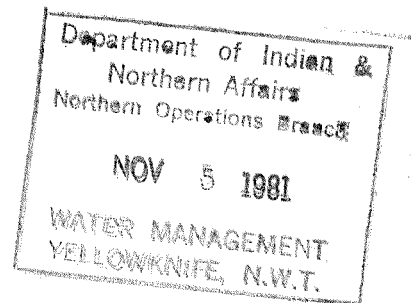


NORTHWEST TERRITORIES WATER BOARD  
PUBLIC HEARING

APPLICATION FOR WATER LICENCE BY  
CADILLAC EXPLORATIONS LIMITED  
PRAIRIE CREEK, N.W.T.

May 20, 1981  
Fort Simpson, N.W.T.



## INDEX

	<u>Page</u>
Introduction (G.B. Warner)	1
<u>PRESENTATIONS</u>	
Cadillac Explorations Limited L. Morrisroe	4
Village of Fort Simpson O. Watsyk	8
Department of the Environment/Department of Fisheries and Oceans J. Parkinson	16, 59
Department of Fisheries and Oceans L. de March	28
Dene Nation/Metis Association of the N.W.T. J. Bayly	30
H. Norwegian	36
Parks Canada M. Falk	42
R. Lamothe	69, 74
A. Lafferty	79
K. Sibbeston	87
D. Antoine	89
<u>INDIVIDUALS - QUESTIONS AND COMMENTS</u>	
O. Watsyk	9, 10, 85
G. Warner	9, 10, 35, 40, 62, 64, 66, 67, 68, 73, 74, 86
L. Menez	12, 14, 41, 60, 82, 83, 84
A. Cullen	14, 64, 67, 69
J. Bayly	36, 41
M. Falk	43, 44, 45, 46

INDIVIDUALS - QUESTIONS AND COMMENTS (continued)

	<u>Page</u>
B. Fletcher	43, 45, 46, 48, 50, 51
W. Dwernychuk	44, 45
B. Wilson	46, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 66, 67
N. Guild	46, 47, 49, 50, 52, 53, 54, 55, 56, 57, 61, 68
M. Bath	50, 64, 65
L. Morrisroe	51, 52, 65, 68, 82, 83
R. Nendick	58
C. Piche	61
R. Lamothe	63, 64, 65, 66, 68, 73, 74, 82, 83, 84
P. Hardisty	101
Summation	
N. Guild	91
L. Morrisroe	102
Adjournment	103

NORTHWEST TERRITORIES WATER BOARD PUBLIC HEARING ON THE APPLICATION FOR WATER LICENCE BY CADILLAC EXPLORATIONS LIMITED, PRAIRIE CREEK, NORTHWEST TERRITORIES HELD AT FORT SIMPSON, NORTHWEST TERRITORIES.

Mr. G.B. Warner, Chairman, Northwest Territories Water Board called the meeting to order at 10:15 a.m. on May 20, 1981.

MR. WARNER: Good morning ladies and gentlemen. I would like to re-open this Hearing on the application for a water licence by Cadillac Explorations Limited for mine and mill use of water and waste disposal associated with their mine at Prairie Creek, Northwest Territories.

Before I start I would like to give you some additional information on the Northwest Territories Water Board. About 16 years ago it became generally recognized by all political parties in our National Legislature that protection of the environment in which all Canadians must live had become an issue above politics in the traditional sense of parties and pressure groups advancing limited interests.

Among the pieces of legislation passed to protect the environment of Canada, particular to the Northwest Territories and Yukon Territories, is the Northern Inland Waters Act which empowers this Board to approve or disapprove, or approve with suitable conditions, applications brought by persons, settlements, municipalities or corporations proposing water use and waste disposal projects such as that of Cadillac Mines before us today.



The purpose of this Hearing is to provide a public forum at which the Board will hear and consider submissions from Cadillac Mines, from various Government agencies which have investigated this project, and concerned citizens having opinions to express about effects of the project on the conservation, development and utilization of the Northwest Territories water resources.

To ensure that the focus of the Board's attention remains where it must, on the priority of water quality, the Parliament of Canada has instructed the Board to restrict its deliberations to the effect or likely effect of the proposed use on the water environment. Water is the business of the Water Board; the optimal use of water resources for the benefit of all Canadians and for the peoples of the Northwest Territories in particular.

While the Board must necessarily receive submissions from the applicant, the Government agencies involved in the management of water resources, it is particularly and vitally concerned to hear what people have to say who use the particular water environment to support their way of life. The Board recognizes that knowledge of the water environment is not confined to academics and consultants. A view of the local picture requires the knowledge of those who have lived upon the rivers, lakes and streams from times past remembering.

I would like to now introduce to you members of the Water Board who are with us today. On my extreme right is Dr. Otto Schaefer who is a medical doctor and who has been practicing medicine and doing research in the Northwest Territories since 1953. Dr. Schaefer first came to the Territories in Aklavik at that time so has a first-hand knowledge of the Mackenzie River and this particular area.

Next to him, it gives me great pleasure to welcome a new member to the Water Board, Mr. Bill Case, who is sitting now in the place previously occupied by our friend, now deceased, Mr. Bill Gibney. Bill came to the North first in 1943, in fact he was here in Fort Simpson as a high school student working on the riverboats in 1943. He returned in 1946 as a university student working on Great Bear Lake and he is now the Senior Mining Engineer with Cominco's Northern Group. He has had a long history of living and working in the Northwest Territories.

On my right is someone who has been with us here for some time, Mr. Mush Mersereau. Also a long time Northerner, 18 years in the Northwest Territories, a lot of it right here on the Mackenzie River.

On my left, Lou Menez, likely had two Native languages before he acquired English, first at Resolution, then at Cambridge Bay, and close to my place of summer occupation at Bathurst Inlet.

Next to Lou is a well-known Northerner, born on the Mackenzie River, Mr. D'Arcy Arden who has probably walked over most of the Western Arctic and is well known to us all.

My name is Glenn Warner. I'm a relative new-comer. I first went down the Mackenzie River in 1955, just about 26 years to the day right now, on my way to Aklavik.

So with that I would like to outline the procedure we will follow today. First I will ask the applicant, Cadillac Explorations Limited, for an opening statement. Then we will go to the individuals who have submitted a formal brief and they will be given that opportunity to present the brief. Then I will open the meeting to anyone who wishes to ask questions, either of the applicant or those who presented a brief,

and finally the applicant will be given an opportunity to respond to the points raised.

For any of you who weren't here last time, or have not attended a Water Board Public Hearing, in order to keep the discussions orderly, people who wish to ask a question are asked to raise their hand and obtain permission from the Chairman before speaking. Each speaker is required to identify himself or herself into the microphone and indicate what organization he represents, if any. I would ask that you come up and speak into the microphone, if you have questions, in order that we can ensure we have the questions on tape for the verbatim transcript of the proceedings which will be prepared after the Hearing.

I would now ask Mr. Laurence Morrisroe of Cadillac Explorations for an opening statement. Mr. Morrisroe.

MR. L. MORRISROE: Thanks Glenn. The last water meeting that was started, or this present water meeting, was the first meeting that I attended and I wasn't expecting questions regarding the whole environment. We thought we were basically looking at water, initially. So I thought to help any confusion, there seemed to be two big concerns at the last meeting; keeping the water clean and, number two, what benefit was going to be to the Native people, to the people of Fort Simpson and to the Northwest Territories. So I thought I would just touch on that a minute before we let the professional people here take over.

Now my understanding is, as Glenn has pointed out to you, the Water Board is appointed and their purpose is to keep the water clean. And the engineers that work for the Federal Government and the Government of the Northwest Territories, the engineers that work for Cadillac Mines,

if there's problems to keep the water clean, we intend to do so. I hope I don't run into a reoccurrence of the last meeting. All these engineers on both sides are all ethical, professional people. At the last meeting we had the unfortunate situation of another professional person calling these same engineers a stranger to the truth, which is very upsetting in regards to Cadillac Mines.

Another thing, with the Native people, they talk about living off the land. Well, they've lived off the land for many years, but they've got to realize that things are changing. The same with the white people of the South. 75 years ago 75% in the United States, the people lived off the land. Today, only 25% live off the land and the other 75% live off other means of life. I think it's only fair, the Native people are changing. There is a certain amount of people that are going to live off the land but there are a lot of the people changing and the younger people are not intending to live off the land. So keeping that in mind, I think being fair to all your people and everything, that you should be providing for them other ways of life.

That's exactly what Cadillac is preparing to do, is to give people employment, give them training programs, and so forth. Now just to give you a slight rundown of what the benefits of this mine can provide. The benefits are there if the people want to take advantage of them. As I told you at the last meeting, it's our intention that we give all of the Northern people here, and Native people, the first opportunity on these benefits. We'd like you to understand, a lot of people accuse the company of saying they don't want to give the people of the North employment. Well that's one of the things the company would like to do. They would like to get all their employees here from the North because

it would be a great benefit to the company, transportation wise and everything. The people here would be at home, it makes steady employment and so forth. So it's the company's wish that this can be done.

Now just to give you an idea of what this mine can do for the area. It will have a payroll of 200 people which will be six million dollars a year on this mine. The trucking alone that will be in the Northwest Territories will be four million dollars a year. The fuel supplies and supplies that are purchased out of the Territories and trucked into the Territories is another five million dollars a year. And the other services, flying, construction, hotels, automobiles and so forth, is a minimum of another million dollars. So that's 16 million dollars as the benefits here which can be derived by the people here of the North. It's available to them if they want to take the benefit.

Now the mine. For example, I listened in on the Hearing here on Monday with the Minister on the pipeline, this Norman Wells Pipeline. Our mine will employ four times as many people as what this pipeline will and these people are all in your area and those 50 people are scattered all the way from Norman Wells down to the central part of Alberta.

This capital expenditure, for example, of Esso is 61 million dollars. That's the capital expenditure. For example, this mine will leave 16 million dollars here in the Territory, you know what I mean, every year it carries on. So I want to just show you what the benefits are, you know what I mean, to this mine.

Now I know the Parks have had hesitations about the mine and no doubt they've got good reasons, that's their job and so forth.

But let's come back to the parks of the Native people. Number one, we were there before the Parks. We had a capital expenditure of six or seven million dollars before the Parks came. We didn't object when the Parks came and we'll look at what the benefits of the Park are to the local people. I know the Park belongs to everybody in Canada, but the benefits we will give the area will be more benefits in one year than what the Parks will be, you know what I mean, to 50 years to the people of this area. So I know that Park's there, but I want you, you have to weigh your local benefits out, what advantage is it to the Parks. Probably in the next 30 years there'll only be 5% of the people of the Territories will ever visit the Parks.

So that, I'm just pointing out the benefits and so forth. Now I'd like to introduce our people, and I want you to keep in mind today that these people that we've all engaged from Cadillac, they're all professional people, they're all acting on their own merits, we don't tell them what to do, that's their profession and they're all professionals in their field, and they hope to be able to explain to you people the solving of any problems that you people have in mind today.

So I'd like to introduce to you, on my right here, Mr. Norman Guild. He's got a Bachelor of Science degree, a professional engineer in hydrology and waste disposal. And Murray Bath, here on my right, he's a Project Engineer and professional in metallurgy, and he's employed by Kilborn Engineering. By the way, I might back up, did I mention Mr. Guild was with Ker, Priestman and Associates? And Roger, stand up Roger, this is Roger Nendick, he has a Bachelor of Science and he's a Project Engineer and he's also employed by Kilborn Engineering.

And Wayne Dwernychuk, will you stand up Wayne, and Wayne's a Ph. D. in aquatic sciences and that takes in fisheries. And at the far right is Brian Fletcher of Golder and Associates who looks after the tailings ponds and the dams. Their firm is very near world-wide, they're experts in that field, and Brian's a Ph. D. and a professional engineer specializing in geo-technical and tailings.

So I'll turn back to you Mr. Warner.

MR. G. WARNER: Thank you Mr. Morrisroe. To get on with the written briefs, I would like to call first on the Mayor of Fort Simpson, Mr. Watsyk, to submit the brief from the Village of Fort Simpson.

MR. O. WATSYK: I suppose it's me you refer to?

MR. G. WARNER: That's right.

MR. O. WATSYK: That pronunciation: I always hear a new one.

MR. G. WARNER: Oh, I'm sorry. Let me hear how it is, I'll remember it for next time.

MR. O. WATSYK: Watsyk.

MR. G. WARNER: Watsyk.

MR. O. WATSYK: Yes, it sounds as it's written.

For the matter of record, my name is Orest Watsyk and I'm representing the Village of Fort Simpson. The Village's position has been outlined to you. For the record of the Public Hearing it reads, "With reference to your letter of March 25, 1981, the Council of the Village of Fort Simpson would like to go on record as supporting the Cadillac Development providing they meet all environmental regulations as per the attached letter of February 20, 1981."

Our letter was based on the performance, not of Cadillac Mine, but of the Water Board. We did not know the details, we haven't had any reports on Water Board and so on, but generally it was felt that the Water Board has been in place for a quantity of years and that they had a fairly decent track record; that we've had no disasters. We did hear on CBC about the problems they're having at Canada Tungston and so on, so for our good and the good of the community, would you people be able to give us a bit more of the details of say the Water Board and their experiences with mines and the potentially hazardous situations over the years?

MR. G. WARNER: Would you like a list of the mines that are licenced presently in the Northwest Territories? Is that what you had in mind? Any mine that is presently operating in the Northwest Territories operates under a licence from this Board and every one has gone through this same Public Hearing process, and the technical data has been considered by a Technical Advisory Committee of the Northwest Territories Water Board prior to a licence being issued. The conditions that are attached to the licence are the important thing. These are the rules and procedures that the mine must follow to operate their mine and every mine has conditions and the conditions, of course, vary from place to place. Some mines, like the Lupin Mine on Contwoyto Lake, has total containment of their tailings, they have an area that they can put their mine waste into and contain it. Other mines have to treat their tailings before it's permitted to be released into another water regime. For instance, this applicant we have before us wishes to dispose some of their mine effluent into Prairie Creek. Therefore, there will be conditions attached



to the licence to ensure that the quality of liquid released into Prairie Creek will meet very strict guidelines, guidelines that are set by the Government of Canada and that are made even more strict by the Northwest Territories Water Board.

Does that help Orest?

MR. O. WATSYK: Yes. The idea that, okay, they have come up with a plan, it's being discussed here, and then, in time, construction goes ahead, operation starts up and possibly problems arise. That must have happened in other mines. What's the routine in such a case so that serious problems, contamination of streams, is avoided through accident?

MR. G. WARNER: Well certainly the most important consideration is that the Water Board attaches conditions to a licence that a serious situation will not arise. However, as was mentioned here last time, if there is a major natural disaster over which none of us have any control, then the mine is put in a position of implementing their contingency plan. Now if you wanted something further on that I could refer it to our Controller of Water Rights, Mr. Andy Cullen, to tell you how these licences are monitored. We usually do that at the last of the Hearing, but we can do it now if you'd like. After the licence is issued it's up to Mr. Cullen and his staff to inspect the mine and to monitor their operations.

MR. O. WATSYK: Well it's at your discretion which time it's presented, but that's the type of information that might allay some of the concerns and fears that have been sounded.

About 18 years ago, when Territorial Council was still meeting in Ottawa, our member at that time said well, things are going well here in Fort Simpson, no one's starving. My reaction to that comment

was well, how good is the situation here. I had then sort of listed the number of males between 16 and 85, and there were about 105. There were about five whom I would call full-time trappers at that time, they'd be trapping from, they'd be gone about the end of September, they'd be back in spring time, be gone on spring hunt, come into town, they'd be working preparing for the next year. We had, I'd say, roughly 50% unemployment amongst the males. Amongst the females it must have been a lot higher than that. I was concerned at that time because we did have youth coming up through the school. What options were there for the young people?

The one sort of beneficial comment on the employment situation at that time was, well there was one major wage earner per household; that those few jobs that we had were spread out. Now, 15 or 18 years later, we do have high unemployment here; we do have a high incidence of alcoholism; we do have an average age of our population that is reasonably young. So they also have the problem of employment and plans for their productive lifetime.

Therefore, we would be concerned about what are the prospects for youth and those people looking for full-time employment. It was interesting that Mr. Morrisroe just mentioned this in his opening here this morning. From experience living here in Fort Simpson, I'd say we do need the employment opportunities, the training that goes with it. We do need alcohol management in a broad sense.

The Village and the Band have been working together on a rationing system that is by no means perfect, at least we've been making an attempt. I don't know of a solution for the alcohol problem, maybe

exporting some of our ideas and having some of these restrictions over a broader part of the Northwest Territories, because I don't think we're the only ones with that problem. The Friendship Center is getting a Life Skills Coaching Program, hopefully, going this winter so that will also, we hope, have a beneficial effect on those people who are interested in sort of improving their general situation.

We also do want protection of the environment, the type of protection that you had mentioned that you people are charged with. Village Council also does recognize that there is to be a land claims between the Federal Government and the local Dene.

So we are aware of all these problems. I suppose we'd want to avoid a situation in which we're damned if we do and we're damned if we don't. If we don't have employment, we're going to have more serious problems. If we do have employment and things like environment and so on are not protected, we have other problems and we'd not want to go from the frying pan into the fire.

Our position was based on faith in the Water Board, that the agency's in place, it's functioning, and serious problems or problems of any nature would be avoided. Thank you.

MR. G. WARNER: Thank you Mr. Watsyk.

FR. L. MENEZ: Lou Menez. Mr. Chairman, I would like to complete your answer about the power of the Water Board.

