NUNAVUT WATER BOARD HEARING

RE: CAPE DORSET TYPE B WATER LICENSE

HEARING HELD AT THE
COMMUNITY CENTRE
CAPE DORSET, NUNAVUT
JANUARY 24, 2008

APPEARANCES:

NUNAVUT WATER BOARD:

Mr. T. Kabloona (by phone)	Chair
Mr. R. Hanson	Acting Chair
Mr. G. Kusugak (by phone)	Vice Chair
Mr. L. Toomasie	Member
Mr. T. Tatatuapik	Member
Mr. G. Porter	Member
Mr. G. Kakkiarniun	Member

NUNAVUT WATER BOARD (NWB) STAFF:

Mr. W. A. Tilleman, Q.C. (by phone)	Legal Counsel
Ms. C. Emrick, Esq.	Legal Counsel
Ms. D. Filiatrault	Executive Director
Mr. D. Hohnstein	Acting Director Technical Services
Mr. B. Kogvik	Secretary/Interpreter/ Translator
Mr. D. Bhandari	Technical Advisor
Mr. D. Carr	Licensing Administrator
Mr. R. Dwyer	Licensing Administrator

NUNAVUT WATER BOARD CONSULTANTS:

Mr. H. Hartmaier	BGC Engineering Inc.

LICENSEE:

HAMLET OF CAPE DORSET

-Mr. A. Stewart	Senior Administrative Officer (SAO)
-Mr. B. Roy	Community and Government Services (CGS)
-Mr. F. Schell	Mayor of Cape Dorset
-Mr. J. Palluq	CGS Assistant Regional Director
-Mr. M. Aulakh	CGS
-Mr. P. Fuentes	Project Officer CGS
-Mr. T. McDonald	Project Officer CGS

HAMLET OF CAPE DORSET CONSULTANTS

-Mr. P. Cavanagh	Geotechnical Consultant, AMEC Earth & Environmental
-Mr. C. Joyal	Dillon Consulting Ltd.

INTERVENERS:

GOVERNMENT OF NUNAVUT-DEPARTMENT OF ENVIRONMENT (GN-DOE)

-Mr. M. Atkinson — Manager of Environmental Assessment and Land Use

ENVIRONMENT CANADA (EC)

-Ms. C. Spagnuolo

INDIAN AND NORTHERN AFFAIRS CANADA (INAC)

-Mr. J. Rogers — Manager of Water Resources
-Mr. A. Keim — Water Resource Officer
-Mr. D. Abernethy — Water Resource Coordinator

INTERPRETERS/TRANSLATORS:

Mary Hunt — Inuktitut Language
Ben Kogvik

Trevor Bourque — Sound Technician

Karoline Schumann, CSR(A) — Court Reporter

INDEX

(PROCEEDINGS COMMENCED AT 9:07 A.M.)
ACTING CHAIR: I'll call the meeting to order. Bill, are you on board?
MR. TILLEMAN: Yes, sir.
ACTING CHAIR: Thomas?
THE CHAIR: Yes, I am.
ACTING CHAIR: Okay, good morning, gentlemen.
THE CHAIR: Good morning.
ACTING CHAIR: Could we ask Lootie to say the prayer, please.
(OPENING PRAYER)
ACTING CHAIR: We will start with the intervener, INAC. We're just setting up here. No, sorry, Art, you have a question?
MR. STEWART: Mr. Chair, Art Stewart. Would we be able to make some brief comments just before INAC goes on? Would that be acceptable?
ACTING CHAIR: Yes, I have no problem with that, Art, go ahead.
MR. STEWART: Bhabesh Roy has --
ACTING CHAIR: Sorry, the guy from INAC had a question.
MR. KEIM: Thank you, Mr. Chairperson. Andrew Keim from INAC. A point of order. Yesterday, the public meetings were

curtailed because of time, and I know that there's one or possibly two members of the public that would like to address the Board and carry on with some questions before we proceed to INAC's presentation, or I don't know whether it would fit in before or after the Municipality makes a statement. I know that there were some follow-up questions for the Board. Thank you.

ACTING CHAIR: Thank you. I have no problem with the Community, but they can perhaps come after. Dionne?

MS. FILIATRAULT: Thank you, Mr. Chairman. Dionne Filiatrault.

Right now on the overall agenda, we are on Agenda Item 10, where we're doing presentation by intervening parties. There is an opportunity, I believe, under 13 -- or, sorry, 12, "Presentations by any other person, association, agency who advised the Chairperson that they wished to speak". I would suggest to you, Mr. Chairman, that they could -- they've advised -- there's two people from the public that advised that they would like to ask some questions and speak, that that would be an opportunity for them to do so.

ACTING CHAIR: Okay, thank you. Point taken. Art, go ahead.

MR. STEWART: Art Stewart, Hamlet of Cape Dorset. Bhabesh Roy would like to speak on our behalf.

ACTING CHAIR: Mr. Roy?

MR. ROY: Good morning, Mr. Chairman, the audience. I'm giving some comments on some of our assessment and presentation held yesterday and on the discussion. We received a letter from Water Board on October 10, 2007. The letter issued by the Executive Officer of the Water Board. In that letter, it was clearly mentioned pre-hearing review of the application. And in there, we have been given 12 points to deal with.

In the 12 points, the first one, I just read it out quickly, one was seepage, as-built, operation and maintenance, ownership of the lagoon, geothermal assessment, stability assessment, identification of geotechnical engineer of record, discharge criteria, sludge management, the use of current treatment system as contingency measures, abandonment and reclamation, monitoring. So these are the 12 point given to us and -- to deal with in this public hearing. And also, we are -- we have been asked to submit the response of these 12 points accordingly.

November 13th, 2007, I replied this letter

point by point, where we have address all these 12 points. A few things are not clearly -- we did not submit information. One is the issue of the as-built drawing. That is a concern yesterday. There is some issue is missing in the as-built drawing we submitted. Yes, I agree. I couldn't do the license agreement. Once the license is issued, within 90 days, we can submit the revised as-built drawings.

Also the density, leakage, seepage, thermistor monitoring, we did not give them a clear indication what kind of precipitation will develop. Now, I'm coming up with a program now. We are giving -- we're installing three thermistor in the discharge pond, and each thermistor should be 15 metre long, and we are giving the detailed manual within -- installing and developing the manual within nine month from today.

Now, the other issues, like due to the ownership of the lagoon is clearly indicated in my letter, and I don't like to mention it. Geothermal assessment, stability analysis, all those is presented by AMEC presentation. Identification of geotechnical engineers of record, the question raised that the -- if Dillon and AMEC will sign the document together, or they don't sign alone. You

know, the as-built drawing, Dillon signed the document because Dillon was the main consultant.

The issue raises by BGC that they are recommending both the consultants should sign the as-built drawings. We ask the advice from the Board, if the Board want, then we will deal accordingly, and we can revise the as-built drawing sheet as signing by two companies.

In the O & M manual, we clearly indicated the discharge criteria, sludge management, current treatment, contingency plan, abandonment and reclamation, and monitoring.

I think the 12 point given to us we clearly mention in my letter of November 13th, and during the presentation yesterday, I saw the repetition, they're asking the same thing, and I suspect that the intervener has control all our reply, which we submitted on the November 13th. However, the additional information, as I said, thermistor monitoring, the manuals, and the as-built drawing addition, we follow up, as I explained in my discussion.

Thank you, Mr. Chairman.

PRESENTATION BY INAC:

ACTING CHAIR: Thank you. Okay. INAC, are you ready for your presentation?

JIM ROGERS, ANDREW PHILLIP KEIM, sworn:

THE CHAIR: While Jim is getting ready, I just have a note here, a bit of housekeeping. Would the people who came in this morning, if you have not already done so, please sign the book during the next break, please.

INAC, the floor is yours.

MR. ROGERS: Jim Rogers, INAC.

Good morning. I'm grateful to have this opportunity to speak to you, the Water Board, and the Members of the Hamlet and their support at this public meeting. My name is Jim Rogers. I'm the Manager of Water Resources for Indian and Northern Affairs, Nunavut Regional Office. With me today is Andrew Keim, the Water Resource officer for the Qikiqtani Region at the table, and in behind, there's David Abernethy, who is the Regional Coordinator and did some of the review for this project.

We're pleased to participate in the public meeting, and we have certain responsibilities and mandates of Indian and Northern Affairs, the DIAND Act, which gives us authority over resources; Nunavut Land Claims Agreement, which is the overriding rule for the Territory; the Nunavut

Water and Nunavut Surface Rights Tribunal Act, which is the Act that influenced Article 13 of the Nunavut Land Claims and is the one for the license; and also we're bound by the Canadian Environmental Assessment Act. At this time the Nunavut Impact Review Board does not review, do assessments of municipalities because it's exempted under 12(1) within the claim.

Indian and Northern Affairs has reviewed the information made available on the Nunavut Water Board's public registry which pertains to the license amendment application. This is the license amendment for the P Lake sewage lagoon.

INAC recognizes that the Government of Nunavut's Department of Indian and Government Services is acting as the Hamlet's representative on technical aspects of the license application. Indian and Northern Affairs Canada has identified areas of concern which the applicant should clarify for the Nunavut Water Board.

These include the licensee of the facility, which has been already discussed a number of times, design criteria, the geothermal assessment of the berms, the responsible professional who signs, who's responsible if there's a failure of the project, operation and maintenance plan,

contingency plan if things don't always work out the way you are (sic), and abandonment and reclamation.

For the Board's use, some of the presentation is slightly different than the hard copy they have, I apologize for that, but we've made some changes.

INAC is under the understanding that the Hamlet of Cape Dorset will be the licensee for the P Lake lagoon. The Hamlet of Cape Dorset is the Applicant for the amendments. However, at the technical meetings, the Hamlet have indicated some unwillingness to take responsibility for the P Lake sewage lagoon. In this hearing, the Hamlet has clearly indicated that they will be the operator. That clears up some of our issues earlier.

INAC also suggests that the Government of Nunavut should explain to the Board, regulators, and other interveners the process of site selection, design, and public consultation that it undertakes to improve the Board's understanding and confidence in the Government of Nunavut system. The perceived unwillingness of the Hamlet earlier to operate the lagoon has opened the GN's process to some question.

INAC would like to be clear that it will hold the Licensee responsible for all terms and

conditions contained in the license -- or the license amendment issued by the Water Board if it issues.

INAC's opinion throughout the process is that it has been unclear to us, and I'm sure it may be to some of the other regulators and some of the interveners and maybe perhaps the Water Board to understand who is the responsible authority for -- on who and how discussions were made.

INAC is willing to work with the Government of Nunavut after this hearing and with the Nunavut Water Board and perhaps the Hamlet to clarify how the process should proceed. This process happens every few years, and we would like to clarify it to make it a little more understandable to all of us.

Design criteria: Throughout the review period, including the October 1st, 2007 technical meeting, INAC had difficulty determining the design criteria used for the lagoon, lagoon construction, and for the treatment of the municipal waste water. INAC now believes that any additional treatment by the wetland downstream of the lagoon is not part of the waste water design. These questions were raised; we got conflicting answers. But the amendment is clear: The point of discharge is the lagoon. The additional treatment by the -- the wetland and the

P Lake is not included as part of this amendment.

However, INAC remains unsure whether and how overland flow from upstream of the lagoon was considered in the lagoon design, including whether the channel built to bypass upstream overland flow around the lagoon is adequate. They have a channel that runs along the south side to channel water that runs down off the headlands, around the lagoon so it won't fill the lagoon, and then down into P Lake.

We now understand after discussions with the consultant to the Hamlet that they have estimated a peak daily precipitation, but we have yet to understand the flow, the design of the flow channel and how much flow it is. Anybody who's aware of Kugluktuk last summer realizes the -- most things are underdesigned for large storms in this country.

Monthly flow rates were used for the upstream flows, which works out to be about .03 cubic metres per second, but peak rates couldn't be found. The releases from the lagoon will be about .8 cubic metres per second max., so it seems funny to design less than the flow coming out of the lagoon.

Annual volumes of effluent in 20 years were included in the application; however, any natural runoff either seeping through or if the spillway --

or the bypass channel is underdesign, running over the berms and into the lagoon, were not included within the design.

During the summer of 2007, information from Hamlet residents seemed to indicate that local runoff was entering the constructed lagoon, and some water was seeping out of the lagoon. The berms constructed in 2007 should be fully frozen now during the winter of 2007/2008, since little water was contained in the lagoon. We would like it clarified by the Hamlet how much water was left in the fall before freeze-up to help us with that determination.

Geothermal assessment: During the design of the lagoon, the consultants for the Applicant used computer models to estimate the rate, extent, and stability of ground temperatures in the lagoon berms and below the lagoon, but some issues remain. Therefor, INAC suggests that ground temperatures should be monitored and the information used to verify the results of the computer model.

Today, the -- or this morning, the Government -- or CGS said that they would install three thermistors. We do not have locations on those thermistors. They did cite depths. It's been a long time coming for them to fully confirm

that they were going to monitor ground temperatures.

INAC suggests that the ground temperatures be monitored in the berms and, so we can estimate potential seepage, freezing rates, perhaps downstream of the lagoon, although we're willing to look at other options. Additionally, for the first three years, the Licensee should compare these temperatures to the results of the models, explain the differences, and provide those to the Board in the annual reports.

Signed drawings: During the review of the water license and after inspection of the constructed facility, INAC had difficulty in understanding how the decisions were made and who made the decisions for designs to application to construction. For example, reports provided as part of the application included recommendations by the project's consultants and subconsultants; however, the project was built without implementing those recommendations.

We -- I think the Board should be clearly -- somebody should tell the Board clearly who makes the decisions. Examples are installations of thermistors. There were recommendations throughout the application. No thermistors are installed at

this time, although the lagoon has been built. Would have been a good chance to find out how the freezing went. The use of clay or impervious material in the cutoff trench was a recommendation of the geotechnical engineer; however, they used sand.

INAC believes the Applicant should clearly explain why only some of these recommendations of the design team were accepted and only provided those designs and drawings that were to be implemented. Very difficult for interveners to know what to comment on if we have five designs, and we don't know which one's going to be implemented.

Also, all drawings should be signed by the appropriate professional, who has the responsibility for design and implementation, and the copies of the signed drawings provided to the Board. Final as-built drawings should be provided within 90 days of issuance of this amendment. Normally, it should be 90 days after construction. However, it's been constructed. We were willing to give a little bit of leeway if the amendment's issued.

Normally interveners comment on the designs of the Applicant. Due to liability -- and we were not

paid by the Applicant -- interveners do not provide designs to the Applicant. That's the Applicant's job. We did get questions yesterday, Well, tell us where to put them, tell us how many; that's not our job. That's what they pay their consultants for, and that's what should happen.

Operation and maintenance: The operation and maintenance manual submitted by the applicant in November 2007 should be accepted with certain amendments. The manual was prepared by Dillon on behalf of the Government of Nunavut's Department of Community and Government Services for the Hamlet. Contacts list, for example, should be updated. The Senior Administrator and Municipal Works foreman's there, but not who else to call. They should include the Government of Nunavut's environmental health officer, and a 24-emergency spill report line should be there as well. I suggested the INAC Water Resource officer's name and number should also be there.

Since cell one or the old sewage lagoon system -- and I'm not always clear on which one they're talking about, but I assume it's the top cell of the three-tier or triple lagoon -- will be used as the emergency sewage disposal site. The operation and maintenance plan should indicate how

this contingency will be maintained in an acceptable manner, accessible when required, and how it will be decanted, preferably after notifying the Board and the inspector. The plan should include a concept of managing the sludge build-up in the lagoon and possible removal.

At the technical meeting in October, the discharge criteria used during the lagoon decant of the amended lagoon was unclear. A waste water operation plan should be amended to the operation and maintenance plan which could outline the timing and discharge rate used during the decant.

Yesterday, we were told two weeks of decant time. 100,000 cubic metres would be about .8 cubic metres per second flow. It's quite a bit larger flow than normal monthly flows. So that -- the erosion capability, that should be considered.

High rates of release because of the -- at one point at the technical meeting, we were told decant would be three or four days, which I think they backed away from. That's the -- that high rate would cause erosion.

Contingency planning: Use of current treatment systems as contingency measures and assessment of how often normally the existing lagoon will be used should be provided to the Board as a requirement of

the amendment. Is it going to be used once a week, once a month, ten times for ten days in the middle of January. On average, just an estimate, a guess. Volumes put into the cell one should be included in the annual report to the Board.

Abandonment and reclamation: Conceptual abandonment and reclamation plans are now normally required during licensing, so the Nunavut Board is confident the Applicant is aware of the long-term consequences of designs and decisions.

Indian and Northern Affairs Canada suggests that the Hamlet of Cape Dorset submit an abandonment and reclamation plan for the recently constructed lagoon within six months of an amendment if it's granted, then updated in greater detail and for the Nunavut Water Board's approval at least six months prior to the P Lake sewage lagoon eventual abandonment. This license condition is also included in the present license up for renewal in Part G, Item 1.

The abandonment and reclamation plan would help the Applicant to be in compliance with license conditions, understand the scale of work needed to eventually restore the lagoon site, and demonstrate the Hamlet's commitment to effectively manage the waste water treatment facility.

Abandonment and reclamation plan for the Hamlet of Cape Dorset's current waste water treatment system should be developed. I know it's not part of this application, but it is imperative that this is done and submitted to the Nunavut Water Board in the immediate future. INAC suggests the plan be submitted within six months, with a detailed plan at least six months prior to abandoning the facility.

So we're suggesting an abandonment plan be provided and then updated to be a little more detailed before they actually abandon it. That's before the three-tier system and for what Mike Atkinson calls the "honey pit", some people call the emergency one, some people call the old one, some people call the small one. We sometimes have problems with the names of everything here.

The abandonment and reclamation plan for -- or according to the submitted license amendment application, INAC understands that once the P Lake sewage lagoon becomes operational, the current waste water treatment system will no longer be used except for the contingency purposes. We'd like that clarified by the Hamlet. I think they have a couple of times.

License amendment: As a note, the Hamlet is

not in compliance with their existing license, which has expired, although the terms and conditions continue. The question of approving an amendment to a noncompliant license will probably be raised by the Board. INAC believes the new lagoon will allow improved treatment and allow for the Hamlet to move towards compliance.

Therefore, Indian and Northern Affairs recommends that the Nunavut Water Board approve the Hamlet of Cape Dorset's municipal license amendment application. However, to ensure that the Hamlet of Cape Dorset sewage lagoon has been constructed and will be operated in a responsible manner, INAC suggests some terms and conditions should be included in the municipal license. I would like to reiterate, the Licensee is responsible for implementing all the terms and conditions.

Any sewage flowing into and out of the lagoon should be monitored and estimated, with results being reported in the annual license report, and there should be an annual license report to the Board.

Some way -- groundwater -- or ground temperatures should be monitored. Thermistors are one way of doing that, should be installed, and thermistors could be installed in the berms, and

downstream of the berms or deep-seated thermistors -- there's two ways to measure the ground temperatures -- to monitor ground temperatures and verify the geothermal analysis provided by the Applicant. Collected information should be provided to the Nunavut Water Board along with data analysis results to the Board annually for the first three years of operation.

