current Tobique residents, talked to Janet Silman about her family and the importance that Indian medicines played in her life.

> I remember my great-grandmother…She would pick sweetgrass. I remember my grandmother going to the same places picking sweetgrass and indian medicine. They'd go down by the river for medicine plants.
>
> My father's mother always told us to help each other. She'd say, "When I'm not around I want you to help one another.' She helped a lot of people with Indian medicine. A lot of times when the kids were sick – not even her relatives – they'd come to her and want advice from her on what to do. Some of the people that didn't like called her witch, but she just laughed, said "I wish I was a witch. I'd put them in their place!" (laughs) She didn't care what they called her. She said "I'm not doing it for them. I like to help people."
>
> When I was living with my grandmother, she would talk to me a lot about religion – but, even though she was a good Catholic, it was her Indian religion she would talk about. She would teach me what the Indians believed in. She said they never used to have confession; would just go in the woods and pray. That is why I like going in the woods so much, and when I do go in, I usually end up praying! My grandmother said there was no such thing as confession; the older people used to talk to the trees. She used to laugh at that, said "I wish some of those trees could only talk!" But she did go to church too.' '[149]

Silman also talked to, Mavis Goeres (born about 1934), another woman whose descendants currently live at Tobique

> We had Indian medicine, and, oh, my [swore] by that medicine. Like that calamous root – in Indian it's gilhiswas. That is very good for a cold; and were always taking that. And buggelous that's also a root. A fern root. You steam it for a high fever. Same with calamous root. You cut that up; put it on the stove and steep it; you don't boil it. Another plant – I don't what you call it but it grows right on our lawns here – that's good for boils or any cut or anything that is got an abscess or any puss to it. That will draw it right out and heal it, and doesn't leave a scar either. Those are some of the medicines that we have. [150]

People think differently because their histories are different. The women of Tobique are no different. And neither are others. What separates individuals is the histories that have formed them and make them what they are, and what they are not.

The fact that the Tobique women spoke to us about their spiritual connection to the land is not invented. It is not empty rhetoric. It is something they feel within their souls. We

[149] Silman, *Enough is Enough*, 61-2, 64.
[150] Silman, Enough is Enough, 40.

know this because what they feel is part of their history and the history that they inherited from their mothers, grandmothers, and great grandmothers. We need to respect that difference and discover a means to protect it. In doing so, the Crown-First Nations relationships will be strengthened and move, however imperfectly, towards reconciliation.

The First Nations have been given ample opportunity to complete an IKS. They were also given a significant sum of money to do so. The fact that the study fails to provide an adequate assessment of the important facts related to Section 35 rights is not the proponent's responsibility. Why this occurred should be of concern both to the First Nations and to the government, which relies on such studies to determine how, if at all, proposed projects will impact established and asserted treaty and aboriginal rights. The failure to properly complete such studies will only create additional problems. The government therefore also has a responsibility to ensure that monies spent on such studies results in high quality reports, which will inform the government and fulfill their duty to consult. The Panel believes that in future projects the government must be involved in structuring the Terms of Reference for work that needs to be completed. This can be accomplished in a number of ways, which does not interfere with who the First Nations decide to hire, or interferes with the IKS. However, since government is dependent on the IKS to determine their legal responsibilities, it is imperative that future IKS studies address the critical questions and follow adequately detailed methodology and that the interested First Nation communities participate. How this might be done and in ways that helps to foster amicable relationships might prove difficult. However, based on the problems that have ensued as a result of the present EIA, the time and effort spent on finding a solution will be time well spent.

Part of the problem is that First Nation communities lack the capacity to deal with the complexity of the proposed project. This statement should not be interpreted to denigrate those who have assumed leadership within First Nation communities. Rather, this statement speaks to the enormous responsibilities that First Nations leaders have assumed, sometimes against their own will. Not all First Nations communities have the capacity to deal with the issues, which confront them. The Sisson project is one of them. The Supreme Court of Canada may dictate that governments have the duty to consult but the practical implications for First Nation communities and government takes time to implement. That application, however, has to involve some common sense, and which is also based on mutual trust and respect. First Nations may have reason to be suspicious of government but if the two parties are intent on moving forward, without recourse to the courts, political acrimony, and the expenditure of public monies which might more fruitfully spent elsewhere, then they need to find some way to work together.

In terms of the present IKS, hiring consultants who are located in Western Canada presents additional challenges and also increases the costs in doing the study. In the future, the First Nations and government should think seriously of hiring individuals who are located closer to home. While the panel is not suggesting that all those hired for such projects be located within the province, there is great value to developing technical

skills and capacity within the Province of New Brunswick and Atlantic Canada, including Quebec and the State of Maine. Sometimes that should include developing partnerships with the University of New Brunswick, the Université de Moncton, and their satellite campuses, Mount Allison University as well as St. Thomas University.

However, this speaks to the future and not to the present. The lack of a competent IKS undermines the ability of the government to determine if the proposed project infringes on established rights or asserted rights.

The fact that the IKS was only done in three of the six Maliseet communities should be a cause of particular concern. As Table 3 shows, the IKS only deals with a third of the present on reserve Maliseet population. In accepting the IKS as the only study would effectively disenfranchise two thirds of the Maliseet people who currently live on reserve. The fact that almost 40 per cent of that population lives in Tobique, a reserve in a rural area where people are more likely to depend or to use current resources would also mean that the government was not protecting their Section 35 rights. This is not appropriate since we know that the Tobique women have a long history of harvesting resources for medicinal purposes.

For these reasons, and to ensure that governments are protecting all community members' Section 35 rights, - regardless of the Assembly of First Nations Chiefs in New Brunswick or a chief and council's actions, which have frustrated the consultation process.

Recommendation # 7:

The panel strongly recommends that an IKS be done which includes the three other Maliseet communities, Kingsclear, Oromocto, and Tobique.

The GNB should organize a meeting with all interested parties to determine how that will be done, when, and funding.

Discussion of a Comprehensive Land Use Study

In their July 2015 report, the MSES, on behalf of both the Assembly and the other three communities, are suggesting that a more comprehensive traditional land and resource study, which documents past and current use, be completed. This, they say, should be done as part of a broader Rights Based Land Use Plan. The Assembly of First Nations Chiefs in New Brunswick is making similar requests.

This proposal is founded on different principles than animated the IKS, and the duty to consult. Indeed, this disconnect between what should be studied and what was studied appears to have been a constant source of tension between the proponent and the First Nations and their consultants. This meant those involved were often speaking at cross purposes. The proponent focused their attention on the PDA and LAA, and has stated that there are no unique resources in these areas. They also stated that resources

found there are in the CLB. The MSES has responded that such an assertion cannot be made without first conducting a more comprehensive 'analysis of land use across the traditional territory.' [151] What this implies is that the proponent should conduct a survey throughout all of the territory, which the Maliseet claim to be their traditional territory.

This disconnect has been a source of disagreement in other jurisdictions. For instance, in the Treaty Number Nine region of northwest Ontario, a community of Anishinabeg/Cree sought an injunction against, Platinex, a junior mining company seeking to drill on the community's traditional lands. This dispute occurred despite efforts to reach an agreement with the community. In his decision on the interlocutory motion, the judge quoted an Ontario Assistant Deputy Minister for the Ministry of Northern Development and Mines (MNDM) regarding the source of disagreement between the parties.

> I think the challenge with respect to the development of the [consultation] protocol has centred principally on the issue of scope in the agreement around what should be a reasonable scope of consultations associated with the order as directed by Justice Smith on July 28th. Ontario has taken a position that we would undertake discussions and consultation on issues related to mineral exploration and mine development, the spectrum of activities from a broader strategic perspective in addition to those which would focus principally on the Platinex undertaking. And the community has positioned themselves to request broader base strategic land use planning in general and has not supported the narrowing of scope to mineral exploration and mine development. So the challenges there are really with respect to scope. You know, at one end of the spectrum being focused specifically on the Platinex activities. At the other end of the spectrum, being focused on broad base land use planning. And Ontario, I guess, in the middle being focused on willing to expand scope in future discussions but limiting it and narrowing it to mineral exploration and mine development.
>
> And associated with the scope issue are the issues of funding, ct cetera. I mean, they are all inter-related to one another. So I think that has principally been the challenge, just defining what this consultation reasonably should be about given the nature of the Platinex activity and also the view of Ontario that we are willing to enter into discussions with the community on a broader base of activities related mineral exploration and mine development.

The judge then summarized the differences, which separated the two parties:

> 'KI [152]submits that Platinex and MNDM's[153] view of the scope of consultations is

[151] Stantec, 'Responses to Information Requests,' (20 May 2014), p. 7-183, item 7.2.129.
[152] KI refers to Kitchenuhmaykoosib Inninuwug Frist Nation.
[153] MNDM refers to the Ontario Ministry of Northern Development and Mines

directly related to their view of the impact of development as being minimal and inconsequential.

That perspective, KI argues, is narrow and insensitive, since even a "minimal impact can be very serious from the Aboriginal perspective, if it includes the claimants' hunting ground or trap line.'

Platinex and MNDM believe that consultations have stalled because of KI's unrealistic view of the scope of the duty, and its attempt to expand this duty well beyond the boundaries that have to date been recognized in Canadian law. This position, they argue, translates into a veto of any activities on Crown land whenever Aboriginal consent is not obtained.[154]

In some ways, Judge Smith's summation of the difference between the mining company and the Crown and the First Nations is similar to what has divided the Maliseet First Nations and the proponent. The former has attempted to broaden the scope of the area to be examined, and the latter has narrowed the scope to the area in which the mine is to operate.

It is perfectly logical that both parties should view the proper area of study differently. The proponent only wishes to use the area within which the mine will operate and so is mainly concerned with how their use of that area will affect the region's ecology. They also believe that what the Maliseet use within that area is not unique to the PDA and LAA. The Maliseet, however, are concerned that future projects will further undermine access to the CLB. As they point out, much of their traditional territory has already been alienated and therefore they are justifiably anxious that future development will further erode their ability to exercise their Section 35 rights. This, the Panel believes, is a legitimate concern. However, the Panel does not recommend that this be made a condition of approval. Rather, such a study is more properly the responsibility of the Crown.

Recommendation # 8:

The panel recommends that the GNB consider doing a comprehensive land use study. The government might do two such studies. One might involve examining Maliseet traditional territory and another study might involve examining Mi'kmaw traditional territory. However, the Panel also recommends that individuals and institutions based in Atlantic Canada and Quebec should be enlisted and in ways that would develop First Nations capacity. This recommendation, however, is not a requirement for approval of the EIA.

[154] Platinex v. Kitchenuhmaykoosib Inninu"g First Nation & A.G. Ontario, Reasons On Motion Court File No: CV-06-02 71 & CV-06-0271A Mr. Justice G. P. Smith, at para 105-107. Court File No: CV-06-02 71 & CV-06-0271A Mr. Justice G. P. Smith

6.9 Accommodation

In Miskew Cree Nation v. Canada, part of the discussion was regarding how the Crown could ensure that the community could continue to practice hunting on their 'traditional territories.' According to the court, this accommodation meant ensuring that they could hunt near to their homes.

> 'Badger recorded that a large element of the Treaty 8 negotiations were the assurances of continuity in traditional patterns of economic activity. Continuity respects traditional patterns of activity and occupation. The Crown promised that the Indians' rights to hunt, fish and trap would continue "after the treaty as existed before it". This promise is not honoured by dispatching the Miksew to territories far from their traditional hunting grounds and traplines.'[155]

As the IKS reported and as discussions between the First Nations and the proponent revealed, three St. Mary's band members have camps in the area of the LAA.

Section 2 of New Brunswick's Clean Environment Act defines a residence in the following way

> 'residence means a building or part of a building used solely as a self-contained domestic establishment with the necessary facilities for sleeping and the preparation and serving of meals and includes a cottage, a cabin, and a camp….' [156]

Recommendation # 9:

Though these camps are located outside the LAA, their proximity to the mine may make their continued use untenable. Therefore, the panel recommends that the proponent enter into discussions with the camp owners and assess what type of accommodation is reasonable.

Second, as the proponent states, for the foreseeable future, the Project "will result in the loss of access to, or use of, land and resources in the Project Development Area (PDA) and Local Assessment Area (LAA) due to the physical presence of Project facilities and associated exclusion zones"[157] . Does this justify that the Crown should intervene and compensate the First Nations for the loss of this use? This is unclear. Though the IKS suggests use, the degree of use is indeterminate and might easily be accommodated by usage of other areas within the CLB. However, such an approach would not be conducive to strengthening First Nations-Crown relationships. Indeed, as the First Nations have stated, the CLB is one of the few remaining, contiguous Crown lands within their traditional territory. This presents a problem since we might also expect this

[155] Miskew Cree Nation v. Canada (2005), 3 SCR, at para 47, p. 513.
[156] NB Regulation 87-83, Clean Environment Act, Section 2.
[157] Page 8-585, FEIA

to be an area useful for development given its close proximity to transportation networks, skilled labour force, business infrastructure, etc.

Recommendation # 10:

Therefore, as a condition of approval the Panel recommends that the GNB and the proponent make reasonable efforts to accommodate the affected Maliseet communities for the loss of use of the areas within the PDA and LAA as a result of the Project (see previous paragraph). This might include compensation, which can take several avenues. For instance, the proponent has suggested that mitigation should go 'beyond biophysical matters 'and include optimizing 'business and employment benefits for First Nations.' [158] This seems to be a reasonable approach. The Panel recommends that the proponent, with the assistance of the Crown, and in consultation with First Nations explore how such an accommodation might be made.

6.10 Aboriginal and Treaty Rights (outside PDA and LAA)

Regardless of the problems associated with the IKS, the panel recognizes that the First Nations communities have aboriginal and treaty rights and that the project's larger footprint may impact their ability to exercise those rights. Though it is ultimately the responsibility of others to determine what those rights are, and how they can be exercised, the Panel is aware that from an early date, First Nations indicated their concern regarding how seepage from the TSF would affect the surrounding area, and especially, fish populations.

At the community meetings, we also heard from people expressing fears about how the TSF would affect migrating wildlife and wildfowl. This, the Panel believes, is a significant concern though we note that the IKS did not indicate that wildfowl was among the species that First Nations people hunt. Nonetheless, the fact that the country foods that First Nations people hunt and/or trap are not sedentary but rather migrate into areas that could include exposure to the TSF, or areas into which seepage may occur, is a cause of concern. Though this issue is dealt elsewhere in the report, the Panel also recognizes that the impact of seepage and/or exposure to the TSF, affects First Nations' future use of the land and resources outside the PDA and LAA. Though the Indigenous Knowledge Study fails to provide as much detail as we would want, there is nevertheless sufficient evidence to show that First Nations members of St. Mary's and Woodstock frequent the CLB to fish, to hunt, to harvest medicines, for recreational purposes, and in order to transfer knowledge about Maliseet culture to children. First Nations are concerned that the project will have a broader ecological impact on the area outside the PDA and LAA, and within the CLB.

[158] See, for instance, Stantec, Responses to Information Requests Received on the EIA Report, July 2013: Information Requests Received from the CEA, 14.1.1, p. 14-4.

A speaker at the Tobique Community Meeting expressed some of these concerns.

> 'How will the First Nations use of the land surrounding the mine site be affected? What mitigation measures will be put in place to assure First Nations can continue traditional practices? How will the effects of stress associated with the changes of traditional practices be addressed? What are the potential environment effects of the planned 20% leakage from the tailings storage facility? What happens of the TSF dam fails? What safeguards are planned to assure that the dam does not fail or if it does, the effects will be minimized or compensated. Is the 20% leakage going to go into surface or ground waters or both? Has the transport of contaminants been modelled? What are the results of the models? Can underground flow affect plant and animals that we harvest and consume? Can underground flow contaminate groundwater? Can they travel to and into streams? The Nashwaak River, wetlands, lakes and ponds? Bird Brook will be eliminated and Sisson Brook will be dramatically altered. How will these impacts be mitigated? How will the Sisson mine affect the structure and function of nearby wetlands? Will any wetlands be eliminated? Have these been mapped and mitigation plans developed? Wetlands are important nurseries for many species of animals. Which animal populations are likely to be diminished because of the Sisson mine?'[159]

This was also a major concern expressed in the comments, which MSES submitted in the July 2013 and February 2015 EIA. Therefore, First Nations have expressed concern that the mine will impact areas outside the PDA and beyond the exclusion zone. In response to CEAA questions about how First Nations current use would be affected, SML responded that 'the environmental effects of the Project on Current use are not expected to extend substantively beyond the exclusion zone'[160].

The proponent has said that 'regulatory *monitoring and follow-up*, as well as fisheries and wetland compensation programs, will ensure that the environmental effects of the Project on Current use are not significant' (italics added). [161]

MSES, on behalf of the First Nations, has insisted that such regulatory regimes should be a condition of approval. Though the Panel agrees with the importance of a monitoring program, we disagree with the scope, which MSES has suggested.

The consultants have recommended that the First Nations be actively involved in monitoring all aspects of the project, in order to collect more baseline data, to monitor seepage, and other environmental impacts of the project, including reclamation. Their July 2015 report includes, on p. 5, several key recommendations and Conditions. We list three of the four 'key' recommendations below. We have italicized key sections of

[159] Sisson EIA, Community Meeting, Tobique, pp. 17-18.
[160] Stantec, Sisson Project, Responses to Information Requests Received on the EIA Report, July 2013: Information Requests Received form the CEA, (28 August 2014), 14.1.1, p. 14-2.
[161] Stantec, Sisson Project, 'Responses to IRs on the EIA Report, July 2013: IRs Received form the CEA, (28 August 2014), 14.1.1, p. 14-4.

the recommendations, where MSES insist that funding and capacity must be included as a requirement for EIA approval.

> As a Condition of EA Approval, GNB should require that a formal and mutually agreeable framework for collaboration between First Nations and SML be developed. This framework will guide the development and design of all monitoring and follow-up plans that will be required as part of EA Conditions and Permits. *Adequate capacity in the form of resources and funding for First Nations involvement in the development of this framework must be included in this Condition.*
>
> It is understood that there will be third-party independent reviews conducted by AMEC Foster Wheeler on behalf of GNB in regards to several aspects of final engineered design of the Sisson Project, including the final engineered design of the TSF and water treatment regime, as well as TSF dam failure scenario analyses and planned security bonds. As a Condition of EA Approval, these independent review documents should be provided to the First Nations for review and comment.
>
> This Condition needs to stipulate that *adequate funding and time to conduct this review in a way that would be meaningful and informative for First Nations* be provided as well as outline how comments and concerns brought forward by First Nations would be substantively addressed.
>
> As a Condition of Approval, prior to issuance of Air and Water Quality Approvals, Permits to Construct and Permits to Operate, drafts of these documents should be provided to the First Nations for review and comment.
>
> *This Condition needs to stipulate that adequate funding and time to conduct this review* in a way that would be meaningful and informative for First Nations be provided as well as outline how comments and concerns brought forward by First Nations would be substantively addressed. [162]

MSES then outlines in more detail how the First Nations and 'their technical experts' should be involved in monitoring the project.

While the Panel recognizes the importance of the First Nations' involvement in monitoring those aspects of the project which affect current use, we also believe that the recommendations, if implemented, would create a third party regulator, who would act parallel to government in monitoring the project.

Regulation of the project is properly the responsibility of the GNB (and/or federal agencies, depending on the issues at hand) and not a third party. The effect of MSES's recommendations would be that the First Nations would form a second order of government and would have access to funds that would allow them to participate as equal partners in the project's regulation. However, because the First Nations do not

[162] MSES, 'Review of the Final EIA Report for the Sisson Mine Project,' (July 17 2015), 5.

have a tax base, their participation should be funded. Who will fund this regulation is unclear but presumably the proponent and if necessary, the government. For these reasons, the Panel does not agree with all of MSES' recommendations.

However, the panel does recognize that there are some important areas, which must involve First Nations participation in monitoring VECs since there is a direct linkage between the project and the Section 35 rights.

To ensure that Section 35 rights are not infringed in the areas outside the exclusion zone (i.e., within some areas in the LAA), the Panel believes a robust monitoring and regulatory regime is necessary. There are a number of areas, for instance, where the proponent has agreed to work closely with the First Nations to monitor those country foods, which have been identified as important.[163] Where applicable, the Panel recommends that the Crown develop, in consultation with First Nations, and the proponent, baseline data for those country foods and medicines that First Nations have identified as key for their communities and to develop a reasonable protocol for monitoring these foods and medicinal plants.

We also agree that some mitigation is needed to ensure that wildlife, which are important to First Nations people, such as deer and moose, do not inadvertently enter into the TSF during the mine's operation, or post closure. Recommendations related to wildlife monitoring, management and mitigation have been made later in this report.

However, as we have discussed, First Nations involvement should only occur when there is a direct link with a Section 35 right. Thus, the panel disagrees with the assertion that First Nations must be involved in every aspect of monitoring the project, during construction, during operation and after closure.

The Panel does not believe that the Supreme Court of Canada, or the federal and province governments, intended that consultation should lead to establishing parallel regulators. Nor did they intend to stop development and capital investment. What they intend, however, was to ensure that First Nations communities had the opportunity to engage meaningfully in planning development on lands where they exercised Section 35 rights or where their asserted rights were strong. The intent was also to reconcile the Crown's public interest and the First Nations interest so as to further a strong relationship between them.

Recommendation # 11:

The Panel recommends that the Government and First Nations develop a framework agreement that determines a step by step process on how consultation will occur when a major project is proposed, which might impact proven or asserted Section 35 rights. The International Council on Mining and Metals (ICMM) released an updated Good

[163] Stantec, Sisson Project, 'Responses to IRs on the EIA Report, July 2013: IRs Received form the CEA, (28 August 2014), 14.2.21, p. 14-19.

Practice Guide related to Indigenous People and Mining in October 2015 which could be considered in developing this framework.[164] Where applicable, the Panel also recommends that the Crown develop, in consultation with First Nations, and the proponent, baseline data for those country foods and medicines that First Nations have identified as key for their communities and to develop a reasonable protocol for monitoring these foods and medicinal plants.

6.11 Funding for First Nations involvement in monitoring programs

The Panel is unclear about how the proponent proposes to involve First Nations in the monitoring programs. We are also unclear how MSES proposes that First Nations should be involved. Throughout their responses to the EIA Reports, the First Nations consultants, MSES, request capacity and funding. This often includes funding for 'their experts.' The panel interprets this to mean MSES consultants. Not surprisingly, MSES does not refer to costs. Nor do they discuss any possible ways in which these experts might help to train First Nations people.

The Panel believes that any monitoring program must involve local resources and local peoples. The Panel also believes that a monitoring program must employ and train a certain number of First Nations people. Finally, the Panel believes that this must involve developing partnerships with local community colleges, universities, research centres, and private industry. Principal recourse to experts located well outside the Atlantic region and Quebec should be limited, so that benefits related to the Project are accrued within the region as much as possible.

As well, we would expect the proponent to flesh out, before construction, the precise forms in which the monitoring program would function. To take one example: in their August 28, 2014 response to the CEA' s enquiries regarding fish monitoring, the proponent mentions creating a 'Community Liaison Committee which would be composed of 'representatives from nearby communities, local First Nations, and perhaps other stakeholders.' [165]

Such plans would need further elucidation, including how the proponent plans to involve First Nation communities.

Recommendation # 12:

In conjunction with the recommendation made previously in Section 6.10, the Panel recommends that an appropriate model or process for funding of capacity be developed

[164] ICMM, 2015 http://www.icmm.com/document/9520?utm_source=ICMM+mailing+list&utm_campaign=a610aaa7c1-New_guide_on_Indigenous_Peoples_and_mining&utm_medium=email&utm_term=0_245f7fbcf5-a610aaa7c1-75296517

[165] Stantec, Sisson Project, 'Responses to IRs on the EIA Report, July 2013: IRs Received form the CEA, (August 28 2014), 14.2.24, p. 14-22.

with the proponent, government and First Nations. This model must include the gradual development of in-house First Nations capacity, such that the reliance on external consultants is diminished over time.

6.12 Aboriginal Title

6.12.1 Community Meetings and Submissions

In the First Nations communities, people mentioned that the PDA lay within 'traditional Maliseet territory,' and that they had never surrendered title to that land. Many people said this was unceded territory. At Elsipogtog, one person said they couldn't agree to any resource development since 'it's our unceded territory.' [166]

A participant from Tobique told us:

> 'Title to this land has not been ceded or surrendered by the treaties signed by the Wolastoqiyik and Wabanaki people. The treaty did not grant us the land, we are the land. The treaty only affirmed that we control this land. It belongs to us, all of us, and not just a select few of us. The Royal Proclamation of 1763 protects the existing aboriginal rights which are inherent, given by the Creator and passed on through blood of our ancestors and those who come after us. This land is the birthright of the Wolastoqiyik and Wabanaki people and we should also have a say in how the land is being used.'[167]

Various other submissions to the Panel also referred, sometimes implicitly, that the proposed project lies on land over which the First Nations held aboriginal title. For instance, a submission from the Assembly of First Nations Chiefs in New Brunswick, opined:

> 'Aboriginal Title remains in effect throughout Atlantic Canada, including across all of New Brunswick. We, the Mi'gkmaq and the Wolastolqiyik Peoples, possess Title to the land, to surface and subsurface waters, to the ocean and its bays and estuaries, the sea-bed and the sea ice and the air space above them all. Our Title this continuum includes all Natural Resources, whether animate or inanimate.'[168]

Some community members expressed frustration in having to prove that Maliseet title. One man from Woodstock remarked that governments had been for years trying to keep them from using the land but now insisted that the only way they can prove title was to use it.

[166] Sisson EIA Project, Community Meeting, Elsipogotog, June 10 2015, p. 20.
[167] Sisson Project, EIA, Tobique, p. 19.
[168] 'The Assembly of First Nations Chiefs in New Brunswick Inc. Statement on Energy' (September 2010). 5.

> And you now for lack of better words, they've been screwing us around now for 500 years. The environmentalists are telling us last Monday, how do you prove that you've been working that land before we came here. And also, in the last 500 years they've been telling us not to use that land. They've been putting us on reserves, putting us in residential schools, anything but to use the land and all of a sudden they're saying prove it? The TRC just came out there a few weeks ago and they're saying the same thing. They're saying, ok you Indians, now you can be Indians. So after 500-600 years of not being an Indian, start acting like one. You know I don't understand that whole process.[169]

The consultation coordinator also expressed frustration with the issue and stated at the public meeting in Stanley that the eight Maliseet communities would soon make a title claim.

> I'm here to tell you that 8 Maliseet Chiefs, 6 within this Province, 1 in Quebec, and 1 in Houlton, Maine, are working towards a unity and when that unity is in place, we will not be taking the Province to court over aboriginal title. We will be inserting our title that we already own. We don't need to prove, it's not our onus. It's the government's. The Royal Proclamation of 1763 says the descendants of the Maliseet people will be unmolested on this land. The day of not molesting us has come. [170]

6.12.2 Panel Discussion: Aboriginal Title

Aboriginal title is a subcategory of an aboriginal right and is a term used to describe a legal situation in which a First Nation community has never formally surrendered title to the land that they 'regularly used.' 'Aboriginal title,' says Thomas Isaac, 'is a right to the land itself and finds its roots in the historical fact that Aboriginal peoples occupied Canada prior to the arrival of Europeans.' The purpose of section 35 (1), said Chief Justice Lamer in 1997, is to 'reconcile the prior presence of Aboriginal peoples in North America with the assertion of Crown sovereignty.'[171] There are several First Nations communities in Canada who did not surrender title to their land. Most First Nations communities in British Columbia, for instance, did not surrender their land. And neither did the First Nations communities of New Brunswick.

Aboriginal title is complicated by the fact that Saint Mary's First Nation asserts title over the area in which the PDA and LAA is located. Community leaders made these assertions throughout the EIA process.

However, even though the First Nation peoples did not surrender their lands, their efforts to prove title have been unsuccessful, including a 2005 decision of the Supreme Court of Canada. In the summer of 2014, the Supreme Court refined its definition of

[169] Sisson Project, EIA, Woodstock, June 24 2015, pp. 2-3.
[170] Sisson Project, EIA, Stanley, June 22 2015, p. 42.
[171] Isaac, *Aboriginal Law*, 67, Lamer quoted in Isaac, p. 67.

aboriginal title. How this revised definition impacts New Brunswick is unclear and is properly the responsibility of the Crown. While the Panel recognizes that the issue of aboriginal title is a critical issue and that the Maliseet have never surrendered their land, this is not an issue, which we can address, except to stress that until such time as 'title' is resolved, the Crown will continue to have problems in reconciling First Nations and the public's interests.

Recommendation # 13:

Though government relations with First Nations is beyond the scope of the EIA report, the Panel feels that some mention of this issue is necessary since many First Nations community members voiced their distrust of government. Some First Nations people and communities feel that the government doesn't respect the unique legal and historical place that the Maliseet and Mikmaq occupy in New Brunswick's history. In Nova Scotia, the provincial government has done much to help celebrate and honour the special place that the Mi'kmaq occupy in that province's history. They do this through 'Treaty Day', which is an annual re-affirmation of the signing of the 1752 Treaty. They also do this through Mi'kmaq History Month, which educates and celebrates Mi'kmaw history.[172] Though the event is symbolic, it nonetheless expresses the respect of government for the treaties that were signed and in informing people about First Nations history. The government of New Brunswick might consider launching a similar initiative in New Brunswick, but which speaks to the unique history of New Brunswick's two first peoples, the Maliseet and Mi'kmaq. Though such an initiative would not address the question of aboriginal title, it might help to foster more amicable Crown-First Nations relations.

6.13 Heritage Resources

6.13.1 Community Meetings and Submissions

At each of the community meetings, community members expressed concern that the proponent had, in their understanding, mismanaged testing the site. As part of the EIA, the proponent was required to determine if the PDA contained any historical material. As a result, they did shovel tests. Soon after they began doing so, the proponent discovered that the site, on which the mine is to be dug, contained significant archaeological artefacts. What happened then and afterwards is in dispute.

A participant from Tobique expressed concern about how the proponent was testing the site.

[172] See the Nova Scotia Aboriginal Affairs website at http://www.novascotia.ca/abor/office/what-we-do/public-education-and-awareness/treaty-day/

> So these are the provincial guidelines the government of New Brunswick recognizes its responsibility in partnership with others to protect the cultural resources in New Brunswick and we feel that the mistakes that were made by the consulting company hired by the proponent were of such a… so many mistakes were made that we really lost confidence in their ability to manage the archaeological contract, I should say. There was a failure to meet minimum requirements on many aspects of the archaeological assessment. There was a failure to properly assess the areas of elevated archaeological potential. They failed to properly complete a pedestrian survey, a failure to properly identify areas of elevated archaeological potential in the field, a failure to properly excavate test pits, identify stratigraphy, the size of the test pits, wetlands. Wetlands are in a crucial state in New Brunswick and no wetlands, this is two questions I guess. There's the wetlands component for the archaeology but there's also the wetlands that are going to be lost due to the footprint of the mine. And that's the question that CEAA is asked that the proponent hasn't answered. But wetlands also have to be considered in the archaeological assessment. Wetlands were important sites from glaciations to about 7000 years ago. They were grocery stores of the past, they are preferred for habitat, resource exploitation, animals, plants, water, food, shelter. They were ideal locations for organic preservation, which is pretty uncommon in New Brunswick, location of ceremonial sites, significant New Brunswick ceremonial sites associated with wetlands were Cow Point, Jemseg Crossing. Yea that's it, probably. Hope they do better. [173]

The consultation coordinator for St. Mary's stressed that the test pits needed to be completed before any permits were given.

> We also have had a big issue with archaeology. Since 2012 we've been asking that all the archaeological test pits be dug up-front before Sisson were to ever get any permits. We've been pushing that since 2012, that's on the record, I can show you multiple letters that we have that the Chief sent to them saying that that's what we require. Because we need to know what's out there for our ancestors before we could ever give any kind of statement about it, right?[174]

Another Tobique community member mentioned that decisions about the archaeology should be made by people with the requisite knowledge.

> I don't think that the process that has been happening with this particular project has been adequate. In terms of the findings in the area of Sisson Brook where they're I guess saying that this area is going to be destroyed? Those archaeological findings, if I'm not mistaken, over 8000 years old? This is a time period that we don't know a lot about in archaeological history here in New Brunswick and to me that says a lot about what's been going on and the contact

[173] Sisson Project, EIA, Community Meeting, Tobique, June 11 2015, pp. 20-1.
[174] Sisson Project, EIA Community Meeting, St. Mary's, June 23 2015, p. 21.

> that we've had with the ancestors here for that period of time. I know that there's older sites that have been found in New Brunswick, but in this particular area, I think it's important that as First Nations people that we are involved in that process as much as we can, and the ones that are sitting around the table making decisions about what happens to the archaeology should be people that have a bit of a background in what's going on and have an understanding of what the process is. Instead of having people around the table that are doing the consulting but don't have that experience. So for me that's what my concern is, and also if there's no mitigation plan, what's going to happen to all of this and who's going to be the ones that deciding on the interpretation of all of this.[175]

Some people also wondered if the site was a burying place and stated that if it was, then the mine should not be constructed. [176]

Finally, in their submission, the Assembly of First Nations Chiefs in New Brunswick voiced concerns about how the GNB and the proponent consulted with the First Nations about testing the site. The Assembly pointed out, for instance, that the Sisson Project Archaeological Advisory Group (SPAAG), which had been established to discuss archaeological issues, had 'not been functioning as it should.' The Assembly also expressed concerns about the ways in which archaeological permits were issued, and stated that they required more time to consider the permits than they had been given

Finally, the Assembly indicated that SPAAG had suggested that a First Nations led archaeological team be assembled in order to continue the testing pitting work in 2015.

6.13.2 Project Guidelines and Terms of Reference

Section 4.10 of the 2009 Project Guidelines (2009) stated that

> An assessment of heritage and archaeological resources will be required for the mine site as well as for any required infrastructure. The effect of the proposed project on physical and cultural heritage, and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance must also be included.

If such resources were found, then the proponent must address what 'mitigative measures' they would take. [177]

The Final Terms of Reference (April 2012) outlined how the proponent would accomplish these requirements. The proponent first would survey historical records and other sources of information in order to determine if the PDA was the site of any known heritage or archaeological sites. After this survey was completed, the proponent would

[175] Sisson Project, EIA Community Meeting, Tobique, June 11 2015, pp. 18-19.
[176] Sisson Project, EIA, Community Meeting, Madawaska, May 26 2015, p. 2.
[177] New Brunswick Ministry of Environment, 'Final Guidelines for an Environmental Impact Assessment: Geodex Sisson Brook Project (Open Pit Mine), (1 March 2009), 8, 20.

then determine if there were any additional 'undiscovered archaeological resources.' An attempt would be done to identify 'areas of high archaeological potential.' In these areas, walkover surveys would be done but not in areas of low or medium potential, though this would be cleared with New Brunswick's Archaeological Services.

Complete test pitting of high potential archaeological areas in accordance with the 2009 Guidelines will be conducted as a follow-up and monitoring measure to confirm the predictions of the EIA, but prior to construction activities being initiated. The test pitting strategy would be developed in consultation with AS, based on the results of the walkover field investigations of the PDA conducted in 2011. [178]

6.13.3 2015 EIA Report

Prior to the beginning shovel testing in 2012, the proponent had not identified, from either documentary research or field investigations, that the PDA contained known heritage resources.

In 2011, the proponent conducted an archaeological survey (walkover), identifying areas of 'high' or elevated archaeological potential as well as areas of 'low archaeological potential.' (Nov 2014, p. 8-610). Part of the survey was to also recommend 'the number and placement of shovel test pits' in areas of elevated archaeological potential.

Shovel testing began in 2012 and continued over the next two seasons, 2013 and 2014. Testing stopped on or about 19 September 2014. In 2012, 869 test pits were done in the Open Pit area. The following year, 667 test pits were completed in the same area. In 2014, 450 more pits were dug and tested, though this time in the TSF area.[179]

During the 2013 season a total of 45 artefacts were found, which date from 7,500 to 6,500 years Before the Present (BP). Though 80% of these artefacts were 'composed of quartz,' one of the significant finds included 'contracting-stemmed projectile point composed of fine-grained volcanic material.' [180] Other artefacts were found during the 2014 season, so that by 19 September 2014, 541 artefacts had been discovered.[181]

After the 2013 season and the discovery of various artefacts in the Open Pit Area, the proponent created a Heritage Mitigation Plan that would be used in the areas artefacts had been found.

The proponent has also indicated that they will follow 'provincial heritage guidelines and procedures 'and all mitigation will be implemented in consultation with, and under the

[178] Final Terms of Reference for an Environmental Impact Assessment for: Sisson Project Northcliff Resources Ltd. (April 12 2012), 103-05.
[179] According to the 2015 EIA Report, during the 2014 season a new walkover was completed as result of decision to relocate the TSF so as to avoid elevated archaeological potential areas, which had been identified in the 2011 walkover. 8.14.2.3
[180] *Sisson Project: EIA Report* (November 2014), 8-616.
[181] Sisson Project: EIA Report (November 2014), 8-617.

approval of, Archaeological Services and in accordance with the Heritage Mitigation Plan.' This will involve 'permitted excavation and recovery of the artefacts and any other archaeological information, in accordance with all applicable laws and regulations and in consultation with the Provincial archaeological regulator and First Nations, as applicable.' [182]

6.13.4 Panel Discussion

The panel understands that there have been significant disagreements about the nature of the testing, which the proponent was doing at the PDA. During this time, some First Nations community members and practicing archaeologists who were hired as inspectors for the province and the First Nations expressed concern that the testing was not done according to specifications. These comments were made about the size of the test pits, the archaeological survey (walkover), and the fact that some artefacts might have been lost. [183]

The panel does not have a mandate to sort out whether or not the test pits were done to specification, whether or not walkover was not done correctly, or whether some areas which should have been identified as high potential, were not canvassed. These are issues, which are properly the responsibility of the New Brunswick Archaeological Services, which has acted as the regulator of the testing programme.

Recommendation # 14:

However, the Panel believes that all shovel testing must be done prior to final approval. The Panel recommends that this testing should be done in consultation with the First Nations and hopefully, as well, by employing community members. This work can be done in cooperation with NB Archaeological Services and overseen by a third party, who, however, should be based in Atlantic Canada.

The fact that a number of artefacts have been found on the open mine site also needs to be addressed. N.B. Archaeological Services will need assess these artefacts and determine their significance. Based on that determination, NB Archaeological Services, in cooperation with the proponent and the First Nations, should devise what mitigation is necessary. To what degree this will involve excavating those sites within the Open Pit Mine area, is the Panel believes, an issue that is properly left to NB Archaeological Services.

[182] Sisson Project: EIA Report (February 2015), 8.14.4.3.
[183] However, the size and quantity of the artefacts is unclear. It is probable, for instance, that the artefacts with lithic quartz and therefore possibly of limited archaeological value.

7.0 Socioeconomic

Most of the submissions that referred to socio-economic issues were supportive of the project, citing its economic benefits. This being said, submissions raised issues that warrant analysis.

It has be suggested that "SML should be required to ensure that the most recent and detailed information on socio-economic or cultural data describing First Nations populations or communities is available to decision-makers wherever such information is required in the planning process."[184] The Panel concludes that the Guidelines and the Terms of Reference do not include such a requirement for socio-economic data.

The panel notes that the 2011 National Household Survey (NHS) results are available for First Nation Communities[185], but not presented in the EIA. Some of this data could have been added to present a socio-economic overview of the First Nations communities. The 2016 Statistics Canada will be going forward with its NHS in 2016, yielding more up-to-date data[186].