MR. G. WARNER: Go ahead.

FR. L. MENEZ: Or even what we call a general set-up about the protection of the environment in the Territories. Is that your concern? Do we have in the Territories a good set-up so that what you talk about major disasters,

I hope not, but even what we call small disaster, what we call pollution, could be avoided because we have a good Water Board and a good system of environmental protection service. My own opinion, and does not implicate all the members of the Water Board, my own opinion is that it is not the best.

One of the reason for that is because the people working for the protection of the environment, be EPS, DOE, Water Resource, are very few compared to the whole work to be done. It is a big Territory. It seems that everybody, small, big company, wants to open his little gold mine in the Northwest Territory at this present time. There is, in my own opinion, a perpetual pollution going on in our water system in the Mackenzie Drainage System and a good example of that is Yellowknife with Giant, Con, Pine Point in a way, certainly the way they are mining is not proper to a good approach to the economy of the area.

Another example is the drainage of what I would call the Liard or the Nahanni drainage area. I mean the first step is not taken even. What I would call a proper water management plan for the whole area. It's very fine and dandy to tell us that the Cadillac Mine would not pollute too much, or very much, or extensively, Prairie Creek, but the way it is going, at the speed we are going, there will be more mines opening in that area and before we know it the people in Nahanni, the people here, will not be able to drink the water from the river.

So this is what's lacking, I believe, in the protection of the environment. Lack of personnel and lack of general water management planning. So it's not very safe at all. It's even dangerous to go ahead with any major development, and certainly in an area like this one,

the Nahanni area. I don't know, I'm still waiting for more answers from the mine, from the technicians, from the people working with DOE, EPS and Water Resources.

MR. G. WARNER: Thank you Lou.

FR. L. MENEZ: If I am wrong, I would like somebody to correct me.

MR. G. WARNER: Well I think we've set the tone for an opening here, and I think it may help everyone understand if we did hear from Andy Cullen, the Manager of Water Resources for the Northwest Territories, on the monitoring end. Would you like to give us a statement please on your role in this?

MR. A. CULLEN: Yes, besides Controller, I'm Regional Manager of Water Resources. Related to water licences, it's our responsibility after they are approved to enforce the terms and conditions of licences. Usually this is done by a number of technicians and people in the enforcement branch, technologists that go through the licence they're involved in, the licencing process, preparing a licence, and they're well informed on the terms and conditions of a licence.

So once it's approved they go through the licence with the companies and indicate the company's responsibility to their licence. Now in this part then, once that's understood, the companies have got a Surveillance Network Program where they do sampling and analysis of all the effluent coming from the mines. On top of that, our Department does their own sampling program, and we have a lab in Yellowknife where we analyze all the data to ensure that everything is being complied with. If it's not being complied with, or there's slight problems, then we usually go back and check and make sure that everything's been analyzed properly and all the things are correct.

If not, then we have the final handle, is to legal action under the Northern Inland Waters Act.

So I think this has evolved over the last ten years since the Act was initiated. I would say that there has been a lot of problems related to water pollution and bringing existing companies into compliance with the Act. But, you know, that part of the problem was mentioned here, Con and Giant, those companies have come a long way from the day when there was no Northern Inland Waters Act, down to places where you would say their effluent is of pretty high quality. It's still detrimental, you're going to have a mine, you have to face the facts. There's going to be some minor problems.

There's going to be work that has to be carried out with the company and that's what our people do. They try to work with the companies and then if it doesn't work out we have to take it to the courts, but that's all we can do. That's what we do. We work our best with the company and make sure that they are working with us in complying with their licence. If not, and we don't see a reasonable approach by the company, then we only have one course of action. But I would say that in the Northwest Territories most mining companies, and I wouldn't be inclined to say all of them, are doing their best to comply with their licences, and it's not a simple problem.

Effluent is difficult to handle and I'm sure that you'll hear today that the metallurgy and the chemistry involved here, it's pretty complex, and you have to give and take a little bit. But I would be willing to stand up here and say that in the Northwest Territories we've got a darned good system because there's not much compromise

here in the Northwest Territories. If you want to start comparing the N.W.T. with the rest of Canada, I think you could stand up, and the Water Board could stand up and say that we can be proud of the licences and the procedure.

The enforcement is difficult and I'm inclined to agree with Lou Menez when he says we don't have enough personnel. But it's being corrected. The Districts are taking over inspection programs; we're moving it to the Districts and coordinating it from Yellowknife only now, and you're going to get more and more inspection, better inspection we hope. It's a hard program and it's hard to get people available to do it, but I would say there's good monitoring of licences. As best as can be done.

Now you're going to have problems, there's always problems. But they can be worked out and I would say we've come a long way backwards from the days when there was no control to, I would say, there's pretty darned good control right now.

If anybody's got any questions or anything they want to ask, go ahead. I'll gladly try and answer them.

MR. G. WARNER: Thank you Andy. I think that likely helps in the education process of people who are not aware of the Water Board, and there'll certainly be ample time for questions and verbal statements later on.

Now I'd like to continue with the written presentations. And I would like to call on the Environmental Protection Service, Mr. Jack Parkinson, please.

MR. J. PARKINSON: Yes, my name is Jack Parkinson, I'm Director of Regional Programs for the Environmental Protection Service, Environment Canada.

I'm presenting a joint submission to the Northwest Territories Water Board dealing with the application for water use and water disposal by Cadillac Explorations Limited. It represents an intervention by the Department of the Environment and the Department of Fisheries and Oceans. Department of the Environment input to this document includes, but is not limited to, the concerns and issues raised by the Environmental Protection Service, Parks Canada, and the Canadian Wildlife Service. The recommendations included in Chemical Impacts, subsection 2, the section on sewage effluent, are not supported by the Department of Fisheries and Oceans. They have submitted a separate intervention dealing with their specific concerns regarding the chlorination of treated sewage.

The single issue which most strongly influences all environmental considerations related to this development is the presence of the Nahanni National Park within the potential zone of influence of the mine. The proposed Prairie Creek Project is situated on the Prairie Creek flood plain, 27 kilometers from the Park boundary and 43 kilometers upstream from the South Nahanni River. It is, therefore, inevitable that Nahanni National Park would be a principal recipient of any impacts associated with the proposed development.

The National Parks fall under the jurisdiction of the Minister of the Environment and are administered by Parks Canada under the National Parks Act and the various Park regulations. The Act dedicates the Parks to the people of Canada for their benefit, education and enjoyment, to be maintained and made use of so as to leave them unimpaired for future generations.



The lands and waters of Nahanni National Park were set aside for National Park purposes in 1972. Approximately 475,000 hectares along the South Nahanni and Flat Rivers were identified as spectacular wilderness, deserving of National Park status. The area was subsequently included under the National Parks Act as a National Park Reserve. The basic objective of Nahanni National Park is to preserve, for present and future generations, a representative example of the Mackenzie Mountain wilderness region. As well, the intent of the Park is to maintain the free-flowing wilderness quality of the river, essentially primitive and unpolluted, while permitting the natural evolution of park landscapes and providing opportunities for the public to experience park values.

At present, Nahanni National Park is virtually a pristine environment. The South Nahanni River has a worldwide reputation as one of the last great wilderness rivers, and has been placed on the United Nations World Heritage List. This list was established to identify and protect cultural and natural properties throughout the world which are considered to be of outstanding and universal value. Parks Canada is very determined that the qualities inherent in the integrity of Nahanni National Park be maintained.

In order to effect the protection of this international wilderness resource, it is important that developments in the region of the Park be assessed within the context of the incremental impacts associated with both existing and potential operations. It must be recognized that even with control of the effluent at individual mine sites, the cumulative effects of the effluents from all mine sites in the Nahanni watershed may still result in a major impact on Nahanni Park water. It

is, therefore, strongly recommended that the Water Board adopt a holistic and management-oriented approach to their assessment of all operations presently existing in, and proposed for, the watershed of Nahanni National Park.

The various concerns which are to be addressed in this submission have been arranged within three groupings of impacts or issues: physical, chemical and biological.

Dealing with with physical impacts or issues.

Firstly, precipitation. The proponent appears to have used Fort Nelson, B.C. precipitation data to calculate peak flows in Prairie Creek and, by extension, to estimate the maximum possible flood. A recent paper by Brook and Ford in the Journal of Hydrology, Volume 46, 103 to 121, indicates that Fort Nelson precipitation is approximately half that experienced in the Nahanni Park, Nahanni area. If the proponent's calculations do not reflect the real potential for flooding, then the probability of a major tailings pond washout may be unacceptably high, especially in the steep V-sloped, V-shaped pardon me, unglaciated valley of Prairie Creek. The Board may, therefore, wish to reconsider the advisability of permitting a tailings pond to be located in a flood plain pending further assessment of the hydrological and design considerations of tailings dyke construction.

Secondly, stream channel stability. Further information on river behaviour and channel stability is required in order to assess the design of the tailings pond dykes. It is suspected that over the long term Prairie Creek will be cutting the bank adjacent to cell 2 and filling the bank adjacent to cells 4 and 5. It is also suspected that

flood episodes may considerably alter the stream channel and, hence, the stresses being imposed on the dykes.

Thirdly, construction schedule for the dykes. The tailings impoundment dam should be constructed to an elevation sufficient to withstand the maximum possible flood before the deposition of any mill tailings. This procedure would overcome the serious consequences of a maximum possible flood occurring during the first years of operation.

Fourthly, seepage. Seepage from the tailings pond is estimated at approximately one cubic foot per day. The proponent should be required to submit a contingency plan for seepage rates in excess of this amount. As well, serious consideration should be given to installing an impervious liner in the tailings pond.

Fifthly, long term planning. This proposed operation should be assessed in the light of its potential long term impacts.

There is a strong possibility that the mine will operate for a considerably longer period than indicated in the IEE. Thus, any evaluation of the total project must consider the implications of greater and prolonged production with respect to increased tailings storage, increased effluent discharge rates, and other factors.

Secondly, although the B.C. Research tests indicated that the tailings would not be acid generating, they also suggested that the ratio of acid-consuming to acid-generating materials could change with particle size and with the depth of the ore body. Thus, the proponent should be required to continually update their evaluations of the long-term, acid-generation potential of the mine tailings.

Thirdly, the proponent has not addressed the potential for continued flow of contaminated mine water after abandonment. Thus, a requirement should be instituted for the long term monitoring and control of this potential source of contaminants by the proponent.

Fourthly, once constructed, the tailings impoundment will represent virtually permanent structures within the flood plain of Prairie Creek. After abandonment, there will remain the possibility of a serious breach of these impoundments due to flooding and/or erosion. Thus, monitoring of the tailings dykes will have to be carried on indefinitely and responsibilities for maintenance will have to be specifically allocated before this project is licenced.

Timing of tailings pond construction. Large quantities of sediments could be introduced into Prairie Creek during construction of the tailings pond. High loading rates of suspended solids are known to be deleterious to the aquatic environments. The timing of this construction is, therefore, critical and every effort must be taken to ensure the protection of aquatic organisms, and the preservation of downstream habitats.

Furthermore, provisions for containment, treatment and monitoring of highly turbid waters originating during construction should be outlined to the Board as part of the overall contingency planning.

Seventh, low flow. The proponent has ignored the standard low water baseline represented by the ten-year, seven-day flow of 2 cfs in Prairie Creek and, instead, has chosen a two-year, seven-day flow of 8 cfs to represent the minimum dilution for the mine effluent. Such an arbitrary interpretation of stream flow data is considered to be completely unjustified when used to imply the mitigation of environmental impacts.

Number eight, surface runoff. Apart from oil and grease and suspended solids, surface runoff water may also contain other contaminants such as heavy metals and mill reagents. Consequently, the surface runoff water must be contained and should be treated with the mine water, where necessary, before discharge to Prairie Creek.

Nine, winter effluent discharge. During the periods of extreme cold, it is possible that the treated mine and sewage effluents may freeze if discharged onto land or onto the top of the ice and snow covering Prairie Creek. During warming trends, these frozen effluents are likely to thaw before the surrounding snow and ice, thereby releasing a pulse of relatively undiluted and, therefore, more highly toxic contaminants into the Creek. Treated effluents must, therefore, be discharged so that, so as not to freeze and accumulate on land or on the ice cover of Prairie Creek during winter conditions.

Number ten, solid waste disposal. The location of a landfill site within a flood plain where it would be prone to both high rates of leaching and intermittent flooding would appear to be a very dubious proposal.

Number eleven, contingency plans. The proponent's contingency plans for dealing with accidental spills of chemicals, fuel, tails or effluents into Prairie Creek or into the water courses along the winter road do not appear to have been adequately developed at this time.

First, the proponent's inability to contain, burn off, or recover a spill of 700 gallons of diesel fuel on the winter road close to the tributary of the Tetcela River on March 10, 1981 would

appear to place considerable doubt upon their capabilities in this respect. The proponent's assertion that spill contingency planning for transportation accidents is the responsibility of the supplier cannot be accepted. The proponent also has a responsibility in this matter and contingency plans for such accidents must be given a much higher priority by both the proponent and the transportation company.

Second, the proponent's contingency plans for the containment of petroleum spills are of doubtful value. Oil booms, even if they could be deployed in time, would be of little or no use in the constricted flowing water situation.

Third, it is apparent that a major spill, tank rupture, or dyke failure would result in a discharge of deleterious substances which could not be adequately contained within the confines of Prairie Creek, and which would produce serious and long-term impacts upon Nahanni Park. Until the proponent can satisfy the Board that their operating and contingency plans offer a virtual no-risk situation, it is suggested that this project not be permitted to proceed.

Chemical impacts and issues. Firstly, mine effluent. The Metal Mining Liquid Effluent Regulations are not sufficiently stringent to protect a water course that is used as a source of potable water and fresh fish by visitors to Nahanni National Park. It is therefore recommended that the Effluent Quality Guidelines outlined in Table 2 be incorporated into any licence applied to this operation. We have the capabilities, Mr. Chairman, to project these tables, if this is desired, for the benefit of people at the meeting.

MR. G. WARNER: I don't think it's necessary to project them unless somebody requests it.

MR. J. PARKINSON: These guidelines were developed from the Water Quality Guidelines contained in the Environment Canada Water Quality Sourcebook, 1979, assuming a minimum Prairie Creek dilution ratio of 20 to 1. Some values were subsequently adjusted to reflect the capabilities of practical treatment technology currently in use at base metal mines in Canada.

It is suggested that a second pond will be required for polishing the treated effluent, being further precipitation of metals, volatilization of residual chlorine, before discharge to Prairie Creek. Such a pond could be created through the establishment of an impermeable cell in the existing pond or through the early development of a separate pond.

A secondary holding facility will also be necessary to retain treated effluents in the initial stages of the operation so as to properly monitor them before disposal to Prairie Creek.

The effluent quality recommendations in Table 1 may permit the recycling of treated waste waters to the milling process. If such is the case, the proponent should be required to submit plans to the Water Board for the reduction of water use requirements.

It will be apparent that the stipulation of a minimum dilution factor and a maximum discharge rate will require the placement of a continuous flow recorder in both the effluent discharge pipe and in the Creek.

It should be pointed out to the Board that even with the effluent quality guidelines recommended in Table 1 of this submission, the mine will be depositing approximately 500 pounds of cyanide and over 500 pounds of heavy metals into Prairie Creek in each year of operation.

Number two, sewage effluent. The discharge of treated sewage effluent into Prairie Creek will introduce nutrients and human pathogens to the aquatic environment. In order to minimize this secondary impact, it is recommended that any sewage effluent discharged to Prairie Creek meet the Draft Guidelines for Municipal Wastewater Discharges in the N.W.T. In addition, the dilution factor for sewage effluent in Prairie Creek water should not be less than 1000 parts Prairie Creek water to 1 part of sewage effluent. It should be noted that if chlorinated sewage effluent is discharged at a dilution of less than 1000 to 1, aquatic habitat quality may be affected by the various impacts associated with high residual chlorine values. If non-disinfected sewage effluent is discharged at a dilution of less than 10,000 to 1, drinking water quality will be affected by high coliform values. It is therefore recommended that sewage effluent not be discharged at a dilution ratio of less than 1000 to 1, that sewage effluent be disinfected, and that methods other than chlorination be seriously considered for the disinfection of the treated effluent.

The Department of Fisheries and Oceans has registered a separate comment on this matter of chlorination of treated sewage effluent. Reference should be made to the Department of Fisheries and Oceans' intervention for this.

Thirdly, Nahanni Park water quality. The maintenance of a pristine water quality is critical to the preservation of Nahanni National Park. It is therefore recommended that water quality requirements be established for, and monitored in, Prairie Creek at the Park boundary. Table 2 outlines a suggested set of water quality guidelines



for the parameters likely to be implicated in any impacts resulting from the Cadillac Mine. Again, we're able to project that table if it's needed for discussion any time.

Suggested guidelines were developed from the Water Quality Guidelines contained in the Environment Canada Water Quality Sourcebook, 1979, the Guidelines for Canadian Drinking Water Quality, 1978, and United States Environmental Protection Agency Quality Criteria for Water, 1976. Some values were subsequently adjusted to reflect the means and variabilities associated with background levels in Prairie Creek.

Biological impacts and issues. In order to preserve the aquatic environments of Prairie Creek within the Park boundary, and to establish the degree of protection necessary to achieve this goal, it is essential that a thorough understanding of the natural aquatic system be established and that sensitive parameters be expressed on a quantitative basis. Therefore, systematic baseline studies incorporating collection and analyses of samples of water, sediment, aquatic invertebrates, macrophytes, and fish must be carried out by the proponent. Prior to release of contaminants of any kind from this operation, the importance of Prairie Creek for fish, water fowl and birds or mammals which depend on aquatic food resources must be satisfactorily demonstrated, and a quantitative basis for determining the extent of future changes to the system must be in place.