The Licensee should confirm the compliance point for lagoon releases with Environment Canada and the INAC inspector. After this has taken place, the Licensee should notify the Nunavut Water Board of the agreed-upon compliance points.

At this time, the compliance point I believe is where it's released into the environment, which is at the outfall or end-of-pipe at the lagoon. I suggested Environment Canada and INAC may be willing to move that compliance point downstream; however, the Hamlet must approach us, and we must agree and provide that to the Water Board.

The Licensee should provide as-built drawings within 90 days of the issuance of any amendment, preferably after -- 90 days after any construction. And the Licensee should provide waste water operation plan as part of the operation and maintenance plan within 90 days of the issuance of

the amendment, including a long-term sludge management plan, and a discharge criteria.

Next steps: As referred to in the December 2000 letter to the Board, INAC is also concerned about the renewal of the existing license, including compliance. INAC will work with the Licensee to reach compliance with the existing license, including the terms and conditions of the amendment. The existing three-tier lagoon site has had failures in the past, which have caused leaking from the cells and untreated waste water entering into the ocean. The Municipality has been issued an inspections directions under the Fisheries Act by Environment Canada a couple of times to prevent raw waste water entering fish-bearing waters.

After the P Lake lagoon is licensed, the Hamlet should begin planning the abandonment and reclamation of the three-tiered lagoon and providing the Board with this plan for approval.

INAC has some concerns over the level of treatment that is designed that will be attained in the lagoon and over the discharge criteria. INAC suggests the Board recommends that the Hamlet consider the use of the downstream wetlands as additional treatment for lagoon releases, including slow releases of effluent over the growing season.

However, that's not part of the application, and if wetlands are to be used as additional treatment, the Hamlet and/or Community and Government Services need to apply with adequate designs to amend the Cape Dorset license for approval of the wetland treatment.

Monitoring of the new lagoon is necessary to confirm stability of the structure and level of treatment. However, the Board must receive the monitoring information if it is to confirm that the Hamlet is meeting the terms and conditions of the license. The INAC inspector will review annual reports to assist in determining the completeness of the reports and compliance with the license. I'd like to reiterate, the Water Board needs to get annual reports on your operation, and it's a requirement of the existing license of the Hamlet, and there is some lacking there.

INAC would like to thank the Board for permission to make an intervention at this hearing, and I'd -- and I and those with me would like to thank the Hamlet for its cooperation and hospitality. That's the end of my presentation, Mr. Chair. Thank you.

ACTING CHAIR: Thank you, Jim. Is there anything from Andrew he wants to add, or the

presentation is done?
MR. ROGERS: We feel he'll probably get a question or two, so...
ACTING CHAIR: Okay, just before I call on the various parties, just a question, I guess, Jim, for the -- from the Board. Are there any other impediments or concerns with the Board issuing a license amendment for the newly constructed sewage lagoon, should the Board decide to do so?
MR. ROGERS: You're in a quandary. At this time, the Hamlet not only is out of compliance with the existing license, the existing license is expired. The Hamlet has applied to renew their license, and INAC, along with some of the other interveners, has agreed that a short-term renewal with the existing terms and conditions would be acceptable. It will be extremely difficult for the Board to amend essentially a nonexistent license.
I would suggest that there's two routes. One would be, with the cooperation of the Applicant, to issue a license that includes a renewal of those sections and the amendment or renew the license and add this amendment. However, I would request or suggest to the Board that the renewal should be fairly short, two years or less, and that the

Hamlet re-apply for the renewal with the entire water-use system within the Hamlet, abandonment and reclamation plans, clean-ups, monitoring included, the waste dumps, both the solid waste dump and the -- I guess what you would call the metal waste dump, the separation of hazardous waste from regular waste, the monitoring of leaching, or the flow of water that comes through or around -- through those has not been upgraded.

I believe within the water license, the Hamlet should give some indication of future growth, so where they would need to modify the stream within the Hamlet. If they want to put in a new road and divert the streams and stuff, they should have a conceptual plan of that ahead of time.

There was -- the inspector last summer did write to senior people within the Government of Nunavut at the Minister's level on the modification required for the construction of the P Lake lagoon. We would like to not see that happen again but -- and anything like that that's in the future, we'd like to see in the renewed license. However, at this time, we feel it's better to have the Hamlet working under a license that we can enforce, rather than working under the Act, which essentially doesn't allow them to do anything.

ACTING CHAIR: Thank you, Jim. Are there any questions from the Hamlet -- oh, sorry, before I go any further, I don't have the names of the -- the names of all the people who came in from Cape Dorset, but I do want to welcome the Community members in the back of the room. Thank you for coming. Later on, you'll be given an opportunity, hopefully, to ask a few questions. I know a few of you want to, and I will definitely include you under probably Item 13. So just bear with us, we have to get through our things also, but we'll definitely get to you.

Bill, do you require any further clarification on anything that's been said so far?

MR. TILLEMAN: No.

ACTING CHAIR: Thank you. Then I will call on the intervener -- or, I guess, the Licensee, sorry, the Hamlet. Do you have any questions for INAC?

MR. STEWART: Thank you, Mr. Chair. Yes, we do, and Bhabesh Roy would like to -- I'm sorry, Colin would like to make a few comments at this time.

ACTING CHAIR: Okay, Colin?

HAMLET QUESTIONS INAC:

MR. JOYAL: Thank you, Mr. Chairman.

Colin Joyal, Dillon Consulting. Thank you, Mr. Rogers, for your presentation.

Just to address two of the items there. One was the as-built drawings, which were submitted along with the November 13th correspondence, and your suggestion to have that as a condition of the license to submit as-built drawings within 90 days. Typically the facility is not built so that you're not discussing as-builts at the hearing, so I would agree with that.

And some of the comments that did come up, there may be some inclusions of information. One in particular, there was reference to the south road, the typical ditch section, was provided in a report August 27th, 2007. That information can be added to the as-built drawings along with any relevant requests from this hearing, if that condition is imposed as part of the license.

In addition, the O & M manual was provided along with that same correspondence on November 13th, 2007, which does include information on discharge rates, point of compliance, and discharge criteria. Again, I agree with the comment that the O & M manual be submitted within 90 days of issuance of the license, as the O & M manual, as everyone understands, needs to be updated

periodically and, in this case, would be updated to reflect the conditions presented in the license, if awarded. Thank you.

ACTING CHAIR: Thank you, any further comments from the Hamlet?

MR. FUENTES: Pat Fuentes, Community and Government Services. The other question, it was regarding thermistor, the depth and then the quantity. We have agreed with our consultant we will install three thermistors along the berm in order to find out what is the level of the freeze-up, and this will be installed within nine months from now, time permitted and allocation of funds.

The others, we will develop and report on that information, and it will be submitted to the Board, if it's required. Oh, excuse me, the other question, it was a drop. The drop is going to be anywhere between 12 and 15 metres from the existing crest of the berm. I think that will answer the question to Jim Rogers. Thank you.

ACTING CHAIR: Thank you. Any further questions, Art?

MR. STEWART: Thank you, Mr. Chair. No, there's no further questions.

ACTING CHAIR: Thank you. Is there any

comments from the Government of Nunavut-Department of the Environment?
MR. ATKINSON: Mike Atkinson, Government of Nunavut-Department of Environment. I don't have any questions. Thank you.
ACTING CHAIR: Thank you, Mike. Is there any questions from Environment Canada?
MS. SPAGNUOLO: Thank you, Mr. Chair. Collette Spagnuolo with Environment Canada. No, we have no questions for Indian and Northern Affairs at this time.
ACTING CHAIR: Thank you. Any questions from BGC Engineering?
MR. HARTMAIER: Mr. Chair, Holger Hartmaier, BGC Engineering. No questions at this time, thanks.
ACTING CHAIR: Thank you very much. Is there any questions from the Staff? Do I call on the community concerns before the Staff, or do I --
MS. FILIATRAULT: Dionne Filiatrault, Mr. Chairman. Yes, you -- if the public has any questions to INAC, then by all means.
ACTING CHAIR: Is there any questions from the public on the presentation that INAC just gave? No, then Staff please proceed. Sorry, somebody had a question? Get her a mike, please,

and she may have a question for INAC. State your name.

COMMUNITY QUESTIONS INAC:

MS. PARR: Yesterday, there was a question. It was about the water source for our community here. It's very deep. My late husband used to work for the local government here, and just recently, it's very deep, it was -- this is known. For many years, it's been our water source for the longest time, and that person was concerned about -- there was a question with regards to our water source here yesterday; it was not answered. I just want to get back to that. Thank you.

ACTING CHAIR: INAC?

MR. ROGERS: Jim Rogers, INAC.

During the presentation, I noted that we would like to see the Hamlet re-apply for the renewal of their license within the short term to deal with those issues that were not part of this amendment and are not in the existing terms and conditions.

One of the issues that has been raised -- or two of the issues, one of the issues that has been raised is the water source, and then there's the water table, elevations, additional information. I would suggest that as an intervener, the -- for the application for the Hamlet, we would ask those

questions, and we would require those to be included.

Yesterday, we heard the full supply level elevations of both P Lake lagoon and the T Lake and that there was a difference in elevation, but the bathymetry of the lake is provided but not in a form that's easily viewed by the -- people like me and the public. So that's one reason for a short-term license renewal, to -- so they come back with a complete license application that will include that information, those concerns.

Other concerns are flow coming down off the mountain side on to Cape Dorset. There's a couple others, I can't remember them offhand, but that's one of the reasons we suggest that it's a short-term license of the existing license. Thank you.

ACTING CHAIR: I guess I'm concerned, Dionne. I don't really think the question -- I don't really know what the question was. Something was said yesterday, and I think we have to know what was said so we can answer her question. Dionne?

MS. FILIATRAULT: Thank you, Mr. Chairman. Dionne Filiatrault.

I think the question of concern to the Elder is

the fact that their current water supply is a very, very deep lake, and they're concerned that there's potentially a link between the sewage lagoon and the water lake, not overland, but underflow. And I think she's worried that there's potential contamination from the sewage path towards the water lake. And I think, while we can get the Proponent to clarify, there is a difference in elevation of the actual two systems, and it would require water to flow uphill for it, in fact, to be -- there to be contamination between the two systems.

ACTING CHAIR: So I think then for clarification yesterday, we heard that not guaranteed but almost impossible for the water lake to be ever contaminated because of that?

MS. FILIATRAULT: (NONVERBAL RESPONSE)

ACTING CHAIR: Does that answer your question?

MS. PARR: The reason why I commented on this, there was our Qallunaaq worker at our behalf in Dorset, and he was quite knowledgeable at the location the water source here. It's very deep, and I think there was a question in regards to how deep is the water. Does anyone know how deep is the water? Our water

source is here, and that was asked, and there was no more comments onto this issue. That's why I brought it up again, just for clarification. Thank you.

ACTING CHAIR: I think that was brought up by Cal a number of times, and I think, Mr. Roy, you showed various charts and so forth. Do you have the depth of that lake, yes or no?

MR. ROY: This is Bhabesh Roy. Thank you, Mr. Chairman. Yes, I have the contour map of the water source, the potable water source. From there, I can easily tell them what is the depth of the water source. And also we have the southern map of the P Lake lagoon, so from there, we can easily compare the comparative water elevation of these two facilities.

ACTING CHAIR: Thank you. You can take it under advisement, please, and if possible between now and the next hour or so, can you figure out the depth of this lake? That's been brought up a number of times yesterday and now again this morning. Just for clarification is it a hundred feet, is it 50 feet? Can you please figure it out and let us know so we can pass it on to the public? I think it's a question that they've asked.

MR. ROY: Yes, this is Bhabesh

again.

Yes, Mr. Chairman, I'll make photocopies of the contour map and make it available to the Board.

ACTING CHAIR: I don't think it's necessary for photocopies; I think it's the depth of the lake. I mean, we have photocopies already. It's not what we're asking. Does anybody in Cape Dorset know what the depth of the lake is? I mean, somebody has to know, I should imagine, by dropping something down and do a measurement.

MR. ROY: Thank you, Mr. Chairman. Yes, I will try to present this information.

ACTING CHAIR: Thank you, Mr. Roy. Okay, any other questions from the -- or, sorry, the public first? Can I have a name?

MS. PARR: My name is Alikak Parr. I have a question now in regards to sewage waste of the lagoon. I attended at the last meeting regards to the same issue, and I'm not sure if the culverts up there at the water source has been inspected lately or it has been inspected at all, but the culverts, the pipes are deteriorating, and it's very obvious they're rusting; that's obvious deterioration.

And I would like to ask a question maybe towards Hamlet staff. As a Community people, we've

been concerned about this for the longest time, and it's rusting, and I would like to ask a question if it's a part of the assessment during this meeting. That was my question. Thank you.

ACTING CHAIR: I've got to get clarification, gentlemen, and it's more on, I guess, your side on the -- what's the word I want, sorry, not inspection but enforcement, sorry, I lost my train of thought -- on the enforcement, so would one of you, please, answer this lady, Mrs. Parr?

MR. KEIM: Thank you, Mr. Chair, Andrew Keim from INAC.

If Alikak could please tell me where the pipes are that she's talking about because I don't know.

MS. PARR: Thank you. The pipes that would be connected to lagoon, is that going to be inspected periodically? Is that going to be part of the monitoring programs? Like I said before, we have -- there's an old culvert that is being used. That was my question, if that's going to be under monitoring programs. Thank you.

ACTING CHAIR: Hamlet?

MR. STEWART: Art Stewart, Hamlet of Cape Dorset. Thank you, Mr. Chair.

I can assure Alikak that our water supply is

tested. These tests are sent in to the environmental people. They used to be sent every week, but they only need them now every two weeks. They test the water. The water is tested at the water point, and we also take two samples out of our trucks, and to date, we have not had any problems. The tests always come back that the water is good.

As far as the pipes go from T Lake, if the water is good at the water point, obviously there is nothing, there's no contaminants that are getting into the pipes to cause the water not to be good. So to answer the question, yes, we do testing on our water supply on a biweekly basis.

ACTING CHAIR: Thank you. For INAC, when was the last time the facilities were inspected by INAC, and prior to that, how often do you inspect this community?

MR. KEIM: Thank you, Mr. Chair. The last inspection --

ACTING CHAIR: Name?

MR. KEIM: Andrew Keim from INAC. The last inspection was July or August, right at the end of July, beginning of August of this year, and previous to that -- oh, sorry, 2007, yes, and looking forward. And before that, it was 2006.

Most communities, if not every community, as that is our goal, is to inspect every community once a year.

ACTING CHAIR: Okay, thank you. Any other questions from the public? Don, there's a lady beside you in red.

MS. QUYIANAQTULIAQ: Can you hear me now? Can you hear me now? Now, my question is -- my name is Mayuriaq Quyianaqtuliaq. When I was a member of the Hamlet Council then, and I attended the last meeting in regards to our sewage lagoon. My understanding was I thought there was going to be culverts connected to the sewage lagoon. And if it should get, if there should be an overflow in that area, there's a natural land where we used to pick berries close to the lagoon. I understand that the landfill was going to be -- but my understanding was at that time, that's very stable where we used to pick berries, and that it's quite sandy up there, and people used the sand pit for building, for constructions. And I just wondering through the thermal testing, and I just want to know if that is stable, like not just on the surface of the land where you can see. The culvert should have been plugged somehow, and if it should be faulty, or if that even -- is that clear? Is that clear --

are those culverts always clean? Do you know the fact that we don't have to worry about those culverts in that area? That's the question I have. Thank you.

ACTING CHAIR: Okay, Hamlet? Dionne?

MS. FILIATRAULT: Thank you, Mr. Chairman. Dionne Filiatrault.

I think we're kind of getting -- you know, we welcome the opportunity for the community to make all the comments and express their concerns. There will be an opportunity following INAC's presentation and then following the geotechnical engineer's presentation, the Board can open the floor to the public again. But right now, INAC is the -- I guess if there's questions related to inspections, enforcement, and any of the recommendations that INAC's made in their presentation, this would be the time to ask the questions to INAC.

ACTING CHAIR: Thank you, we will take your question under advisement, and you can make a note from the Hamlet and perhaps give an answer later on, so we'll just defer it for now.

Go ahead, INAC.

MR. KEIM: Thank you, Mr. Chair. Andrew Keim.

If Alikak and Mayuriaq next year, when I come back during my inspections, can make themselves available, I can work with the Hamlet. I'll make arrangements to let them know that I'm coming to town. They can show me what it is that they have concerns about, and I will include it in next year's inspection. Currently right now we don't have the time. I'm just not sure exactly what it is that they want me to look at, so next year when there's no snow, when I'm back here in the summer, I commit to working with them and bringing this to a resolution for the Board.

ACTING CHAIR: Thank you. Okay, any other questions from the community? Then, Staff, do you have comments? Jim?

NWB STAFF QUESTION INAC:

MR. HOHNSTEIN: Thank you, Mr. Chair. David Hohnstein.

I've got a few quick questions here with respect to Environment Canada's recommendation yesterday on toxicity testing for the effluent. Does INAC see toxicity testing as part of this license, and if so, have these been applied or included in other licenses and, you know, have they been in compliance? And again if so, has it been the trout bioassay or has it been alternatives, as

Environment Canada had suggested?
ACTING CHAIR: INAC?
MR. KEIM: Thank you, Mr. Chair. Andrew Keim from INAC.

I'm aware of two other licenses that have a bioassay component. To the best of my knowledge, none of the bioassays that have actually -- and they use trout -- none of the bioassay samples that have been collected, the trout didn't survive because of other factors, not necessarily anything to do with anything they were measuring for the effluent. I don't find the test to be particularly a good indicator because of different factors. So I know of two -- it's in two licenses, but I don't know of anybody who's ever been able to come into compliance with it.

ACTING CHAIR: Thank you. Staff?
MR. HOHNSTEIN: Thank you. David Hohnstein, again Water Board.

Just a quick question on sampling procedures, and are there any issues with the sampling and monitoring that takes place under the current license, I guess, for the lagoon operations, and you know, are there any recommendations that INAC can provide?
ACTING CHAIR: INAC?

MR. KEIM: Thank you, Mr. Chairperson. Andrew Keim.

I believe that INAC is closely working with the Board, and we're planning a meeting here in the not-too-distant future to talk about topics exactly like this, so I think I'll defer any comments like that to the meeting we have so that we can move forward positively on future licenses.

ACTING CHAIR: Okay, thank you. Staff?

MR. HOHNSTEIN: Just -- sorry, Mr. Chair, David Hohnstein.

Just a follow-up to the sampling and monitoring. I guess with respect to some of the components that are required for the Hamlet's monitoring under the license, particularly, I guess, BOD monitoring. Is there any issues that INAC may have identified in their compliance that, I guess, could be included in another license renewal conditions? Is there any problems with the monitoring of that particular component? Is there any alternatives, I guess?

ACTING CHAIR: If I can, Bill, are you still there?

MR. TILLEMAN: I am.

ACTING CHAIR: Tom, you still there?

THE CHAIR: I am.

ACTING CHAIR: Okay, just want to check in every so often, make sure you guys are still there; I don't want to lose you. INAC, go ahead.