Some commentators argued that "employment and business opportunities are the only manifest benefits First Nations are likely to gain from the project."[187] It has been suggested that "an Approval Condition to explicitly specify the steps it commits to take to ensure First Nations are offered all possible opportunities for employment and business with the project. The commitments should be written in formal, enforceable, and binding terms."[188] Others have also identified job creation as an important issue for First Nations Communities[189]. In the EIA, the proponent has a section on aboriginal employment (8.10.2.4). We can read that "SML has committed to facilitating and securing training, employment and business opportunities with the Project that are consistent with the capabilities within the First Nation communities."[190]

Recommendation # 15:

The panel considers that the development of such a comprehensive First Nations Training and Employment strategy is technically not a requirement of the guidelines and the TOR. On the other hand, based on all information received in the process of the panel's work, the panel has come to the conclusion that such a strategy is desirable as these economic benefits are indeed the principle benefit for First Nations from the project. Such a strategy should identify not only the objectives but the various actions which will be taken to achieve them. For example, a registry could be created where interested individuals from First Nations communities would put their name and profile could be part of a training/hiring strategy for the project.

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[184] MSES, p.14
[185] http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/aprof/search-recherche/lst/page.cfm?Lang=E&GeoCode=13&TABID=1
[186] http://www12.statcan.gc.ca/nhs-enm/2016/ref/questionnaires/questions-eng.cfm
[187] MSES, p.14
[188] MSES, p.14
[189] For exa~~m~~ple, Madawaska, p.16, Woodstock, p. 18
[190] FEIA, Section 8.10.2.4, p. 18

Finally, the economic cost benefit analysis approached was criticized, where all expenditures were considered economic benefits. It was suggested that the impact analysis should have had a much broader scope.[191] The Panel considers that the economic impact analysis approach used by the proponent is consistent with the guidelines and the TOR, where elements to be included were clearly identified.

8.0 Tailings Storage, Seepage and Baseline Hydrology Concerns

These concerns can be summarized as follows:

- dam design,
- slurry versus filtered/dry-stacked tailings,
- percentage of tailings slurry water that leaks from the base of the dam,
- chemistry of tailings and chemical changes of pore water over time ,
- chemistry of the leachate at the base of the dam,
- whether some of the leachate will mix with groundwater and enter streams,
- adequacy of baseline hydrology data for bedrock and weathered bedrock below and surrounding TSF,
- implications of an unforeseen mine closure or financial failure before water treatment facility is in place,
- water treatment and pumping in case of an electrical power failure,
- the plan to flow water from the tailings pond into the open pit following mine closure,
- risk and consequences of a major dam failure or breach[192],
- post-closure plans and their implications, and,
- application of some, or all aspects of, the best available technology as discussed in the January 2015 Independent Expert Engineering and Review Panel Report[193] on the Mount Polley copper/gold mine tailings dam breach in British Columbia.

[191] For example, Elsibogtog, p. 16.
[192] Bowker, L.N. & Chambers, D.M., 2015, The Risk, Public Liability & Economics of Tailings Storage Facility Failures, https://www.earthworksaction.org/files/pubs-others/BowkerChambers-RiskPublicLiability_EconomicsOfTailingsStorageFacility%20Failures-23Jul15.pdf
[193] www.mountpolleyreviewpanel.ca/final-report

8.1 Final EIA (FEIA) Report Provides Insufficient Detail for the Public to Make a Proper Assessment

Many parties expressed concerns that the FEIA provides insufficient technical detail about the TSF and other aspects of the project for the public to make a proper assessment. These concerns are paraphrased as follows:

- With incomplete dataset and lack of analysis and models, it is not possible for the public to make a proper assessment.
- Lacks information needed to meaningfully assess the actual impacts during construction, operation and reclamation.
- It is unjust to be asked to comment without full knowledge of plans, baseline data and government's constraints.
- EIA is not complete until there is a thorough health impact assessment. Not enough information on employment, business opportunities and labour breakdown.
- The percentage of First Nations people to be employed and whether or not there will be First Nations contractors is unclear.
- Send project back to proponent to develop a complete, all-inclusive EIA and then have a discussion about a mine for NB.

The FEIA was prepared for a corporate entity, Sisson Mines Ltd. and operated by Northcliff Resources Ltd. Northcliff might be characterized in mining investor terminology as a junior company or in other industries, a venture company. Such venture organizations provide risk financing through purchase of shares and grubstake or limited partnership agreements and play a key role in developing and sustaining New Brunswick's mining industry[194] and elsewhere as well. Typically, and to a large extent dictated by availability of funds, mineral properties are evaluated to the stage at which takeover or earn-in by a major mining company can be arranged. In many cases, a series of junior companies do not succeed in attracting a senior source of funding. Although Northcliff attracted Todd Corporation to invest, this did not occur until October 2013 after completing virtually all of the baseline technical reports[195] and a feasibility study on which the FEIA is based. Company funds were running too low[196] for conducting more in depth baseline survey work and modeling.

[194] New Brunswick quite possibly would not have a metal mining industry today had it not been for the venture capital raised to discover the Brunswick zinc-copper-lead-silver deposit near Bathurst in 1952 which was to become the world's largest zinc producer for 50 years, the foundation for the Belledune port, smelting and fertilizer industries, and, the catalyst for funding discovery and development of the Heath Steele and Caribou mines as well as many more deposits including Sisson in the 1970's.

[195] The Sisson Partnership, Sisson Project EIA Report Documents, http://www.sissonpartnership.com/s/SEIAR.asp

[196] Northcliff Resources Ltd., Condensed Consolidated Interim Financial Statements for the Three and Nine Months Ended July 31, 2013 and 2012, Condensed Consolidated Interim Statements of Cash Flows, page 5 ($1,160,079 cash and cash equivalents remaining on 31 July 2013 versus $12,445,841 remaining on 31 July 2012).

Filing the first EIA report on 31 July 2013 undoubtedly was necessitated because an approved EIA would be a prerequisite for arranging the debt and equity financing to begin construction. Northcliff had limited remaining funds for doing more comprehensive technical work, and, there was the need to demonstrate that the project was moving forward at a time when metal markets were strong and companies like Todd Corporation would be more willing to invest. The following paragraph from the FEIA[197] explains the proponent's recognition of the need and intention to undertake further investigations:

> "Prior to Construction, further geotechnical and hydrogeological investigations will be undertaken in the TSF area to support basic engineering and detailed design studies for the TSF embankments and associated seepage and water management systems. These investigations include geotechnical drilling with associated groundwater testing, test pits and seismic surveys. They are important to enhancing the characterization of existing site conditions, and to advancing the design of the environmental management features of the TSF. In particular, they are important to refining the assumptions, and confirming the conservatisms, in the seepage and water quality modelling, both for facility design purposes and to inform the possible selection of adaptive management and mitigation measures as described in Section 8.5.4.2, should they be needed as determined through the Follow-up and Monitoring Program. A key purpose of the further site investigations, predictive modelling refinements, increasingly detailed environmental design of the TSF and associated seepage and water management systems, and planning for adaptive management during Operation is to ensure that environmental effects due to Project-related water quality changes will not risk ecological or fish health."

On page 281 of the Technical Report,[198] which presents documentation from the Sisson Feasibility Study and on which the FEIA is based, it is stated that;

> "A comprehensive plan for development and implementation of the Sisson Project has been conceptualized. The project engineering and procurement will be developed in two distinct phases, a basic engineering phase and detailed engineering phase.
>
> First, an 'at risk' basic engineering phase spanning about 11 months (May 2013 through March 2014) will be implemented. Its intent will be to keep the project advancing in support of the schedule until permitting and full project funding are realized. This phase will also serve to maintain technical continuity with the work done in the feasibility study and will focus on outstanding process issues, general plant layouts, and obtaining enough vendor data to support the detail design to the point where construction contracts can be awarded as soon as permitting allows. Emphasis will be placed on completing the following specific activities:
>
> - Any remaining concentrator and APT plant metallurgical testwork (an estimated 7-month duration)

[197] FEIA, February 2015, page 8-210.

[198] pages 257 to 283 of http://www.sissonpartnership.com/i/seiar/4-Other-Documents/02-Sisson-43-101-Technical-Report-Final-Jan13.pdf

- Process flowsheets and mass balance based on new metallurgical data ……
- …….The basic engineering phase will be followed by a detailed engineering phase which will begin once project permitting and full financing are in place. This phase is expected to last approximately 18 months……..
- …….The overall project duration from start of detailed engineering to mechanical completion is expected to be approximately 30 months and construction is estimated at 24 months."

That "at risk" basic engineering and environmental-related work have continued beyond the February 2015 filing of the FEIA is demonstrated by the costs itemized and the disclosures below, which also are from the Condensed Consolidated Financial Statements for the 3- and 9-month periods ending 31 July 2015. Northcliff Resources Ltd. issued these statements in September 2015[199].

- "Jacobs (Jacobs Minerals Canada Inc.) has initiated and/or completed various trade-off studies to optimize the project, has received updated quotations for key long lead items and has prepared technical specifications and procurement packages for other major equipment. Future work will be directed towards updating capital and operating expenditure estimates, construction schedule, project execution strategy, and contracting and procurement plans.
- Knight Piésold has continued with the Basic Engineering of the Tailings Storage Facility ("TSF"). The original TSF design from the Feasibility Study design is being updated based on the results from 2013 geotechnical drilling and test pitting. In addition, a three dimensional seepage model of the TSF and open pit has been completed based on these same geotechnical results to further refine the seepage collection and water management systems for the Project.
- Moose Mountain Technical Services has also advanced Basic Engineering for the open pit mine, which includes initiating requests for pricing and delivery on major equipment to further refine capital and operating costs.
- SRK Consulting continued with engineering of the water treatment facilities for both the operations and post-closure periods.
- NB Power has completed a geotechnical drilling and test pitting program along the proposed route for the new 138 kV transmission line. Initial pole and tower locations have been identified and refinements have been made to the design based on the results of this program."

[199] Northcliff Resources Ltd., September 2015, Condensed Consolidated Interim Financial Statements (including Management Discussion and Analysis) for the Three and Nine Months Ended July 31, 2015 and 2014, http://www.northcliffresources.com/i/pdf/FS/NCF_FY15_Q3FS.pdf

Table 4: Northcliff Group's 88.5% share of Sisson project deferred mineral development costs for three and nine month periods ended July 31, 2015

	Three months ended July 31, 2015	Nine months ended July 31, 2015
Engineering and design	$ 175,184	$ 977,024
Environmental and permitting	160,162	778,292
Stakeholder communications	229,019	497,275
Total	$ 564,365	$ 2,252,591

Source: page 9, http://www.northcliffresources.com/i/pdf/FS/NCF_FY15_Q3FS.pdf

Other evidence of ongoing technical work from which results would not have been incorporated in the FEIA is found in the following excerpts from a Northcliff Resources Ltd. document[200] entitled *Annual Information Form* filed on SEDAR[201] on 28 January 2015:

> "In late 2013 and late 2014, an additional 36 diamond drill holes for a total of 1,665 m were drilled within the proposed tailings facility and plant site locations as part of a second phase geotechnical investigation program for these facilities. The holes ranged from 29 to 96 m in length and all were drilled vertically. These drill holes did not encounter any indications of exploration potential in the area of infrastructure, which is fully consistent with results from previous drilling, test pitting and geochemical surveys in this area. During 2014, Northcliff also completed 2 drill holes of PQ diameter that totaled 325 m in length; the holes were located within the resource and were drilled to obtain material for potential metallurgical testwork.
>
> Activities at site include ongoing environmental monitoring and collection of data for basic engineering design. The intention is to advance the Sisson Project to the next level of engineering to enhance the design to pre-construction levels. Jacobs Minerals Canada Inc. was contracted for the Value and Basic Engineering contract of the Sisson Project to further define the engineering plans for the plant site and associated infrastructure in order to refine capital expenditure and operating costs of the proposed mine. Several significant activities were initiated and/or completed to advance the engineering for the Sisson Project:
>
> - Development of a risk identification register;

[200] Northcliff resources Ltd., Annual Information Form for the year ended October 31, 2014, dated January 23, 2015, http://www.sedar.com/search/search_form_pc_en.htm

[201] SEDAR is an acronym for System for Electronic Document Analysis and Retrieval. It is used for electronically filing most securities related information with the Canadian securities regulatory authorities. Filing with SEDAR started January 1, 1997, and is now mandatory for most reporting issuers in Canada. Information on the rules for electronic filing can be found in SEDAR Rules and Forms.

- Completion of a High Pressure Grinding Roll (HPGR) edge recycle trade-off study;
- Completion of a single vs. double ball mill trade-off study;
- Development of equipment specifications and data sheets for long lead equipment and major equipment;
- Completion of the recommended Bidders' list for the long lead equipment and major equipment requests for proposal;
- Solicitation and receipt of bids for all of the long lead equipment and approximately 25% of the major equipment;
- Development of design drawings for the primary crusher, overland conveyor, coarse ore stockpile, secondary/tertiary crusher building and truck shop;
- Review of the mineral processing flow sheet;
- Review and assessment of the potential to improve the grade of the tungsten concentrate to be produced; and
- Development of the initial three dimensional models for the Concentrator and Reagents building.

The Company is also assessing EPCM (engineering, procurement, and construction management) and other strategies to construct the mine."

8.1.1 Discussion

The Panel recognizes that an EIA based on the level of baseline and engineering data required for a conceptualized plan will leave uncertainties. This will require many government-imposed conditions to ensure that the detailed project design and implementation, and closure plans, are undertaken in a way that results in adequate protection of the environment and addresses other public concerns.

The Panel also appreciates that the Sisson project has had a long gestation period, having been through a number of ownership phases. In each phase, the owners have understood more about the mineral deposit. This has resulted in the most recent conceptualized plan demonstrating the mine's commercial potential. However, the FEIA's prognosis has been made under market conditions and metal prices when the feasibility study was completed in January 2013.

The Panel notes that the resource base and potential have been considerably enhanced since 1980 when Texasgulf Inc. estimated[202] that Zone I contained 6.8 million

[202] Thorne, K. G. et al, Granite-related mineralization at the Sisson W-Mo deposit and the Zealand Station Be-Mo-W prospect, New Brunswick Department of Energy and Mines, Exploration, Mining and Petroleum Conference Field Trip 2014, page 20.

tonnes of 0.21% tungsten trioxide and 0.35% copper and that Zone II contained 1.4 million tonnes of 0.14% tungsten trioxide and 0.09% copper. However, these initial tests were not enough to reveal the presence or potential of Zone III and the Ellipse Zone[203] which comprise the bulk of the deposit proposed for mining.

Recommendation # 16:

The Panel recommends that the proponent be required to continue public engagement and to provide access to results of the ongoing baseline and other studies relating to concerns presented to the Panel. Under the condition, such results, their analysis by companies engaged by the proponent and all modelling would be required to be posted on The Sisson Partnership web site, http://www.sissonpartnership.com/s/SEIAR.asp, and full documentation filed with NBDELG.

8.2 Public Participation and Alternative Means of Carrying out the Project

The Panel infers from questions asked at meetings with the Panel at Stanley and at First Nations communities that the many presentations[204] which the proponent made must have used terminology and illustrations that were too technical to be understood by many of the general public. As suggested in Section 3.3 of the FEIA, (*Identification and Analysis of Alternatives)*, the proponent may not have realized the limited public awareness of how the proposed project compared with other mines when addressing certain of the "technically and economically feasible and alternative means of carrying out the project"[205]. Examples include:

- "understand that it would be the largest open tailings pond in the world. Is that correct?
- "…..it's going to take up so many hectares that open pit mine…
- "the proposed mine and tailings pond are enormous…...
- "the ore should be left in the ground until we have better technology
- "have alternative or underground mining methods been investigated?
- "need examples of similar projects elsewhere for comparison
- 'EIA should include a list of major accidents and malfunctions from other similar mines".

One of the written submissions concluded, presumably in reference to technical literacy, that:

> "…the proponent had no method of establishing a baseline for the public's understanding of the project and project processes. They were unaware of the

[203] Segments or wider portions of the Sisson mineral deposit are designated Zones I , II and III from north to south. The 4th zone to be discovered is to the west or in the "shadow" of Zone III rather than being a segment in the north-south alignment. Because it is in the "shadow" rather than in a line with the others, it is presumed that when geologists made the discovery they decided to name it the Eclipse Zone.
[204] FEIA Report, February 2015, p. 4-14 to 4-44
[205] FEIA Report, February 2015, p. 3-48 to 3-85

> functional literacy rate within that population (and then unbelieving when informed that it was slightly north of 60%.) They had no means of measuring the efficiency of their communication, no feedback method."

An example of why the public is left with questions is the proponent's following explanation as to why open pit instead of underground mining was chosen.

> "The ore body at the Project site is near the surface, with only 0.9 m to 4.0 m of overburden, so that underground mining is not a technically and economically feasible alternative. The only technically and economically feasible means of mining this ore body is by open pit." [206]

A numerically convincing explanation might have been given. As is well known, many ore deposits in the world extend downward from the surface yet are mined by underground methods because of the deposit shape, orientation relative to the bedrock surface, and value of the product in each tonne. While open pit mining may have been the only reasonable alternative to the proponent's engineers, the public deserves a more explicit explanation than what was presented.

Another key to earning the social licence is to convincingly "Describe how public participation in the EA influenced the Project design and the environmental effects analysis"[207]. Rather than listing or discussing even a few cases where public participation influenced design and analysis, the FEIA report describes only what appear to be the proponent's own plans[208].

Numerous speakers at the public and community meetings gave the impression that they were marginalized by the consultation process and considered public consultation, which the proponent had undertaken, to be a sales pitch rather than a serious discussion of the proponent's design, operating and environmental plans.

Even though not required under guidelines for the Sisson EIA, concerns about largeness of the proposed Sisson mine and TSF might have been dispelled by citing examples of such metal mines in addition to the Brunswick mine[209]. Canadian examples, which might have been cited as more comparable with the Sisson TSF footprint of 4 by 3 km and the potential impact, include the former East Kemptville mine in Nova Scotia (3.0 by 2.2 km),[210]and, the Highland Valley tailings containment 19 km south-southeast of Ashcroft and 14 km west of Logan Lake, British Columbia. In the latter: "The L-L Tailings Dam, presently 128 m-high, is a major earthdam constructed mainly of hydraulically placed cylconed sandfill. The dam is projected to reach the ultimate height of about 140 m…under the current mine plan. The L-L Dam together with the somewhat lower H-H Dam, constructed of earth – and rockfill further upstream, retain the 9.6 km-long, 2 km-wide Highland Valley tailings impoundment with a final storage capacity of 1.3 billion tonnes of tailings. Both dams are designed to high international standards for seismic and flood design criteria. The adoption of the modern

[206] FEIA Report, February 2015, p. 3-48
[207] FEIA report, February 2015, Appendix C, Table C.2, p. C-30
[208] FEIA Report, February 2015, Section 1.3.6, p. 1-16 & 1-17; and, Section 4.3.2, p. 4-31 to 4-40
[209] FEIA Report, February 2015, p. 4-42 and 4-43
[210] Google Earth imagery for measurements of footprint at each mine tailings example

centerline dam scheme with an impervious glacial till core and the use of compacted cycloned sandfill and waste rockfill for dam construction materials achieve the mine's objective to provide safe yet economic permanent tailings retaining structures" [211].

To address concerns about tailings and water quality management after mine closure, the proponent could have cited what has been learned at the former Mount Pleasant tungsten-molybdenum[212] [213](1983-1985) and the East Kemptville[214] tin (1985-1992) mines, both of which closed prematurely primarily due to a decline of metal prices. At these mines as well as at Sisson, the ore deposits are granitic intrusive-related and analogous in many respects, even though elements like arsenic, zinc, copper and fluorine are much lower in content at Sisson and potentially acid-generating minerals also are lower in content. With respect to East Kemptville, a 1996 report[215] on the aquatic effects of mining in Canada states:

> "This open pit mine, located in south-west Nova Scotia, operated from 1985 to 1992 and was subject to the Metal Mining Liquid Effluent Regulations. Except for a period of 4 months just after start up, it maintained a good record of compliance with those regulations. Surface and ground water quality monitoring at the site was extensive during the operation and that program is continuing, in a somewhat reduced form, while the mine undergoes reclamation.
>
> Biological monitoring at this site was very sporadic and included a few intermittent surveys of benthic invertebrates, fish populations, and bioaccumulation. Impacts from this operation were limited to the immediate receiving stream and were associated with habitat damage caused by siltation during the construction phase of the mine. The effluent contained significant concentrations of fluoride and one study demonstrated that fish in the receiving waters were accumulating fluoride in their bones. No pathological effects of this bioaccumulation were detected.
>
> Surface water quality objectives were established for this mine and a multi-stakeholder monitoring committee was created to review the water quality results. This process, with the full participation of the mining company, has

[211] http://www.klohn.com/projects/sector/highland-valley-copper-cycloned-sandfill-tailings-dam

[212] Petrunicm B.M. and Al, T., 2005: Mineral/water interactions in tailings from a tungsten mine, Mount Pleasant, New Brunswick, Geochemica et Cosmochemica Acta, Vol. 69, No. 10, pp. 2469-2483, copyright Elsevier Ltd. (*dissolution of fluorite releases F into the pore water… enhances the dissolution of aluminosilicate minerals within the oxidation zone* of tailings resulting in *high Al concentrations…in the near-neutral pore water in the oxidation zone* and *pH near 10 in the pore water at depth*.)

[213] Flood Details – 1998-03-09 - 1998-03-14, http://www.elgegl.gnb.ca/0001/en/Flood/Details/112
High runoff contributed to the breaching of the tailings dam at the Mount Pleasant…mine. Effluent from the pond flowed into the Piskahegen Stream. Fortunately, it appeared the tailings deposits were not mobilized and remained inside the tailings pond.

[214] http://www.cbc.ca/news/canada/nova-scotia/east-kemptville-tin-mine-could-resume-production-in-a-few-years-1.3137873

[215] AQUAMIN Working Groups 3,4,5 and 6, AQUAMIN Secretariat, 1996: Assessment of the Aquatic Effects of Mining in Canada: AQUAMIN Supporting Document II, Regional Syntheses, http://www.ec.gc.ca/eem/pdf_publications/english/regsyn_e.pdf

proven to be an effective mechanism to evaluate changes and trends in receiving water quality as a result of the mine operation. The mine has an excellent record of operating in such a manner that the water quality objectives have been consistently met since production began.

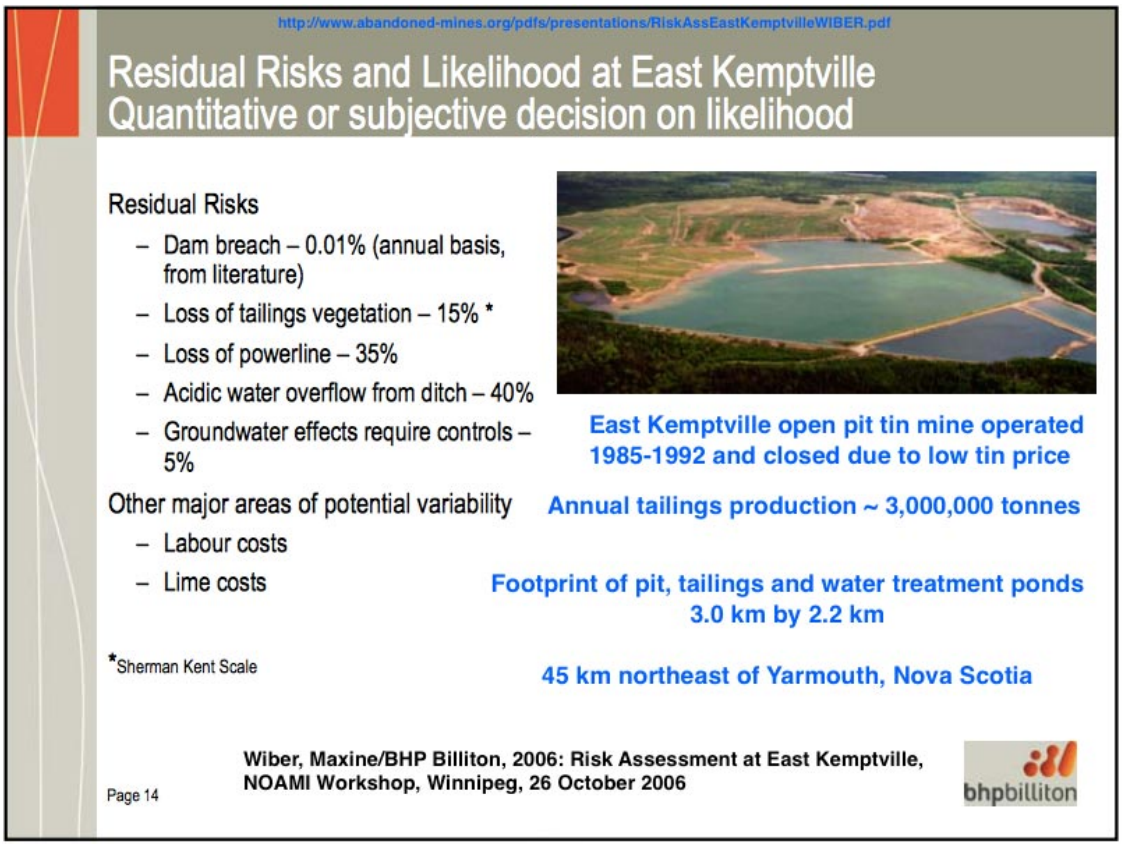
Fluoride: Fluoride was detected in the effluent from the East Kemptville Tin Mine, the Mount Pleasant Mine and the St. Lawrence Mine in Newfoundland. While the acute toxicity of fluoride is not a serious concern, fluoride has been demonstrated to accumulate in the skeletal tissue of freshwater fish. The unregulated discharge of fluoride to the aquatic environment is a concern.

Aluminum: Aluminum is among the most common constituents of geological material. It can dissolve in water as a result of the processing of mineral ores or through natural processes, depending on factors such as particle size and pH. Aluminum is quite soluble in water and has been demonstrated to be acutely toxic to aquatic organisms……. The adjustment of pH to precipitate the regulated metals (zinc, lead, copper, etc.) does not necessarily remove aluminum."

The following figures illustrate planning and risk assessment of BHP Billiton as of 2006 for the East Kemptville site, which the AQUAMIN report describes in 1996 as having *maintained a good record of compliance with* the Metal Mining Liquid Effluent Regulations post closure[216]:

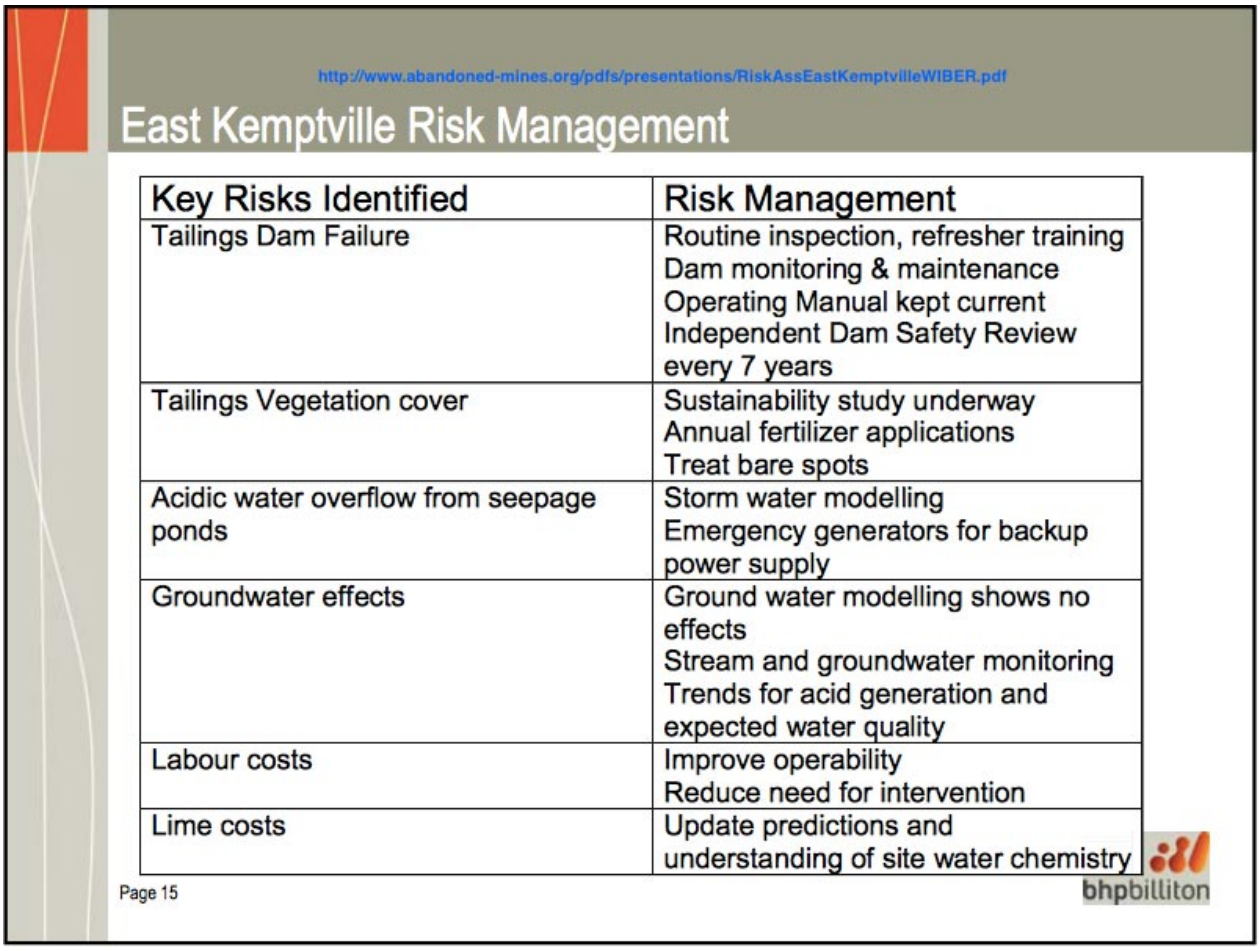
[216] Wiber, Maxine/BHP Billiton, 2006: Risk Assessment at East Kemptville, NOAMI Workshop, Winnipeg, 26 October 2006 (http://www.abandoned-mines.org/pdfs/presentations/RiskAssEastKemptvilleWIBER.pdf)

Figure 1: Planning, risk assessment and risk management after closure of the East Kemptville open pit tin mine in Nova Scotia



East Kemptville Reclamation Plan http://www.abandoned-mines.org/pdfs/presentations/RiskAssEastKemptvilleWIBER.pdf

- Address public safety hazards
- Collect and treat acidic run-off from coarse tailings and mine waste rock (70 year treatment period)
- Maintain fine tailings in saturated condition
- Eliminate large pools of acid water (tailings pond, and pit lake)
- Establish sustainable tailings vegetation
- Surface and groundwater monitoring
- Environmental effects monitoring



Recommendation # 17:

The Panel recommends that the proponent continuously act on the need to maintain the dialogue with all members of the general public and Maliseet First Nations communities. In communication, the proponent should make every effort to ensure use of words and illustrations that the majority can understand, and, responsiveness with credit for specific public concerns and inputs which result in changes to the Sisson project plan.

Both the majority of those who expressed concerns and those who expressed strong project support appeared to agree that the common goal is that the project creates employment for many years, but safeguards the Nashwaak Basin environment, protects what people value and will operate with an unblemished record in a way that fosters growth in New Brunswick's mining sector.

8.3 Concern about Impact of Periods of Unplanned Mine Closure or Electrical Power Failure

One submission to the Panel expressed a concern shared by many about the high probability that:

> "..lengthy mine shutdowns will be inevitable at Sisson, as evidenced by lengthy shutdowns of other tungsten mines around the world. (Mount Pleasant, Climax, Cantung). These shutdowns will be costly for the taxpayers of New Brunswick, both for water treatment and for social assistance to displaced workers and their families. The province can and must buffer itself against the water treatment costs that will accrue during dormancy if it is to properly protect the environment and its water resource."

Other submissions expressed concern about the potential impact of an electrical power failure on pumping of TSF seepage, operation of the wastewater treatment facility and other equipment necessary to protect the environment.

The accompanying graph of the inflation adjusted or constant dollar price history since 1900 for five metals (chrome-Cr, copper-Cu, nickel-Ni, tin-Sn and tungsten-W) shows that tungsten has the widest price swings. From this, we can infer that tungsten mines with higher than the industry average costs per unit of product are most vulnerable to the inevitable price decline if brought to production at any of the price peaks. As of 14 September 2015, Ammonium Paratungstate (APT) was reported trading at US$188 to 198/metric tonne unit (mtu)[217] of tungsten trioxide (WO_3) FOB China and US$180-190/mtu in Europe[218].

Eleven major proposed tungsten mining projects reviewed in a December 2014 research report[219] shows Sisson to have the second highest forecast gross cash cost at US$242/metric tonne unit (mtu) and the fifth highest net cash cost at US$164/mtu. These figures compare with respective gross and net costs of US$148 and US$115/mtu forecast for the Drakelands/Hemerdon tungsten mine in Devon, England.

In spite of the public concerns about the impact of an unforeseen shutdown on the sensitive Nashwaak salmon nursery - whether the shutdown were to be caused by financial failure of the mine owner or some other reason - the proponent has proposed to cover the risk of an untreated water release by posting bonds totalling $4.8 million[220] to cover the cost of building a water treatment facility in the event that it is needed prior to year eight of operation. It is in year eight when the facility would be built in any case because recycled water from tailings and pit pumping would then become surplus to onsite usage[221].

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[217] 1 mtu = 10 kg of tungsten trioxide (WO_3) = 7.93 kg of tungsten (W). Thus US$190/mtu WO_3= 190/7.93 = $23.96/kg Win 2015 US$ and in 1998 US$ using http://www.in2013dollars.com = $16.46/kg W or $16,460/t W on the above graph.
[218] http://www.asianmetal.com
[219] Edison Investment Research, 2014, Tungsten Sector Report – Exhibit 32, p. 18, 9 December 2014,
[220] FEIA Report, February 2015, Appendix H, Table 9.3, p. 137
[221] FEIA Report, February 2015, p. 3-23

If an unforeseen closure were to occur prior to year eight and if leakage of untreated water occurred or appeared imminent, a considerable amount of off-specification effluent could escape while making the decision to cash the bond, award a contract to build the water treatment facility and have the facility operational. With respect to the potential impact, the FEIA states that[222]:

> "A release of off-specification effluent could adversely affect downstream surface waters (i.e. Napadogan Brook and eventually the Nashwaak River) and associated fish habitat. This could result in the short-term ingestion/uptake of contaminants by fish, wildlife, the public or First Nations. Downstream groundwater, soil, or wetlands could also be adversely affected."

The public concern is important, particularly because the current salmon population is low and would potentially be at risk, depending on the season, amount and duration of any mine effluent escaping into the Nashwaak system. The covering letter of the Atlantic Salmon Federation (ASF) submission[223] to the Panel highlights this issue:

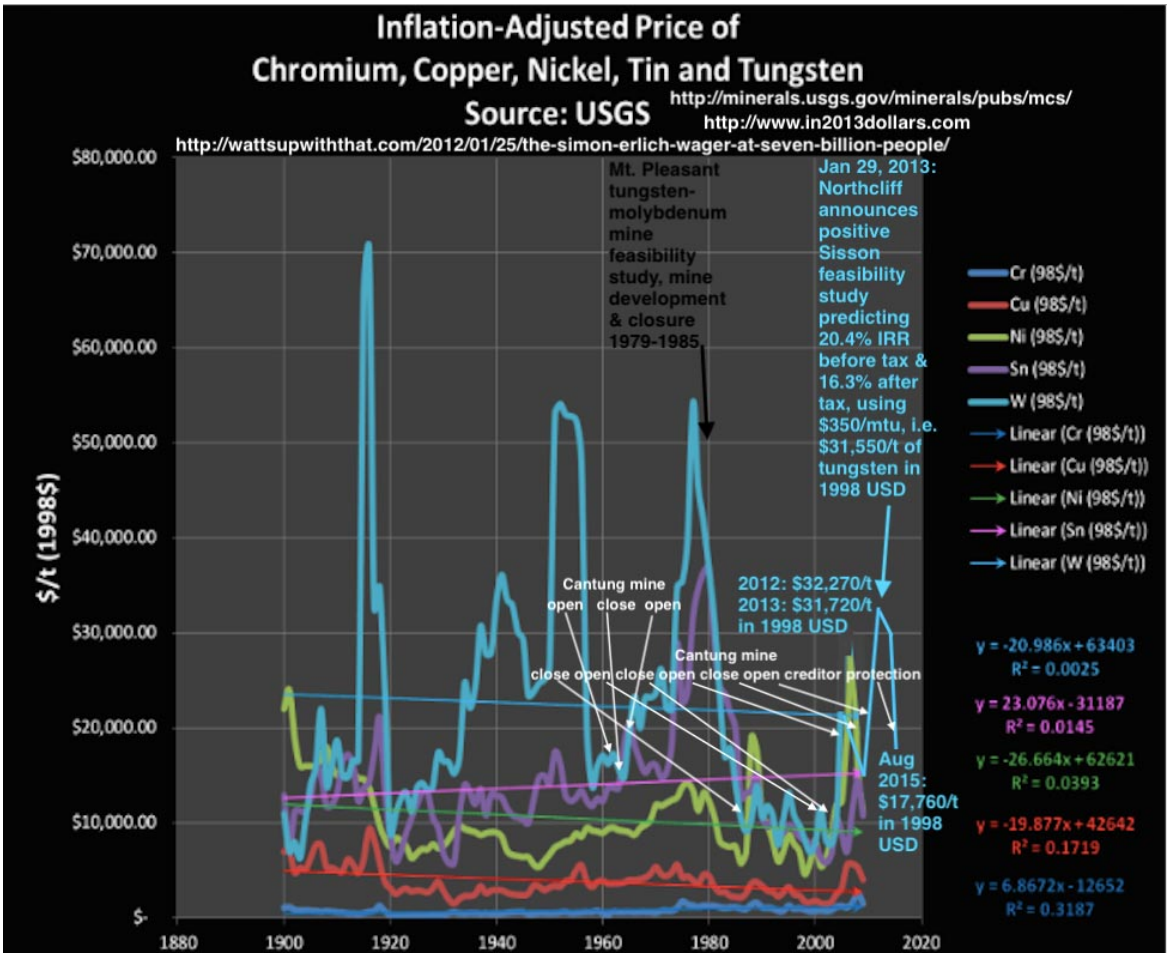
> "Wild Atlantic salmon in the Nashwaak River are part of the Outer Bay of Fundy (OBoF) population complex and are at critically low levels. The population is currently being assessed as endangered under the Species At Risk Act (SARA). As part of the SARA process, DFO produced a Recovery Potential Assessment for the OBoF Atlantic salmon population and the Nashwaak is identified as the largest salmon-producing tributary downriver of Mactaquac dam. It is the priority river for recovery in the lower St. John River. As such, and considering the substantial historic, social, economic, and recreational value of salmon in the watershed, this species and its habitat needs to be given utmost priority in the risk assessment and mitigation planning of the Sisson Mine. It is ASF's opinion that a more detailed study regarding impacts to wild Atlantic salmon is required in order for the EIA to be considered complete from an Atlantic salmon conservation perspective. ASF maintains that the EIA demonstrates an incomplete analysis and modelling, thus making it not possible for our organization to fully understand the impacts of the project, nor to support the project."

Recommendation # 18:

That, complementary to bonding and insurance recommendations made elsewhere in the Panel report, the Panel recommends that the proponent be required to have in place and operational from commencement of mill tune-up all electrical generators, pumping equipment, water treatment facilities and trained personnel that would be necessary to ensure that leakage does not escape untreated from the site in the event of a need to begin treating effluent due to a corporate financial failure, unforeseen mine closure or a sudden loss of electrical power from the grid during an extreme rainfall event.

[222] FEIA Report, February 2015, Section 8.17, Table 8.17.1 Credible Accidents, Malfunctions and Unplanned Events and Scenarios, p. 8-756
[223] Atlantic Salmon Federation, letter dated 10 July 2015

Figure 2: Canadian tungsten mine openings and closures since 1960 depicted on graph of constant dollar price history since 1900 for tungsten (W), copper (Cu), tin (Sn) and chrome (Cr)



8.4 Tailings Dam Foundation Concerns re Leakage and Risk of Major Breach

Fear of a tailings dam failure was expressed at both public and community meetings and in written submissions, particularly by those living downstream from the proposed Sisson mine. As stated elsewhere in the Panel report, this fear is founded primarily on the Mount Polley[224] failure on 4 August 2014, but has likely been reinforced by the escape of slurry tailings from the former Gold King Mine[225] in Colorado on 5 August 2015. With respect to the Mount Polley failure, the reason in simple terms was:

"The design did not take into account the complexity of the sub-glacial and pre-

[224] https://en.wikipedia.org/wiki/Mount_Polley_mine_disaster
[225] http://www.cnn.com/2015/08/10/us/animas-river-toxic-spill-colorado/
https://en.wikipedia.org/wiki/2015_Gold_King_Mine_waste_water_spill

glacial geological environment associated with the Perimeter Embankment foundation. As a result, foundation investigations and associated site characterization failed to identify a continuous glacial lacustrine layer ("GLU") in the vicinity of the breach and to recognize that it was susceptible to undrained failure when subject to the stresses associated with the embankment. The specifics of the failure were triggered by the construction of the downstream rockfill zone at a steep slope of 1.3 horizontal to 1.0 vertical. Had the downstream slope in recent years been flattened to 2.0 horizontal to 1.0 vertical, as proposed in the original design, failure would have been avoided. The slope was on the way to being flattened to meet its ultimate design criteria at the time of the incident" [226].

Recommendation # 19:

The Panel recommends that the proponent be required to test for, and to map, permeable zones of rock disruption/faults or weathered and unconsolidated granitic rock or other surficial material that is potentially unstable or could act as a water conduit from the tailings containment base to the groundwater outside the TSF. The proponent should be required to use the survey results for detailed engineering design of the containment base and dam as well as locations of hydrology testing and monitoring wells. The suggested mapping method to be required of the proponent is a Ground Penetrating Radar (GPR) survey[227]. The proponent should survey along the centreline or perimeter of the proposed dam base plus at least three east-west and three north-south lines across the proposed tailings storage site prior to starting any dam construction.

8.5 Concerns about TSF Seepage Water Quality and Treatment

With respect to concerns about the quality of water to be treated, the SRK report[228] on metal leaching and acid rock drainage potential, makes the following cautionary statements:

> "Based on the preliminary water quality effects assessment by Stantec, these water quality data indicate that water treatment for arsenic and antimony is likely to be required for the TSF and open-pit discharge prior to release to

[226] https://www.cim.org/en/News-and-Events/News/2015/Memo-to-CIM-Membership-regarding-Mount-Polley.aspx

[227] Geological Survey of Finland, 2015, GPR survey and field work summary in Siilinjarvi Mine during July 2014 http://tupa.gtk.fi/raportti/arkisto/74_2014.pdf

[228] SRK Consulting (Canada) Inc., 2013, Metal Leaching and Acid Rock Drainage Potential Characterization, Sisson Project, FINAL, for Northcliff Resources Ltd., August 2013, excerpts from Appendix I: Water Treatment Plant Conceptual Design , being a memo dated August 6, 2013 from SRK Consulting's M. Nodwell & S. Jensen, with subject heading "Scoping Level Water Treatment Estimate for the Sisson Project - FINAL " http://www.sissonpartnership.com/i/seiar/3-Technical-Study-Reports/03-Sisson_MLARD_Potential_Characterization_SRK_7Aug2013.pdf

environment. In addition, fluoride was identified as a potential constituent of concern upon release and dilution in Napadogan Brook.

"SRK was directed to investigate water treatment processes for removal of arsenic and antimony only. No other elements were considered in the process described herein, although the treatment may result in other metals removal for a net water quality benefit.

"The proposed ferric co-precipitation process is primarily intended to remove arsenic and antimony but will have a limited ability to remove aluminum, selenium, molybdenum. However, sodium and fluoride concentrations will be unaffected by the proposed treatment.

"In the event that water treatment for sodium or fluoride is required or if effluent metal concentrations must be lower than those achievable by ferric and lime treatment then the water treatment process proposed here will not be adequate."

In tailings at the former Mount Pleasant tungsten mine, research[229] has shown that dissolution of fluorite releases fluorine into the pore water, which, in turn, enhances the dissolution of aluminum-rich minerals within the oxidation zone and results in high aluminum concentrations (up to 151.7 mg/L) in the near-neutral pore water of the oxidation zone. Also, elevated concentrations of tungsten (up to 7.1 mg/L) are detected in the pore water throughout the tailings.

For leaching tests relevant to the proposed Sisson mine and for the actual chemical and mineralogical characterization of the tailings, the products of a fully integrated pilot plant should be available. The Samuel Engineering NI 43-101 Technical Report[230] states that;

"A pilot plant was set up and operated to meet project objectives of producing a bulk tungsten concentrate sample for the subsequent APT conversion tests and to develop feasibility level engineering data as well as definitive predictions for the tungsten circuit.

"The plant did not perform as expected. The majority of the attention throughout pilot operations was focused on improving tungsten circuit froth stability. It was recognized mid-way through the operations that the low throughput rate of the pilot plant feed was likely the root cause in generating flotation conditions that were too sensitive to achieve circuit stability in the pilot plant cells. Although the plant had periods of operation when metallurgy was as expected, this performance could not be maintained on a consistent basis. Required froth mass pull rates were too small to achieve at reasonable consistency, and increased pull rates would require larger feed rate (and thus larger metallurgical sample).

[229] Petrunicm B.M. and Al, T., 2005: Mineral/water interaction in tailings from a tungsten mine, Mount Pleasant, New Brunswick, Geochemica et Cosmochemica Acta, Vol. 69, No. 10, pp. 2469-2483, copyright Elsevier Ltd.

[230] Samuel Engineering, Inc., 2013, Canadian National Instrument 43-101 Technical Report on the Sisson Project, New Brunswick, Canada, 22 January 2013, p. 134, http://www.sissonpartnership.com/i/seiar/4-Other-Documents/02-Sisson-43-101-Technical-Report-Final-Jan13.pdf

For this reason, the operation of the pilot plant was ceased. Metallurgical predictions of recovery in the concentrator are therefore based on locked cycle tests described above. Further pilot plant testing will be considered at a later stage of the project development."

The viability of the proposed Sisson mine should include certainty about the costs for milling and process extraction efficiency. This is necessary because the Sisson ore has a low content of tungsten (and molybdenum) per tonne of ore fed to the processing plant and a high operating cost per tonne of product relative to many other tungsten mines. Integrated process piloting was not undertaken prior to commencing production at the similarly high cost and now closed East Kemptville tin mine[231]. As a consequence, the first five years was an unduly expensive period of process plant modifications for improving efficiency.

An Amec Foster Wheeler report[232] prepared for the NB Department of Energy and Mines reviewed reclamation and water treatment costs proposed by the Sisson mine proponent and concluded with respect to the Reclaim Water Clarification Plant (RWCP) and reclamation that:

"….capital costs appeared to be underestimated by approximately 50%, and the operational costs of the post-closure also seemed low. It was difficult in some cases to be sure of the number to be evaluated because of discrepancies between documents.

"The reclamation costs proposed for the TSF seem low, as a result of apparently low unit rates and the underestimation of some material quantities required for closure.

"To provide a more complete understanding of the water treatment and reclamation activities and associated costs, it is recommended that additional information be obtained from the mine owners. Specific questions and information requests are being submitted to NBDEM in a separate letter."

The Amec Foster Wheeler report also voiced technical concerns and cited potential risks:

"… it is assumed that (RWCP) sludge would be 10% solids; this seems optimistic as similar treatment plants form sludges of less than 5% solids. Another point that requires clarification is the design of the calcium carbonate precipitation step: the location, dimensions, and general design of the pond are not detailed. It

[231]East Kemptville Tin, The Northern Miner, November 1-7, 1989, Volume 75, Number 34 http://www.northernminer.com/news/east-kemptville-tin/1000126213/ where it is stated that: When the milling process was first designed five years ago, it was so complex that it had to be tested in bits and pieces……..The mill was built without the process being tested in a pilot plant. In the past five years, much has been learned about milling the East Kemptville ore.

[232] Amec Foster Wheeler Environment & Infrastructure, a Division of Amec Foster Wheeler Americas Limited, 2015, Review of Reclamation and Water Treatment Costs, Sisson Brook Mine, New Brunswick, Final Report, number TE153001, submitted to New Brunswick Department of Energy and Mines, 20 April 2015, 15 pages.

is also unclear how the overflow from the pond is handled.

“According to the water balance diagram supplied in Figure 11.9 of the Mining and Reclamation Plan (Sisson 2014 Rev2), water from the RWCP is sent in part to the concentrator process water tank at the mill for re-use in the process, and in part back to the TSF. However, Section 11.3.13 of that document infers that only sludge and carbonate precipitate will be sent to the TSF and the neutralised clarifier overflow from the RWCP will be sent to the concentrator process water tank in its entirety. “Furthermore, the memorandum Draft Scoping Level Water Treatment Cost Estimate (SRK 2013) mentions that ‘the TSF water is treated for arsenic and antimony following lime and carbon dioxide treatment’, but does not indicate whether the water passes through the TSF between these two steps. This point requires further clarification to ensure that dissolved metals will be adequately removed by the process.

-“There are some concerns regarding design of the post-closure water treatment approach. First, the semi-batch treatment in the pit appears to be a new concept. Curtain systems in pit lakes have been known to fail, especially in freeze-thaw. Therefore the idea of a floating baffle curtain wall may not be feasible. An example of a successful full-scale operation at another site may help prove the feasibility of this concept.

-“Although this review is intended only to verify the costs of treatment, it is important to note that in reality, these costs cannot be dissociated from the water management and expected raw water quality. The following is a list of concerns that represent potential risks to the estimated costs.

- “Molybdenum is not identified in the ferric co-precipitation plant design (SRK 2013) as requiring treatment. The maximum concentration of molybdenum predicted in the TSF during operations by the Updated Predictive Water Quality Model Results (Knight Piésold Consulting 2014) is 0.1275 mg/L, and depending on discharge permit values, this may require treatment.
- “For the ferric co-precipitation plant during the operations phase (SRK 2013), it was assumed that arsenic would occur as arsenate. This should not be assumed, as it is most often present as arsenite in mine drainage. Although arsenite is treated using the same method, it usually requires a higher dosage of iron for ferric co-precipitation.
- “According to the EIA (Stantec 2013), humidity cell testing was not done on materials expected to be underwater, and it is expected that no metal dissolution would occur for the material underwater in tailings or in the pit. This should be validated as dissolution of metals has been known to occur under water cover.
- “Construction water management is only identified as having ponds and coffer dams. In some cases, suspended solids in construction can be very fine and not settle. It may also be necessary to have coagulation systems ready to be

used.

- “Very little make-up fresh water is planned. This could lead to an accumulation of conservative elements in the reclaim TSF water.
- “In the Basis of Estimate - Water and Waste Management (Knight Piésold 2013a), it is assumed that water released during operations from the open pit does not require use of the water treatment plant, but at the very least, the suspended solids in this water will require some treatment before release to the environment. This assumption is borne out in the water balance diagram supplied in Figure 11.9 of the Mining and Reclamation Plan (Sisson 2014 Rev2) and discussed in Section 2.1.4 of this report.”

Recommendation # 20:

The Panel recommends that the proponent be required to conduct further leaching tests on tailings material. To ensure that the tailings material is representative of what would be produced during mine operation, piloting of the integrated milling process will be required and it is expected that drilling of large diameter holes to collect sufficient fresh un-oxidized ore also may be required for this integrated testwork. The leach tests would determine with more certainty whether concentrations of elements in addition to the currently proposed arsenic and antimony must be removed from tailings and/or leachate water, and, if so, would provide the concentrations in leachate that would serve as the basis for defining capital and operating costs for water treatment.

That prior to, and during the basic engineering phase, the proponent be required to conduct testing as appropriate and incorporate corrective design provisions, which address concerns and risks cited in the Amec Foster Wheeler report dated 20 April 2015.

That measures taken in response to these and other adopted Panel recommendations be addressed in reports that, in the interest of achieving the transparency that fosters public trust, would be posted on the proponent’s website.

8.6 Concern that Leachate Will Enter Groundwater Beneath Unlined TSF and Bypass Collection Ponds

Considerable concern was expressed in a number of submissions and meetings that seepage from the TSF would enter area brooks or streams. People voiced concerns about the possible ecological and/or human health implications. Specific issues raised include the following:

- Can underground flow affect plant and animals that we harvest and consume?
- Can underground flow of contaminated groundwater travel to and into streams? The Nashwaak River, wetlands, lakes and ponds?
- How can you stop an underground seep from reaching the rivers?

- Why does the TSF not have a basal liner and seepage collection drains rather than just collection of embankment seepage?
- Are baseline hydrology data on groundwater quality, distribution, flow direction and flow rates sufficient?

The Panels' understanding is that there are two potential sources of aqueous releases from the facility. Starting in about year eight of operations, excess water from the TSF will be pumped to a Water Treatment Plant (WTP), and this water will be treated and, subsequently, discharged to Napadogan Brook at the confluence of Sisson Brook[233]. In addition, the FEIA states that:

> "TSF embankment seepage is collected in the Water Management Ponds (WMP) and is continuously pumped back into the TSF. Water will not be stored in the WMPs under normal operating conditions. TSF basin seepage that bypasses the WMPs mixes with groundwater in the receiving environment and reports to the nearest creek after a five-year lag time. A seepage recovery system is modelled along the northern extent of the TSF downgradient of WMP5 that is assumed to recover 30% of the TSF basin seepage in that portion of the catchment."[234]

Map 1 below is modified Figure 10-2 from Samuel Engineering's Technical Report[235] . It has been modified to depict locations of the TSF, WMPs, open pit, locations of holes drilled for various purposes, processing plant, brooks and treated water discharge location. Map 2 which follows it is modified from Knight Piésold's Baseline Hydrology Report Figure 3.1.1.[236] Notes and dashed red lines added to the latter figure (red) explain purpose for which holes were drilled and show inferred zones of faulting. If faults actually exist near where shown by the dashed red lines, they could serve as groundwater conduits into the open pit and result in need for treatment of more than the 6 million m^3/year of surplus water[237] well before year eight of operation.

The Baseline Hydrology Report prepared by Knight Piésold Ltd.[238] summarizes the pathways for groundwater flow as:

- "glacial tills comprised of sand-silt-gravel-clay *up to approximately 10 m thick*,
- *shallow weathered bedrock….in the upper 10 to 20 m of rock* below the till, and,
- deeper bedrock that is expected to be less permeable than the shallow rock based on hydraulic conductivity testing and fault zones."

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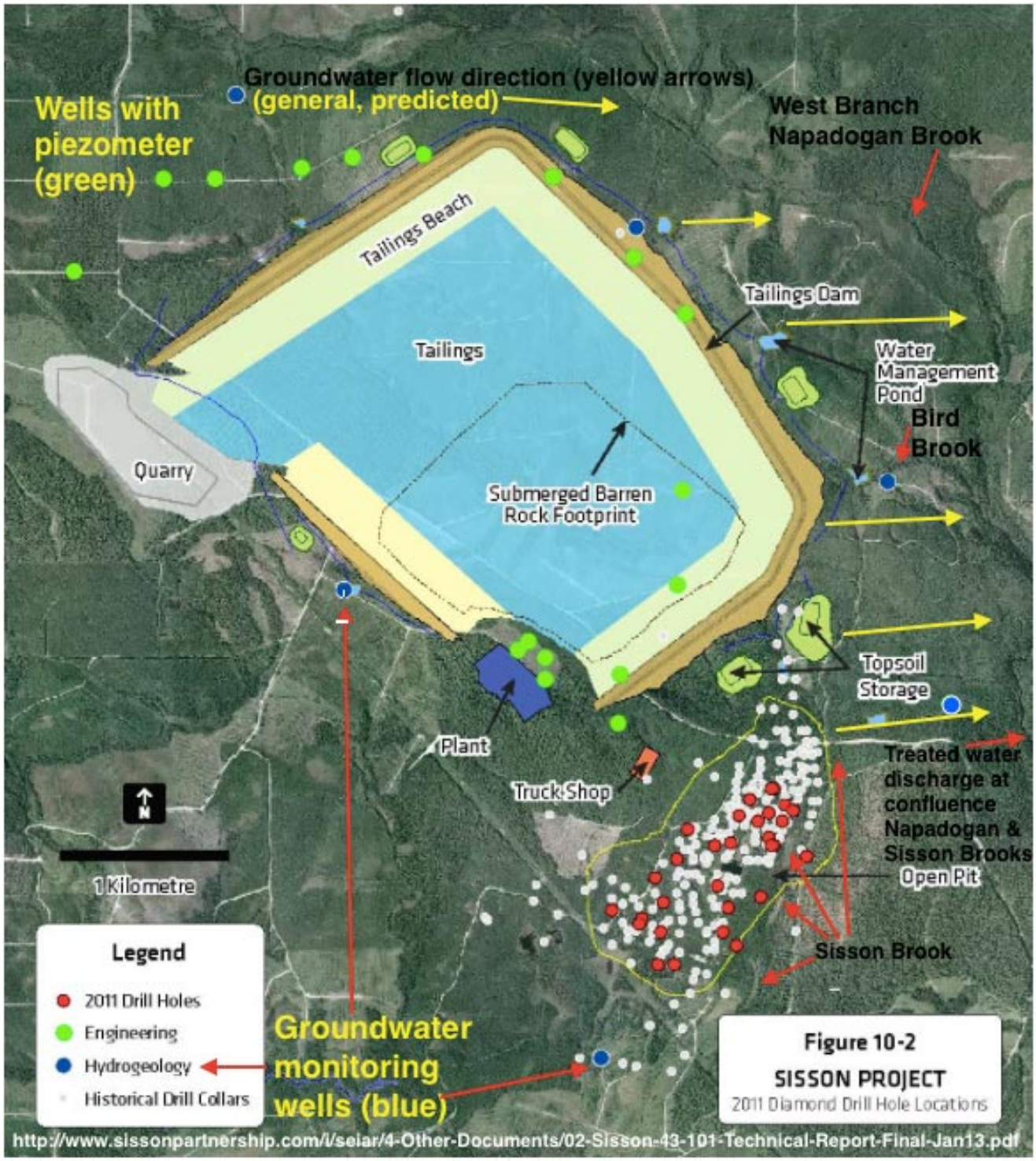
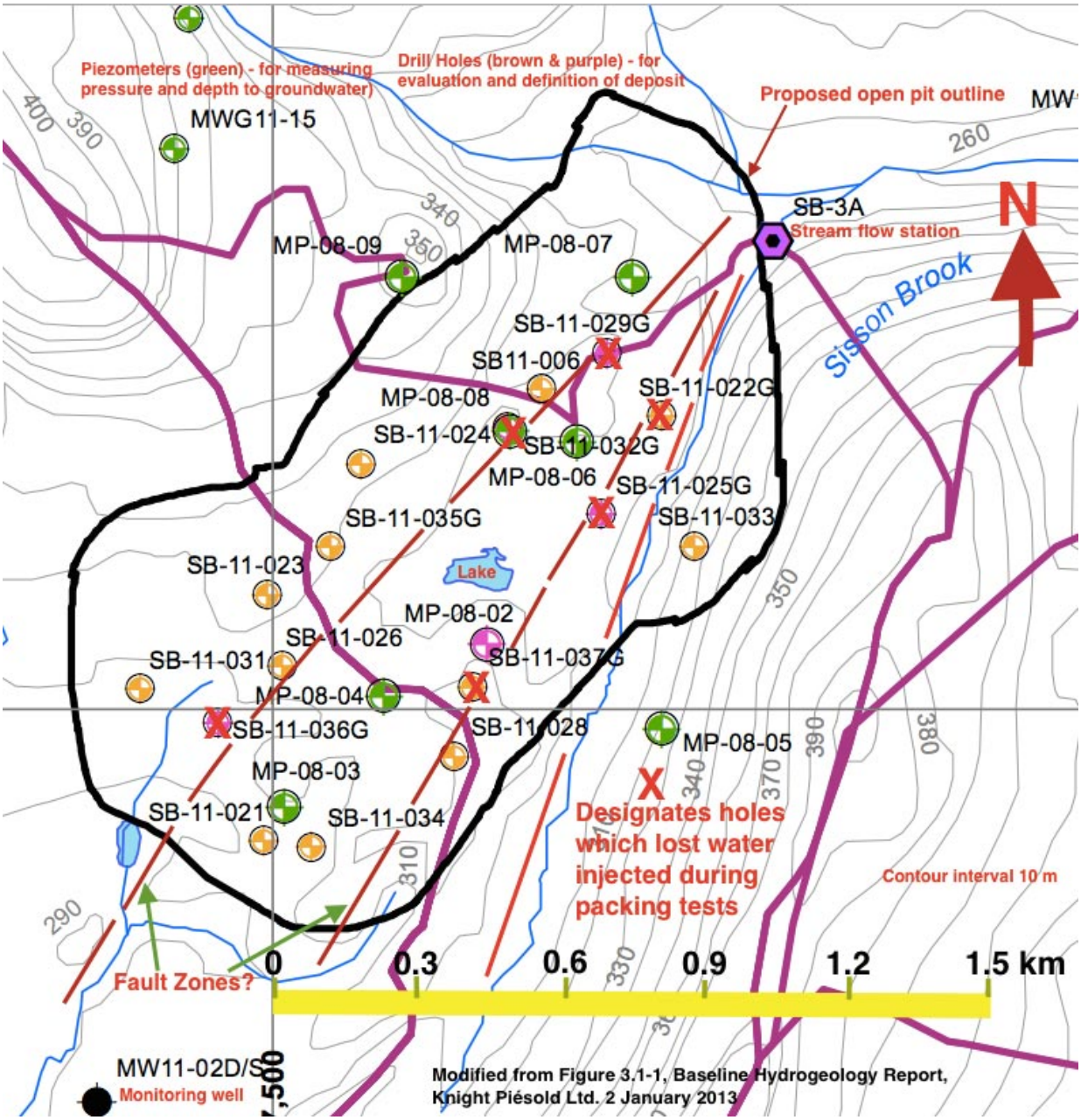
[233] Page 7-117, FEIA
[234] Page 7-117, FEIA
[235] http://www.sissonpartnership.com/i/seiar/4-Other-Documents/02-Sisson-43-101-Technical-Report-Final-Jan13.pdf
[236] Knight Piésold Ltd., 2013, Baseline Hydrogeology Report, Sisson Project, prepared for Northcliff Resources Ltd., Report number VA101-447/2-8, Rev 0, 2 January 2013, http://www.sissonpartnership.com/i/seiar/2-Baseline-Technical-Reports/A-Physical-Env/06-Sisson_2013_Baseline_Hydrogeology_Report_rev0.pdf
[237] Page 3-131 or page 7-117, FEIA
[238] Knight Piésold Ltd., 2013, Baseline Hydrogeology Report, Sisson Project, prepared for Northcliff Resources Ltd., Report number VA101-447/2-8, Rev 0, 2 January 2013, referenced are Executive Summary page plus pages 1 and 8, http://www.sissonpartnership.com/i/seiar/2-Baseline-Technical-Reports/A-Physical-Env/06-Sisson_2013_Baseline_Hydrogeology_Report_rev0.pdf

Map 1: Sisson mine site showing tailings storage facility, water management ponds, processing plant, pit outline, boreholes for various purposes, brooks and general groundwater flow direction



Map 2: Boreholes in proposed Sisson pit area on which hydrology testing has been reported, those holes which lost water injected during packing tests and potential fault zones inferred



Sixteen wells with piezometers are either outside or under the TSF embankment, but only one is under the tailings that would be contained within the embankment. Furthermore, most wells fringing the TSF range from a third of a kilometer to more than a kilometer apart whereas in the pit area the spacing is much closer, particularly when considering both wells with piezometers and those where packer tests[239] were done.

Relevant to addressing the concern about where and at what rate the groundwater will travel would be additional baseline hydrology data. These data could be used to model how much seepage, which bypasses the WMPs, will flow down the groundwater gradient and into the pit.

The Knight Piésold Executive Summary states that "high take in packer tests intervals (in holes SB-11-022G, -25G, -29G,-32G, -36G & -37G) within the deposit area may be flawed" and "hydraulic conductivity testing did not identify elevated hydraulic conductivity values near faults." This is not convincing if one plots the holes from which water loss occurred, compares the alignment with the zones of faulting inferred from the straight north-northeast course of Sisson Brook and the "disrupted zone" shown on the FEIA geology map[240], and considers that aligned holes SB-11-22G, -25G and 37G all were drilled toward Sisson Brook (see above Figure 3.1.1 from Knight Piésold's Baseline Hydrology Report, as modified). Nevertheless, the FEIA states[241] that:

> "Very few fractured contacts or faults were identified in the 2011 open pit geomechanical/ hydrogeological site investigation program. The overall rock mass quality at the Sisson deposit is good and the intact rock strength is strong. The identified rubble zones and gouge filled structures were localized in the drillholes, and do not imply any large-scale continuous fractured features at the drillhole locations. The deformation of the Sisson project area likely served to strongly anneal the affected rock types which may account for their current strength and the scarcity of extensive brittle deformation. Exploration drilling at the Sisson deposit has intersected a near-vertical, strongly disrupted zone along the contact between the Howard Peak gabbroic rocks and the metavolcanic rocks of the Turnbull Mountain Formation. Similar disrupted zones passing through the entire deposit area have not been identified to date."

In reporting packer tests (Lugeon tests[242]) for wells in the open pit area, Knight Piésold (p. 8) stated that:

> "Given the uncertainty with the high take tests, the following was recommended:
>
> - "Identify the packer tests as high take without assigning an actual hydraulic conductivity value, until there is greater certainty regarding the validity of the testing.

[239] Ibid, Tables 3.2-1 and 3.2-2
[240] FEIA Report, February 2015, Figure 8.4.5, page 8-89 or Figure 3.1.2, page 3-7
[241] FEIA Report, Page 3-9,
[242] The **Lugeon** test is used to measure the amount of water injected into a segment of the bored hole under a steady pressure, see Lancaster-Jones, P. F. F. 1975. The interpretation of the Lugeon water-test. Quarterly Journal of Engineering Geology and Hydrogeology; **8**(2):151-154.

- "If required, carry out additional and more than one type of hydraulic testing (e.g. constant head, falling head, lugeon) to better constrain whether the high take results are indicative of the site conditions or were influenced by the testing tool or method.

- "Recognize the implications of potentially high hydraulic conductivity values within the deposit area on engineering and environmental studies until additional testing is completed to gain a better understanding of the hydraulic conductivity values."

Meetings which the proponent hosted did not result in diminishing public concerns about predictive water quality results. A series of memos in reports of 2014 on the Sisson website meant to update and modify[243] predictions from their 3 July 2013 report[244] may have contributed inadvertently to the ongoing concerns, even though Knight Piésold explained that:

> "…geochemical ML/ARD testing of site materials has continued. In particular, further humidity cell testing of quarry rock by SRK has demonstrated the need to revise the water quality modelling source terms for embankment runoff and infiltration. A correction has also been made to the treatment levels that can be conservatively assumed for chromium in the water treatment plant discharge at the current stage of Project planning."

With respect to the direction and flow velocity of groundwater at Sisson, Knight Piésold states that:

> "As at most sites, groundwater levels are expected to be a subdued reflection of the ground surface. Local groundwater flow will be toward local streams and wetlands. Regional discharge is likely east toward West Branch Napadogan Brook. Horizontal groundwater flow gradients in the project area along valley slopes are estimated as about 0.2 m/m and along valley bottoms as 0.01 m/m. The average groundwater flow velocity within the overburden is 0.2 m/day based on the estimated horizontal gradient (0.01 m/m)…velocity within the bedrock is also 0.2 m/day based on the estimated horizontal gradient (0.01 m/m)…"

Each proposed mine site will have rock and overburden characteristics that differ, and, as a result, the ideal spacing between boreholes for geotechnical and hydrology measurements will vary from site to site. An example of closer spacing than at the Sisson site by the time of submitting the FEIA can be seen on Map 3 below. It shows holes for geotechnical and hydrology testing under the TSF of the new

[243] Knight Piésold Ltd., 2014, Memo entitled *Sisson project – Updated Predictive Water Quality Model Results,* 5 March 2014 http://www.sissonpartnership.com/i/seiar/3-Technical-Study-Reports/02-VA14-00403---Updated-Predictive-Water-Quality-Model-Results.pdf

[244] Knight Piésold Ltd., 2013, Predictive Water Quality Monitoring - Sisson Project, prepared for Northcliff Resources Ltd., Report number VA101-447/2-9, Rev 1, 3 July 2013 http://www.sissonpartnership.com/i/seiar/3-Technical-Study-Reports/01-Sisson-KP-WQM-Report-Rev-1-July-2013.pdf

Drakelands/Hemerdon tungsten mine[245] in Devon, England. For comparison with the number and spacing of such holes within the Sisson TSF footprint area, see above Map 1 (adapted from Figure 10-2 from the Samuel Engineering Technical Report).

Recommendation # 21:

The Panel recommends that the proponent be required to conduct additional drilling both in the proposed pit and TSF areas (unless drilling and testing satisfactory to NBDELG have been conducted by the proponent and not included in the FEIA), measure seasonal variations in depth to groundwater (perched, if existing, as well as permanent water table) and undertake hydraulic testing to determine permeability, uptake (packer-type tests) and pump down recovery/airlift yield rates for overburden, weathered bedrock, fresh competent bedrock and intervals of faulting or fracturing.

Introduction of tracers in wells up the groundwater gradient also is recommended for determining the actual rate of groundwater flow through bedrock as well as through overburden.

While the proponent has indicated that further geotechnical and hydrology is intended or may have been undertaken, the Panel also recommends that NBDELG ensure that the proponent has addressed not only the lack of engineering and hydrogeology borehole data in the proposed TSF footprint, but also east of, the highest portion of the tailings embankment (~76 to 86 m height from base of Bird Brook). This would be an easterly extension of the pattern of boreholes and testing recommended for the tailings footprint.

The concern about whether there should be a liner at the base of the tailings to control the rate of seepage that could enter the bedrock water table and potentially bypass the WMPs can be addressed by conditions imposed by NBDELG on the basis of results from the above test work.

In the interest of maintaining a database for the public record and ensuring credibility of the proponent, the Panel also recommends that the results of all past and ongoing water quality monitoring results for streams, stream nodes, wells etc. be compiled, submitted to NBDELG and the annual reports posted on the NBDELG web site as has been done[246] for the Drakelands/Hemerdon tungsten project.

Also important for the proponent to address from an environmental baseline perspective prior to any disturbance of the proposed mine site is the uncertainty noted in the first

[245] Coffey Geotechnics, 2013, Hemerdon Mining Waste Facility Environmental Permit Application EA/EPR/EP 3490VQ/A001, Section 3F: Geotechnical Assessment, 8 May 2013 http://www.southhams.gov.uk/CHttpHandler.ashx?id=5693&p=0 . For other such *Tungsten Mine Public Consultation* documents which can be downloaded from the web page of South Hams District Council, see http://www.southhams.gov.uk/hemerdon

[246] RPS Aquaterra, annually, Hemerdon Tungsten Project Annual Water Monitoring Report, example for 2012, prepared for the Environmental Agency and posted at http://www.southhams.gov.uk/CHttpHandler.ashx?id=5679&p=0. For sourcing such reports, see http://www.southhams.gov.uk/hemerdon

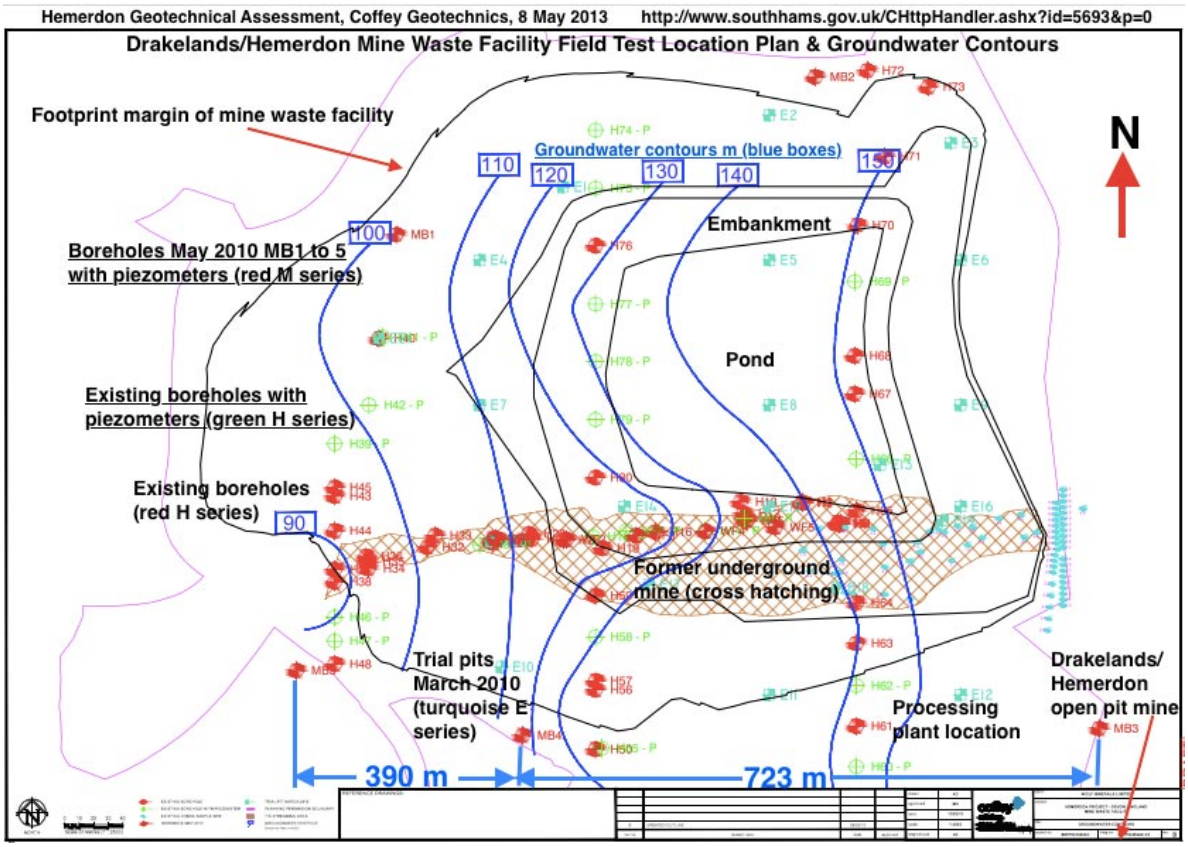
paragraph (see below) from the Knight Piésold memo of 5 March 2014[247] about the water quality prediction for node UT1 and the predicted fluoride concentration (see Map 4 below, modified from Figure 2 of Knight Piésold memo of 5 March 2014).

The above final recommendation in this Section 8.6 is based on the following excerpt from Knight Piésold's memo of 5 March 2014 regarding water quality prediction for node UT1:

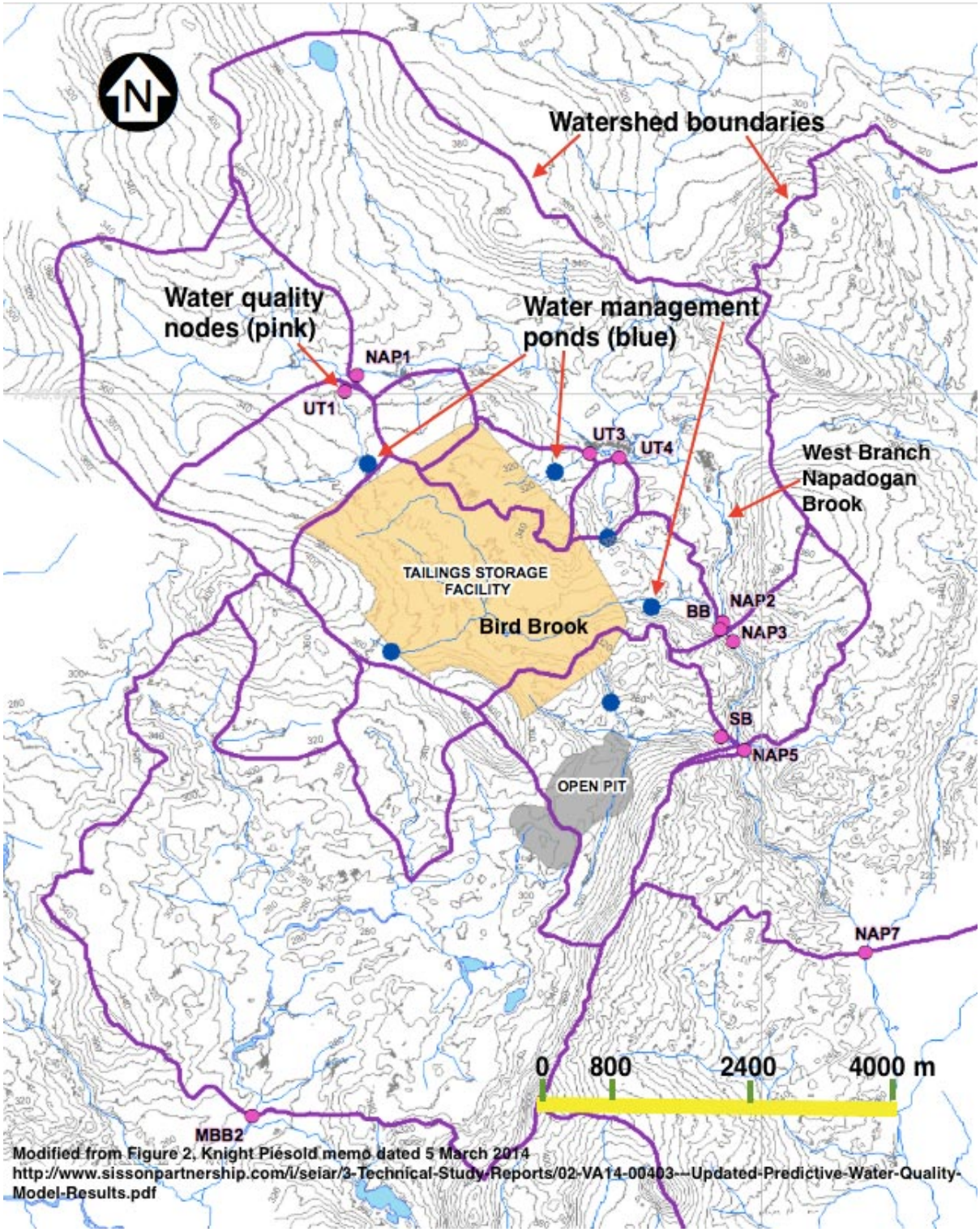
> "…while the results for the modelled location on the unnamed tributary to Napadogan Brook (UT1) are presented in the graphs along with results for other nodes on Napadogan Brook and McBean Brooks, the degree of uncertainty for the UT1 results at this node is greater than for the other nodes due to a lack of baseline water quality, hydrological, and hydrogeological information in this area. It is important to note that the UT1 results are indicative only and do not have the same level of accuracy or confidence as the results at other nodes. They represent a conservative assumption that all modelled seepage that bypasses the TSF water management systems becomes surface water before it enters Napadogan Brook and is accounted for at the NAP1 node, when some of it may well enter the brook as groundwater. (see page 5 of Knight Piésold memo and location of UT1 on Map 4 below)
>
> "Fluoride concentrations are not predicted to exceed the 1.5 mg/L GCDWQ, but are predicted to exceed the 0.12 mg/L CCME FAL guideline at each node for the duration of the modelled Project life. Baseline fluoride concentrations were elevated throughout the Project area and average levels generally exceeded the CCME FAL guideline. …. The greatest increase is noted at UT1 due to seepage from the TSF and Water Management Pond 5 (WMP5), reaching a maximum concentration of 1.4 mg/L in Year 17 (Operation). Peak concentrations decrease at NAP 1 (maximum concentration of 0.57 mg/L in Year 17)… Peak concentrations of fluoride increase at NAP5 when compared to the upstream nodes (maximum concentration of 1.3 mg/L in Year 12) due to the WTP effluent during Operation, and to a lesser degree in Post-Closure." (page 9 of Knight Piésold memo).

[247] Knight Piésold Ltd., 2014, Memo entitled *Sisson project – Updated Predictive Water Quality Model Results,* 5 March 2014

Map 3 : Drakelands planned tungsten mine tailings storage facility footprint showing boreholes for hydrology testing and elevation contours of groundwater level



Map 4: Sisson planned tungsten pit and tailings tailings storage facility footprints showing watershed boundaries, brooks and water quality prediction nodes, including UT1 node with uncertain prediction



8.7 Concerns about Failure of the TSF Dam and Lack of Impact Modelling

As stated earlier, many people are concerned about the possibility that the tailings impoundment dam will rupture and cause destruction along the Nashwaak River system, particularly in light of the much publicized Mount Polley[248] catastrophic dam failure in British Columbia and the more recent spill of tailings from the former Gold King Mine[249] in Colorado. Nevertheless, the proponent has concluded that:

> "…the possibility of a structural failure of a TSF embankment is so unlikely that it cannot reasonably be considered a credible accident or malfunction, and is thus not considered further in this EIA Report"[250].

Submissions to the Panel have questioned why the proponent has not adopted a method whereby mill tailings are filtered to remove a considerable percentage of water and then "dry stacked", thus removing the need for a dam and eliminating any risk of the impounded slurry being released. Submissions also have called for the proponent to commission an independent risk analysis and to model and estimate the potential impact of various dam rupture scenarios.

Of note is that a significant investor in the Sisson Partnership (Todd Corporation[251]), has a 32.19% shareholding[252] in another newly operating open pit tungsten mine (Drakelands[253] mine of Wolf Minerals Ltd[254]). In the British approval process, this mine was required to complete a dam failure analysis, as are many mines located within Canada.

Figure 3 is a photo of the Drakelands site (previously known as Hemerdon) showing the processing plant and starter tailings pond/mine waste storage facility in summer 2015. The location is approximately 10 km northeast of the city of Plymouth, England. The mine has been brought to production at an approximate cost of A$297 million[255] (or more than 140 British pounds[256]). The first shipment of tungsten concentrate was made in early September 2015 and annual output is projected at 3,500 tonnes of tungsten trioxide (WO3) in concentrate versus 5,570 tonnes projected for Sisson.

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[248] https://en.wikipedia.org/wiki/Mount_Polley_mine_disaster

[249] http://www.cnn.com/2015/08/10/us/animas-river-toxic-spill-colorado/
https://en.wikipedia.org/wiki/2015_Gold_King_Mine_waste_water_spill

[250] FEIA Report, February 2015, p. 8-753

[251] See Todd Minerals and Coal at http://www.toddcorporation.com/content/our-businesses-investments

[252] Wolf Minerals Annual Financial Report for the Year Ended 30 June 2015, 20 Largest Shareholders, 17 Sept. 2015, p. 58, http://www.wolfminerals.com.au/IRM/Company/ShowPage.aspx/PDFs/1795-10000000/WolfMinerals2015AnnualReporttoShareholders

[253] RPS Aquaterra, 2013, Hemerdon Mining Waste Facility Environmental Permit Application EA/EPR/FB3639RK/A001, Tier 3 Groundwater & Surface Water Risk Assessment, Document 4C, 16 May 2013, http://www.southhams.gov.uk/CHttpHandler.ashx?id=5672&p=0

[254] http://www.wolfminerals.com.au/IRM/content/default.aspx
http://www.wolfminerals.com.au/IRM/Company/ShowPage.aspx/PDFs/1746-10000000/InvestorPresentationDiggersDealers4August2015
http://www.ft.com/intl/cms/s/0/9201a816-c95d-11e4-b2ef-00144feab7de.html#axzz3f4CBwkl1

[255] Ibid, Financial Position as of 30 June 2014, Development assets. page 25.

[256] http://www.wolfminerals.com.au/IRM/Company/ShowPage.aspx/PDFs/1797-10000000/OfficialOpeningofHemerdonTungstenandTinProject

Figure 3: Drakelands tungsten ore processing plant and tailings pond/mine waste storage facility shortly after commencing production in mid-2015 near Plymouth in Devon, England

The Drakelands slurry tailings/mine waste management facility (WMF) has an embankment that is scheduled to reach a height of 113 m compared with Sisson's maximum height of 76 or 86 m. Annual tonnage of ore processed at Drakelands is projected to be approximately 3 million[257] dry tonnes versus 10.5 million dry tonnes at Sisson. At Sisson, the 10.5 million milled dry tonnes after removal of the tungsten and molybdenum minerals are to be discharged from the processing plant/mill to the Tailings Storage Facility (TSF) "at an average slurry solids content of 35% by weight"[258]. At Drakelands, the 3 million dry tonnes is predicted to be discharged in a "Fine tailings slurry from the processing plant with a solids content of 55 -60%"[259]. In both cases, run-of-mine waste rock also will go into the MWF/TSF.

Although the content which the Drakelands tailings and mine waste management facility is designed to contain is much less than in the case of Sisson, a "Major Accident Off-site Plan Assessment of potential downstream risks" report[260] was required and states in the Executive Summary that:

> "It is, good practice, and mandatory in the UK, to assess the hazard potential which would arise should the embankment fail in such a manner that a breach were to develop and lead to an uncontrolled outflow of any water which has been impounded. For the purposes of establishing the downstream impacts a range of failure modes and initiating events has been considered for the MWF in order to ensure that all possible conditions of the embankment and all mechanisms have been identified."

Recommendation # 22:

The Panel recommends that the proponent be required to have an independent qualified party conduct a major accident downstream risk study to at least a similar standard as was required in the case of the Drakelands mine.

The government should assure that dam inspectors have appropriate and continued training to ensure that inspections are completed by adequately trained individuals.

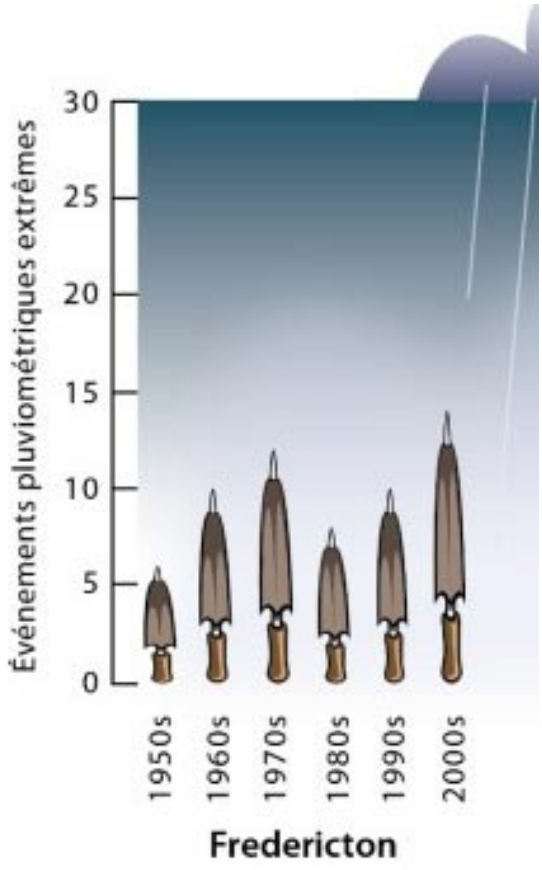
8.8 Concerns that Potential Impact of Extreme Rain and Wind Events Have Not Been Evaluated

A concern about whether the FEIA has adequately evaluated the potential impact of extreme rainfall and wind events reflects the increasing frequency of extreme weather events in the region. This concern may also reflect that the proponent's consultants only

[257] http://www.wolfminerals.com.au/IRM/content/default.aspx , Wolf Minerals Limited Corporate Video
[258] http://www.sissonpartnership.com/i/seiar/4-Other-Documents/02-Sisson-43-101-Technical-Report-Final-Jan13.pdf , page 244.
[259] http://www.southhams.gov.uk/CHttpHandler.ashx?id=5643&p=0 , page 13.
[260] Cantab Consulting Ltd., 2013, Hemerdon Mine Waste Facility Environmental Permit Application EPR/FB3639RK/A001, Section F: Major Accident Off-site Plan Assessment of potential downstream risks, 15 May 2013, 22 pages, including 4 figures depicting inundation mapping scenarios. http://www.southhams.gov.uk/CHttpHandler.ashx?id=5670&p=0

used historic records from the Sisson and Juniper climate stations[261] when calculating the return period[262] for 24-hour extreme precipitation rather than incorporating data from other climate stations and assessing the implications of trends in New Brunswick beyond the 20-km distance to Juniper.

Figure 4: Graphical depiction of extreme rainfall event frequency in Fredericton by decade from 1950 to 2010



The FEIA statement that "24-hour extreme precipitation values for return periods of 10, 50, and 200 years are estimated to be 95 mm, 117 mm, and 136 mm, respectively"[263] becomes difficult for members of the general public to believe after having experienced the following events over the past 27 years, which is approximately, the expected life of the mine.

- Sept 30, 2015: swath from SW to NE of NB with more than 200 mm of rain in some communities[264]
- Dec 9-10, 2014: Nor'easter brought a mix of snow and rain (up to 162 mm

[261] FEIA, February 2015, page 8-71
[262] https://en.wikipedia.org/wiki/Return_period
[263] FEIA, February 2015, page 8-71.
[264] https://awd1970.wordpress.com

rain) across the province

- July 5, 2014: Hurricane Arthur deposited up to 150 mm of rain across a swath of the province[265]
- July 26, 2013: Heavy rainfall depositing up to 163 mm in the province
- Dec 13, 2010: Heavy rainfall - St. Stephen 166.4 mm, Fredericton 101.7 mm, and Gagetown 284 mm
- Sept 6-7, 2008: Up to 141 mm of rain from tropical storm Hanna
- Sept 22-3, 1999: Heavy rainfall - 170 mm in Saint John, 166 mm in Fredericton, 150 mm in Moncton
- Aug 5, 1989: Heavy rainfall - 149 mm rain at Fredericton[266]

As noted in the FEIA, estimation of extreme precipitation over a 24-hour period is an important component in the engineering design of water storage and conveyance features such as the TSF, water management ponds culverts and pumps[267]. It also is very important to design the water treatment so as to have surge capacity for such events.

Recommendation # 23:

The Panel recommends that the proponent review climate change data, particularly in consideration of emerging trends within a greater radius of Sisson, and post the results of this review as well as any consequent facility design changes on The Sisson Partnership web site.

8.9 Concerns that the Proponent Plans Storage of Tailings as a Slurry Rather than in Filtered Stable Form

The storage of tailings as a partially water covered slurry of fine particles is of concern because a slurry is unstable and could cause destruction if the containment dam were to rupture. This concern has been heightened by the Mount Polley slurry tailings escape in British Columbia. Nevertheless, slurry tailings storage has proven to be safe and low risk if the dam is properly designed and built on a structurally competent footing, the tailings management program is sound, and effective monitoring is rigorously practiced.

Although ‘dewatered' tailings at Sisson would have the advantages of:

- saving cost of quarrying non acid-generating rock and building a containment dam;
- smaller TSF footprint of perhaps two thirds of the currently proposed 751 ha;
- less seepage to capture and recycle to the TSF;
- less seepage to treat after mine closure; and,

[265] http://www.elgegl.gnb.ca/0001/en/Flood/Search - Sept 1999 to Dec 2014
[266] http://www.theweathernetwork.com/forecasts/statistics/cl8101500/canb0519
[267] FEIA, February 2015, page 8-71.

- eliminating risk of containment dam failure.

Offsetting these advantages would be:

- costs for building and operating the tailings dewatering plant;
- increased cost for physical transport and placement of filtered tailings at the TSF;
- increased cost for dust suppression and progressive vegetation during operation; and,
- possible need for separate lined TSF for the acid-generating molybdenum tailings.

In the case of the Sisson project, as is apparent from information presented in this report under the heading "Concern about Impact of Periods of Unplanned Mine Closure or Electrical Power Failure", both capital and operating costs are important reasons for proposing the slurry tailings approach. First, the mill is located on a hill above the level of the tailings, thus allowing gravity to minimize pumping costs in early years. Secondly, a plant to filter the tailings would add an estimated $40 million, or so, to the capital cost[268] of the Sisson project.

A tailings filtering plant capital cost of $40 million, or so, would be up front rather than spread over the life of the mine, as would be the case for the quarrying of the rock to be used for building the tailings dam. Samuel Engineering's estimated cost for the mining and movement of quarried material for ongoing construction of the tailings embankment is only $4.1 million/year out of a total annual water and waste management cost of $6.2 million/year[269]. The quarrying cost estimate is considered low by Amec Foster Wheeler[270]. Nevertheless, it is safe to assume equal or higher annual costs for filtering, movement and placement of filtered tailings and treatment of the more limited seepage.

Samuel Engineering summarized the proponent's rationale for selecting the slurry tailings approach as follows[271]:

> "A trade-off study was completed to evaluate the following tailings technologies:
>
> - Un-thickened slurry tailings
> - Paste tailings, and

[268] Based on an announcement that the Siilinjärvi mine in Finland will install a plant to filter approximately the same amount of tailings annually as would be produced at Sisson at a cost of 40 million Euros (US$44 million) making it possible to extend the lifetime of the current slurry tailings facility. For the announcement and photos of the existing mine and slurry tailings facility, respectively, see http://www.outotec.com/en/Media/News/2015/Outotec-to-deliver-tailings-treatment-plant-for-Yaras-Siilinjarvi-mine/ and http://fem.lappi.fi/c/document_library/get_file?folderId=1405164&name=DLFE-20769.pdf

[269] http://www.sissonpartnership.com/i/seiar/4-Other-Documents/02-Sisson-43-101-Technical-Report-Final-Jan13.pdf, page 267.

[270] Amec Foster Wheeler Environment & Infrastructure, a Division of Amec Foster Wheeler Americas Limited, 2015, Review of Reclamation and Water Treatment Costs, Sisson Brook Mine, New Brunswick, Final Report, number TE153001, submitted to New Brunswick Department of Energy and Mines, 20 April 2015, 15 pages.

[271] http://www.sissonpartnership.com/i/seiar/4-Other-Documents/02-Sisson-43-101-Technical-Report-Final-Jan13.pdf , page 234.

- Filtered dry stack tailings.

The resulting recommendation was that an un-thickened tailings system, operating at approximately 35% solids content by weight, be used as the basis for further project development. This conclusion was based on several factors including the local climate, site water balance, overall system complexity, and ease of operation."

The New Brunswick Final Guidelines for the EIA specify that "the study should evaluate alternatives to the project as proposed that are technically and economically feasible…"[272]

Recommendation # 24:

The Panel recommends acceptance of the slurry tailings disposal system proposed by the proponent on the condition and understanding that if water quality at stream sampling nodes or other environmental predictions do not meet accepted targets the proponent may be required to convert to a filtered tailings system.

8.10 Concerns that the TSF Would Not Have a Liner to Prevent or Limit Seepage

The concerns about leakage from the tailings because no liner is proposed have been accentuated by the proponent reportedly changing the leakage estimate from two percent when addressing questions at early meetings to 20 percent at later meetings. The real issue, however, is whether seepage will occur through bedrock below the TSF and bypass the collection ponds. Such seepage can be reliably predicted by additional baseline hydrology borehole studies as recommended elsewhere in this report. Whether seepage would be sufficient and of a quality to be of concern and whether it can be effectively collected by an array of pumping wells outside the dam perimeter also can be reliably predicted from the additional hydrology work. From filings of Northcliff to comply with securities regulators[273] [274], it appears that there has been further hydrology testing than has been reported in the FEIA.

With respect to seepage management and the need for a TSF liner, the European Community Reference Document on Best Available Techniques (BAT) for the

[272] http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/EIA-EIE/SissonBrookFinalGuidelines.pdf, page 13.

[273] Northcliff Resources Ltd., September 2015, Condensed Consolidated Interim Financial Statements (including Management Discussion and Analysis) for the Three and Nine Months Ended July 31, 2015 and 2014, http://www.northcliffresources.com/i/pdf/FS/NCF_FY15_Q3FS.pdf

[274] Northcliff Resources Ltd., Annual Information Form for the year ended October 31, 2014, dated January 23, 2015, http://www.sedar.com/search/search_form_pc_en.htm

Management of Tailings and Waste-rock in Mining Activities[275] *provides the following advice:*

> "Seepage management (Section 4.3.10)
>
> Preferably the location of a tailings or waste-rock management facility will be chosen in a way that a liner is not necessary. However, if this is not possible and the seepage quality is detrimental and/or the seepage flowrate is high, then seepage needs to be prevented, reduced (Section 4.3.10.1) or controlled (Section 4.3.10.2) (listed in order of preference). Often a combination of these measures is applied."

Recommendation # 25:

The Panel recommends that results of the additional geotechnical and hydrology testing recommended earlier in this report and also planned by the proponent should determine whether there is need for a liner and any related drainage at the base of the tailings.

The Panel recommends that the proponent post results and reports on any hydrology and geotechnical test work subsequent to the FEIA on The Sisson Partnership web site and hold meetings with both the general public and First Nations to explain significance and respond to related concerns.

8.11 Concerns that Design of the Tailings Impoundment Dam Should be Different than Proposed

A number of submissions to the Panel expressed a concern that the proposed "centreline" impoundment design is less safe than a "downstream" design. The Panel does not have expertise in design of dam structures. However, equally critical to stability and safety is the nature of the foundation and proper management of the contained tailings. The European Community Reference Document on Best Available Techniques (BAT) for the Management of Tailings and Waste-rock in Mining Activities cites these and many other considerations to assist regulatory authorities when determining the BAT-based conditions of permits[276]:

> **"Dam design**
>
> "In addition to the measures described in Section 4.1 and Section 4.2, during the design phase (Section 4.2.1) of a tailings dam, BAT is to:
>
> - "use the once in a 100-year flood event as the design flood for the sizing of the emergency discharge capacity of a low hazard dam
> - "use the once in a 5000 – 10000-year flood event as the design flood for the sizing of the emergency discharge capacity of a high hazard dam.

[275] European Commission Reference Document on Best Available Techniques for Management of Tailings and Waste-Rock in Mining Activities, January 2009, page xii in Executive Summary, http://eippcb.jrc.ec.europa.eu/reference/BREF/mmr_adopted_0109.pdf

[276] ibid, pages viii to xiv of Executive Summary.

“Dam construction

“In addition to the measures described in Section 4.1 and Section 4.2, during the construction phase (Section 4.2.2) of a tailings dam, BAT is to:

- “strip the natural ground below the retaining dam of all vegetation and huminous soils (Section 4.4.3)
- “choose a dam construction material that is fit for the purpose and which will not weaken under operational or climatic conditions (Section 4.4.4).

“Raising dams

“In addition to the measures described in Section 4.1 and Section 4.2, during the constructional and operational phases (Sections 4.2.2 and 4.2.3) of a tailings dam, BAT is to:

- “evaluate the risk of a too high pore pressure and monitor the pore pressure before and during each raise. The evaluation should be done by an independent expert.
- “use conventional type dams (Section 4.4.6.1), under the following conditions, when:
    - the tailings are not suitable for dam construction
    - the impoundment is required for the storage of water
    - the tailings management site is in a remote and inaccessible location
    - retention of the tailings water is needed over an extended period for the degradation of a toxic element (e.g. cyanide)
    - the natural inflow into the impoundment is large or subject to high variations and water storage is needed for its control
- “use the upstream method of construction (Section 4.4.6.2), under the following conditions:
    - there is very low seismic risk
    - tailings are used for the construction of the dam: at least 40 – 60 % material with a particle size between 0.075 and 4 mm in whole tailings (does not apply for thickened tailings)
- “use the downstream method of construction (Section 4.4.6.3), under the following conditions, when:
    - sufficient amounts of dam construction material are available (e.g. tailings or waste-rock)
- “use the centreline method of construction (Section 4.4.6.4), under the following conditions, when:
    - the seismic risk is low.

“Dam operation

“In addition to the measures described in Section 4.1 and Section 4.2, during the operational phase (Section 4.2.3) of a tailings pond, BAT is to:

- monitor stability as further specified below
- provide for diversion of any discharge into the pond away from the pond in the event of difficulties
- provide alternative discharge facilities, possibly into another impoundment
- provide second decant facilities (e.g. emergency overflow, Section 4.4.9) and/or standby pump barges for emergencies, if the level of the free water in the pond reaches the pre- determined minimum freeboard (Section 4.4.8)
- measure ground movements with deep inclometers and have a knowledge of the pore pressure conditions
- provide adequate drainage (Section 4.4.10)
- maintain records of design and construction and any updates/changes in the
- design/construction
- maintain a dam safety manual as described in Section 4.2.3.1 in combination with
- independent audits as mentioned in Section 4.2.3.2
- educate staff and provide adequate training for staff."

Recommendation # 26:

The Panel recommends that the government follow recommendations of Amec Foster Wheeler which is understood to be conducting an evaluation of the proponent's dam design under a contract with NB Department of Energy and Mines.

8.12 Concerns of Groundwater Pollution from Drainage of TSF Pond Water into the Open Pit After Mine Closure

Whether there would be seepage of tailings pond water into bedrock from the open pit after mine closure can be predicted by the hydrology test work that has been recommended, is planned by the proponent or may have been done already. The quality of the water in the pit also is predictable and will improve over time. Any surface outflow from the open pit is to be treated for as long as it proves necessary before it enters the Napadogan Brook.

As the TSF footprint is advanced during operation and dam-building, uncontaminated topsoil, silt and clay could be scraped from the base of the proposed TSF and stockpiled. After mine closure, some uncontaminated silt could be introduced to the tailings pond and the remainder of the TSF capped with stockpiled topsoil and forested. The clay-silt on the pond bottom should prevent exposure of the rainfall recharge-dependent pond water to the sulphide-bearing tailings thus resulting in drainage into the open pit being of a quality similar to water in natural ponds of the area. The deep water in the open pit would become stratified and oxygen-poor at depth, thus ensuring that sulphur-bearing minerals in the pit floor and walls do not generate acid.

Recommendation # 27:

The Panel recommends that alternative scenarios for closure be addressed and modified as more information is generated by further hydrology investigations at Sisson, from seepage management during mine operation and from the post-closure experience of other open pit mines.

8.13 Concerns about Number of Drill Cores Sampled for Leach and Dust Characterization Testing

A few submissions questioned whether "39 drill cores of the available 304" was an adequate proportion to test for predicting the chemistry and potential health impacts of dust and, presumably, tailings leachate.

Many of the 304-cored holes were drilled[277] before the exploration teams focused on the area, which is to be mined. This is why Map 6[278] shows considerably fewer than 304 points representing holes drilled within the proposed pit outline. Of these holes, the small white circles represent those that extracted rock cores prior to 2011 and other colours represent those drilled in 2011. All of the holes and portions of holes not drilled into the rock to be mined would and should have been omitted from tests for predicting dust and leachate chemical analyses because that rock will not be mined or exposed by mining to water and air.

Map 5[279] below shows the 39 drill holes from which composites of core intervals representative of ore and rock types were selected for testing. For comparison, Map 6 from the Samuel Engineering figure shows all holes drilled in the pit area.

The Panel has no concerns about the representativeness of the SRK sampling or the analytical results. However, some tests were reported to be continuing. and results in the FEIA might differ slightly from final results. Because the tailings subjected to testing were not produced by a pilot plant that worked correctly, actual tailings may differ slightly from what was produced.

Recommendation # 28:

The Panel recommends that analytical results from integrated pilot plant ore feed and tailings as well as results of the leaching tests on these materials form the basis for predictive leachate and dust chemistry.

[277] http://www.sissonpartnership.com/i/seiar/4-Other-Documents/02-Sisson-43-101-Technical-Report-Final-Jan13.pdf. Since 1979, "some 64,768 m of drilling has been completed on the property in 304 drill holes. Average core recovery for this drilling was 97.6%", page 67.
[278] Ibid, page 71
[279] http://www.sissonpartnership.com/i/seiar/3-Technical-Study-Reports/03-Sisson_MLARD_Potential_Characterization_SRK_7Aug2013.pdf, page 14

Map 5: Sisson proposed mine footprint showing location of boreholes for extracting rock samples tested for metal leaching (ML) and acid rock drainage (ARD) potential

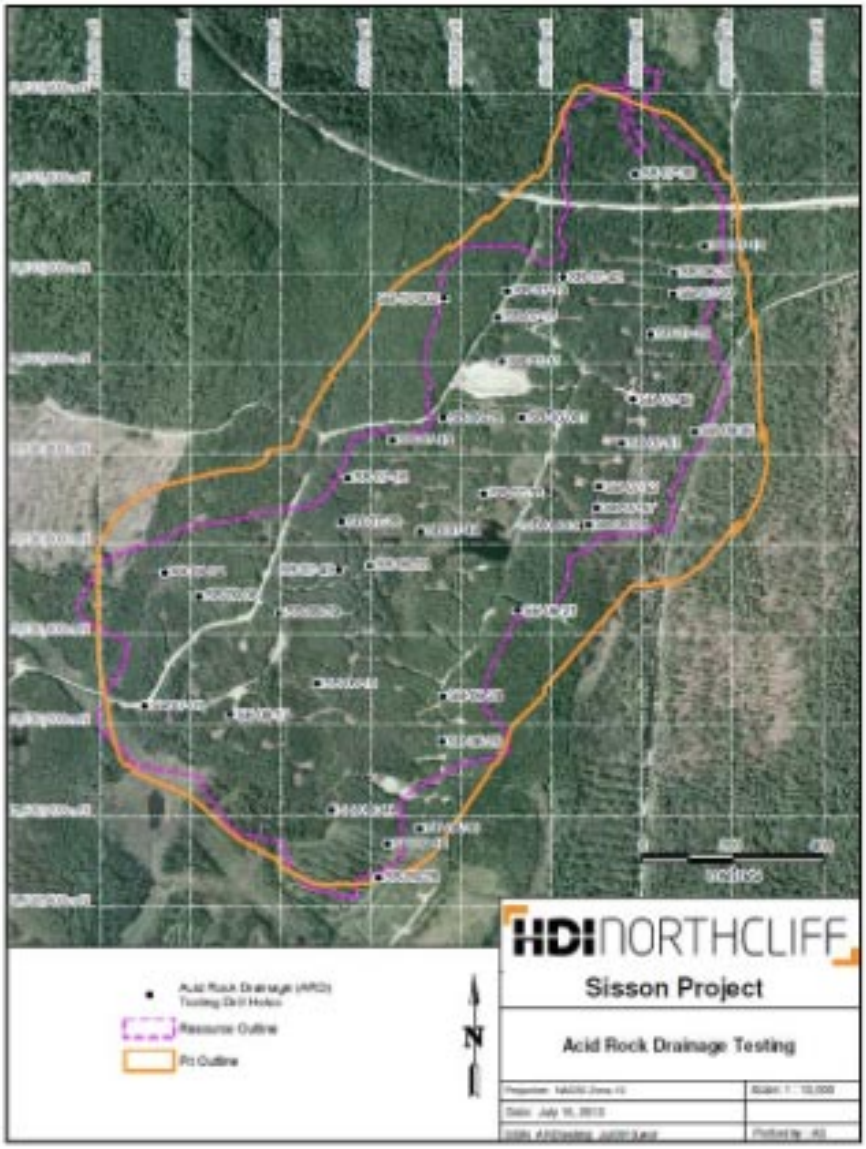


Figure 5: Proposed mining area and location of drill hole collars used for ML/ARD characterization studies (Source: Northcliff).

Map 6: Sisson proposed mine footprint showing location of historical and 2011 boreholes, with purpose for which the 2011 holes were drilled

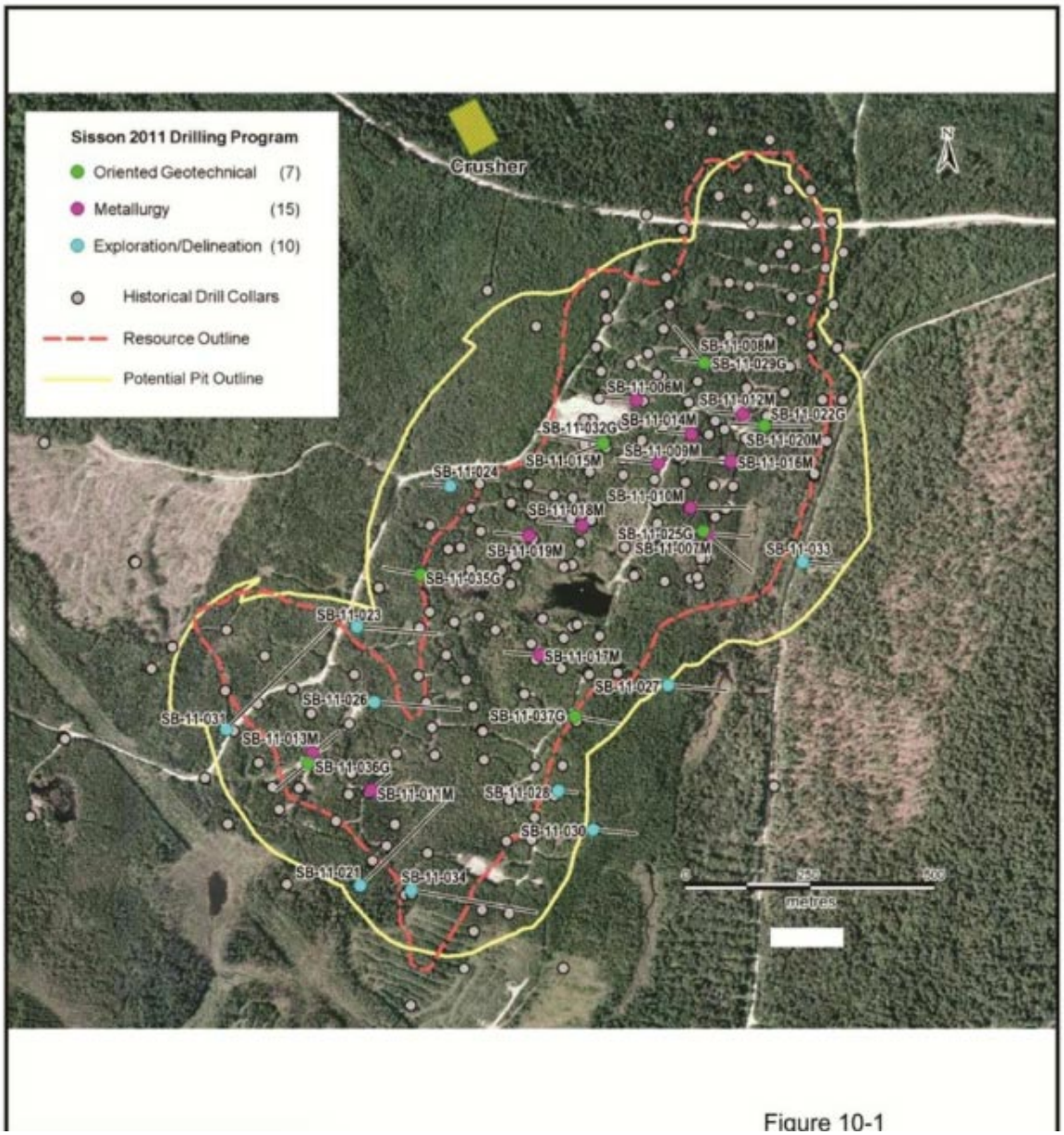


Figure 10-1

9.0 Bonding

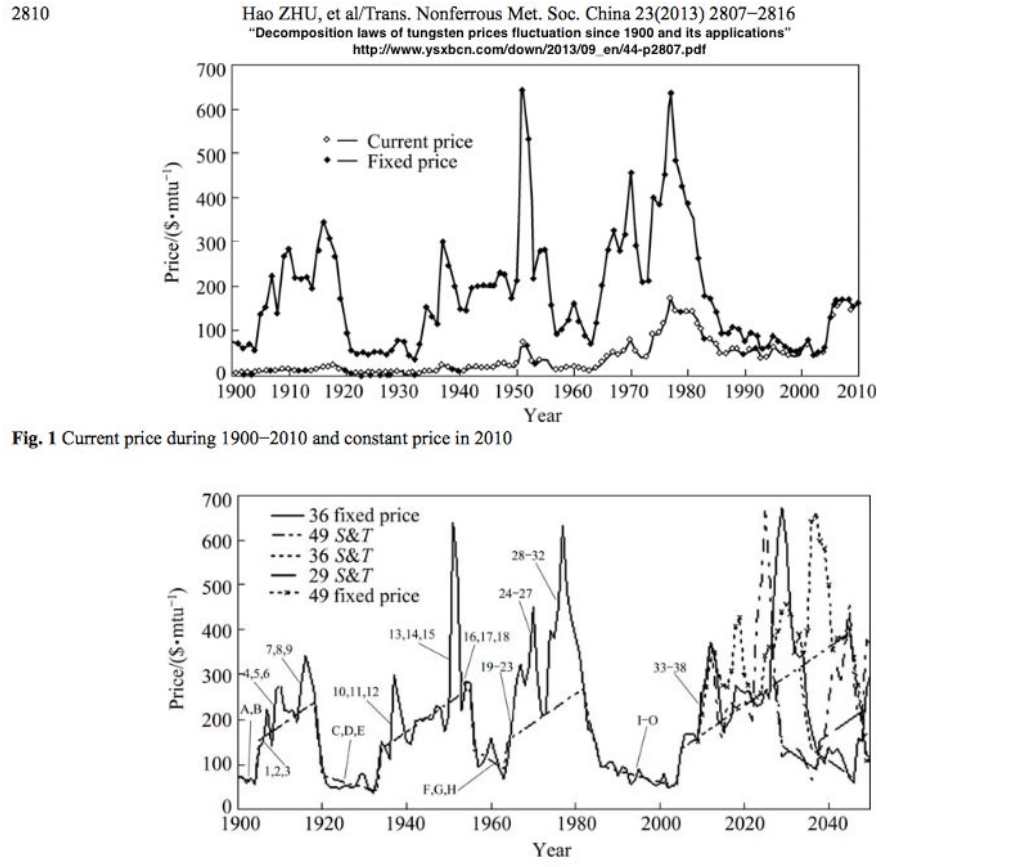
ISSUE: Public concern that proposed environmental and reclamation bonding will be insufficient and that the Province will have to either incur a portion of such costs during periods of unanticipated mine closure and possibly in perpetuity after final closure, or accept the environmental consequences.

The tungsten price has displayed much greater swings than the prices of most other metals as evidenced by Figure 2. Chinese researchers project (Figure 5, lower half) that the 2013 price spike was the beginning of a repeat of previous patterns[280].

Tungsten deposits often have been brought to production at or near the peak price on the assumption that investors would receive a decent return before the price would fall and/or that a long term increase in the real tungsten price finally was at hand. But, the anticipated real price increase has proven to be elusive and the result has been closure of mines such as that opened by Billiton, then a subsidiary of Shell Oil, at Mt. Pleasant in Charlotte County in the early 1980's and which closed in 1985 following a price collapse. Canada's only other tungsten mine, Cantung, which is in the Northwest Territories near the Yukon border, was brought to production in 1962, has been closed periodically for a total of 20 years since then and since June 2015 is again under creditor protection. The two mines outside China which are being brought to production in 2015 and 2016, namely Drakelands (Wolf Minerals) near Plymouth in England and Barruecopardo (Ormondo Mining) in western Spain, both have produced in past periods of high tungsten prices. The proposed Sisson mine has a higher forecast cost per unit of tungsten production than forecast for these other two mines.

[280] **Hao ZHU**, **et al**, 2013, Decomposition laws of tungsten prices fluctuation since 1900 and its applications, Trans. Nonferrous Met. Soc. China, http://www.tnmsc.cn/down/2013/09_en/44-p2807.pdf, pages 2807−2816, Figure from p. 2810.

Figure 5: Current and constant dollar tungsten price history for 1900 to 2010 and constant dollar projection scenarios to 2050



Based on the history of tungsten mining as described above, the greatest environmental risk for the Province is that the mine will close periodically, or, like Mt. Pleasant, will close prematurely and remain closed for decades with the company in liquidation and having insufficient funds to maintain water treatment or carry out a closure and reclamation plan. In consideration of this risk, the proposed bonding as outlined below would be reasonable, if:

- the redeemable value of each bond were to be the stated amount plus interest to the date of redemption rather than the value at maturity including interest as implied in the February 2015 FEIA report.
- the amount of each bond were to be adjusted on the basis of studies such as those being conducted by AMEC Foster Wheeler

- the Province were to adjust the amount of each bond at the end of each five years, taking into consideration inflation and new cost estimates resulting from data from environmental monitoring and technological advances
- the Sisson project construction were to be delayed, the amount of each bond would be increased to account for inflation from 2014 until the year when each bond would be posted
- a liability insurance policy to protect the Province in the case of a failure of the tailings containment or other such happening and patterned on the policy for the Drakelands tungsten mine in Devon, UK , ie. Environmental Liability Insurance.[281]

9.1 Bonding proposed in FEIA

The Sisson Project FEIA proposes and provides a rationale for three bonds[282] that are to mitigate liability to the Province. These are:

1) Reclamation bonding

$ 7,500,000 posted at the beginning of construction;

$16,500,000 posted at beginning of year 4 from commencement of construction, i.e. beginning of year 2 of mine start-up, commissioning and operation;

for a sub-total of $24,000,000 “value….at maturity at the end of year 6” of operation with provision for "no interest or discount”.

“Subsequent bond needs would be reviewed and posted for each (5) five year period thereafter at the beginning of these periods…….At the end of the mine life, the total required bonding amount is estimated to be $41.8M, which would be covered by these periodic bond placements. The bond values will vary based on the effective interest rate at the time of the bond placements….”

[281] Wolf Minerals (UK) Ltd./SLR, May 2013, Hemerdon Mining Waste Facility, Environmental Permit Application, Financial Provision, http://www.southhams.gov.uk/CHttpHandler.ashx?id=5689&p=0 , Pages 6 & 7

“The Company will also hold Environmental Liability Insurance cover, in the event of Environmental Damage resulting from operations carried out at Hemerdon Mine, which results in a claim against the Company by a Regulator.

- Specifically ‘the insurer will pay clean-up costs arising from a pollution condition in or under or migrating from the insured premises listed in the schedule providing such clean-up costs are the result of a claim against the named insured by a regulator’.
- The insurance policy will provide cover of £20 million with £100,000 deductible.

“Policies will be put in place for the construction period and on a rolling basis for the operational period. It is anticipated that a five-year policy would be enacted immediately prior to closure.”

[282] FEIA, Appendix H, Section 9.0 Description of Bonds, pages 131-138 and Appendix A of Appendix H, Table 9.4

2) Environmental protection bonding

$500,000 posted prior to start of construction;

$500,000 posted at beginning of second year of construction;

$500,000 posted at beginning of start-up and commissioning year;

for a sub-total of $1,500,000 “cumulative value of bonds (no interest)”.

“This bond would be established to accommodate the cost of monitoring during the active reclamation period (one year) and for a subsequent two-year mine Closure period.”

3) Post closure water treatment bonding

$4,600,000 posted at the beginning of the first year of operation after mine start-up and commissioning year for capital cost (CAPEX) of the plant to treat mine site discharge water in perpetuity;

$200,000 posted at the beginning of the sixth year of operation after start-up and commissioning year for balance of CAPEX of the plant to treat water in perpetuity;

$19,700,000 posted at the beginning of the first year of operation after mine start-up and commissioning year for operating cost (OPEX) of the plant to treat mine site discharge water in perpetuity;

$1,500,000 posted at the beginning of the sixth year of operation after start-up and commissioning year for balance of OPEX of the plant to treat water in perpetuity;

$100,000 posted at the beginning of the eleventh year of operation after start-up and commissioning year for balance of OPEX of the plant to treat water in perpetuity;

$700,000 posted at the beginning of the sixteenth year of operation after start-up and commissioning year for balance of OPEX of the plant to treat water in perpetuity;

for a sub-total of $26,800,000 “cumulative value of water treatment bonds (no interest)”

“The bond values will vary based on the effective interest rate at the time of the bond placements…”

TOTAL BONDS - construction & operation…. $52,300,000

TOTAL BONDS, including end of mine life…. $65,300,000 “Estimated Bond Requirement End of Life of Mine (Year 27)”

9.2 Bonding provisions for Wolf Minerals' Hemerdon tungsten mine

In addition to the Environmental Liability Insurance cited above, the Environmental Permit Application of Wolf Minerals[283] specified the posting of a "planning bond" of £5 million, but the following note from Wolf Minerals annual report for the year ended 30 June 2015 suggests that there are additional bonds[284]:

> "Other assets comprise a bond agreement and cash collateral deposits the Group has provided as security to various parties in connection with environmental restoration obligations. The bond and collateral deposits are not released until the underlying obligations have been fulfilled by the Group to the satisfaction of the UK authorities. The two major non-current collateral deposits are a £9.05M (~$18.5M[285]) financial provision for the restoration bond and a £0.75M (~$1.53M) environmental waste permit.".

It is noteworthy that the bond and cash collateral deposits considerably exceed what Wolf Minerals has made as a provision for mine rehabilitation ($5,073,528) in their financial statement for the year ended 30 June 2015:

> "1. Rehabilitation costs will be incurred by the Group at the end of the operating life of the Project. The Group assesses its rehabilitation provision at each reporting date. The ultimate rehabilitation costs are uncertain and cost estimates can vary in response to various factors, including estimates of the extent and costs of rehabilitation activities, regulatory changes, inflation rates and changes in discount rates. These uncertainties may result in future actual expenditure differing from the amounts currently provided and there could be significant adjustments to the provisions established which would affect future financial results. The provision as at 30 June 2015 represents management's best estimate of the present value of future rehabilitation costs required."[286]
>
> "2. The Group makes full provision for the future cost of rehabilitating mine sites and associated production facilities on a discounted basis at the time of constructing the mine and installing those facilities. The rehabilitation provision represents the present value of rehabilitation costs relating to the Project site which are expected to be incurred up to and following the expiration date of the mining licence. The provision has been created based upon the updated Definitive Feasibility Study. Assumptions based upon the current economic environment and development work completed at the Project have been made,

[283] Wolf Minerals (UK) Ltd./SLR, May 2013, Hemerdon Mining Waste Facility, Environmental Permit Application, Financial Provision, http://www.southhams.gov.uk/CHttpHandler.ashx?id=5689&p=0 , Pages 5 & 6

[293] Wolf Minerals Annual Financial Report for the Year Ended 30 June 2015, 17 Sept. 2015, http://www.wolfminerals.com.au/IRM/Company/ShowPage.aspx/PDFs/1795-10000000/WolfMinerals2015AnnualReporttoShareholders
Note 12, footnote 2, page 43 & page 26 "Wolf Minerals financial statements are presented in Australian dollars".

[286] Ibid, Note 1, footnote iv, page 30

which management believes are a reasonable basis upon which to estimate the future liability, and will be reviewed regularly to take into account any material changes to the assumptions. The actual rehabilitation costs and works required will ultimately depend upon future market prices for the necessary rehabilitation works required, changes in future regulatory requirements and the timing on when the mine ceases to operate commercially. The discount rate used in the calculation of the provision as at 30 June 2015 is 3% per annum. The value of the undiscounted provision is $7,084,083."[287]

The Panel's following recommendation is made in consideration of the risk factors.

Recommendation # 29:

That a bonding and liability insurance package be required of the Sisson proponent commensurate with the size and prospective cost differential over the Hemerdon/Drakelands mine.

10.0 Health Issues

10.1 Lack of a Health Impact Assessment:

Several submissions raised the issue that the Environmental Impact Assessment (EIA) did not include a formal Health Impact Assessment (HIA). This issue was generally expressed in the context that the Medical Officer of Health, Dr. Elish Cleary, had indicated in her report entitled "Chief Medical Officer of Health's Recommendations Concerning Shale Gas Development in New Brunswick" (September 2012) that "As part of an improved approach to Department of Health review of all industrial projects, a requirement for conducting a Health Impact Assessment should also be extended to industrial projects in other sectors as well (scope to be defined)."

The United States National Research Council (NRC, 2011)[288] defines HIA as "a systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program or project on the health of a population and the distribution of those effects within a population. HIAs provide recommendations on monitoring and managing those effects."

Examples of specific concerns, relative to the issue of an HIA, voiced in submissions include the following:

[287] Ibid, Note 16, footnote 1, page 44.
[288] NRC. 2011. Improving Health in the United States: The Role of Health Impact Assessment. National Research Council. National Academies Press. Washington, DC.

- The social impact of a "boom and bust" economy;
- Potential impact of increased truck traffic;
- Potential impact of noise pollution;
- Psychosocial health impacts;
- Need to develop a comprehensive HIA process for this project; a recommendation that the DOH, specifically the Chief MOH be given a more prominent and regulated role in the review of projects that trigger federal or provincial EIA processes. The Office of the Chief Medical Officer of Health (CMOH) should be given the responsibility and resources to develop an HIA framework template, which could be applied to the current review of the Sisson Mine project.

The Guidelines for the EIA were finalized in 2009[289], three years before the Dr. Cleary's report. Therefore, it is not surprizing that the guidelines did not contain explicit mention of an HIA process.

It is not common practice for EIAs in Canada to require an HIA be completed. Nonetheless, many of the issues typically captured in an HIA were outlined in the EIA guidelines. For example, in Section 4.7 of the Guidelines (Community Services and Infrastructure), the following requirements were stated:

> **"**An assessment of the community services and infrastructure will be required in order to evaluate the potential impacts from the large number of workers associated with the construction and operation of this facility both on a temporary and permanent basis. Community services and infrastructure includes: local emergency response, ongoing support services (health and social services), accommodation, food services, and entertainment."[290]

Elsewhere, the Guidelines made other references to Health Impact Assessment.

> "Any increased demands on the above community services and infrastructure, (as large numbers of temporary workers in an area could create unique concerns during the construction phase) will need to be assessed. Such a situation may result in increased need for policing and social services in certain areas."[291]

The Guidelines also mentioned that an assessment was needed regarding any increased noise and transportation (increased truck traffic):

> "Assess the environmental effects of the proposed project on traffic patterns/flows, including a prediction with respect to current/future road infrastructure and use with reference to safety and the integrity of infrastructure on traffic flows, level of service, and accident rates. Predict the impacts of increased ground transportation in the region and specifically traffic to and from the proposed mine site with reference to noise, safety, risks of spills and air

[289] NB DOE 2009. Final Guidelines for an Environmental Impact Assessment: Geodex Sisson Brook Project (Open Pit Mine). March 1, 2009
[290] Page 19, NB DOE, 2009, Final Guidelines
[291] Page 20, NB DOE, 2009, Final Guidelines

quality. The study should consider localized impacts that may occur from fossil fuel combustion as a result of increased traffic."[292]

With respect to health, the Guidelines state the need to use a human health and ecological risk assessment framework, as opposed to a HIA framework[293]. Therefore, it is reasonable that an HIA was not completed for the Final EIA. Although the Chief Medical Officer of Health in NB has clearly indicated a preference for an HIA to be completed for major infrastructure projects in 2012, this has not yet been translated into policy or legislation. HIA can provide useful insight into how a project may holistically impact health, but this was not required as part of the Final Guidelines for the Sisson Project. In the Panel's opinion, it is not reasonable to expect that this framework now be required for this project.

The Panel also notes, however, that some provinces, such as Quebec[294] are starting to move forward with the implementation or consideration of this type of framework for the assessment of larger projects. In light of Dr. Cleary's recommendation in 2012, and the further development of the science of HIA in large development projects, New Brunswick should consider the inclusion of an HIA approach in the scoping stage of establishing EIA guidelines.

Recommendation # 30:

New Brunswick should consider the inclusion of an HIA approach in the scoping stage of Guideline development for future large projects in NB.

10.2 Air Quality Comments:

Many individuals voiced concerns related to air quality. These concerns are summarized below:

- The inputs to the AERMOD air emission modeling (air quality model used to predict future air quality related to mine emissions) were highly uncertain and used mean values and not 95%UCL values, and thus require re-compilation after more appropriate sampling. Independent experts reported flaws in the airborne pollution predictions Therefore, risks to human health are not adequately assessed and could be a lot higher than predicted (particularly for arsenic);
- Visibility concerns;
- Verification of air quality modelling predictions and need for an ambient air monitoring programme beyond complaints-based monitoring;
- Lack of use of more stringent air quality guidelines for criteria air contaminants;

[292] Page 21, NB DOE 2009, Final Guidelines
[293] Page 22, NB DOE 2009, Final Guidelines
[294] http://www.ncchpp.ca/54/health_impact_assessment.ccnpps

- Need for a Dustfall Collection Programme;
- Dusts from the mine will travel far, and will fall onto plants and animals, as well as water and people. Deposition of dusts and metals onto soil and vegetation will potentially affect consumers of country foods and wildlife;
- The likely impacts of air pollution on human health, and on the animals and plants First Nations rely on;
- People will be breathing arsenic from the fine dusts, which the project will generate;
- Air pollution will affect favourite hiking places, such as Balancing Rock; Chimney Rock and Balls Falls;

Each of these issues is addressed in the sections which follow. Concerns related to dusts impacting country or traditional foods are addressed in Section 10.3.

Issue 1: Input to the Air Dispersion Model was Uncertain with Respect to Geochemistry Characterization of Metals Air Quality; Independent experts reported flaws in the airborne pollution predictions, and therefore risks to human health are not adequately assessed and could be higher.

Air quality associated with various mine phases must be predicted using a computerized air dispersion model. The model selected (AERMOD or American Meteorological Society and Environmental Protection Agency developed Regulatory Model dispersion model) is a standardized one, which is widely used and accepted. Commentators and experts did not indicate concerns regarding the selection and application of this model for assessing air quality. In addition, there do not appear to be concerns about the validity of the Criteria Air Contaminant predictions. Rather, concerns were raised about the geochemistry input values used to predict metals air quality. Specifically, some experts expressed apprehension that an average metal concentration was used, as opposed to 95th upper confidence limit of the mean values[295]to characterize metals air quality, and that the Proponent used only 39 of the drill cores (of the 304 available drill cores within the resource perimeter) to estimate the occurrence of trace metals of importance to the Human Health and Ecological Risk Assessment.

The Panel reviewed the geochemistry drill core data. Many of the 304 available drill cores were done before the exploration teams identified the enrichment within the present pit area, and hence, many of these earlier drill cores are not relevant to characterizing geochemistry of the ore from the pit area. In the Panel's opinion therefore, the use of the 39 drill cores to characterize ore geochemistry is appropriate.

With respect to the use of the average versus the 95th Upper Confidence Limit (UCL) of the dataset, the 95th UCL would be a more appropriate estimate of the metal's mean concentration. However, weighted averages or average concentrations are also commonly used to calculate the geochemistry of mine dust. Chronic exposure estimates provided in the Final EIA do not suggest any health risks related to predicted air

[295] Table 3.4.33 of the Final EIA

concentrations of metals, particularly at the locations of nearby cabins. While the 95th UCL concentrations of the metals would provide a higher estimate of exposure, the overall conclusion of the potential for health effects is unlikely to change. The Panel is recommending air quality monitoring be conducted to confirm that predictions within the Final EIA are reasonable (see additional comments below).

Issue 2: Visibility

Concerns were also voiced with respect to potential visibility issues, or impacts on visibility, associated with mine site activities. An assessment of visibility impacts was not requested in the Guidelines for the Project[296], and hence, this issue was not specifically addressed in the Final EIA. SML has addressed this concern with a response to a related Information Request (IR) that appears reasonable. Based on the predicted air quality in the Final EIA, significant visibility impacts would not be anticipated in areas outside of the Project Development Area (PDA), and are likely to be limited within the PDA. No recommendations related to this issue are necessary.

Issue 3: Lack of Verification of Air Quality Modelling Predictions and Need for an Ambient Air Monitoring Program beyond Complaints-Based Monitoring

There was also some commentary that the air dispersion model has not yet been validated for this Project, and so the degree of conservatism in the predictions cannot be confirmed, based on available information. While SML responded to this issue in the IRs in a reasonable fashion, the basis of the question appears to be related to air quality monitoring if the project is approved. The Panel's view is that since SML has indicated they have a high degree of confidence in the air quality predictions, there is no need for robust air quality monitoring, apart from complaints-based monitoring (if complaints are received, particulate monitoring for dust may be carried out, to determine if adaptive management measures are needed)[297]. In responses to the IRs, it is clear that SML recognizes that the GNB will likely require air quality monitoring (which would be defined at a later date) as part of the Approval to Operate. SML states that they "anticipate the requirement for, and will comply with, ambient air quality monitoring requirements in the Approval to Operate."[298] While predicted concentrations of Criteria Air Contaminants (CACs) are generally within ambient air quality guidelines, and while the air dispersion model used (AERMOD) is a reasonable model for predicting ambient air quality associated with industrial operations, there is always uncertainty in any modelling exercise. Therefore, it would be appropriate to include air monitoring of selected key parameters in the baseline (to establish pre-construction air quality), and continue monitoring through the various mine phases. This approach would serve to validate the air quality predictions for these parameters, and would be important in determining whether adaptive management responses are required if exceedances are noted. Recommendations related to this issue are provided at the end of this section.

[296] NB DOE, 2009 Final Guidelines
[297] Page 9-27; Section 9.4.4.1, Final EIA
[298] Submission by MSES; page 32 of 208

Issue 4: Request to Commit SML to a Dustfall Collection and Monitoring Program, Including Speciation, and a Monitoring Plan to Collect Dustfall Along Road Ways

Based on information presented in the EIA, the predominant source of dusts outside the PDA is related to road dust, as opposed to enriched metals dusts that would be related to ore geochemistry from within the mine site operations. Since dustfall near roads is not anticipated to be related to mineralized ore, collecting dustfall along roadways would seem unnecessary. Such dust typically settles reasonably close to roadways. Since SML has committed to monitoring traditional vegetation (fiddleheads, berries, traditional medicines)[299] for metals (which would provide much more appropriate data for assessment of potential changes in the environment and assessment of human health risks associated with consumption), the Panel believes this issue is adequately addressed.

The request for dustfall monitoring, including speciation, at selected locations near the plant operations and near roadways to demonstrate that off-site transport is not occurring was also made. Dustfall monitoring, while useful, provides only an indication of the amount of dust over a month long time frame (e.g., mg dust/cm^2/30-days). This type of monitoring is conducted at some mine sites for validation and/or monitoring purposes, at selected locations[300]. Dustfall predictions for the SML Project were not specifically presented in the EIA (relative to a specific guideline), but TSP, PM10 and PM2.5 were predicted. If dustfall were to be collected at the current project, it would be important to pre-establish the benchmark to which the data will be compared to (there is no existing dustfall guideline in New Brunswick). The purpose of monitoring could be to determine whether dustfall in areas outside the PDA is within reasonable limits (as defined by the pre-selected benchmarks). If dustfall is found to be outside the selected benchmarks, mitigation measures could be enhanced or implemented to reduce dustfall.

Looking at this issue from a human health perspective, dustfall data (and metals speciation of dustfall) will not answer any questions related to possible human exposures to dusts, as the size of particles captured in dustfall monitoring are too large to be inhaled into the respiratory system. In light of this, speciation of metals on dustfall is difficult to interpret from a health perspective, due to the large size of particles, and the lack of appropriate benchmarks to compare these data to (e.g., comparison of metals in dustfall to ambient air quality guidelines for metals in fine particulate matter would be inappropriate).

SML has committed to monitoring vegetation and other traditional foods for metals. This should address the metals speciation concern in a more specific manner, and will generate data that can be used in the future to assess human health implications. The

[299] Page 9-33; Final EIA

[300] E.g., Meadowbank Mine, Nunavut. ftp://ftp.nirb.ca/03-MONITORING/03MN107-MEADOWBANK%20GOLD%20MINE/03-ANNUAL%20REPORTS/02-PROPONENT/2012/01-REPORT/130419-03MN107-App%20G7%20Air%20Monitoring-IA2E.pdf

Panel is recommending that an ambient air quality monitoring program be included as a Condition of Approval. Dustfall monitoring could be considered as part of the ambient air program for the purpose of enhancing the understanding metals speciation, but these data cannot be compared to ambient air quality guidelines. If dustfall is selected for monitoring, it could be used to verify predictions related to facility operations, but the Proponent would have to model dustfall specifically for this to occur.

Issue 5: Dusts from the Mine will Travel Far, and will Fall out onto Plants and Animals, as well as Water and People. Deposition of Dusts and Metals onto Soil and Vegetation, and Possible Effects to Consumers of Country Foods and Wildlife

Concerns were expressed in several community meetings that dusts from the mine will disperse over a wide area and well outside the PDA. The EIA has provided an assessment of air dispersion related to dusts using a widely accepted modelling approach (AERMOD) as a tool to predict future dispersion. The Panel's opinion of the approach and assessment taken in the EIA is that it captures these issues. The possible dispersion of dust in the area has been assessed using a standardized and widely accepted modelling approach. The dispersion of Total Suspended Particulate Matter (TSP) is within acceptable guidelines in the construction phase of the Project[301] in all areas (including the PDA), with the exception of some exceedances related to road dust generated by truck traffic during construction. For operations, there are some exceedances of ambient air quality guidelines predicted within the PDA, but the maximum predicted concentrations of TSP outside of the PDA are within the guidelines[302]. These exceedances have been attributed to dusty conditions near the primary crusher for the Project, and are predicted to occur infrequently (4 predicted exceedances over 6 years of modelled meteorological data)[303]. In addition, infrequent exceedances along roads were predicted during operations. The concentration of this size of particulate matter in baseline (before the proposed mine construction or operations) is estimated at 23 $\mu g/m^3$, and, if the mine is approved, predicted future concentrations will be slightly above this baseline value during construction (approximately 26 $\mu g/m^3$ outside the PDA)[304] and will be approximately double baseline immediate outside the PDA during operations, with concentrations decreasing with increased distance from the mine[305]. These concentrations are maximum predictions, and are within regulatory limits, suggesting that the dispersion of dusts will be limited.

Fine particulate matter ($PM_{2.5}$) is also estimated to be within ambient air quality guidelines during both construction and operations, outside the PDA. SML has

[301] Figure 7.1.3, Final EIA
[302] Figure 7.1.7, Final EIA
[303] Page 8-31, Final EIA
[304] Estimated from Figure 7.1.3, Final EIA
[305] Estimated from Figure 7.1.7, Final EIA

indicated in the EIA that complaint-based monitoring of dusts will be undertaken[306], but in the Panel's opinion, more robust air quality monitoring should be undertaken to validate the predicted concentrations of dusts and finer particulate matter. Based on the predictions provided in the EIA, the dispersion of dusts from the mine will be fairly limited in aerial extent, and will be most pronounced inside the PDA, with limited dispersion outside the PDA area. Based on the predictions, areas near roads, and areas near the PDA will experience dustfall, and this dust will deposit in the environment. The potential implications of dust deposition on country foods and wildlife is discussed further in Section 10.3. SML has committed to monitor traditional foods (e.g., fiddleheads, berries, medicinal plants) in the surrounding environment. In addition to monitoring of traditional vegetation, monitoring of soil will increase the understanding of dust deposition in the environment, and possible future changes. Recommendations related to this issue are provided below.

Issue 6: The Likely Impacts of Air Pollution on Human Health, and on the Animals and Plants First Nations rely on

The Panel has reviewed the predicted air quality related to Criteria Air Contaminants (CACs), metals and odorous compounds provided in the Final EIA. The Panel's opinion is that based on the predictions and assessment provided, exposures to air contaminants in areas near the proposed mine where people could be residing or spending time in hunting or gathering activities, should be within ambient air quality guidelines. Given this, the likelihood of human health impacts related to air quality is considered low. The Panel has recommended that an ambient air quality monitoring program be stipulated as a Condition of Approval for the facility (see Section 10.2). This will provide measured data to assist in validating the predictions in the Final EIA. The monitoring can be used to identify the need for adaptive management to mitigate emissions of air contaminants, if levels are trending upwards beyond expectations.

Issue 7: Concern Related to Inhalation of Metals in Dusts released from the Mine (arsenic)

The Final EIA did provide an assessment of short term (acute) and long term (chronic) exposures to metals in dusts, and potential risks associated with the estimated exposures. This assessment relied on the air dispersion modelling to predict ground level air concentrations, and then compared those concentrations to either ambient air quality guidelines from various regulatory agencies, or inhalation toxicological reference values[307]. The assessment followed standardized assessment procedures. The Panel agrees with the conclusions made in the Final EIA regarding potential metals exposures. With respect to arsenic in dusts, based on predictions provided in the Final

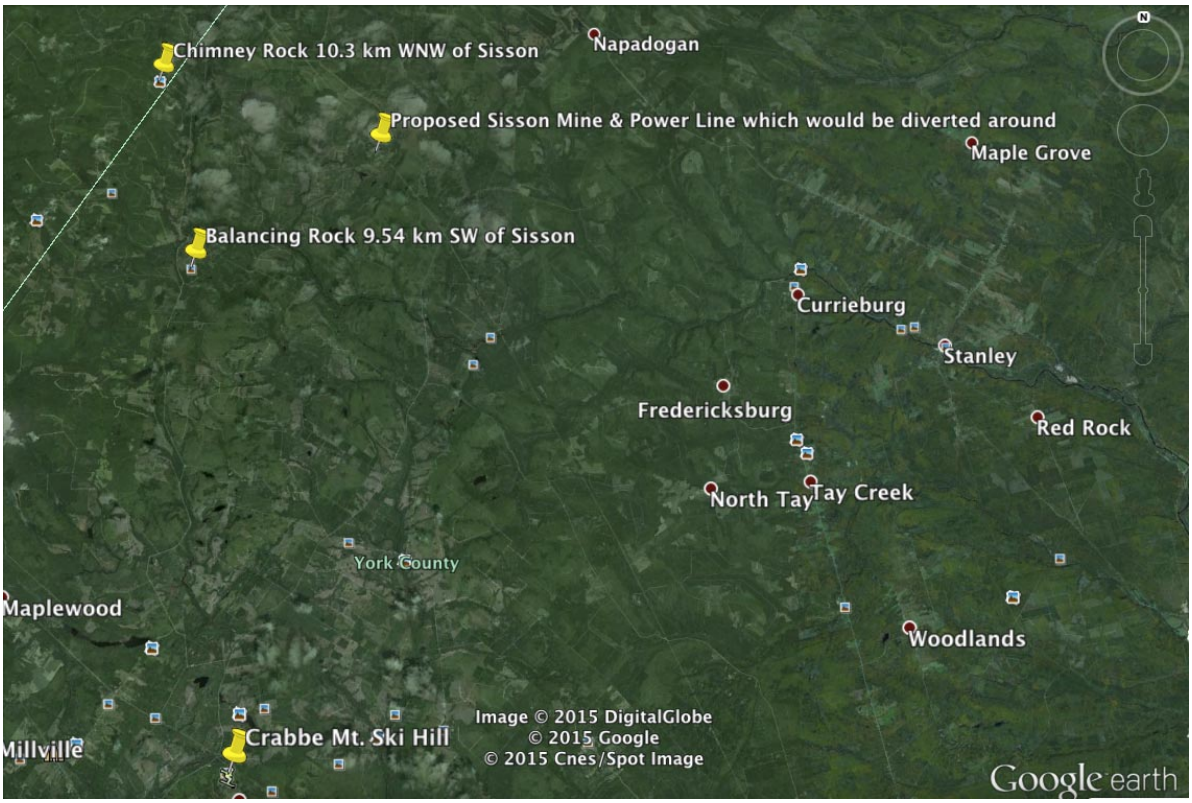
[306] Table 9.4.3, Final EIA
[307] Page 7-178 to 7-188; FEIA

EIA[308], a 1-hour exceedance for arsenic was predicted at an area within the PDA, near the edge of the quarry. Maximum chronic exposures did not exceed ambient air quality guidelines. Based on the low likelihood of a person being near the quarry when this type of excursion occurs, exposure at this predicted maximum level is considered unlikely. Maximum predictions were provided for the nearest residence, and these were well within guidelines[309].

Issue 8: Concerns related to Balancing Rock, Chimney Rock and Balls Falls being Affected by Air Quality

These three areas are important to First Nations. Based on maps found on the NB hiking website[310] Balancing Rock and Chimney Falls are in an area near the proposed mine. The distance of these two hiking paths from the SML Project is approximately 9.5 km and 10.3 km, respectively (see google earth image below).

Map 7: Google Earth Image of Proposed Mine Site and Chimney Rock and Balancing Rock Hiking Locations



[308] Page 7-185, FEIA
[309] Page 7-187 FEIA
[310] http://www.hikingnb.ca/Trails/MiramichiRegion.html

Based on the air quality predictions in the EIA, the Panel does not anticipate any noticeable change in air quality at these two locations. Regarding the Balls Falls hike mentioned in community meetings, the specific location of this hike could not be located on the NB hiking website, but it is not known to be located within the PDA. Therefore, based on predicted air quality for areas outside the PDA, this area should not experience any significant air quality impacts related to this project.

Issue 9: Air Quality Assessment Should Have Used More Stringent Air Quality Guidelines

The issue raised was that the air quality assessment should incorporate more recently developed guidelines from other agencies, such as the World Health Organization and the US Environmental Protection Agency, as opposed to just New Brunswick or Canada, and that any monitoring results be compared to relevant regulatory objectives and criteria.

For the air quality assessment, SML did give the standards and objectives to be used in the assessment in the Terms of Reference stage for the EIA, and no comments were received following either regulatory or public review. While no comments were received on the standards and objectives at the Terms of Reference stage, the Panel recognizes that there are more recently developed air quality guidelines for some Criteria Air Contaminants than those currently in use in New Brunswick and other parts of Canada.

A number of Criteria Air Contaminant guidelines have been updated in Canada, and are relevant for assessment of health implications of exposure. For example, ambient air quality guidelines for $PM_{2.5}$ and ozone were updated fairly recently, and new values were established as standards within Canada in the Spring of 2013 (Canadian Ambient Air Quality Standards or CAAQS)[311]. These CAAQS have specific objectives set for 2015 and for 2020. The 2020 objectives will be re-visited in 2016, to determine if any change is needed. These objectives are current and considered reasonable and appropriate for health evaluation of these parameters in ambient air. With respect to SO_2 and NO_2, the existing Canadian ambient air quality guidelines for these substances are dated, relative to the current science on health effects related to these substances. These two Criteria Air Contaminants are currently being re-evaluated and the federal government will issue revised ambient air quality guidelines for these compounds once the assessment process is complete. The details and timeline of the assessment process for SO_2 and NO_2 objective setting does not appear to be in the public domain[312]. It is anticipated that this process would build on the US Environmental Protection Agency's comprehensive assessments of these two air contaminants[313,314].

[311] http://www.ccme.ca/en/current_priorities/air/caaqs.html
[312] http://www.ccme.ca/en/current_priorities/air/caaqs.html
[313] US EPA (United States Environmental Protection Agency). 2010a. Primary National Ambient Air Quality Standards for Nitrogen Dioxide; Final Rule. Part III. Environmental Protection Agency. Federal Register. 40 CFR Parts 50 and 58. Tuesday February 9, 2010.

By the time the SML Project begins (if approved), the new CAAQS for SO_2 and NO_2 may be approved and implemented in New Brunswick, since the province is a signatory to the national standards process. With respect to the World Health Organization guidelines, these were last updated in 2005/2006[315], and since more recent updates will be available through the CAAQs process, the CAAQs updated guidelines (or the existing US EPA guidelines) would be assumed to represent the most recent science.

The Panel examined the predicted maximum concentrations of SO_2 and NO_2 in the Construction[316] and Operational[317] phases of the project presented in the Final EIA. The estimated (Baseline + Project) maxima will not exceed the more stringent US EPA air quality standards for these CACs. Given this, and that the air quality guidelines used in the assessment were reviewed and accepted prior to commencing the assessment, the Panel believes that the health assessment of air quality data in the Final EIA is adequate.

While the GNB is likely a stakeholder in the current federal re-evaluation of the CAAQs for SO_2 and NO_2 the Proponent should also be made aware that there may be future changes to the existing provincial air quality guidelines. As such, they may be required to meet more stringent guidelines than those currently stipulated in the province.

If monitoring is required by NBDOE, it would be unusual that regulatory objectives and/or criteria from outside of New Brunswick or Canada be cited as requirements for compliance.

Recommendation # 31:

For future health evaluation of the ambient air data, future monitoring data should be compared to appropriate health-based guidelines. For compliance purposes, NB guidelines would be applicable.

Issue 10: Concern Related to Radioactivity of the Mine Emissions

Another issue brought to the Panel's attention was that dusts released from the mine may be associated with radioactivity. While this was not assessed in the EIA, in the Panel's opinion, this issue does not require further evaluation. The main sources of radioactivity in rocks are minerals, which contain uranium (U), thorium (Th) and the

[314] U.S. EPA (United States Environmental Protection Agency). 2010b. Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network and Data Reporting Requirements for Sulfur Dioxide (SO2). General Overview. Office of Air and Radiation. Office of Air Quality Planning and Standards. June 2010. Power Point Presentation. United States Environmental Protection Agency. http://www.epa.gov/airquality/sulfurdioxide/pdfs/20100603presentation.pdf

[315] WHO (World Health Organization). 2006. WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. Global update 2005. Summary of risk assessment. World Health Organization. WHO/SDE/PHE/OEH/06.02.

[316] Page 7-13 FEIA

[317] Page 7-16 FEIA

potassium-40 (^{40}K) isotope which "makes up 0.012%", i.e., 120 parts per million (where 10,000 ppm = 1%), "of the total amount of potassium found in nature". Abundance of uranium (U) in the earth's crust (natural background) is in the 1.8 and 2.7 ppm range, whereas background ranges for Th are 6.0 to 9.6 ppm and ^{40}K is 1.8 to 2.5 ppm[318]. The Nashwaak granite[319] in the Sisson mine area contains 3.4 to 5 ppm U, 7.2 to 21 ppm Th and 4.16 to 4.98 ppm ^{40}K, all of which would average less than two times the natural background in the earth's crust. The uranium (U) content in Sisson ore is reported by Stantec[320] as 2.8 mg/kg (i.e., 2.8 ppm). Th as well as ^{40}K would be lower than in the Nashwaak granite because the ore is in granodiorite and gabbro which always contain less of all three elements than granite. To put the Sisson area Nashwaak granite and granodiorite in perspective, some granites such as True Hill, which is near the Mount Pleasant tungsten-tin-molybdenum deposit in southern New Brunswick, is reported[321] to contain 32 ppm U and 69.6 ppm Th.

Public exposure to granite rock and dust in New Brunswick is common as it is quarried on a large scale at Gayton near Moncton, Bald Mountain near Saint John[322] and at Bayside near St. Andrew's. Granite rock is mainly used for road construction and concrete aggregate. Counter tops, street curbing, and headstones also are made from different types of granitic. The Panel believes that mining and quarrying the Sisson area granitic rocks will result in equal or less health risk from dust-bearing radioactive elements than similar granite mining operations in other parts of New Brunswick.

Recommendation # 32

The Panel recommends that ambient air quality monitoring be required as a Condition of Approval for the Project. This should be implemented in advance of construction, to ensure adequate characterization of baseline data prior to Project commencement. This approach, in conjunction with monitoring through the various phases of the Project, will provide validation of air quality predictions in the EIA. Data resulting from the monitoring program can be used to implement adaptive management if measured concentrations are increasing beyond ambient air quality guidelines. The specifics of this program could include a variety of parameters, including some of the Criteria Air Contaminants, and/or dustfall.

Recommendation # 33

In addition to air quality and vegetation monitoring, the Panel recommends that soil quality monitoring be included as part of the ambient monitoring program associated with the mine. This monitoring will serve to validate EIA soil quality predictions (which

[318] (https://en.wikipedia.org/wiki/Abundance_of_elements_in_Earth%27s_crust
[319] Geological Survey of Canada Bulletin 436, 1993, http://geoscan.nrcan.gc.ca
[320] EIA Report, February 2015, p. 3-144 & 3-145
[321] Lentz and McAllister, 1990, p. 148
[322] (http://www.gulfoperators.com/gulf-operators-services-aggregate-supply-aggregate-sources.aspx

are directly associated with the deposition of dusts in the environment). Soil quality monitoring should be stipulated to involve a shallow sampling program (e.g., 0 – 5 cm soil depth), since dust deposition typically is measurable in shallow surficial soils. Comparable baseline soil chemistry characterization will be required prior to construction of the mine for comparison purposes.

10.3 Human Health Risk Assessment Comments:

The EIA included a Human Health Risk Assessment, which provides a predictive assessment of potential risks to selected future land users (known as "receptors"), based on plausible future land uses and potential emissions as a result of the presence of the facility in the PDA. The consultant followed a standardized framework developed by Health Canada[323], which is an accepted and appropriate framework for this type of assessment. As in any prospective project assessment, various project phases are considered by the consultant (e.g., construction, operations, decommissioning, reclamation and closure), and the project phase(s) with the highest emission potential are typically assessed in the HHRA. As per standard procedures, typically a "Baseline Case" is modelled, as well as a "Project Alone Case", and subsequently the baseline and project risks are summed in the "Project + Baseline Case" to examine risk potential associated with the addition of the future project to the existing environment. The outcomes of the HHRA are important to the development of management, monitoring and mitigation strategies associated with the various project phases, since the HHRA identifies which project activities and emissions (if any) pose potential risks to future site users, and hence, may require mitigation or monitoring. There were a variety of comments on the HHRA (or data feeding into the HHRA), as follows:

- Adequacy of baseline data, and lack of detail related to adaptive management plans;
- Lack of assessment of arsenic as a non-carcinogen;
- Assumptions related to speciation of arsenic and methyl mercury in fish tissues, and monitoring of these substances in fish;
- Lack of assessment of groundwater consumption in the HHRA, and concerns related to seepage from the TSF was adequately assessed (relative to groundwater);
- Concerns related to boron, thallium and arsenic human health risks related to fish consumption;
- Concern related to assumptions of food consumption from the Study area for vegetation and fish;

[323] Health Canada, 2010a Federal Contaminated Sites Risk Assessment in Canada, Part 1: Guidance on Human Health Risk Preliminary Qualitative Risk Assessment (PQRA), Version 2.0; Health Canada, 2010b. Federal Contaminated Sites Risk Assessment in Canada, Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical Specific Factors Version 2.0. Health Canada, 2010c. Federal Contaminated Sites Risk Assessment in Canada, Part V: Guidance on Complex Human Health Detailed Qualitative Risk Assessment for Chemicals ($DQRA_{CHEM}$).

- Lack of an occupational health assessment;

These issues are discussed in the sections, which follow.

Issue 1: Adequacy of Baseline Data and Lack of Detail related to Adaptive Management Plans

Several comments were made about the adequacy of the baseline dataset. The concerns can be summarized as being related to the adequacy of the existing dataset to speak to First Nations traditional foods (e.g., moose, berries, fish, and vegetation), as well as the potential for the existing baseline dataset to underestimate the true baseline, which could therefore underestimate the "Project + Baseline" risk estimates. If adequate baseline data are not collected prior to Construction, changes in the environment in a statistically meaningful fashion (based on comparisons to future monitoring data collected during construction, operations and closure) cannot be detected. As a result, there will be difficulties in validating impact predictions.

The Panel understands that baseline monitoring for some media (such as groundwater) has continued since the submission of the Final EIA but the Proponent has not projected additional baseline data collection for some other media. In addition, several monitoring programmes are being recommended in this Panel Report, and the GNB and federal governments will likely recommend other monitoring programmes as well. The design of future monitoring programs needs to consider the baseline data to ensure that adequately robust datasets are available for comparison purposes and statistical analysis. The Panel recommends that the design of all monitoring programs present the details of available baseline data, and indicate the proposed additional baseline data sampling requirements clearly. This will mean that the proposed programmes can be reviewed well in advance of approval and implementation and will ensure adequate characterization of baseline conditions, pre-construction.

The Panel recommends that an adequately robust set of baseline data be compiled for soils (shallow depth), surface waters, groundwater, vegetation (country foods), air, and fish tissue. This will ensure that any changes in these media can be assessed through comparisons to operational monitoring data. Understanding baseline conditions is critical to the interpretation of operational monitoring data. From this, an adaptive management framework can be developed and mitigation actions taken if environmental concentrations are increasing and are projected to exceed EIA predictions.

Several comments were also submitted regarding lack of substantive information on adaptive management plans within the FEIA. Details related to specific adaptive management plans were not located in Volume 9 of the FEIA, and should be developed in advance of operations, such that triggers or thresholds are pre-established for when management action should be implemented, and what types of actions may be taken (e.g., increased or expanded monitoring; development of site specific water quality objectives; identification of contributing sources and mitigation plans). Adaptive management plans are becoming more commonplace for mining operations, particularly

in the Northwest Territories and Nunavut. Racher et al (2011) developed a draft framework for the Wek'e`ezhı`i Land and Water Board (WLWB) in the Northwest Territories in 2010[324]. While this framework has not formally been accepted by the WLWB, elements of this approach are being used in various adaptive management plans in northern mining operations[325]. This approach involves establishing an aquatic effects monitoring program response framework, which includes action levels or thresholds for early warning, such that as monitoring data are reviewed, and as action levels are approached or passed, management actions can be implemented to reduce the potential for impacts (see Table 1 from Racher et al, 2011, below as an example). The development of this type of framework and approach by the Proponent would enable discussion and review with regulatory and other stakeholders, such that a clear framework is established prior to operations.

Table 5: Relationship between Monitoring Results, Action Level and Management Actions

Table 1. Relationship between Monitoring Results, Action Levels, and Management Actions

Environmental monitoring result	Action level exceeded	Management actions
Trend away from background but below benchmark concentrations No biological effect measured	Low	• Investigate trend and implications • Identify potential mitigation options • Set Moderate and High Action Levels
Benchmark exceedance or biological effect is imminent or has been measured in the area where effects were predicted in the EA	Moderate	• Implement mitigations to stop or slow trend
Benchmark exceedances or biological effects are measured that are above EA predictions but below significance threshold	High	• Implement mitigations to reverse trend • Environmental remediation may be necessary

Recommendation # 34:

Since baseline data continues to be collected and additional monitoring is being proposed, the Panel recommends that all monitoring programme designs be submitted well in advance of construction. These designs must include a summary of existing and proposed additional baseline data that will be required to enable an appropriate assessment of potential changes associated with operations, or other project phases. These monitoring study design documents would therefore capture all existing baseline data, as well as proposed future baseline monitoring programmes (which will be undertaken prior to construction). The document would also include proposed sampling and statistical approaches for the monitoring programmes. Using this approach would

[324] Racher, K., N. Hutchinson, D. Hart, and B. Fraser. Linking Environmental Assessment to Environmental Regulation through Adaptive Management. IEAM 7, 2011.
[325] E.g., http://www.mvlwb.ca/Boards/mv/Registry/2005/Gahcho%20Kue/MV2005C0032%20-%20Gahcho%20Kue%20-%20Updated%20Project%20Description%20--Attachment%2013%20-%20Dec06-13.pdf

facilitate the ability of NBDELG and other key stakeholders to review the monitoring programmes.

In addition, the development of an adaptive management plan framework in advance of operations is also recommended. This framework should provide an early warning system involving action levels, which can be reviewed and discussed with federal and provincial regulatory agencies, in addition to key stakeholders.

Issue 2: Arsenic was not assessed as a non-carcinogen:

Several submitted comments mentioned that arsenic was only assessed as a carcinogen, and not as a non-carcinogenic compound. Typically, if a substance has the potential to cause both cancer and non-cancer effects, an HHRA considers both endpoints. While Health Canada does not cite a non-cancer Toxicity Reference Value (TRV) for arsenic in their TRV guidance document[326], Health Canada does state that where no Health Canada TRV is available for a substance or endpoint, that alternative TRVs should be sought from other agencies (either other divisions of Health Canada, or agencies such as US EPA Integrated Risk Information System, World Health organization, etc.)[327]. The US EPA non-cancer TRV for arsenic is often used to represent the potential toxicity of this substance, relative to non-cancer endpoints.

Recommendation # 35:

The Panel recommends that non-cancer health risks associated with arsenic be assessed. This information is recommended in order to confirm whether estimated non-cancer risks are higher than cancer risks, and if this is the case, management or mitigations associated with the most important exposure pathway may need to be considered or modified. Therefore, this recommendation is meant to inform the potential need for additional monitoring or mitigation related to arsenic exposures, should the mine be approved.

Issue 3: Assumptions Related to Inorganic and Organic Forms of Arsenic in Fish, and Speciation of Arsenic and Methyl Mercury in Fish Tissue as a Monitoring Condition

Arsenic is a naturally occurring element, found in soils, air, surface water and groundwater and various types of foods. Arsenic can occur in both organic and inorganic forms. Scientists generally concur that the inorganic forms of arsenic are the more toxic forms[328]. Studies have been conducted in various foods to attempt to understand which forms are dominant in different food types. In the EIA, the proponent

[326] Health Canada Toxicological Reference Values (TRVs) and Chemical Specific Factors Version 2.0. Health Canada, 2010c. page 10

[327] Health Canada, 2010a Federal Contaminated Sites Risk Assessment in Canada, Part 1: Guidance on Human Health Risk Preliminary Qualitative Risk Assessment (PQRA), Version 2.0. Page 22

[328] http://www.atsdr.cdc.gov/csem/csem.asp?csem=1&po=4

assumed a value of 10% inorganic arsenic. Comments were made that this was an assumed value and site-specific data should be collected to ensure that this assumption is adequately conservative. The assumption used in the assessment is similar to that cited by Schoof and Yager (2007)[329], and in the Panel's opinion, is a reasonable assumption to apply in the HHRA.

As to whether there should be a Condition of Approval related to speciation of arsenic (e.g., determination of the percentage of inorganic arsenic and organic arsenic in fish tissue) in all fish tissues sampled as part of any long-term monitoring of fish tissues, in light of First Nations concerns associated with country food consumption, the Panel does not fully agree. The Panel does agree that speciation of some fish samples for inorganic arsenic would be considered appropriate. If a subset of fish tissue samples were speciated for arsenic in baseline data, as well as periodic speciation of samples during operational monitoring, adequate data would be available to provide an evaluation of this issue, relative to inorganic arsenic levels. Currently, SML has committed to a fish tissue-monitoring programme[330]. This approach is to monitor fish tissues for a series of metals (including arsenic, which would be analyzed as total arsenic, as opposed to speciated arsenic) prior to construction, and then to conduct additional monitoring at year Five of operations. Regulatory Agencies would determine the need for continued monitoring beyond year Five, following review of these datasets (apart from mercury monitoring, which is required under the Metal Mining Effluence Regulations or MMER). Based on the predictions in the EIA, an elevated ILCR for arsenic is predicted for fish consumption, but the estimated future fish tissue concentrations are lower than the existing Canadian Food Inspection Agency limit of 3.5 mg/kg (see Response 5, below).

With respect to the comment that methyl mercury speciation of fish tissue samples should be undertaken in environmental monitoring, the Panel does not consider this necessary. Mercury totals in fish tissues (fillet) is typically considered to represent 90 – 95% methyl mercury, and hence, the measured values in fish fillet for total mercury are considered adequately conservative for assessing human health concerns.

Recommendation # 36:

In light of predicted fish tissue concentrations during operations and concerns related to arsenic speciation, the Panel recommends that a subset of baseline fish fillet monitoring data include speciation of arsenic to determine the relative percentage of inorganic arsenic in fish tissues in the Study area. This speciated analysis should be repeated at Year Five, and in subsequent monitoring years on a subset of fish where fish tissue monitoring is undertaken. This approach will provide updated information relative to inorganic arsenic concentrations in fish tissues, for the purposes of human health evaluations associated with consumption of fish from the Study area.

[329] Schoof, R.A., and Yager, J.W. 2007. Variation of total and speciated arsenic in commonly consumed fish and seafood. Human and Ecological Risk Assessment 13: 946 – 965. Table 3: mean value of 42 fish = 6.8 %; 75th%ile = 10%

[330] Page 9-14; Section 9.4.3.2.5, Final EIA

Issue 4: Groundwater Consumption was not Assessed as an Exposure Pathway in the HHRA, and Concern Related to Whether Potential Seepage from TSF to Groundwater was adequately Assessed

Consumption of groundwater was not included in the HHRA. SML justified this decision based on the fact that the closest full time residential groundwater users are in Napadogan (9 km from the site), and the closest camp user is 1.5 km from the open pit, in a watershed that is not expected to be impacted by pit dewatering[331]. The EIA states that the water supplies currently being used by camp users are likely shallow groundwater ("springs"), which are beyond the zone of influence of the open pit draw down. The EIA also says that "the design and management of the Tailings Storage Facility (TSF) will ensure that seepage through the TSF embankments will not affect downstream groundwater and surface water quality to an extent that it causes an exceedance of Health Canada's "Guidelines for Canadian Drinking Water Quality" (GCDWQ; Health Canada 2012a) that would adversely affect human health"[332]. Based on the lack of groundwater use and the differing watershed associated with camp users in the area, the Panel does not believe the exposure pathway related to groundwater to be an open pathway. Consequently this would not require inclusion in the HHERA. The Panel agrees with the approach on this matter.

Several comments were also raised about the importance of the groundwater to surface water pathway, the potential for seepage from the TSF to enter groundwater, and the long-term effects on surface water. Consumption of surface water in the Local Study Area (LSA) was considered in the HHERA[333], and the maximum annual average chemical of potential concern (COPC) concentration during any phase of the project (Construction to Closure) was selected to represent the exposure point concentration for human receptors[334]. First Nations receptors were assumed to be in the HHERA study area two days per week, every week, each year[335], with ingestion rates for surface waters of 1.5 L/d for an adult and 0.6 L/d for a toddler[336]. Concerns were expressed about why drinking water was not assumed to be seven days/week, 365 days/year. Based on the land use information available, and standard risk assessment procedures, the Panel believes that surface waters in the immediate area of the proposed mine would be consumed at that rate indicated in the EIA. There may be time intervals when individuals are drinking water over seven day periods, but it is highly unlikely that surface water ingestion would exceed the assumed 104 days/year (2 days/week, 52 weeks per year). Therefore the Panel considers the assumptions applied in the assessment to be reasonable, and adequately conservative to assess potential risks associated with surface water consumption.

[331] Page 7-162 and 7-163; Final EIA
[332] Page 8-62 Final EIA
[333] Page 7-175; Table 7.7.18 Final EIA
[334] Page 7-162; Final EIA
[335] Page 7-172, Final EIA
[336] Page 7-173, Final EIA

The surface water modelling conducted by Knight Piésold in the EIA did consider discharges from the Water Treatment Plant (WTP) and seepage from the TSF embankment[337]. However the Panel is unclear whether the potential influence of seepage from TSF (from areas within the TSF, not associated with the embankment; i.e., the main part of the TSF, which is proposed to be unlined) to the underlying groundwater was considered in the modelling effort. If seepage is expected to occur through the bottom of the TSF to underlying groundwater, and if this has not be considered in the water quality modelling, this could result in a potential underestimation of risks related to surface water consumption (based on the scenario that groundwater could come into contact with surface waters at some point in the future). SML has committed to the following:

"Implement an adaptive management plan to install groundwater monitoring wells below the TSF WMPs to monitor the groundwater quality, which can be converted to groundwater interception wells should downstream water quality monitoring indicate that seepage is jeopardizing downstream water quality objectives."[338]

"Monitor surface water quality in receiving streams to verify predictive modelling. Monitor groundwater quality and quantity to verify the EIA predictions"[339]

Comments were also made as to whether administrative barriers should be put in place to prevent future site users from installing groundwater wells in the area (due to potential future contamination). Since the mine is located on Crown land, permits would have to be obtained to install any wells. The Panel would expect the Province to review groundwater data relevant to the area and determine acceptability. This issue is considered to be adequately addressed in the Panel's opinion, and the approach suggested should provide adequate protection for future site users.

Based on the Proponent's proposed monitoring and adaptive management approaches, the Panel believes this issue is adequately addressed though we also note a need for confirmation that additional contributions from sources other than the embankment have been adequately accounted for in the modelling effort.

Recommendation # 37:

Since an expert in water quality modelling is not included in the Panel, we recommend that NBDELG confirm that the groundwater modelling component of the TSF is complete and accurately represents the potential future groundwater conditions.

[337] Figure 7.6.1 and Table 7.6.1, Page 7-109, Final EIA
[338] Mitigation Section of Final EIA; Table 10.1.1
[339] Table 9.4.1, Final EIA; Proposed Followup Program

Issue 5: Concerns Related to Boron, Thallium and Arsenic Human Health Risks and Need for Mitigation Measures Related to Surface Water Increases.

Another issue of concern was with respect to boron, thallium and arsenic health risks. Exposure to these metals were identified as being above a Hazard Quotient of 0.2, (for boron and thallium) or an Incremental Lifetime Cancer Risk (ILCR) of 1E-5 (for arsenic) associated with ingestion of food from within the study area[340], for the Project Alone, and the Baseline + Project scenarios. In all three cases, the increased risk was associated with fish consumption (which is linked to predicted future surface water concentrations increasing, and hence, increasing fish tissue concentrations). The concern is specifically related to the identification of mitigation measures that can be implemented to reduce or eliminate the impact of Project-related COPCs on fish tissue. Each of these issues will be discussed separately.

For boron, the Project + Baseline Case (HQ = 0.34), was largely driven by Project Alone (HQ = 0.21), with a smaller component coming from Baseline (HQ = 0.13) (Table 7.7.31). The concern expressed was about the need for mitigation measures to address the significant increases in boron surface water concentrations associated with mine releases. These increases are predicted to also lead to higher fish tissue concentrations [baseline fish tissue data presented in Table 7.7.14 indicate fish carcass concentrations of 0.025 mg/kg (which is ½ of the detection limit), with a predicted future Project concentration at Grid G8 of 3.18 mg/kg fish tissue, and a Baseline + Project concentration of 3.20 mg/kg fish tissue]. The Proponent has proposed a number of mitigation measures, including collection and treatment of surplus mine contact water before discharge to the environment, construction of drainage channels, provision of water treatment to meet discharge permit requirements post-closure, as well as follow-up monitoring programs for surface water and fish tissue metal residues, in addition to the monitoring requirements under the Metal Mining Effluent Regulations. The Proponent has also committed to an adaptive management program, based on the outcomes of the monitoring, as needed. In addition, the Proponent states the following:

> "Prior to Construction, further geotechnical and hydrogeological investigations will be undertaken in the TSF area to support basic engineering and detailed design studies for the TSF embankments and associated seepage and water management systems. These investigations include geotechnical drilling with associated groundwater testing, test pits and seismic surveys. They are important to enhancing the characterization of existing site conditions, and to advancing the design of the environmental management features of the TSF. In particular, they are important to refining the assumptions, and confirming the conservatisms, in the seepage and water quality modelling, both for facility design purposes and to inform the possible selection of adaptive management and mitigation measures as described in Section 8.5.4.2, should they be needed as determined through the Follow-up and Monitoring Program. A key purpose of the further site investigations, predictive modelling refinements, increasingly

[340] Page 7-191-2, (Final EIA)

> detailed environmental design of the TSF and associated seepage and water management systems, and planning for adaptive management during Operation is to ensure that environmental effects due to Project-related water quality changes will not risk ecological or fish health."[341]

While these statements are related to ecological and aquatic life, there is an obvious linkage to human consumption of fish. Based on these statements, additional study will be conducted related to enhancing the understanding of the geotechnical and hydrogeological aspects of the TSF prior to construction. In addition, refined water quality modelling will be conducted with these additional data. These data and revised modelling are an important refinement in the Panel's opinion, in order to ensure that predictions regarding seepage, which result in increased surface water and fish tissue concentrations, reduce uncertainties about potential human exposure and subsequent risk.

The Panel agrees that these additional geotechnical and hydrogeological studies and water quality remodelling are important to reducing uncertainties in the existing information related to TSF seepage in the FEIA. The Panel also agrees that monitoring programmes should adequately identify any increasing trends.

An additional issue that needs further development is the framework for implementation of adaptive management, so that increasing trends are identified. This framework will need to be developed in advance of operations. The FEIA states the following:

> "…SML will work with provincial and, as needed, federal regulatory agencies to develop site-specific water quality objectives in watercourses downstream of the Project, consistent with CCME guidance, for implementation as part of the Approval to Operate for the Project. The goal will be to develop water quality objectives that are specific to the Sisson Project and the existing conditions in the Napadogan Brook watershed to supplement the CCME FAL guidelines, where appropriate, based on the most recent research and science aimed at preventing acute and chronic effects on fish health arising from treated wastewater release and seepage from the Project."[342]

The development of site specific water quality objectives using CCME guidance would be part of the Adaptive Management process. The Panel recommends that that the Adaptive Management framework include early-warning thresholds. This would ensure that management actions are taken to reduce mine contributions, when responding to increasing trends in the monitoring data. In addition, it is unclear what additional mitigations would/could be put in place in the instance that seepage from the tailings is higher than anticipated, such that groundwater contributions to area streams are higher than those predicted in the FEIA. This issue requires further consideration.

For thallium, the Project + Baseline Case (HQ = 7.6), was equally influenced by Project Alone (HQ = 3.8), and Baseline (HQ = 3.8). The increase in fish tissue concentrations

[341] Page 8-210 FEIA
[342] Page 8-210 FEIA

and consumption of fish contribute the most to the exposure estimates. Baseline fish tissue concentrations of 0.014 mg/kg were measured in the study area, with future predictions estimated at 0.060 mg/kg (carcass)[343]. Surface water exposure point concentrations used for Grid G8 in the HHERA are cited as 0.00005 mg/L in baseline, with an increase of 0.000163 mg/L projected to be related to the Project (and Project + Baseline = 0.000214 mg/L)[344]. The EIA compares the predicted future concentration of 0.060 mg/kg to other values found in the literature for Lake Michigan (0.1408 mg/kg; whole fish sample of lake trout) and a pristine area in Peru (data not cited), and indicated that the predicted future concentrations are within the range of natural variability. The HQ for the Project Alone scenario of 3.8 suggests considerable exposures above a HQ of 0.2. The Panel suggests the proponent find additional Canadian fish tissue data for comparison purposes in order to add perspective, and that data from areas outside Canada not be used to provide perspective on natural variability of thallium in fish tissue in New Brunswick. This issue is important, as the fish tissue data from Peru and Lake Michigan are being used to provide the comparison point of what is considered to be acceptable. The mitigation measures identified above for boron the Proponent has indicated will apply to thallium. As stated previously, the framework for the adaptive management approach is important, with the pre-establishment of thresholds so that management actions would be taken to mitigate trends when increasing concentrations occur.

For arsenic, the Project Alone ILCR was reported as 6.2E-04, relative to a benchmark of 1E-05, with fish consumption being estimated at an ILCR of 7.7E-05[345]. Baseline concentrations of arsenic in fish tissues in the study area are cited as 0.89 mg/kg, and the Panel agrees with the Proponent's conclusion that arsenic in fish tissues appear elevated from natural sources. The fish tissue concentrations are projected to increase (Project Alone = 0.62 mg/kg; Project + Baseline = 1.51 mg/kg)[346]. The predicted future fish tissue concentrations are within the Canadian Chemical Guidelines for Contaminants and Toxins in Fish and Fish Products of 3.5 mg/kg[347] , which would suggest that the predicted future tissue concentration is within acceptable levels, based on Canadian Food Inspection Agency standards. As per above for thallium and boron, the mitigation measures the Proponent has outlined, the Panel judges to be appropriate and, when coupled with the monitoring, should be sufficient in identifying potential increasing trends in either fish tissue or surface waters.

The Proponent has proposed a fish tissue monitoring programme that will include 31 metals and metalloids (including arsenic, boron, and thallium), on brook trout carcass, viscera and liver[348]. This monitoring will assist in verifying whether predictions of future

[343] Page 7-195, Final EIA
[344] Page 7-162; Final EIA
[345] Page 7-193; Final EIA
[346] Page 7-169; Final EIA
[347] CFIA, 2007; http://www.inspection.gc.ca/food/fish-and-seafood/manuals/standards-and-methods/eng/1348608971859/1348609209602?chap=7#s20c7; amended August 2014
[348] Page 9-14; Section 9.4.3.2.5 Final EIA

fish tissue metals levels are conservative or underestimated. While the focus of this monitoring is indicated as being related to fish health, these data should also be used to assess human health, relative to consumption.

Based on the comments received, and the information reviewed, the issues related to arsenic and boron are adequately addressed in the Final EIA. With respect to thallium, predicted future fish tissue concentrations appear elevated, The Proponent should find more data from either New Brunswick or other parts of Canada so that a broader perspective from which to understand the predicted data can be provided. Future fish tissue data that are deemed to show significant increases, relative to baseline, should be assessed relative to human consumption, in addition to fish health.

While fish fillet sampling would be most relevant for evaluation of human health exposures, the sampling programme, which the Proponent designs must be mindful of fish population size in the area. For instance, the development of an extensive fish tissue monitoring program requiring the sampling of large numbers of fish could have negative impacts on the population.

The Proponent should also establish, prior to operations, the approach that will be taken to assess fish tissues, relative to potential health risks of consumption. The fish tissue monitoring data collected during mine phases should be interpreted relative to human consumption, and communicated to stakeholders in a transparent fashion, in light of known land use patterns and traditional foods hunting and gathering activities. Most important would be the development of the proposed approach to adaptive management, with respect to fish tissue and surface waters. The Panel recommends that the Proponent develop thresholds, which can constitute an “early warning stage” so that management actions can be implemented to reverse trends of increasing concentrations. In addition, it is unclear what additional mitigations would/could be put in place when seepage from the tailings is higher than anticipated, such that groundwater contributions to area streams are higher than those predicted in the FEIA. This issue requires further consideration.

Recommendation # 38:

With respect to thallium, predicted future fish-tissue concentrations appear elevated, and the Proponent should find additional data from either New Brunswick or other parts of Canada. In addition, a proposed framework for adaptive management should be developed prior to operations, with respect to fish tissue and surface waters. The Panel recommends that the Proponent develop thresholds which can constitute an “early warning stage” wherein management actions be implemented to reverse trends of increasing concentrations, if they occur. Following the Proponent’s proposed additional geotechnical and hydrogeological investigations related to the TSF, and re-modelling of potential seepage from the TSF, the proposed mitigation approaches related to groundwater seepage from tailings into area brooks should be re-evaluated to ensure the predicted concentrations and proposed mitigation approaches are effective at managing the volume of seepage anticipated (including an upper bound estimate of

seepage). These measures will help to ensure that risks to aquatic life in nearby streams and brooks, as well as to humans (associated with consumption of fish), are within acceptable levels. These items should be listed as conditions of approval.

Issue 6: Concern that the Percentage of Foods from the Study Area for Vegetation and Fish in the HHERA Study Area were Underestimated

The HHERA assumed that the First Nations receptors obtained 20% of their total consumption of fish and 10% of their total consumption of vegetation from the study area. The fish consumption assumption appears adequately justified, based on fish density observations from McBean and West Branch Napadogan, relative to the assumed consumption rates used in the assessment. Briefly, the assessment assumed 46 kg[349] of fish per year from the study area would be consumed by a family of 4 (2 adults; 2 toddlers). Based on calculations provided in the EIA, this would equate to 916 fish (15 cm length)[350] collected by a single family from the study area, each year. In the Panel's opinion, this seems to be a reasonable, and conservative estimate of site-related consumption. With respect to vegetation consumption, the 10% factor applied in the HHERA was related to the amount of home garden produce typically consumed from a vegetable garden (CCME, 2006). The consumption rate used for the adult in the HHERA equals 0.0325 kg/d[351], annualized over a year (0.325 kg/d x 10% = 0.0325 kg/d). This would equate to 11.8 kg of vegetation being consumed from the study area, over a year (0.0325 kg/d x 365 d/year = 11.8 kg/year). In the Panel's opinion, this appears to be a reasonable assumption and that this issue has been adequately assessed in the EIA.

Issue 7: Lack of Occupational Health Assessment

Several submissions commented on the lack of an occupational health assessment, or concerns related to worker exposures. As the EIA states, "The Final Guidelines and Terms of Reference include the requirement to assess public safety and worker health and safety. In the context of this EIA, public safety also includes the safety of workers[352]." Similarly, "While on the site, workers employed by the Project will be subject to applicable occupational health and safety laws of the Province of New Brunswick; therefore, this condition is encapsulated in the assessment of a Change in Public Safety[353]." The company is bound to abide by the laws of New Brunswick and

[349] 46 kg is calculated using the fish ingestion rate of 0.22 kg/d from page 7-173 x 365 d/year = 80.3 kg/year per adult; 0.095 kg/d x 365 d/year = 34.7 kg/year per toddler; with 2 adults and 2 toddlers, the total kg/year for a family of 4 would be 230 kg, but only 20% is assumed to come from the study area, which equals 46 kg of fish.
[350] See page 7-173
[351] Page 7-173 Final EIA
[352] Page 8-453, Final EIA
[353] Page 8-453 Final EIA

therefore in the Panel's opinion is also bound to uphold all laws regarding occupational health and safety.

In addition, other comments were made about a need for health monitoring of workers. This issue is considered to be outside the scope of the EIA, since the Proponent has committed to meet all the GNB's regulations related to occupational health and safety.

10.4 Concerns Related to Potential Contamination of Country Foods and Medicines

Every First Nations community, and several non-First Nations submissions, expressed concerns that the mine would potentially impact Country Foods (or Traditional Foods) and medicines that are harvested in the LAA. These fears focused on the potential contamination of foods and medicines (through dust deposition onto soils and waters, and through release of effluent into waters or seepage of tailings pond water), but also encompassed concerns related to potential loss of these foods and medicines, either from animals moving away from the area, or plants not being able to tolerate the changes related to dusts. Examples of specific concerns raised include the following:

- Metals will accumulate in country foods (moose; waterfowl; fish; vegetation), which is a concern for human consumption. Deposition of dusts and metals onto soil and vegetation, will possibly affect consumers of country foods and wildlife;
- Concern related to loss of traditional food, due to the impact of air pollution, or animals moving away from the area;
- Specific concerns related to wildlife using the tailings ponds – either landing or nesting on them (waterfowl), or drinking from them;
- Concerns related to potential loss of fiddleheads along the Nashwaak;
- If moose drink the tailings water, will it cause health effects in offspring?
- Concerns expressed related to monitoring of animals and soils if mine is to operate. Questions include: "How can I be sure the moose is clean to eat?"; "How can we ensure my food supply is safe?"; "If wildlife drink from the tailings pond, they will get contaminated, and hunters will shoot them later and eat them."

Each of these issues is addressed in the following Sections.

Issue 1: "Metals will accumulate in country foods (moose; waterfowl; fish; vegetation), which is a concern for human consumption." Deposition of dusts and metals onto soil and vegetation, and possible effects to consumers of country foods and wildlife

The potential for bioaccumulation of metals in various environmental media was considered in the Final EIA, through the use of uptake factors (for fish[354]; small

[354] Page 7-168, Final EIA;

mammals[355]; vegetation[356]; game meats[357]). This approach is standard practice, and the Panel agrees with the use of uptake factors to predict future concentrations.

With respect to the terrestrial environment, based on a review of the Final EIA and associated IRs, dusts from the mine operations were assumed to fall onto soils, and could be absorbed by vegetation, and animals in the terrestrial environment through soil uptake and incidental soil ingestion. The additional pathway of dust deposition onto vegetation was not considered in the EIA, according to information provided in IRs requested by Health Canada[358]. The response provided by SML to this IR was as follows:

> "The HHERA evaluated the potential for ore dust deposited on the ground as a result of emissions from the Project (both from point- and fugitive sources) to produce changes in soil chemistry, which may in the longer-term result in changes in plant chemistry as the elements contained in the soil are taken up by plants and vegetation. Dust deposition on plants near roadways is the result of re-suspension of dust on the roads, typical of dirt roads and not related to the ore. Deposition of ore dust within the LAA is considered negligible, as evidenced by the minimal changes in soil concentrations produced by the HHERA model after 27 years of Operation, and therefore the potential for direct deposition of ore dust to affect plant concentrations is also considered negligible."

In the Panel's opinion, dust deposition onto vegetation should have been included as an additional contribution to overall changes in vegetation quality in the study area. The Proponent used a conservative mixing depth for root uptake in vegetation (standard practice for modelling root uptake is 0 – 20 cm depth[359], whereas the Proponent assumed 0 – 10 cm depth)[360]. The predictions provided in the Final EIA resulted in no predicted substantial change to soils, vegetation, soil invertebrates or small mammals over the 27 years of operations. Not including dust deposition onto vegetation that may have underestimated potential changes which could occur in areas close to the mine in the terrestrial environment, in the Panel's opinion the additional contributions from dust deposition onto vegetation are likely small. Dust deposition onto vegetation is a pathway that would typically be included in a HHERA, in the case of aerial deposition of emissions.

The Proponent has committed to monitor potential effects of country foods that First Nations have identified at traditional use sites (e.g., fiddleheads, berries, medicinal plants).[361] Such a monitoring programme will provide measured data related to the

[355] Page 7-166, Final EIA
[356] Page 7-163; Final EIA
[357] Page 7-167; Final EIA
[358] Information Request HC-01-26, 6.1.26.
[359] US EPA 2005
[360] Page 7-161 Final EIA
[361] Page 9-27; Final EIA

potential additional contributions of dust deposition onto vegetation from mining activities.

Recommendation # 39:

The Panel recommends that the vegetation modelling be re-visited to include dust deposition onto vegetation. The Proponent's traditional foods monitoring program can then be used to verify these updated predictions.

Issue 2: Concern related to loss of traditional food, due to impacts of pollution, or animals moving from the area. "How will the Sisson mine affect habitat for, and therefore populations of moose, deer, small mammals and birds (trapped by many First Nations peoples)?" "What will be the effects of changes in populations of large and small mammals, fish, birds, etc., on the ability of First Nations to harvest these species for food, ceremonial and social purposes?"

The Final EIA did provide an assessment of potential risks to terrestrial vegetation, as a broad group of species (rather than individual plant species)[362]. Based on predictions provided in the Final EIA, the Panel considers it unlikely that traditional foods present in the area would be lost due to pollution, in areas outside the PDA. The main pathway by which traditional foods such as vegetation could be affected outside the PDA is considered to be related to air quality (or effluent release affecting water quality in the case of aquatic-related vegetation). Areas inside the PDA could also be influenced by construction and infrastructure, which are recognized and discussed in the Final EIA. The air quality predictions outside the PDA are not suggestive of substantial changes, such that vegetation impacts would be expected. Based on the monitoring recommendations to which the Proponent has committed for traditional vegetation, and additional supplemental monitoring recommendations the Panel has made regarding soil and air quality, the Panel agrees with the Final EIA conclusions that impacts to terrestrial-based vegetation are considered to be not significant. No additional recommendations are made with respect to this issue.

With respect to wildlife, one of the main issues that may cause animals to move away from the area would likely be related to increased activity and noise in the immediate area of the facility. This was assessed in the EIA, and largely focussed on the effects on human health[363], but effects to wildlife were also considered in Chapter 8-6 (Terrestrial Environment), as follows:

> "Increased sound levels (as measured in dBA) may cause wildlife to temporarily relocate to a less disturbed location, especially for species that rely on sound transmission to attract and communicate to members of the same species. Actual sound levels that are disruptive to wildlife may vary depending on the

[362] Table 7.7.51 + accompanying text, Final EIA
[363] Chapter 8.3 Acoustic Environment; Chapter 7.3 Sound Quality and Vibration Modelling

species, or group of similar species (*e.g.* birds) and the environmental conditions in which the sound is experienced. It is acknowledged that wildlife may avoid areas with intensive human activity (such as industrial activity or mining), but noise levels tend to naturally attenuate to near background levels beyond 1 km of the source. Thus, it is expected that wildlife avoidance will also occur within approximately that distance (*i.e.,* within the LAA), beyond which wildlife are expected to be largely unaffected by noise from Project activity. The potential interaction between emissions and wastes and wildlife populations will be reduced by using appropriate noise suppression for Project equipment and down-lighting on lighting systems as recommended in guidelines of the Commission Internationale de l'Eclairage (CIE). Environmental effects assessment with respect to those activities ranked as 2 does consider habitat loss and alteration related to sound in the LAA."[364]

Habitat loss could also have an adverse effect on wildlife. The FEIA summarizes this as:

> "Habitat will be lost as a result of the Construction and subsequent Operation of the Project, but some habitat restoration will occur upon Decommissioning, Reclamation and Closure as Project elements are removed and some re-vegetation of disturbed areas is carried out. Wildlife habitat types within the Local Assessment Area (LAA, defined later) are common and found throughout Central New Brunswick, and no habitat will be lost that is unique to the region or that is critical for the survival of a wildlife SAR or SOCC population The assessment of environmental effects identifies the presence or possible presence of various secure species of birds, mammals and herpetiles in the Project Development Area (PDA, Figure 1.2.1). These secure species are not limited by their habitat and will not be adversely affected significantly by Project presence. SAR (*e.g.*, Canada lynx, Bald Eagle, Common Nighthawk, Olive-sided Flycatcher, Canada Warbler, and Rusty Blackbird) and several SOCC have been recorded in or near the PDA, but they are not likely to be affected substantially by the Project activities. The Project will not cause the decline of any population of a non-secure wildlife species such that their survival in New Brunswick is jeopardized."

SML has committed to the following monitoring and mitigation measures:

> "SML will participate in and be supportive of a broader study of the sustainability of traditional First Nations wildlife resource use in the Crown land block in which the Project is located."[365]

> "SML will work with NBDNR and Crown licensees and sub-licensees to communicate information about the Project footprint and schedule for habitat alteration so that it can be factored into broader forest management and other related wildlife management initiatives in the region."[366]

[364] Page 8-305, FEIA
[365] Page 10-30 Final EIA; Table 10.1.1
[366] Table 10.1.1, Final EIA

The Panel interprets the first commitment to mean that the Proponent is committed to sustainable use of First Nations wildlife resource use (which includes traditional plants, as well as hunting and fishing activities) within the Crown Land Block (CLB) in which the Project is located. This area includes the LAA and RAA. Concerns were expressed regarding the future availability of traditional resources for First Nations hunting and gathering activities, and the possible need for First Nations to relocate to other areas to exercise their aboriginal and treaty Rights. The FEIA concluded, with a high degree of confidence, that effects to populations of wildlife will not be significant[367] and therefore, no follow-up monitoring was proposed. Consultants for the First Nations have questioned the confidence of these impact predictions[368]. While the approach taken to evaluate the issue in the FEIA was considered by the Panel to be adequate, in light of the usage of this area for some First Nations , the Panel agrees that some monitoring of wildlife in the area would be of merit to confirm impact predictions. In addition, the Proponent has committed to a no hunting policy for staff and contractors (on work days) in the interests of minimizing the potential for increased hunting pressure in the area, due to increased human activity[369].

Therefore, SML's commitment to participate in and be supportive of a broader study of the sustainability of traditional First Nations wildlife resource use would benefit from the inclusion of a monitoring component, such that the status of baseline and future wildlife populations could be better understood and monitored. This would enhance the understanding of sustainable use of the resource. In light of this, the Panel recommends that wildlife monitoring be included as a condition of approval.

Concern related to potential loss of fiddleheads along the Nashwaak

Napadogan Brook will receive releases from the facility WTP (via Sisson Brook), and will ultimately flow into the Nashwaak River. Fiddleheads are reported to be present along the Nashwaak River. Comments were made whether future harvesting of fiddleheads along this river may be impacted as a result of mine operations or post closure.

Fiddleheads will not grow in the sediments of the river as an emergent aquatic plant, but rather, would be expected to grow along the riverbanks (in soil, but with adequate moisture). We would expect therefore that they would be exposed to water from the Nashwaak River, which could contain some diluted mine effluent since the Napadogan flows into the Nashwaak. Napadogan Brook is in the Local Assessment Area (LAA), but the Nashwaak River Watershed is considered to be outside of the LAA, and within the Regional Assessment Area (RAA). The Panel believes, given rates of dilution and the location of the Napadogan to the Nashwaak, that the mine would not have any substantive impact on the water quality of the Nashwaak and hence, would not affect

[367] Page 8-308, FEIA
[368] MSES submission to the Panel
[369] SML response to CEAA Information Requests page 2-8; March 2014

fiddleheads which grow along that river's banks. The potential for air deposition of any significance from facility operations at this distance from the facility would also be limited, and considered highly unlikely to affect fiddleheads or soils they grow in. Specific toxicity information related to metals and fiddleheads was limited in the literature reviewed.

Based on the available information presented in the Final EIA, the Panel considers that fiddleheads along the Nashwaak River would unlikely be adversely affected by mine releases. Since SML has committed to monitoring traditional vegetation (and the Panel has recommended that more traditional vegetation sites be included in the monitoring program; see Issue 5, below), First Nations input should be sought to determine if one of the selected monitoring sites of interest for traditional vegetation be located along the Nashwaak River.

Issue 4: Concerns Expressed Related to Monitoring of Animals and Ground if Mine is to Operate. "How can I be sure the Moose is Clean to Eat?" "How can we ensure my Food Supply is Safe?" "**If Wildlife drink from the Tailings Pond, they will get contaminated, and Hunters will Shoot them later and eat them."**

First Nations and non-aboriginals, hunt and harvest resources near the proposed Project. The safety of game meats, berries, and fish, relative to human consumption, was assessed in the Final EIA, using standard risk assessment practices. The Panel has recommended that additional modelling be conducted to include dust deposition onto vegetation, as the EIA did not account for this pathway. The EIA also did not specifically examine how TSF might impact wildlife. The Panel recommends that the Proponent provide information related to mitigation measures, management and monitoring of wildlife related to the TSF.

The Proponent has made commitments and this Panel has made additional recommendations with respect to monitoring ambient media (air, surface water, groundwater, soils, fish tissues, and selected vegetation types linked to traditional foods, as well as wildlife usage of the TSF). In addition, the Panel has recommended that a wildlife management plan related to the TSF be done (see recommendation for Issue 6, below). These monitoring programmes will provide data, which can then be used to assess how mining activities may potentially change the environment. The data resulting from these monitoring programs will provide information to address the concerns expressed with regard to safety of human consumption of wildlife in the area, as well as other traditional foods. In addition, the wildlife management plan will be used to confirm that wildlife usage of the TSF area is low. If this is not the case, however, the Proponent should be required to adopt additional mitigation measures.

Issue 5: Were any studies done on medicinal plants? Will they disappear (i.e., there will be none for future generations?) Has this been assessed? "What is the land and water area that will disappear and how will this affect production of such plants as fiddleheads, medicinal plants?"

As per the response above, in the Final EIA vegetation were assessed as a broad group. No specific risk assessments were done for medicinal plants. (Chapter 7.7 of the FEIA), but use of vegetation for traditional purposes is discussed in Chapter 8.7 of the Effects Assessment (Vegetated Environment). As indicated in the previous response, based on risk assessment predictions provided in the EIA, the Panel considers unlikely that emissions from the facility will affect vegetation, though some impacts are expected within the PDA (associated with construction, etc.) In the Vegetated Environment effects assessment, the Proponent concludes:

> "The interactions of past, present and future current use of land and resources for traditional purposes by Aboriginal persons in combination with the Project's environmental effects on the Vegetated Environment have been ranked as 1 in Table 8.7.8 as they are not expected to adversely affect the sustainability of vegetation communities and/or vascular plant SAR or SOCC within the RAA, and are therefore not likely to have any significant adverse residual cumulative environmental effects on the Vegetated Environment."[370]

The Proponent has committed to monitoring traditional plants[371]. The identification of traditional vegetation locations was undertaken using a survey approach in the IKS study, which Moccasin Flower Consulting did. In the Panel's opinion, adequate baseline data on medicinal plants in the vicinity of the proposed facility would be essential in evaluating the potential for change over the years of operations. The Proponent had collected 25 vegetation samples in the baseline vegetation assessment, which included a mixture of berries, forage and browse (for the wildlife ecological risk assessment). It is not mentioned whether any of these vegetation samples were medicinal plants. Without adequate baseline data, change is difficult to determine. The Proponent's proposed traditional foods monitoring programme is likely focused on metal levels within vegetation. If this programme will also capture medicinal plants (which the Panel believes is the case), then the baseline data set must be expanded to include an adequate number of plants in this category. The possible elements of the monitoring programme should be discussed with First Nations such that the programme maximizes information and data related to the issues of importance for selected species of importance.

Recommendation # 40:

The Panel recommends that the traditional monitoring programme for vegetation species, which the Proponent has committed to developing with First Nations input, identify vegetation species of importance to the First Nations, and ensure adequate baseline data for these selected species are collected. In addition, the Panel

[370] Page 8-380, FEIA
[371] Table 9.4.3, FEIA

recommends that the monitoring programme for traditional plants include more than the two to three sampling locations to which the Proponent has committed. The programme should be designed in consultation with First Nations and NBDLG, and be adequately robust.

Isssue 6: Specific concerns related to wildlife using the tailings ponds – either landing or nesting on them (waterfowl), or drinking from them. "If moose drink the tailings water, will it cause health effects in offspring?" "What happens to thousands of waterbirds that will land on those tailings ponds in perpetuity?" "How will migratory birds be prevented from unwittingly landing in the tailings pond?"

Based on a review of the HHERA, wildlife use of the tailings ponds was not considered in the EIA, but exposure of wildlife to surface waters influenced by effluent release and seepage from the TSF was. In Section 8.6.1.1 of the Terrestrial Effects assessment, the issue of potential wildlife usage of the tailings ponds was not identified, but this issue was mentioned a number of times in Panel meetings with various communities, and in Information Requests (IRs). Assessment of wildlife exposures to tailings pond water is not always conducted in mining EIAs, as exposures are often considered to be low, relative to effluent releases from the water treatment facilities associated with TSFs. In the Panel's opinion, infrequent exposure of wildlife to water within the TSF would not be expected to have an effect on wildlife species, or tissue concentrations (in the instance that wildlife are later caught and consumed by humans).

Due to the size of the TSF (approximately 7 km^2 some species (such as waterfowl) could use the area in the future as a nesting and loafing area. The Proponent states:

> "Reclamation of the TSF will involve establishing vegetative cover on the embankments and beaches surrounding the residual TSF pond. Until reclamation of the TSF is complete, which could include the establishment of aquatic life such as aquatic plants, invertebrates, and fish, the TSF is unlikely to attract waterfowl and other wildlife for the purposes of nesting/breeding, rearing or foraging."[372]

No supporting information is provided related to the predicted low usage of the tailings ponds. Tailings pond water quality predictions were provided in Table 3.4.16 of the FEIA[373]. Operational water quality may differ from that in Post Closure, but the area could still be an attractant during operations (due to its large size), and during post closure (wherein it will be smaller, due to reclamation activities). In the Panel's opinion this issue has not been adequately addressed. We make this conclusion in consideration of the pond's projected size, and longevity on the landscape. To address this issue, the Panel recommends that SML provide information through a Wildlife Management Plan regarding how wildlife usage of the TSF will be discouraged, managed, and monitored. In the absence of a wildlife management plan,

[372] Page8-308, Terrestrial Effects Assessment FEIA
[373] Page 3-134 FEIA

supplementary information related to risks to waterfowl, and human consumption of waterfowl, should be provided in case the area is used as a future nesting and foraging area.

Recommendation # 41:

The Panel recommends that the Proponent be required to prepare a Wildlife Management Plan to identify how wildlife usage of the TSF will be discouraged, mitigated, and monitored. The purpose of monitoring would be to confirm usage of the area is low, as stated in the FEIA. In the instance that wildlife usage of the TSF is found to be higher than anticipated, additional mitigation may be warranted.

10.5 Separate Issues:

"How could harm to birds and animals be calculated as "no significant threat to NB Populations" when we don't even know what populations are, and we have documented throughout the Maritimes significant overall declines in several species of birds that nest in the Sisson area?" "Threatened birds are endangered by this mine, declining by a thousand cuts to their habitat."

The FEIA presents a discussion of avian species that could be present in the project area[374]. Field studies were conducted for breeding and nesting birds, which identified 93 species in the Project area, through point counts (2011). Fourteen of these species were identified to be either at risk, rare, or uncommon under NBDNR, NB SARA, COSEWIC and SARA. The FEIA states that an abundance of preferred nesting and breeding habitat for these species is available in the vicinity of the Project. Species identified as being "At Risk" by NBDNR status are summarized in Table 6.3.2 of the FEIA and include bald eagle, common nighthawk, chimney swift, olive-sided flycatcher, and the Canada warbler. Several of these species are identified as being on Schedule 1 (threatened) of the Species at Risk Act (SARA) and considered threatened by COSEWIC. In addition, species which may be at risk (under NBDNR) were rusty blackbird and the vesper sparrow. Other sensitive species were also named. In Section 8.6 (Terrestrial Environment), a detailed effects assessment is presented for threatened and endangered species. The proponent has committed to developing an Avifauna Management Program, which will be submitted to the Canadian Wildlife Service and the NBDNR for approval prior to construction, and will address mitigation for the protection of various avifauna. The Avifauna Management Program will give baseline information on key avifauna species (*i.e.,* Species at Risk and Species of Concern), and a series of mitigation measures which are intended to reduce the likelihood of interactions with avian species, as well as procedures staff need to follow when active nests are found, and how such instances should be monitored. In the

[374] Section 6.3.5.4.1, FEIA

Panel's opinion, the assessment, mitigation, and follow up measures provided for threatened species in the FEIA, is adequately comprehensive and anticipated to provide appropriate protection.

The assessment provided for populations of secure species (non-threatened) follows standard practice. No mammalian or avian species which forage in the terrestrial environment were predicted to have elevated Risk Quotients, as the predicted changes to soils and vegetation were minimal, based on the dust deposition predictions in the air quality model. The Panel agrees with the conclusion that populations of these species would not be expected to occur in the study area. Some avian species which forage in the aquatic environment were predicted to have elevated Risk Quotients (e.g., belted kingfisher and American black duck, due to the predicted increased fish tissue, benthic invertebrates and/or sediment concentrations[375] related to TSF seepage moving into small tributaries of the West Branch Napadogan Brook (specially UT1, UT3, UT4). The Panel agrees with the conclusion that exceedances in this area are unlikely to result in population-level impacts to these species. The Proponent has committed to conducting further geotechnical and hydrogeological investigations in the TSF area to enhance the characterization of existing site conditions, and refinement of assumptions used in the water quality modelling. In addition, the Panel has recommended that additional baseline surface water data be collected in these smaller tributaries (which were recognized by the proponent as having limited baseline data, and therefore a high degree of uncertainty in the predictions). With this expanded information base, and remodelling of seepage predictions, revised and more accurate predictions of potential impacts to brooks and associated wildlife will be made.

If revised modelling indicates that predicted concentrations in area brooks are higher than those presented in the FEIA, risk estimates for these species (and human consumption of fish) and any associated conclusions should be re-visited.

Recommendation # 42:

The Proponent has committed to conducting additional geotechnical and hydrogeological investigations in the TSF area, and the Panel has recommended additional baseline characterization of brooks and streams, which could be impacted by TSF seepage. The Proponent has committed to re-modelling the water quality predictions (seepage and water treatment plant), and in the instance that these remodelling results indicate higher concentrations of any parameters, the risk assessments for aquatic species and consumption of fish and wildlife for humans should be revisited. If this situation occurs, additional mitigation may be warranted.

"How would water quality from the Tailings Storage Facility become suitable for discharge from these lakes in the perpetual future?"

The following is stated in Chapter 8.5 (Aquatic Environment):

[375] Page 7-232, FEIA

"Surplus water stored in the TSF, and afterwards from the pit lake that will be formed during Closure of the mine, will be treated prior to release to comply with regulatory requirements, and monitored extensively to ensure that downstream water and environmental quality is not jeopardized by the Project (emphasis added). An adaptive management strategy and mitigation plan will be applied in the event that follow-up and monitoring identifies that seepage or treated surplus water releases lead to concentrations of metals in surface waters that pose a risk to ecological or fish health[376].``

"During Closure (approximately Years 28-39), surplus water from the TSF will be directed to the open pit and will no longer be released to the former Sisson Brook channel as was the case during Years 8-27 of Operation. The filling of the open pit with water is projected to take approximately 12 years. As well, water will continue to be returned to the TSF from the WMPs and any established groundwater pumpback wells. Thus, all water within the TSF and open pit will no longer be discharged to the receiving environment beginning in Year 28 until about Year 39. During Post-Closure (starting about Year 40 onward), when the pit lake is at an elevation that ensures it is a groundwater sink, the lake water will be pumped to the WTP for treatment before discharge to the residual segment of Sisson Brook for as long as required to meet discharge requirements established by the government's Approval to Operate. When the lake water is of acceptable quality for direct discharge (emphasis added), pumping and treatment will cease, an engineered channel will be established from the north end of the pit lake to the residual segment of Sisson Brook, and the lake level will be allowed to rise to discharge through that channel[377]."

Based on these statements, water quality will have to meet government established water quality guidelines prior to release in the Post Closure phase. These water quality guidelines will consider the receiving environment, and therefore should provide adequate protection for aquatic life. In the Panel's opinion, this issue has been adequately addressed in the FEIA.

Concerns Related to Fluoride Releases from TSF Seepage and the Water Treatment Plant, and, Potential for Effects on Aquatic Life

Concerns have been made that fluoride in the Water Treatment Plant effluent and seepage will be elevated, relative to CCME water quality guidelines. The CCME guideline is set based on the lowest acceptable adverse effect level reported (a 144-hr LC50 value of 11.5 mg/L in a caddisfly study; see CCME, 2002).[378] There is a 100-fold safety factor applied to this value by CCME to calculate the final guideline of 0.12 mg/L. During operations, the predicted mean concentration at NAP5 node is 0.746 mg/l, and the predicted mean concentration at the Sisson Brook node is 2.6 mg/L[379]. The CCME

[376] Page 8 - 138 FEIA
[377] Page 8-207, FEIA
[378] CCME 2002 Canadian Water Quality Guideline for the Protection of Aquatic Life: Inorganic Fluorides http://ceqg-rcqe.ccme.ca/download/en/180/?redir=1444057383
[379] As cited by submission by Scott Kidd, CCNB

summary documents mention that several studies have indicated that fluoride toxicity is negatively correlated with water hardness and positively correlated with ambient temperature, but data to further characterize this was not robust enough to factor these issues into guideline development. The CCME guideline was set in 2002, and hence, there may be additional data available now, relative to 2002, to enable consideration of these important factors. In addition, other cations (such as calcium and magnesium), as well as anions, such as chloride, can reduce toxicity, whereas aluminum can enhance toxicity (see CCME, 2002). The proponent has indicated that site-specific water quality objectives will be developed for several elements, and when this is done, these important modifying factors should be considered, relative to predicted future water quality conditions. As discussed previously, the proponent has committed to conducting additional hydrogeological and geotechnical investigations related to the TSF, and will be revising the seepage and WTP water quality modelling. The Panel has recommended that more baseline data on surface waters be gathered, particularly for areas, which may be impacted by seepage which lack adequate baseline data. As well, the Proponent has recognized the potential issues related to Fluoride toxicity as follows:

> "Although the CCME FAL guideline for fluoride is considered to be over-protective in regards to finfish the future fluoride concentrations are predicted to be intermittently over the CCME FAL interim guideline for the most sensitive species (*Hydropsyche bronta*). Thus, additional hydrogeological and geotechnical investigation prior to Construction, refined predictive water quality modelling and perhaps Project design, and follow-up and monitoring components are warranted.[380] (Emphasis added).

One cause of this concern is that the Water Treatment Facility, as currently designed, will not be able to treat fluoride. If fluoride treatment is required a revised treatment design will be necessary. Based on these issues, the outcomes of the additional study are key to understanding what the future concentrations of fluoride may be within Sissons Brook, and related to seepage from the TSF. In addition, consideration of the modifying factors affecting fluoride toxicity will be important to understand the toxicity of the revised predictions. With this in mind, the Panel recommends the Proponent develop a site-specific water quality objective for fluoride, using CCME protocols and considering future water quality characteristics within the receiving environment, such that this revised guideline can be used to evaluate potential toxicity of this compound in the receiving environment. This approach will assist in confirming that the receiving environment will be adequately protected.

Recommendation # 43:

Proponent should develop a site-specific water quality objective (SSWQO), using CCME guidance, for fluoride. This SSWQO can then be used to assess revised water quality predictions, which will be undertaken following further geotechnical and hydrogeological investigations, as well as baseline sampling. If water quality, relative to fluoride, is not adequately protected, additional mitigation will be required.

[380] Page 8-217; FEIA

“The Nashwaak River and its tributaries are home to endangered fish and provide drinking water for many different animals. If something happens, people can read the signs (do not drink and do not swim) posted on the river but animals cannot and fish have no other option.`` ``What happens if the tailings storage facility dam fails? What safeguards are planned to ensure that the dam does not fail?”

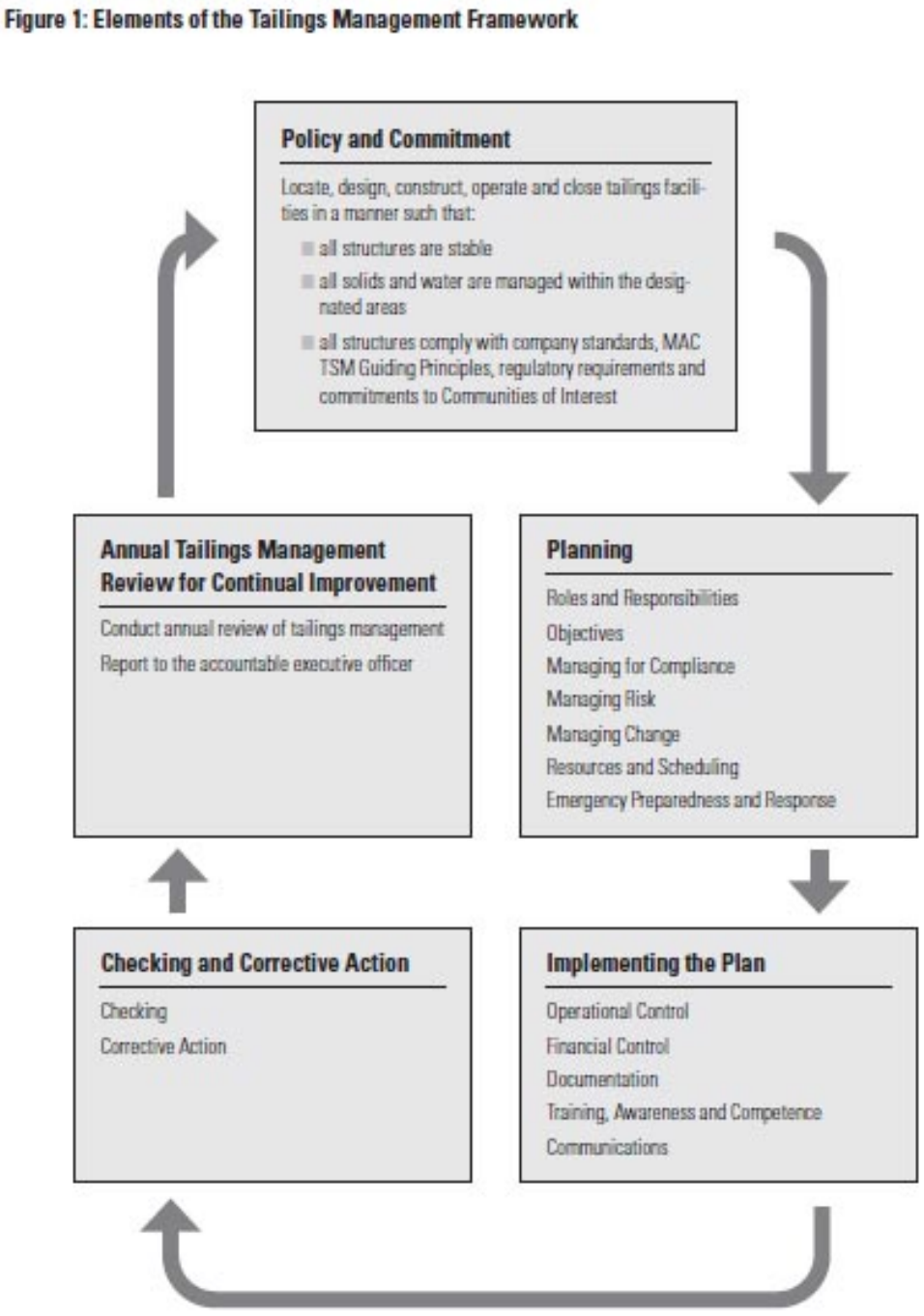
The Panel assumes that the first of these concerns relates to the potential of a tailings dam failure, and the subsequent environmental concerns concern that scenario. As discussed in other parts of this report, the Panel has recommended that failure modelling (known as inundation modelling) be conducted to predict tailings dam failure outcomes, in case such an event were to occur. Though a dam failure is unlikely, such an eventuality requires critical investigation. By conducting this type of modelling, the predictions can be used for emergency planning and mitigation purposes. If a dam failure occurred, the outcomes could have severe environmental implications, depending upon the size of the breach and size of the tailings ponds.

Of some note in this regard is the Mining Association of Canada’s “Guide to the Management of Tailings Facilities”[381]. This document lays out a management framework for tailings facilities. Elements of this framework are provided in the figure below[382], and include proposed company policies and commitments, planning aspects (including emergency preparedness planning); plan implementation; and checking and corrective actions as well as annual tailings review. The implementation of this type of framework would assist in minimizing the potential of a major failure. The Mining Association of Canada has an additional guidance document called: Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities (2011).[383] This document provides an approach for developing a site-specific operation, maintenance and surveillance (OMS) manual for a given facility. The Association views this as an integral component of an overall tailings management system, which “can help companies comply with government regulation and corporate policy, demonstrate voluntary self-regulation and due diligence, practise continual improvement, and protect employees, the environment and the public”.[384]

While this does not directly answer the public’s concerns to a severe event occurring, the Panel’s opinion is that appropriate and focused management of the facility will reduce the potential of this type of event from happening.

[381] MAC, 2011 http://mining.ca/sites/default/files/documents/GuidetotheManagementofTailingsFacilities2011_0.pdf
[382] Page 2-2 of the Mining Association of Canada 2011; Guide to the Management of Tailings Facilities.
[383] MAC, 2011 http://mining.ca/sites/default/files/documents/DevelopinganOMSManualforTailingsandWaterManagementFacilities2011_0.pdf
[384] Page I; MAC 2011; http://mining.ca/sites/default/files/documents/DevelopinganOMSManualforTailingsandWaterManagementFacilities2011_0.pdf

Figure 6: Elements of the Tailings Management Framework Developed by the Mining Association of Canada



Recommendation # 44:

That the Mining Association of Canada's Guide to the Management of Tailings Facilities and their guidance related to Developing an Operation, Maintenance and Surveillance Manual be considered as a framework and guidance for the Proponent's management approach for the TSF. Implementation of this type of framework and guidance would provide safeguards to minimize the potential of a catastrophic failure.

"Predictive Data for Water Quality Modelling at the Sissons Brook Node were not discussed in the FEIA, and since the Water Treatment Plant releases into Sissons Brook, Concentrations are higher than at NAP 5 (Napodogan Brook).The EIA report is using Napadogan Brook to dilute and mask the Sisson Projects WTP effluent."

The Panel agrees that the water quality data for the Sisson Brook node was not presented in the main part of the EIA, and should have been included, or a statement as to why it was not included should have been provided for the reader (if the node was not considered relevant for some reason). The Proponent has committed to undertaking additional geotechnical and hydrogeological studies related to the TSF, and to revising the water quality modelling through inclusion of these additional data. In the Panel's opinion, these additional assessments should include provision of information on water quality within Sissons Brook, at appropriate nodes, to ensure water quality within the brook is acceptable for aquatic life. Effluent discharge from the Water Treatment Facility (WTF) must meet Metal Mining Effluent Regulations (MMER). This is a requirement of the regulations[385]. The effluent, at point of discharge from the Water Treatment facility, must meet the MMER limits set out in Schedule 4[386]. While there are only limits for certain substances within the MMER, there is also a requirement to undertake acute lethality testing of effluent at each final discharge point. If the effluent contains substances not listed in Schedule 4, but are present in the effluent at concentrations which could cause acute lethality, this will be identified in the testing. In addition, under Schedule 5[387] of the MMER, there is a requirement to undertake environmental effects monitoring studies, within a certain distance of the final discharge point at set time intervals.

In the Panel's opinion, the implications of toxicity in Sisson Brook prior to finalizing Water Treatment Facility (WTF) design is important to assess. Pending the outcome of the additional geotechnical and hydrogeological investigations, as well as water quality modelling and assessment, relative to potential for aquatic effects, the potential need for additional treatment of other parameters needs to be confirmed and accounted for.

[385] Metal Mining Effluent Regulations, http://laws-lois.justice.gc.ca/eng/regulations/sor-2002-222/page-2.html#docCont
[386] http://laws-lois.justice.gc.ca/eng/regulations/sor-2002-222/page-17.html#h-51
[387] http://laws-lois.justice.gc.ca/eng/regulations/sor-2002-222/page-18.html#h-52

Recommendation # 45:

The Proponent has committed to conducting additional hydrogeological and geotechnical investigations related to the TSF. The Panel has also recommended that additional baseline data related to both groundwater and surface waters near the TSF be collected, and that the Proponent conduct revised water quality modelling. With this revised and updated information, the adequacy of the Water Treatment Facility design, relative to potential implications of effluent discharge on the receiving environment, needs to be confirmed. This should be a condition of approval.

"The Project will result in destruction of two fish-bearing streams on this important river system. It will result in seepage of toxic materials from the tailings pond into the Nashwaak River system." "Seepage through the embankment will occur. Some will be captured. Where is the plan – how much is captured, are the WMP (water management ponds) large enough? What is the water chemistry of seepage water? How much will by-pass treatment? Impacts on downstream?"

Concerns related to the seepage from the TSF in the northeast and eastern area of the TSF were expressed in a number of submissions and community meetings. The FEIA, stated that treated water will exit through the water treatment facility (and the effluent discharge point will be in Sisson Brook). With respect to seepage, a 20% seepage rate has been predicted during operations. Much of this seepage will be collected by the seepage collection system/water management ponds (WMPs) and pumped back to the TSF, but the amount to be captured is not stated. The Proponent had indicated that some of the water collected in the WMP may be released into the environment if water quality was considered suitable for discharge[388]. Environment Canada Information Requests on this issue[389] indicate that if this were to occur, the Proponent would be required under the Metal Mining Effluent Regulations (MMER), to identify the WMPs as final discharge points, and that the requirements of the MMER would have to be met at each final discharge point. The Proponent's response was that the WMP would not be identified as final discharge points and so water collected in the WMP would be pumped back to the TSF and treated. The question remains, however, about how much of the seepage will bypass the WMPs (i.e., if 20% seepage is anticipated during operations, how much of this will be captured by the seepage collection system/WMPs, and how much is anticipated to bypass the system/WMPs?), and subsequently enter area brooks either through groundwater discharge or surface water runoff. Also, whether the sources of seepage in area brooks above NAP5 in the water quality modelling relate only to seepage bypassing water treatment ponds, or also include actual discharge from the WMPs is unclear. These issues are not clearly addressed in the FEIA. The water chemistry and the potential effects of seepage (whether it is from WMP release and/or seepage which bypasses the WMPs) was assessed in the FEIA in the Aquatic Environment section, but clarity on whether the predicted concentrations pertain only to seepage, which bypasses the treatment ponds, or added contributions from water

[388] Page 7-106, FEIA
[389] EC-01-18; March 27; 2014

released from the WMP, is needed (particularly since the proponent has indicated that no water will be released from the water management ponds).

With respect to the "where is the plan" comment, a water management plan is laid out in the FEIA. This plan does require careful consideration on a number of fronts (which are addressed elsewhere in the Panel's report). With respect to seepage release, the water management plan must meet the requirements of the MMER. Within the MMER, effluent is defined as:

> "effluent" means an effluent — hydrometallurgical facility effluent, milling facility effluent, mine water effluent, tailings impoundment area effluent, treatment pond effluent, seepage and surface drainage, treatment facility effluent other than effluent from a sewage treatment facility — that contains a deleterious substance. [390] (bolding added by Panel)

With this in mind, the seepage (whether captured or not captured) is considered effluent, if it contains a deleterious substance. A deleterious substance is defined as follows under MMER:

> "For the purpose of these Regulations, the substances set out in column 1 of Schedule 4 and any acutely lethal effluent are prescribed as deleterious substances[391]."

The Panel does not include a legal expert. Water quality modelling of the seepage into area brooks[392] has indicated that some water quality guidelines are predicted to be exceeded in the receiving environment, and that some of the metals/metalloids in exceedance of freshwater aquatic life are listed on Schedule 4 of the MMER (e.g., arsenic, cadmium and copper). The Panel notes that exceedance of a water quality guideline within a receiving environment does not necessarily mean that effects in the receiving environment will occur. If these metals/metalloids are on Schedule 4, whether the direct discharge of this seepage is allowed under MMER, without having a formal final discharge point identified is unclear. While some loss of seepage is anticipated to occur in any mine design, the question relates to whether the amount of loss in this design is considered acceptable under the MMER. For this reason, the Panel recommends that the Water Management Plan be revisited to confirm whether the seepage released into area brooks will require the identification of these areas as final discharge points under the MMER regulations. If this is found to be the case, the seepage will be required to meet Schedule 4 limits, and Schedule 5 environmental effects monitoring program requirements.

[390] http://laws-lois.justice.gc.ca/eng/regulations/sor-2002-222/page-1.html
[391] http://laws-lois.justice.gc.ca/eng/regulations/sor-2002-222/page-2.html#docCont
[392] As presented in Section 7.6 of the FEIA (Knight Piésold)

Recommendation # 46:

The Panel recommends that the amount of seepage which may be released into area brooks (through bypassing the WMPs) be confirmed, and that the potential for adverse effects to aquatic life in area brooks as a result of this release be re-evaluated, following the Proponents further investigations related to hydrogeological and geotechnical investigations, as well as additional baseline sampling in area brooks and re-modelling of potential impacts. In addition, it is recommended that the Proponent revisit the Water Management Plan to confirm whether the seepage released into area brooks will require the identification of these areas as final discharge points under the MMER regulations. These items should be conditions of approval, as the outcomes will affect monitoring requirements.

Concern that the Proponent has not Adequately Reviewed, incorporated and assessed the implications of Recent Scientific Literature on the Dispersal of Heavy Metals from Mining Operations showing Trace Metal Uptake by Flora at 25-40km from Mine Operations.

This underlying concern associated with this comment is that if heavy metals can be dispersed at these distances from mining facilities, the Proponent's selection of the air quality-modelling domain (the Local Assessment Area, or LAA) of 20 km by 20 km would be too small, and hence, could under predict effects. Several scientific journal articles were cited in support of this issue (Hasselbach et al, 2004; Aznar et al, 2008; Parsons and Cranston, 2006; Pilgrim and Hughes, 1994; Pilgrim and Schroeder, 1997). The comment goes further to state "It is incumbent upon the review panel to require the proponent to address the implications of the findings of these studies for agricultural, ecological and human health considerations. Recent studies by Bacigalupo and Hale (2012) have documented the risk of uptake of heavy metals by ingestion of produce from contaminated soil."[393] "The peer reviewed studies on heavy metal dispersal and heavy metal uptake from domestic and agricultural sources demonstrate the need for baseline data covering a much wider spatial scale, and inclusive of a wider range of VECs, than has been previously reported."[394] The Panel agrees that these studies were not considered in the FEIA. Nevertheless, if the air dispersion modelling domain is examined, relative to the air quality modelling outcomes for this project using AERMOD (which is a regulatory approved dispersion model), the predictions provided in the FEIA indicate that particulate predictions (which would contain the largest proportion of metals) for Baseline + Project are within background levels within the LAA (See Figures 7.1.3; 7.1.4; 7.1.5 – Construction phase; Figures 7.1.7; 7.1.8, and 7.1.9 for Operations phase). This indicates that the size of the LAA is reasonable and appropriate, and that significant dispersion of metals outside the LAA is not anticipated. The concentrations of metals on the particulate may differ from those in background (due to contributions from the mine), but the HHERA showed that exposures to metals on particulate are not associated with elevated Concentration Ratios (CRs) at the Maximum Point of

[393] L. Wuest submission
[394] L. Wuest submission

Impingement or when the Maximum Point of Impingement was elevated relative to a guideline. Further assessment at the nearest recreational cabin illustrated that predictions were not elevated[395]. In addition, accumulation of metals in vegetation, and consumption of future vegetation, was accounted for in the HHERA. Based on this information, the Panel believes that the LAA is an adequate size to capture potential air quality impacts, and deposition of particulate matter onto soils and vegetation. Given this, the focus of collecting baseline data within the LAA (and not in areas beyond the existing LAA) would provide adequate characterization for future evaluation of human health risks and potential changes in the environment. No recommendations were therefore provided by the Panel with respect to this issue.

Concerns Related to Outer Bay of Fundy Atlantic Salmon.

There have been a number of comments made about possible impacts to Atlantic Salmon. These concerns are summarized below:

- Failure to acknowledge that Outer Bay of Fundy Atlantic Salmon may be listed as endangered under the federal species at Risk Act (SARA) is a plausible outcome of the federal review process;
- EIA fails to present baseline studies that properly determine existing conditions and natural variance for Atlantic Salmon and importance of habitat;
- Compensation for loss of fish habitat confusion;
- Lack of a detailed analysis of potential impacts in the LAA and RAA, based on synergistic effects, etc.;
- Lack of a detailed analysis and modelling of geomorphic processes that will alter habitat (flow changes);
- Dismissal of the Tailings Storage Facility (TSF) and Water Management Pond (WMP) failure scenarios as “not credible”
- Failure to provide details of seepage which will bypass water management ponds into groundwater and surface waters (quality and quantity).

Atlantic salmon is a culturally significant species for the First Nations. Salmon is also an important species to anglers and conservationists. Some comments most likely pertain to the draft EIA, and revisions were made subsequently in the Final EIA. For example, the Outer Bay of Fundy Atlantic Salmon are acknowledged as being under review in the Final EIA[396] by DFO as a potential Species at Risk under the Species at Risk Act. Specific text from the Final EIA is as follows:

> “The process by which a species may become protected under *SARA* begins with a review by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Pending the results of the COSEWIC review, and subsequent regulatory actions, a species may be listed in Schedule 1 of *SARA* by ministerial decision. For example, the COSEWIC review of the Outer Bay of Fundy (OBoF)

[395] Page 7-185 to 7-188; FEIA
[396] Page 8-144; page 8-151 of Final EIA

Atlantic salmon, which is native to the LAA, recommended that the species be classified as "Endangered". DFO is currently undertaking a Recovery Potential Assessment for the OBoF Atlantic salmon which will inform the listing decision by the Minister. Species that potentially occur within the LAA, for which a COSEWIC classification has been made, but which are not yet on Schedule 1 of *SARA*, include:

- Outer Bay of Fundy Atlantic salmon (*Salmo salar*; "Endangered", status A2b); and
- American eel (*Anguilla rostrata*; "Threatened", status A2b)."[397]

Provisions that would have to be made in accordance with a SARA listing are not discussed in the EIA, as it has not yet been listed, and the focus of a recovery strategy is not yet known. The Panel does not have an expert on the Species at Risk Act. Therefore, the Panel assumes that if the Outer Bay of Fundy Atlantic Salmon is listed, the Federal government will indicate what specific issues related to conservation will require protection, and the Proponent will have to comply.

With respect to adequate baseline data, the Panel has recommended that additional pre-construction baseline data be collected for several media. Additional baseline data related to Atlantic Salmon should be included, but since the Panel does not have an Atlantic Salmon expert in our group, we defer to the expertise of the provincial and federal governments to determine what may be required. Consideration should be given to gathering adequate data on the issue of geomorphic processes and sedimentation along habitat in the Napadogan system. Fish monitoring is part of the requirement under the Metal Mining Effluent Regulations (MMER) (fish health), and as such, the Proponent will be required to submit to the federal government a study design related to proposed Environmental Effects Monitoring program. Adequate baseline data are critical in these statistical evaluations of fish health, and hence, the Panel is of the opinion that additional baseline data will be required. Clearly, if the baseline data characterizing Atlantic Salmon are considered by the NB DE and/or DFO (or Environment Canada, which is the agency which will review the EEM study design) as being inadequate, additional baseline data should be collected to provide a stronger measure of baseline for comparison purposes in the EEM program.

There appears to be some confusion as to the compensation for loss of fish habitat (formerly called HADD), which the Proponent initially suggested regarding the removal of the Lower Lake Dam to improve connectivity/accessibility further upriver in the headwaters. The Panel is aware that there is no passage problem in this area and that DFO has not yet approved the suggested removal of the lower lake. The Panel understands that if Project approval is granted at both the provincial and federal levels, then DFO will undertake consultation with stakeholders for the Fish Habitat Offsetting for the Project. Other/additional options may be considered during the consultation.

[397] Page 8-151, Final EIA

With respect to the effects assessment, the Final EIA does provide an assessment of potential impact to Atlantic Salmon related to metals, flow, temperature, etc. However the Panel has made a number of recommendations about increasing baseline data for understanding various media. As well, the Proponent has committed to conducting further study on the geotechnical and hydrogeology aspects of the TSF and updating water quality modelling related to releases from the TSF water treatment facility and seepage. In addition, the Panel has recommended more details be provided about the seepage volumes and the water management plan. These data are important with respect to potential implications for aquatic life, including Atlantic Salmon. The assessment of these additional data and studies, including enhanced baseline data for Atlantic Salmon (which will be determined by Provincial and/or federal fisheries experts, as outlined above), should be undertaken to provide an updated evaluation of potential effects to Atlantic salmon.

With respect to the TSF failure analysis, the Panel has recommended that a failure analysis be conducted (see Section 8.7). Failure analysis is important in emergency planning and preparedness. In addition, the Panel has recommended that the Proponent follow the Mining Association of Canada's "Guide to the Management of Tailings Facilities"[398] (which lays out a management framework for tailings facilities). This framework includes policy and commitment (at a senior corporate level within the company), planning aspects (including emergency preparedness planning); implementing the plan; checking and corrective action and annual tailings review for continual improvement. The implementation of this type of framework would assist in minimizing the potential of a major failure. In addition, the Mining Association of Canada also has a guidance document called: Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities (2011).[399] This document gives an approach for developing a site-specific operation, maintenance and surveillance (OMS) manual for a given facility. The Association views this as an integral component of an overall tailings management system, which "can help companies comply with government regulation and corporate policy, demonstrate voluntary self-regulation and due diligence, practise continual improvement, and protect employees, the environment and the public".[400]

With respect to seepage, which may bypass the WMP, the Panel has made recommendations related to this issue as well. Section 10.5 discusses seepage bypassing the WMPs and the need to quantify the volume.

[398] MAC, 2011 http://mining.ca/sites/default/files/documents/GuidetotheManagementofTailingsFacilities2011_0.pdf
[399] MAC, 2011 http://mining.ca/sites/default/files/documents/DevelopinganOMSManualforTailingsandWaterManagementFacilities2011_0.pdf
[400] Page I; MAC 2011; http://mining.ca/sites/default/files/documents/DevelopinganOMSManualforTailingsandWaterManagementFacilities2011_0.pdf

Recommendation # 47:

The Panel recommends that prior to Construction the Provincial and/or Federal departments of fisheries determine the adequacy of baseline data related to Atlantic Salmon and, if necessary, require additional baseline data to be collected. These data, a geotechnical and hydrogeological study related to the Tailings Storage Facility, and refinement of water quality modelling and seepage estimation can then be used to update the potential effects for Atlantic salmon and other aquatic life. This should be a condition of approval.

The Nashwaak headwaters should have been classified according to the water classification system

The classification program has never been implemented. No river in New Brunswick has been classified. It is unclear, if the programme was implemented, at which level the Nashwaak would be classified. The Minister would still have the discretion to intervene to allow the project to go forward if the river's classification would not allow such a development. The EIA process is presently the process to protect the quality of the water.

11.0 List of Recommendations

Recommendation 1: The GNB could do more to articulate how the consultation process between First Nations, a proponent, and government might work. For this reason, the Panel recommends that to move forward on these issues, the GNB should inform themselves and the First Nations about the duty to consult. This might be done in a number of ways, and might include:

a. providing a clearer and more comprehensive overview of the consultation process on the Aboriginal Affairs Secretariat (AAS) website. At the present time, the website provides little information and does not refer the reader to the Supreme Court decisions, lower court decisions (such as from the British Columbia Supreme Court), articles, and websites (such as fngovernance.org), which would help government, and First Nations leaders and community members to understand the 'duty to consult.'
b. holding workshops with designated community consultation coordinators. These workshops might involve inviting respected and informed First Nations representatives, government and academic scholars who could provide a broader perspective on the Crown's duty to consult obligation.
c. Participating with First Nations in developing a strategy to streamline the Duty to Consult process, and which would also assist in making First Nations participation more effective. This might be accomplished through examining how other provincial governments have developed procedures or memorandums of understanding with First Nation communities. For instance, the GNB might

develop a procedure, as did the Government of Nova Scotia with that province's thirteen Mi'kmaw communities. [401]

First Nations communities also have a responsibility to ensure that those who are employed as consultation coordinators are qualified to do the work, have the proper educational background, and are also trained in the process. The First Nations can also help to make consultation more effective by:

a. ensuring that those employed as consultation coordinators have university or college degrees in an area that has some applicability to their employment,
b. ensuring continuity in the employment of consultation coordinators, especially when an EIA process concerns a large industrial project,
c. discussing with government and the proponent when a large industrial project is proposed, the feasibility of appointing one individual or individuals, at the beginning of the consultation process from the affected First Nations community or communities (Maliseet or Mi'kmaq), whose principal responsibility would be to act as the principal intermediary with the proponent and also to inform the other affected communities about the ongoing EIA process.

Recommendation 2: Recognizing the highly technical and multidisciplinary nature of Environmental Impact Assessments, First Nations should explore mechanisms by which capacity can be built in house for some aspects of these reviews. In addition, development of partnerships with regionally based firms (in Atlantic Canada and/or Quebec), which could include local universities and colleges, is also recommended. These approaches will increase direct involvement of First Nations, and will also save costs.

Recommendation 3: The Panel recommends that the GNB and the First Nations determine an equitable process that would provide a framework for how community members may be consulted about a project in the future.

Recommendation 4: The GNB should inquire if the communities of Kingsclear and Oromocto have been properly informed about the project, and if necessary, canvas community concerns and/or views about it. This might include the proponent organizing an open house at both communities where the company's experts can answer questions about the project. A similar open house should be held at Tobique.

[401] See 'Terms of Reference for a Mi'kmaq-Nova Scotia-Canada Consultation Process,' (September 2010) at http://novascotia.ca/abor/docs/MK_NS_CAN_Consultation_TOR_Sept2010_English.pdf

Recommendation 5: For the future, the GNB should develop a protocol with the province's First Nations about when consultation should occur with what First Nations communities.

In thinking about this protocol, the GNB and the First Nations might ask the following questions:

If a major project is located on lands, which are part of traditional Maliseet territory, does the Crown need to consult with Mi'kmaw communities? If the answer is yes, what communities should be consulted? What level of consultation is necessary? What role, if any, should Maliseet communities play in this consultation process?

The same question might be asked regarding a major project proposed to be developed on traditional Mi'kmaw lands. To what degree should Maliseet communities be consulted? What Maliseet communities? And what level of consultation should occur?

Finally, the GNB and the First Nations might also consider what constitutes a 'major project'?

Recommendation 6: The Panel recommends that the GNB and the First Nations determine the process by which proven and assertion Section 35 rights might be evaluated when considering future projects.

Recommendation 7: The Panel strongly recommends that an IKS be done which includes the three remaining Maliseet communities, Kingsclear, Oromocto, and Tobique.

The GNB should organize a meeting with all interested parties to determine how that will be done, when, and funding.

Recommendation 8: The Panel recommends that the GNB consider doing a comprehensive land use study. The government might do two such studies. One might involve examining Maliseet traditional territory and another study might involve examining Mi'kmaw traditional territory. However, the Panel also recommends that individuals and institutions based in Atlantic Canada and Quebec should be enlisted and in ways that would develop First Nations capacity.

Recommendation 9: Though these camps are located outside the LAA, their proximity to the mine may make their continued use untenable. Therefore, the panel recommends that the proponent enter into discussions with the camp owners and assess what type of accommodation is reasonable.

Recommendation 10: As a condition of approval the Panel recommends that the GNB and the proponent make reasonable efforts to accommodate the affected Maliseet communities for the loss of use of the areas within the PDA and LAA as a result of the Project (see previous paragraph). This might include compensation, which can take several avenues. For instance, the proponent has suggested that mitigation should go 'beyond biophysical matters 'and include optimizing 'business and employment benefits for First Nations.' [402] This seems to be a reasonable approach. The Panel recommends that the proponent, with the assistance of the Crown, and in consultation with First Nations explore how such an accommodation might be made.

Recommendation 11: The Panel recommends that the Government and First Nations develop a framework agreement that determines a step by step process on how consultation will occur when a major project is proposed, which might impact proven or asserted Section 35 rights. The International Council on Mining and Metals (ICMM) released an updated Good Practice Guide related to Indigenous People and Mining in October 2015 which could be considered in developing this framework.[403] Where applicable, the Panel also recommends that the Crown develop, in consultation with First Nations, and the proponent, baseline data for those country foods and medicines that First Nations have identified as key for their communities and to develop a reasonable protocol for monitoring these foods and medicinal plants.

Recommendation 12: In conjunction with the recommendation made previously in Section 6.10, the Panel recommends that an appropriate model or process for funding of capacity be developed with the proponent, government and first nations. This model must include the gradual development of in-house First Nations capacity, such that the reliance on external consultants is diminished over time.

Recommendation 13: Though government relations with First Nations is beyond the scope of the EIA report, the Panel feels that some mention of this issue is necessary since many First Nation community members voiced their distrust of government. Some First Nations people and communities feel that the government doesn't respect the unique legal and historical place that the Maliseet and Mikmaq occupy in New Brunswick's history. In Nova Scotia, the provincial government has done much to help celebrate and honour the special place that the Mi'kmaq occupy in that province's history. They do this through 'Treaty Day', which is an annual re-affirmation of the

[402] See, for instance, Stantec, Responses to Information Requests Received on the EIA Report, July 2013: Information Requests Received from the CEA, 14.1.1, p. 14-4.
[403] ICMM, 2015
http://www.icmm.com/document/9520?utm_source=ICMM+mailing+list&utm_campaign=a610aaa7c1-New_guide_on_Indigenous_Peoples_and_mining&utm_medium=email&utm_term=0_245f7fbcf5-a610aaa7c1-75296517

signing of the 1752 Treaty. They also do this through Mi'kmaq History Month, which educates and celebrates Mi'kmaw history.[404] Though the event is symbolic, it nonetheless expresses the respect of government for the treaties that were signed and in informing people about First Nations history. The government of New Brunswick might consider launching a similar initiative in New Brunswick, but which speaks to the unique history of New Brunswick's two first peoples, the Maliseet and Mi'kmaq. Though such an initiative would not address the question of aboriginal title, it might help to foster more amicable Crown-First Nations relations.

Recommendation 14: However, the Panel believes that all shovel testing must be done prior to final approval. The Panel recommends that this testing should be done in consultation with the First Nations and hopefully, as well, by employing community members. This work can be done in cooperation with NB Archaeological Services and overseen by a third party, who, however, should be based in Atlantic Canada.

Recommendation 15: The Panel considers that the development of such a comprehensive First Nations Training and Employment strategy is technically not a requirement of the guidelines and the TOR. On the other hand, based on all information received in the process of the panel's work, the panel has come to the conclusion that such a strategy is desirable as these economic benefits are indeed the principle benefit for First Nations from the project. Such a strategy should identify not only the objectives but the various actions which will be taken to achieve them. For example, a registry could be created where interested individuals from First Nations communities would put their name and profile could be part of a training/hiring strategy for the project.

Recommendation 16: The Panel recommends that the proponent be required to continue public engagement and to provide access to results of the ongoing baseline and other studies relating to concerns presented to the Panel. Under the condition, such results, their analysis by companies engaged by the proponent and all modelling would be required to be posted on The Sisson Partnership web site, http://www.sissonpartnership.com/s/SEIAR.asp, and full documentation filed with NBELG.

Recommendation 17: The Panel recommends that the proponent continuously act on the need to maintain the dialogue with all members of the general public and Maliseet First Nations communities. This communication should make every effort to ensure use of words and illustrations that the majority can understand, and, responsiveness with

[404] See the Nova Scotia Aboriginal Affairs website at http://www.novascotia.ca/abor/office/what-we-do/public-education-and-awareness/treaty-day/

credit for specific public concerns and inputs which result in changes to the Sisson project plan.

Recommendation 18: That, complementary to bonding and insurance recommendations made elsewhere in the Panel report, the Panel recommends that the proponent be required to have in place and operational from commencement of mill tune-up all electrical generators, pumping equipment, water treatment facilities and trained personnel that would be necessary to ensure that leakage does not escape untreated from the site in the event of a need to begin treating effluent due to a corporate financial failure, unforeseen mine closure or a sudden loss of electrical power from the grid during an extreme rainfall event.

Recommendation 19: The Panel recommends that proponent be required to test for, and to map, permeable zones of rock disruption/faults or weathered and unconsolidated granitic rock or other surficial material that is potentially unstable or could act as a water conduit from the tailings containment base to the groundwater outside the TSF. The proponent is also required to use the survey results to plan mitigation for the containment base and dam design as well as locations of monitoring wells. The suggested mapping method to be required of the proponent is a Ground Penetrating Radar (GPR) survey[405]. The proponent should survey along the centreline or perimeter of the proposed dam base plus at least three east-west and three north-south lines across the proposed tailings storage site prior to starting any dam construction.

Recommendations 20: The Panel recommends that the proponent be required to conduct further leaching tests on tailings material. To ensure that the tailings material is representative of what would be produced during mine operation, piloting of the integrated milling process will be required and it is expected that drilling of large diameter holes to collect sufficient fresh un-oxidized ore also may be required for this integrated testwork. The leach tests would determine with more certainty whether concentrations of elements in addition to the currently proposed arsenic and antimony must be removed from tailings and/or leachate water, and, if so, would provide the concentrations in leachate that would serve as the basis for defining capital and operating costs for water treatment.

That prior to, and during the basic engineering phase, the proponent be required to conduct testing as appropriate and incorporate corrective design provisions, which address concerns and risks cited in the Amec Foster Wheeler report dated 20 April 2015.

That measures taken in response to these and other adopted Panel recommendations be addressed in reports that, in the interest of achieving the transparency that fosters public trust, would be posted on the proponent's website.

[405] Geological Survey of Finland, 2015, GPR survey and field work summary in Siilinjarvi Mine during July 2014 http://tupa.gtk.fi/raportti/arkisto/74_2014.pdf

Recommendations 21: The Panel recommends that the proponent be required to conduct additional drilling both in the proposed pit and TSF areas (unless drilling and testing satisfactory to NBELG have been conducted by the proponent and not included in the FEIA), measure seasonal variations in depth to groundwater (perched, if existing, as well as permanent water table) and undertake hydraulic testing to determine permeability, uptake (packer-type tests) and pump down recovery/airlift yield rates for overburden, weathered bedrock, fresh competent bedrock and intervals of faulting or fracturing.

Introduction of tracers in wells up the groundwater gradient also is recommended for determining the actual rate of groundwater flow through bedrock as well as through overburden.

While the proponent has indicated that further geotechnical and hydrology is intended or may have been undertaken, the Panel also recommends that NBELG ensure that the proponent has addressed not only the paucity of engineering and hydrogeology borehole data in the proposed TSF footprint, but also east of, the highest portion of the tailings embankment (~76 to 86 m height from base of Bird Brook). This would be an easterly extension of the pattern of boreholes and testing recommended for the tailings footprint.

The concern about whether there should be a liner at the base of the tailings to control the rate of seepage that could enter the bedrock water table and potentially bypass the WMPs can be addressed by conditions imposed by NBELG on the basis of results from the above test work.

In the interest of maintaining a database for the public record and ensuring credibility of the proponent, the Panel also recommends that the results of all past and ongoing water quality monitoring results for streams, stream nodes, wells etc. be compiled, submitted to NBELG and the annual reports posted on the NBELG web site as has been done[406] for the Drakelands/Hemerdon tungsten project.

Also important for the proponent to address from an environmental baseline perspective prior to any disturbance of the proposed mine site is the uncertainty noted in the Knight Piésold memo of 5 March 2014 about the water quality prediction for node UT1 and the predicted fluoride concentration.

Recommendations 22: The Panel recommends that the proponent be required to have an independent qualified party conduct a major accident downstream risk study to at least a similar standard as was required in the case of the Drakelands mine.

[406] RPS Aquaterra, annually, Hemerdon Tungsten Project Annual Water Monitoring Report, example for 2012, prepared for the Environmental Agency and posted at http://www.southhams.gov.uk/CHttpHandler.ashx?id=5679&p=0. For sourcing such reports, see http://www.southhams.gov.uk/hemerdon

The government should assure that dam inspectors have appropriate and continued training, to ensure that future inspections are completed by adequately trained individuals.

Recommendation 23: The Panel recommends that the proponent review climate change data, particularly in consideration of emerging trends within a greater radius of Sisson, and post this review on The Sisson Partnership web site the results of this review as well as any consequent facility design changes.

Recommendation 24: The Panel recommends acceptance of the slurry tailings disposal system proposed by the proponent on the condition and understanding that if water quality at stream sampling nodes or other environmental predictions do not meet accepted targets the proponent may be required to convert to a filtered tailings system.

Recommendations 25:

1. The Panel recommends that results of the additional geotechnical and hydrology testing recommended earlier in this report and also planned by the proponent should determine whether there is need for a liner and any related drainage at the base of the tailings.
2. The Panel recommends that the proponent post results and reports on any hydrology and geotechnical test work subsequent to the FEIA on The Sisson Partnership web site and hold meetings with both the general public and First Nations to explain significance and respond to related concerns.

Recommendation 26: The Panel recommends that the government follow recommendations of Amec Foster Wheeler which is understood to be conducting an evaluation of the proponent's dam design under a contract with NB Department of Energy and Mines.

Recommendation 27: The Panel recommends that alternative scenarios for closure be addressed and modified as more information is generated by further hydrology investigations at Sisson, from seepage management during mine operation and from the post-closure experience of other open pit mines.

Recommendation 28: The Panel recommends that analytical results from integrated pilot plant ore feed and tailings as well as results of the leaching tests on these materials form the basis for predictive leachate and dust chemistry.

Recommendation 29: That a bonding and liability insurance package be required of the Sisson proponent commensurate with the size and prospective cost differential over the Hemerdon/Drakelands mine.

Recommendation 30: New Brunswick should consider the inclusion of an HIA approach in the scoping stage of Guideline development for future large projects in NB.

Recommendation 31: For future health evaluation of the ambient air data, future monitoring data should be compared to appropriate health-based guidelines. For compliance purposes, NB guidelines would be applicable.

Recommendation 32: The Panel recommends that ambient air quality monitoring be required as a Condition of Approval for the Project. This should be implemented in advance of construction, to ensure adequate characterization of baseline data prior to Project commencement. This approach, in conjunction with monitoring through the various phases of the Project, will provide validation of air quality predictions in the EIA. Data resulting from the monitoring program can be used to implement adaptive management if measured concentrations are increasing beyond ambient air quality guidelines. The specifics of this program could include a variety of parameters, including some of the Criteria Air Contaminants, and/or dustfall.

Recommendation 33: In addition to air quality and vegetation monitoring, the Panel recommends that soil quality monitoring be included as part of the ambient monitoring program associated with the mine. This monitoring will serve to validate EIA soil quality predictions (which are directly associated with the deposition of dusts in the environment). Soil quality monitoring should be stipulated to involve a shallow sampling program (e.g., 0 – 5 cm soil depth), since dust deposition typically is measurable in shallow surficial soils. Comparable baseline soil chemistry characterization will be required prior to construction of the mine for comparison purposes.

Recommendations 34: Since baseline data continues to be collected and additional monitoring is being proposed, the Panel recommends that all monitoring programme designs be submitted well in advance of construction. These designs must include a summary of existing and proposed additional baseline data that will be required to enable an appropriate assessment of potential changes associated with operations, or other project phases. These monitoring study design documents would therefore capture all existing baseline data, as well as proposed future baseline monitoring programmes (which will be undertaken prior to construction). The document would also include proposed sampling and statistical approaches for the monitoring programmes.

Using this approach would facilitate the ability of NBDELG and other key stakeholders to review the monitoring programmes.

In addition, the development of an adaptive management plan framework in advance of operations is also recommended. This framework should provide an early warning system involving action levels, which can be reviewed and discussed with federal and provincial regulatory agencies, in addition to key stakeholders.

Recommendation 35: The Panel recommends that non-cancer health risks associated with arsenic be assessed. This information is recommended in order to confirm whether estimated non-cancer risks are higher than cancer risks, and if this is the case, management or mitigations associated with the most important exposure pathway may need to be considered or modified. Therefore, this recommendation is meant to inform the potential need for additional monitoring or mitigation related to arsenic exposures, should the mine be approved.

Recommendation 36: In light of predicted fish tissue concentrations during operations and concerns related to arsenic speciation, the Panel recommends that a subset of baseline fish fillet monitoring data include speciation of arsenic to determine the relative percentage of inorganic arsenic in fish tissues in the Study area. This speciated analysis should be repeated at Year Five, and in subsequent monitoring years on a subset of fish where fish tissue monitoring is undertaken. This approach will provide updated information relative to inorganic arsenic concentrations in fish tissues, for the purposes of human health evaluations associated with consumption of fish from the Study area.

Recommendation 37: Since an expert in water quality modelling is not included in the Panel, we recommend that NBDOE confirm that the groundwater modelling component of the TSF is complete and accurately represents the potential future groundwater conditions.

Recommendation 38: With respect to thallium, predicted future fish-tissue concentrations appear elevated, and the Proponent should find additional data from either New Brunswick or other parts of Canada. In addition, a proposed framework for adaptive management should be developed prior to operations, with respect to fish tissue and surface waters. The Panel recommends that the Proponent develop thresholds which can constitute an “early warning stage” wherein management actions be implemented to reverse trends of increasing concentrations, if they occur. Following the Proponent’s proposed additional geotechnical and hydrogeological investigations related to the TSF, and re-modelling of potential seepage from the TSF, the proposed mitigation approaches related to groundwater seepage from tailings into area brooks should be re-evaluated to ensure the predicted concentrations and proposed mitigation

approaches are effective at managing the volume of seepage anticipated (including an upper bound estimate of seepage). These measures will help to ensure that risks to aquatic life in nearby streams and brooks, as well as to humans (associated with consumption of fish), are within acceptable levels. These items should be listed as conditions of approval.

Recommendation 39: The Panel recommends that the vegetation modelling be re-visited to include dust deposition onto vegetation. The Proponent's traditional foods monitoring program can then be used to verify these updated predictions.

Recommendation 40: The Panel recommends that the traditional monitoring programme for vegetation species, which the Proponent has committed to developing with First Nations input, identify vegetation species of importance to the First Nations, and ensure adequate baseline data for these selected species are collected. In addition, the Panel recommends that the monitoring programme for traditional plants include more than the two to three sampling locations to which the Proponent has committed. The programme should be designed in consultation with First Nations and NBDLG, and be adequately robust.

Recommendation 41: The Panel recommends that the Proponent be required to prepare a Wildlife Management Plan to identify how wildlife usage of the TSF will be discouraged, mitigated, and monitored. The purpose of monitoring would be to confirm usage of the area is low, as stated in the FEIA. In the instance that wildlife usage of the TSF is found to be higher than anticipated, additional mitigation may be warranted.

Recommendation 42: The Proponent has committed to conducting additional geotechnical and hydrogeological investigations in the TSF area, and the Panel has recommended additional baseline characterization of brooks and streams, which could be impacted by TSF seepage. The Proponent has committed to re-modelling the water quality predictions (seepage and water treatment plant), and in the instance that these remodelling results indicate higher concentrations of any parameters, the risk assessments for aquatic species and consumption of fish and wildlife for humans should be revisited. If this situation occurs, additional mitigation may be warranted.

Recommendation 43: Proponent should develop a site-specific water quality objective (SSWQO), using CCME guidance, for fluoride. This SSWQO can then be used to assess revised water quality predictions, which will be undertaken following further geotechnical and hydrogeological investigations, as well as baseline sampling. If water quality, relative to fluoride, is not adequately protected, additional mitigation will be required.

Recommendation 44: That the Mining Association of Canada's Guide to the Management of Tailings Facilities and their guidance related to Developing an Operation, Maintenance and Surveillance Manual be considered as a framework and guidance for the Proponent's management approach for the TSF. Implementation of this type of framework and guidance would provide safeguards to minimize the potential of a catastrophic failure.

Recommendation 45: The Proponent has committed to conducting additional hydrogeological and geotechnical investigations related to the TSF. The Panel has also recommended that additional baseline data related to both groundwater and surface waters near the TSF be collected, and that the Proponent conduct revised water quality modelling. With this revised and updated information, the adequacy of the Water Treatment Facility design, relative to potential implications of effluent discharge on the receiving environment, needs to be confirmed. This should be a condition of approval.

Recommendation 46: The Panel recommends that the amount of seepage which may be released into area brooks (through bypassing the WMPs) be confirmed, and that the potential for adverse effects to aquatic life in area brooks as a result of this release be re-evaluated, following the Proponents further investigations related to hydrogeological and geotechnical investigations, as well as additional baseline sampling in area brooks and re-modelling of potential impacts. In addition, it is recommended that the Proponent revisit the Water Management Plan to confirm whether the seepage released into area brooks will require the identification of these areas as final discharge points under the MMER regulations. These items should be conditions of approval, as the outcomes will affect monitoring requirements.

Recommendation 47: The Panel recommends that prior to Construction the Provincial and/or Federal departments of fisheries determine the adequacy of baseline data related to Atlantic Salmon and, if necessary, require additional baseline data to be collected. These data, a geotechnical and hydrogeological study related to the Tailings Storage Facility, and refinement of water quality modelling and seepage estimation can then be used to update the potential effects for Atlantic salmon and other aquatic life. This should be a condition of approval.

12.0 Appendices

12.1 Abbreviations and Acronyms

AAS	Aboriginal Affairs Secretariat
AERMOD	American Meteorological Society and Environmental Protection Agency Regulatory Model
AFNCNB	Assembly of First Nations Chiefs of New Brunswick
APT	ammonium paratungstate
ASF	Atlantic Salmon Federation
Assembly	Assembly of First Nations Chiefs in New Brunswick
BAT	Best Available Technology
CAC	Criteria Air Contaminants
CAAQS	Canadian Ambient Air Quality Standards
CAPEX	capital cost
CCME	Canadian Council of Ministers of the Environment
CCME FAL	Canadian Council of Ministers of the Environment Canadian Environmental Quality Guidelines for the Protection of Aquatic Life
CEAA	Canadian Environmental Assessment Agency
CIE	Commission international de l'Eclairage
CLB	Crown Land Block
CMOH	Chief Medical Officer of Health
COPC	chemical of potential concern
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CRs	concentration ratios
dBA	decibel (dB) on the A-weighted scale
DELG	Department of Environment and Local Government
DFO	Department of Fisheries and Oceans Canada
EA	environmental assessment
EEM	environmental effects monitoring
EIA	environmental impact assessment
EPCM	engineering, procurement, and construction management
FEIA	final environmental impact assessment
FN	First Nation
FNEAWG	First Nations Environmental Assessment Working Group
FPIC	Free Prior and Informed Consent
GCDWQ	Guidelines for Canadian Drinking Water Quality
GLU	continuous glacial lacustrine layer
GNB	Government of New Brunswick
GPR	Ground Penetrating Radar
HADD	harmful alteration, disruption, or destruction (of fish habitat)
HHERA	human health and ecological risk assessment
HHRA	Human Health Risk Assessment
HIA	Health Impact Assessment
HPGR	High Pressure Grinding Roll
HQ	Hazard Quotient
IKS	Indigenous Knowledge Study
ILCR	Incremental Lifetime Cancer Risk

IRs	Information Requests
^{40}K	potassium-40
Kg/d	kilogram per day
KI	Kitchenuhmaykoosib Inninuwug Frist Nation
LAA	local assessment area
LSA	Local Study Area
mg/kg	milligram per kilogram
mg/L	milligram per litre
MLA	Member of the Legislative Assembly
ML/ARD	Metal Leeching/Acid Rock Drainage
MMER	Metal Mining Effluence Regulations
MNDM	Ministry of Northern Development and Mines
MSES	Management and Solutions in Environmental Science
Mtu	metric tonne unit
NBDEM	New Brunswick Department of Energy and Mines
NBDNR	New Brunswick Department of Natural Resources
NBDELG	New Brunswick Department of Environment and Local Government
NBPAPC	New Brunswick Aboriginal Peoples Council
NDP	New Democratic Party
NE	Northeast
NHS	National Household Survey
NO_2	nitrogen dioxide
NRC	National Research Council
OBoF	Outer Bay of Fundy
OMS	operation, maintenance and surveillance
OPEX	operating cost
PDA	project development area
PM	Particulate Matter
PNB	Province of New Brunswick
ppm	parts per million
PQRA	Preliminary Qualitative Risk Assessment
RAA	regional assessment area
RWCP	Reclaim Water Clarification Plant
SARA	Species At Risk Act
SCC	Supreme Court of Canada
SEDAR	System for Electronic Document Analysis and Retrieval
SML	Sisson Mine Ltd
SO_2	sulphur dioxide
SOCC	species of conservation concern
SPAAG	Sisson Project Archaeological Advisory Group
SSWQO	site-specific water quality objectives
SW	Southwest
TEK	traditional ecological knowledge
Th	thorium
TOR	Terms of Reference
TRC	Technical Review Committee

TRV	Toxicity Reference Value
TSF	Tailings Storage Facility
TSP	Total Suspended Particulate Matter
U	uranium
UCL	Upper Confidence Limit
ug/m^3	micrograms per cubic metre
UK	United Kingdom
US EPA	United States Environmental Protection Agency
VEC	valued environmental component
WLWB	Wek'e`ezhi`I Land and Water Board in Northwest Territories
WMF	waste management facility
WMP	Water Management Pond
WTF	Waste Treatment Facility
WTP	Water Treatment Plant

12.2 List of Participating Businesses, Groups and Organizations

Below is a list of participating businesses, groups and organizations that provided written comments to DELG and/or spoke at the public meeting.:

Archaeological Prospectors
Assembly of First Nations Chiefs
Atlantic Cat
Atlantic Metal Works Association
Atlantic Salmon Federation
Birds Construction
Bulk Material Handling Systems (B.I.D.) Canada Ltd.
Canadian Rivers Institute
Citizens Coalition for Clean Air
Conservation Council of New Brunswick
Construction Association of New Brunswick
Construction Association of New Brunswick, Saint John Region
Elsipogtog First Nation
Graymont (NB) Inc.
IBEW Local 2166 Electrical Union
International Union of Operating Engineers
Juniper Cooperative Ltd.
Juniper Lodge and Restaurant
Labourers' International Union of North America Local 900
Metal Works
Miramichi Valley Business Association Inc.
N.B. Building Trades
N.B. Rivers Institute
N.B. Salmon Council
Nashwaak Watershed Association
NB Prospectors & Developers Association
New Brunswick Aboriginal Peoples Council
New Brunswick, WSP Canada Inc.
Our Environment, Our Choice Kent County
Parts for Trucks
Pipefitters Union Local 325
Road Builders Association
Roche Limitée
Rock Atlantic
Rural Community of Upper Miramichi
Saint John Construction Association
St. Mary's First Nation
Strategic Workforce Solutions, N.B. Mentor Apprentice Program
Triquetre Protective Services
Village of Doaktown
Village of Millville

Village of Stanley
W&R Gillespie Trucking Ltd.
WSP Canada Inc.

12.3 New Brunswick Treaties

Peace and Friendship Treaty (1726)

Articles of Peace and Agreement: Annapolis Royal 1726

London, England, Public Record Office, Colonial Office Series 217/5: 3r-5r

Whereas by the Articles of Peace and agreement Made & concluded upon att Boston in New England the Fifteenth Day of Decr: One Thousand Seven Hundred & twenty five by our Delegates & Representatives Sanguarum (alias Loron) Alexis Francois Xavier & Meganumbe as appears by the Instrument then Sign'd Seal'd & Exchanged in the Presence of the Great & Generall Court or Assembly of Ye Massachusetts Bay by our Said Delegates in behalf of us the Said Indians of Penobscott, Norrdigewalk, St Johns, Cape Sable, and the other Indian Tribes belonging to & inhabiting within these His Majesty of Great Britain's Territories of Nova Scotia & New England & by Majr Paul Mascarene Comissioner from this said Province in behalf of His Majesty by which Agreement itt being requir'd tht the Said Articles Shoul'd be ratified with Full Power & Authority by an Unanimous Consent & desire of the Said Indian Tribes who are Come in Complyance with ye Articles Stipulated by our Delegates as aforesaid and do in Obedience thereunto Solemnly Confirm & ratifie ye Same & in Testimony thereof with Hearts full of Sincerity. Wee have Sign'd & Seal'd the Following Articles being Conform to what was requir'd by the Said Majr Paul Mascarene & Promise to be perform'd by our Said Delegates.

Whereas His Majesty King George by the Concession of the Most Christian King made att the Treaty of Utrecht is become ye Rightfull Possessor of the Province of Nova Scotia or Acadia According to its ancient Boundaries, wee the Said Chiefs & Representatives of ye Penobscott, Norridgewalk, St. Johns, Cape Sables & of the Other Indian Tribes Belonging to & Inhabiting within This His Majesties Province of Nova Scotia or Acadie & New England do for our Selves & the said Tribes Wee represent acknowledge His Said Majesty King George's Jurisdiction & Dominion Over the Territories of the said Province of Nova Scotia or Acadia & make our Submission to His said Majesty in as Ample a Manner as we have formerly done to the Most Christian King.

That the Indians shall not molest any of His Majesty's Subjects or their Dependants in their Settlements already made or Lawfully to be made or in their carrying on their Trade or other affairs within the said Province.

That if there Happens any Robbery or outrage Comitted by any of our Indians the Tribe or Tribes they belong to shall Cause satisfaction to be made to ye partys Injured.

That the Indians shall not help to convey away any Soldiers belonging to His Majesty's forts, but on the contrary shall bring back any soldier they shall find endeavouring to run away.

That in case of any misunderstanding, Quarrel or Injury between the English and the Indians no private revenge shall be taken, but Application shall be made for redress according to His Majesty's Laws.

That if there are any English Prisoners amongst any of our aforesaid Tribes, wee faithfully promise that the said Prisoners shall be releasd & Carefully Conducted & delivered up to this Government or that of New England.

That in testimony of our Sincerity wee have for ourselves and in behalf of our Selves & in behalf of Our Said Indian Tribes Conforme to what was Stipulated by our Delegates at Boston as aforesaid, this day Solemnly Confirmd & ratified each & every one of the aforegoing Articles which shall be punctually observed and duly performed by Each & all of us the Said Indians. In Witness Whereof wee have before the Honourable John Doucett & Councill for this His Majesty and the Deputies of the French Inhabitants of Sd Province hereunto Sett our Hands & Seals att Annapolis Royall this 4th day of June 1726 in the twelvth year of His Majesty's Reign.

Reciprocal Promises Made by Captain John Doucett: 1726

London, England, Public Record Office, Colonial Office Series 217/4: doc. 321

This a shortened version, with two paragraphs preamble not included.

Whereas the Chiefs of the Penobscott, Norrigwock, St. Johns, Cape Sable Indians and of the other Indian Tribes & their Representatives Belonging to and Inhabiting within this his Majesty's Province of Nova Scotia Confrome to the Articles Stipulated by their Delegates, Sangarumn (alias) Laurens, Alexis, Francis Xaver, & Meganumbe, at Boston in New England The Fifteenth day of December one thousand Seven hundred & twenty five have come to this His Majesty's Fort of Annapolis Royal and Ratifyed said Articles and made their Submission to his Majesty George by the grace of god of great Britain France & Ireland King Defender of the Faith &c and Acknowledged his said Majesty's Just Title this his said Province of Nova Scotia or Acadia & promised to Live peaceable with all his Majesty's Subjects & their Dependants & to performe what Further is Contained in the Severall articles of their Instruments. I do therefore in His Majesty's name for and in Behalf of this his said Government of Nova Scotia or Acadia Promise the Said Chiefs & their Respective Tribes all marks of Favour, Protection & Friendship.

And I do Further promise & in the absence of the honble the Lt. Govr of the Province in behalf of the this said Government, That the Said Indians shall not be Molested in their Persons, Hunting Fishing and Shooting & planting on their planting Ground nor in any other their lawfull occasions, By his Majesty's Subjects or their Dependants in the Exercise of their Religion Provided the Missionarys Residing amongst them have Leave from the Governor for So Doing.

That if any Indians are injured by any of his Majesty's Subjects or their Dependants They shall have Satisfaction and Reparation made to them According to his Majesty's Laws whereof the Indians shall have the Benefit Equall with his Majesty's other Subjects.

That upon the Indians Bringing back any Soldier Endeavouring to run away from any of His Majesty's Forts or Garrisons, the Said Indians for this Office Shall be handsomely rewarded.

That as a Mark and token of a true Observation & Faithfull Performance of all and Every Article promised on his Majesty's part by the Government I have by and with the Advice of the Council for said Government Releas'd and Sett att Liberty the Indian Prisoners.

Given under my hand and Seal at his Majesty's Fort of Annapolis Royall this 4th day of June in the Twelvth year of his Majesty's Reign.

John Doucett

Lieu Govr of Annapolis Royal

Peace and Friendship Treaty 1760

Treaty of Peace and Friendship concluded by the Honorable Jonathan Belcher Esquire, President of His Majesty's Council and Comr. in Chief in and over his Majesty's Province of Nova Scotia or Accadia with Joseph Shabecholouest of the Merimichi tribe of Indians at Halifax in the Province of N.S. or Accadia.

I, Joseph Shabecholouest do for myself and the tribe of Merimichi Indians of which I am Chief do acknowledge the jurisdiction and Dominion of His Majesty George the Third over the Territories of Nova Scotia or Acadia and we do make submission to His Majesty in the most perfect, ample and solemn manner.

And I do promise for myself and my tribe that I nor they shall not molest any of His Majesty's subjects or their dependents, in their settlements already made or to be hereafter made or in carrying on their Commerce or in any thing whatever within the Province of His said Majesty or elsewhere.

And if any insult, robbery or outrage shall happen to be committed by any of my tribe satisfaction and restitution shall be made to the person or persons injured.

That neither I nor any of my tribe shall in any manner entice any of his said Majesty's troops or soldiers to desert, nor in any manner assist in conveying them away but on the contrary will do our utmost endeavours to bring them back to the Company, Regiment, Fort or Garrison to which they shall belong.

That if any Quarrel or Misunderstanding shall happen between myself and the English or between them and any of my tribe, neither I, nor they shall take any private satisfaction or Revenge, but we will apply for redress according to the Laws established in His said Majesty's Dominions.

That all English prisoners made by myself or my tribe shall be sett at Liberty and that we will use our utmost endeavours to prevail on the other tribes to do the same, if any prisoners shall happen to be in their hands.

And I do further promise for myself and my tribe that we will not either directly nor indirectly assist any of the enemies of His most sacred Majesty King George the Third, his heirs or Successors, nor hold any manner of Commerce traffick nor intercourse with them, but on the contrary will as much as may be in our power discover and make known to His Majesty's Governor, any ill designs which may be formed or contrived against His Majesty's subjects. And I do further engage that we will not traffick, barter or Exchange any Commodities in any manner but with such persons or the managers of

such Truck houses as shall be appointed or Established by His Majesty's Governor at Fort Cumberland or Elsewhere in Nova Scotia or Accadia.

And for the more effectual security of the due performance of this Treaty and every part thereof I do promise and Engage that a certain number of persons of my tribe which shall not be less in number than two prisoners shall on or before September next reside as Hostages at Lunenburg or at such other place or places in this Province of Nova Scotia or Accadia as shall be appointed for that purpose by His Majesty's Governor of said Province which Hostages shall be exchanged for a like number of my tribe when requested.

And all these foregoing articles and every one of them made ….I do promise for myself and on of sd part -- behalf of my tribe that we will most strictly keep and observe in the most solemn manner.

In witness whereof I have hereunto putt my mark and seal at Halifax in Nova Scotia this Twenty-fifth day of June one thousand seven hundred sixty one and in the First year of His Majesty’s Reign.

His

Joseph Shabecholouest

Mark

The 1760 Treaty Signed with the St. John and Passamaquoddy

23 Feb 1760

Whereas Articles of Submission and Agreement were made and concluded at Boston in New England in the Year of Our Lord 1725 by Sauguaaram alias Loron Arexus Xavier and Meganumbe, Delegates from the Tribes of Penobscott Naridgwalk St. Johns and other tribes inhabiting His Majesty's Territories of Nova Scotia and New England, in manner and form following Vizn.

Articles of Submission and Agreement at Boston in New England by Sauguaaram als Loron Arexus Francois Xavier and Meganumbe Delegates from the Tribes of Penobscot Naridgwalk St. Johns Cape Sable and other Tribes of the Indians inhabiting within His Majesty's Territories of Nova Scotia and New England.

Whereas His Majesty King George by the Concession of the most Christian King made at the Treaty of Utrecht is become the Rightfull possessor of the Province of Nova Scotia or Accadie according to its ancient Boundaries We the said Saugaaram als Loron Arexus Francois Xavier and Megamumbe Delegates from the said Tribes of Penobscot Naridgwalk St. Johns, Cape Sables and other Tribes inhabiting within His Majesty's said Territories of Nova Scotia or Accadie and New England So in the Name and behalf of the said Tribes we represent acknowledge his Said Majesty King Georges Jurisdiction and Dominion over the Territories of said Province of Nova Scotia or Accadie and make our Submission to his Said Majesty in as ample a manner as We have formerly done to the Most Christian King.

And we further promise in behalf of the said Tribes we represent that the Indians shall not molest any of His Majesty's Subjects or their Dependants in their Settlements already or lawfully to be made or in their carrying on their Trade and other affairs within said Province.

That if there happens any Robbery, or outrage Committed by any of the Indians the Tribe or Tribes they belong to shall cause Satisfaction and Restitution to be made to the Parties injured.

That the Indians shall not help to convey away any Soldiers belonging to His Majesty's Forts, but on the contrary shall bring back any soldier they find endeavouring to run away.

That, in case of any misunderstanding Quarrel or Injury between the English and the Indians no private Revenge shall be taken but application shall be made for Redress according to his Majesty's laws.

That is the Indians have made any Prisoners belonging to the Government of Nova Scotia or Accadie during the course of the War they shall be released at or before the Ratification of the Treaty.

That this Treaty shall be Ratified at Annapolis Royal.

Dated at the Council Chamber at Boston in New England this fifteenth day of December An Dom, one thousand Seven hundred and twenty five Anno R.R. George Mag Britain and Duodecimo.

Which Articles of Submission and Agreement were renewed and confirmed at Halifax in Nova Scotia in the Year of Our Lord 1749 by Joannes Pedousaghugh Chief of the Tribe of Chignecto Indians and Francois Aroudourvish, Simon Sactarvino and Jean Baptiste Maddouanhook, Deputies from the Chiefs of the St. Johns Indians in manner and form following Vizn.

I Johannes Pedoudaghugh Chief of the Tribe of Chignecto Indians for myself and in behalf of my Tribe my Heirs and their heirs for ever and We Francois Aroudorvish, Simon Sactarvino and Jean Baptiste Maddouanhook Deputies from the Chiefs of the St. Johns Indians and invested by them with full powers for that purpose Do in the most solemn manner renew the above Articles of Agreement and Submission and every Article thereof with His Excellency Edward Cornwallis Esq. Captain General and Governor in Chief in and over His Majesty's Province of Nova Scotia or Accadie Vice admiral of the Same Colonel in His Majesty's Service and one of his bed Chamber in Witness whereof I the said Johannes Pedousaghugh have Subscribed this Treaty and affixed by Seal and We the said Francois Aroudorvisah Simon Sactarvino and Jean Baptiste Maddouanhook in behalf of the Chiefs of the Indian Tribes we Represent have Subscribed and affixed our Seals t the Same and engage that the said Chiefs shall Ratify this Treaty at St. Johns. Done in Chibucto Harbour the fifteenth of August One Thousand Seven hundred and forty-nine.

In Presence of P. Hopson, Mascarence, Robt ellison, Ian T. mercer, Chas. Lawrence, Edn How, Edm. Gorham, Benj. Green, John Salusbury, Hugh Davidson, William Steele (Members of the Council for Nova Scotia)

Johannes Pedousaghsigh

Francois Arodorvish

Simon Sactarvino

Jean Bap.t Maddouanhook

And the same was according Ratified at St. Johns in manner and form following Vizn.

The Articles of Peace on the other Side Concluded at Chibucto to the fifteenth of August One Thousand Seven hundred and forty nine with His Excellency Edward Cornwallis Esq.r Cap.t Gen. Gov.r & Commander in Chief of His Majesty's Province of Nova scotia or Accadie and Signed by our Deputies having been communicated to Us by Edward How esq.r One of His Majestys Council for Said province, and faithfully Interpreted to Us by Madam DeBelliste inhabitant of this River nominated by Us for that purpose We the Chiefs and Captains of the River St. John and places adjacent do for ourselves and our different tribes Confirm and Ratify the same to all Intents and purposes.

Given under our Hands at the River St. Johns the fourth day of September One Thousand Seven hundred and forty nine n presence of the under written Witnesses.

Michell / Narragonis chief
Nicola / Neguin Capt
Francois / De Xavier Archibano Marqillie
Pierre / Alexander Margillie
Augustin / Meyacvet, Maitre Chief deRiv St. Jean
Francois / Mayanyarvet, Maitre Lerure D.
Rene / Neguin
Neptune / Pierre Paul Chief Pasmequody
Luafin / Papanlouet
Francois / Germain Capt
Pierre / Bennoit Capt
Francois / Drino Capt
Rene / file D'ambroise Capt

Ed.d How One of His Majesty's Council

Nath Dennal

John Beare

Joseph Winniett

John Wonn

Rob McKoun

Matt Winniett

John Phillipps

And Whereas the said Articles of Submission and Agreement, so made and concluded, renewed, confirmed and ratified have notwithstanding been since violated contrary to the good Faith therein engaged for the constant and strict Observation and performance thereof and to the Allegiance due from the said Tribes to His Majesty Our Sovereign

Lord King George We Mitchel Neptune Chief of the tribe of Indians of Passamaquoddy, and Ballomy Gloade Captain in the Tribe of Indians of St. John's River Delegates from the said Tribes and by them fully authorised and empowered to make and conclude with His Excellency Chas Lawrence Esq.r His Majesty's Captain General and Governor in Chief of the Province of Nova Scotia or Accadie in behalf of His Majestys Government of the Said Province a Treaty for the renewal and future firm Establishment of Peace and Amity between the said Tribes of Passamaquoddy and St. Johns River Indians and His Majesty's other subjects and to renew the Acknowledgement of the Allegiance of the said Tribes and their engagements to a perfect and constant Submission and Obedience to His Majesty King George the Second his Heirs and Successors Do accordingly in the name and behalf of the said Tribes of Passamaquoddy and St. Johns herby renew and Confirm the aforesaid Articles of Submission and Agreement, and every part thereof and do so solemnly promise and engage that the same shall for ever hereafter be strictly observed and performed.

And We the said Mitchel Neptune and Ballomy Glode, for ourselves and in the name and behalf of the said Tribes of Passamaquoddy and St. Johns Indians Do respectively further promise and engage that no person or persons belonging to the said Tribes shall at any time hereafter aid or Assist any of the Enemies of His most Sacred Majesty King George the Second or of his Heirs and successors nor shall hold any Correspondence or Commerce with any such His Majesty's Enemies in any way or manner whatsoever and that, for the more effectually preventing any such Correspondence and Commerce with any of His Majesty's Enemies the said Tribes shall at all times hereafter Trafic and barter and exchange Commodities with the Managers of such Truckhouses as shall be established for that purpose by his Majesty's Governors of this Province at Fort Frederick or elsewhere within the Said Province and at no other place without permission from his Majesty's Government of the said Province.

And We do in like manner further promise and engage that for the more effectually securing and due performance of this Treaty and every part thereof a certain Number, which shall not be less than Three from each of the aforesaid tribes, shall from and after the ratification hereof constantly reside in Fort Frederick at St. Johns or at such other place or places within the Province as shall and at no other place without permission from His Majesty's Government of the said Province.

And We do in the manner further promise and engage that for the more effectually securing and due performance of this Treaty and every part thereof a certain Number, which shall not be less than Three from each of the aforesaid tribes, shall from and after the Ratification hereof constantly reside in Fort Frederick at St. Johns or at such other place or places within the Province as shall be appointed for that purpose by His Majesty's Governors of the said Province as Hostages, which Hostages shall be exchanged for a like Number of others or of the said Tribes when requested.

And We do further promise and engage that this Treaty and every part thereof shall be ratified by the Chiefs and Captains and other principal persons of the said Tribes at Fort Frederick aforesaid on or before the 20th May next.

In Faith and Testimony whereof We have Signed these Presents and caused the Seal of the Province to be hereunto affixed, and the said Michel Neptune and Ballomy Glode have hereunto put their Marks and Seals in the Council Chamber at Halifax in Nova Scotia the Twenty third Day of February in the Year of our Lord One Thousand Seven hundred and sixty and in the Thirty third Year of His Majesty's Reign.

A true Copy.

By His Excell.ys Comm
Rich.d Bulkeley, Sec.y