Invertebrate populations. In general, Prairie Creek was undersampled for invertebrates and the data was over-analyzed. There was considerable variation between replicates at some stations, rendering

spatial and temporal comparisons of little value. Further studies should concentrate on obtaining more replicates at an increased number of sites on a seasonal basis. Invertebrate studies should also be carried out in streams crossed by the winter road.

Fish populations. A more intensive fisheries study is required of the proponent. Prairie Creek was sampled only at five stations with an average of only 6.36 minutes of electro-fishing per station, and at two stations with a total of 87 hours of gill netting. Of even more serious concern, as with the invertebrate studies, is the fact that the fishing effort was limited to a three day period in July. Such studies cannot be used to assess the fisheries and fish habitat potential. Further studies should concentrate on evaluating an increased number of sites on a seasonal basis, with special effort directed towards the identification of spawning areas, overwintering areas, migrations, seasonal species, and food preferences of the major species. Fish studies should also be carried out in streams crossed by the winter road.

Bioaccumulation. The analysis of heavy metals in only two Dolly Varden is entirely inadequate for the establishment of baseline levels. Much more extensive heavy metal analyses should be carried out on all major species of fish as well as on the sediments, invertebrates, and water-dependent birds.

Monitoring. For monitoring purposes, analyses of all contaminants in water and of heavy metals in sediments, invertebrates, fish, and water-dependent birds should be carried out on a regular basis. Surveys should also be carried out occasionally to re-evaluate the utilization of Prairie Creek resources by fish.

The preceding issues represent the concerns of the Department of the Environment and the Department of Fisheries and Oceans with respect to the potential impacts of the proposed Prairie Creek mine on the aquatic environment. It should be indicated to the Water Board at this time that the Department of the Environment also has concerns with respect to the potential terrestrial impacts of the proposed project. These concerns, however, will be addressed in a separate submission to the Environmental Review Committee of D.I.A.N.D. for reference in their assessment of land use applications.

In concluding this submission, we would like to emphasize the general principals underlying the issues and concerns which have been detailed here. It is, therefore, strongly recommended that the Water Board a) recognize the need for the maximum possible protection of the pristine environmental quality of Nahanni National Park; b) initiate a holistic management-oriented approach to the regulation of water use and waste disposal by all mining operations in the Nahanni River watershed; and c) evaluate this particular mining operation in relation to the overall potential for the development of other ore bodies throughout the Prairie Creek property.

That concludes the presentation, Mr. Chairman. Copies, as read to this Hearing, have been given to your secretary and to the company. Thank you.

MR. G. WARNER: Thank you very much. I'd like to now call on the Department of Fisheries and Oceans for their presentation please.

MR. L. DE MARCH: My name is Larry de March, I'm Resource Impact Biologist with the Department of Fisheries and Oceans. The Department of Fisheries

and Oceans participates with the Department of Environment in the review of the environmental evaluation of Cadillac Explorations Limited Prairie Creek Mine.

The Department of Fisheries and Oceans has the responsibility, under the aegis of the Fisheries Act, to ensure the protection of Canada's fisheries resources. This responsibility includes the protection of fish and fish habitat.

This Department's concerns generally are covered in the Department of the Environment's submission to the Water Board. However, Cadillac Explorations Limited is proposing to chlorinate its sewage effluent prior to discharge to Prairie Creek, and DFO Western Region, in keeping with its responsibilities under the Fisheries Act, is making this submission to the Water Board to emphasize its opposition to the practice of sewage chlorination.

The reasons for this position are, one, discharges of chlorinated effluents have been shown a) to result in fish kills which occasionally have been massive, b) to reduce the abundance of fishes downstream of the discharge and c) to block the migrations of fish going upstream.

Laboratory studies have shown that chlorination significantly increases the acute lethal toxicity and sub-lethal toxicity of wastewaters to fish and to other aquatic organisms. Demonstrated sub-lethal effects include reduced reproduction and growth of fish and aquatic invertebrates, and avoidance reactions by fish.

Three, chlorine and chloramines reduce primary productivity by depressing photosynthesis, respiration and the uptake of nitrate and ammonia.

Four, chlorination results in the formation of chlorinated hydrocarbons which have direct lethal and sub-lethal effects on fish and may accumulate in fish flesh rendering it unsuitable for human consumption.

In addition, the Department would like to take this opportunity to bring the public health consequences of chlorination to the attention of the Water Board. As mentioned above, chlorination results in the formation of chlorinated hydrocarbons to which the public will be exposed. Evidence shows that some of these chlorinated hydrocarbons are toxic to humans, they are also carcinogenic, teratogenic and mutagenic. Also, studies suggest a link between drinking chlorinated water and the incidence of certain cancers in man. We recommend that the Water Board consult with National Health and Welfare about the potential public health effects of chlorinating sewage.

A short list of pertinent references is appended to our submission for the Board's information, and we would be happy to provide copies of any of these if they are required.

MR. G. WARNER: Thank you. Next I would like to call on Parks Canada. You don't wish to present a written brief? Alright. I would then like to call on the Dene Nation and the Metis Association. Mr. Bayly.

MR. J. BAYLY: Good morning, Mr. Chairman. You caught me slipping out for my own coffee break.

Mr. Chairman, the Dene Nation and the Metis Association of the Northwest Territories wish to intervene in the Hearing of the application of Cadillac Explorations Limited for a licence for water use and disposal of Prairie Creek in the Northwest Territories in conjunction with a proposed mine in which the pre-production development

is presently underway. The Dene Nation and Metis Association, through its Counsel, should be spelled differently, s-e-l, will make submissions and direct questions to the applicant regarding the environmental, social, and economic impact that its use and disposal of waters may have on the region.

The Dene Nation and Metis Association are particularly concerned with the potential of the project to pollute waters within a watershed depended upon by many of the people of Dene descent. The Dene Nation and Metis Association wish to reserve the right of individual residents of Dene communities within the region to make submissions, express individual or community concerns, and to ask questions of the applicant and of the Board. Some of this was done last time this Hearing convened and I think there may be more questions and submissions later on in the day.

It is submitted that the Governor-in-Council may, under section 26 of the Northern Inland Waters Act, make regulations pursuant to subsection D on the recommendation of the Minister and the Water Board to provide for priorities among the classes of use of water within a management area. It is further submitted that the Water Board and the Minister should make recommendations regarding these priorities prior to the issuing of a licence to Cadillac Explorations Limited.

The uses of the waters of the Mackenzie River Basin, particularly those of the people of Dene descent who have used and occupied the Mackenzie River and its tributaries since the earliest time, must be protected and must be given the priorities required to protect their domestic and other uses of water before these waters can

be licenced for use by the applicant and others associated with this and related and unrelated industrial undertakings.

It is further submitted that since a Water Management Area has been established under the Northern Inland Waters Regulations, and I won't read the citation, it's there in the submission, as Water Management Area Number Three, it is respectfully submitted that the Northwest Territories Water Board should conduct a Hearing pursuant to section 15, sub 1, of the Act, related to its objects within the Water Management Area.

Section 9 of the Northern Inland Waters Act provides that, among its other objects, the Northwest Territories Water Board is to provide for the conservation of the water resources of the Northwest Territories in a manner that will provide the optimum benefit therefrom for all Canadians and the residents of the Northwest Territories in particular.

Since water use priorities have not been established and since there is an increasing number of water licence applications and since there are proposed projects which will necessitate water licence applications it is the responsibility of the Northwest Territories Water Board to review the potential uses within this Water Management Area so that the combined uses of water within the Management Area will not impair water quality in such a way that the people of Canada, and particularly the people of Dene descent in the Northwest Territories, cannot use and enjoy the optimum benefits of these waters.

Mr. Chairman, a number of these points have been made in previous Hearings of this Board in association with applications for water

use and disposal within Water Management Area Number Three, the Mackenzie River Drainage Basin. And I guess we'll continue to make them because the concern continues. The difficulty for the Board without setting water use priorities and without determining a water management plan for a watershed is that while it may find water uses by themselves acceptable, that is the levels of contaminants that are disposed of in waters and the quantities of water withdrawn for various purposes satisfactory, that taken together, the Board may suddenly find that it has licenced the water use in a watershed to such an extent that, in fact, the water quality is not acceptable, it is not providing for the best use, conservation and development of the waters for the people of the Northwest Territories and the people of Canada and it may be too late to do anything about it.

You have probably been reading, as I have, in the press that although the resources that we're most immediately concerned with, running short of maybe hydrocarbons, oil and gas, that the real crunch may be that we're going to run short of fresh water, what we've always thought of as a renewable resource. It may be beyond renewal. I realize, as the representative from Cadillac Mines said, that people in Southern Canada and the United States have moved off the land and moved into the cities and accepted new ways of life. It's in those very cities that the shortages of fresh water are immediately being felt.

This is a precious resource that this Board must deal with and it's of interest to me that, as a person who goes to Hearings professionally, that we go to Hearings with very wide scopes and mandates to look at projects in which the applicants and proponents undertake



not to put anything in the water, such as pipeline companies. And at the Water Board one of the things that is licenced is the disposal of pollutants into waters in certain quantities which are deemed to be acceptable. And that's a great irony that I think the Board must come to grips with.

You've heard from the Department of the Environment today and it was through the good offices of your Executive Secretary that I learned that they have requested that there be a Hearing with a wider mandate than you have been given under the Northern Inland Waters Act to review the Cadillac Mine project and the related service projects. They recommend an Environmental Assessment Review Process Hearing because, as you've pointed out, Mr. Chairman, although you can listen to our submissions about the use of a winter road and the trucking of dangerous compounds that may pollute the land and water courses, you're looking at a specific application for the use and disposal of water at a mine site. And although you may be interested, because you're interested in general terms in the water quality of the region in which you have this mandate, in this particular licence application you're only looking at the mine project itself within the terms of reference of this Hearing.

Because of that, it's my respectful submission that the Board should consider in its deliberations about whether to grant a licence to this mine at this time a recommendation to the government that because this is a major industrial project involving a mine whose life span, at the shortest, will be six years and is much more likely to be in the neighborhood of 20 years or more, that will involve a winter road with its own environmental hazards and possibilities for opening access

to country and being the occasion for spills of toxic materials that you should recommend that any review of the entire project be conducted before you are put in the position of granting or not granting a licence.

This Board has provided, by statute, the only window into this industrial project that the public has, and it's a narrow one because you're set up only to deal with the application. I've spoken somewhat off my brief, and I trust that I've kept to the general points because I don't want to put anyone at a disadvantage of not having had notice of what I was preparing to say.

And my only other concern is this, that the five permanent trappers that the Mayor referred to seem to have taken a large portion of the community out beaver hunting, and so some of the people that had initially intended to come to this extension of the Hearing are, in fact, out of town at the moment. There will be some submissions. You may wish to consider, if you feel you have not heard everything you should hear from the public, that this Hearing is sufficiently important that you should extend it another time, that is an additional time, and consider when you do that whether you should attend the community of Nahanni Butte.

These are my submissions, and if anyone has any questions I'll respond to them.

MR. G. WARNER: Thank you, Mr. Bayly. I think first we'll see if there are any other written briefs, and then we'll certainly reserve the opportunity to respond in general.

And I think at this point it's a good time to bring up the matter that this Public Hearing was set for this date on May the 20th several weeks ago and your suggestion that it be reconvened will

certainly be taken under advisement. However, there was ample notice given that this Hearing would be held on this date and we had no objections from the people.

MR. J. BAYLY: I don't mean to fault the Board at all for that, sir. The matter was brought to my attention that people were out of town about five days ago and it was obviously too late for the Board to change its plans.

MR. G. WARNER: Thank you, Mr. Bayly. Are there any written interventions that we have not heard today? I don't think there are any further. So I know some people have to get away at noon, so instead of breaking for coffee I think I'll ask Mr. Herb Norwegian if he wants to make his verbal statement in order that he can get away. Mr. Norwegian.

MR. H. NORWEGIAN: Yes, there's a few things that I wanted to say here. Although I didn't attend the first set of Hearings on this particular application I wanted to say a few things in relation to what is happening right now. A lot of our people have reviewed this application and they saw what has been happening around this particular project and I wanted to respond to a couple of things that the guy there was saying earlier.

I guess the first thing I wanted to say is that water for our people in this part of the Territories has always been a very important resource, as John Bayly was saying, our people here, the people of Fort Simpson, Nahanni Butte, they are people that are known as river people. In our language you call them the Dene debga, which means people of the river. They are different from the people of the Dogrib area around the North Slave or even the South Slave. People here depend

upon the rivers. The rivers are their highways. But what is happening now is that we have all these exploration companies that are doing all this exploration work, at the same time not recognizing the importance of these rivers to our people here.

The river itself is a very sacred thing, although the white people might not look at it that way. For a long time our people have always valued the water in the rivers, and today that same feeling is still there, it's very much alive. When our people say that the rivers have got to be protected they're saying that for a reason, a spiritual reason.

At this time, what is happening throughout the whole North American continent, we see that there is a shortage of water, and in different places throughout the United States, even in Saskatchewan now, we're starting to find out that that whole province is starting to dry up. What we really see that is happening is that water is not being treated properly. We have dams, the whole diversion system is being tampered with, the natural diversion system is being tampered with. In some places rivers are being polluted, not being respected. It's a result that the land is starting to react to people, although the non-Dene might not see it in that way. But that's the way that it stands.

And so for that matter our people are saying that this whole issue on water has got to be dealt with very seriously, even if we have to go the route of having a full-scale Environmental Assessment Review Process into this. I think that that would be one route to take. But this has to be seriously looked at especially in the Northwest Territories here. We just finished listening to the Norman Wells Project

where they're trying to build six islands in the middle of the Mackenzie. That has received a lot of opposition. Even this Board here will be going into the Delta to listen to some more people's views. So this Board really has to seriously take a closer look at this whole system and not really listen to the people of the exploration companies, the mining companies. We have a serious case on our hands. The Board is mandated to look after the water for the Dene and the people of the North. I feel that this matter has to be really looked at seriously.

In relation to what the guy there was saying to development, saying that while there's all these jobs that are going to be promised to the people here and all this money is going to be pumped into Fort Simpson here and to this region, well maybe it's good that some money is being made available to this region, but there's still one overall question that still has to be dealt with, and we've tried to make that kind of arrangement with Munro on his visit here, and that's trying to have a certain amount of control over resources. At this time, the Federal Government has appointed a negotiator but they haven't budged anything at all on the sharing of any kind of resources in the North. Although they're willing to make arrangement to give us jobs and maybe take part in some kind of construction, that's not good enough. The centerpiece that we are concerned about is our resources and how much are we going to benefit from it. Sure, it's alright that you people are going to pump all this money into this region, but it only stays in here for awhile and then it's gone. But the resources will be here for a long time and what we're trying to do is set up an arrangement whereby we can benefit from it directly, and that's what we are saying today.

Our position is not that we are against development, there is not a damned Dene that is against development. We all support it, but provided that our conditions are met. That is what we are saying.

As far as you saying that you were at that Prairie River way before Parks Canada was, I think that if we wanted to take it a little bit further, the Dene were there way before Cadillac Mines even thought of, or even found the resource. Our people have trapped in that area for thousands of years, they've lived in that area. So rightfully that belongs to us so I don't know why you're tossing it in between yourselves and Parks Canada. That's bullshit.

So those are some things that I felt that had to be said that were not said at the first Hearing. I feel that this Board has to seriously, seriously look into this matter and I would seriously suggest that the Hearings be postponed to another date. Our Chief from Fort Simpson, Jim Antoine, is out on the land. Most of the leaders from the outlying communities are out on the land. We tried to get them in at the same time we tried to get hold of your people so that this could be postponed but because of the procedures that you have to go through, the kinds of deadlines that you have to meet, we weren't aware of it, but we made an attempt to postpone it to another date. We're seriously saying that this Hearing should be postponed for another date and then at that time our people will be fully involved in this, in this kind of Hearing. I think that there's a lot of views that they would want to bring up.

The other thing is John was suggesting that, or recommended that maybe an EARP Hearing be set up for this, for this application. I think that that's something to seriously consider. Our views on the EARP

Hearings is that compared to what has happened with the whole Norman Wells Project. This time if we're to recommend that an EARP Process take place, what I would suggest is that Dene would be fully involved in this panel. I think that if the Board is to recommend something like this that it would also be strongly emphasized that Dene should have representation on that Board because, after all, it is their resources that would be the main topic.

On that I think that that's basically the things that I wanted to say. Although we have some people in town here that are, want to make their views known to this Board, I think that maybe some of them would probably come in this afternoon but they pretty well have this feeling that the Board has pretty well made their decision, but I think that if we brought them in and have them listen to you people and the way that you conduct your meetings and to see which way your thinking is really geared to, I think that there might be some hope left.

I think that we have to seriously look at this matter. Cadillac Mines is not the only company that is interested in using water. I'm sure that once development goes ahead there will be all kinds of other companies that would have prime concerns over water too. So if we're going to deal with this, let's set a precedent and deal with the whole water issue carefully.

I think that's basically the things that I wanted to say and I thank you for listening.

MR. G. WARNER: Thank you, Mr. Norwegian. A comment there on a couple of points Mr. Norwegian raised regarding, in particular, the appointments to the Northwest Territories Water Board. I think Mr. Norwegian

knows the route to follow if he wants to recommend, or have recommended, to the Minister who should be members of this Board. And also I hope that some of the people that he said may be with us will have a chance to speak this afternoon. We'll certainly be here and available.