MR. KEIM: Thank you, Mr. Chair. Andrew Keim.

A number of the components that are currently in the monitoring programs in municipal and other licenses, particularly Class A licenses, have sampling that requires that the municipality or the proponent, the licensee, to capture a sample and be able to have that sample into a lab within 24 hours.

If you're in a community such as Cape Dorset or any community in Nunavut and transportation is an issue, it is sometimes, although probably not every time, it is hard for the licensee to ensure that that sample makes it from point A to point B within 24 hours at a given temperature and not frozen and all the rest of the stuff that goes with it.

Currently there is no lab in Nunavut to address these types of issues; these time-sensitive issues. I think it's a -- it is a problem. It affects the job that I do as well. A lot of the samples that I took this year did not make it to the lab on time simply because of transportation. That doesn't make the samples totally useless; they can still

run the tests, but I can't use that result with any, you know, definitive, you know, judgment on it. Thank you.

ACTING CHAIR: Thank you. Any other questions?

MR. HOHNSTEIN: Yes, Mr. Chair, thank you. David Hohnstein.

There's been a little bit of discussion about the emergency lagoon and the use of this cell one, whichever, you know, it's referred to, and I was wondering if INAC sees application of similar monitoring requirements for this lagoon, as it will, no doubt, require annual decanting every year to remove water to make sure it's got the capacity to be available for emergency use, and if so, I guess, you know, would toxicity testing be applied on that decant as well.

ACTING CHAIR: INAC?

MR. KEIM: Thank you, Mr. Chairperson. Andrew Keim.

I'm not sure if the toxicity testing can even be added to an amendment to an existing license that's currently expired. So I don't know if you could actually add that to the license as they're talking about an amendment to an existing license. And whether or not the acute toxicity of fish

should be added to any license here in Nunavut, I'm not convinced that it actually is applicable, and probably it causes more concern than the value of the test is worth.

ACTING CHAIR: Staff?

MR. HOHNSTEIN: Thank you, Mr. Chair. David Hohnstein.

Just another quick follow-up to that response. Is there any other recommendations as far as a similar test or other tests that could be applied in place of the toxicity testing?

ACTING CHAIR: INAC?

MR. KEIM: Thank you, Mr. Chair. Andrew Keim.

Maybe I should rephrase my comment earlier. It's not that I believe that all lethality tests are not applicable; it's just the specific one for trout.

Again, just to give a history to the Board, we've gone out, we've taken samples of a potable water source that should have been absolutely pristine and people are drinking it, and we send it south, and they throw the trout in, and the trout are dead within 24 hours, and there's nothing wrong with the water. The water's very, very hard.

And trout grow up, they're fish that are down

south, they're not used to that, and they die. Char would have survived; trout die. Is it a good indication that the water, you shouldn't be drinking it? Probably not.

So as an alternative, the Daphnia. I can't remember the name of the Daph -- Daphnia Magna is the alternative that I would suggest. Thank you.

ACTING CHAIR: Thank you. Staff, comments? Okay, are we going to be a while with these questions? The reason being is it's like 20 after 10, and I see the coffee is ready, and people --

MS. FILIATRAULT: I have three questions.

ACTING CHAIR: Okay, let's carry on. I'd like to get INAC done, if we can, before coffee.

MS. FILIATRAULT: Thank you, Mr. Chairman.

It will require possibly some clarification on one point from the Hamlet. Does the Nunavut Water Board -- we've heard a lot about thermistors, so does the Board need to confirm the installation of these thermistors and an assessment period on thermistors to monitor the freeze-back before the system can actually be commissioned for use?

ACTING CHAIR: INAC?

MR. ROGERS: Jim Rogers, INAC.

Actually I was going to ask the Hamlet a question about the thermistors. The installation of the thermistors should occur, I believe, within 90 days of this hearing because the Hamlet has stated that they will install them. They need to provide the information to the Water Board on thermistor depth, give locations, and the frequency of monitoring; are they going to monitor these thermistors once or twice a year, or are they going to put a continuous monitor on there and monitor daily temperatures.

I believe the designs for the thermistors, the locations, should be provided to the Board within 90 days of this hearing. I would suggest that the Board does not have to wait to approve an amendment or this amendment for that to be in place.

However, the Board should require or I suggest the Board should put in the license that the comparison to the modelled data should be provided on a fairly frequent basis, like close to the end of the first summer and close to the end of the first winter to show freeze-back amounts and the amount of the active layer. And included in there is a special report, which the Board will review and provide comments back, and then the Board can decide whether they need to approve or not. But I

don't think it should hold up the amendment itself, but I would like to see those designs fairly quickly, and design locations and frequency of monitoring.

ACTING CHAIR: Thank you, Jim. Staff?

MS. FILIATRAULT: Thank you, Mr. Chairman. Dionne Filiatrault.

So just to confirm, it's INAC's recommendation that the thermistors should be installed within 90 days of issuance of a potential license, and that the assessment of that material can come throughout a later date, but that the installation of the thermistors should be done prior to commissioning of the facility, yes or no?

ACTING CHAIR: INAC?

MR. ROGERS: Yes.

ACTING CHAIR: Staff?

MS. FILIATRAULT: Thank you, Mr. Chairman. Dionne Filiatrault.

If I could, one of these questions, I guess it is to INAC, but it may require some clarification from the Proponent.

In your discussion, you talked about the wetland and if the community is proposing to use the wetland and consider the wetland as part of the sewage treatment system. It's my understanding

that the use of the wetland as it is now is more of a natural wetland, that there is no plans to go in and actually engineer a wetland for this community, that the wetland is being viewed as sort of a secondary bonus treatment for this community, and I'm not sure what INAC's recommendation on how you're going to go and actually have them submit designs for a natural wetland. If it was an engineered wetland, I could see where that would apply, but I'm trying to understand how you want them -- what information this Board would ask them for a natural wetland.

ACTING CHAIR: INAC?

MR. ROGERS: Jim Rogers, INAC.

Under this amendment the wetland is not part of the water treatment -- the effluent treatment system. However, throughout the amendment, the meetings, the technical meetings, it always was mentioned, oh, that the wetland will polish the water and make it better and stuff like this.

At this time, my personal feeling is that this is the same as dumping it straight into the sea right out of the sewage lagoon. If they want to use the polishing within the wetland, I suggest that they come back to the Board with a proper design to modify the wetland from an -- or some

sort of controlled spreading of water and -- so they can come up with an idea of how much improvement in the treatment of the effluent will occur by the wetland.

Right now they're saying it's going into a wetland, and therefore, it's better. How do they know? It's a gut feeling? Okay, say it's a gut feeling. If they've tested it, tell us. But at this point, it is not part of the effluent treatment system. If it is part of the effluent treatment system, then work out the design, do the monitoring, and tell us how much improvement that does occur. That's all that -- that's really what my point is, it's not part of this amendment.

ACTING CHAIR: Thank you, Jim. Hamlet, do you have any comments?

MR. JOYAL: Thank you, Mr. Chairman. Colin Joyal, Dillon Consulting.

Yes, I'm in agreement that the lagoon design does not include treatment from the wetlands. The lagoon is designed to meet the discharge criteria at the end-of-pipe. The wetland's location through, I would say through good site selection, it makes the site preferable and adds to the advantages of locating a lagoon at that site.

If down the road, it's deemed that the wetlands

should be included in the license or included in the treatment process, then I agree that it would have to be designed, and then the point of compliance would then be moved to the end of the wetlands.

ACTING CHAIR: Thank you. Staff, last one?

MS. FILIATRAULT: Thank you, Mr. Chairman.

Just a final point on some follow-up from yesterday based on a comment on the effectiveness of the lagoons. It was compared to two other communities, Pond Inlet and Hall Beach, and the request was made to INAC to provide some indication of compliance and their inspection overview of, you know, how the systems in those communities are operating for those communities.

ACTING CHAIR: Do you need that question read again, or did you both understand that?

MR. KEIM: Andrew Keim from INAC.

To confirm, I believe it was Hall Beach and Pond Inlet? That's correct, Mr. Chair? I recall that I've been to both communities, and while I don't have my notes in front of me, I could provide -- and I know I have provided copies to the Board. I believe that there were issues with both of those communities, and both were noncompliant in

a number of areas of their license.
ACTING CHAIR: Dionne?
MS. FILIATRAULT: Mr. Chairman, I can advise the Board that if there are inspection reports that were completed for those communities, they likely have been provided to the Board, to the overall public registry that the Board holds, but not necessarily to the public registry for this particular file.
ACTING CHAIR: Okay, INAC, do you want to -- no questions, no? So what are you suggesting?
MS. FILIATRAULT: It may be of use, Mr. Chairman -- Dionne Filiatrault -- to file those, the most recent inspection reports that have been completed by Andrew or Water Resources as exhibits to this application.
ACTING CHAIR: Okay, and that can be done, Andrew?
MR. KEIM: Yes, Mr. Chair. Andrew Keim.
ACTING CHAIR: Thank you. Okay, is that your final comment, Staff?
MS. FILIATRAULT: That's it, Mr. Chairman. Thank you.
ACTING CHAIR: Bill, do you have any

comments or questions at the present time?
MR. TILLEMAN: No, sir, thank you.
ACTING CHAIR: Thank you, sir. Then we will take a -- sorry, Hamlet?
MR. ROY: This is Bhabesh Roy.
I'm talking about the thermistor as Dionne mentioning the question to INAC. If the thermistor requirement is before licencing or a pre-condition of the licensing.
As you understand that, we are in a situation where we cannot bring any equipment in this situation. We have to wait for the sea lift. So if you say that we have to keep the license after the thermistor will be installed, then we have to wait for when the sea lift will be available to bring the equipment and then do the boring and install the thermistors.
I think the solution -- my solution is we can submit the manual location plan specification offhand, and once the facility will be available, we can bring the equipment, and we can do the construction. Thank you, Mr. Chairman.
ACTING CHAIR: Thank you. Go ahead.
MR. CAVANAGH: Can I add a comment too, Mr. Chairman?
ACTING CHAIR: Of course, please.

MR. CAVANAGH: Thank you. Paul Cavanagh. I'll be brief.

The intent -- I'd just like to clarify the intent of the monitoring, and the need to have it in expediently kind of hinges on that. The -- in my mind, the intent of the monitoring is two-fold: To confirm the assumptions that we've made in the design; the second is to collect data that would help us provide maintenance and ongoing operations in the future.

So the monitoring system for thermistors is not intended as a one-shot to trigger whether we can start filling or not. Our design initially included immediate filling right from day one, and we've shown by thermal modelling that it should work even when filling is ongoing.

So I'm not totally comfortable with the idea that the licensing needs to be connected to whether the monitoring is in place. If the Proponent is agreeing to supply the monitoring within a certain time frame, as Mr. Roy pointed out, there's practical limitations that may come into play in that, and to hold it as a condition of the license might be very onerous for the Proponent, and I would suggest that it's not necessary.

The other issue that I'd like to briefly touch

on that INAC has brought up, the whole idea of us supplying our monitoring plan for review. Early on in the proceedings, we have indicated that the Proponent and members of the Proponent will be the engineers of record, and if we develop plans that we think is appropriate for our designs and monitoring, it is our responsibility to do that and make sure that it's operating in its intended use.

I'd just like some clarification about when we're submitting plans, when we're submitting annual reports of monitoring. Is it of the understanding that those plans and reports have to be approved by the Board or some of the enforcing agencies, or does the ultimate responsibility still rest with the Proponent and the engineer of record?

ACTING CHAIR: Thank you. Staff?

MS. FILIATRAULT: Dionne Filiatrault, Mr. Chairman.

No, that's fine; I appreciate the clarification.

ACTING CHAIR: INAC?

MR. ROGERS: Jim Rogers, INAC.

Throughout this process, the consultants to the Applicant have recommended monitoring. This project was built in the summer of 2007, but there was no monitoring installed. As the intervener to

this, INAC has difficulty in understanding why recommendations of the designers were not implemented by the Applicant. We would like the -- I don't think we have to approve the monitoring plan, but we have to understand the monitoring plan.

The reason to provide the designs beforehand is so we can understand what you're trying to monitor and whether that -- we feel that fills out your -- not only your due diligence but our cleanup in case of failure.

So I would like to see some way to monitor freeze-back fairly rapidly; preferably 90 days from this date. I'm not much of a geotechnical installation guy. I don't know if you can use the air drill that Bronik (phonetic) has in town to put in the thermistors or not. They're fairly deep, 15 metres. But is that 15 metres off the top of the berm, which doesn't go very far under the natural level because the berms are fairly high? So that's just the berms themselves; you're missing some of the foundation that way.

So I suggest that you may not hold up the amendment, Mr. Chair, but I suggest that installation and monitoring is expedient, within reason. You know, I'm not saying you have to go

hire the Royal Navy's Hovercraft to bring up a separate drill. But if it's possible, I would like to see the monitoring installed and put in place as early as possible within the dates. It would have been fortuitous if you would have installed them last summer when it was not frozen, easy to dig through, the stuff was unconsolidated.

Now, as for frequency of monitoring, we have another project where they monitor the thermistors once a year, so the depth of the active layer depends on the date they arrive, sometimes August 1st, sometimes August 5th, sometimes July 15th. However, most of us understand that the maximum depth of the active layer probably occurs between the 15th of September and the end of October.

Therefore, we would like the thermistors to be monitored more frequently. I don't think minute by the minute. I suggest either once a week, once a day, you know, something like that. Electronics have gone a long way. They can monitor that stuff; you just need to download it. Thank you, Mr. Chair.

ACTING CHAIR: Thank you, Jim. Staff?

MS. FILIATRAULT: Thank you, Mr. Chair. Dionne Filiatrault. I'll make this very, very quick. It's a yes-or-no question to INAC.

We heard this morning that the Proponent -- Applicant has said in all likelihood they will not be able to install thermistors until I believe it was nine months. Is that this acceptable to INAC, yes or no?

ACTING CHAIR: INAC?

MR. ROGERS: If it's not possible, it's not possible. However, I suggest that if it's possible, they do it. So I can't tell you what equipment's in town or nearby at this time, but if they need to bring in equipment, then that's just the way it is. But if there is equipment that they can use to install, I would suggest we would like to find out the maximum freezing that has happened this winter, would be ideal, and we can see what the active layer is over the summer.

ACTING CHAIR: Thank you, Jim. Any other questions for INAC? Final comment, go ahead, Art.

MR. ROY: Bhabesh Roy, Mr. Chairman.

Yes, nine month is our worst-case scenario to answer to -- for the comments of Mr. Jim Rogers, yes, we try our best; as early as possible we can install thermistor and start monitoring. But as I said, the nine month is the worst-case scenario.

Thank you, Mr. Chairman.
ACTING CHAIR: Thank you very much. Then on behalf of the Board, I want to thank INAC for doing your presentation. We will take a 15-minute break and grab a coffee, and we'll come back and do BGC Engineering.
(BRIEF ADJOURNMENT)
ACTING CHAIR: I call this meeting back to order. Okay, what we'll do is we'll start. David, could you pass the -- BGC Engineering, do you want to come forward. I'll just do some housekeeping.
PRESENTATION BY BGC:
HOLGER HARTMAIER, sworn:
ACTING CHAIR: Just roughly how long do you figure you'll be, Holger?
MR. HARTMAIER: Probably about half an hour, I'd say.
ACTING CHAIR: Thank you. Bill, are you on Board?
MR. TILLEMAN: Yes, sir.
ACTING CHAIR: Welcome back. Thomas?
THE CHAIR: Yes.
ACTING CHAIR: Welcome back. Okay, BGC, the floor is yours, sir.
MR. HARTMAIER: Thank you, Mr. Chair.

Holger Hartmaier, BGC Engineering.

I'm a geotechnical engineer that's been retained by the Nunavut Water Board to conduct an independent geotechnical review of the Cape Dorset sewage lagoon. I don't actually have a visual presentation to give you.

In yesterday's hearing, BGC started listing the issues and questions for the Proponent raised in our intervention. It was decided that rather than having the Proponent respond directly to each issue, that BGC would present their comments and recommendations in summary fashion so that the Proponent and parties would have the opportunity to ask questions and obtain clarification.

Also, Mr. Bhabesh Roy from the GN had indicated that some submission by BGC had arrived after the close of the submission period, and therefore, the Proponent did not have the opportunity to respond. These included our executive summary and the results of an independent geothermal analysis conducted by BGC.

Mr. Chair, I, therefore, intend to read excerpts from our executive summary and the results of the independent geothermal analysis into the public record. Copies of these documents are on the back table if anyone wants to follow along with

the presentation.

BGC was requested by the Nunavut Water Board to contact an independent geotechnical review of the following information that was posted on the NWB FTP site on November 13th, 2007, by the Government of Nunavut, Department of Community and Government Services -- I'll refer to them as CGS for the rest of my presentation -- the Proponent of the Cape Dorset lagoon. These were the record as-built drawings of the construction, the operation and maintenance manual for the operation of the lagoon that was prepared by Dillon Consulting, dated November 9th, a memorandum on the additional stability and seepage analysis for the P Lake sewage lagoon that was prepared by AMEC, dated November 15th, a letter from CGS with a table summarizing their response to a list of specific geotechnical items requested by BGC. That letter was dated November 13th, 2007. These documents were provided in response to the October 10th letter issued by the Nunavut Water Board following the pre-hearing in the fall of 2007.

Upon receipt of this documentation, BGC noted that the as-built detail of the berm differed significantly from the original design drawings as well as the details that were used in the

geothermal model that was done by AMEC. The main differences were the configuration of the geosynthetic clay liner -- which I'll refer to as the GCL -- within the berm, the cutoff trench excavation configuration and the cutoff trench, the material used in the cutoff trench backfill.

These discrepancies in addition to other technical issues raised by BGC in previous reviews resulted in a recommendation by BGC to the Water Board to conduct an independent geothermal analysis of the berm as part of this review. Board representatives agreed that this additional work would be worthwhile and should be included in our scope of work and budget.

The purpose of the independent geothermal analysis was to satisfy the following objectives: It was to support BGC's intervention statement, specifically to back up any comments or critique of AMEC's geothermal modelling that's been carried out to date, to provide the Board with an independent assessment, and improve the level of confidence that the permafrost conditions in the as-built liner berm foundation and lagoon configuration will provide the necessary water retention of lagoon contents, such that the waste water treatment objectives are met, to identify sensitive or

critical parameters or issues that must be addressed either by additional investigations, monitoring, engineering, or construction such as remediation on the part of the Proponent, to provide technical guidance with the drafting of terms and conditions of the water license to address the above-identified issues.

So in summary, Mr. Chair, some of our key comments that are detailed in our intervention statement, as far as the as-built drawings go, and some of this was brought up in yesterday's discussions, we require that the as-built drawings be stamped by AMEC as the engineer responsible or the engineer of record for the geotechnical discipline.

In general, there was no identification shown on the drawings indicating where field changes were made from the original construction drawings. Normally, these would be highlighted in some way, such as with a revision bubble as well as a brief note on the revision section of the title block.

In Record Drawing 100, major revisions were made with respect to the alignment of the access roads on both sides of the lagoon between the east and west berms compared to Original Design Drawing Number 100. Also the configuration of the west

berm at the north abutment had been altered from the original design. Further clarification on this is requested from Dillon, as noted under the comments for Drawing 109.

As far as Drawing 109 goes, it shows up to 1 metre of unfrozen fill that was used to level the ground surface under both berms, meaning the east and west berms. There are no details provided on the drawings as to what this material is actually composed of.

On Drawing 109, the berm contours at the north abutment of the west berm include a widened crest, which is widened from original width of 4 metres to about 25 metres for a turnaround area on the downstream side. On the upstream side, there are two significant gullies or ditches indicated by the contours, and it is not clear what these represent.

BGC requests that the Proponent provide additional cross-sections and longitudinal sections of this area to clarify as-built conditions. The concern is that there may be insufficient fill thickness in this area to ensure that the GCL tie-in to the cut off trench remains frozen.

Record Drawing 110 shows typical road sections. On July 30th, 2007, CGS provided a revised ditch detail for the road, which does not seem to be

included in as-built details on this drawing.

The Hamlet of Cape Dorset noted a problem with seepage into the lagoon through the active zone with the as-constructed detail in the October 1st, 2007, technical pre-hearing. In that hearing, Dillon was requested to provide further clarification on how this issue is being resolved, and we are still looking for that clarification.

In Record Drawing 112, the configuration of the geosynthetic clay liner is different from the original design. In the original design, the liner was placed on top of the original ground surface under the berm on the upstream side of the core trench. The concern with the as-built configuration is that the saturated zone upstream of the liner is now brought closer to the cutoff trench. Record drawing 112 also indicates that the material used to backfill the cutoff trench is labeled as "sand", the same material used in the construction of the berm.

At the October 1st, 2007 technical pre-hearing, Hamlet representatives noted that water was observed to be seeping out of the downstream toe of the dam. Since the berm was constructed during the summer on top of the thawed active zone, the berm foundation had not yet had a chance to freeze back.

As a result, the water within the lagoon can seep under the berm, through the active zone, around the GCL, through the sand backfill in the cutoff trench, and through the thawed active zone under the downstream toe of the berm. As a result, the lagoon will not be usable until after the winter of 2007/2008 at the earliest when the foundation has had a chance to freeze back.

It is important to note that AMEC's original design recommendation in the October 13th, 2005 report was to backfill the cutoff trench with, and I quote, "compacted clay material or grouted". This requirement was never reflected in the previous construction drawings issued by Dillon to date and has been raised as a design issue by BGC in previous reviews. The modification requires the lagoon now to remain dormant over the first winter season so that the foundation can freeze back. This conflicts with the original intended commissioning of the lagoon in October. Thermistors are, therefore, required to validate the freeze-back as a license condition.

In Record Drawing 112, the as-built liner embedment details for the abutment areas of the east and west berm are requested. The cutoff trench must extend a sufficient distance into the

abutment so that any end-run seepage through the active zone is prevented. It is not clear from the as-built information if the extent of the cutoff trench satisfies this criteria.

Also in Record Drawing 112, the crest detail of the emergency overflow weir section was changed. This change notice was transmitted to the contractor by Dillon originally on July 21st, 2007. The as-built detail now shows the geoweb and the GCL in one layer with no granular or other material between the two. Dillon had originally initiated this modification to address a previous concern raised by BGC that water could seep under the GCL in the emergency spillway and potentially lift the liner. It is still not clear how the above modification prevents this problem from occurring.

With respect to the operation and maintenance manual, BGC recommends that the Board include a condition in the water license requiring prior approval by the Board for any change in the lagoon waste water storage and decanting operations. This notification should trigger a geotechnical and geothermal review to assess the implications of year-round water storage on permafrost conditions under the lagoon.

Section 3.4.6 of the operation and maintenance

manual for the lagoon describes geothermal monitoring but does not provide the number, locations, depths, or bead locations of the thermistors that are proposed. Further details should be provided as a license condition.

Section 3.4.7 describes geotechnical reviews but does not mention dam safety inspections. Inspections should be carried out more frequently than dam safety reviews. As a minimum, the lagoon should be subject to an annual inspection by a qualified geotechnical engineer. The operation and maintenance manual should also require operators to conduct a visual inspection of the berms whenever they are visiting the lagoon and record any observations in a logbook that can be reviewed during the annual inspection.

It is noted that weekly inspections of berms, dikes, and drainage courses were recommended in Table 6 of the O & M manual. This is considered an adequate minimum frequency, similar to typical license requirements for mining operations. It is recommended that these requirements be included as conditions in the water license. The annual geotechnical inspection should also be added under the yearly frequency in Table 6.

With respect to the report on the additional

stability and seepage analyses conducted by AMEC, observations of the active zone in the cutoff trench were carried out by AMEC between July 2nd and July 12th, 2007. A 1-metre thick working pad was placed over the natural ground surface, but depths were measured relative to the natural ground surface. Hard frozen soil was typically observed in the cutoff trench from a low of about 1-and-a-half metre depth. This would suggest that the active layer, which is deepest in early October of the year, will likely be on the order of 2 to 2-and-a-half metres.

AMEC should have commented on whether their geothermal model agreed with the active layer observations. In AMEC's August 21st, 2007 geotechnical report that reviews the geothermal analysis, no mention is made of the assumed active layer thickness or of any calibration of the geothermal model to replicate these site conditions. Note that in bedrock areas, the depth of the active zone is typically much greater than in soil, say in the order of 3 to 4 metres deep.

AMEC had assumed that the native silt and clay and frozen soil were impermeable material, having low values of hydraulic conductivity. This assumption may be true for ice-saturated frozen

material below the active zone; however, for active zone materials which have been disturbed by seasonal free-thaw cycles, this is not the case, nor has it been substantiated by site observations.

Hamlet officials reported water seeping into the sides of the lagoon, under the roadways, and exiting the lagoon under the berm at the completion of construction in August 2007. Therefore, it is clear that the GCL by itself is not an effective water barrier. Freezing of the foundation and the berm will be necessary to form an effective barrier to seepage. This major design criterion must be confirmed with thermistor readings.

The major concern from a licensing perspective is the water retention capability of the lagoon, and we've all heard the public's concerns in the meetings so far. Since the base of the lagoon is unlined, there's nothing preventing seepage losses or gains through the active zone along the sides and bottom of the lagoon. As noted above, it is not clear from the record drawings if the cutoff trench extends far enough into each of the abutments to prevent end-run seepage out of the lagoon through the active zone.

The extent of the cutoff must also take into account global warming effects over the design life

of the structure. These have not been included in the current geothermal analysis done by AMEC. The model cross-sectioned surfaces of the seepage and stability analysis do not realistically represent the as-built configuration of the liner. The model case assumed a vertical liner in the center of the berm that ties into the core of frozen soil. The as-built detail indicates that the GCL is inclined at 45 degrees from the horizontal within the upstream shell of the berm. The active zone in the berm was assumed by AMEC to be 2 to 3 metres deep. This appears low considering that the berm is composed of granular material which was placed during the summer in a relatively dry and drained state.

BGC believes that from a seepage analysis perspective, the differences between the modelled and actual liner configuration may not be significant. However, from a stability perspective, it seems that having a GCL as a low sheer strength element that is oriented at the as-built slope of 45 degrees would have a greater effect in reducing the factor of safety of the upstream slope than the vertical liner.

With the model case, the slip circle lies essentially within the granular berm material of

the upstream slope. If the failure path was modelled along the inclined low sheer strength GCL, a lower factor of safety for the upstream slope is expected. It is, therefore, recommended that the stability analysis for the 1 and 2 metre a head difference for the rapid drawn-down case include this assessment to demonstrate the stability of the upstream slope based on the as-built detail. BGC, therefore, recommends that AMEC validate the stability of the upstream slope with the revised liner configuration for all expected stability cases in agreement with factors of safety recommended by the Canadian Dam Association.

General conclusions: Based on the field performance of the GCL, on its own, it is not an effective seepage barrier. A GCL with overlapped sheets is an imperfect liner typically used for secondary containment. Freezing of the foundation is required to create an impermeable barrier to seepage under the berm. Within the berm itself, the upper 2 to 3 metres is assumed to be within the seasonal active zone. In this area, the GCL has to act as the primary water retention barrier. It remains to be seen how effective this barrier is, since the lagoon has not yet been impounded.

In general, the seepage analyses have indicated

that there are no significant adverse effects on stability. The downstream slope, however, has slightly less than the required factor of safety for the conservative case of full seepage, assuming no liner is present. The effectiveness of the liner under full lagoon conditions, therefore, remains to be confirmed especially for seepage through the active zone in the berm as noted above.

The upstream slope stability should be re-checked with the inclined low sheer strength element representative of the as-built conditions. It is expected that lower factors of safety presented in the current analysis will result.

AMEC has outlined potential mitigation strategies that could be implemented should factors of safety for the berm slopes not meet the required design criteria, including additional drainage provisions, construction of support berms, modified operational procedures. Further details should be provided by AMEC regarding the event of trigger level when these contingency measures should be implemented. These details should be included in the O & M manual as well as in water license conditions.

I'd now like to just present a summary of our independent geothermal evaluation of the proposed

design. As I noted, the water retention capability of the sewage lagoon is a key water licensing issue for this facility. The engineer of record, Dillon, with geotechnical input from AMEC has designed the berm with a geosynthetic clay liner embedded in a cutoff trench excavated into the top of the permafrost. The lagoon basin is unlined.

The integrity of the sewage lagoon strongly depends on the aggradation and maintenance of permafrost within the berm and foundation throughout its design life, which is understood to be in the range of 20 to 40 years. We've assumed 30 years, because in the previous design reports, there was indications that various elements of the infrastructure had potential lives in the range of up to 40 years. So in our geothermal model, we ran the model beyond the 20-year design life just to see what would happen up to a 30-year design life in case the lagoon had to remain in service after the 20 years.

Although an updated geothermal analysis dated August 21st, 2007, was prepared by AMEC and discussed at the October 1st, 2007, pre-hearing, BGC did not feel it was relevant to undertake an in-depth critique of the analysis results until the as-built construction details from the November

15th, 2007 submissions were provided. The as-built configuration was noted to be different from the original design drawings and the design cross-section evaluated in the geothermal model.

Specifically the geothermal model was based on a berm section that excluded the presence of the liner, in AMEC's opinion, demonstrating that the berm and foundation would freeze back and remain frozen without a liner is a conservative design assumption supporting the conclusion that the lagoon did not need to be lined.

BGC believes that this design rationale has not been fully substantiated by the design calculations. AMEC's updated geothermal design predicted ground temperatures in the undisturbed terrain downstream of the berm cooling from approximately minus 5 degrees Celsius to colder than minus 6 degrees Celsius over a 30-year period. This contradicts AMEC's November 1st, 2006 report where they stated that from the measured ground temperature data at the mean annual permafrost temperature at a depth of 15 metres was extrapolated to be in the range of minus 4 to minus 5 degrees Celsius. The thermal instability suggests that the selected input parameters are inconsistent with the assumed initial temperature

conditions.

Furthermore, AMEC also predicted that the berm foundation will also progressively cool over the 30-year design life, which is inconsistent with typical geothermal response of embankments on permafrost. Considering that the design concept for the sewage lagoon relies on the presence of permafrost to provide containment, BGC believed that an independent geothermal analysis of the sewage lagoon design was necessary to improve our level of confidence that the sewage lagoon will perform as designed.

It was BGC's view that the AMEC's geothermal design was incomplete in several key areas. First of all, the geothermal model was not calibrated against any observed permafrost conditions. The applied air temperature boundary was based on mean monthly values for the time period of 1970 to 2000. The sensitivity of the geothermal design to the potential occurrence of long-term climate warming in extreme warm years was not explicitly evaluated. The as-built configuration of the GCL was not modelled. The potential thermal effects of seepage through the berm were not evaluated. The warming effect of density-driven convection in the lagoon waste water was not addressed.

Specifically BGC has carried out the following tasks. We reviewed the available information such as climatic data, soil properties, berm sections, and we commented on AMEC's models and assumptions. As part of our geothermal modelling, we conducted our own 1-D thermal model calibration to what we believe to be the existing site conditions. We carried out a 2-D simulation of the sewage lagoon over an operational period of 30 years. We assessed sensitivity cases such as convective heat transfer, long-term climate warming, and the effects of extreme warm years to basically test the robustness of the model and its sensitivity.

ACTING CHAIR: May I ask, are you just about done? I don't want to rush you, but are you almost done?

MR. HARTMAIER: Yes, I'm just going to summarize the conclusions of the geothermal model, and I'm done.

ACTING CHAIR: I just need to take a 5-minute break.

MR. HARTMAIER: Okay.

ACTING CHAIR: I had a prostate operation two months ago, and I have to go.

(BRIEF ADJOURNMENT)

ACTING CHAIR: Sorry, about that. We'll

come back into regular session. Bill, you still with us?

MR. TILLEMAN: Yes.

ACTING CHAIR: Thomas, you still there?

THE CHAIR: I am.

ACTING CHAIR: Okay, sir, if you want to carry on. Thank you for that break. I can't -- I don't have a quorum, hold on.

Okay, sorry, for the delay. Thank you, Holger, for waiting. Please go ahead.

MR. HARTMAIER: Thank you, Mr. Chair. I'll conclude by summarizing the results of our geothermal modelling. The good news is that the as-built berm configuration, in general, is suitable for the proposed operating conditions based on our modelling. However, there's a few issues that did come out of the modelling that I think we'd like to pass on for consideration by the Proponent as well as the Board.

First of all, assuming that the lagoon filling does not start until the first February after construction, the GCL is expected to freeze into the bedrock foundation, and seepage through the berm mainly through the silt layer in the foundation would not occur. Convection due to seepage will only partially thaw the upstream side

of the berm. With an estimated active layer of thickness of 3 to 4 metres in the berm, the GCL will be the primary form of containment for the summer. We should note that as compared to the 1 to 1-and-a-half metres that were predicted or assumed by AMEC in their geothermal analysis.

We heard yesterday that the time period is critical because if we -- the upper part of the berm is full of -- or affected by water content in the lagoon for only a short period of time in the later part of the season, that would be different compared to having the majority of the berm exposed to lagoon contents, which would be this case for the deeper active zone.

It is predicted that the berm foundation will remain sufficiently frozen. We've assumed minus 2 degrees Celsius as our boundary between frozen and unfrozen soil over the 30-year design life, although permafrost containment may be impacted if the sewage lagoon operates for more than 30 years under the design long-term climate warming modelled.

So what we're saying is that with the assumption of global warming included in our analysis, the lagoon should be good to about the 30-year design life, but if we're considering

operating this lagoon for longer than that that -- and again, this is the reason we want to do thermistor modelling of the foundation is we want to keep close tabs on what the actual foundation temperature is at that time. We're predicting that we're going to start seeing some thawing around the cutoff trench, you know, in around the 30-year period.

Even under extreme warm-year scenarios following the berm construction, the foundation meets the minus 2 Celsius criteria and after the first winter. Now, we've assumed here that, you know, during this first winter period that the lagoon has no water behind it. It's just empty.

The foundation beneath the lagoon is predicted to remain in a permafrost condition. The integrity of the system strongly depends on the operation and management of the lagoon contents. Changes in the way and schedule that the lagoon is filled and emptied may affect temperatures in the lagoon and berm foundations and adversely impact the design concept.

So in a sense the modelling that we carried out was based on the proposed operation of the lagoon: Emptying it each fall, and then slowly incrementing filling over the course of the year. So in a sense

over most of the winter period, the depth of water in the lagoon is, you know, very low.

The base of the lagoon may be frozen year-round. When modelling, the monthly .45 metre increments of lagoon filling and assuming that the lagoon level is lowest at the end of the September, the lagoon contents are predicted to completely -- to be completely frozen each year between October and April. The summer period may be too short and cold to fully thaw the lagoon. I'm talking about now the actual sewage contents. This may cause problems related to sewage management.

On the other hand, if sewage is first added to the lagoon during the spring or summer, the sewage contents may not completely freeze to the bottom of the lagoon and could cause additional permafrost foundation thaw. The observed thermal state of the lagoon contents should be reviewed by a geotechnical engineer during a minimum of the first two years of operation to confirm the thermal design of the sewage lagoon.

Where the liner is embedded in a bedrock foundation, the active layer is deeper, say in the order of 3 metres, and the as-constructed cutoff trench depth is 2 to 2-and-a-half metres, so the active zone in bedrock is deeper than the cutoff

trench. Berms founded on a bedrock foundation are predicted to be colder than the minus 2 degree Celsius criterion after the first winter following berm construction. However, over the 30-year design life, part of the bedrock foundation may warm to above minus 2 Celsius but still remain colder than zero degrees Celsius due to global warming. As bedrock, even jointed, is expected to freeze at temperatures just below 15 Celsius, permafrost is still expected, providing the joints remain ice-saturated.

So in conclusion, it is critical freeze-back has occurred within the foundation and the berm. Temperature data must be routinely collected and recorded in the annual inspection reports. We're recommending that a minimum of three deep, and we're talking 20- to 25-metre deep, thermistors be installed from the berm crest as a license requirement. And I should add that the geothermal analysis recommendations were with respect to the west berm, so we're talking about three thermistors in the west berm as a minimum that are 20- to 25-metres deep. As well, I would also recommend at least one thermistor of that depth into the east berm as well because the east berm is also a water retention structure with the potential for seepage

to the east toward town, down the hill.

That concludes my presentation.

HAMLET QUESTIONS BGC:

ACTING CHAIR: Thank you, Holger. We'll start with the Hamlet of Cape Dorset. Questions? You can start or you can finish, whichever you prefer. You want to take some time to think about what's just been said, and then I can call on the other interveners first? Art?

MR. ROY: This is Bhabesh Roy, Municipal Engineer at CGS.

Three of us are sharing the question initially to answer a few of the issues Holger brought up, some of the issues also raised by other interveners, like INAC and Department of the Environment. Some of the issues I already answered their inquiries, even to the Water Board.

I'm going to begin. You were talking about the thermistor. Yes, as an engineer, I feel it is extremely necessary. This is not only for licensing, the comment, also to know due to the climate change and the global warming what is happening in the north in our communities, so yes, thermistor is on.

In the west berm, we are definitely putting three. One more to the east, we are requesting our

consultant to advise if it is -- we are coming up with the same conclusion. If it's needed, we'll consider it.

Now, regarding the depth, you are considering 20 to 25 metre; we are considering 15 metre. 15, 25 is not a big deal, but installing thermistor is the important issue.

We are talking about the Dillon and AMEC consultant joint signature on the as-built drawing, I will indicate if the Water Board would want, we definitely -- we're willing to go ahead. The as-built drawings you are talking about of -- due to the change-orders during the construction, something missing in the as-built drawing. We agreed, and as-built drawing will be revised and O & M manual, and following will be, 90 days, of the revised drawings and the O & M.

We are also talking about the life of the project. Normally in our -- all the CGS municipal project we are designing for 20 years' lifetime. Make sure it is 20 safe, and project is environmental sound to protect communities.

Now, I'm giving microphone to Dillon and to AMEC to raise some other issues so that we all come to the conclusion. Thank you, Mr. Chairman.