Is there anyone else in the group who has to get away at noon for any other reason that would like to be heard before they go?

Okay, we'll just continue now with any questions from the floor. The questions can be of the applicant or of any of the intervenors. Mr. Falk, are you getting ready to go? Okay. Lou.

FR. L. MENEZ: I have a few questions for John Bayly. I was just wondering, are you leaving after, will you be here this afternoon?

MR. J. BAYLY: Yes, I will be here.

FR. L. MENEZ: Okay.

MR. G. WARNER: If no one is interested in further discussions now, I don't want to preclude anyone who may be here this afternoon, so we'll recess this meeting until 1:30 this afternoon. Same place. Thank you.

MR. G. WARNER: Alright gentlemen, ladies and gentlemen, we'll reconvene this Public Hearing. We had a nice lunch by the Mackenzie River. We're open to any questions of the applicant or of any of the intervenors, or any statement, any verbal statement, that anyone from the general public wishes to make. Mel, Mr. Falk.



MR. M. FALK:           Mel Falk, Parks Canada. I have about three comments and three questions to ask of the proponents. Comments being, as previously mentioned this morning, in 1979 the Nahanni National Park was placed on the World Heritage List with the United Nations as the South Nahanni River is one of the last great wilderness rivers in the world. This list was established to identify and protect cultural and natural properties throughout Canada and Canada, with the lead agency being Parks Canada, has certain obligations. These obligations are to identify, protect and conserve and present or interpret cultural and natural sites, to adopt appropriate legislative measures to protect these sites and to maintain the World Heritage List sites to acceptable standards. And I just wanted to clarify that for information. Parks Canada is, as I said, the lead Canadian federal agency on the World Heritage Committee and is very determined that the qualities inherent with the integrity of Nahanni National Park are maintained, not only for the benefit of Canadians, but for the world population as a whole, and that is the meaning of the World Heritage List and the significance of it.

My second comment relates to over-wintering potential of fish in Prairie Creek. In the initial environmental evaluation and, specifically, on page 18 of the Cadillac Explorations Limited submission to the Water Board, reference is made to over-wintering potential in Prairie Creek particularly in deep ponds along the reach downstream from the minesite in Nahanni National Park. I'd like to confirm that this is a fact now, since Arctic grayling were captured in these pools by Parks Canada staff during this winter of 1981, so potential, it's really no longer potential, it's a fact.

Now to a couple of questions. These relate to, probably the last session and some clarification that is, I think, required and I think the proponent can provide this. The first question is to a representative of Cadillac Explorations Limited regarding tailings pond construction. It would appear from the initial environmental evaluation that considerable potential exists for siltation of Prairie Creek during initial tailings pond construction. Would you please describe the method of tailings pond construction and the measures to be implemented to prevent this situation occurring?

MR. G. WARNER: Mr. Fletcher.

MR. B. FLETCHER: Mr. Fletcher of Golders. Norman, is there any chance that we could have that section of the tailings package shown on there?

Okay, you see here a section of the final embankment as it's going to be when all of the construction's complete. This dashed line shows you the approximate outline of the existing embankments, the embankments that are already there. Okay. Now the construction is going to be done from the inside of the embankment toward Prairie Creek. In other words, there's going to be no infringement on Prairie Creek at all, except for excavation and placing of the material for the heavy rock rip-rap on the outside. So there isn't going to be a lot of effect on Prairie Creek at all. It will be absolutely minimal. Okay. In other words, no material for this construction is going to be taken from Prairie Creek. It's all coming from inside. All of the construction activity will be on the inside or on the embankment proper except for this part here which is absolutely necessary. In other words, this heavy rip-rap is what is going to protect that embankment against erosion

from heavy flows in Prairie Creek in the event that they happen. The bottom of that has to be below scour level in the Creek so there's going to have to be excavation there. Okay.

Another point, however, is that the construction's going to take place in the summertime when water is very low, and during that period Prairie Creek, itself, runs quite a distance away from the embankment except near the upstream end when the river comes around the corner. So I don't think there'll be a lot of, you know, certainly not expecting a lot of siltation and the activity there will be absolutely minimal.

MR. M. FALK: I think you've clarified that quite nicely. A question to a representative of Cadillac Explorations Limited pertaining to the conduct of baseline studies. At the April 21 session of the Water Board here we learned that minewater is presently being discharged so as to enter Prairie Creek. Has this fact been taken into account in the establishment of baseline studies of water quality and heavy metal content in fish, invertebrates and sediment that are presently underway?

DR. W. DWERNYCHUK: Could you repeat that again please?

MR. M. FALK: Sure. Okay, at the last meeting here we learned that minewater is presently being discharged so as to enter Prairie Creek. Has this fact been taken into account in the establishment of baseline studies of water quality and heavy metal content in fish, invertebrate and sediment that are presently underway?

DR. W. DWERNYCHUK: We are assuming that any minewaters that are entering the system are in turn assimilated into the system and any analysis that are performed on fish tissue would obviously include any potential assimilation of that particular metal into the tissues, so it's more or less a

total, if you will, holistic view of it. It is in the system and that is what we are examining. Does that cover your question?

MR. M. FALK: My question and concern is that, in reality, would the results be a true reflection of baseline conditions in Prairie Creek before the mine would actually be in operation? It seems like there's a middle of the road, upstream-downstream situation that could develop, whether it be baseline studies for metal content in fish and vertebrates above and below may be a reflection of minewater discharge.

DR. W. DWERNYCHUK: We have established upstream and downstream controls so, in effect, the control upstream would not be contaminated, if you will, by any potential minewater, and the information that we have to date shows that there's virtually no difference in any concentrations of trace metals that do exist in the control versus the experimental sites.

MR. M. FALK: Okay, question two. A representative of Cadillac Explorations Limited, regarding tailings pond seepage. On page 19 of the Golder Associates section of the initial environmental evaluation, seepage from the tailings pond is estimated to be .7 to 1.7 cubic feet per day. Also, during initial tailings pond construction, it is indicated that seepage would be into the tailings pond from Prairie Creek. What is the estimated rate of seepage into the tailings pond during this period?

MR. B. FLETCHER: There's been no calculation made with regard to an estimate of seepage into the pond from Prairie Creek. Suffice it to say, however, it will be an order, or possibly orders, of magnitude less than the ultimate seepage out of the tailing pond which is, in fact, negligible as you are aware.

MR. M. FALK: Has this factor been taken into account in the water balance calculations for the operation?

MR. B. FLETCHER: The quantities involved are so small, 1 cubic foot per day amounts to so little water that you couldn't see it if it was flowing. Consequently, it hasn't been taken into account in terms of water balance.

MR. M. FALK: The final comment relating to the maintenance of pristine water quality downstream of the minesite at Nahanni National Park. As stated in the DOE/DFO submission to the Water Board, the maintenance of a pristine water quality is critical for the preservation of Nahanni National Park. For further clarification and reinforcement, it is Parks Canada's position that any increase in water quality parameters above background levels is unacceptable.

That concludes my comments and questions. Thank you.

MR. G. WARNER: Thank you Mr. Falk. Further comments or questions from the floor or from the Board? Brian Wilson.

MR. B. WILSON: I'd just like to ask a few questions just so I can get clarified as to where the whole thing is heading. As Mr. Falk of Parks Canada has indicated, the National Parks Act calls for the requirement that the environment in National Parks be maintained so as to leave them unimpaired, I think is the word that's used. Previous things that the proponent has said would indicate that they do wish to address that question and maintain water quality, at least at the Park boundary, at background levels. Am I more or less correct in assuming that? That that, in fact, is your goal, to not impact upon the Park waters?

MR. N. GUILD: Yes.

MR. B. WILSON: Is the proponent prepared to take responsibility for monitoring water quality in Prairie Creek at the Park boundary?

MR. N. GUILD: Previously this question of monitoring was brought up at the last Hearing and we have indicated that we are prepared to do any reasonable monitoring program that the Water Board deems is necessary, and if that is one of the factors at the boundary we would meet those requirements.

MR. B. WILSON: Thank you, Norman. One thing that we discussed at the last Water Board Hearing with Brian was the question of seepage and seepage rates and how, in fact, you could measure seepage rates, what sort of confidence you could place upon the seepage of materials out of the tailings pond into the river, and there was some indication that it was very difficult to monitor, in fact, it might even be an order of magnitude or two higher than predicted and it would be very difficult to know whether, in fact, your seepage was increasing above the predicted. In fact, I believe you indicated that you might have to wait until seepage turned up on a chemical mass balance estimate to know for sure that you have a seepage problem. Is that basically correct?

MR. B. FLETCHER: That's basically correct. I think if you, to put the problem into perspective, when we talk about a cubic foot of water per day, that's something less than a slowly dripping tap. Over a length of some three or four thousand feet of embankment in an area of about 17 acres, so quite clearly that's an immeasurable amount of water. And even if it was ten or 100 or even 1000 times that much you'd still be posed with a problem where measurement would be impossible to calibrate.

MR. B. WILSON: Just to consider a hypothetical situation. If, in fact, a chemical mass balance indicated that there was, in fact, considerable

seepage at some time in the future, can you suggest any possible mitigated measurements, or mitigated measures rather, that could be undertaken to correct that situation if it did, in fact, occur?

MR. B. FLETCHER: The first thing that you would have to do would be to locate the source of the leak, which presumably would be along the embankment, the constructed embankment section, and not along the natural base. Once the source is discovered then you could take measures to construct, or reconstruct, that portion of the embankment so that the leak would be stopped by using either the locally available materials, the clay, or perhaps an artificial membrane.

I might mention, while on the topic of artificial membranes, that the suggestion's been made many times that we use a plastic liner for the embankment, or for the whole base of the pond, and it's my opinion, and basically the opinion of the profession, that artificial materials generally produce an unsatisfactory solution to that sort of problem. Even a small tear, small hole, in the thing can completely negate its use.

MR. B. WILSON: If, in fact, a liner is your only means of containment.

MR. B. FLETCHER: Yes, but over a small area you could presumably exercise enough control so that a liner would be successful.

MR. B. WILSON: My only comment, I guess, is that seepage seems to be a fact of life, that's come up many times before this Board, and the experience in many cases seems to have been that it's a messy job to clean it up, to contain it, to fix the leaks and so on, and this will in fact be a particularly difficult job when your back is turned to, in many cases, a fast flowing creek immediately adjacent to the tailings dyke if, in

fact, a seepage does occur. Is there someone charged with the responsibility for, in fact, undertaking to stop seepage, clean up seepage, returning seepage to the tailings pond? It's not a particularly easy situation in which to undertake an operation.

A quick question on mine water. It's already been mentioned that there does appear, at the present time, to be minewater running out of the portal and being discharged, I suppose, indirectly to Prairie Creek. Can someone indicate, please, how post-abandonment discharge can be controlled and treated?

MR. N. GULLD: Okay. Post-abandonment discharge, we believe, should not be a problem, since at the time of abandonment, the backfilling operations have ceased to the mine and there is one surface portal that will be sealed. It's a ventilation vent that is going to be sealed in the near future and which is going to prevent a little bit of the excess seepage water that enters the mine at the present time. It's going to reduce the quantity, so our indications are that the water leaving the mine after abandonment will not have a need for treatment.

The other factor we feel that sort of backs this up is that the carbonate host rock that the ore is found with, the dolomite and the limestone, should prevent the leaching of heavy metals from the abandoned stopes as there always is a possibility in certain mines of acid generation. Now we do not feel that's going to be a problem here for that reason.

So we ourselves believe that there will not be a problem from the mine seepage after abandonment. I would presume that EPS or Water Resources would themselves fully monitor that discharge for a period after abandonment to verify that the water quality was acceptable for direct discharge to Prairie Creek.



MR. B. WILSON: You indicated that the shafts, not the shafts, but the inclines, would be backfilled.

MR. N. GUILD: There's a ventilation raise in existence at the present from one of the older workings, that's what I meant would be sealed at the surface.

MR. B. WILSON: That's the one that would be sealed? All portals other than that will have a decline as opposed to an incline?

MR. N. GUILD: My understanding is, the portals, we would simply block them, block the entrances. That's also for prevention of animals or whatever straying into them. At the moment that's all that I'm aware of, unless you're aware of anything else, Murray.

MR. M. BATH: I might just mention that with the backfilling operation, which will take place concurrently with the extraction of ore, by the time the mine is abandoned, a very large proportion of the void created by mining will, in fact, have been filled. That, together with preventing the ingress of further groundwater, as Norm has explained, by blocking off the one existing opening towards the upper surface of the mountain, will largely prevent any water flowing out of the mine. As Norm has also said, the mine entrances themselves could, in fact, be sealed.

MR. B. WILSON: Sealed to be impervious to water flow?

MR. M. BATH: I don't see that as being impossible to achieve. Perhaps Brian would have a further comment on that.

MR. B. FLETCHER: I'm sorry, I didn't hear the question.

MR. M. BATH: Brian, I said that I thought it should be possible to seal the mine entrances completely to make them essentially impervious to outflow of water. I wondered whether you agreed?

MR. B. FLETCHER: That's certainly possible as far as the seal itself is concerned, yes, to seal the portal.

MR. B. WILSON: Okay, thank you. A quick question on contingency plans. Actually I'm going to go back to minewater, just one more thing. One more quick question actually I addressed to Norm earlier. Are there other ore portals presently opened in other ore bodies associated with exploration in the area?

MR. L. MORRISROE: Yes, there's two more.

MR. B. WILSON: Two other portals?

MR. L. MORRISROE: Yes.

MR. B. WILSON: Is there minewater?

MR. L. MORRISROE: No, they're dry. They will be dry.

MR. B. WILSON: Have they been dry since they were opened?

MR. L. MORRISROE: Yes, there never was any water in them.

MR. B. WILSON: Okay, thanks. I just wanted to clarify that. One comment on contingency plans.

The potential for accidental spills into Prairie Creek, or other tributaries of the South Nahanni, that the winter road crosses, exists right now. In light of the spill of diesel fuel that took place this past winter, is the proponent in a better state of preparedness to handle such emergencies, either on the road or at the minesite?

MR. L. MORRISROE: Well the plans are to improve the road and put bridges across those streams, and I think with the improvement to the road it should just about eliminate any possibilities of any more spills.

MR. B. WILSON: My understanding of the spill that occurred this winter was that it wasn't associated with a bridge, it was associated with a hill.

MR. L. MORRISROE: With a hill, yes, but if we'd had a little more time and had the proper grade I don't think that would have happened.

MR. B. WILSON: Even with grades, good grades and good bridges, and even good dykes at the minesite, accidents do occur due to other circumstances beyond controls, such as climate, storms, the like, especially during the winter. Maybe I could restate, or reask, the question again. Once an emergency spill occurs, is the company in a better position to handle that emergency, to contain and to clean-up?

MR. L. MORRISROE: Go ahead, Norm.

MR. N. GUILD: We are, I believe, and correct me if I'm wrong, the company is in the position, at the present time, of collecting equipment and the personnel that can handle this. At the present time they're looking for a Mine Manager for the property. They've had one gentleman in within the last few days, and every effort is being made to recruit this individual. You have to have somebody on site that's in control of this, and this is the purpose to have this one man appointed and, at that point, it becomes his responsibility. In the meantime, Cadillac are aware of the materials that are necessary for containment of those spills and are in the process of acquiring them.

MR. B. WILSON: Okay, thank you Norm. A quick question on the disinfection of treated sewage.

The point has been made in a couple of submissions about concerns related to the disinfection of treated sewage. Is the proponent in a position to consider methods of disinfecting treated sewage other than by chlorination?

MR. N. GUILD: We have been pursuing different methods of treatment of the sewage prior even to the last Hearing. Now Kilborn have collected enough data and they are satisfied themselves that they are now proposing for the project an ultra-violet system for the treatment of the sewage. So the present proposal, well it's more than a proposal, it's a fait accompli, is that we will remove the section that was going to chlorinate from the treatment plant and we'll add to the treatment plant an ultra-violet system. We hope that will remove many of the concerns that have been raised by yourselves and from people in the public.

MR. B. WILSON: I would assume that you've looked into the matter of either reducing the rate of flow through the uv treatment system or, conversely, making a long enough uv treatment system to adequately address the disinfection.

MR. N. GUILD: Yes, in fact, the smallest unit is almost such that it's almost too large for the small flow that we have. So we are going to allow sufficient spare capacity in the plant.

MR. B. WILSON: Thank you. You've indicated that you don't expect any impacts on Nahanni Park, and you've indicated that if required it would be feasible to monitor the Park boundary. Can you indicate what steps might be available to you if it was found that the quality of water at the Park boundary was, in fact, degrading?

MR. N. GUILD: On the assumption that the water was degrading on the basis of dissolved metals rather than suspended solids, our method of treatment, at the present time, is the alkaline chlorination plant that we have on site. So the first step would obviously be to study the plant that we have and endeavor to improve it such that it did improve the

effluent coming out. However, if we detected that at the Park boundary, it would most certainly show up at our point of discharge, and I think in that case we'd immediately know that there was something awry with our treatment plant and that's the area that we'd concentrate on, improving the system that we actually had. And, as we mentioned at the previous Hearing, it is our intention to, rather than operate the treatment plant as of day one, we'll be recirculating the waste from the project to the tailings pond for approximately one year to enable us to have actual samples whereby we can hopefully design a treatment plant that will meet the actual field requirements.

So, to sum up, I think if we found a problem of that nature it would be traced back to our plant and our plant would be what we would study and improve.

MR. B. WILSON: Thank you. I guess the problem there is that background levels at the Park boundary are very different numbers than effluent quality requirements, whatever they end up being, and there's no guarantee on either side that effluent quality requirements will, in fact, however stringent or loose, or however they may be set up, will, in fact, result in maintenance of background water quality levels at the Park boundary or at any place further downstream.

MR. N. GUILD: One of the problems, of course, with defining the water quality at the Park is to actually have a statistically valid set of results so that you can relate water quality that you do have at all times of the year. Now to actually have a complete baseline at that point could take several years to actually identify. So if you discharge the first year and you could sort of compute that there was a change in

the water quality, however, that may be a seasonal variation at that point so it becomes a matter of debate.

MR. B. WILSON: I think that's a great idea, Norm. I guess that leads into my final question very nicely. EPS put together a table which we call Table 1 in our submission. We did not do so lightly. We considered, as much as possible, available and practical treatment technologies now in use in mines in the North; we considered effluent quality requirements, I don't like to use that word, but goals as promulgated by Department of the Environment in Canada, Environmental Protection Agency in the U.S.; we looked at background levels; we looked at dilutions; we didn't develop the numbers in that Table lightly at all. A great deal of thought and consideration went into them from both environmental protection and treatment technology points of view. You've had a fairly good chance to look at that table. Can the effluent quality outlined in that table be met?

MR. N. GUILD: Our feeling, in reviewing your Table, your Table 1, is that it is too restrictive, and we believe that we're providing an effluent treatment system to treat effluent to a level which we believe, at normal low flow conditions in Prairie Creek, will be equal or below threshold levels and these are threshold levels as defined by McKee and Wolf. Now we have said all along that we were not designing to the absolute low flow in Prairie Creek, ten year to put a time frame on it, that during those periods we were prepared to cease discharge and return the tailings effluent to the pond. So our proposal has been and is that we will provide an effluent that, during the two year low flow period, will provide parameters in Prairie Creek that are not above threshold

levels; and threshold level is defined as a level which is below that which aquatic life can survive.

MR. B. WILSON: I guess the first, really the first comment I have on that is that a lot has happened in the last 20 years, both in the fields of treatment technology and in the fields of environment impact, toxicology, call it what you will. I would hate to see us base decisions on information developed 20 years ago, i.e. McKee and Wolf, 1963, is the date.

MR. N. GUILD: Yes.

MR. B. WILSON: A great deal has been learned about environmental impacts since that time. In fact, that paper, while it was a generalist paper and pulled a lot of information together at the time, it really doesn't reflect at all what is known today.

Maybe I could just add while the microphone is being passed along. I don't think we're terribly far apart on what we are asking for and what you are offering. For the better part of the year flows are such that dilution of effluent more than compensates for DOE effluent quality requirements for the protection of aquatic life. I don't believe there's really much of a problem based on dilution for the greater part of the year. What we're very concerned about is what is happening during those periods of the year, or during those years, when minimum flow has occurred in Prairie Creek.

The problem that we faced was, in the development of the Table, in the basing the effluent quality requirements that we asked for, was your choice of a minimum flow which we considered, as is obvious in our submission, fairly arbitrary. You have suggested the

potential for holding effluents at low flow. We looked at that procedure and decided that's one option. The other option, of course, is to simply specify a dilution ratio which, in fact, is what we have done and amounts to almost the same thing. At various times of the year you would be required, basically, to hold back a portion, I suppose, of the mine water, or the mine effluent and milling effluent, only releasing very small amounts, or at the discretion of the company, none. We're not, in effect, very far apart if you actually look at the numbers seriously.

MR. N. GUILD: I guess the two philosophies of effluent discharge on receiving water quality which often are proposed, now they find. With the 20 to one dilution that you had proposed, if you take it at any other time of the year then, one, Cadillac can not really make use of greater flows. So you tend to put a restriction on us by doing that 20:1 dilution. So we prefer to adopt the fact that during the critical period we recognize it and we don't discharge. So that's our, that really is the philosophy that we have proposed.

MR. B. WILSON: That's an operational decision and we're not about to suggest what operational decisions are made, it's just that we feel very strongly that the basis upon which you have developed effluent quality requirements, i.e. McKee and Wolf, 1963, is very, is very much less than adequate in light of what's, the knowledge that's been gained over the last 20 years which, I believe, is very well reflected in the DOE water quality guidelines. So that what it comes down to really, I suppose, is the dilution ratio.

MR. N. GUILD: Brian, you also in your brief had proposed a flow restriction as well of 1 cfs in the effluent discharge. Now that flow



was even less than what we had asked for in the licence as a maximum discharge. So you had asked for a flow restriction, a dilution restriction and, as I said, levels which we felt were rather extreme in our case.

MR. B. WILSON: Yes. We're concerned not only with the concentration, which can have deleterious effects, but of also upon the total loading. The number that we've suggested for maximum rate of discharge was, I believe, based, I'd have to go back to the numbers, we can do that another time I suppose, but was in fact based upon the numbers that you had asked for. It was, as I recall, barely less than your maximum requested discharge rate. But I'd have to check on numbers for that.

MR. R. NENDICK: Roger Nendick, Kilborn Engineering. Based on previous work we've done on alkaline chlorination, I would expect we will most likely meet those requirements that you have down there on the quality of the effluent. That's on work done on a high cyanide solution from a mine in British Columbia. The analysis of solution and the limits of detection were somewhat higher on two elements than they were within your quoting here. You're getting down to very low levels when you're talking about .1 ppm arsenic, but I believe the measurement we had was less than .3 in effluent we had. But in all other respects I'd expect, from previous work, that we could meet that level.

MR. B. WILSON: Thank you, Roger. Just a comment, I suppose, that we feel that's very good, I'm very glad to hear that, but we still feel very strong that dilution is an important concept to mold together with the effluent quality. You could only seriously impact once, or kill a fish once, or that's the most general way of saying that you don't necessarily need to get a second chance.

I guess my only comment is to reiterate something that Father Lou mentioned this morning, and that is that no matter what happens and how the thing is operated, there will always be an impact. It's just a matter of deciding what is an acceptable impact and what the Board is willing to accept as impact on the environment, making the assumption that there will, in fact, be some impact. Thank you very much, Glenn.

MR. G. WARNER: Further questions or comments? Mr. Parkinson, would you like to make a supplementary statement to your intervention? Please feel free to do so.

MR. J. PARKINSON: This is a supplementary statement, Mr. Chairman, on behalf of the Department of the Environment, to clarify a position which may not have been too apparent in our original submission.

The Department would like to make clear to the Hearing that the position of the Department of the Environment would ordinarily take for developments so close to a National Park would be against, I repeat, against the development. The fact that the leases were under active development at the time the Park boundaries were established had to be taken into account in the case of Cadillac Explorations Limited.

Future developments that will impact upon National Parks will be faced with a much firmer position by the Department. It is strongly recommended that the NWT Water Board encourage the proper authority to develop regional plans for any areas where developments will impact on National Parks.

Thank you.

MR. G. WARNER: Thank you Mr. Parkinson. Anything further before I ask the applicant to make a final statement? Lou.

FR. L. MENEZ: Mr. Chairman, we had a very lengthy presentation from the Department of the Environment and Fisheries and Oceans. There is a list in my mind quite a few questions addressed to Cadillac Mines and, Mr. Chairman, I just wonder are we waiting for a written answer to those questions or are the public willing to and Cadillac also willing to hear the answer now? For example, when they are, I was going to say accused, they are, well, criticized for calculating the peak flow in Prairie Creek on the Fort Nelson precipitation, although it seems to be known that the precipitation in the Prairie Creek area is about half, no it is twice the Nelson's precipitation. That's one question.

And others, well it goes on like that page after page, and I wonder when we'll have the answer to all those questions? They're very serious ones, some of them.

MR. G. WARNER: Yes, I do know that in the final statement Cadillac had planned to address the DOE brief. They do plan to address that today. However, if you have a specific question, go ahead.

FR. L. MENEZ: Okay, I'll go to the one that bothers me more. Once you close the shop there, who is going to monitor the dykes, the wastes left inside, in one word, whose responsibility is it? According to you. Is it the responsibility of Cadillac Mine that will go on forever and ever, or is it the responsibility of the Government, which means the taxpayers? That question was asked, that question was raised, I should say, page 4 of the presentation.

MR. N. GUILD: Basically the two areas that I guess have been addressed on the future is the <sup>quality of</sup> effluent or the mine drainage that might exist after ....

(Part of tape missing.)

(Tape 6 recorded over Tape 4)

FR. C. PICHE: .... it's just impossible to deal with any type of an environmental security of the waters, of the land, without looking at it in its total picture.

The other point I wanted to make is that, I'd like to check with you, Mr. Chairman, if it's correct the information that I've received, that the mandate of quite a number of people sitting on the Board right now is going to come to an end, and that we are considering the appointment of new members to the Water Board, and that along with what Mr. Bayly has suggested that some of the members now sitting on the Board were not here at the last Hearing and that others that were sitting at the last Hearing are not here today, plus a change-over again in members sitting on the Water Board, I'm just wondering what kind of time-table are we following, what kind of pressures are there to reach a decision, you know, within a certain framework of time, and whether the new members that will be sitting on the Board will be asked to take

a decision on matters concerning such a serious decision as granting this licence to Cadillac Mines without having being able to sit on these Hearings or, on the other hand, whether this group of people will be asked to continue sitting and with the information and facts that they have gathered, arrive at a decision with the present component of people sitting on the Board.

These were the two major points that I wanted to submit to you.

MR. G. WARNER: Thank you, Father Piche. Certainly it is fair to state that the Board certainly shares the concern so well put forward by Father Piche, and others, here this afternoon regarding a water management plan. It has been discussed by the Board previously, and we will continue to discuss it as early as tomorrow.

Regarding the new members, there are five appointments that will expire in June. Whether or not any of these, or all of these, five will be reappointed will be the decision, finally, of the Minister of Indian and Northern Affairs. I would expect that he will be taking the advice of the Legislative Assembly of the Northwest Territories when making those appointments. So none of us know, and the five appointees include myself, whether or not we will still be members of the Water Board by the first of July. There will, however, be at the minimum of four members that participated in both or one of these Hearings who will continue to be members after the first of July, and I would suggest certainly more than five, which is a quorum of the Board. What the legal standing of this is would be up to others to decide, not myself, in so far as the legality of this Hearing is concerned, if it comes to a

question of legality. So that's about the best I can do in answering that question.

I think it's safe to assume that the concerns will certainly be well taken care of by any new members of the Board. Everything we've said has been transcribed, or will be transcribed, and at this point it's likely worthwhile to mention that a member of the community of Fort Simpson or the District is welcome to join our Technical Advisory Committee when it is deliberating on the recommendations it will make to the Board regarding the Cadillac Mine. If the community or the Dene Band, or both preferably together, wish to give us a suggestion, it will be done. And one of my notes say that the Legislative Assembly meets in caucus on May the 27th to discuss membership of the Water Board. It doesn't make the appointments, but it does recommend to the Minister. And as Jo so ably pointed out to me when I was discussing the Technical Advisory Committee, this membership is not subject to reappointment, their terms do not expire, so that people who are considering the technical problems will continue on.

Is there anything further from the floor? Yes, Mr. Lamothe.

MR. R. LAMOTHE: I have a few notes that I've worked over, but the submission isn't in written form. Anyway, I'll just go through it and maybe we can get into a little bit of answers and questions, if it's appropriate.

The aspect of transportation of chemicals into the mine-site. Will there be anything in that area looked at by any other Government agency other than yourselves? The environmental impact of transporting the chemicals into the minesite. Is there going to be anything done in that area?

MR. G. WARNER: Yes, I think I can answer that question, and the answer is affirmative. Certainly the Environmental Protection people of the Government of the Northwest Territories will be interested, and the Water Board's jurisdiction is regarding water, but if there's any potential spills on the land certainly others will be interested in that as well.

MR. R. LAMOTHE: What if, in the event that the licence is issued, and the mine goes into operation, and then the transportation of the chemicals start coming in, and supposing a truck turns over in the Redknife River or something, just on the highway between here and Enterprise, and it's carrying chlorine, I don't know how it's containerized, but what would be the impact on the Redknife and the Mackenzie in such an event? Would there be any?

MR. G. WARNER: Andy, can you field that one, or choose someone who can.

MR. A. CULLEN: Well as far as how the thing is contained, I think we could ask the people who are transporting it. The impact of chlorine, it's poisonous. Is it a gas or liquid form, or solids?

MR. M. BATH: Solid.

MR. A. CULLEN: Solid form.

MR. M. BATH: It's not intended to transport chlorine to the site as a gas. We'll be using calcium hydrochloride which is a solid powder or pellet form. This can be sealed in steel drums and, I believe, contained within those drums in case of an accident to a vehicle carrying them.

MR. R. LAMOTHE: With the exception, given the possibility there are a lot of drums, if a truck turns over, a lot of drums banging around.

Are you really sure, do you feel there's no risk whatsoever that one of the drums mightn't break open and the pellets dissolve in the water?

MR. M. BATH: Well I couldn't say that, there is always the possibility that a drum would burst open, but I think I pointed out at the last session of this Hearing that since the transport is over a winter road any spill of the dry powder is not going to be into water but onto snow or ice and it's feasible to collect that spill and return it to suitable containers and transport it to the minesite where it could be safely disposed of.

MR. R. LAMOTHE: Who would be responsible, in your mind, to do that work? Would it be the transporting company or yourself, the mining company? Who would be responsible to clean up the mess, in other words?

MR. M. BATH: I don't believe I could answer that.

MR. G. WARNER: Please identify yourself, gentlemen. Mr. Morrisroe.

MR. L. MORRISROE: The company would be responsible.

MR. R. LAMOTHE: The reason I ask, the question was included in the submission that was read this morning by the Department of the Environment. I think that there was an oil spill last winter that wasn't cleaned up and, at that point, you felt it was the transportation company's responsibility and I guess they felt it was yours, and nothing happened to it. Since that point in time, have you taken a new policy decision in that regard then as far as spills are concerned?

MR. L. MORRISROE: I don't know where you got that. I didn't hear that. If it's on the record there, I didn't hear it that way.

MR. R. LAMOTHE: Well, I read it in the document this afternoon ....

MR. G. WARNER: Please identify yourself gentlemen.



MR. R. LAMOTHE: I'm sorry. Rene Lamothe. I did read it in the document this afternoon that was submitted. Perhaps if the people from the Department of the Environment are around they might be able to clarify something on that. The statement was in the document.

MR. G. WARNER: Mr. Parkinson, was that in your submission? Do you have a copy of that Andy? Would you hand it to Mr. Lamothe please. Okay Brian. Brian will speak for the Department of the Environment.

MR. B. WILSON: With respect to the point that Rene has brought up. In our submission, on page 5, our information was on the spill itself. It came from a spill report that was submitted to the Department as a requirement of reporting of accidents of this sort, and it was indicated in the proponent's IEE that, I believe, that they felt, I can't quote the page right now, I could find it, that they felt that the transportation company was, in fact, responsible. At the stage of development of the IEE they felt that it was their responsibility for cleaning up any accidents occurring during transportation of chemicals along the winter road.

MR. G. WARNER: And that statement was made by who, Mr. Wilson?

MR. B. WILSON: This was in the IEE.

MR. G. WARNER: And explain that to the people that don't know what an IEE is.

MR. B. WILSON: Okay. The Initial Environmental Evaluation, which is the environmental impact outline submitted to the Environmental Review Committee of DIAND.

MR. G. WARNER: And who would that be submitted by?

MR. B. WILSON: By the proponent.

MR. G. WARNER: By Cadillac?

MR. B. WILSON: Or their representatives.

MR. G. WARNER: Mr. Cullen.

MR. A. CULLEN: Mr. Wilson, did the spill report not indicate that no further action was necessary, that the spill was being handled or that it was not causing any problems, and maybe you can give us some details of the spill report itself.

MR. B. WILSON: Beyond the question of location and amount, which we've included in our submission, and the specifics associated with the spill, which I mentioned when I was asking questions earlier, it's indicated that there was no containment, all diesel fuel had soaked into the snow. It indicates that there was possible contamination of the Tetsila River if the fuel reached the small tributary which was a quarter of a mile away. An attempt to burn off the fuel was unsuccessful and the recommendation in the spill report was that no action was going to be attempted to clean up since the site was on a steep slope, which I assume indicates that it was a very difficult operation to clean it up.

MR. A. CULLEN: Yes, okay ....

MR. G. WARNER: Mr. Cullen.

MR. A. CULLEN: I think the point is that when the spills are reported that they indicated what action should be taken and maybe that they're followed up a little bit more than is indicated by Mr. Gauthier in the district here and by people in our shop when we do receive these. So if the Board wishes, at a later date, we can follow up and I believe we checked this the last time and found that no action was really necessary.

MR. G. WARNER: I think we can deal with that if anyone wants. The question that precipitated this discussion was, who was responsible for a spill on the winter road? Maybe we should come back to that and, Mr. Morrisroe, would you like to make a statement on your opinion?

MR. L. MORRISROE: Well, I take the position that we hire the transport company, between us and the transport company, it was our responsibility.

MR. G. WARNER: Thank you. Does that satisfy you?

MR. R. LAMOTHE: Yes, that's fine.

MR. N. GUILD: Might I add one thing? It wasn't in the IEE, the report they've been reading from. I guess we're misleading by omission. It said in there, spill contingency planning for transportation accidents is the responsibility of the supplier, which is normally the case, but we should have added that that did not mean that Cadillac did not believe that they had a responsibility as well, and that's what I was going to say in my summation, and that is our belief.