ACTING CHAIR: Okay, thank you, Mr. Roy.

Colin or Paul, one of you two?
MR. JOYAL: Thank you, Mr. Chairman. Colin Joyal, Dillon Consulting.

Just to add to what Bhabesh mentioned, as previously mentioned, as-built drawings, updated as-built drawings could be provided within 90 days of issuance of the license. Some of the issues and requests for information will be included on those drawings -- could be included at that time. Some of the other issues here, the same would go for the O & M manual, if there are -- if there is additional information requested, the O & M manual following issuance of a license could be revised to include that information where appropriate.

There is some information on a road section, I addressed this earlier today, where that information has been included in the August 27th report but will be included in record drawings.

One of the questions relevant to the road section was addressed in the November 13th letter, Item 30. Just to summarize that condition, there was seepage reported in 2007, fall. It was likely through the still unfrozen active layer and unfrozen cutoff trench beneath the berm. This will be monitored. If the ditch seepage is present at an unacceptable rate, remediation action will be

undertaken. Of note, the constructed containment is approximately 4,000 cubic metres greater than the design requirements are. 38,000 cubic metres of hydraulic retention is designed for a 20-year life. Should there be seepage through the ditch in the first several years of operation, it will not adversely impact the operation of the lagoon.

That concludes the items that I would like to address, and I'll hand it over to Paul.

ACTING CHAIR: Go ahead, Paul, please.

MR. CAVANAGH: Thank you, Mr. Chairman. I have a few questions that I'd like answered, and I would start off with a few comments. I'm going to try to restrict my questions and comments to the document that was provided on January the 8th and not refer to the other documents that were provided subsequent to that, just for clarity.

This document, that is a final document?

ACTING CHAIR: Holger?

MR. HARTMAIER: Yes, it's a final document.

ACTING CHAIR: Hamlet?

MR. CAVANAGH: Thank you. The initial part of the document talks about the as-built drawings, which I believe has been addressed, and I don't want to get into too many details there. I

understand that on page 8, there's a -- in the top paragraph, there's the last sentence: (As Read)

> In addition, BGC recommends that the Board include a condition in the water licensing requiring prior approval by the Board for any change in waste water storage and decanting operations. This notification should trigger a geotechnical and geothermal review to assess the implications of year-round storage on permafrost conditions under the lagoon.

I'm wondering if Mr. Hartmaier can elaborate on what he sees as that geothermal review.

ACTING CHAIR: BGC?

MR. HARTMAIER: Thank you, Mr. Chair. Holger Hartmaier, BGC Engineering.

Basically the geothermal modelling is looking at the assumed operational case where the lagoon is emptied at the end of September. It certainly is empty pretty much throughout the winter period, and water starts to accumulate to the full supply level by the end of September, and it's decanted again.

If we get to the situation where the amount of water in the lagoon progressively, you know -- at each time in the year is progressively deeper, then it starts to impact the thermal regime. The

thermal regime is sensitive to the water in the lagoon. So what we're saying is that if there's a change in the operation of the lagoon from the assumed case, that that should trigger a reassessment of the operational aspects on the geothermal regime.

Now, presumably by the time that were to happen, if we have thermistors installed, we would have a pretty complete operational history on the response of the permafrost under the foundation to the operation of the lagoon, and we would be in a better position to attest the sensitivity of that to, you know -- of the water levels in the lagoon.

So, therefore, it's just a flag to say that if the Hamlet is considering changing the operational process in the lagoon, that it should also be coupled to a geotechnical review of the implications on the permafrost and geothermal stability.

ACTING CHAIR: Hamlet?

MR. CAVANAGH: Paul Cavanagh.

So are we to interpret from this statement that the Board will assess a major or minor change in the decanting operations and instruct the Hamlet to conduct the review?

ACTING CHAIR: Holger?

MR. HARTMAIER: Holger Hartmaier, BGC.
Our recommendation to the Board is to write the terms of the license to include a condition, and the specifics of how that would work could be included in the wording of the condition, but basically, yes, it would be that the Applicant would have to submit any significant change in the operation of the lagoon to the Water Board so that they could assess whether an additional geothermal review should be conducted, or as part of your -- part of the condition in the submission on the change in operation would be presumably going back to the -- to yourself to include that assessment as part of the application.
ACTING CHAIR: Hamlet?
MR. CAVANAGH: Paul Cavanagh here.
So the determination of significance in changes of operations rests with the Hamlet?
ACTING CHAIR: BGC?
MR. HARTMAIER: Holger Hartmaier, BGC.
In one of our other recommendation, we have asked for one of the license conditions to be an annual inspection by a geotechnical engineer. As part of his inspection, you know, he would be looking at the thermistor readings, comparing them to the water levels and operations in the lagoon,

and the -- if there was any change in terms of the operational aspects, it can be determined in that case, number one, as a sort of annual requirement to address any changes in operations.

The other -- as a license condition, it would specifically be stated that if the Hamlet does change those operations that it is the Hamlet that must inform the Board on any significant changes and as well as inform their consultant.

ACTING CHAIR: Hamlet?

MR. CAVANAGH: Paul Cavanagh, Mr. Chairman.

I'm just trying to understand what is a significant change in operations and what is not a significant change in operations. I would -- I'll just make a comment that I would suggest that the Hamlet as the owner and the consultants that work for the Hamlet as the engineers of record should retain some ability to determine significance in this case. It is our design, and we should be able to understand what a change in operations and how that impacts the design, and we should be the ones who determine at what point we advise the Board of a significant change.

ACTING CHAIR: BGC?

MR. HARTMAIER: Holger Hartmaier, BGC.

It's my recommendation to the Board that this be included as a license condition. However the Board chooses to apply it and the -- is up to them. I'm just saying that the -- it's a design aspect. The Hamlet has -- on the operational side, we don't know who's operating the lagoon and who's making the decision as to whether this is a significant change or not. We just want to have the blanket statement that any changes in operations do require the notification of the Board because there may be a potential for geothermal assessment, which would then be requested via the Board. We -- I don't think -- it's our recommendation that we don't leave it up to an operator at the Hamlet to determine whether it is a significant change or not. It's up to the Hamlet to provide an annual report on the operations of the lagoon, and if nothing else, that should perhaps trigger the Board to notice that there is a significant change in operation, which may trigger this as well.

So as I say, it's not up to me to write the specifics of how it would work between the Board and the Hamlet, but it's our recommendation that some kind of license condition be included to initiate that trigger.

ACTING CHAIR: Thank you, Holger.

Staff?
SUPPLEMENTARY MATTERS:
MS. FILIATRAULT: Thank you, Mr. Chairman. Dionne Filiatrault.
I think there is -- you know, not to presume any decision that this Board is going to make -- in Water Board licenses, there is a general provision in all licenses that for operation and maintenance plans, if there are changes in operation, technology, or functioning of the operation and maintenance component, that there be -- the licensee is requested to provide annual revision to that and provide notification to the Board of that revision. And then, you know, it's the level of significance. It really isn't brought, I guess, into the term itself. So that does give an -- the Applicant that broad ability, but your points are noted, and the Board has that for the record.
ACTING CHAIR: Thank you. Before we go any further, we are getting close to noon, and I know we were talking about -- wrapping up by noon is not going to happen, I know that right now because we still have all the other interveners; we have the community consultation, they have questions they want to do; the final comments from the Licensee. So it could be another couple hours

yet before we're done, so I would suggest that we break now for lunch, because lunch is only from 12 to 1, and we break for lunch until, say, even 1, come back here at 1, and get back in it. Dionne?

MS. FILIATRAULT: Thank you, Mr. Chairman. Dionne Filiatrault.

Just one, I guess, consideration on your -- what you're proposing is the Hamlet or the Applicant following questioning and comments, once it's closed, they may want a period of time, a significant period of time, in order to prepare their final closing remarks. And I would suggest maybe trying to determine whether or not they are going to need a significant break to prepare closing remarks, determine if there are a significant number of questions left to Holger.

You may -- we may be that close to actually getting it done as far as the questioning and what not that then a lunch break could be the time where the Applicant could turn around and prepare their final closing remarks. So you may want to poll the Applicant on this.

ACTING CHAIR: Okay, I'll going to the Hamlet first. Roughly how much longer are you going to need?

MR. STEWART: Thank you, Mr. Chair.

Art Stewart, Hamlet of Cape Dorset.

Paul will probably need about another 15, 20 minutes, and we would like to have approximately 1 hour to sum up our final comments. Thank you.

ACTING CHAIR: I'm just going to do a roll call. Department of Environment, roughly how long? What I can do right now is I'll do a roll call. GN-Department of Environment, do you want to come up? Do you have any questions for BGC?

MR. ATKINSON: Mike Atkinson, Government of Nunavut-Department of Environment. I don't have any questions.

ACTING CHAIR: Thank you. Environment Canada, do you have any questions?

MS. SPAGNUOLO: Collette Spagnuolo. Environment Canada would have no questions for BGC either.

ACTING CHAIR: Thank you. INAC?

MR. ROGERS: Jim Rogers, INAC. We will have no questions for BGC, and our closing remarks would be very short as well, probably less than 10 minutes.

ACTING CHAIR: Sorry, I didn't ask GN. Thank you, Jim. GN-Department of Environment and Environment Canada, do you have any closing remarks at all?

MR. ATKINSON: Mike Atkinson, Government of Nunavut-Department of Environment. I have some very brief closing remarks.
ACTING CHAIR: Thank you. Environment Canada?
MS. SPAGNUOLO: Thank you, Mr. Chair. Collette Spagnuolo. Our closing remarks would be extremely brief as well.
ACTING CHAIR: Staff, questions and closing remarks?
MS. FILIATRAULT: Thank you, Mr. Chairman. Dionne Filiatrault. We will likely have no questions for Holger except for actually we do have one, and we don't have closing remarks, we work for you.
ACTING CHAIR: No, I know. I have closing remarks. Bill, do you have anything you want to add right now?
MR. TILLEMAN: No, thank you.
ACTING CHAIR: Okay. So it looks to me then we probably have close to an hour of questions and closing remarks left to do. I'll let you give the community at least a half an hour perhaps.
So I'd say we will break until -- you know, there's no way we can get through this in the next hour-and-a-half for sure and get this done until --

by 2:00, and then they're going to need an hour, so -- and I expect Art, he has to pick up staff at 12:00, as mentioned yesterday, so I think we should break now and come back in at 1:30 or 1:00 even. 1:00? Yes, 1:00 is good. And we'll get right back into Holger and get you done, and do closing remarks, community comments, and hopefully be done.

Might be able to give you a break for an hour if you need it. You can work over lunch if you want to, see if you need that extra hour after, and if you do, most certainly, we'll give it to you for your closing remarks and then come back in, say, at 3, 3:30, whatever, and do your final closing, because I think our plane is at 6:00 tonight, so we still have a bit of time left.

MS. FILIATRAULT: Mr. Chairman, we are on charter, so the plane is at our disposal.

ACTING CHAIR: Okay, so we'll take a break now until 1:30 (sic).

(PROCEEDINGS ADJOURNED AT 11:58 A.M.)

(PROCEEDINGS RESUMED AT 1:19 P.M.)

ACTING CHAIR: Welcome back to regular session. Please, we don't have a lot of time.

Okay, just before we go back to BGC, the Licensee has a clarification they'd like to do before we start.

MR. FUENTES: Thank you, Mr. Chairman. This is Patricio Fuentes, Regional Manager for Project Division. I would like to say for the record, the question yesterday was have similar facility such as these been contracted in Nunavut. The answer was yes. We have contracted two of them; one of them was Hall Beach and the other one was Pond Inlet.

In the case of Pond Inlet, we have recent evidence that the system is working in regard to the BOD discharge. In the month of October, it is a decanting process, and we have the lab result, which we have provided to the Nunavut Water Board, also to Andrew Keim, at least by Tuesday, if that is acceptable. The result -- the result -- what we promised by Tuesday is the result that we obtained from the lab; the laboratory result, it will be provided.

ACTING CHAIR: I don't know if that's relevant because it's after the hearing. Dionne?

MS. FILIATRAULT: Mr. Chairman, thank you. Dionne Filiatrault.

My concern is exactly what you just expressed. When you, Mr. Chairman, close this meeting, the Board will not accept any further evidence, and there are issues surrounding leaving the floor open

for the receipt of additional evidence.

My first suggestion is the nature of the monitoring data that you want to submit for Pond Inlet and whatever, is this information that likely was submitted under those particular water licenses and that we may have on the public registry already, and we can verify that through our office and ask them to see if that information is already -- we already do have it, and therefore, we can close it now? Is there no way that you can get this information and provide it before the close of this hearing today?

ACTING CHAIR: Hamlet?

MR. FUENTES: We have that information, but it's in Pond Inlet. I know because we receive it from the lab directly. We request a copy of that result, and we have it in the office, but unfortunately, I cannot pick it up right now.

ACTING CHAIR: If you -- if I may, if you could have that faxed to your office today, we can enter that into evidence. If not, it will not be part of this hearing.

MR. FUENTES: We will try. Thank you.

ACTING CHAIR: Bill, any comment?

MR. TILLEMAN: No. I think Dionne, Mr. Chairman, summarized the issue and the concern,

and I think your decision reflects that, so I don't have any comments. Thank you.
ACTING CHAIR: Thank you. Catherine, you had a comment? No? So basically that's where it's at now. Clarification, Andrew -- or INAC, sorry?
MR. KEIM: Thank you, Mr. Chair. Andrew Keim from Indian and Northern Affairs.
The documents that Mr. Fuentes would like to submit are relevant to the proceedings only in the sense that it is representative of the current lagoon that's in discussion here today. Further to that, I've entered other documents into evidence for the hearing electronically, and they'll be read out later on today. It will have to do with the whole thing. Thank you.
ACTING CHAIR: Okay, thank you. Okay, Holger, would you please come to the intervener table, and I think we were still on the Hamlet's questions. Any questions before we finished for lunch, Holger, or everything's been entered so far?
MR. HARTMAIER: (NONVERBAL RESPONSE)
ACTING CHAIR: Hamlet?
HAMLET RESUMES QUESTIONING BGC:
MR. CAVANAGH: Thank you, Mr. Chairman. It's Paul Cavanagh.

I probably have about seven or eight questions, and then -- they should be fairly straightforward. I'd like to ask the representative from BGC Engineering if he considers that there's general agreement between the models and the modelling done by AMEC and the modelling done by BGC, and I'm just wondering if there's general agreement between the results.

ACTING CHAIR: BGC?

MR. HARTMAIER: Holger Hartmaier, BGC.

Our report I guess indicates where we see differences. We have differences of opinion on the starting temperatures and the predicted -- primarily the predicted active zone depth. I think some of those issues relate to the design of the berm, particularly with respect the need for the GCL, the geosynthetic clay liner, to act as the primary liner within the main part of the berm above the frozen zone.

We've predicted a greater -- essentially the entire thickness of the berm would be the active zone, whereas the prediction by AMEC was only the top 1 to 1-and-a-half metres would thaw out, which is a substantial difference in terms of the amount of berm where you have both frozen containment as well as secondary containment by the liner.

We feel that the main difference in the analysis is that we've confirmed that the core trench and foundation is in a frozen state, but the actual berm itself would become thawed in the summertime.

So at the end of the day, I have achieved maybe a bit better level of confidence on the overall fact that we do get frozen conditions in the foundation, but nevertheless, I'm less confident on the ability of the berm to act as a dual frozen structure as well as the -- you know, the GCL acting as a hundred percent effective single line of containment.

ACTING CHAIR: Thank you. Hamlet?

MR. CAVANAGH: Thank you. Paul Cavanagh.

I'll take that as, yes, there is general agreement in the conclusions with some differences.

The seepage that was observed last fall, it's been speculated that it flowed -- that there was seepage beneath the berm to the downstream side. Is it -- would BGC Engineering consider that that seepage flowed around the bottom end of the GCL liner or through the GCL liner?

ACTING CHAIR: BGC?

MR. HARTMAIER: Thank you, Mr. Chair.

BGC, Holger Hartmaier.

I can't speculate. I mean, the potential flow paths include going around the liner or going through the liner. The fact is the core trench was backfilled with sand, so there are numerous flow -- potential flow paths for seepage under the dam, so I can't say one way or another which was the actual case this past summer.

ACTING CHAIR: Thank you. Hamlet?

MR. CAVANAGH: Thank you. Paul Cavanagh.

Is it fair to say though that the level of the water was at a sufficient elevation that it's most likely that it flowed around the end of the liner rather than through it and that the liner in terms of its capacity to hold water had not really been fully tested?

ACTING CHAIR: BGC?

MR. HARTMAIER: Holger Hartmaier, BGC.

As I said, the fact that the liner is constructed of sheets of overlapping GCL in terms of conventional practice for that liner is a known problem with that type of liner to be a hundred percent effective in terms of seepage. Therefore, it's never used as a primary liner for that reason, so the -- coupled with the fact that the trench has

been backfilled with sand.

I grant, Mr. Cavanagh, the -- I guess the case that it could be that the seepage hadn't consisted entirely of seepage going underneath the liner through the sand backfill, but nevertheless, we have not experienced the full containment of the liner as far as having seepage potential going through the GCL above the frozen zone, so I can't say.

ACTING CHAIR: Thank you. Hamlet?

MR. CAVANAGH: Thank you. Paul Cavanagh.

I'd just like to make a comment then. Throughout this document, there's comments about, and I'll quote one: (As Read)

> Based on the field performance, the GCL on its own is not an effective seepage barrier.

I would suggest that those comments are not fully proven, and I would like to make that as a public record for the Board to consider, that I don't think the GCL liner has really been tested as to its effectiveness.

ACTING CHAIR: Thank you. Just a comment; it's not a question to you --

MR. HARTMAIER: Holger Hartmaier, BGC.

You know, I think we're dealing with six of one, half dozen of the other. I think the fact that we don't know exactly what happens, I don't think we can equally make the statement that Paul is making, that it is, therefore, an effective liner or hasn't been tested.

The fact is that seepage was observed. The design intent of this lagoon was to be fully operational at the time of commissioning and to hold water. That was the original design intent.

The -- for various reasons, the core trench was backfilled with sand. The GCL configuration was changed. The actual use of a GCL was continued despite the original concerns that were raised by BGC in earlier sessions regarding the effectiveness of using GCL.

So my concern is that either way you look at it, there hasn't been an adequate assessment of what had happened back in August of 2007. I have no -- there's nothing before me regarding water levels, what type of seepage and where it was observed to say whether we can tell whether it's going underneath or through the liner. So equally, I would think, AMEC can't make the statement that the liner is a hundred percent effective.

ACTING CHAIR: Okay. Thank you.

Hamlet?

MR. CAVANAGH: Thank you. Paul Cavanagh.

Within the document, there is two other quotes I'd like to bring forward: (As Read)

> From a seepage analysis perspective, the differences between the model and actual liner configuration are not considered significant.

That's from BGC's document. What I'd like to put forward as a comment is I'm suggesting that a lot of the discussion in this document that suggests differences between as-built conditions and what was used in the models is important to determining the outcome/conclusion.

And I'm of the opinion that I think this statement is factual, that we ran models for exactly what they are, they're models, and I think BGC did the same thing. And I think we've come to the conclusion that the models are generally representative and provide a positive outcome in that we've both concluded, for example, that the berm will remain frozen over the life of the structure, which is 20 years, 20-year design life, that the base of the lagoon will remain frozen and act as a liner to seepage; and that in relation to

another statement from the same document, where it says: (As Read)

> In general, the seepage analyses have indicated there are no significant adverse effects on stability. The berm itself will remain stable throughout the life of the project,

this is -- and I think BGC and AMEC are in agreement on that.

One of the differences where -- that was cited was the active layer as a result of the models that we have both produced. We've suggested that the active layer is 1 to 2 metres thick. BGC is suggesting that it could be higher than that. And I'm suggesting that that portion of the dam is above typical reservoir levels during the first years of operation, and we will be able to collect enough data from thermistor monitoring to assess how important that is, and I recognize that it's a difference in the modelling, but the proof is going to be in the pudding, and we will have time to react to those kinds of conditions. And I just wonder if Holger would like to comment on that.

ACTING CHAIR: Thank you for that. BGC?

MR. HARTMAIER: Holger Hartmaier, BGC.

Yes, I generally concur with what Paul was

saying there. The statement I was making in our intervention about the difference with regard to the seepage from the as-built versus the configuration that was modelled, that was just in reference to the fact that, for some reason, AMEC's August 21st model showed a vertical liner in the center of the berm down to basically a frozen zone within the core of the dam, whereas the actual as-built is, you know, a 45-degree liner on the upstream slope dropping down into the core trench.

So what I was trying to say there is that with the modelling that AMEC had done from a seepage perspective, the difference between the modelled and the as-built from a seepage perspective doesn't make a big difference, so we don't have any argument with AMEC's seepage analysis. Where we do think there may be a slight difference is to have them confirm what the impact was on the actual upstream slope stability with the as-built configuration.

The other difference of opinion is, as Paul suggested, is with the depth of the active zone within the berm. So our active zone encompasses pretty much the entire berm thickness, so the -- it puts more onus on that GCL to act as the primary containment for the lagoon contents, you know, when

the lagoon levels get up to that level.
ACTING CHAIR: Thank you. Hamlet?
MR. CAVANAGH: Thank you. I have three more questions, and then I'll be done, so I'll switch directions a bit.

I'd like to -- sorry, Paul Cavanagh -- I'd like to explore a bit the final recommendations that BGC is putting forward. And when I read this document, there's about one, two, three -- about five bullets on page 14, and that kind of confirms, I think, that there's general agreement in the models, there's some differences, but that it's prudent to put in place a monitoring program.

And I want to understand from BGC Engineering if that is the essence of their recommendation to the Board at this time, that a monitoring program and a reporting program be put in place, just if that's really the essence of the recommendation, or if there's other recommendations that they will be making.
ACTING CHAIR: Thank you. BGC?
MR. HARTMAIER: Holger Hartmaier, BGC.

Yes, that's basically what we boiled it down to. The intent of doing this independent geothermal analysis was to -- for us to cut through having to, you know, get into academic discussions

at the hearing level regarding our differences of opinion on how the model should be done and then requesting you to answer back. So it was maybe to jump ahead of all that discussion, run the model ourselves just to see, you know, if any of the issues that we had in our own mind are critical to the design and operation.

So, therefore, we have come up essentially with the recommendation that at the end of the day, what we'd like to see is thermistors being installed within both berms so that we can confirm, you know, (a), the model assumptions that were used, and the actual ground temperatures within the berm.

ACTING CHAIR: Thank you. Hamlet?

MR. CAVANAGH: Thank you. Paul Cavanagh.

When these thermistors are installed in the ground and the monitoring begins and the reporting process is underway, in your mind, how much responsibility and how much authority reverts back to the owner of the facility and the engineer of record in determining how that program is changed or altered over time?

ACTING CHAIR: BGC?

MR. HARTMAIER: Holger Hartmaier, BGC.

Basically AMEC is the geotechnical engineer of

record and has full responsibility for putting together the thermistor program that they recommend, the -- you know, deciding on the details of the thermistor installation, the frequency of monitoring, how that data gets interpreted, and the implications on design.

BGC and the Board really have no, I guess, approval of that. We don't approve that. We're not the designers. We're not taking responsibility for that design. All we can do is look at that information and make sure that the appropriate monitoring that we like to see to get, you know, our own assessment of stability and confirmation of confinement is addressed in whatever you recommend, and the license condition will reflect that that information be submitted, and we review it, and we comment on it, and get back to you, but essentially, it's your responsibility, and it's -- you're the engineer of record, and it's up to you to decide exactly what those details might be.

ACTING CHAIR: Hamlet?

MR. CAVANAGH: Thank you. Paul Cavanagh.

I have one last question. We've seen from some of the other interveners, they've provided a concise list of recommendations, but in general,

we're getting an understanding from those interveners that, in general, they're supportive of providing a recommendation to the Board to grant a license with some conditions, and they've outlined what they think those conditions should be.

It's a little confusing to me right now if BGC is of the same mind or has a different intent, and I'm just wondering if Holger is in a position now to comment as to whether he will recommend that a license be granted with conditions.

ACTING CHAIR: BGC?

MR. HARTMAIER: Holger Hartmaier with BGC.

Yes, the -- basically the -- with the conditions that we've indicated in our intervention, I see no reason why, you know, we couldn't get a license put together that now addresses any of those outstanding concerns, so I don't have any other objections to moving ahead into a licensing.

ACTING CHAIR: Thank you. Hamlet?

MR. CAVANAGH: Thank you. I don't have any further questions. Does -- I think we're good. Thank you.

ACTING CHAIR: Thank you very much. Is that a question?

MR. ROY: From the long debate between two experts from two independent sides, from the engineering point of view, we totally satisfied that the thermistor is going as a condition, and the recommendation in the west berm should be three and the east berm should be one, yes. We are going for -- we are starting four for satisfaction of all the parties.

And we still proposing the length of the 15 metre these, and the way the manual will be coming up, we'll monitor weekly and see how the behaviour and the information coming up. If we see the consent information, probably then we can increase the frequency, so it depends on the pre-condition. So, however, since it will come as a condition, we'll submit the manual and worst-case scenario with the nine-month period, definitely this thermistor will be in place. Thank you, Mr. Chairman.

ACTING CHAIR: Thank you. BGC?

MR. HARTMAIER: Holger Hartmaier, BGC.

I'd just like to comment on the proposed thermistor program that the GN is recommending. Our recommendation would be to -- I guess, first off maybe before you maybe finalize the depths is to talk to your consultant, make sure that he's had

a chance to look through our -- the actual geothermal analysis report.

The depth that we've recommended is in the range of 20 to 25 metres simply because we have developed a slightly different initial ground temperature scenario than AMEC has come up with, so the depth that we've picked for the thermistors is also to provide a bit better information on the actual geothermal regime deeper down, which is part of the overall geothermal model and -- so that's one, is to consider going deeper.

The -- I forget what the other point I was going to make was, but anyways, the -- oh, yes, the timing, the timing of your installation. You're recommending within the next nine months. Our recommendation is that these thermistors be installed before the end of April because what we'd like to capture is the actual freezing that's taking place right now, and after -- you know, once you get past April, you're starting to get on the warming side of the curve again, and whatever readings you have are going to be, you know, subject to some interpretation as to whether it's already been affected by some warming. So you want to be able to see essentially what has happened this year and be confident that, you know, you've

experienced the, say, maximum amount of freeze-back that you're going to get over the winter period and what that is. It gives you more confidence as to planning your operations from then on in.

If you leave it for nine months, that means you're not going in until, say, October, which is already -- we've lost this freeze-back period, and we're at the deepest active zone at that point, so you're not going to have any information on -- you know, that would give you some information that there is frozen conditions there, but it may be that you're right back to the bottom of the core trench, which is what we're predicting. So that would then require, again, looking at that information, saying, Well, now we have to wait until the winter of '08/09 to get another degree of freeze-back again.

So the information is required now because it's such a -- there's such a time period in gathering the data before you can even make an interpretation of it. So my recommendation is to get those thermistors in before the end of April.

ACTING CHAIR: Okay, just for clarification for the Board, this has been discussed this morning already, and it's the same thing you're starting again today, again this

afternoon, doing it all over again. And I understand that from the Licensee that it will be done as quickly as possible, what we were told this morning. And if cannot be done, it may have to happen during sea lift, which could be up to nine months, but as soon as it is feasible to do, it will be done. Is that what I heard this morning, and if that's the case, why are we debating this again?

MS. FILIATRAULT: I think it's critical that the Board -- Dionne Filiatrault -- I think it's critical that the Board understand the risks associated with understanding whether or not the system is confirmed to be operating as they've proposed through their modelling.

In order to do that, I believe all parties have agreed that thermistor -- the use of thermistors is one method to do, to use to confirm that. In the ideal world, these thermistors would have been installed prior to construction. We're now faced with the Board having to make a determination on when these thermistors should go in, such that the level of risks is minimized or is understood clearly by the Board.

So the timing of when these thermistors are going to go in is critical also in understanding

from the Applicant's point of view of when they're actually going to be able to use the system.

So not to presume a decision that you as a Board member would make, if this project proceeds forward and the Board does issue a license, what is going to need to be very clearly identified is when they're actually going to be able to put sewage into the system, that just because you're given a license, does not necessarily mean you can immediately start using the system. Do those thermistors need to be installed prior to being able to use the system? That is the question that needs to be answered and be very clearly enunciated.

And that's -- we've got their understanding that it's not going to happen or it may not happen for 90 days. We have INAC's understanding that they are -- want it to go in within I think it was three months, but we still -- the Board still needs to understand the risks associated with that.

So it may be appropriate, Mr. Chairman, to really clarify with Holger when should the thermistors be installed, what information is needed by this Board before the plan is commissioned, and what are the risks if the lagoon is commissioned prior to the installation of

thermistors.
ACTING CHAIR: No, I completely understand all that. I'm sorry, I didn't -- I know what you're saying. I just thought we're doing it again, and I know what the requests are, but if you want to carry on and clarify, please do.
I just, you know, know we're trying to get to the end of this so we can have other interveners also ask questions, and I'm -- you know, we're just debating something we've already debated this morning, and I don't know -- I'm kind of lost, I guess, where I am for clarification.
But, no, please proceed. I understand what Dionne has said, but I want to make sure the Board does because this is very -- it's very, very technical for us. You know, we're the laymen in the communities, and what you're talking about is way above me, but I'll get it when I talk to the Staff for sure once we're told and the information that we're receiving, but I want us to try to get to the end, that's all.
So, BGC?
MR. HARTMAIER: Holger Hartmaier with BGC.
Yes, I think the -- you know, our comments and our intervention have boiled down to the fact that

we're willing to see the license go ahead as long as there is monitoring put in place.

From our point of view, the fact that there are no thermistors in the dam right now is a gross design deficiency because those were recommended by Dillon's geotechnical consultant from very early on, first design that they've ever done. So for some reason, they were never installed. So you basically have a structure that has been built with a major design deficiency in it.

So having said that, we're now faced with trying to get this thing in operation. So what are the risks of filling this lagoon before we know any of the ground temperature data?

Well, if we look at what was done, the entire geothermal analysis was based on assumed ground conditions. The -- there was very little or no initial ground temperature measurements that were done. Some were done back in the fall of last year. BGC commented that those temperatures were not representative of actual ground conditions because they were measured right after the bore hole was drilled, and they weren't allowed to equilibrate to ground temperatures. You know, we've discussed the calibration of the -- what was observed in the core trench in the summer against

what the modelling had assumed, there was a difference there.

So basically we don't know what we have right now, so that's the key thing. So in order to assess the risk, if we want to start filling the lagoon, say, tomorrow, then we'll have to look at exactly what is going to happen in the lagoon. If we -- we can imagine that we're placing material into a lagoon in small lifts under winter temperatures, it's all going to freeze. So we maybe have an assumption that for a certain period of time in the initial operation of this lagoon, there won't be any open water up against the structure.

Now, if we're waiting nine months, to get up to nine months before we get temperature data, then we've already committed ourselves to having a lagoon at some point that's full of water, and we still don't know whether or not the foundation is frozen. So then we run the risk that in the summertime, whatever's in the lagoon, if the cutoff is not frozen, and seepage does occur, there is a risk that whatever freeze-back has occurred could be thermally destroyed by water seeping in.

Now, the modelling assumption has made certain assumptions about what effect water has on the

integrity of the frozen structure, but again, it's just based on original assumptions, so again, we're back to having thermistors in the dam when the water starts to be impounded against the dam so that we can actually see whether or not our assumptions, that, you know, despite the fact there's water up against the upstream slope, that it is staying frozen.

So if we don't have that in place, we won't know that information until suddenly we have some issues. So not having the thermistors in place is a fundamental deficiency with the design and operation of the lagoon.

ACTING CHAIR: Thank you. I just want to do a roll call. Bill, are you still on Board?

MR. TILLEMAN: Yes, sir.

ACTING CHAIR: Thomas, still there?

THE CHAIR: Yes.

ACTING CHAIR: Thank you. Hamlet, any more comments on what's been said? Paul?

MR. CAVANAGH: Yes, I -- Paul Cavanagh. I'll try to keep them brief.

In general, I understand what Holger is saying. At the end of the day, I concur with Dionne that -- and her comments that it's really a risk question, and you have to temper some of the modelling

results, which are kind of theoretical and not forgiving, with what is actually happening in the real world. And at this point, if we were to start filling, within three months' time, I'm betting that the lagoon area would not be full to the top, for example. So it really comes down to what is the risk, and Holger's right; on the condition of the berm, all we have is modelling results right now, what we think the condition is.

I would suggest though, on behalf of the Hamlet, there is some urgency to try to get this thing, this structure into operation, and I would suggest that through the initial filling period of three or four months, the risks, because it's a winter period, are relatively low. So I would suggest that, from my perspective, and if I'm the engineer of record at the end of the day and maybe has some final say on all of this, I would say that the risks are relatively low in terms of starting the filling and putting the thermistors in simultaneously, but I would like to see what comes back from the license conditions around that before I make some of those decisions.

So I just want to clarify that I'm not convinced that the risks are as high as perhaps what BGC is suggesting.

ACTING CHAIR: Thank you. BGC?
MR. HARTMAIER: Holger Hartmaier, BGC.
Well, to assess the risks, we have very little factual information to assess the risk. All we're saying is that without knowing what the actual condition is within the berm, once we start impounding the lagoon, then there is a chance that, you know, we may have problems that will only manifest themselves by the fact that we, you know, see problems developing, and we won't have any advance warning of, you know, warming temperatures or anything like that.
So the operational aspect of a lagoon from here on in is a critical component. If we say that we can put, you know, material in a lagoon now, then you are automatically setting yourself up for risk down the line because now you have material in the lagoon that can thaw, and you don't have any monitoring in place. And if that monitoring doesn't happen until October, well, you're running the first year with no information on what the actual berm conditions are doing and the response of the ground to the impact of the lagoon water.
So that's another important piece of information that you want to confirm is that you want to get the initial ground temperatures,

confirm that they're frozen back under a dry condition right now, and then you want to see what the thermal response is as you start impounding just to make sure that it is behaving according to the model. If you see that there's some anomalous warming, then you know you've got a problem, and you can do something about it before the lagoon gets too full. That's the risk, and I'm just explaining it to you.

As far as the license condition goes, we can address any of the operational things, and as Paul suggested, he's the engineer of record, he should be able to go through and assess, you know, what the operational methodology and maybe some other form of interim monitoring can be, but the -- our basic recommendation is that the thermistor should go in now prior to impounding so that the -- that risk is mitigated.

ACTING CHAIR: Thank you, Holger. Hamlet?

MR. CAVANAGH: Paul Cavanagh. No, I have no further comment.

ACTING CHAIR: Anything else from the Hamlet for BGC?

MR. ROY: Bhabesh Roy. Yes, I'm glad for the discussion, and I understand that

the -- nobody has any concern for issuing the license; that is the one thing probably I understand clearly.

Now, the issue is the thermistor will go to the ground before commissioning or up to commissioning. I understand the Board can make the decision and whatever direction will come to us, and we try to follow. Thank you, Mr. Chairman.

ACTING CHAIR: Thank you. It was just a comment that was just made that -- it was just a general comment that I heard for clarification is that nobody has any problem with the license being issued. That was just a comment that was made, and I don't know, that's not what I've heard yet from all the parties, and I just want to make sure that is clarified, please. Dionne?

MS. FILIATRAULT: Mr. Chairman, that's their interpretation of what they're hearing at this hearing, and that's fine. I think that was the two questions of clarification that I believe you're going to move to shortly here, so that will provide that 100 percent clarification in the Board's mind of what the position of the parties are in that regard, so those two questions will answer that.

ACTING CHAIR: That's what I wanted to

make sure. Okay, Department of Environment had no more questions; Environment Canada had no questions. INAC?

MR. ROGERS: Of Holger?

ACTING CHAIR: Yes, of BGC. So will you please come forward and -- do you have any questions for BGC?

MR. ROGERS: Jim Rogers, INAC. No, we don't have any questions for BGC.

COMMUNITY QUESTIONS BGC:

ACTING CHAIR: Thank you. Is there any questions from the community for what this gentleman there was talking about? Does anybody have any questions for him, not for the Hamlet but for this gentleman here and his presentation?

Okay, Zeke? Do you want to get a thing for Zeke, and he can ask the question?

MR. EJESIAK: Thank you, Mr. Chair. I was listening to this -- I just want to add this as a comment in regards to the issues, same issue. Last August, September 2007, I was involved in building a berm for a fuel tank. We dug in a foundation for the berm to place the berm -- in the bottom of the berm. Like it has to be insulated with sand, but no gravel. Gravel is permeable, and it has to be certain size, thickness of the sand

that we put three layers of lining.

I was involved in constructing it, and we had to place three layers of liners. We could not -- we had to make sure not to have any pieces of stones such as gravel. It has to be pure sand in order to prevent it from if it should get damaged.

I've been following you on this topic, and I just want to help the public here in order to make them more understand. This is exactly what they're talking about. This is the topic. This is more or less in supporting -- in explaining it. This is what the kind of thermal liner they're talking about.

ACTING CHAIR: Thank you for those comments. Anybody else from the community? Ashevak?

MR. EEZEKIU: Mr. Chair, thank you. I'll probably be a little bit long on this, on my question, because I have not heard any comments in the issue I'm about to bring up.

In regards to sewage waste, at certain times, the smell occurs from where they place -- they use the small lake or pond for decanting it. The stench tends to reach this far to our community. Is that going to be the problem on the next one if they're going to be issued with a license?

This usually happens during the -- depends which way the wind is coming from. Can the contaminant contaminate human health? If it -- I was wondering if it can impact on our health, will it contaminate the wild game also, such as ravens? There's always scavengers around that area, and they bring what they scavenge into our community. They can spread what's contaminatable.

And sometimes we have dry meat in our community here, right in the community here in Cape Dorset. Sometimes they come too close to our houses where we have dry meat, and wouldn't that be -- maybe they can spread the -- they can contaminate our natural foods on the nature. I don't know if I make any sense with my question or not.