MR. G. WARNER: Thank you Norman.

MR. R. LAMOTHE: Just one other question in relationship to the potential spills, those kinds of things, what authority would the Board have in the event that there were spills? I don't really know how to address the thing, but supposing there is a spill, it's difficult to clean it all up, or it's impossible to clean it all up, or it is not all cleaned up, and as a result of that, the ecology is damaged.

MR. G. WARNER: Well I think I'll answer first and then turn it over to Andy. The Board is responsible for the issuing of licences and the issuing of authorizations. The enforcement of anything that happens detrimental to the waters in the Northwest Territories is spread amongst

three agencies at least, Fisheries and Oceans, Department of the Environment, and Department of Northern Affairs. Probably also the Government of the Northwest Territories under their Environmental Pollution Ordinance. Andy is likely the prime mover in that. Mr. Cullen.

MR. A. CULLEN: Yes. Under the Act, under the Northern Inland Waters Act, if it is an unauthorized discharge of waste, which is what you're talking about here, the approach is that we work with the company and the people that the spill occurs to and try to clean it up. If there's not a concerted effort to do so then the recourse is legal action in the courts. Then also there's the Fisheries Act if it gets into the waters and I think EPS people and Fisheries can speak to their Act. But mostly what happens is these spill reports, and we ask these people to make these spill reports, and as you can see even 700 gallon spills are reported, and almost immediately, within a day or so, an action is taken on these reports. They're telexed, they're not telephoned, if they are telephoned or telexed, it's immediate. And that's where the action comes in. Everybody's concerned with the transportation and pollution of our water resources and we don't like to have to go to legal action but we work with the company and try to make sure the thing is cleaned up. And that's where our District Offices come in and all the people that are on the job here. That's all I can tell you.

MR. R. LAMOTHE: Okay, thank you.

I'll move onto another area. The social and economic implications of the project outlined by Cadillac. They've been reduced quite specifically to the creation of the jobs with the putting in place of workshops and sensitization of employees for Cadillac from management

and workers to the cross-cultural situation that exist in this part of the world. In other words, there's going to be Dene people working with people from down South and that kind of a thing, and that brings to bear a lot of social pressures on both groups, and they have proposed to put together workshops, sensitization sessions, to prepare people to work in a cross-cultural-type situation as they are proposing.

I have to return, though, to the reality that the primary thrust of the whole economic reality by the company is based on creating of employment and primarily that is an assumption that, I suppose, stems from an inherent belief that one's own way of life is the best way, or the right way, or the only way, and everybody else should adjust to it. You know, that in itself is the bottom line of what you need as far as sensitization is concerned, it's an inherent contradiction in your socio-economic plan is what I'm saying, because for many people jobs are not necessary to maintain a very positive self image. To many Dene, in fact, jobs are a threat to their way of life.

In other words, the mine at Pine Point, for example, very much altered the way of life of a lot of people from Fort Resolution, and did it in a negative way. And when you look at the mine in Pine Point, or the two gold mines in Yellowknife, you find very few Native people working in there. Those who are working there now are, like in Yellowknife, are second, at least second, generation people since the mines have started up.

There's been a lot of social pressures brought to bear by the reality of that economic activity on the people of the area and the pressure that's brought to bear is a negative one. It's inevitable,

and jobs don't offset that. I mean, I talked to that at the last Hearing, the idea that jobs just don't bring to bear enough weight to offset the negative impact of these kinds of projects on a people whose way of life does not flow in that way, does not really adjust or fit into that way of life.

So I want to submit to the Board that the socio-economic study done by Cadillac is inadequate and is setting up the company to a lot of misgivings.

(Back up missing)

.... is just based on assumptions.

The next area that I want to just identify, it has been identified by the Department of the Environment, they've urged that the Water Board take a holistic approach to, and a management-type approach, to water management. And when you start thinking about a holistic approach to these kinds of things you begin to move a lot more slowly, that's the first thing. It takes longer to look at, you know, to look at a 360° thing than it does to look at a 2° type scope, you know. It takes a lot longer. It's more comprehensive, it's more difficult. Things begin overlapping, things for awhile are more confusing, so people take more time. Some people say that people who live in a holistic way are backwards, you know, but that's just a matter, again, of value assumptions and the basis from which people live.

I want to emphasize that to the Board, I think it is a really good recommendation on the part of the Department of the Environment, that the Board take a holistic approach in their decisions in relationship to the use of water and the granting of licences for the use

of water. It's primarily as a result of a holistic approach to life on the part of the Dene that there is this conflict with industry that wants to move in the area, because once you've done it for a number of generations it becomes like second nature to a great extent. Any type of operation like this threatens the integrity of the land. I refer you again to the phrase used by the Department of the Environment, shut the proposal down until the Cadillac can prove to you that there is no risk, that there is no risk of contaminating the pristine nature of the Nahanni National Park, it's what they're concerned about. But we're concerned about the whole Mackenzie Valley too, you know, we've got to drink that water here in Fort Simpson, and you're drinking it when you come to visit us too, and probably you're going to have to come back in the future 'cause I suppose there's going to be more mining companies applying to you, mineral extractions, in the area.

I want to advise the Board, as well, of the development that is taking place right now within the region among the Dene. They are negotiating, at this time, with the Minister of Indian Affairs and with the Territorial Administration to set up an Advisory Board, if you want, or an authority, an economic development authority board for the Liard Valley and watersheds. Now this has direct bearing on applicants such as Cadillac. We don't know, at this time, what the authority of this board will have, those things haven't been defined, they're still in negotiating stages, but in a meeting two nights ago with both the Minister of Indian Affairs and the Commissioner, they were both very favorably impressed with the initial steps that have been taken in that area and they indicated they support it.

So projects such as this prejudice the development of those kinds of things. People begin to wonder, well, what's the use, you know, people with more power turn around and override everything we want to try and do for ourselves, what's the use. So that's the kind of reaction that comes from people who want to do things for themselves but everytime they try and do it, they're overridden by other agencies, or ignored. It might sound like a radical statement to say, but I think it's fair to say that projects such as this will prejudice the legitimate democratic right of people to govern their own areas. It does it by negatively affecting the minds of the individuals in the area who say we have no control over this area anyway, what's the use. You know, I bring it back to you, what's the use? That's how it prejudices it, in the sense that people just give up before they even start to fight for their rights so, and you know there's only one way of maintaining a democracy and that's by staying on guard. That's the same here as it is anywhere else in the world, like people have given up, they're not going to stay on guard. We stand on guard for who?

Another area I want to raise with you, the Nahanni National Park is a World Heritage area and I'm wondering if the Board, I'm asking Mr. Warner, if the Board advised the United Nations of this application?

MR. G. WARNER: I'll answer that, no we did not.

MR. R. LAMOTHE: Will you be advising the United Nations of the potential damage to the Nahanni National Park by this mine?

MR. G. WARNER: Not unless the Board instructs me to do so.

MR. R. LAMOTHE: Well I would propose to the Board that you instruct Mr. Warner to do so.



MR. G. WARNER: We will take your comment under advisement.

MR. R. LAMOTHE: Thank you. I think that in fairness to both the Government of Canada, which is a member of the United Nations, and to the United Nations, which is attempting to set up World Heritage Centers, they should have been invited here to make a submission. They should have had an opportunity to express their concern if they had one. I think it would be rather embarrassing to the Government of Canada if, in four or five years, the Nahanni National Park is polluted because this Water Board gave a licence to a company without even giving the Government of Canada or the World Heritage Group from the United Nations an opportunity to speak to the issue.

MR. G. WARNER: Mr. Lamothe, your line is very interesting, however, we follow the procedures outlined by the Parliament of Canada and that is to Gazette these Public Hearings in the Canada Gazette.

MR. R. LAMOTHE: They are in the Canada Gazette? I thought they were only in the Territorial Gazette.

MR. G. WARNER: So if the United Nations, or anyone else, likes to read it they're willing, and I'm sure if they were here we'd hear them.

MR. R. LAMOTHE: Fine. Okay. I was of the understanding, sir, that it was published only in the Territorial Gazette. Okay. I would still like to reiterate though that the Board should send a special letter to the United Nations World Heritage Group.

Okay, another area I wanted to just raise, I suppose you've heard these before but I guess it's my right to raise them. One of the areas that I feel quite concerned about is the cumulative impact of the development on the watershed. We're at the tail end of it, you know, we're getting the dirty end of the stick. We've got Alberta and

B.C. dumping a lot of stuff in those rivers that are draining through this system. I can remember ten years ago when you went up from Simpson on the Mackenzie, the water was just crystal clear and it's foggy now, it's getting foggy. Now we've got one of the biggest distillation units over there on Great Slave Lake in the world and that water on the Mackenzie's getting foggy up from Simpson. People will go into the creeks to take water to drink rather than from the Mackenzie now. The effects are there already.

It's going to get a lot worse and I recognize that it's difficult for you to handle within the scope of your mandate, possibly, but I also recognize that by identifying the limitations that you are experiencing with your mandate in front of people in the communities you are in a position to advise those who have given you the authority to make these decisions of the limitations of your scope and of the necessity of coordinating this thing in a better way. I would submit that the Water Board should commission an analysis of submissions to them in the last few years to attempt to identify the weaknesses in the structure, the present structure, of the Water Board. In other words, what kinds of submissions have been made to the Water Board that the Water Board had no authority over, but that do have bearing directly to applications that come before the Board, and in identifying those kinds of things make a recommendation, or at least advise the Minister and the Commissioner of the limitations of the Board's scope in the light of these kinds of applications. I think that would be relevant to the development of the Board as a body with credibility and more clout. So I would make that recommendation to the Board.

These whole areas, though, of the holistic approach to the earth as identified by a number of people, the idea of attempting

to develop in a no-risk situation, and the relationships with the earth that man has are centered, in many ways, to the concerns that are expressed by Dene people in front of a lot of things like this.

One of the functions of the Western mind, and this has become very sub-conscious in the Western mind, is to relate to the world as its master, to have dominion over the earth, and in the context of having dominion, you know it comes from the Bible, it comes from the Old Testament, from the Book of Genesis, go forth and multiply and rule, whatever it says. But it's been around a long time and people really feel that to have dominion over the earth means to be able to manipulate it physically. I think for a long time the Europeans have neglected to understand that the Bible is a spiritual document and when you have dominion over something spiritually you learn how to live with it in harmony and to leave it alone. The European mind has never really understood that.

I want to refer you back to a number of statements that were made by old people to Berger on the Mackenzie Valley thing. The land is not only ours, they told him, many people told him this. They recommended to him that before you make a decision on changing the relationship of man with the land, you had best get the permission of all other creatures who use the land.

You might feel like you're not confronted by that kind of a reality but I suspect that you are. Because we are responsible for what we do and the decisions that we take in our lives and the more public the decisions are, in other words, the more impact our decision has on a vaster number of people, the more accountable we become.

I suspect that possibly as a group of people you're as much overwhelmed by everything that is put before you as anybody else is. You know, it just comes in like waves, rolls and rolls. How many submissions do you have to hear in a year? I mean, you've got a life to live at home; you've got a family. You haven't got time to be reading these big technical documents night after night after night; I know you haven't. I haven't either, nobody does, and so you're confronted by it in the same way as everybody else and you're just swamped by it like everybody else. And I think, generally, as a result of that, in the past, you sit back and say what's the use, give them a licence, get them out of my hair.

I think it's time though that you took a stand. I would recommend that, along with the Department of the Environment, the project should be shut down until there's no risk, and I would go further and say until the proper legitimate authorities are in place to set up the relationships that will not impinge on the people, the Dene from this area, in their feelings, in their beliefs as human beings with a specific way of life, that in fact they have some control over their lives and the area of the earth in which they have chosen to live, because giving them jobs is not going to do any good in that area.

We've seen the effects of just a lot of money, it has broken up a lot of homes and you've seen it all over the place. I'll give you an example why I say that. In the Dene way, anything that is taken off the land, around here anyways, it's still like that, it's shared, it's given out all over the place. If it comes from the land it's shared, but I know many Dene fathers who go out and make \$2000 in

one month working at Hire North, or somewhere else, and come home and that money is theirs, it doesn't go to their kids, it doesn't go to their wife. The kids belong to my wife, she can go and make money to feed those kids if she wants to, that's my money. Money is a completely foreign thing to the mind of the Dene people. It has no bearing whatsoever on social responsibilities or on plain human common sense in many Dene minds.

So jobs don't do a damned thing for Dene as far as aiding and abetting the development of a social existence generally. There are some who are the exceptional people but, in general, jobs do not answer the social needs for self image.

I think if we're really concerned about the social well-being, and the applicant has made a part of their application in that area, are really well concerned of the social well-being of the people in the area from which they are extracting the resources, the ownership of which are in question, then we have to look at things from that perspective as well. And they have to have bearing on whether or not a licence is granted. That's not saying shut down development indefinitely, or for ten generations until the minds of the Dene changes, I'm not saying that. I'm saying until the authorities that are mutually acceptable to the Dene and the Government of Canada and of the Territories are in place such that when development like this goes ahead, the Dene feel we have had input through our leadership and we have some control on our land and the negative impacts of the development come into the kind of context that can be coped with by the leadership with their people, at least.

I want to leave you with those considerations. Thank you for your time.

MR. G. WARNER: Thank you, Mr. Lamothe. Further statements or questions? Agnes.

MS. A. LAFFERTY: My name is Agnes Lafferty. I was born in Fort Simpson, I lived away for a few years but I came back five years ago and I intend to make this my home for however long I'm around, providing the polluted water doesn't get me first.

I guess I can talk for a lot of people today because I am with the Metis Association, I am Secretary for the Native Women's Association here, and I'm also on Village Council. So you see I'm representing a lot of people in the Northwest Territories. And a lot of people have come and spoken to me on the development that's been going on and people are just generally stunned by the things that have been happening to us just in the last few months. Petro Can has leased a whole bunch of our area of land and I guess the pipeline is going through and now the horror of horrors has happened, Cadillac Mines is opening and they're putting all that cyanide in that water up there and they don't know the effects of the rainfalls and floods that occur in that area.

I've heard a lot of stories from the old timers and some of them aren't very pretty because these flash floods can come very fast and we are very concerned about this area because if ever there is an overflow and this tailings pond, that garbage that's going to be put in there, if this overflowed, it's going to make its way down the Mackenzie Valley to our river, and this goes all the way down the Mackenzie Valley

and this is all our area. There's Dene people living all the way down here and you all know the damage that has been done by mines all over Canada, the United States, all over the world, in fact.

Do you want to let this Mackenzie River be polluted also, the last of the clean water in the, in North America? You know, it only stands to reason that we want our water clean. My God, it's our lives. Once our water goes, well, what the hell's the use.

I wasn't going to get up and talk because I had this really sick feeling today, and I was so damned mad, and I felt if I would have had a bomb I could go down there and just bomb the whole bloody area out because I'd rather do that than have them poison us. I mean, somebody's going to get it in the end and who's it going to be, them or us? They don't care about us so why should we care about them? Somebody's got to listen to our plea! Christ, they've been killing Dene people with mercury and every damned thing else, alcohol. The ones of us that don't drink alcohol now, we've quit because we want to try and help our people. Are they going to kill us with cyanide now? The ones that are sober? Cripes, I'm not going to go back to drinking alcohol because I can't drink the water.

I mean, what are we supposed to do? Where are we supposed to turn? I think it's time, like Rene said, that the Water Board takes a stand and speaks for the people that are here. We want to live. I don't know, maybe they are less human than we are, maybe they don't know what we're talking about, maybe they don't live like us. I've got feelings, I'm alive, man, I want to live, I want to enjoy. I don't need all kinds of money to make me happy because I am, I've been very happy

lately, but when I see you guys coming in with all your chemicals and poisons, what the hell's the use living. You may as well take me and shoot me like an old dog, you know, there's no use.

Look around, look at the area up there, it's a Park isn't it? Wasn't it made a park to be protected? And then they stick a mine in the middle of it to pollute it all. What the hell's the sense of making it a Park?

I say shut down that mine until there are restrictions put in there or some very careful studies because that's a dangerous area that they're going into. Over the years there has been a lot of flash floods and earthquakes and what have you. They don't know it all, they don't live in this area, they haven't made their lives in this area. It was my great uncle who discovered that mine in the first place when he was a little boy. They left it alone because it was safe where it was at. As long as it's there in the mountains we're not being harmed by it. Now they're trying to take it out and that's when they're killing us.

So I don't know, I really feel that sooner or later, sooner I hope, before it's too late, that you people will listen to us and help us. Make the right decision. Don't come back to us when it's too late, when our hair is fallen out and we're dying, crawling around from poison. Don't come back and say, well gee, I'm sorry, we should have done this, we should have done that, and everybody's going to be crying around here and complaining. That's going to be too damned late then. Let's do something before it happens. Now is the time to do it. Now or maybe never.

Thank you for your attention.



MR. G. WARNER: Thank you Agnes. Further comments or questions? Mr. Lamothe.

MR. R. LAMOTHE: Just to let you know, sir, that we were a little slow. Do you want me to come over there?

MR. G. WARNER: Please.

MR. R. LAMOTHE: I don't know whose fault it was, probably nobody's, but generally we were a little slow. When you came back after the last Hearing and said you'd meet on the 20th, it was really unfortunate that we didn't jump on that. It was late for everybody, but tomorrow is the last day of the beaver hunt and most of the people are out in the bush still. So you haven't heard a lot of people who are concerned about this. Unfortunately the Chief is out. He wasn't willing to come back for this Hearing. The Commissioner sent a helicopter for him to meet with the Minister on Monday and then he went back by boat because the ice was out, but he wasn't willing to come back again. There are a lot of people who, you know, it's not only the other creatures, but a lot of people you haven't heard yet. I just wanted to let you know, sir.

MR. G. WARNER: Lou.

FR. L. MENEZ: Rene mentioned at the beginning of his expose that he was concerned with the inspection, the type of inspection that will take place, the surveillance and so on. Mr. Morrisroe, do you have, will you have at the mine somebody, I would call that the kind of senior officer or manager, looking into the environmental problem of the mine?

MR. L. MORRISROE: Yes, there'll be a Mine Manager.

FR. L. MENEZ: Now I was just wondering, will you accept a couple of persons coming, for example, from the, I believe they call that the

Liard Valley Authority? Will you accept a couple of persons presented by that Committee to work with your senior officer working on the management, on the environment of the area?

MR. L. MORRISROE: Well, like when that spill occurred, we immediately notified the environmental people. We notified Mr. Gauthier there, land use, and the water use people were immediately notified.

FR. L. MENEZ: So my question would be more direct then. Would you hire two persons to work with your manager working on the environment, two persons presented by the Liard Valley Authority so they will exercise with your staff the surveillance of the mining activities around the property?

MR. L. MORRISROE: Well to help you, Father, we've got one Dene on our Board of Directors. We have Mr. Harry Denneron from Fort Liard here, which represents the Denes on our company, and I take it today that I feel that Rene here, and the Dene people here, are very, very selfish for the simple reason I told them today of the benefits of this mine. I said they were available there if they wanted to take advantage of them. Rene has spoken that the Dene have no interest in taking advantage of them but ....

MR. R. LAMOTHE: You're misrepresenting what I said.

MR. L. MORRISROE: The Metis people here are very interested, there's other people here, Native, born here in the North, they're mostly interested, and I listened to the meeting with the Minister on Monday and I heard the other Bands speak and they're very interested in work, very interested in development and they wanted work. Now that's part of your Denes.

Now Rene's here today, he represents the Denes, which is only a partial, and he puts it that they don't want any jobs, it's no help to them, and I listened to them on Monday and the other part of the Band were most interested. So I feel that he's very selfish only looking at their end of the situation.

So, I think Father, we've already got represented with the Band with Mr. Denneron on our Board of Directors.

MR. R. LAMOTHE: I'd just like to indicate that I feel Mr. Morrisroe has misrepresented what I did state, and I suppose the record will point that out.

MR. G. WARNER: Fine. Thank you.

MR. R. LAMOTHE: Did you want me for anything specific, Lou?

FR. L. MENEZ: No, I just perhaps I thought something will develop from my question.

Mr. Morrisroe, one of the concerns of the people is the environment and it will be just for the credit and the benefit of your company if you could, in a way, go in front or forward to take away the suspicion that the mining company is not doing very well with the environment. Now you come North now, you're starting a new mine, people here have been living with mining work done in the area and any area in the Northwest Territories and what has been left behind has been destruction of the environment. So, I would say, you must help to rebuild I would say the good name for the mining industry in the North and that's why I was asking you that question.

Will you hire two persons presented by the Dene Group, or I would say the people of Simpson, to work with your own people

working on the environment? Not in the mining industry as such. That was my question. That's all. You don't give me the answer, that's fine with me, that's your right. Just, this is the purpose of my questions. There is no answer, that's your right. That's all.

Thank you very much.

MR. G. WARNER: Thank you Lou. Yes, Mr. Watsyk.

MR. O. WATSYK: Orest Watsyk speaking. I'd like to just discuss very briefly the new idea that seems to be getting a bit of attention here, called the Liard Valley Authority. The history of this idea, Village Council, two years ago, come up with a proposal. We'd included the Band in it, we've tried to get a meeting with the Band, the idea of structuring it with two people from the Village, two from the Band, two from the Metis Association, to form a Simpson Area Development Council. Specific sort of guidelines for that was to look at development here that would be socially conscious, economically viable to develop the renewable resources so that we could become as self-reliant as possible. Farther on the list was to examine the potential development in non-renewable resources, and things like mines and pipelines were on it.

We were unsuccessful in getting participation from the other political groups in town so about fifteen months ago we put in a proposal to the Territorial Government Economic Development to have an economic development coordinator hired by the Village to work with all interested people in the community to look at these things. Mr. Braden, the Minister at that time, turned it down. He had consulted with Councillor Sibbeston. Councillor Sibbeston felt that, number one, the Band wasn't involved; number two, it was sort of in the interest of the

Village Council only. So we then referred it back to Council about a year ago, in March, so it's over a year ago, it's about fifteen months ago. We have heard nothing since from the Band Council.

Now we hear of this Liard Valley Authority. A meeting was held by the Dene people in Hay River. We feel it should be a democratic system and it should not be just the Dene people. There are other people living here in the Liard Valley even from Simpson and down. We realize we would not be the majority, we don't wish to exercise sort of a majority influence, but we would like to be involved.

Now if these ideas that were put forward about two years ago would have been acted on, we would not have some of those strong negative feelings that are being identified here today.

Thank you.

MR. G. WARNER: Thank you, Mr. Watsyk. I think now we'll break for coffee and come back again in 15 minutes. And I would just like to reiterate while this dialogue is certainly very interesting and certainly very important in some areas of responsibility, we are here today to discuss the Cadillac Exploration request for a licence for mine and mill use of water and waste disposal associated with their mine at Prairie Creek. When we come back after coffee I would like to keep the discussion more restricted in that area. Thank you.

MR. G. WARNER:        Alright, are we ready to reconvene after our coffee, or Pepsi, or whatever? Further questions of the applicant, or the intervenors, or further statements? Mrs. Sibbeston.

MS. K. SIBBESTON:    I'm Karen Sibbeston. I happen to be the MLA's wife, but I'm not speaking from that point at all. I'm speaking as an individual, speaking what I feel and I'm speaking, I'm also a non-Native but having lived here for a long time and being very close to the people, married to one and having six offspring with that heritage, I have very strong feelings that have been building up about the environment here in the North since I've been here, and I really feel that this is the last frontier that still has a bit of fresh air and a bit of fresh water. I'd really like it to stay that way. I know that there's raw sewage running into the river from here, and maybe the water comes from a little further up the river, but there are the little individuals that are affected by that raw sewage from time to time. That's one little concern.

                         I feel it's big companies who impose themselves upon us, they have ruined too much of the water in the South and you haven't convinced me that the process that you talk about is safe. We hear of lakes where fish are dying, we hear of the Great Lakes and all the pollution there, and how many hundreds of years or hundred years or whatever it will take to have that in a normal state again, if it ever will be. Why now should we believe that you, you know, it seems that you've fooled the Southerners and we don't want to be fooled as well. I'm a white person but I do feel frustrated enough and I can see that the Dene people, who this land belongs to, are more frustrated and I hear it every day. They have a feeling of a lack of control over what's happening here and

they feel like they're being "run over". There has been too much trust on the part of the Dene in the past, and now they can see that the large companies are misusing their trust. They don't want the same thing to happen to Northern environment as has happened in the South.

We could learn from the Dene. If we can look past the short sighted consequences to the future. We're on the road to self-destruction, and in the process are overlooking what the Dene people feel about their land. They are concerned about the future generations, and if we would all stop and listen to what they have to say, I think we'd find it's very important for our well-being as well as their own. You haven't convinced me that your development is safe and will keep the water safe and clean. I can see where the Dene feel afraid and frustrated. They just haven't been involved enough in the decisions. It is their land and I think they would be the best keepers of it because they care about what happens to it more than you developers do. I'm glad they have taken a strong stand to protect their land, not just for their sake, but for our sake too. Development is okay as long as it isn't going to harm anyone or anything, meaning the environment or the earth.

If you could take a little more time and with that time, hopefully, if it is safe, convince the Dene people and the leaders, the Dene leaders and the general people, that your operations are safe, then maybe I could swallow it too. But what I listen to at Water Board meetings I just don't feel very convinced sometimes. I hear conflicting views from the experts from time to time and it makes me, as just a private citizen, feel not very convinced.

In Yellowknife, already the people there are afraid to eat the berries that are right around Yellowknife, and to drink the water from their rivers, because of the mine. Are we going to learn the hard way too? Lots of people that I know, who have no interest in development from the point of getting money from it or gaining something from it in monetary terms, are afraid of your development and I'm afraid of your development. I just feel morally maybe you shouldn't go ahead so quickly when there's a wide-spread feeling of fear amongst us common dwellers in the North, and I just feel that maybe with a little more time, if it is safe, then maybe we'll be more convinced, but I feel that we need to be informed better. Maybe it's our responsibility to be able to be at more Hearings, to read more information, but some of us don't have that kind of time to sit and study all day long, but if we can feel a sense of, that our leaders are, you know, feel that if they can feel that the go-ahead is okay then I would feel more inclined to feel that way too.

That's all.

MR. G. WARNER: Thank you Mrs. Sibbeston. Mr. Antoine, did you want to say something before I offer the company their opportunity to sum up and reply?

MR. D. ANTOINE: Good afternoon. I was listening to some people talking around here, and I just wanted to remind people that the things that I'm going to say are reminders of what was said before. I'm with the Band Council here in Simpson, and I've spoken to a few people about the Cadillac Mines project, and I just wanted to say a few things about it. Even if whatever I'm going to say is still on the record, I'm still going to remind people.



To the Dene, to the people of the Dene, we know that water is very important to us and everything uses it. I'm not going to talk about anything to do with any technicalities because water is, to me, like is a very basic thing, very simple. Every plant, every living creature, and every living human being that lives in a cycle uses it. When we use the water we have a lot of respect for it, so we pay it, we give it something. And what makes me wonder is do certain people, are they aware of what, like what the people, the Dene people believe in? It just comes to my mind that what is Cadillac Mines going to give the water?

I can imagine, in the future, who will be using the water. When I say we use it, I mean we drink it, we cook with it, we cleanse our bodies with it, we wash our clothing with it, and also we use it as transportation. When I say that I don't only mean the water around that area around Prairie Creek, but the water that's flowing into the South Nahanni from Prairie Creek and to the Liard and down the Mackenzie, meaning Big River, and down into the Delta.

I want to quote someone who was in the Hearing the last time, about a month ago, the person was sort of intoxicated, but he asked the question and he said, where does the water flow, backwards? I think that person was trying to tell everybody something, he's trying to tell a lot of people something. When Cadillac Mines talk about benefits, truthfully, who are those benefits going to? The mines and the companies, or the people of the land?

Most of the people, like Rene was saying, are out on the spring hunt. The people that are living around the Prairie Creek area

aren't even here. I'm just wondering what they are thinking. Someone said earlier today, professionals in their own way. Like the Dene people they have professionals but they don't have any papers, no degrees, or anything like that. But we've been around here a long time. One thing about Cadillac Mines, they don't come from here, they don't come from the land, and that's one thing that they're going to have to accept, that the Dene people are a people who will not disappear 'cause we're here to protect our land.

And I'd just like to say that I want to support a lot of people in postponing the Hearings to another time when the people that actually use the land can speak. That's all I have to say.

MR. G. WARNER: Thank you Don. Further comments or questions? If not, I would ask the representative from Cadillac Mines to make your final statement.

MR. N. GUILD: Norman Guild; Ker, Priestman. We would like to state, for the record, that with respect to the Nahanni National Park, Cadillac Exploration Limited are fully aware of the importance of this internationally renowned wilderness area and have, for that very reason, solicited the aid of specialist engineering and environmental consultants to design and construct the facilities for their Prairie Creek project. As well, each consultant represented on the panel understands the need for protection of the natural resources of Nahanni Park and has given due consideration to that need throughout his or her involvement with the project. Furthermore, Cadillac and her consultants have to date endeavored to work closely with government agencies in Yellowknife to develop sound engineering design concepts with respect to environmental

protection and intends to maintain the same working relationship in the future.

Now I'd like to address, at this point in time, some of the concerns that were expressed by Agnes Lafferty, and these were concerns that were expressed at the last Hearing and, for that reason, we've prepared three slides. And if you could assist me. Just go right on, keep going, keep going, right to the end. Okay.

There's been many questions and many statements made with respect to the cyanide that is going to enter Prairie Creek and find its way down to the area of Nahanni Butte. So we've prepared this slide to try and give you a visual feel for the amount of flow that is in Prairie Creek and the amount of flow that is actually in South Nahanni River.

Now one thing I might say from the beginning is that the amount of cyanide that is going in with the effluent as it discharges into Prairie Creek, if you just take the figure of .1, it's milligrams per litre, but it's .1, that's going out of the end of the pipe that goes into the Creek. Now the maximum permissible level which you can actually drink in water is .2, so that begins to put things in perspective. That's going out of the end of the pipe.

Now as it goes into Prairie Creek the line would be, the pipe as it enters Prairie Creek would be a point. Now it widens out and then by the time it reaches the South Nahanni that is the thickness of the line and the dilution, dilution is a factor of let's say we put, dilution would equal 1 where we put the cyanide in at the pipe. By the time we got down to Nahanni Butte we'd be talking 28,000 to 1. So that's

why, as we've said all along with respect to cyanide, we do not believe that there is a problem at all with cyanide.

Now the, another point that perhaps hasn't been brought out well enough is that the cyanide storage on the site, because of the winter road, we have to bring in nine months' supply. Now it's the company's intention that we will actually be storing the cyanide not actually on the flood plain, even though we believe the dyke structures and everything we've created will protect them. They'll actually be a ledge, there's just a physical place we want to put them. They're on a ledge well above any flood levels so the actual storage of the cyanide will be above any potential flood levels in the area and the amount that's required in the mill will be brought down on an as-required basis.

Now if we could also briefly touch on your points about flash floods, how we are unfamiliar with the area, we do not come from this area. If you could flick back two slides. Okay. This is just quite simply two lines and that's all we need to refer it to. During our hydrology studies to determine flood flows and flash floods in the area, we not only studied all the literature that we had and made our own determinations because we do have people that are familiar with areas other than B.C., we have done extensive work in the Yukon and at CanTung and some areas around there, not for CanTung itself, but in that area. We also had extensive discussions with the Water Resources in Yellowknife. Now they have a hydrologist there by the name of Mr. Jasper and he has had extensive experience in the general areas around here.

Now our line is the line that's above, the top line. Now this just gives you some idea, we've been talking about design

floods for the dyke around Prairie Creek of a hundred year return period. This represents simply a 50 year return period because this was all the data that Mr. Jasper developed for the study he was doing. But a typical line is the lower line. Our line is even more conservative than that and is above it. So we believe that we have recognized the flash flood potential, the hydrology problems of the specific area and we've made use of all the available information that is available and we're even more conservative. So that's our approach to the hydrology.

Now I think these are two of the main points that you have been concerned with and in relating that now, if you flick on one more slide, it's a little bit faint there but perhaps with a pointer I can indicate in words that all these arrows starting from the bottom one give you some idea of the flows in Prairie Creek. Now starting from the low line, that represents the average flow, the 204. The next one is the maximum recorded flow. The next one is our hundred year design flow. The one above that is the maximum possible flood. This is what we have designed the tailings impoundment for. You will note we have even three feet of rip-rap above that level. Now that, when you work it out in terms of flow, gives you almost at least a 60% increase over even the maximum possible flood that we've calculated. On top of that there's six feet to the top of the tailings impoundment. So again we feel we have been conservative in our selection of flows and in our design and we do believe that the facilities that we have provided have the integrity necessary for the long term stability in that area.

The next part of the summation, I'd like to address the EPS brief. I'll address it on a point-by-point basis relative to the points that were raised in the brief, starting with the physical impacts and issues.

Item one was precipitation. The maximum possible flood was not estimated by extension of Fort Nelson, B.C. precipitation data. It was estimated by using available flow records in Prairie Creek. As well, the Brook and Ford paper in the Journal of Hydrology had been reviewed by Ker, Priestman and did not, in their opinion, provide data which would necessitate revisions to the estimates of the maximum possible floods. In fact, the paper deals with only one particular storm front which lasted for a period of several days and therefore did not provide information on hourly rainfall intensities or on average annual trends. In conclusion, Ker, Priestman Associates believe that their calculations related to the estimate of the maximum possible flood do reflect the real potential for flooding in the valley of Prairie Creek.

Two, the stream channel stability. The tailings pond retention dyke will be designed as a river training structure, suitably rip-rapped along the face of its slope and at its toe. Therefore, the integrity of the tailings dyke during periods of high flow will be protected.

Three, on the construction schedule for dykes. We confirm that the tailings impoundment dam will be constructed to an elevation sufficient to withstand the maximum probable flood before the deposition of any mill tailings.

Four, seepage. The proposed tailings pond location is underlain by 20 to 30 feet of impervious clay which we believe will provide an excellent barrier to pond seepage. In situ clay is superior and its long term seepage control ability to impervious plastic liners.

Five was long term planning. A future tailings impoundment area designated T3 has been identified for future use if mine life were to be extended. The possibility of Cadillac tailings becoming acid generating in the future, due to changes in the ore body at depth, is considered to be remote. It should be noted that the ratio of acid consumption to acid production for present tailings samples is as high as 20 to 1. By careful design of the tailings impoundment dykes and effluent treatment systems prior to and during mine operation, the water quality of Prairie Creek after abandonment should be adequately protected.

Now the timing of the tailings pond construction, which was item 6, the need to protect Prairie Creek from the introduction of sediments during the construction of the tailings pond is recognized by Cadillac. As outlined by Mr. Brian Fletcher of Golder Associates, construction methods will be such that sediment levels can be controlled. However, provision will be made, if necessary, to collect waters with elevated levels of suspended solids in temporary holding ponds behind the tailings dykes for settlement prior to their release to Prairie Creek.

Seven, on the item of low flows. Cadillac has not ignored the ten-year, seven-day low flow of 2 cfs in Prairie Creek in its evaluation of the project's impact on the existing water quality of Prairie Creek. Estimates have been made of the effect of the mine effluent on the aforementioned low flows and are discussed later in this summation. Furthermore, the choice of the two-year, seven-day low flow of 8 cfs as an indicator for effluent dilutions was not an arbitrary selection as suggested in the DOE brief. The choice was made to permit the clear

understanding of the effect of mixing treated mine effluent with Prairie Creek under normal low water conditions.

Eight was an item on the surface run-off. By implementation of good transportation, storage, materials handling and mill operation techniques, the introduction of contaminants other than oil and grease and suspended solids into surface run-off water in the plant site area will be controlled. Therefore, treatment of surface run-off in a manner similar to mine water is not considered necessary.

Nine, winter effluent discharge. During the period of each year when Prairie Creek is frozen, treated mine effluent will be discharged beneath the surface ice level.

Ten was the solid waste discharge. The location of the Cadillac solid waste landfill site is not within the flood plain of Prairie Creek as was suggested in the DOE brief.

Eleven, contingency plans. A format for the development of contingency planning for the Cadillac project is included in the environmental evaluation submitted by Ker Priestman Associates in October, 1980 to Department of Indian Affairs. Further site-specific planning will be carried out by Cadillac after appointment of the Mine Manager.

With respect to spill contingency planning for transportation accidents, Cadillac recognizes it has a responsibility in this matter and will meet its legal obligations. As well, Cadillac is aware that careful consideration has to be given to the correct use of oil booms. In small creeks with low velocities, oil booms can be successfully used to contain oil spills. In larger creeks with higher velocities,



oil booms can be deployed in cascading or chevron patterns to divert oil spills toward the calmer waters at the creek banks or towards back eddies for recovery. Fuel storage facilities at Prairie Creek site are located within a dyked impervious area, complete with an integral recovery pumping system.

The second area of the brief was chemical impacts and issues.

First item was mine effluent. Cadillac do not propose to discharge mine effluent to Prairie Creek during their first year of operation. All mine drainage will be returned to the tailings impoundment. Therefore there will not be a need to construct a secondary holding facility in the initial stages of the operation. During the aforementioned time period, samples of mine effluent will be collected and analyzed to permit the design of an effluent treatment plant. The presently envisaged plant would be an alkaline chlorination facility comprising mixing tanks, equipment and an inclined plate settler. It is presently believed that the proposed treatment facility will be designed to operate without the need of an additional polishing pond.

With reference to the mine effluent quality requirements proposed in Table 1, the minimum dilution restraints in relation to Prairie Creek and the proposed restriction of the effluent flow rate, Cadillac requests the Water Board not to impose strict conditions on the effluent discharged from the Prairie Creek project for the following reasons.

A) During average low flow conditions in Prairie Creek, the mine effluent quality limits proposed by Cadillac will produce contaminant concentrations less than the threshold concentrations for

aquatic life. Cadillac requests the Water Board to use the aforementioned threshold limits as a basis for development of allowable concentrations in Prairie Creek mine effluent. It should be noted that threshold concentration is defined as the level below which water should be suitable habitats for mixed fauna and flora and are normally not deleterious to fish life.

During the ten-year, seven-day low flow period in Prairie Creek, all effluent parameters are expected to be within threshold limits with the possible exception of copper and nickel. However, Cadillac propose to cease backfill operations and/or to recycle mine effluent to the tailings pond to maintain concentrations of critical parameters in Prairie Creek below threshold limits. Careful monitoring of the existing Prairie Creek flow gauge together with effluent analysis will provide a basis for determining when positive action may be required. It's worthy of note that the pond will have the capability of storing mine effluent for a period of at least two months.

C) The proposed restriction of effluent flow rate to 1 cfs would not permit the Cadillac to discharge at its requested maximum rate of 590,000 Imperial gallons per day. Furthermore an arbitrary selection of flow rate at a value that allows no operational flexibility is highly questionable.

D) Cadillac will not be depositing 500 pounds of cyanide into Prairie Creek in each year of operation as stated by the DOE. The maximum amount to be deposited would be about almost five times less than the quoted amount.

Two, on sewage effluent. Final design of the effluent treatment system for the sewage discharge to Prairie Creek has now been completed. It is proposed to use ultra violet radiation to disinfect sewage effluent instead of the originally proposed method of chlorination. As dilutions of greater than 50 to 1 will be available in Prairie Creek even during the ten-year, seven-day low flow period, the impact of the discharge will be minimal.

Three, Nahanni Park water quality. We agree that it is imperative to maintain the pristine nature of the waters of Nahanni National Park and do not take exception to any reasonable statistically valid receiving water quality requirements proposed by the Water Board. However, provided the construction and operation of facilities are carried out as recommended by Cadillac's consultants, it is believed that the mine will have negligible negative impact on the waters of Prairie Creek and the South Nahanni River.

Fourth area was biological impacts and issues. First item was invertebrate populations. We advise that additional invertebrate studies are scheduled for Prairie Creek and major streams along the route of the winter access road. Due to replica variation during previous invertebrate studies, a greater number of samples will be collected in 1981.

Two, with respect to fish population. Additional fisheries studies either have been undertaken, or will be undertaken, on Prairie Creek and major streams along the route of the winter access road. These studies will better identify the over-wintering, migration and spring spawning potential of the waters of the study area.

Three was an item on bio-accumulation. It is proposed to undertake additional heavy metal analysis on fish samples collected from Prairie Creek during the on-going fisheries study provided sufficient fish can be isolated.

Four was an item on monitoring. Cadillac will agree to any reasonable monitoring program which will collect sufficient data capable of interpretation and application.

So, in conclusion, it is the firm intention of Cadillac Explorations to achieve, through good construction procedures and operational management, negligible negative impact on the present or future environment of the project area. To assist in the attainment of this goal, the construction of both the tailings impoundment earth works and the plant site perimeter dykes and containment berms will be under the direct supervision of a field geo-technical engineer. As well, Cadillac will employ an on-site environmental supervisor for the life of the project to ensure adherence by project personnel to the environmental programs developed for Cadillac by their specialist consultants.

Thank you.

MR. G. WARNER: I have one request for an additional comment from the floor, a person who was unable to get here earlier. So I would like to hear what Mr. Hardisty has to say please. Percy Hardisty. Is Mr. Hardisty here? Would you take the microphone please, Percy?

MR. P. HARDISTY: My name is Percy Hardisty and I live in Fort Simpson, I grew up here in Fort Simpson. And for today I have certainly heard enough. I have heard enough of both sides and there are inadequate answers from the Cadillac Mine as to water use and waste disposal.

What I'm saying is, I have been employed by Syncrude, and I know what waste disposal is, and I certainly cannot see the Cadillac Mine going ahead with their proposal or application. I know for a fact that it will do a lot of damage to the environmental, and we are really suspicious on the environmental issue. And it's not going to only affect that area, it's going to affect the whole Mackenzie River System and the Liard River System too. So what I have in mind is that for the Board to probe deeper into what is actually happening. Right now I don't have anything else to say so I'll just leave it at that.

MR. G. WARNER: Thank you Mr. Hardisty. Is there anything further you wish to say on behalf of the company before I sum up? Mr. Morrisroe, go ahead.

MR. L. MORRISROE: Yes, Mr. Chairman. Mr. Chairman, I wish you, in consideration which has been suggested today about the meeting's postponement and so forth. I feel that we had the meeting a month ago and with the request of the people who were here you were good and gave them a month to prepare, the meeting being postponed, and everybody's aware of it, it's been in the papers, it's been on the air, everybody is very up-to-date that the meeting was being held here today. Basically we have the same people here today who were here at the last meeting, outside of Chief Jim Antoine, and he was here at the meeting on Monday, was still in town here yesterday morning, I know he's got his beaver to look after but I think if he thought this meeting was important he would have been here today. And he's not here so I think that everybody has been adequately heard, and most of the people have been heard here twice, a month ago and also today. So I feel that the people have had adequate information and adequate time to think about it.

So, Mr. Chairman, I'd appreciate, us being a small company, low on personnel and many things to do, that we ask your submission that this here closes the Hearing. Thank you.

MR. G. WARNER: Thank you, Mr. Morrisroe. Just in wrapping up I would like to explain to you the procedure that the Water Board will follow which some of you may not be aware of. There will be no decision on this matter today or tomorrow or this month or even next month. Our support staff and others prepare transcripts of these two Public Hearings and have them typed and send them out to all interested parties including any, or all of you here, to look at. After that, it is reviewed very carefully by our Technical Advisory Committee. This is a group of people from various sciences and other walks of life, and also we would be pleased to have a member chosen by Fort Simpson on that committee. So there will be an ample opportunity for any new information that you people would like to put forward through the medium or to myself or to the Technical Committee.

In closing, I would like to thank the proponent, Cadillac Explorations Limited. I would like to thank the persons who presented the written interventions. I'd like to thank the Dene Nation and the Metis Association. I'd like to thank the Mayor and the Village of Fort Simpson, and I would also like to thank Ronne Hemming of Outcrop Limited for preparing the tapes from which the transcripts will be prepared.

Thank you. Meeting adjourned.

## ATTENDANCE

The following people registered with Mrs. Jo MacQuarrie, Executive Secretary, N.W.T. Water Board.

G.B. Warner	Chairman, N.W.T. Water Board Yellowknife, N.W.T.
D. Arden	Member, N.W.T. Water Board Prelude Lake, N.W.T.
B. Case	Member, N.W.T. Water Board Yellowknife, N.W.T.
L. Menez	Member, N.W.T. Water Board Fort Resolution, N.W.T.
Dr. O. Schaefer	Member, N.W.T. Water Board Edmonton, Alberta
M. Mersereau	Member, N.W.T. Water Board 100 Mile House, B.C.
J. MacQuarrie	Executive Secretary, N.W.T. Water Board Yellowknife, N.W.T.
M. Bath	Kilborn Engineering/Cadillac Explorations Vancouver, B.C.
Dr. W. Dwernychuk	Beak Consultants/Cadillac Explorations Richmond, B.C.
E.B. Fletcher	Golder Associates/Cadillac Explorations Vancouver, B.C.
N. Guild	Ker, Priestman & Associates/Cadillac Explorations Victoria, B.C.
L.C. Morrisroe	Cadillac Explorations Calgary, Alberta
R.M. Nendick	Kilborn Engineering/Cadillac Explorations Vancouver, B.C.
D. Antoine	Dene Band Fort Simpson, N.W.T.
J. Bayly	Dene Nation and Metis Association Yellowknife, N.W.T.

ATTENDANCE (continued)

A. Cullen	Water Resources/DIAND Yellowknife, N.W.T.
M. Falk	Parks Canada Winnipeg, Manitoba
P. Hardisty	Fort Simpson, N.W.T.
A. Lafferty	Fort Simpson, N.W.T.
R. Lamothe	Fort Simpson, N.W.T.
L. de March	Department of Fisheries and Oceans Winnipeg, Manitoba
H. Norwegian	Dene Nation Yellowknife, N.W.T.
J. Parkinson	Environment Canada Edmonton, Alberta
C. Piche	Fort Simpson, N.W.T.
K. Sibbeston	Fort Simpson, N.W.T.
O. Watsyk	Village of Fort Simpson Fort Simpson, N.W.T.
B. Wilson	Environmental Protection Service Yellowknife, N.W.T.
R. Cairns	Public Affairs/DIAND Yellowknife, N.W.T.
K. Cooper	Dept. of Economic Development Hay River, N.W.T.
L. Cooper	Water Resources/DIAND Yellowknife, N.W.T.
R. Douglas	Wildlife Service/G.N.W.T. Fort Simpson, N.W.T.
P. Gray	Wildlife Service/G.N.W.T. Yellowknife, N.W.T.
A. Hardisty	Fort Simpson, N.W.T.
R. Hemming	Outcrop Limited Yellowknife, N.W.T.
J. Jasper	Water Resources/DIAND Yellowknife, N.W.T.



ATTENDANCE (continued)

A. Jobin-Fowlow	National Health and Welfare Fort Simpson, N.W.T.
R. Kent	Environmental Protection Service Yellowknife, N.W.T.
S. Metikosh	Water Resources/DIAND Yellowknife, N.W.T.
E.L. Morrisroe	Cadillac Explorations Limited Calgary, Alberta
R. Pearson	National Health and Welfare Fort Simpson, N.W.T.
G. Stirling	Native Press Yellowknife, N.W.T.
D. Sutherland	Environmental Protection Service Yellowknife, N.W.T.

September 3, 1981

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Mr. J. U. Bayly, Dene Nation Office, Box 2338, Yellowknife, N.W.T. XOE 1H0

George N. Carter, Box 1980, Yellowknife, N.W.T. X1A 2P5

Father L. Menez, General Delivery, Fort Resolution, N.W.T. XOE OMO

It has come to our attention that during the recording of the Cadillac Mines Public Hearing at Fort Simpson, May 20, 1981, side 6 was inadvertently recorded over side 4 of the tape.

The order of speakers was as follows:

N. Guild  
L. Menez  
N. Guild  
G. Carter  
L. Menez  
N. Guild  
L. Menez  
R. Nendick  
L. Menez  
J. Bayly  
G. Carter

It is difficult to determine the topic under question at the time. If you have a better recollection or took notes at the time and wish to forward this information, I will be pleased to include it in the final transcript.

I have attached a copy of the draft transcript and identified the section that is missing.

Yours truly,



Jo MacQuarrie  
Executive Secretary  
N.W.T. Water Board

Encl. (1)

NORTHWEST  
TERRITORIES  
WATERBOARD



ALTA  
SOL

*cc on Cadillac co. file*

September 10, 1981

Ms. Ronne Heming  
Outcrop Ltd.  
P. O. Box 1114  
Yellowknife, N.W.T.  
XOE 1H0

Dear Ronne:

Re: N.W.T. Water Board Public Hearing Tapes and Transcript  
Cadillac Mines Ltd.; Fort Simpson; N.W.T.; May 20, 1981

It appears that during the recording of the above public hearing side Six tape was inadvertently recorded over side Four tape.

Can you review the tapes and accompanying draft transcript and advise in writing to Mr. Warner the amount of time which was consumed in the lost portion when side Six was recorded over side Four of the tape?

Should you require further clarification, please call me at 920-8191.

Yours truly,

Jo MacQuarrie  
Executive Secretary  
N.W.T. Water Board

cc to: G. N. Carter  
Yellowknife, N.W.T.

utcrop

P.O. Box 1114  
Yellowknife, N.W.T.  
Canada X0E 1H0  
Telephone 873-6152

Advertising, design and communication North of 60

October 1, 1981

Northwest Territories Water Board,  
C/o Mr. Glenn Warner,  
Box 1500,  
Yellowknife, NWT X1A 2R3



Re: Cadillac Mines Hearing, Fort Simpson, NWT, May 20, 1981

Dear Mr. Warner:

I have reviewed the tapes of the above hearings and the typed transcript and it appears that approximately 26 minutes of tape was inadvertently re-recorded, with material from the last part of the hearing.

This means the transcript is missing approximately eight pages.

I regret the error, and unfortunately, because the backup equipment was malfunctioning at the time I am not able to supply a backup tape of that part of the hearing.

I particularly regret any inconvenience this has caused the Water Board or any of the participants in the hearings.

Yours truly,

Ronne Heaming  
Ronne Heaming

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September 30, 1981

Our File: 1561

Northwest Territories Water Board  
Box 1500  
Yellowknife, N.W.T.  
X1A 2R3

Attention: Jo MacQuarrie  
Executive Secretary

Dear Sirs:

Cadillac Mines Public Hearing  
Fort Simpson 20 May, 1981



We are in receipt of your letter of 3 September 1981 requesting information regarding a topic which was discussed during the above-mentioned Public Hearing.

Although the writer cannot recall the exact dialogue which took place, the subject under discussion was the long-term responsibility of Cadillac Explorations Ltd. with respect to the integrity of the tailings impoundment and the quality of the groundwater which might continue to flow from the lower mine portal.

The writer advised that, upon cessation of underground mining operations, it is expected that mine water quality will return to pre-mining levels and that the tailings impoundment will be monitored by Cadillac Explorations Ltd. for a minimum of one year. The writer further advised Mr. Menez that he could not comment regarding surveillance beyond the one year period and suggested that Mr. Menez address his questions to the Northwest Territories Water Board and/or the Water Resources Division of the Department of Indian and Northern Affairs.

. . . 2/

Northwest Territories Water Board

September 30, 1981

Attention: Jo MacQuarrie  
Executive Secretary

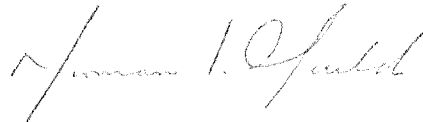
Our File: 1561

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In reviewing the transcript, it was noted that the transcriber had some difficulty in recording and, especially, punctuating certain statements made by the writer during the Public Hearing. Therefore, for your convenience, the writer has edited his statements where necessary and the relevant pages of the transcript are enclosed for your records.

Yours very truly,

KER, PRIESTMAN & ASSOCIATES LTD.



N. I. Guild, P. Eng.  
Manager, Water Resources & Mining  
Development Division

NIG/md  
Encl.