ACTING CHAIR: No, you made good sense. I just need to know who wants to answer it. It could be a public health or environmental thing, but I just wonder who really would like to answer that. I need some help here. Would somebody please tell me who I should be asking to answer that question? I know what he's saying, and I appreciate his comment; I just need who can answer him.

MS. FILIATRAULT: It's a difficult question to answer on whose responsibility it is to answer

this question. It is outside the mandate of this Board to deal with wildlife and to deal with public health issues.

I would suspect in the siting of the sewage lagoon that there likely is no, I guess, airborne public health issues with residents of the community. However, I'm not the public health expert, but I would recommend that it's Public Health that would address that particular issue of other impacts to our health, and that's the Government of Nunavut, and I'm not going to put Mike on the spot again because he's not here with Public Health.

ACTING CHAIR: No, I appreciate that, and I'm just saying maybe direction perhaps to the Hamlet, because there has been a concern brought up by a community member advising there's a problem, and all we're asking you is to please get that information for this gentleman, Ashevak, and get back to him and give him an answer about it, even if it's Public Health or whoever it is.

This is not a Water Board issue, so we can't deal with that, but I just want to make sure that your question is answered. Right?

MS. FILIATRAULT: My apologies, Mr. Chairman, can you repeat that last little bit

of your statement?
ACTING CHAIR: I just want to make sure his question is answered. Like he has a question, a concern, and we appreciate his comments. I just don't want to leave him out there. I mean, we're directing through the Staff to find out, I mean, whether it's through the Hamlet or through the Government of Nunavut, their other departments, that there is problems. So it's not just here, as Mike's probably aware, it's all across all of Nunavut because there is other sewage lagoons elsewhere, so go ahead.
MS. FILIATRAULT: Thank you, Mr. Chairman. Then I would suggest, Mr. Chairman, that when they did the site selection process for determining where these facilities -- what facility to use and where to site this particular facility, they would have done an environmental assessment component or Dillon would have.

The environmental assessment process is somewhat outside our scope, but Dillon may be able to provide some indication, and I'm not sure that he specifically will be able to give an answer, but there was an -- there should have been an environmental review done when they were doing site selection.

ACTING CHAIR: That's what I wanted to hear, thank you. Hamlet? We'll ask for Colin perhaps. You can't pass the buck; you're the only guy here.

MR. JOYAL: Why is everybody looking at me? Thank you, Mr. Chairman, Colin from Dillon.

Yes, I don't have that information present in the body of information at this hearing. What I do have in front of me though, just to -- I acknowledge that I'm not directly answering the question but perhaps to add to the body of information and provide some background or reassurance is there's several guidelines and reports that have been issued for different treatment methods in the north, specifically in the north. INAC has a sewage treatment best available technology report issued from 2001. There's other comments that have been made about other lagoons in other communities. So just to provide some assurance that what we're proposing is technology that's used elsewhere.

It is acknowledged that there are odor issues associated with sewage, and as mentioned, I agree that it was likely taken into consideration, and dominant winds would have an impact as well as distance from the community. So I guess what I'm

hoping to add here is the knowledge that this technology is used elsewhere and has been investigated and is included in the best available technologies for sewage treatment in the north.

ACTING CHAIR: Yeah, I appreciate that, even though it is not the mandate of the Board, a question has been asked by one of the Elders for clarification, and perhaps when you go back and you do discuss with your other workers and find some information, you can pass it on to the Hamlet, and perhaps they can pass it on to Ashevak because he is going to be living here for many more years. So thank you for that question.

Any other questions from the community? Then I'll call on the Staff. Any questions? Oh, Annie Manning.

MS. MANNING-PICHULA: Mr. Chair, my name is Annie Manning-Pichula (phonetic) of Dorset. We been concerned about -- and us ladies in town here, this summer, we went up there to visit the site. We actually were on top of the higher grounds, and it's -- I just want to know the level or the height, if it's the same as our water source. Will there be any seepage to this -- from the lagoon to the water source through the ground. We were concerned about that, of the women's group, when we

visited the site.

We also live off the roots and plants from the land annually. They're very -- they have nutritional value, and they're part of our culture; we want to conserve them. That's all I have to say.

ACTING CHAIR: Okay, thank you, Annie. Thank you for them comments. They have been asked before, and just to advise you what we were told, there's no way can the sewage go into the water source, because the sewage is here and the water's here, and they can't -- it doesn't run up hill. So hopefully everything what we're hearing before is all okay. Now, I can ask somebody from the Hamlet perhaps just to give a short clarification to make sure I said that right, and I'll ask Colin.

MR. JOYAL: Thank you, Mr. Chairman. Yes, I agree the question came up in the past, but it's come up again. Maybe I won't read the paragraph, but I'll try and pick out the important parts to address your concern.

P Lake, which is where the discharge for the lagoon is located, and T Lake, which is the water source, are located approximately 1 kilometre apart. The elevation of T Lake is 150 metres above sea level, the surface in P Lake is 113, so you've

got 37-and-a-half metres in elevation, with your sewage facility being at the bottom and the water supply being above. So those are important factors.

The possibility of sewage running from P Lake to T Lake is highly unlikely. The sewage would, in essence, have to run uphill in order to reach T Lake. In addition to that, the land mass lying between P Lake and T Lake is significantly higher in elevation, so there's actually a physical barrier of rock between the two, making it physically impossible.

The second path that could be identified extends to the northeast of P Lake, which is blocked by the construction of lagoon berms that will contain the volume of sewage discharges into P Lake. So I hope that helps.

ACTING CHAIR: It does. Thank you very much, Colin. Annie, just so you know, when he's talking 37 metres, that's 110 feet, okay? For us older folks, trying to figure out metres and feet. It's a hundred-plus feet, so that's a quite a ways away, so hopefully it will never happen. Hope that answers your question.

Any other questions from the community? Then I'll move on to Staff. Staff? No questions?

MS. FILIATRAULT: No questions, Mr. Chairman.
ACTING CHAIR: No questions for Holger?
MS. FILIATRAULT: Mr. Chairman, I believe our questions got asked when you sought that clarification previously, so we're good.
ACTING CHAIR: Thank you very much. Bill, do you have any questions for BGC?
MR. TILLEMAN: No, thank you.
ACTING CHAIR: Okay, thank you. Holger? Sorry, I've already dealt with him. If it's quick, I'll let you do it, because I mean I asked for questions, you had none, I moved on, so --
MR. ROY: No, not be --
ACTING CHAIR: The Hamlet?
MR. ROY: This is Bhabesh Roy. Yes, thank you, Mr. Chairman. My question is not in this regard. Before the break, I was asked one of the public to know the water depth of the water source for clarification.

The information actually in my computer. I cannot explore it from here, but I did the measurement by myself. The ice thickness roughly, I think, 1.2 metre. I did in wintertime. I did a bore hole, and then I did the measurement. And probably the water depth roughly 10 metre, but if I

can send this information to SAO so that this information can be available to the public. Thank you, Mr. Chairman.

ACTING CHAIR: Thank you. So you're saying the water depth is roughly 10 feet -- or 10 metres, which is roughly 30 feet; is that correct?

MR. ROY: Yes, plus ice thickness 1.2 metre, so roughly, say, we are talking about 35 feet depth.

ACTING CHAIR: So your lake in Cape Dorset is 35 feet. Thank you very much for that.

Okay, what I'll do maybe is I'll call on Catherine first to do the exhibits and get us back up to date. And, Holger, thank you very much for your presentation, well-received.

PROCEDURAL MATTERS:

MS. EMRICK: Thank you, Mr. Chair. We have a number of items to add to the exhibit list. I'd like to mark as Exhibit Number 9, the INAC presentation, the Hamlet of Cape Dorset P Lake Sewage Lagoon, dated January 23rd, 24th, 2008, hard copy submitted by Jim Rogers.

EXHIBIT NO. 9:
HARD COPY OF THE INAC PRESENTATION, THE HAMLET OF CAPE DORSET P LAKE SEWAGE LAGOON, DATED JANUARY 23, 24, 2008, SUBMITTED BY

JIM ROGERS.

MS. EMRICK: I'd like to mark as Exhibit Number 10, the INAC presentation, Hamlet of Cape Dorset P Lake Sewage Lagoon, January 23rd, 24th, 2008, electronic copy submitted by Jim Rogers.

EXHIBIT NO. 10:
ELECTRONIC COPY OF THE INAC PRESENTATION, HAMLET OF CAPE DORSET P LAKE SEWAGE LAGOON, JANUARY 23, 24, 2008, SUBMITTED BY JIM ROGERS.

MS. EMRICK: I'd like to have marked as Exhibit Number 11, INAC July 14th, 2007, Municipal Water License 3BM-PON0409 Pond Inlet, letter December 6th, 2007, and that was submitted by Jim Rogers. And to mark as Exhibit Number 12, INAC July 16th, 2007, Hall Beach Municipal Water License Inspection 3BM-HAL0308, letter December 17th, 2007.

ACTING CHAIR: Just for clarification, that was not Jim's, that was Andrew's.

MS. EMRICK: Okay, we can have those submitted by Andrew Keim.

ACTING CHAIR: Yes.

MS. EMRICK: So that would be for Exhibit 11 and Exhibit 12, thank you.

EXHIBIT NO. 11:
INAC JULY 14, 2007, POND INLET MUNICIPAL WATER LICENSE INSPECTION 3BM-PON0409, LETTER DATED DECEMBER 6, 2007, SUBMITTED BY ANDREW KEIM.
EXHIBIT NO. 12:
INAC JULY 16, 2007, HALL BEACH MUNICIPAL WATER LICENSE INSPECTION 3BM-HAL0308, LETTER DATED DECEMBER 17, 2007, SUBMITTED BY ANDREW KEIM.

MS. EMRICK: I'd like to mark as Exhibit 13, BGS Cape Dorset Sewage Lagoon Review of Final Submission, dated January 8th, 2008, submitted by Holger Hartmaier.

EXHIBIT NO. 13:
BGS CAPE DORSET SEWAGE LAGOON REVIEW OF FINAL SUBMISSION, DATED JANUARY 8, 2008, SUBMITTED BY HOLGER HARTMAIER.

MS. EMRICK: To mark as Exhibit Number 14, BGC Executive Summary, Cape Dorset Sewage Lagoon, Review of Final Submission, January 17th, 2008, Executive Summary, Holger Hartmaier.

EXHIBIT NO. 14:
BGC EXECUTIVE SUMMARY, CAPE DORSET SEWAGE LAGOON, REVIEW OF FINAL SUBMISSION, DATED JANUARY 17, 2008, SUBMITTED BY HOLGER

HARTMAIER.
MS. EMRICK: And Exhibit Number 15, BGC Independent Geothermal Evaluation of Proposed Design, January 17th, 2008, submitted by Holger Hartmaier.
EXHIBIT NO. 15:
BGC INDEPENDENT GEOTHERMAL EVALUATION OF PROPOSED DESIGN, DATED JANUARY 17, 2008, SUBMITTED BY HOLGER HARTMAIER.
MS. EMRICK: And then for -- to mark as Exhibit 16, Caduceon Certificate of Analysis Report to Hamlet of Pond Inlet, and it's number B07-32335, October 30th, 2007, submitted by Patricio Fuentes.
EXHIBIT NO. 16:
CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET OF POND INLET, NUMBER B07-32335, DATED OCTOBER 30, 2007, SUBMITTED BY PATRICIO FUENTES.
MS. EMRICK: To mark as Exhibit Number 17, Caduceon Certificate of Analysis Report to Hamlet of Pond Inlet B07-34682, November 20th, 2007, submitted by Patricio Fuentes.
EXHIBIT NO. 17:
CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET OF POND INLET, NUMBER B07-34682,

DATED NOVEMBER 20, 2007, SUBMITTED BY PATRICIO FUENTES.

MS. EMRICK: To mark as Exhibit 18, Caduceon Certificate of Analysis Report to Hamlet of Pond Inlet, Report Number B07-31475, dated October 23rd, 2007.

ACTING CHAIR: Sorry, if I can, Catherine, I have to take just a 5-minute break.

MS. EMRICK: Okay, so that was submitted by Patricio Fuentes.

EXHIBIT NO. 18:
CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET OF POND INLET, NUMBER B07-31475, DATED OCTOBER 23, 2007, SUBMITTED BY PATRICIO FUENTES.

(BRIEF ADJOURNMENT)

ACTING CHAIR: Okay, thank you for coming back. Bill, are you still there?

MR. TILLEMAN: Yes, sir.

ACTING CHAIR: Thomas?

THE CHAIR: Yes.

ACTING CHAIR: Thank you. So, Catherine, do you want to finish, please?

MS. EMRICK: Thank you, Mr. Chair. Catherine Emrick.

I would like to mark as Exhibit Number 19 the

Caduceon Certificate of Analysis Report to Hamlet of Pond Inlet, Report Number B07-34075, November 12th, 2007, submitted by Patricio Fuentes.

EXHIBIT NO. 19:
CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET OF POND INLET, NUMBER B07-34075, DATED NOVEMBER 12, 2007, SUBMITTED BY PATRICIO FUENTES.

MS. EMRICK: And finally mark as Exhibit Number 20, Caduceon Certificate of Analysis Report to Hamlet of Pond Inlet, Report Number B07-33259, October 31st, 2007, submitted by Patricio Fuentes.

EXHIBIT NO. 20:
CADUCEON CERTIFICATE OF ANALYSIS REPORT TO HAMLET OF POND INLET, NUMBER B07-33259, DATED OCTOBER 31, 2007, SUBMITTED BY PATRICIO FUENTES.

MS. EMRICK: Thank you, Mr. Chair.

ACTING CHAIR: Thank you very much.

Dionne, just for myself again, because so many things were told to me during the break, I have a line here to ask a question, and I forgot what it was. I know I have to do these couple questions, but there was something before I started here. I don't know what it was.

Okay, I was just going to give one final opportunity for the community members who are here, in case they had any other comments or questions that they want to bring to the components or to any interveners or to the Licensee, that was one, and the second one is -- I know what the line is now -- the Government-DOE, Department of Environment, and Environment Canada are leaving on the plane, and they would like to have their presentation comments or their closing comments read into the record by a Staff member. I don't think that's really a problem. Dionne?

MS. FILIATRAULT: Dionne Filiatrault. Thank you, Mr. Chairman.

There's no problem us reading their final statements into the record, but before they do leave, there were the two questions that you deferred to today that need to be asked to those two parties before they depart.

ACTING CHAIR: I'm getting to that; I just had to ask the community first. Looks like there is no questions, so as I mentioned yesterday at the close of the first day and knowing that we would be probably closing today, which I'm sure we will be, it was a comment -- there was two comments that I made yesterday, and I'm going to do the roll

call individually by the various interveners.

And question one is I intend to ask, which I am asking, I'm asking each party to comment on whether the Board should consider merging the renewal of the existing license, which is currently underway, with a license amendment for the newly constructed sewage lagoon should we decide to do so. So that's question one.

Question two is the Board will ask each party to advise the Board whether or not the party recommends that the Board issues a license amendment for the newly constructed sewage lagoon.

So it's a two-part question. So I'm going to do a roll call, and I'm going to ask the individuals the two questions, and question one will be yes or no, and question two will be yes or no. And I guess, Mike, Government-Department of Environment will go first as usual.

MR. ATKINSON: Mike Atkinson, Government of Nunavut-Department of Environment.

I've got two words to answer both questions. Question one -- I'm going to use more than two words -- I have to confess to not fully understanding the kind of -- the implications of the first question in terms of the administration and enforcement of the license, but the Applicant's

applied for a renewal that incorporates other components that were not being discussed at the moment, and I see no reason why that renewal should not be issued followed by an amendment to take account of the current proceedings.

The answer to the second question about should the license be issued, I believe I answered that yesterday in my intervention, and I haven't changed from that position.

ACTING CHAIR: Can I just hear, Mike, what that was, yes or no?

MR. ATKINSON: It was yes, subject to the recommendations.

ACTING CHAIR: Thank you just for the record. Thank you very much. Environment Canada?

MS. SPAGNUOLO: Thank you, Mr. Chair. Collette Spagnuolo with Environment Canada.

In regards to the first question, given that the amendment application may affect some of the terms and conditions in the existing expired license such as the operation of the three-celled lagoon, Environment Canada recommends that the renewal application be processed first and then be amended as required based on the amendment application, similar to the Government of Nunavut's recommendation.

We do recommend that the duration of the renewal be limited so that the Hamlet, the Board, and the interveners are given the opportunity to evaluate the effectiveness of the P Lake system. And I'd just like to qualify that by saying our recommendation to process the renewal application is based on receiving a commitment from the Applicant that they will come into compliance with all of the terms and conditions in the existing expired license.

ACTING CHAIR: Thank you. And Item 2?

MS. SPAGNUOLO: In regards to question number 2, a response is included in our closing statements which will be read into the record, but for your benefit right now, Environment Canada sees no problems with issuing the amendment pursuant to the recommendations that we have made and that the other interveners have made here today.

ACTING CHAIR: Thank you very much. INAC?

MR. ROGERS: Jim Rogers, Indian and Northern Affairs Canada.

I can never say anything in two words. I do agree with Environment Canada and the Government of Nunavut that the renewals should be issued, first, for the short term, and the amendment, if the Board

agrees to pass the amendment, the amendment passed afterwards and included as part of the renewed license.

As for the recommendation of the amendment as it was in our presentation, INAC agrees that the amendment can be issued meeting the conditions that were laid out in our presentation and a confirmation from the applicant that they will meet the requirements of the existing license to come into compliance.

ACTING CHAIR: Thank you, Jim. BGC?

MR. HARTMAIER: Thank you, Mr. Chair. Holger Hartmaier, BGC Engineering.

If I may, I'd like to abstain from the first part with respect to the merging of the two applications. BGC has not been involved in any of the review of the existing structure and the conditions under which it's being operated, so we'd rather not make a yes-or-no pronouncement on that one.

With respect to the second question of the existing license -- or the license amendment for the new sewage lagoon, we see no problem in proceeding with that.

ACTING CHAIR: Okay, thank you. I think that is the only people I need to ask that to. And

the Hamlet, sorry? Sorry, I'll ask the Hamlet. You've heard the two points; would you please answer to both points?

MR. ROY: This is Bhabesh, Municipal Engineer, CGS.

Mr. Chairman, the first question is the -- the first one, the existing -- renewal of the existing license and amendment of the new one. I think the new one can be implemented on the basis of the existing one because the -- if you go -- if the Board will issue a new license for the new facility, then with that license, we cannot use the existing facility, so I think the -- it should be a wise decision to renew the existing which we applied, and then on the basis of the existing license we amend, accommodating the P Lake lagoon.

ACTING CHAIR: On the second point?

MR. ROY: As I think I already indicated, that the second one cannot go independently, otherwise, the existing system will be left out.

ACTING CHAIR: Point taken. But at present, supposedly there is no license, but they are applying for a Type B license, and that's what we're here for is to approve the Type B license -- amendment to the Type B license, and that

includes -- they don't have a Type A. They have a Type B. So he's saying that we can do everything at once, different people or not. Is that what you want to hear? No, I mean we want to hear, but I mean is that what you're asking me to do, may I ask, sorry, Dionne?

MS. FILIATRAULT: Yes, Mr. Chairman, that's fine. The response that he provided is sufficient clarification.

ACTING CHAIR: Thank you. Then I will carry on. I guess, Mike, thank you. I know you've got to catch a plane.

MR. KEIM: We're delayed an hour; we're good.

ACTING CHAIR: Oh, we're good; we're delayed an hour anyway, so there's no --

MR. KEIM: 4:30.

ACTING CHAIR: 4:30, so no need to rush then. Okay, presentation by any other person, association, agencies who have advised me that they wish to speak; I had none.

Questions of other persons, association, agencies, et cetera, by the parties; I take it there's none.

And upon completion of our -- now at the completion of the presentations by all parties, the

Board will give the Applicant an opportunity to reply to what is said. It's not your closing remarks, is do you have any final comments. Sorry, Dionne?

MS. FILIATRAULT: Mr. Chairman, just before we proceed to the closing remarks from the -- 14, yes, is that not where you just talked about Agenda Item 14, that's the closing remarks from the Proponent.

ACTING CHAIR: Oh, sorry, you told me they could have a reply, and then I will advise them they're going to have a closing remark after.

MS. FILIATRAULT: Oh, okay. And I just want to confirm that we kind of moved quickly into those two clarifications. Did we actually confirm from the local people that nobody had any additional questions?

ACTING CHAIR: We asked that before, yes, and nobody had any questions. Thank you very much.

I'll just ask it one more time. Does the community members have any more questions for anybody in this room, because once this is done, we're finished, and we'll actually close this meeting. No, I think everybody is good.

So basically I'm just trying to find out does

the Licensee have an opportunity to do a reply now, or just strictly a closing remark only? Go ahead.

MS. FILIATRAULT: Mr. Chairman, Dionne Filiatrault.

There were two points of clarification that the Applicant had committed to provide us with today on a series of questions that were provided, so before you get into their reply, they should provide that at this point. They can reply to any comments at this point, and it's not necessarily a closing. Then they will hear the closing of all the parties and make a final closing statement.

ACTING CHAIR: So basically, what are the two questions? One was the depth of the water source, that was one that has already been answered, or is there two other questions? What are the questions again? I don't know what they are.

MR. HOHNSTEIN: Thank you, Mr. Chairman. David Hohnstein.

It was a question I had posed yesterday regarding the slope alongside of the lagoon and the drainage coming into that lagoon and, I guess, the effectiveness of the deflection berm and where that water would be going. I think Dillon had deferred that to just confirm their response.

ACTING CHAIR: And what's the second question, David?
MR. HOHNSTEIN: It was all-encompassing in that one, yeah.
ACTING CHAIR: Colin, are you ready to answer that question?
MR. JOYAL: I'll give it a shot. Thank you, Mr. Chairman. Colin Joyal, Dillon Consulting.

In response to that, I'll just defer or I'll draw your attention to Item 30 in the November 13th, 2007 letter to the Water Board, and maybe I'll just -- I can just read through it. It pertains to issues that are related to the question. "Description" -- and this was an issue that came up at the technical hearing: (As Read)

> Ditch liner detail provided by the Applicant does not prevent seepage from entering the lagoon, since it does not go below the active zone. Seepage inflow is noted at site through the recently completed berm.

So that was an issue that came up October 10th.

And the response submitted was that: (As Read)

> The berm and cutoff trench were, as mentioned in the BGC memo, recently

completed and, for this reason, were in an unfrozen state. Thus, the reported seepage noted in the 2007 fall was likely through the still unfrozen active layer and the unfrozen cutoff trench beneath the berm. This will be monitored. If the ditch seepage is present at an unacceptable rate, remediation action will be undertaken. Of note is the constructed containment is approximately 4,000 cubic metres greater than the design requirements. Also in the first years of operation, the lagoon has 38,000 cubic metres of spare hydraulic capacity because of hydraulic retention is designed for a 20-year life. Should there be seepage through the ditch in the first several years of operation, it will not adversely impact the operational lagoon.

So to address the question, there is a detail given on Drawing 110, Detail 5 of the north berm section. There is a response here that it will be observed, and if there is any seepage, it will be monitored, or if there is any overflow of that ditch, it will be monitored in regards to the hydraulic capacity of the facility. Because it's designed for a 20-year horizon, and we're in year

one, it should not adversely affect the operation of the lagoon.

With respect to the design of those -- of that ditch, the contours and topography in the area was taken into consideration. The design calculations are not provided in the design reports at this time.

ACTING CHAIR: Thank you very much. Okay. Sure, Holger.

MR. HARTMAIER: Holger Hartmaier with BGC.

I just wanted to follow up on Colin's comments on that detail. The detail that is being shown is the detail that we had commented on at the October 1st meeting, and it obviously is not working as far as the -- providing an adequate cutoff through the active zone. The problem is the berm section for the road is not thermally designed to bring the permafrost up into the base of the bedrock where the seepage is occurring, so we still have an issue with respect to making sure that the -- you know, some kind of a revised ditch detail is provided that's going to work. So that was in our intervention.

The other comment is that, yes, the lagoon does have adequate capacity to store any runoff water

that may be seeping into it, but be aware that this represents a change in the operation of the reservoir, which is exactly one of those trigger points that we want the consultant to be aware of. If you're suddenly storing a lot of spring runoff in the lagoon, impounding water, that does change the operational aspect of the reservoir with respect to the amount of water that's in the lagoon and the potential impact on the geothermal property. So that's an automatic trigger for some kind of a geotechnical review of the operations.

ACTING CHAIR: Thank you. Hamlet?

MR. JOYAL: Thank you. Colin Joyal, Dillon Consulting.

Just to be clear, the intent is not to modify the operation of the facility. The intent is to address the situation and monitor it and provide a response if necessary. That comment is related to the ability to have an opportunity to observe conditions and monitor it without at that time adversely affecting the performance of the lagoon.

ACTING CHAIR: Thank you. Okay, any other reply -- oh, Jim, sorry, INAC?

MR. ROGERS: Just a quick clarification. Was that the north dike that you were suggesting that detail was for, or for the

south road channel?
ACTING CHAIR: Hamlet?
MR. JOYAL: Thank you. Colin Joyal, Dillon Consulting.
There are details provided on Drawing 110. Detail 5 is for the north berm section. On the south road, that issue was brought up earlier, and that is one of the details that was issued in a change-order and will be included in the as-built drawings if they're re-issued.
ACTING CHAIR: Thank you very much. Any other replies? No, okay. We'll move on. We're at the stage now where the -- final closing. Now, I understand that Department of Environment did not go. Would you still wish to sit there and have somebody from our Staff read it for you, or do you want to do it?
MR. ATKINSON: Sure.
ACTING CHAIR: Mike, would you please come up and do it. What I'm going to do if I can, I'm going to call on DFO (sic), Environment, INAC, and then there's going to be an hour break because the Licensee needs at least an hour to prepare their final closing remarks, which means, hopefully, we'll be back here by 4 if we can get through them fairly quick, if not, 4:30 because we

leave on a plane coming in too, so we want to get out. So do I call them right now or Dionne first?
MS. FILIATRAULT: It may be worthwhile, Mr. Chairman, to clarify if the Proponent still needs an hour. They did have the lunch hour and some breaks in between here that maybe they don't need a whole hour and just to give you a better idea.
ACTING CHAIR: Yes, no, they did come back after lunch and told me they would need an hour. Do you still need an hour or a half an hour is sufficient?
MR. ROY: Half hour.
ACTING CHAIR: Half hour, good; we've gained a half an hour. Michael, please proceed.
CLOSING STATEMENT BY GN-DOE:
MR. ATKINSON: Thank you very much. Mike Atkinson, Government of Nunavut-Department of Environment.

Just in closing, I would add that since 2006, the Government of Nunavut-Department of Environment has been involved in the review of the proposed amendment to the Hamlet of Cape Dorset Type B water license.

At this hearing, we have provided final comments and recommendations for the license

conditions in matters relating to seepage, geothermal analysis, operation and maintenance, discharge criteria, sludge management, and use of the current treatment system as a contingency measure, abandonment and restoration, and monitoring.

We've also listened closely to the dialogue here and the information presented by the Proponent and other interveners and still stand by all of the recommendations that we provided to the Board in our intervention. We also stand by our final conclusion that that was subject to the recommended license conditions and those suggested by other interveners. The Board should proceed with the issuance of the amendment.

Finally, I would say that Department of Environment would like to thank the Water Board for the opportunity to present information to them and to the Community of Cape Dorset for their valuable contributions and hospitality during these hearings. Thank you.

ACTING CHAIR: Quyannamiik. Environment Canada? Okay, she has already left. Would somebody please read their presentation into the record. State your name for the record, and who you're representing, I guess.

CLOSING STATEMENT BY EC:
MR. HOHNSTEIN: Thank you, Mr. Chair. David Hohnstein. I've been asked to read into the record, Environment Canada's closing remarks for the Cape Dorset water license amendment: (As Read)

Environment Canada would like to thank the Nunavut Water Board for the opportunity to intervene at this hearing and the Hamlet and the people of Cape Dorset for their hospitality during our stay.

Environment Canada is sympathetic to the concerns expressed by some of the citizens of Cape Dorset regarding the location of the P Lake lagoon. Environment Canada hopes that these concerns highlight to the Department of Community and Government Services and the Hamlet of Cape Dorset the importance of public consultation during the planning and the design stages and that this lesson will be applied to future municipal projects in Nunavut.

Environment Canada also recognizes that the proposed sewage treatment system will result in a significant improvement over the current treatment of municipal waste

water in Cape Dorset. However, successful treatment of the waste water will be highly dependent on the operation and maintenance of the lagoon by the Hamlet. Environment Canada respectfully requests that the Board consider the recommendations made in our written intervention and our presentation, as we feel these recommendations will help ensure the protection of the receiving environment.

In particular, monitoring of the effectiveness of the waste water treatment in both the P Lake lagoon itself as well as the ancillary components downstream of the lagoon and the inclusion of an appropriate test to provide an indication of toxicity are necessary to provide assurances that Telik Inlet will be protected.

The Board should note that Environment Canada has received the letter from CGS, dated November 13th, 2007, and our recommended terms and conditions are in addition to the responses provided by CGS in their letter. Provided the terms and conditions recommended by Environment Canada and interveners are included in the

license, Environment Canada recommends that the Nunavut Water Board approve the license subject to these terms and conditions. Thank you. Environment Canada.

ACTING CHAIR: Thank you very much, David. I don't think the Staff has any closing remarks; never do. Bill, do you have any closing remarks?

MR. TILLEMAN: No, thank you.

ACTING CHAIR: Sorry, I missed INAC.

CLOSING STATEMENT BY INAC:

MR. ROGERS: Thank you, Mr. Chair, Jim Rogers.

I apologize to the Board for being long-winded. As the Board knows and the Hamlet knows, the Hamlet is not in compliance with their existing, expired license, which the Board has raised for renewal.

As the enforcer of the terms and conditions of a license issued by the Nunavut Water Board, INAC still has some discomfort with the renewal unless we, and I presume the Board, has confidence that the Licensee will strive to come into compliance with the existing terms and conditions.

INAC requests that the Licensee contact the INAC inspector for assistance in reaching this compliance. INAC also believes that the designs

and construction of the P Lake lagoon cannot be proven to be adequate until tested through operation and, therefore, the reaction of the lagoon, the berms, and the other infrastructure.

Monitoring should provide sufficient data or information to indicate what is happening before, then during operation. To improve our confidence, INAC believes monitoring would be prudent, especially monitoring of the berm and ground foundation temperatures with near continuous measurements, inputs into the lagoon either through recording of inputs, such as the number of truckloads, the amount of precipitation falling, and any overland flow that flows into it, or measuring the levels of the water upstream, downstream, and doing a water balance, monitoring of water quality downstream of the lagoon to meet discharge limits, and also to indicate if seepage is occurring through the berm, and monitoring of the rates of decant. Some of this monitoring should not wait until the Board has issued a decision. We are missing a window of opportunity.

INAC also believes that the final surveillance network points under the surveillance network program sites for the amendment or the P Lake amendment be set up in consultation with the INAC

and Environment Canada inspectors, and then that these points, once identified and marked, would be used by the Hamlet, by the inspectors, and then the Water Board would be informed.

Operation: If the Applicant is willing to take the risk and with the low volumes to be inputted into the lagoon if operation begins within the next 60 days -- such as April 1st, so we feel about 25 to 30 cubic metres would enter the lagoon if there was just the input from the sewage -- INAC will not oppose the issuance of the amendment and the beginning use of the lagoon, but it is a risk. Monitoring would assist in limiting that risk and allowing you to develop contingencies.

Finally, I would like to suggest again to the Hamlet -- or that INAC is willing to work with the Hamlet, the Government of Nunavut, the Board and its Staff on the water and licensing process and enforcement of any issued or to-be-issued licenses. Phone us, we're willing to work with the process to improve it for later on. And that's my comments. Thank you, Mr. Chairman.

ACTING CHAIR: Thank you, Jim. We will now adjourn until quarter to 4, gives a little more than half an hour, but we'll adjourn to quarter to 4. We will come back with the closing of the

Applicant.

Once that is done, I will do our, the Board's, closing remarks, and then we will adjourn. So we will go away for half an hour and come back at quarter to 4.

(PROCEEDINGS ADJOURNED AT 3:09 P.M.)

(PROCEEDINGS RESUMED AT 3:47 P.M.)

ACTING CHAIR: We'll come back into regular session. I just want to do a roll call with Bill. Are you there, sir?

MR. TILLEMAN: Yes, sir.

ACTING CHAIR: Thomas, are you there?

THE CHAIR: Yes.

ACTING CHAIR: Bill, are you there?

MR. TILLEMAN: Yes, sir.

ACTING CHAIR: Sorry, I didn't hear you. Thanks, Bill.

Okay, is the Licensee now ready to do their presentation? I'll call on the Hamlet, and I think it's going to be a two-part. Let's just do it -- we'll do the first one. And Mr. Palluq will do the second one, Johnathan. So please proceed, Art.

CLOSING STATEMENT BY HAMLET:

MR. STEWART: Thank you, Mr. Chairman. Art Stewart, SAO, Hamlet of Cape Dorset.

As the Applicant on behalf of the Mayor and

Hamlet Council, I wish to thank the Members of the Water Board, the Water Board Staff, stenographer, translators, interveners, consultants, CGS, and those participating by phone and the public for their input into this hearing.

Our Hamlet is in desperate need of a solution to our sewage problems, and we strongly feel that the P Lake lagoon will solve these problems. Each of the interveners have suggested that a water license be granted subject to certain conditions. We are confident that these conditions can be met if they are reasonable, practical, attainable, and enforceable.

We respectfully request that a license for the P Lake facility be granted. Thank you very much, Mr. Chairman.

ACTING CHAIR: Thank you, Art. Johnathan?

MR. PALLUQ: Johnathan, Assistant Regional Director for CGS.

I would like to thank everyone first, Nunavut Water Board, and the Board of directors, their Staff, and I would like to thank the Hamlet Staff, community, the public. I thank you for your hospitality in Cape Dorset, and I would like to also thank the interveners: Department of

Environment, Environment Canada, INAC, BGC, Dillon, and AMEC, also our staff here.

We have been having a discussion the last two days what is going to be purposeful for the Community of Cape Dorset, the sewage lagoon when the P Lake -- lagoon for P Lake. I'm sure it's going to be purposeful for the Community, and it has to be built properly.

And it's going to be -- the monitoring program's going to be an effect, and it's going to be ongoing in order to be able to see anything, if it's working, if it's operable, and to maintain it, and it's for the sewage waste and before it spreads to the ocean to other -- and the surroundings of the environment here, to protect it. It's called O & M manual, operation and maintenance, that has to be -- it's going to be part of it.

And the outcome is everybody's in favour to renew the license, and if they want to make a recommendation that's going to be part of the license, and would they want to -- it's going through Hamlet's application, and that's going to be enforced.

We still have to protect the land, the environment. Presently, it has to be -- it has to -- we have to follow the regulations to protect

the land and the ocean. And the P Lake presently, that's going to be a good choice, and we'd like to see the license to be granted to the Applicants, and we also like to see the license to be renewed. And if it has to be renewed again for such as when the decant, if it should get deep, it might get damaged by the wind. We'd like to remain to work closely with the regulators and their staff, and we like to work closely with them when we use to communicate with one other.

We are willing to work with regulatory staff to work out the details of the conditions on that renewal license, and also for the Nunavut Water Board, and if there are any conditions achievable and practical. It has to be practical, the conditions, the recommendation that you will be making.

I would like to thank everyone here again and Inuit from this community and the residents here who did not (sic) show up for the meeting. This is my conclusion. Thank you.

ACTING CHAIR: Thank you, Johnathan. We are now onto Agenda Item 15, before I proceed, I would like -- I always hate to say I would like -- I want to call on Thomas and Bill, if they have any comments or require any more clarification. I'll

start with Bill.
MR. TILLEMAN: No, sir, thank you very much, and thanks to the parties. No comments or clarifications from me, sir. Thank you.
ACTING CHAIR: Thank you. Thomas?
THE CHAIR: I don't have any questions at this time or require any clarifications. Thank you.
CLOSING STATEMENT BY NWB BOARD:
ACTING CHAIR: Quyannamiik. On behalf of the Board Members, I would like -- I want to thank the parties, including especially the Applicant; the Staff; the interveners; our interpreters, Mary Hunt and Ben Kogvik; our court reporter, Karoline Schumann, thank you for your indulgence; PIDO, Trevor Bourque; our local page, Dana Pootoogoo; and especially all the Community Members and the Elders for their valued participation at this hearing. I know you're my family and you're my friends, and quyannamiik for coming.

Thanks also to the Hamlet of Cape Dorset, especially Art Stewart and the Mayor, Fred Schell, and the Cape Dorset Suites, Timoon and Christine, for their outstanding hospitality and patience with the Board in dealing with weather-related

challenges.

As we are at the close of the hearing, I will make some comments to let the parties know what happens next.

I now close the hearing record for the application for amendment submitted by the Hamlet of Cape Dorset. What this means is no additional information will be accepted on this application prior to the Board making a final decision. The Board will make its decision on the application in due course consistent with usual time lines for issuing its decision.

Have a good afternoon, safe travel home, especially for the visitors to Cape Dorset. Please come back. It's a great community to come to.

I now declare this hearing closed. We will have a closing prayer by Lootie Toomasie. Quyannamiik.

(CLOSING PRAYER)

(WHICH WAS ALL THE EVIDENCE TAKEN AT 3:59 P.M.)

I, Karoline Schumann, Court Reporter, hereby certify that I attended the above Hearing and took faithful and accurate shorthand notes, and the foregoing is a true and accurate transcript of my shorthand notes to the best of my skill and ability.

Dated at the City of Calgary, Province of Alberta, this 31st day of January, 2008.

_____

Karoline Schumann, CSR(A)
Official Court Reporter

EXHIBITS

PAGE NUMBER: