NUNAVUT WATER BOARD

Doris North Gold Mine Project Type "A" Water Licence Amendment Application No. 2AM-DOH1323

TECHNICAL SESSION/COMMUNITY SESSION

VOLUME 1

Cambridge Bay, Nunavut

September 13, 2016

TABLE OF CONTENTS

Proceedings taken at Cambridge Bay Community Hall, Cambridge Bay, Nunavut

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September 13, 2016

NUNAVUT WATER BOARD

T. Kabloona	Chair of Hearing
M. Mrazek	Member
M. Nortok	Member

NUNAVUT WATER BOARD STAFF

T. Meadows	Legal Counsel
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D. Hohnstein	Director of Technical Services
S. Aredes	Technical Advisor
I. Porter	Licensing Administrator
B. Kogvik	Board Secretary/Interpreter
H. Ohokannoak	Interpreter

TMAC RESOURCES INCORPORATED/LICENSEE

J. Roberts	TMAC Resources VP Environment
A. Buchan	TMAC Resources Director of Community Relations
I. Evalik	TMAC Resources IIBA Liaison
S. Hamm	TMAC Resources Project Manager
O. Curran	TMAC Resources Director of

		Environment
	M. Rykaart	Engineering Consultant/SRK Consulting
	M. Henry	Environmental Consultant/ERM Consultants
	N. Bishop	Environmental Consultant/ERM Consultants
	C. Kowbel	Legal Counsel
	KITIKMEOT INUIT ASSOCIATION	
	J. Roesch	Senior Hope Bay Project Officer
	J. Donihee	Legal Counsel
	INDIGENOUS AND NORTHERN AFFAIRS CANADA	
	K. Costello	Director of Resource Management
	D. Abernethy	Regional Coordinator, Water Resources
	S. Forte	Water Management Coordinator
	A. Tariq	Regulatory and Science Advisor
	T. Carroll	Legal Counsel, Department of Justice Canada
	ENVIRONMENT AND CLIMATE CHANGE CANADA	
	M. Dahl	Environmental Assessment

		Coordinator
	A. Wilson	Water Pollution Specialist

INTERPRETERS/TRANSLATORS

H. Ohokannoak	Inuktitut Language Interpreter
R. Dempster	Sound Technician
S. Anderson, CSR(A)	Official Court Reporter

(PROCEEDINGS COMMENCED AT 9:13 AM)

Opening Remarks by the Nunavut Water Board Chair

THE CHAIRPERSON: Good morning, and welcome to the public hearing for the amendment application by the TMAC Resources Incorporated in relation to Licence 2AM-DOH1323 which authorizes the use of water and the deposit of waste associated with the Doris North Gold Mine Project and submitted.

My name is Thomas Kabloona, and I'm the Chair of the Nunavut Water Board, and I am the Chairperson for today's public hearing.

Before we proceed with the hearing, please us begin with an opening prayer by Henry Ohokannoak.

(Opening Prayer)

THE CHAIR: Thank you, Henry.

On behalf of the Nunavut Water Board, I welcome you to the community of Cambridge Bay. Now, to provide some background and set the stage for the hearing, the Nunavut Water Board, which I shall refer to as "the Board" or "the NWB" is an institution of public government created under Article 13 of the Nunavut Land

Claims Agreement.

THE NWB is responsible for the use, management, and regulation of freshwater in the Nunavut settlement area. The purpose of this public hearing is to review an application brought by TMAC Resources Incorporated, whom I shall refer to as "TMAC", for the amendment of a Type A water licence in accordance with the Nunavut Waters and Nunavut Surface Rights Tribunal Act.

Pursuant to Section 13.3.6 of the Nunavut Land Claims Agreement and Section 29 of the Nunavut Waters and Nunavut Surface Rights Tribunal Act, the Board has delegated its power to dispose all matters related to amendment application for Type A Licence Number 2AM-DOH1323 including the conduct of this public hearing to a panel of the Board, which is referred to "P13".

I will be chairing this panel, and with me today are -- members of the panel are Board members Ross Mrazek to my right, and to my left, Makabe Nortok. Several staff members who have contributed to the NWB's administration and the technical review of the application are present, along with legal counsel to the NWB, and I will introduce the individuals attending today. Stephanie Autut, Executive Director; David Hohnstein, Director of Technical Services; Sonia Aredes, Technical Advisor; Ida Porter, Licensing

Administrator; Teresa Meadows with Shores Jardine LLP, legal counsel to the Board.

In addition, we have two interpreters available for simultaneous interpretation, Ben Kogvik, secretary for the Board, and Henry Ohokannoak who is from Cambridge Bay.

For audio support we have Ryan Dempster from Pido Productions with us. If you have any -- experience any difficulties with your headsets, he will be able to provide assistance.

To ensure an accurate record of these proceedings is kept, we have with us a court reporter, Sara Anderson, from Dicta Court Reporting. To assist Sara, I'd ask that all parties please state their name prior to speaking.

Before I provide an overview of this application and what to expect today during this public hearing, there are some important housekeeping items for everyone here. First, as indicated earlier, there will be interpretation available throughout the hearing. Earpieces can be obtained from the table located just by the door as you enter this room. Channel 2 broadcasts English. Channel 4 broadcasts Inuinnaqtun. And when you are speaking to the microphone, please turn off your earpiece to avoid feedback. And floor is Channel Number 1.

Second, the Board will appreciate if everyone, including the applicant, interveners, and members of the public sign in on the sheets located at the table as you come into the hall. This is an important record of the attendees at this public hearing, and we appreciate your help in making sure it is complete.

The washrooms are located just as you enter the hall, and the exits are located at the side and back of the hall. There will be coffee, tea, and snacks located at the tables along the right side of the hall available throughout the hearing during breaks.

I would also like to remind everyone to please turn off your cell phones.

Finally, to assist both our court reporter and our interpreters, please wait to have a microphone before you speak. Then state your name. Speak clearly and slowly to -- avoid the use of abbreviations. We appreciate your assistance in making sure your comments are recorded and the Board's recording of the proceedings is accurate and complete.

I would like to notify participants that media is present at this meeting. While we are happy that the media's here, I will ask on behalf of the Board that parties not make any comments regarding the Board's potential conclusions on the matter in any way. The Board cannot and does not comment on any matter before

it reaches a decision. In the past, parties in other proceedings have approached the media prior to the release of the Board's decision suggesting comments about what the Board is going to do either procedurally or in terms of the final result.

Since the Board cannot comment on pending matters either by confirming or denying the accuracy of statements by others to the media, the Board would appreciate if all parties would refrain from any such comments that may imply a certain action or decision by the Board.

Board members will not discuss the hearing or the matters before the Board with any of the parties or the media. If you have concern about the Board and its practices or procedures, please speak with the executive director, and she will assist you.

Prior to identifying and introducing all the parties in attendance today, I will provide a brief history of the licence that have been issued to the Doris North Gold Mine Project, as well as the current amendment application that is before the Board.

The NWB has issued two licences and two amendments to the Doris North Project, Licence Number 2AM-DOH0713 was issued Miramar Hope Bay Limited on September 19, 2007, with an expiry date of September 30, 2013. The licence allows for the use of 480,000 cubic metres of

water per year and the deposit of waste for a mining and milling undertaking.

On February 20, 2001, the licence was assigned from Miramar Hope Bay Limited to Hope Bay Mining Limited. Amendment Number 1 to Licence 2AM-DOH0713 was issued on August 4, 2010, to allow for relocation of the explosives mixing and storage facility.

Amendment Number 2 to Licence 2AM-DOH0713 was issued on February 15, 2011, to allow for infrastructure expansion.

Amendment Number 3 to Licence 2AM-DOH0713 was issued on January 18, 2012, to allow for that -- changes in the management of waste rock and ore.

On June 18, 2013, the licence was assigned from Hope Bay Mining Limited to TMAC Resources Incorporated.

Renewal Licence 2AM-DOH1322 (sic) was issued to TMAC Resources Incorporated on August 16, 2013, and will expire on August 15, 2023. The licence allowed for the use of 480,000 cubic metres of water per year and the deposit of waste for mining and milling undertaking.

Application before the Board: So those were the previous licences. Now I'm going to move on to the application that is before the Board. As mentioned earlier, the application that is currently before the Board is for amendment of a Type A Water Licence

2AM-DOH1323 issued to TMAC Resources for mining and milling undertaking at the Doris North Gold Mine Project.

The application to amend the water licence, which is the subject of this public hearing, was submitted on June 15, 2015, and consisted of the following documentation: cover letter, project summary and submission outline, project description, NIRB and NWB application documents, water management plans, interim closure and reclamation plan, water management plan, interim closure and reclamation plan, water management plan, waste rock and ore management plan, engineering design documents.

In addition to the initial submission, TMAC provided the following submissions in response to intervener's comments.

2015, TMAC submitted Doris North Mine interim closure and reclamation plan, supporting information on geochemistry, memo on tailings pore water, memo discussing tailings cover, memo discussing mine flooding.

In 2016, TMAC submitted water and load sensitivity analyst (sic), Doris Lake fish habitat, TIA capacity, memo addendum to the closure plan, water and load balance model, results of sensitivity analyst (sic) for TIA and Doris Creek, interim water management plan,

alternate water management strategy.

Effects to water quality arising from mine re-flooding, Doris aquatic effect monitoring program and surveillance network and program revisions. Groundwater management plan and Doris Tailings Impoundment Area operations, maintenance and surveillance manual. Doris amendment interim dyke trade-off study.

The proposed amendment would make changes to the type and quantity of waste to be generated at the site and also requests changes to the water and waste management strategy. The scope of the application for the amendment of the licence is generally as follows: management of saline groundwater inflow originating from mine works, discharge of the saline groundwater to Robert's Bay; a modification in tailings disposition (sic) strategy to include combination of backfill underground for the treated cyanide tailings, subaerial disposition for the gravity flotation tailings within the Tailings Impoundment Area; during operations, the seasonal discharge of compliant effluent from Tailings Impoundment Area, TIA, to Robert's Bay, instead of Doris Creek; an increase in waste rock, domestic waste, hazardous, nonhazardous waste generated by the undertaking as a consequence of extension of mine life from a two to six years of the life of the mine and

increase in the milling rate; updated reclamation costs.

Copies of all these submissions as well as all other documents related to this amendment application, specifically in Doris North Gold Mine Project, more generally are available on the NWB's FTP site.

In addition, our licencing administrator, Ida Porter, has made available for view -- public viewing of this hearing paper copies of the documentation that have been received today for the application. If you are interested in reviewing any of the documentation, please ask Ida.

The application procedure history: Now I'm going to provide you with a brief summary of the procedural history for the application that is before the Board.

June 15, 2015, TMAC submitted the application and supporting documentation for the amendment of Type A Water Licence Number 2AM-DOH1323. August 21, 2015, the NWB acknowledged receipt of the amendment application and asked interested parties to review the scope and completeness of the information provided, as well as to identify any deficiencies.

September 18, 2015, the NWB received comments from the completeness of the amendment application information request, IRs, from Indigenous and Northern Affairs Canada, INAC; Environment and Climate Change

Canada, ECCC; Fisheries and Oceans Canada, DFO; and Kitikmeot Inuit Association, KIA; and Natural Resources Canada.

October 8, 2015, NWB acknowledged TMAC's response to information requests, IRs, and invited parties to comment on TMAC's submission. Comments received by parties indicated that the amendment application was considered complete and able to proceed to the technical review period.

November 4, 2015, the NWB and the Nunavut Impact Review Board, or NIRB, issued a joint letter regarding the coordinated process of the NIRB considering the amendment proposal for the Doris North Project Certificate Number 003 and NWB considering the amendment application for Licence Number 2AM-DOH1323 filed by TMAC. The letter informed the parties of the commencement of a coordinated public technical review period of the application and invited parties to make representations to the NWB.

November 5, 2015, the NWB issued a letter providing parties with greater details regarding the NWB's expectation for technical review period, NWB's next steps in consideration of the amendment application.

November 10th, 2011, the NWB gave public notice of TMAC's amendment application and invited interested

parties to make representations to the Board.

December 8, 2015, NWB received technical review comments from KIA, INAC, and ECCC, and DFO.

December 21, 2015, the NWB received TMAC's submission responding to the technical comments.

January 8, 2016, NWB received additional technical review comments from ECCC.

January 20th, 2016, the Board confirmed the venue and days of the technical meeting and community session, being January 28th and 29, 2016, in Cambridge Bay and provided parties with a proposed agenda. Also TMAC was requested to provide a response to ECC's comments submitted on January 8, 2016.

January 26, 2016, TMAC submitted a response to ECC's technical review comment from January 8, 2016. January 26th, 2016, NWB issued the final agenda for the technical meeting and confirmed attendance of the following interveners: Environment and Climate Change Canada, Fisheries and Oceans Canada, Kitikmeot Inuit Association, Indigenous and Northern Affairs Canada, and TMAC Resources at the NWB technical meeting.

January 28 and 29th, 2016, NWB hosted a technical meeting and community session in Cambridge Bay.

March 15, 2016, TMAC hosted the Doris North aquatic monitoring workshop in Edmonton, and Environment and Climate Change Canada, Fisheries and

Oceans Canada, Kitikmeot Inuit Association, Indigenous and Northern Affairs Canada, and the NWB participated.

May 18, 2016, NWB hosted a meeting in Iqaluit to review submissions and commitments.

June 6, 7, and 8, 2016, TMAC hosted technical workshops in Iqaluit with respect to updates and submission of management plans required under the water licence.

June 15, 2016, NWB issued correspondence providing notice that the NWB would be holding a prehearing conference by teleconference for the amendment application on June 24th, 2016.

June 24, 2016, NWB held the prehearing conference via teleconference. The parties in attendance included TMAC Resources, Kitikmeot Inuit Association, Environment and Climate Change Canada, Fisheries and Oceans Canada, Indigenous and Northern Affairs Canada, and Natural Resources Canada.

July 7, 2016, NWB issued the prehearing conference decision report, a formal notice of this public hearing.

Based on the application, written submissions received, information exchanged prior to and subsequent to TM/PHC, the NWB staff have prepared the following list of issues that remain to be addressed at this hearing: water quality predictions, Robert's Bay

discharge monitoring, waste rock and tailings, mitigation measures, water treatment, management plans and reports, closure and reclamation planning, water user compensation.

Written submissions for this hearing have been received from Kitikmeot Inuit Association, Indigenous and Northern Affairs Canada, Fisheries and Oceans, Environment and Climate Change Canada, and TMAC.

If I have missed a written submission by any intervener, please advise David Hohnstein, NWB's director of technical services, as soon as possible.

If there are no issues, I would like to move to our roll call. I will begin roll call with the applicant, TMAC, then go the local associations, representatives, and intervening parties. Mr. Roberts, could please introduce the members of your team who will be appearing on your behalf during the hearing.

Roll Call

MR. ROBERTS: Thank you, Mr. Chairman. I will do that. I'm -- excuse me. I'll have to apologize a few times during the proceedings, I believe. As you may be able to tell, my voice is a little weak.

I'm joined today by my team from TMAC Resources. A gentleman, who many of you will know is a very integral part of our team; he is off doing something

else today, Alex Buchan is TMAC's resources director of community relations. Alex, as you will know, is based here in Cambridge Bay and has been on the project since 2005, one of the longest serving members of the project team.

Alex is a former wildlife manager for the territorial government and has also worked as a community economic development officer. Alex leads TMAC's stakeholder engagement and participates in various regional and local socioeconomic initiatives. He is one of TMAC's appointees to the Hope Bay, IIBA, implementation committee.

Also you will see here during the proceedings Mr. Ikey Evalik, also from Cambridge Bay. Ikey is TMAC Resources' IIBA liaison. Ikey will be arriving later because he's currently supporting the crew change with the site. He is based here and has been on the project for a number of years. Ikey's role is to ensure compliance with and implementation of the Hope Bay IIBA.

Thank you, Mr. Chairman. Again, John Roberts, TMAC Resources. On my right is Sharleen Hamm. Sharleen is our -- TMAC Resources project manager for this amendment. Sharleen joined the project in 2014 and has been coordinating the amendment application process since then.

Sharleen is a registered professional biologist and has been working in the Arctic, specifically the Kitikmeot Region for over ten years conducting aquatic baseline and impact assessment activities.

Behind me I have Oliver Curran. Oliver joined -- he is our director of environment. Oliver joined TMAC in March and brings six years of Nunavut experience leading the environmental assessments, water licensing, and public consultation and compliance programs for Nunavut's Mary River Project. In his previous role, Oliver attended several technical meetings and final public hearings for obtaining and amending Type A licences with the Nunavut Water Board.

Also behind me is Dr. Maritz Rykaart, environmental consultant -- or, sorry, engineering consultant with SRK Consulting. Maritz has over 25 years of experience as a professional engineer specializing in permafrost engineering, mine waste management, and Maritz has been working on the Hope Bay Project perhaps longer than anyone else, almost 15 years.

He is a professional engineer registered to practice in Nunavut and provides us with expert advice on geotechnical and tailings engineering, permitting, field characterization, capital and closure cost estimating, and strategic planning. He is the engineer

of record for the north dam in the Doris Tailings Impoundment Area.

Mike Henry is an environmental consultant with ERM Consultants. Mike has been involved in the field of freshwater and marine ecology for over 20 years. His expertise is in basin-scale oceanography. He has conducted marine-specific environmental impact assessments and environmental effects monitoring programs in British Columbia, Nunavut, and internationally. In the Kitikmeot Region, Dr. Henry has recently designed the marine programs for the Doris amendment and the proposed Back River, Hackett River, and BIPAR projects.

Nicole Bishop is an environmental consultant with ERM. Nicole has seven years' experience in environmental consulting, four of which have focused on projects in the Kitikmeot. Nicole manages and coordinates multidisciplinary project teams for environmental assessment applications, regulatory processes including those for Hope Bay, Back River, Hackett River, and BIPAR.

On my left, many of you will recognize Christine Kowbel, TMAC's legal counsel with the firm of Lawson Lundell. Christine has been working on legal matters in Nunavut since 2000 and specifically on Hope Bay project since 2001 as both regulatory advisor and legal

counsel.

And I would note that Mr. Buchan, Alex, is now here, and many of you will recognize him, I'm sure.

And, lastly, I'd introduce myself. As I said, I'm John Roberts. I joined TMAC in 2014 as vice president, environmental affairs. I'm a professional engineer and have been involved exclusively in environmental -- in the environmental business for approximately 40 years, always in the field of natural resources. I worked in the mining industry for a number of years and then took some time in the forest industry working with pulp and paper and -- and sawmills. Did some environmental policy research and then came back to my first love, the mining industry, most recently in Labrador with a project called "Aurora", which is a uranium project in Labrador.

I must say -- I must comment, it's a great privilege to work with such a team that I've been attached to here with TMAC. It's an excellent company, and I'm supported by a wonderful team here. And it's a great privilege to be able to work in Nunavut on a project of this kind and a great pleasure to be here today. Thank you very much, Mr. Chairman.

THE CHAIR: Thank you.

Kitikmeot Inuit Association, introduce your team, please.

MR. ROESCH: Hello. I'm John Roesch with the Kitikmeot Inuit Association. I'm the senior Hope Bay project officer, and we have John Donihee here as well, our legal counsel.

And did you have any other questions? We didn't have any questions for TMAC, but did you have any for us?

THE CHAIR: Thank you. Indigenous and Northern Affairs Canada, will you please introduce your team.

MS. COSTELLO: Thank you very much, Mr. Chair. My name is Karen Costello. I'm the director of resource management with the Nunavut regional office with Indigenous and Northern Affairs Canada. I'm joined by staff who have worked on this file. I will ask them to raise their hands as I mention their name. David Abernethy is with our water resources division, and he has been the regional coordinator assigned to this file. He has been working on the Doris file for a number of years and has dealt with the 2013 renewal so he's become very familiar with the file.

He has been supported by Sarah Forte, our water management coordinator, and Amjad Tariq our regulatory and science advisor. The Department's interventions on this licence amendment application have been supported

by our consultant, Amec Foster Wheeler, and sitting at the back at the table is Jane Doucette. Thanks, Jane.

And just because I'm the first Government of Canada rep at the table, I will also introduce Tracy Carroll, who is counsel for all of the Government of Canada, and she is with Justice Canada in Yellowknife. Thank you, Mr. Chair.

THE CHAIR: Thank you.

Environment and Climate Change Canada.

MR. DAHL: Good morning. My name's Mark Dahl. I'm an environmental assessment coordinator for Environment and Climate Change Canada. And today I'm joined by Anne Wilson, who's sitting behind me, and she is the water quality expert working on the file. Thank you.

THE CHAIR: Thank you. It is with regret that I must inform you that Fisheries and Oceans Canada will not be in attendance at this public hearing.

If there are any other interveners not mentioned who would like to speak, please identify yourself.

It is our tradition to give respect to our Elders, therefore at any time during the proceedings an Elder may speak to the application that is before the Board.

Are there any members of the general public who would like to identify themselves and provide a brief presentation to the Board during the public hearing?

Are there any other representatives from agencies, associations, et cetera, who have not submitted interventions but would like to speak?

Before proceeding with the hearing, I would like to request that, if you haven't already done so, all parties in attendance please register and sign in with Ida Porter, NWB's licencing administrator, at the side table at the entrance.

Before we begin with the presentation by the application (sic), are there any motions or any objections in relation to the amendment application that is before the Board?

On that note, before I go on to the application, it is 10:00 my time, according to my watch. We will take a ten-minute break. Then the application (sic) will then make a presentation. Thank you. See you in ten minutes.

(ADJOURNMENT)

THE CHAIR: Welcome back.

Mr. Roberts, how much time will you need to do your presentation?

MR. ROBERTS: John Roberts, TMAC Resources. Mr. Chair, we believe we will take about an hour and a half.

THE CHAIR: Thank you.

Teresa, please swear in the applicant.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. If I can have the witnesses who wish to affirm.

SHARLEEN HAMM, Affirmed

MS. MEADOWS: Mr. Chair, Teresa Meadows, legal counsel for the Nunavut Impact Review Board. Obviously not moving too quickly this morning.

If you can state and spell your name for the record first, please.

MS. HAMM: I've never -- Sharleen, S-H-A-R-L-E-E-N; Hamm, H-A-M-M.

MS. MEADOWS: Are there other witnesses who wish to affirm? If you can state and spell your name for the record and affirm that you solemnly affirm the evidence about to be given by you shall be the truth, the whole truth, and nothing but the truth.

MR. HENRY: Mike Henry, M-I-C-K (sic) H-E-N-R-Y and yeah, I'm -- I affirm.

MIKE HENRY, Affirmed

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Impact Review Board (sic). If I can have the witnesses who wish to have their evidence sworn, please place your hand on the Bible which I've put in front of you. Raise your right hand. Do you swear that the evidence about to be given by you shall be the truth, the whole truth, and

nothing but the truth, so help you God? And if you can state and spell your name for the record, please.

MR. ROBERTS: My name is John Roberts, J-O-H-N R-O-B-E-R-T-S, and I do so swear.

MR. RYKAART: My name is Maritz Rykaart, M-A-R-I-T-Z R-Y-K-A-A-R-T, and I do so swear.

JOHN ROBERTS, MARITZ RYKAART, Sworn

MS. MEADOWS: Thank you, Mr. Roberts. Those are your witnesses for this panel?

MR. ROBERTS: John Roberts. Yes, that's correct.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board.

Ms. Kowbel, it's my understanding that there are a number of exhibits that you wish to file in support of the submissions of TMAC, so perhaps if you can take me through the exhibits that you wish to file.

MS. KOWBEL: Christine Kowbel, legal counsel for TMAC. Yes, thank you. The first exhibit is an exhibit that's been filed electronically with the Board. It's just the English copy of the company's presentation.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. Let the record show that that will be filed as Exhibit Number 1 being the Nunavut Water Board public hearing

Doris Project Water Licence Amendment 2AM-DOH1323, and it is a PowerPoint presentation in English.

EXHIBIT 1 - Hard Copy PowerPoint Presentation TMAC Resources Inc. Nunavut Water Board Public Hearing Doris Project Water Licence Amendment 2AM-DOH1323 (English)

MS. MEADOWS: Thank you, Ms. Kowbel. The next exhibit?

MS. KOWBEL: Christine Kowbel, TMAC. Thank you. The next exhibit is the Inuinnaqtun translation of that same presentation. At this time, I'll also advise that the Inuinnaqtun translation is still in progress and will be provided once available.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. Let the record show that the Inuktitut version of the PowerPoint presentation will be marked as Exhibit 2 in these proceedings.

EXHIBIT 2 - Hard Copy PowerPoint Presentation TMAC Resources Inc. Nunavut Water Board Public Hearing Doris Project Water Licence Amendment 2AM-DOH1323 (Inuktitut)

MS. MEADOWS: The next exhibit, Ms. Kowbel?

MS. KOWBEL: Christine Kowbel, TMAC. The next exhibit is the resume of Maritz Rykaart. This document has been provided to the Board, and extra

copies are also available on the table for those who wish to review it.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. Let the record show that Mr. Rykaart's resume will be filed as Exhibit 3 in these proceedings.

EXHIBIT 3 - Hard Copy Resume of Dr. Maritz Rykaart (English)

MS. KOWBEL: Christine Kowbel, TMAC. Thank you. The next exhibit is the resume of Dr. Mike Henry. And, again, copies available at the back table for those who wish to review, and copies have been provided for the Board.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. Let the record show that Dr. Henry's resume will be filed as Exhibit Number 4 in these proceedings.

EXHIBIT 4 - Hard Copy Resume of Dr. Mike Henry (English)

MS. KOWBEL: Thank you. Christine Kowbel, TMAC. The next exhibit is actually an update of Slide 4 of the presentation that you'll hear from Mr. Roberts. The version that has been provided -- the version that the -- of the presentation that will be viewed this morning has this figure on it. It's just -- and I'll describe it for you. It's just a

general description which Mr. Roberts will go through in some detail of the mine process, but we realized that we had forgotten to add that gold comes out at the end of the whole process, so we thought that was important to note so we updated the figure to reflect that.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board.

Ms. Kowbel, I don't have a hard copy of that single slide so if you can provide it to me afterwards, that will be marked as Exhibit Number 5.

EXHIBIT 5 - Hard Copy Single PowerPoint Slide TMAC Resources Inc. Slide Entitled Doris North (Addition of Gold to Process Schematic Diagram) (English)

MS. KOWBEL: Thank you. Christine Kowbel, TMAC. The next -- I'm nearly done. The next three filings are all expert reports. And just to give context for the next three exhibits, all three of these exhibits are all -- are all reports that have been shared between KIA, TMAC, and Indigenous and Northern Affairs during their conversations that are ongoing about the reclamation security.

Again, Mr. Roberts and Mr. Rykaart -- Dr. Rykaart will speak to that in the presentation. But the first of those is a report by SRK Consulting dated August

3rd, 2016. And before I leave you, I'll -- I just wanted to note that if you flip to the back page of the hard copy, there's a reference to a reclaim spreadsheet that is referenced in the memo. The electronic copy of this exhibit filed with the Board has that spreadsheet, but it's just not something that's really practical to print, and so we'd refer everybody to the electronic exhibit if the Board accepts this report. Thank you.

MS. MEADOWS: Teresa Meadows, legal counsel for the Nunavut Water Board.

Ms. Kowbel, what I propose to do is file as Exhibit 7 the electronic version, the reclaim spreadsheet. So this will be -- the memo itself, the hard copy memo will be marked as Exhibit 6, and then Exhibit 7 will be the electronic version of the spreadsheet that is attached that is not actually printed out in the hard copy.

EXHIBIT 6 - Hard Copy Memo SRK Consulting, Subject Doris Project: Closure and Reclamation Cost Estimates - Response to INAC's July 22, 2016, Submission (English)

EXHIBIT 7 - Electronic Copy Only, Excel Spreadsheet RECLAIM 7.0 File TMAC Response to INAC's Revised Reclamation Cost Estimate Under RECLAIM 7

MS. KOWBEL: Thank you. Christine Kowbel,

TMAC. The next exhibit that we would like to file -- and we're filing this, I guess, on behalf of the Kitikmeot Inuit Association. This is actually their report, but we're just filing it out of convenience. That's a report from BGC Engineering Inc. dated July 27th, 2016.

MS. MEADOWS: Thank you, Ms. Kowbel. Teresa Meadows, legal counsel for the Nunavut Water Board. So let the record show that that will -- the BCG (sic) Engineering Inc. report dated July 27th, 2016, will be filed as Exhibit 8 in these proceedings.

EXHIBIT 8 - Hard Copy Project Memorandum Prepared By BGC Engineering Inc. for The Kitikmeot Inuit Association, Subject: Draft - Review of Interim Closure Cost Estimate For the Doris North Mine (English)

MS. KOWBEL: Thank you. Christine Kowbel, TMAC. And the final filing I have for now, this morning, is a report dated September 7th, 2016, from Brodie Consulting to TMAC.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. So let the record show that that will be filed as Exhibit Number 9.

EXHIBIT 9 - Hard Copy Letter to John Roberts from Brodie Consulting Ltd. dated

September 7, 2016, Re: Review of Reclamation Cost Estimate - Doris North Mine (English)

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. I have nothing further at this point.

THE CHAIR: Thank you.

Mr. Roberts, go ahead with your presentation.

Presentation by TMAC Resources Incorporated

MR. ROBERTS: Thank you, Mr. Chairman. It's John Roberts, TMAC Resources. And thank you very much for the opportunity to present here today. It's -- as I said earlier, it's nice to be back in Cambridge Bay and nice to see many familiar faces around the table and in the audience, many of whom, as you well know, we have been engaged with over the past year or so on the review of the Doris amendment application. We very much appreciate the time that the Board and its staff has taken in this application and also appreciate the work of the many interveners and reviewers that have commented upon our proposals, and we -- and we do believe that their comments and our responses have improved the amendment proposal or application considerably.

In my presentation today, I want to describe a little bit about TMAC Resources, who we are, and a really short and brief indication of what is mining. I

think it's important for us, as we delve into the various details of an application like this, to recognize what the activity actually is that we're taking on here. And after that, we'll go more specifically into the project for which we are seeking an amendment and have applied for that. And then we'll go to the matter of the -- of our resolution to the various questions that have been asked of TMAC during the course of the last year or so in this review. I believe I have control here. Or maybe not.

Mr. Chairman, my apologies for the technical difficulties. John Roberts, TMAC Resources. So this is to tell you a little bit about who is TMAC Resources. TMAC Resources is a small publicly traded Canadian based company that is designed specifically to develop the Hope Bay Green Stone Belt in Nunavut. It is our only property and the focus of all of our activity and attention. As I said the company is publicly traded.

Our vision is to do all this while exhibiting respect for the people of the Kitikmeot and indeed all of Nunavut, and also in respect for the land and other natural resources that we find in the area. This is a very deeply held respect in -- inside TMAC and is acknowledged by the KIA in that we have a security agreement with the KIA on developing this land.

This is what we're after. This is what we're here for; it's the gold. And strangely enough we left it off the -- a diagram you'll see shortly. I'll take the fall for that. This is -- this happens to be a picture of some visible gold in an ore sample from one of our -- one of our drill holes in the Doris North area. This gold equals jobs and development for Nunavummiut and for Nunavut. And, of course, for TMAC, it represents an opportunity to benefit from that development as well.

Now, we extract this gold, of course, by mining it. And mining is actually quite a simple activity that I hope to show you shortly; however, to do mining safely by protecting the land, minimizing impacts, enhancing benefits to people, is actually quite complicated, and that's why we're here today, because the act of mining is complicated. But I think we can think of mining as being a little bit simple, and I hope to show you that with the next figure.

So if I can walk through this figure a little bit. You can see here we have a mine, and a mine is a hole in the ground. It can be an open pit, or in our case, it's a -- it's an underground mine. So three things go into that hole: air, because people are down there working; water, because you need water to drill and so on; and, of course, explosives to break the rock. And

three things also come out of that hole, and simply put those three things are ore, which is what we're after, and ore is the rock that actually contains the gold. Waste rock is the rock that doesn't contain gold, and we have to move it out of the way so we can get to the ore. The third thing, of course, that comes out is water. The water that we put down has to come back out, and also in case of -- in many cases, the mine leaks water from the surrounding rocks, and we have to get that water out as well. In our case and in most cases, this water is eventually discharged to the environment, and in our case, because it's going to be saltwater, it will be discharged to the Arctic Ocean.

Now, what do we do with the ore and the waste rock? The waste rock is, in our case, used as backfill for the mine. Our mining method is such that we open up cavities underground and take the ore out, and in order to continue mining that ore, we have to fill the hole behind us as we progress or else that hole will fall in and be a danger to our miners. So we use backfill, and we'll use the waste rock that came out of the ground. We'll put it back in the mine to support the -- the cavities.

The ore will go to the processing plant. We've a processing plant here. It's also called "the mill" in normal terms, and into the mill goes the ore, some

reagents or chemicals that we use to help extract the gold, and -- okay, thanks. Oh, good. Sorry.

The ore will go into the processing plant as well as reagents and freshwater. We need freshwater as a -- to help move the ore around as it's ground up and created -- and separated with the reagents. So a fair amount of work goes on inside that mill where the ore is ground up and -- and treated to get the gold out.

From the mill, funnily enough, also come three things: the gold, of course, which is what we forgot before, but that's the reason we're here. That will be flown out typically on our aircraft in normal flights. Also what comes out is tailings, and in our case, there are two kinds of tailings. We have a kind of tailings that is not treated with chemicals. It is very simple, called floatation or gravity tailings, and they will be -- form 94 percent of the -- of the material and will go straight out to the Tailings Impoundment Area which you'll see diagrams of later on. That is carried out by water because water is one of the things that comes out of the mill.

And the reclaim -- and the water that separates then as the tailings settle, the water is reclaimed and brought back to the mill and recycled and thereby minimizing the amount of water that we need to process the -- the tonnes that we have. And this -- this is a

major reason why we're not asking for additional water under the current licence but rather maintaining the same volume from the previous licence.

I said that this amount of tailings is about 94 percent in our case. 6 percent of the tailings will go back into the mine as backfill, and these are the tailings that are actually treated with the reagents, the chemicals that separate the gold from the rock. These tailings will go back with the waste rock into the mine as backfill to support the mine.

Discharging this -- tailings and water and separating the water for reclaim will generate -- this is done in a -- in a fairly large area that's subject to precipitation, and we will have to discharge the excess water so that this basin doesn't overflow, and that excess water is our effluent, and that is the water that is governed by the Metal Mining Effluent Regulation that we'll talk about a little later. So I hope that provides a simplistic description of what we're actually doing, and we'll show some -- we'll show various activities that are -- that include that work.

Now, to introduce you to the Doris Mine site. This is an aerial shot taken about three years ago looking to the north in the Arctic Ocean. This is Doris Lake right here, the Arctic Ocean is up here, and Cambridge Bay is just over there somewhere. This is

the mill pad area of the Doris Mine. We have the camp, fuel storage, power house. The mill building, which is included in a subsequent picture, is being built and completed here as we speak. The Doris Mine itself is a portal that goes into this rock outcrop and goes down several hundred metres into the ore zone.

The actual ore body -- the Doris North ore body is here. Subterranean here underneath the area about 200 to 400 metres down. New -- additional ore is available in the Doris connector and central zones in the -- that lie beneath Doris Lake and are the subject of this amendment application. The Doris Mine ventilation raise is located here, and this is where the air that I spoke of in the previous slide is delivered to the mine by a large fan system.

The -- ultimately the tailings area is over here, and we have already constructed the north dam, and that is being operated. It's a frozen-core dam, and we'll hear some more about that later on. At the south end, which is down here, under this application, we will be constructing the south dam.

The effluent that we speak of will be pumped to Doris -- sorry, from the Doris Mine to the Arctic Ocean in Robert's Bay where we have our port. This port is comprised of a jetty and some fuel storage facilities and various other accoutrements of a normal port.

We're proposing to bring the effluent pipeline to this outcrop, this headland, and 2.3 kilometres out into the bay to a sufficient depth that it can be discharged safely.

One thing I'd like to note is that the footprint you see here, in addition to a proposed new pad located here, is approximately the entire future extent for the life of mine at Doris. Because the waste rock which we are currently storing in this area will go back under the mine, there's no need to grow this pad to a large extent. It may grow by small amounts with small -- as things emerge, but really this is the full extent of the area. And I took a tour of many of the people who were here yest -- today around that site on Sunday, and it took us about an hour to walk and talk all the way around this area right here, including a quick visit inside the mill.

Too many buttons to push here. This one. So with that, I wanted to spend a few moments on the history of this site. As many of you will know and as is evident from the record that Mr. Chairman read into the -- the history of this project, it's been around for quite a long time. And indeed from about 1988 to 1999 the project was owned by BHP, BHP Billiton. And we can simplify their ownership by saying they did a very good job of exploring the Hope Bay Belt. The Hope Bay Belt,

as you will know, is an 80 kilometre by 20 kilometre Green Stone Belt which is highly prospective for mineral finds.

In 1999, BHP sold the property to a company called "Miramar", and we can thank Miramar for getting the first project certificate and the water licence for this -- this belt. And indeed it's the -- a different generation of that water licence that we're working with today.

In 2007, Newmont, a large American gold company, bought the project, and we can thank Newmont for building some truly world-class mining infrastructure in the area. Extraordinarily well-designed, very stable. It has not moved or failed in any way that I can observe or we can observe through our regular inspections. So we're very happy to be able to stand on that infrastructure and proceed with TMAC's activity. TMAC bought the facilities in 2013 after Newmont decided to not continue. But in truth, we do stand on the shoulders of these previous owners. They all contributed tremendously to the value and the prospectivity of this belt.

It's TMAC's job, as we see it, to build and operate this facility to the benefit of Nunavummiut and as well to TMAC as a company. So we are in the process right now of completing that -- the mill building that

you saw in the earlier diagram. And, in fact, on Sunday when we were there, the first components of the mill were being hauled in as we stood in the gallery looking at it come in the building, so quite a good moment to be present there.

A little bit of TMAC history here. As I said, TMAC purchased the project in March of 2013 so about three and a half years ago. It was in care and maintenance at that time, and since then we have continued the care and maintenance of the facility but then brought it into an operating state last year. We have explored, modified mine plans, modified tailings plans, and modified water management plans in accordance with the needs of the -- of the site.

We've sought amendments to the project certificate, and we expect to have that process finalized shortly. We've commenced mining, mining to stockpile ore for the start of the mill. The mill has been designed and was delivered, and as we saw on Sunday, it sits in orange boxes on our site waiting to be opened up and installed in the facility. All the time we are -- want to maintain a high environmental standard and providing increased amounts of employment to Nunavummiut.

Our first pour, as you can see at the bottom, is intended to be in January 2017. In April -- by April

2017, we intend to have the mill fully functional and operating smoothly and in full commercial main-plate production.

As I said earlier, Doris ore body is located as we see here. The Doris North Project was wholly in permafrost. This whole area, as you well know, is -- is permafrost. Underneath the lake is the Doris connector and Doris central. We were successful with our exploration and determined there is more gold than Doris -- in the Doris North Project that we would like to mine, and hence we needed to change the permits, and that's the process we're involved in today.

So I would -- in looking at this drawing which is an overview of the amendment changes, and it is a slightly small picture of a rather large area so the developments look a bit small. But I would -- excuse me. I would refer you to the banners at the back of the room which replicate this picture with labels and so on in three languages, and you can see in a little more detail what these features actually are. But I'll walk through them very quickly. Well, I'll follow the notes here perhaps.

Our changes to the amendment include a six-year mine life mining -- mining under Doris Lake, as I said. Moving to a total of 2.5 million tonnes of ore, and

that, of course, results in 2.5 million tonnes of tailings. We'll have open-air tailings disposal as opposed to underwater tailings disposal. Our camp will be larger, and all waste rock will now go underground and wastewater and groundwater will be discharged to the ocean. We believe that this reduces risk to the environment and will provide authorizations that are practicable and can be implemented.

This is a picture inside the mill probably about three or four months ago. As I said, we'll be increasing the mine life, volume of ore. We've went -- we've gone through this, and so the only thing I will add here is that, as I said, we are installing a new mill. This is a slightly different process than what Newmont had proposed, and it is being installed as we speak.

One of the features of this facility, as you will know, cyanide is used in the processing of gold ore as gold does -- will only dissolve in a solution of cyanide. And so that is used and recirculated inside the mill. Once it's done, the cyanide is destroyed. We will use a sulfur dioxide and oxygen process to destroy the cyanide in the 6 percent of the tailings that is actually exposed to cyanide. Those tailings will then be dried and included in the waste rock that goes back underground. So no cyanide will be

discharged into the surface environment.

Again, a little more summary of the project changes. And tailings, we talk a lot about tailings. Tailings are the finely ground rock material that's left over once you take the gold out. It has to be disposed of on the site because it's a very large volume, and there are -- there are well engineered, understood, and practical ways of containing these tailings in a safe manner for the environment.

As I said, we will have 2.5 million tonnes of tailings, and this is a schematic of the way in which we will place the tailings. We have the north dam that you saw in the photograph, and we will have the south dam that we have not seen yet because it's not yet built. The interim dyke is a structure placed in the middle, more or less, of the Tailings Impoundment Area. And the tailings will be placed behind the interim dyke, and the purpose of that is to contain the tailings so that when we reclaim the area, it's a controlled surface controlled by the interim dyke. And the water will seep through the interim dyke. It's not meant to contain water. Water will seep through the interim dyke into the reclaim pond, and this will be used, as I said, in the mill.

In terms of waste rock, we have decreased the overall volume of waste rock that was intended to be

mined in the previously project, and that's because of the -- a different way of approaching the excavation of the mine itself. We've improved the handling to allow for very efficient use and for it to be hauled back underground for disposal. It, of course, will be stored onsite temporarily during operations and will go -- and all of the material will be underground by the time you get to closure of the mine. And as I said, I would reiterate, it needs to go in the ground as a part of the mining activity and is not in and of itself a reclamation activity.

A little more information on tailings. This is a picture of the north dam, and as you can see, it -- it's a -- it's a fairly significant structure that has very flat side slopes which means it's very stable. And it's actually a frozen core dam so there's -- are facilities on the site to ensure that the core remains frozen, and therefore the dam can hold back the water that you see here because this level will rise somewhat during operation.

This is the road that will take us out to the south dam. This is a schematic of the area. This is the north dam at this end, the south dam at this end, and the interim dyke located here with the road all the way down. This black spot here is a quarry that will be used to construct those facilities.

Disposal of tailings here is on the land, not under the water. The original licence has tailings disposal proposed for this area and would be underwater with a larger volume. We need more area so we have -- are compelled to use the land for the tailings, and this would then be completely covered at closure.

In terms of water management, we have the -- have to manage surface water and groundwater, and we have to collect it and dispose of it as needed. Because we're mining in unfrozen ground underneath the -- underneath Doris Lake, we have to manage more groundwater. That water will be somewhat salty, and therefore it's our intention to dispose of that to the ocean. The previous proposal was to dispose of wastewater in the freshwater of Doris Creek, and we think it's a better idea for saltwater to go to the ocean.

We'll also collect all site water and send it to the TIA, and this -- all of the site water is collected in this sedimentation pond and then pumped off to the Tailings Impoundment Area. We will have a new pollution-control pond at Pad U, which is a new facility designed in the -- into the amendment, and we will dispose excess Tailings Impoundment Area water and groundwater to the ocean. This is overseen by Environment and Climate Change Canada through the Metal Mining Effluent Regulation and also by INAC through

their land-use lease and land-use plan for the discharge pipeline. There's no change in the water sources or water volumes to be withdrawn from the -- from Doris Lake or Windy Lake. The Windy Lake is for drinking water, and Doris Lake is for processed water. Water from the mill will come from the reclaim pond and from Doris Lake. For waste management, we will create a landfill, as I showed you a moment ago, in -- within the basin of the Tailings Impoundment Area from a worked-out quarry.

Again, continuing our summary of the project changes. At the port, we will increase our lay-down area because we find that it's a bit constricted for the amount of equipment that comes in. We'll create new pads in this area here and a small expansion of the pad area that already exists adjacent to our jetty, and a -- and a short piece of roadway to carry our effluent pipeline out to this outcrop where we'll enter the ocean and travel approximately 2-and-a-half kilometres out to its final discharge point. The camp will increase in size to 280 beds. It's currently at about 180.

For explosives, we will store only. We do not intend to mix explosives on the site. The closure cost estimate is an item of some discussion, and we'll have some more discussion about that a little later. I'm

going the wrong way.

This project will provide significant benefits to the Kitikmeot. There will be up to 280 jobs on the site, and through the IIBA that we've concluded with the Kitikmeot Inuit Association, there are Inuit employment targets, and these will be set and adhered to by TMAC and in -- with the oversight of the KIA.

Approximately $550 million is being spent to construct and bring this facility into operation. And I would note that in the IIBA, Kitikmeot-based industry or businesses have preferred opportunities on 14 different types of categories of work. So we look forward to filling those complements with Kitikmeot industries.

On this site, we have a list of high-level changes that TMAC believes need to be made to the licence as a result of the amendment application. Prior to the end of these hearings, we will be submitting a markup of the water licence which reflects the amendment application and identifies obsolete clauses for removal and flags certain terms and conditions to further -- for further consideration by the Board which TMAC is of the view will add sizable, administrative -- or is of the view adds sizable and administrative and operational challenges that have little or no environmental benefit, and therefore we propose that

they be removed.

TMAC is also suggesting some options to allow the Board a thorough review of management plans and modifications while balancing TMAC's need for predictable timelines as the project advances through the next phases.

So let's get into some more details. Back in June 2015, Mr. Chairman, as you pointed out, we submitted our application for an amendment of this project certificate and water licence. It was a substantial set of documents that included a project summary, an outline of the application package, description of all the proposed changes, specific applications to the Nunavut Water Board, the Nunavut Impact Review Board, and the Nunavut Planning Commission. We outlined the existing conditions and the project interactions with the government and -- sorry, with the environment and any potential effects. We also included some revised management plans. Design details for the proposed changes were also included and also some information about our -- about TMAC itself.

So this is meant to be a bit of a snapshot of the Water Board process. The red text indicates where we are today. A meeting with the Water Board and parties to discuss the remaining issues before the public. "The parties" in this case refers to those

organizations involved in the process thus far, including the KIA, Government of Nunavut, Industry -- sorry, Indigenous and Northern Affairs Canada, Environment and Climate Change Canada, Department of Fisheries and Oceans, Transport Canada, and Natural Resources Canada.

"The public" in this case includes Inuit and many of the Elders who have approached our hearings and our many meetings, and thank everybody for their input.

This whole process has been going -- ongoing for a number of years, and TMAC and previous owners, it -- have been considering this for approximately six years. Lots of work has been done, and we all better understand and have improved the design. The current application was submitted just over a year ago. Throughout the whole process, TMAC and previous owners have been talking to the public and the NIRB and parties to better understand all of the issues and consider these in the -- and these have been considered in the project design.

This represents the issues that were -- have been presented in the Nunavut Water Board process. This is -- this list does reflect the issues originating in the technical meetings and is in the prehearing conference report, and we'll go through all of these in detail as we -- I will do so a little later. But you

can see that we've characterized them in terms of water and waste on this drawing and in terms of closure and management plans on this one, and finally in terms of water, again, which looks like a duplicate -- okay. Oh, sorry. This is another duplicate. This is where we actually begin to start to talk about water. Thank you.

So let's focus on the water issues. Of interest is a site-wide water and load balance, groundwater quality and volume, of course. Robert's Bay discharge, aquatic monitoring, effluent discharge, marine water quality objectives, water and sewage, Doris Lake outflow, and water crossings. All issues of water interest. The site-wide water balance is a computer model and is one of the most important documents in the submission. It looks at water quality and the quality over the life of the mine to inform design and management. It was submitted with the application and updated throughout the process based on party questions and comments and describes how we manage and protect water.

So as you can see, we have organized the slides by issue. So I just want to note that we prepared and filed this presentation several weeks ago, and it was based on our understanding of the status of the issues at that time. On September 10th, we -- INAC filed a

followup written submission which confirmed that a number of issues proposed or previously noted as unresolved were now resolved.

It also flagged several issues that had some additional questions. As I go through the following slides, I will flag for the Board and the audience where TMAC and INAC have had additional relevant discussions in relation to those issues that INAC has flagged as unresolved as of last week.

To start with, INAC raised a new -- a new issue regarding calibration of the water and load balance. TMAC clarified that this will be calibrated annually, and this clarification will be reflected in an addendum to the water management plan that will be submitted as an exhibit later in this hearing. Accordingly, we now believe that this matter is resolved.

In terms of water and sewage treatment, the existing water and sewage treatment plant -- or sewage treatment plant has been replaced. The Nunavut Water Board was notified and the routine update to the management plan submitted. There's no need for other water treatment so we believe this matter is now resolved.

The aquatic effects monitoring plan is designed to study areas of water that could be negatively affected by the mine. It provides an early warning -- pardon

me. My apologies, Mr. Chairman.

The aquatic effects monitoring plan measures water quality, sediment creatures, and ice thickness. Numerous changes that reflect the fact that effluent from the operation is no longer to be discharged to the freshwater were made in aquatic environment management plan. The water level of Doris Creek will be monitored because of -- sorry, of Doris Creek will be monitored and Doris Lake because some water will leak into the mine. This is an issue marked previously as "resolved" that required further discussion last night. The discussion has resulted in both clarification and changes to the AEMP. Most additional recommended parameters will be collected and reported in the appendices to -- of the AEMP.

Also, TMAC will maintain existing Doris Lake monitoring station and related sampling frequency. This will also -- this will result in a revision of the AEMP which, as before, will be filed with the Board prior to the close of this hearing. Our understanding is that this commitment -- INAC now considers the -- this issue to be resolved.

There is a risk to the level of the lake water in Doris Lake, and we will therefore monitor that level continuously. If the water levels are affected by mining under the lake, then there are action levels

that are included in the plans. Monitoring Doris Lake outflow is to -- is an issue that was understood to have been resolved yet remained an issue as indicated in INAC's September 10 submission. We've had further discussion on this, and there's yet some further discussion to be clear that we have resolved this; however, we believe that measuring -- that calculating the relationship between the Doris Lake level discharge and Doris Creek flow is a suitable way to monitor the Doris Creek flows and timing and is not necessary nor suitable to monitor Doris Creek flows directly. TMAC hopes this resolves this matter.

Robert's Bay discharge is an important element of the proposed amendment. Obviously this water goes to the saltwater. It is our understanding that the Nunavut Water Board's jurisdiction is on freshwater in Nunavut, and accordingly, the discharge of this water is outside the jurisdiction of the Nunavut Water Board; however, all aspects of this discharge are regulated by Environment and Climate Change Canada for the quality of the effluent, by the Department of Fisheries and Oceans for its potential effects on fish habitat; by Transport Canada for its potential effects on navigable waters, and by the Industry and Northern -- sorry, Indigenous and Northern Affairs Canada for -- by -- for land use and -- and the land-use lease. Excuse me a

moment.

Mr. Chairman, I spoke earlier -- I spoke earlier of mine entering -- of water entering the mine from Doris Lake. Our modeling of the geology and the mining of Doris -- of the Doris Mine underneath the Doris Lake indicates that some water from the lake may flow through cracks in the rock into the mine. This water will contain salt because much of the groundwater in this part of Nunavut is salty, and therefore this salt will come into the mine. This water will be quite salty at first. As you can see from this graph, this is the -- a number of days of operation, and very early in the operation salt goes to quite a high concentration before being basically rinsed out of the rocks and falls to lower concentrations. This water will be collected in some -- in the mine and pumped out so that it does not flood the mine. This will -- originally intended to be sent directly to Robert's Bay but will temporarily be stored in the Tailings Impoundment Area.

Just to explain briefly about why this happens, as you know, the ground around the Doris Mine is permafrost, permanently frozen with ice lenses and very cold rocks. However, underneath lakes the land is not frozen, and in a deep lake such as Doris Lake, that unfrozen area extends all the way down past the bottom

of the permafrost extent. Underneath shallow lakes such as the Tailings Impoundment Area, the water body is not sufficiently large to fully melt the permafrost so it's -- this is called a closed or isolated talik. This is called an open talik.

The significance for the mine is that if the mine were here, water from this lake can flow through cracks in the -- in the land, in the rock, and into the mine this way because it's higher. This is a -- this is a relatively small flow and forms a part of the water that will come into our mine. Also, there are cracks in the rock from here, and that's why the -- we can get water flowing in from the lake. The Doris North facility would be located in -- in frozen ground here, and because the water is frozen, it's a dry mine. The -- underneath the Doris Lake, however, there's flowing water.

It's important to note, by the way, as we're -- as we have this drawing in front of us that with a closed talik at the Tailings Impoundment Area there's no opportunity for any contaminants, should there be any, to flow from there out of the frozen area into the other lakes in the vicinity. In terms of -- so I think I've described how water will get into our mine. That's part of the story.

The -- another part of the story is the fact that

that water is saltwater. Now, normally you can discharge saltwater to the ocean with no difficulty; however, there is a feature of the Metal Mining Effluent Regulation that requires the water to be tested to be nontoxic, and basically you put a little fish in the water and see if it survives. If it survives long enough, you pass the test.

However, the -- as written, the current Metal Mining Effluent Regulation requires that that fish be freshwater fish, and therefore if you put a freshwater fish in saltwater, he will die because of the salt, and it is not an appropriate test for our effluent.

Environment Canada is very well aware of this problem with the Metal Mining Effluent Regulation. It's a problem that exists for other mines in Nunavut, including Agnico Eagle's properties in the Kivalliq, and they are working hard to bring new -- a new test for saltwater species in -- into play. However, in the meantime, that means we can't discharge to the ocean our saltwater from the -- from underground. That's why we will store it in the Tailings Impoundment Area for a time period that will allow Environment Canada to finish their work. We anticipate that a year or 18 months will be adequate for this. And during mining, we will be trying to minimize the inflow of water to the mine by doing risk-zone mapping and working to

limit the infiltration of water by grouting or concreting the rocks ahead of us as we mine forward. We'll monitor the water quality and the water quantity that comes from the mine.

This is an item that we previously understood to have been largely resolved but was flagged by INAC as an unresolved matter in the September 10th submission. We are suggesting that the groundwater monitoring occur under the groundwater monitoring plan as opposed to directly in the project licence -- in the water licence. Reporting under that plan of groundwater quality will occur as part of our discharge compliance program, and that will be reported on a monthly basis to the Metal Mining Effluent Regulation. We are also prepared to report these results on a monthly basis to the Water Board for their information and annually as part of our regular reporting to the Nunavut Water Board. We believe this is now resolved with all parties.

There are a number -- because we are building some additional roads in -- as part of the amendment, there are two water crossings that need to be addressed. This photo shows one of those water crossings in the vicinity of our Robert's Bay access road. The water crossings must not negatively affect fisheries, so the crossings must be -- are regulated by the Department of

Fisheries and Oceans. TMAC has made submissions to the Department of Fisheries and Oceans on these crossings and has received letters of advice from them. The DFO, in fact, has recently confirmed that these works will not result in serious harm to fisheries and therefore do not require a Fisheries authorization. The DFO review is now complete, and we believe these matters are resolved.

With that I will move to issues presented in the process that refer to waste-related issues, and as you can see, the -- many of these deal with waste rock and tailings. In terms of waste rock, as I said, waste rock is that rock that does not have gold in it and is in the way so we take it out. This will be temporarily placed on the surface in a designated area, and as I said, at our mine, we will need to use it underground so there will be none left on the surface at the end. The added benefit of this is that there will be no potential for acid-rock drainage from waste rock following closure. We don't expect to use any of this rock for construction on the surface, but if we should choose to do so, there is a protocol for ensuring that it will not cause acid-rock drainage problems. We intend to use it all underground.

Occasionally small amounts of fuel or oil spill onto the ground at the site. This material is picked

up and either treated or stored onsite, and eventually it too may be used to backfill the mine in the permafrost areas. The same goes for spilled explosives materials that may occur in the mine.

Also, as I indicated earlier, detoxified tailings will be disposed of underground with the waste rock as backfill. Now, we've analyzed the effects of this and don't find any negative effects. We believe that this matter is also resolved.

Now, just to remind you again of the Tailings Impoundment Area, this -- and the tailings -- the tailings is certainly our major volume of waste. And, again, it's going to be disposed of on the land in the southern part of the Tailings Impoundment Area. And this is permitted under the Metal Mining Effluent Regulations that are -- that are administered by Environment and Climate Change Canada. It's called a Schedule 2 assignment of this lake as a waste management area. When you place tailings, you run the tailings out in a slurry. You think of it as muddy water with -- so water with a lot of solids in it that's pumped through a pump line, and the -- and the pump line will travel -- there we are -- travel along -- along the roadway out to the south dam and be disposed of out from these spigots in various locations in order, ultimately, to create a landform, when

finished, that is self-draining and stable. So this landform will drain to the west and to the north, and ultimately the water will report into the reclaim pond.

As I said, this tailings management area has already been in use -- has already been approved for use. Our floatation tailings will report to that area and will be discharged. The reclaimed water will go back to the mill for use. I think I've described this already. Tailings operations are described in the tailings area, operations, maintenance, and surveillance manual, also known as the tailings management plan, and we believe that matters here are also resolved pending approval of the tailings management plan by the Board as part of this licence. Oh, no. Back here. Sorry.

Tailings monitoring: Tailings geochemistry is one of those items that we have marked as resolved and yet discussed with INAC again last night as a result of their September 10th submission. INAC sought clarification on a component of our tailings geochemistry monitoring indicating this issue as unresolved. We have since clarified that confirmatory monitoring of tailings geochemistry will be carried out throughout operations. An addendum to the tailings management plan will be submitted as an appendix to this document to clarify this in the plan, and we now

understand that this issue is resolved.

Because the tailings will be disposed of on the surface, on the land, they are exposed to the wind, and as they dry, they can create dust. Dust suppression can be used to minimize the dust, and our preferred dust-suppression method will be water that we will use on a normal basis, but if that is insufficient, we would wish to use approved chemicals. There are a number of chemicals that are listed for tailings management in the tailings management plan, and others may also be used as may be approved by the Nunavut Water Board.

This was flagged as -- by INAC in their September 10 submission as being unresolved, and we proposed that dust suppressants approved for use anywhere in Nunavut by the Government of Nunavut or the Nunavut Water Board or other relevant body should be considered suitable for use at Doris and that no site-specific approval relating to dust suppressants should be required. In our view, this is a reasonable approach to use dust suppressants and should be adopted by the Board.

This picture is merely to demonstrate that the interim dyke is constructed of runoff quarry fill with a grandular filter zone at the upstream edge of the structure. It will be placed in-dumping rock into the Tailings Impoundment Area. As I said, the interim dyke

is an internal structure within the Tailings Area that confines the tailings' solids to a smaller area. It facilitates easier and more cost-effective closure.

We believe that the details of this structure, which have been the subject of extensive conversation with INAC, are now resolved, which brings us to closure, and we are also approaching closure of the presentation, Mr. Chairman.

There are a number of matters important in closure, and that includes Tailings Area water quality, groundwater quality, tailings cover, the security cost estimate, and the interim closure and reclaim -- and reclamation plan. Each of these was discussed in some detail during the last months. In terms of the tailings cover, there'll be a rock cover designed to prevent wind and water erosion. It considered the potential for and effects of frost heave and the boils, and the final design would be submitted just prior to construction. We believe this matter is resolved.

In terms of Tailings Area water quality, inputs are monitored under the water management plan, and seasonal discharge will occur to Robert's Bay, and that will be monitored under the Metal Mining Effluent Regulation and also under the management plan as indicated earlier.

At closure, the entire contents of the -- of water

in the Tailings Impoundment Area will be discharged to Robert's Bay on the presumption it is compliant, of course, with the Metal Mining Effluent Regulations, which we believe it to be. And then the area will be allowed to naturally refill for an -- a period estimated at approximately five years. This water will then be tested to ensure that it meets discharge criteria set for post-closure period, and at which point, the dam will be breached or removed. That is a slot will be cut in the dam so that water can flow naturally, and discharge will return for the Tail Lake outflow to Doris Lake and onward to Doris Creek.

Post closure we will -- it is intended to visit the monitoring frequency at the time of licence renewal in 2023, which is approximately the time that this whole adventure will be ongoing. We believe this -- these matters to be resolved.

There were questions as to the groundwater quality around the Tailings Impoundment Area and the potential for discharge of that water to Doris Lake and causing an impact. And as I showed earlier with the drawings, it has been indicated that it would be minimal flow from the mine to Doris Lake -- oh, sorry -- and also from the Tailings Impoundment Area. There would -- and upon closure, the mine will flood with water from Doris Lake, and we do not believe there would be any impacts,

and we've -- to Doris Lake on water quality from the material in the mine. We believe this matter to be resolved.

We come now to the matter of security cost estimate, obviously a very important item for everybody involved. The quantum of the security cost estimate is an issue that has been resolved between TMAC and the Kitikmeot Inuit Association, but it remains unresolved with INAC. Once the finalized cost estimate has been agreed upon with INAC, we will be able to reissue a revised closure plan with the modest adjustments we would expect.

Now, TMAC is aware that reclamation security is very important, and that it is important to get the estimate right. Despite extensive engagement with INAC over the last year and particularly in the last several months, comprised of over 20 engagements commencing in -- back in August 2015, this included phone calls, document exchanges, in-person meetings with opportunities to engage with TMAC's reclamation expert. There were two site visits from INAC and their reclamation expert.

The KIA, TMAC, and INAC have submitted original and revised cost estimates. TMAC's estimate was prepared by our independent professional expert, Dr. Maritz Rykaart, who sits -- of SRK Consulting, who

sits on my right here. We have filed a summary of his extensive experience as an exhibit, and Dr. Rykaart's professional opinion on matters relating to reclamation and closure have been accepted by the Nunavut Impact Review Board and the Nunavut Water Board on numerous occasions, as well as other northern environmental assessment and water boards. Dr. Rykaart is a professional engineer registered to practice in Nunavut, the Northwest Territories, the Yukon, British Columbia, and Manitoba and is the engineer of record on the design of our Tailings Impoundment Area, including the north dam.

Now, despite the fact that there's a difference in the quantity of the cost, there is alignment between TMAC and INAC on the direct costs, that is the actual cost of doing the work, required to close this facility. Despite our best efforts and intent, INAC and TMAC are still $7.8 million apart in our respective estimates. The KIA has provided an assessment of the estimates by -- of these estimates by its independent professional reclamation expert, Geoff Claypool, who is a professional engineer with BGC Engineering Inc. It confirmed that Dr. Rykaart's estimate is appropriate. And despite our confidence, despite TMAC's confidence in Dr. Rykaart and Mr. Claypool's expertise, given the difference between TMAC and the INAC estimate, in

September we took the additional step of obtaining a third-party review focused on the differences between INAC's and TMAC's -- and that is Dr. Rykaart's cost estimate, and we retained Mr. John Brodie for this task. Some of you may know that Mr. Brodie is very well-known in this room and to the Board as the author of the reclaim model that INAC has adopted in its closure policy and is the standard for cost estimation of reclamation in the north.

Mr. Brodie, in fact, developed the initial model for -- that is now reclaim and continues to maintain it and has appeared in front of this Board on behalf of INAC previously. Mr. Brodie's report has been filed as an exhibit with the Board and concludes that it is Brodie -- and I quote: (as read)

> It is Brodie Consultants' opinion that the estimate for reclamation security provided by SRK is reasonable and appropriate. [End quote]

He goes on to confirm that, and I quote again: (as read)

> SRK's estimate uses current reclaim-unit costs with supplemental quotes for key items, including fuel and shipping. The level of detail is suitable for this stage of the project, and there does not appear to be any

rationale for greater security provision.
[Closed quote]
Now, at this point I'm going to hand the microphone to Dr. Rykaart to provide the Board with an overview of his approach to preparing the security estimate, as well as an overview of the concerns that Dr. Rykaart and TMAC have with the estimate that has been prepared by Amec in -- on behalf of INAC.
MR. RYKAART: Maritz Rykaart. Mr. Chair, members of the Board, I'd like to start by explaining to you some background as to how SRK Consulting goes about developing security closure cost estimates. We feel that providing you with this background is important in terms of understanding some of the differences which I will outline later on.
SRK develops closure cost estimate as a routine part of our practice. We do this based on a first principle's approach. What I mean by that is that we take the activities of a closure plan, and we break it down into the very specific individual work items that is necessary to do the work. By doing that, we can establish exactly what equipment is needed to do the activities, we can establish exactly what manpower is needed to do the activities, and then we can assign costs in terms of labour and equipment rates.
Doing this allows us to develop a very

comprehensive -- okay. In doing that we can develop a very comprehensive and a very detailed closure cost estimate. This is different than the reclaim model approach which is adopted normally in this part of the world. The difference between the reclaim model and the first principle's approach that SRK adopts is that reclaim develops the cost based on standard unit rates for specific activities. The unit-rate approach is not wrong, but the challenge for the unit-rate approach is that it is not site specific and does not recognize the specific uniqueness of every project.

The SRK approach of first principles is considered significantly more robust and generally more accurate than the reclaim model. This is, however, not just our opinion as professional engineers. This is a supported fact as can been seen from the report that Mr. John Brodie produced and that has been submitted as evidence whereby Mr. John Brodie acknowledged that the SRK work is substantially more detailed and rigorous and support than -- than the reclaim approach.

In using this approach, we also -- we developed the direct costs. Mr. Roberts explained to you that the direct costs are the actual work activities necessary to complete the closure activities. There is agreement between the SRK closure cost and that developed by Indigenous and Northern Affairs Canada,

their consultant, Amec Foster Wheeler.

In other words, we agree that the actual activities needed to carry out the closure activity in terms of physical work that needs to be done such as, for example, building a tailings cover, is the same. The difference in the SRK cost associated with the direct costs and those by Amec Foster and (sic) Wheeler was a few thousand dollars on a total of about $16 million, therefore very, very close. There is, however, a $7.8 million difference in the indirect costs. These indirect costs are the costs attributed to a project associated with other activities such as providing camp support; providing equipment to site, mobilization, demobilization; as well as project management; engineering design; safety and security costs, et cetera.

SRK's original cost estimate submitted in 2015 as part of the amendment application was a total of about $25 million for the security estimate. Following submissions by Indian (sic) and Northern Affairs Canada through their consultant Amec Foster Wheeler discussions were held prior to the technical hearings at which time the TMAC cost estimate was increased to $29.7 million. The reason for increasing these costs were to acknowledge many of the concerns that INAC had with the original TMAC cost estimate. TMAC

subsequently agreed to add in an 18-month-interim-care-and-maintenance period. TMAC agreed to use all new camp rental facilities for both interim-care-and-maintenance phase, as well as active-closure phase. TMAC agreed to bring in all new fuel for all activities. TMAC agreed to additional post-closure monitoring. And, in addition, TMAC corrected a mistake in their cost estimate where labour for pump technicians were not included.

Yesterday Indian and Northern Affairs Canada provided TMAC with their revised cost estimate. This cost estimate is a total of 37.5 million which is the $7.8 million difference that I've pointed out. We reviewed this cost estimate very carefully, and SRK, in our professional viewpoint, is confident that the SRK estimate of 29.7 million remains valid, and I'd like to point out some of the reasons for this.

There is a $3.9 million difference associated with supplying camp facilities on the site during the closure activities. The way this number is calculated is to determine how much manpower is needed on the site during the closure period. SRK, based on their detailed cost model, developed a detailed schedule which balances manpower as well as equipment, has determined that about 4,800 man days are required to complete the work. This is spread out over a period of

about two-and-a-half years. This includes a 10 percent contingent for project personnel.

Amec Foster Wheeler's equivalent man days for the project is 13,700 man days. This is a substantial difference. Their breakdown provided allows for about 5,600 man days associated with completing the actual work activities of closure. The remaining approximately 8,000 hours is associated with nonworking staff. This means that for every one working personnel doing closure activities there is 1.4 nonworking personnel onsite. So if there was a crew of 10 people onsite operating equipment or performing different labour activities there is 14 other people onsite carrying out nontechnical tasks, including project management, project oversight, camp support, as well as inspections and unidentified visits.

This complement of 1.4 to 1 is not reasonable and is not justifiable. This is not normal in any project, whether it's a construction project or a closure project. To further illustrate why we believe that this is not reasonable, of this 8,000 man days, which is included for nonworking staff, it includes an allowance of about 1,900 man days for visitors to site during closure activities. This equates to three people onsite visiting the closure activities at any given time while closure is happening.

Amec Foster Wheeler's rationale for this is it is an allowance for people to carry out inspections, water quality sampling, and other similar activities. A fully operational mine like TMAC has to carry out similar types of inspections and expect visits. These visits and expect -- and similar activities, however, does not come close to that amount of manpower. There is never that amount of visitors on an active mine site, not to speak of a closed mine site undergoing closure activities.

A second major difference between the SRK cost estimate and that provided by Amec Foster Wheeler relates to the mobilization and demobilization of equipment to carry out the activities. This difference amount (sic) to about $980,000, almost a million dollars. As I've explained, SRK's cost estimate is based on a very rigorous manpower and equipment loading schedule developed from first principles. This includes mobilizing and demobilizing equipment in three different stages, one associated with interim care and maintenance, one associated with the first stage of closure activities, and a second associated with mobilization and demobilization of equipment needed to breach the north dam.

Amec has not developed an equivalent schedule, and therefore there is no justification for how they've

determined their fleet. Notwithstanding the fact that Amec has not provided justification for their selection of a fleet, SRK's total fleet being mobilized is in actual fact greater than that proposed by Amec Foster Wheeler. SRK is proposing 23 pieces of equipment where Amec Foster Wheeler is proposing 20 pieces of equipment. One would therefore intuitively expect that SRK's mobilization and demobilizing costs should be greater, but this is not true. The reason why there is such a substantial difference is that Amec Foster Wheeler has, in our opinion, incorrectly allowed for an additional $565,000 for mobilizing and demobilizing equipment for the breach of the north dam after the TIA facility has refilled.

In addition, this cost has been assigned under the water management tab of reclaim which makes it a direct cost which is not appropriate. The rest of the difference of about $350,000 is associated with the fact that Amec Foster Wheeler has used the incorrect shipping rates for mobilizing and demobilizing equipment. In their assumptions, they have stated that they used the same staging point as SRK has, and that they are using NTCL shipping rates for demobilizing equipment. Those shipping rates are substantially reduced for backhaul of equipment as opposed to moving equipment north. SRK pointed out these errors, but

Amec chose not to correct those errors, and we do not understand why.

The next item of substantive difference relate to about $400,000 plus an additional 13 percent of management and overhead costs between the SRK and Amec Foster and Wheeler costs associated with interim care and maintenance. During this -- during this period, the primary activity is water management while the camp is being held. The water management activity during this stage entails simply movement of water collected in the pollution control pond to the Tailings Impoundment Area. This is a sporadic pumping of water only after precipitation events of very short-lived duration.

Amec Foster Wheeler initially stated that they needed people onsite for eight months of the year to pump this water. TMAC advised Amec that this part of the world there's probably about four months of nonfreezing water in these ponds that can be pumped. Nonetheless, TMAC agreed to allow, in the interim care and maintenance period, pumping for six months of the year. Amex Foster Wheeler subsequently reduced their allotment of ten months to eight months and justified their reason for the extra time as overlap and training for the pump technicians operating this pump.

Given the nature of the activity, this seems

hugely unreasonable and not justified. Another significant difference between the two cost estimates is about $450,000 associated with fuel being shipped to site. Both parties agree on the quantity of fuel that is needed to carry out the closure activities. In fact, this number was calculated based on first principles by SRK and Amec accepted that quantity.

The difference is associated with the cost of fuel. TMAC has based their cost of delivery of fuel to the project site based on a long history of delivered cost since construction of the project started in 2007. This includes a time period where fuel costs have had record highs in the industry. The reclaim model has a significantly higher cost as a unit cost for fuel shipping to northern sites, but as previously stated, those reclaim costs are generic and intended to cover multiple conditions.

In the interview that SRK had with Mr. John Brodie when he carried out his review on behalf of TMAC, Mr. Brodie questioned the fuel cost that SRK had used, and he concluded that SRK's approach and estimate was more accurate than that provided in reclaim, and therefore he accepted that the SRK estimate was appropriate.

The remaining differences between the SRK and the Amec Foster and Wheeler cost estimate relate to a series of smaller items. I want to highlight just

three of these just by way of example to illustrate some of the assumptions being made by Amec which SRK does not agree with. By way of example, Amec has allowed a total of $180,000 plus a 13 percent overhead and project management cost for a snow machine during interim-care-and-maintenance period. I would like to remind you that this activity happens over the summer months. Secondly, there is already a dozer onsite to remove snow, and therefore there's truly no justification for providing a snow machine, especially not something that costs the same as operating a dozer.

If a small snow machine was needed for a crew onsite, which is no more than three people at most, then a commercial snow machine can be bought for a capital price of less than $10,000; therefore, this cost is simply not justifiable.

Amec has also allowed a cost of $280,000 plus a 13 percent project management and overhead fee for inspection and maintenance of water management structures by external consultants during interim care and maintenance. As I explained earlier, the activity that happens during this time is pumping of water from the pollution control pond to the Tailings Impoundment Area. This amount of inspection by external consultants is not necessary nor required. Consultants do not inspect pumps on behalf of clients. This is

done by trained pump technicians who are onsite and are being paid for under the cost estimate.

Mr. Chairman, these example (sic) highlight the reason why the $7.8 million difference between the TMAC and the INAC cost estimate exist. SRK has provided comprehensive details of all our assumptions and all our calculations pertaining to our estimate. We've provided that in written form as well as electronic form in terms of all our calculations. Based on the evidence that we've seen from the information provided by Amec Foster Wheeler, on behalf of INAC, it is our professional opinion that many of the assumptions made by Amec, as illustrated, are erroneous. A lot of the background information is unfounded and unsupported, and therefore we cannot suggest to TMAC that that cost estimate needs to be accepted.

We have considerable confidence in SRK's cost estimate, which has been supported by the two independent other technical reviews which has -- this has underwent. Thank you.

MR. ROBERTS: John Roberts, TMAC Resources. Thank you, Dr. Rykaart.

With that I will move on to the next topic which is management plans. TMAC has provided management plans ...

THE CHAIR: I have 12, which should be

lunchtime. Maybe to give yourself some rest we will break for lunch to about 1:30. We'll see you back here at 1:30, and you can continue your presentation then. Is that okay with you?

MR. ROBERTS: Certainly, Mr. Chairman. We can -- my voice can use a rest.

THE CHAIR: We'll see you back here at 1:30.

(LUNCHEON ADJOURNMENT AT 12:00 AM)

(PROCEEDINGS RECOMMENCED AT 1:41 PM)

THE CHAIR: Welcome back. Mr. Roberts, whenever you're ready, please carry on with your presentation.

MR. ROBERTS: Thank you, Mr. Chairman. John Roberts, TMAC Resources. I believe my voice did get a good rest over lunch. Thank you very much.

So when we left off, we had finished our conversation about reclamation estimates and matters concerning -- concerning reclamation. I wanted to turn now to some final comments about management plans that TMAC has provided as a part of the amendment process. And you can see from this slide that we have provided new management plans on aquatic effects monitoring, groundwater management plan, tailings management plan, water management plan, and a waste rock and ore management plan.

Our management plans are intended to help us operate and to continue to implement the existing measures that are already in our requirements under the licence. The revised plans have been changed. For example, the aquatic effects plan has been changed to recognize that the discharge is now to Robert's Bay and not to freshwater. The waste rock and ore management plan has been changed to recognize the disposal of detoxified tailings underground. And the water management plan has added the interim water management strategy that I spoke of before where we store the saltwater in the salt mine water in the Tailings Impoundment Area. We have -- existing plans are being drafted to reflect this transition and are to be submitted. This is old.

We intend to -- sorry, let me go back. We intend to reissue the aquatic environment plan this week and to address some comments made by Environment and Climate Change Canada very recently so we will have that finalized --

Is it this week or before the end of the hearing?

MS. HAMM: Before the end of the hearing.

MR. ROBERTS: Before the end of the hearing we will have this revised and in your hands. So we believe with the submission of the various management plans and the adjustments that have been made in

conversation with the various reviewing parties, that these matters are resolved.

So all of our outstanding issues have -- pertaining to water and waste have been resolved, and all of our outstanding issues with respect to closure and the quantum of security remain unresolved. And as you heard today, we have made our presentations to the Board with respect to our view of that appropriate amount of money for reclamation security.

We look forward to the Board's very careful examination of the evidence before you, and TMAC remains hopeful that a defensible security amount can be reached. Following the resolution of that security amount, TMAC will issue a revised closure plan which we expect to be a very quick process, a very short time to provide that, and we'll address any minor technical changes that may arise from the adjustment in the security amount.

Finally, we also look forward to the approval of the management plans submitted along with this application, and before, with the issuance of the licence so that we can proceed with those at the moment that the licence is issued.

So our next steps are to finalize this public hearing with the Water Board, and with the leave of the Water Board we hope that we will be able to close the

file and proceed to your decision-making processes. We look forward to having the new water licence and the new project certificate granted in relatively short order, and we wish to hurry and complete our construction of the project and bring it in to full operation with the first pour of gold in January of 2017. So we have a very active fall before us.

And I want to close particularly with this beautiful picture of Robert's Bay and our lay-down areas and thank you everybody once again, Mr. Chairman, for the kind attention you've afforded us today and the opportunity to make this presentation and to submit our applications to the Board. We thank you very much, and we're open for my questions. Thank you.

THE CHAIR: Thank you.

Any questions to the applicant by -- I'll start with Kitikmeot Inuit Association? Sorry.

MS. KOWBEL: Thank you, Mr. Chair. Christine Kowbel, legal counsel for TMAC. Before the opportunity for questions, I was hoping to ask to file a -- one further exhibit, and that's a CV for Mr. John Brodie, and I'm requesting that be marked as an exhibit, and I'll leave that to you.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board.

Ms. Kowbel, I don't have a copy of it in front of

me, so perhaps if I can ask, it's not been circulated before -- Mr. Brodie is not going to be offering evidence in this proceeding other than the report that was filed in the exhibit; is that correct?

MS. KOWBEL: Christine Kowbel, legal counsel for TMAC. Yes, that is correct. Mr. Brodie is not attending these hearings and is filing his report. I should also note that this summary is missing some of Mr. Brodie's more recent experience, and so -- but we thought it was still use -- worthwhile to file it with the Board so that there was a sense of his background.

MS. MEADOWS: Thank you, Ms. Kowbel. So perhaps if I can poll the parties to see if there are any objections to filing Mr. Brodie's CV notwithstanding the fact that he's not appearing.

MR. ROESCH: This is John Roesch for the KIA. We have no objection to the submission.

MS. MEADOWS: Thank you. If I can have INAC.

MS. COSTELLO: Thank you, Mr. Chair. Karen Costello for Indigenous and Northern Affairs Canada. We have no objections.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board.

Mr. Dahl?

MR. DAHL: Mark Dahl for Environment and

Climate Change Canada. No objections.
MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. So let the record show that we will be marking Dr. Brodie's CV as Exhibit Number 10 in this proceeding.

EXHIBIT 10 - Hard Copy Resume of Dr. John Brodie (English) (Updated Resume filed on September 14, 2016, as Exhibit 30)

THE CHAIR: Thank you. Kitikmeot Inuit Association, any questions to the applicant?
MR. ROESCH: This is John Roesch for the KIA. We have no questions for TMAC or comments. Thank you.
THE CHAIR: Thank you. Next we have Environment Canada and Climate Change (sic). Any questions to the applicant?
MR. DAHL: Mark Dahl for Environment and Climate Change Canada. No questions. Oh, one moment please.

Environment and Climate Change Canada Questions TMAC Resources Incorporated

MS. WILSON: Hi. I'm Anne Wilson, water quality with Environment Canada. And I did just want to get one question and answer on the record from TMAC, and that is in respect of the Tailings Impoundment Area

capacity for holding the saline water.

Earlier this morning, John mentioned the number of 18 months as an estimate of when it might be reasonably expected that the MMER could be changed to accommodate direct discharge to the marine environment. If there is any delay to that time frame and if your chloride levels don't decrease as predicted to the point where the effluent would pass a rainbow trout bioassay, I would just like to have confirmation that the TIA capacity would accommodate further holding times?

MR. ROBERTS: Mr. Chairman, thank you, and thank you, Anne, for the question. TMAC and its predecessors has been involved with this question in various forms since 2010. This is not a new thing that has emerged in the last little while, although the regulatory reality, I think, has risen relatively recently. The -- we have been working with Environment Canada to ensure that -- that they are aware of the problem, and I give Environment Canada considerable credit that they have identified and understood the problem. They've received input, and they are working vigorously to solve the matter. It -- I am aware that they have selected a species that will be used to carry out the saltwater test, and that they're working very aggressively on the -- on a timeline to solve the -- to produce the regulation that will provide a test in

pretty short order.

I would also say that in terms of -- so I guess what I really want to say here is I really don't think that Environment Canada's going to fail us on this. What I can say in terms of the -- our ability to hold water, we do have 18 months of available volume if we do not make any discharges, and that is 18 months from the point at which we start discharging, which is not today but rather about the end of the year. So we have until mid 2018 approximately to -- as the -- the time which we can contain the water in question. And as I said, I really can't imagine that Environment Canada would not be able to get this rather small technical change done in that time frame.

MS. WILSON: Thank you, Mr. Chairman. Anne Wilson, Environment Canada.

When we were on our site tour on Sunday, there was mention of the possibility that more mining could be done in the taliks so I was wondering if that would -- sorry -- it would be more surficial so that you wouldn't get the deep saline groundwater. Is that something that will affect the holding capacity?

MR. ROBERTS: Mr. Chairman, when TMAC -- and thank you again, Anne, for the question. When TMAC became aware of this problem approximately this time last year, or perhaps -- perhaps it was a little later

than that actually, we devised a strategy that had three approaches that we hoped would solve our problem with respect to this.

The first was to work closely with Environment Canada to raise the matter and work with our colleagues at Agnico Eagle who share the problem, and to encourage Environment Canada to work quickly to bring a new test into service. And as I just stated, I can't believe they would fail us in that. The second part of the strategy was, of course, the one that we have -- are planning to implement once we start discharging, and that is to store the saline groundwater in the Tailings Impoundment Area.

The third leg of that strategy stool was to explore further underground in areas that were not outside the permafrost, so in other words in dry areas where we would not encounter talik water. To explore in those areas to see if there was additional ore around some early indications that could delay the timing of the onset of saline water.

Earlier this summer TMAC announced by way of press release to the markets and the public that we had, in fact, had some success in identifying additional ore in an area that we know as "below the dyke". And that's not the interim dyke in the Tailings Area. It's a geological structure in the mine that looks very

attractive for mining and represents an opportunity to further delay the onset of saltwater inflow.

However, at this point, that -- those findings -- showings have not been sufficiently delineated to be brought into our reserve or our mine plan, although I will tell you that we are very hopeful and very confident that we can do that. But as yet, that has not been done, and we cannot therefore suggest that we have a solution in that line as yet until the mining plan has been so revised.

So I would say that we have actually been relatively successful in all three of our approaches to this, by finding some more ore in dry ground, by having a strategy where we have 18 months of storage in our Tailings Impoundment Area, and we're quite confident that Environment Canada will be able to meet their objective of providing a new toxicity standard by that time.

MS. WILSON: Thank you, Mr. Chair. I'm just going to move on to another question that is more of an administrative nature with respect to water licence. In most water licences in Nunavut from mining operations, the Board has the ability to amend the schedules without considering an amendment of the water licence. Now, because that isn't in TMAC's current licence -- I know you want to move a lot of your

monitoring and reporting into your management plans, which makes sense as long as they can be reported.

I think it would be probably constructive if the Board would consider having the option for the schedules to be amended without opening the licence up and wanted to see if that was something TMAC supported?

MR. ROBERTS: Mr. Chairman, John Roberts, TMAC Resources. And, again, thank, Anne, for the question. We absolutely support that. We think it would be much more efficient for the Water Board and all concerned if the schedules of sampling and such would be -- can be modified without opening the licence for amendment. Thank you.

MS. WILSON: Thank you. Anne Wilson. No more questions.

THE CHAIR: Thank you. Next we have INAC. Indigenous and Northern Affairs Canada Questions TMAC Resources Incorporated

MR. ABERNETHY: Thank you, Mr. Chair. David Abernethy with Indigenous and Northern Affairs Canada.

I have a question for clarification, and that relates to the deposition of tailings in the Tailings Impoundment Area prior to the interim dyke's construction, the completion of its construction. And for ease of reference, it's -- I'll point out the slide that TMAC provided. The issue is issues under "waste",

and its tailings management. I believe it's around Slide 35, so if possible, if that diagram could be shown, it would be helpful. Yeah, that's it. Thank you.

The question that I have is just clarification of how tailings will be prevented from going past the footprint of the interim dyke prior to the completion of its construction. I understand that the south dam will be constructed this winter, and TMAC, the licensee, will not be depositing tailings from that area because it will be constructed, that being the south dam. So points on eastern shore will be used to deposit tailings.

Now, the point to the farthest left -- or north, I believe, is 650 metres away from where the interim dyke will be constructed, and my understanding is that tailings can move up to a kilometre when they're placed in the -- in the water. So I'd like further understanding on how TMAC will work to prevent tailings from travelling further north past where the interim dyke will be constructed.

MR. ROBERTS: Mr. Chairman, John Roberts, TMAC Resources. I will make an approach to this, and then I will defer to Dr. Rykaart who has designed this plan, and thank you, David, for the question.

Essentially the approach here is that the -- we

anticipate that tailings will not make the full extent of the length of the area shown for approximately 2.5 years assuming deposition starting at the southern end of the Tailings Area. So we would very much anticipate discharging along this side of the area while the south dam is being constructed and ensuring that the tailings area is advanced to the south so that it will not encroach upon the foundation of the proposed interim dyke. And with that little introduction, perhaps I'll turn it over to Dr. Rykaart to give a little more detail.

MR. RYKAART: Maritz Rykaart. Mr. Chairman, I will have -- I think the first piece of the question that I'll respond to is the comment that Mr. Abernethy made in terms of -- it's their understanding that tailings can move up to one kilometre, and therefore how will TMAC ensure that the tailings does not move beyond the point of the interim dyke.

To clarify, tailings -- the tailings deposition strategy will not allow the tailings to move one kilometre. What happens is the tailings deposition strategy for this project is what's called a single pipe's spigot system. In other words, the entire tailings stream at any given time is deposited from an end of the pipe, and as soon as you deposit that stream, the tailings will flow out of the pipe. The

tailings will flow because the tailings in the pipe is hydraulic. In other words, it's mixed with water. During the first year of operation, that tailings will have a solids content of about 35 percent. In other words, 35 percent of the material in the pipe is sand, and the rest is water. So it's a slurry.

In the second year, as the second mill module comes online and the production rate is increased to 2,000 tonnes per day, that solids content reduces to 65 percent solid content. In other words, that slurry contains less water, and it becomes a thicker consistency.

Once that slurry leaves the pipe, what happens is the sand settles out, and it's -- and the heavier particle settles out immediately right below the pipe, and then the finer particles take some distance and flows with the water and settles out.

And the distance that will travel will vary. The first day you deposit tailings it might travel only a couple of metres. After you've created sufficient landscape for that tailings so that there's a long continuous beach, it can travel a long distance. And based on the deposition plan that was developed for this project, we can move tailings a distance of about a kilometre depending on a specific discharge point.

On this slide, what you see is the deposition-plan

strategy based on the six-figured points that's been placed. One, two, three, four, five, and six. These have been designed to create a land form that allows free drainage of the facility at closure. The reason we (sic) got to continue moving these locations is the tailings will not form a landscape unless you make it form that landscape. But in the original plan, if we can start on the south dam, we'll deposit these tailings, it will move down, and then ultimate at the very end of the mine life, we'll have this discharge point, which is the very last discharge point, which is in actual fact the closest discharge point to the tailings dyke. The distance that this travels is less than a kilometre, but the only reason it can travel that far is because of the geometry of the facility that's been created by that point in time.

As Mr. Roberts just explained and as Mr. Abernethy correctly pointed out, when TMAC starts tailings deposition in January 2017, this dam will be under construction so we will not be able to place spigot points here as shown. Therefore we'll start by placing sphered points at this location. We can now replace those tailings there for many months up to a year without those tailings ever reaching this point. It will take us about four months to build this dam which is well within that time frame, and as long as we have

the dam in place, we'll be relocating the discharge point to the dam.

So I hope that clarifies the process. I hope that answers Mr. Abernethy's question about how we will ensure that tailings cannot travel to the interim dyke.

MR. ABERNETHY: Thank you, Mr. Chair, David Abernethy with Indigenous and Northern Affairs Canada. And thank you, Mr. Roberts and Mr. Rykaart; that does answer my question.

THE CHAIR: No more question?

MR. ABERNETHY: David Abernethy, no more questions.

THE CHAIR: Thank you. Next we -- any question from the general public to the applicants?

Any questions to the applicant from the general public? No.

Staff, questions to the applicant?

MR. HOHNSTEIN: Thanks, Mr. Chair. Dave Hohnstein here. I think if we could have maybe ten minutes to put together a few questions, we'll have a few questions for the applicant.

THE CHAIR: Okay.

(ADJOURNMENT)

Nunavut Water Board Staff Questions TMAC Resources Incorporated

MS. AREDES: Sonia Aredes from the Nunavut

Water Board. The question is about the decrease on the monitoring of the decrease of the outflow levels in Doris Lake, more hydrometrical (sic) station in Doris Creek that was requested by INAC. I understand that TMAC wants to do calculation to see how the outflow decrease. That is very important for the fish. And how is (sic) going to prove TMAC that the values of the calculation represent the real decrease or not of the Doris Creek?

MR. ROBERTS: Mr. Chair, John Roberts, TMAC Resources. The method of identifying the flow from Doris Creek is by way of a calculation of an -- it will probably be a weir equation, W-E-I-R, out of the -- over the sill that defines the outlet of Doris Lake. This was requested by INAC in a previous response to -- I believe in the NIRB process, and TMAC accepted that. So we anticipate that that will be the process we would use.

I would note that in terms of the potential effect of the decrease of a -- of a potential decrease in Doris Lake levels and its effect on fish in Doris Creek, the modeling that we identified spoke more about a -- the presence or absence of flow and the delay of the onset of flow in the freshet period. That is if the water in the lake declines over the winter, then it will take a while to fill up on freshet, and we'll be

delayed in discharge -- in the start of discharge at Doris Creek. That is the more important parameter, as we understand it, and similarly the water may freeze and close off outflow earlier in the fall at that time.

We understand from our fisheries studies now that the Doris Creek itself is a fairly bank-full stream, and we do not anticipate that the amount of flow is particularly critical to the fish itself but rather whether or not it flows. So we would anticipate that measuring the actual flow volume is not the most critical aspect but rather when it starts and when it ends.

MS. AREDES: When it start and when it ends will be consequence -- it will be affected by Doris Lake in certain way?

MR. ROBERTS: That's correct.

MS. AREDES: Okay. Next question is referred to the memo provided about the closer -- the cost estimate, the post-closure tab, Item 2.4. INAC assume a discount rate of zero percent, and SRK is suggesting that 2 percent discount rate is more appropriate. Why is that?

MR. ROBERTS: John Robert, TMAC Resources. Mr. Chairman, I'll defer this question to Dr. Rykaart.

MR. RYKAART: Maritz Rykaart. Mr. Chairman, when one does closure and reclamation cost estimates,

it is standard practice to apply discount rates to financial numbers, especially in the post-closure monitoring phase. The reason to do that is post-closure monitoring period can often be quite long. In the case of the Doris North Project, it is a ten-year period after the final closure activities has been done. And applying a discount rate, therefore, ensures that unnecessary cash flow is not exerted by the proponent.

The reclaim model has that ability in it. It allows a proponent to submit the discount rate, and that is the reason why SRK has recommended that. The discount rate of 2 percent is very low. Industry practice, not government organizations -- but proponents normally use discount rates of between 5 and 7 percent. So 2 percent is considered low but appropriate.

MS. AREDES: And how much usually use government for discount rate?

MR. RYKAART: Maritz Rykaart, Mr. Chairman, I don't know what the current government regulations are regarding discount rates. All I can tell you is in our experience we have seen that those rates are normally in the range of between 1 and 3 percent, but it is an economic number, and therefore it depends and varies over time.

MS. AREDES: Thank you.

MR. HOHNSTEIN: Thank you, Mr. Chair. It's David Hohnstein, Nunavut Water Board. I've got one question. I think it's more of a followup to some of the discussions that have taken place and the submissions from INAC with respect to dust control and dust suppression at the site, and, you know, I know there's been references to using materials that have been used elsewhere in the north, in Nunavut, in Northwest Territories.

I was wondering if you might be able to provide us with a little bit of, I guess, assurance or experience with dust suppressants used on tailings facilities. I know through our work with the Board we've had discussions with other sites. I can, you know, use examples. Lupin, Meadowbank, that use subaerial deposition and have in the past and, you know, have had some issues through INAC enforcement, you know, just having to deal with dust suppression at -- at the site.

So I was wondering if there was a little more information that could be provided. And I think the last response we -- we did see from TMAC was that, you know, preference was to use materials that have been used elsewhere and not look to the Water Board for any kind of approval for those materials.

MR. ROBERTS: Thank you, Mr. Chairman. John

Roberts, TMAC Resources. And thank you, David, for the question. I guess the -- I'll speak to the approvals idea that we are presenting here, and then I'll defer to Dr. Rykaart again to speak a little bit more about materials.

Our current plan is to use water primarily as our dust suppressant of choice, but we recognize that there may be other needs as time goes on, and that's where we'll get to Maritz's comments. But in terms of approvals, we are of the belief that if there are dust suppressants approved for use in Nunavut, then those are the ones that would be -- assuming that they would be appropriate for use on tailings, that they would be the ones that would be first used.

In our submission, we presented the names of three different dust-suppressant substances, and we proposed to assess those when needed, once we have a sufficient sample of tailings that the manufacturers of those substances could use for -- for testing purposes. We've asked that we -- that things that are approved for -- and used elsewhere in Nunavut because we see this is a potential administrative nightmare that I think the Board would be wise to avoid by approving -- or whatever body would be appropriate to approve such a -- the use of such a product -- approve it just once for service in Nunavut. And hence we suggested that if

something is already approved and suitable for use, then we would not feel the need to seek specific -- site-specific approval on our site. So that was -- the logic there is the administrative efficacy piece of the logic.

I'll turn to Maritz there, and maybe Maritz could speak a little bit more about dust-suppressant products and their use in his experience.

MR. RYKAART: Maritz Rykaart. Mr. Chairman, I refer you to the tailings operating maintenance and surveillance manual, which is one of the management plans that has been submitted as part of this application. At the -- there's an appendix to that tailings operations maintenance and surveillance manual, and that appendix relates specifically to dust suppressants. In there we list three different dust suppressants which are currently being used at active and closed mine sites in northern climates in Canada. The three products that's listed there, and these are the commercial names for them, are Soil Cement, EK35, and a product called Dust Cap. These products are used at a number of different mine sites, and those mine sites are listed in a table that's provided. That information also contains the -- some details about the products, as well as product-specific specification sheets are included in that tailings operation

maintenance and surveillance manual. So we know these products are being used. We know they're being used by mining companies in similar climate regimes as Doris is proposed for.

We also asked each of these manufacturers to provide us with details of how these products might be used at Doris given the specific tailings conditions. Each of these suppliers told us they would be very happy to provide specific application details and performance specifications; however, to do that, they would do specific testing on the actual tailings. As no tailings is currently available, that testing cannot yet be done.

So before TMAC would use any of these three products, they would get the testing done and get the manufacturers to provide specifics on application rates and mixing rates.

MR. HOHNSTEIN: Thanks, Mr. Chair. David Hohnstein. Just one more maybe clarification. I'll probably go back to the documentation to check it as well. But the application that you're referring to, is this on, I guess, active tailings deposition, or is it for sort of an interim closure for maintaining the tailings and preventing -- or applying dust suppression?

MR. RYKAART: Maritz Rykaart. Mr. Chairman,

these products are being used for both those applications. They're used on closed facilities or facilities that are under care and maintenance, as well as under active operations, and some of these products are also used for other applications such as road-dust control, et cetera.

MR. HOHNSTEIN: David Hohnstein, Nunavut Water Board. Thank you, Mr. Chair. No further questions.

THE CHAIR: Thank you. Any questions from Board members to the applicant? Any questions?

Nunavut Water Board Questions TMAC Resources Incorporated

MR. MRAZEK: Thank you, Mr. Chairman. Ross Mrazek, Nunavut Water Board. One question to the applicant. You mentioned this morning that the first gold break is expected to be born (sic) in January 2017. Do you have any additional estimate of the production for the next year? Thank you.

MR. ROBERTS: John Roberts, TMAC Resources, Mr. Chair.

And thank you for the question. I can -- I can tell you that if -- I probably said that we would plan our first pour in January 2017. We hope it's gold. And once the mill is stabilized, we -- we're very confident it will be gold, and we anticipate that the amount of gold that would be produced would be

approximately 500 ounces a day, which comes up to approximately, I think, 160,000 ounces a year, I believe, is the number that we have.

Mr. Chairman, John Roberts again. Just a clarification. Was that ounces you were interested in, sir, or tonnes?

MR. MRAZEK: Either way it's fine.

MR. ROBERTS: Just to -- John Roberts, TMAC Resources. Just to follow up on the tonnes, we'll start with a thousand tonnes per day, and the mill that was delivered just last month will deliver a thousand tonnes per day of ore that we believe will be about 500 ounces per day -- sorry, yeah, 500 ounces per day of gold. And by 2018, we will have a second mill onsite in the same building that will double our production to 2,000 tonnes per day, and then, therefore, probably about a thousand ounces per day.

MR. MRAZEK: Thank you.

THE CHAIR: Thank you. Next we have Kitikmeot Inuit Association. Will you come up to the microphone.

Teresa, you want to swear in the witnesses, please.

MS. MEADOWS: Thank you, Mr. Chair, Teresa Meadows, legal counsel for the Nunavut Water Board. If I can have the witness state and spell his name for the

record, please.
MR. ROESCH: Yes. My name is John Roesch for the Kitikmeot Inuit Association. J-O-H-N, Roesch, R-O-E-S-C-H.
MS. MEADOWS: Thank you, Mr. Roesch. If I can you have you put your left hand on the Bible and raise your right hand.
JOHN ROESCH, Sworn
MS. MEADOWS: Thank you, Mr. Roesch. It's my understanding that you have two exhibits to file in advance of your submissions, and that would be the technical submission for Doris North Type A water licence amendment application filed by the Kitikmeot Inuit Association, and I also have a copy of the same presentation in -- translated into Inuktitut; is that correct?
MR. ROESCH: Yes, that is correct.
MS. MEADOWS: Thank you, Mr. Roesch. Let the record show that those will be filed as Exhibits Number 11 and 12 respectively in this public hearing. Thank you, Mr. Chair. I have nothing further.
EXHIBIT 11 - Hard Copy PowerPoint Presentation Kitikmeot Inuit Association Technical Submission, Doris North Type A Water Licence Amendment Application (English)
EXHIBIT 12 - Hard Copy PowerPoint

Presentation Kitikmeot Inuit Association,
Technical Submission, Doris North Type A
Water Licence Amendment (Inuktitut)

THE CHAIR: Thank you, Teresa. Please go ahead with your presentation.

Presentation by the Kitikmeot Inuit Association

MR. ROESCH: Hello, my name is John Roesch. I'm the Senior Hope Bay Project Officer For the Department of Lands and Environment for the Kitikmeot Inuit Association. I am responsible for the project oversight for the KIA and provide input into the regulatory process on the Hope Bay project to both the NWB and NIRB.

In performing this role, I manage KIA's consultants who are subject-matter experts in the area of wildlife, fisheries, aquatic environment, and geotechnical engineering.

Oh, the mouse. Okay. Thank you. That's my pointer. Okay. Thank you. Let's see here. There we go.

This presentation follows the order presented in KIA's technical submission as prescribed by the NWB. It focuses on the key issues associated with mine infrastructure and the water licence changes, water quality prediction, site water, and load balance. The issue: The water quality monitoring does not consider

the effects of climate change and varying hydrological conditions.

Our recommendations were to update the site water quality water -- water quality model to include climate change as per the latest IPPCC (sic), define hydrological conditions modelled and how that will affect the water load balance. TMAC has run variable hydrological models based on a 1953 to 2014 data. Water quality results of the sensitivity analysis was reviewed at the technical meeting in January. The review of changes in wet and dry conditions indicate no impact on the load balance model or effluent quality. This issue is resolved.

Water quality predictions, site water and load balance: another issue on this is the water and load balance model uses medium values to predict water quality and loadings which may underestimate potential effects to surface water. Our recommendation was to use the 75th percentile on concentrations as input values into the model to considered enriched conditions.

TMAC had run a sensitivity analysis of the water and load balance using the 75th percentile for background concentrations and other input source terms. The results indicate low toxicity levels below Canadian Council of Ministers of the Environment in Mining

Mineral Effluent Regulation Guidelines (sic). This issue is resolved.

Again, site-wide water load balance, another issue. The model did not predict cyanide mercury, and selenium in the TIA and mercury in the effluent discharging to Robert's Bay from the marine outfall box due to high detection limits or lack of data. Our recommendation was complete additional analysis for mercury and selenium using low level detection limits. Also obtain additional information to predict cyanide concentrations in the source terms.

TMAC updated the modeling to include cyanide, selenium and mercury in the TIA and point of discharge to Robert's Bay. Results indicate concentrations for cyanide, copper, mercury, and selenium were extremely low. This issue is resolved.

On the issue of hydrology, there was little discussion on how groundwater inflow at 3,000 cubic metres per day will be handled, including post closure. We recommended that TMAC provide additional details regarding the variance in the volume and quality of groundwater to be managed and, management of groundwater inflows during mining operations to provide assurance that the watering rates would effectively handle groundwater inflows. The response: TMAC provided the requested information to KIA's

satisfaction, and this issue was resolved.

The next issue was potential interaction with the marine environment. Saline groundwater and water from the TIA have the potential to interact with the marine environment. This concerns the variability of TIA discharge, salinity levels, and chemical differences between saline groundwater and seawater. We recommended variance in water discharge. Chemical differences and potential impact on seawater should be addressed in further detail. TMAC provided information on groundwater quality, and saline variation of ocean discharges was found to be below Canadian Council of Ministers of the Environment Guidelines. This issue is resolved.

The next issue: Robert's Bay discharge and aquatic environment monitoring program. The Robert's Bay hosts nine waterfowl and at least two mammal species that feed on benthic food items like bivalves. Update the aquatic and environment monitoring plan in Robert's Bay to protect wildlife. The aquatic environment monitoring plan changes should include increased sampling locations and frequency for diffuser outfall.

The sensitivity analysis of the water load balance indicates the TIA effluent concentrations are below the CCME and Mining Mineral (sic) Effluent Regulations.

Hydrodynamic modeling of discharge indicates dilutions of greater than 180 to 1 within 1 metre of the diffuser and dilutions of 1000 to 1 to 10,000 to 1 at a distance of 250 metres from the diffuser. Proposed sampling locations in Robert's Bay and the TIA were reviewed and found adequate for the AEMP. This issue is resolved.

The next issue is on mixing-zone delineation. The methods used to predict water quality in Robert's Bay does not determine the size and properties of the mixing zone where water quality will be above the Canadian Council of the Environment Guidelines. The size and shape of the mixing zone where water quality will be above CCME Guidelines should be modeled and presented using 75th percentile concentrations. TMAC used a three-dimensional hydrodynamic modeling to simulate mixing zones, plume movement, and predict water quality concentrations using 75th percentile concentrations. All marine CCME water quality requirements were met within 1 metre of the diffuser with water quality similar to baseline conditions. The issue is resolved.

The next issue was prediction of environmental effects on water quality. A water quality model is needed to determine the concentrations of nitrate in the mixing zone and between deep and surface layers. Enriched nitrate in the surface layer may cause

excessive algae growth. Update site water -- water quality model to include the mixing zone modeling in Robert's Bay that predicts the concentrations of nitrate in other parameters in the mixing zone deep layer and surface waters.

TMAC has provided modeling results on plume size, shape, and concentration in Robert's Bay at Melville Sound. Nitrate and other parameters were found to be well below the Canadian Council of the Environment Guidelines with the plume trapped well below the surface water layer. This issue is resolved.

The next issue: contaminants of potential concern in Robert's Bay. This concerned how will future projects affect water quality in Robert's Bay? Our recommendation to TMAC is that TMAC should provide a discussion of how CCME water quality criteria in Robert's Bay will meet -- be met after Phrase 2 starts. Additional studies for the TIA and Robert's Bay will be addressed in Phase 2 environmental impact statements. This issue was discussed and resolved by KIA and TMAC at the January technical meeting. Concerning waste rock tailings, we have no issues.

The next issue was TIA expansion capacity. The question was does the TIA have sufficient capacity for Madrid and Boston projects? Our recommendation: TMAC should provide an assessment of TIA capacity for future

projects and should include these projects in the CEA. The response was that additional studies for TIA and Robert's Bay will be addressed in Phase 2 of the environmental impact study. This issue was discussed and resolved by KIA and TMAC at the January meeting, and the issue is resolved.

The next issue was TIA wildlife attraction and deterrence. We were concerned about attraction to and the consumption of tails or vegetation impacted by tailing leachates by wildlife. Our recommendation is that there would be an adaptive management program with several details on frequency thresholds and methods of monitoring and mitigation.

TMAC has agreed to develop a monitoring plan to detect wildlife attraction in feeding in or near the TIA in combination with other monitoring based on results will conduct a risk assessment and implement a wildlife deterrence as necessary. This issue was discussed thoroughly and was resolved by KIA and TMAC.

The next issue was the TIA NPAG tailings cover depth. The issue is that the proposed .3 metre depth of quarry rock cap for the tailings beach upon closure is not sufficient. Using 75th -- our recommendation was to use the 75th percentile leach as input values into the model when predicting containment release from the TIA. TMAC had recalculated the tailings beach

source terms using the 75th percentile leach rates from the humidity cell tests. The results of the new model indicate that the 0.3-metre tailing cover is adequate in the development of boils on its surface is low. This issue is closed -- or resolved, I should say.

Okay. The next issue the TIA floatation tailing dustfall in leaching. The issue was attraction to consumption of tails or vegetation impacted by tailing leachate by wildlife. Our recommendation: an adaptive management program with several details on frequency, thresholds, and methods of monitoring and mitigating. Our response is the review of the TIA water quality from the sensitivity analysis indicated that tailings were very low in concentrations of toxic substances and were well below the Canadian Council of the Environment Guidelines. This issue was discussed thoroughly and was resolved by KIA and TMAC.

The next issue, the TIA elevated parameters of potential concern upon closure. Our issue was water and load balance model uses medium values to predict water quality and loading which may underestimate potential effects to surface water. Again, we recommended the use of the 75th percentile concentrations as input values into the model to consider enriched conditions. TMAC had run a sensitivity analysis of water and load balance using

the 75th percentile for background concentration and other input source terms. The results were found to be low in Canadian Council of the Environment and Mining Mineral Effluent Regulations and Guidelines (sic), and the water was nontoxic to caribou and birds. The issue is resolved.

The next issue on waste rock and tailings, we have no issues with this.

The next issue is the Doris Lake water levels. The issue we brought forward was groundwater inflows will affect the Doris Lake water levels; potential effects on fisheries, in particular spawning habitat and egg incubation are currently unknown. Our recommendation was to have -- additional work was completed in 2015 that -- to characterize the fish habitat around Doris Lake. It is recommended that this baseline information be presented and used to update the effects, assessment, and guide mitigation, and monitoring plans as needed.

TMAC has completed additional data collection to quantify effects to fish and fish habitat in Doris North -- in Doris Lake. This information was reviewed and assessed by us, and the issue is resolved.

Concerning the next few issues of -- or items is that construction operation of Robert's Bay discharge and pipeline, road and water crossings, sediment

quality, effluent buoyancy, and dust suppressant of tailings, we had no issues. Concerning water treatment, water and sewage treatment, we had no issues. Concerning the management plans and reports and the contents of the plans, we had reviewed this, and we have no issues.

Again, concerning updates to plans and approval of plans, we have no issues.

This statement I had presented at the NIRB public hearing, and I'll present it here. The KIA receives monetary compensation through a variety of agreements, direct compensation through the framework agreement and the IIBA for land access, quarry materials and water usage, which is covered. Royalties from gold production plus shareholdings in TMAC, NTI also gets a royalty on profit under its Mineral Rights Agreement with TMAC Resources Inc. All this creates a substantial benefit to Inuit in the region.

And this -- our framework agreement does cover -- for the purposes of the water licence, water usage is covered under this for the purposes of the licence -- water compensation under the licence has been covered by the framework agreement.

So in our statement here, the KIA has resolved all technical issues brought forward to the technical meeting through our ongoing collaboration with TMAC

Resources Inc. The final resolution of the reclamation security is still pending at this time of our submission.

In addition to the technical issues raised, the KIA has signed with TMAC a comprehensive framework agreement for land, compensation of water, and the Impact and Benefits Agreement. The IIBA addresses Inuit interest in the areas of employment, contracting, and training in relation to the Hope Bay project as a whole through its entire lifespan. Under the IIBA, the Inuit environmental advisory committee has been established with TMAC which complements KIA's current environmental activities in the Department of Lands and Environment.

The IEAC allows for local community to have input directly to TMAC on environmental concerns. Through the implementation committee with KIA and TMAC representatives, measures of employment, business development, and training are being developed which fulfills our social economic obligations under Nunavut Land Claims Agreement.

The KIA currently has $3.49 million in letters of credit and an 8 million corporate guarantee and a general security agreement to back up the corporate guarantee giving KIA a claim on TMAC's assets. The current amount of security of 11.49 million is

inadequate security for the Doris North Mine site, given project changes and development. The KIA's engineering consultant has reviewed TMAC and INAC's reclamation cost models. TMAC's cost estimate or quantum of 28.94 million for security is reasonable, and the split in land and water is about 84 percent and 16 percent, as per our memorandum from BGC Engineering. A contingency of 20 percent exits within TMAC's reclamation estimate residual risks and cost escalators as well as questions raised by KIA's consultant were discussed with TMAC and their engineering consultant. All questions were satisfactorily answered, and the KIA accepts and supports TMAC's reclamation cost estimate for the Doris North Mine site.

INAC's engineering consultant has a reclamation cost estimate of 44.12 million, which is substantially higher than TMAC's estimate. This is primary due to indirect costs being 175 percent higher than TMAC's estimate of indirect costs. INAC's estimate uses a five-year time horizon for reclamation in contrast to TMAC's approximately two-year time horizon for performing reclamation work.

INAC's estimate is about 50 percent, the productivity of TMAC's estimate, which KIA finds questionable. The INAC estimate acknowledges that 98 percent of the quantum is associated with the

Inuit-owned land while only 2 percent is Crown land. The 43.42 million of IOL security has a split of land/water liability of 45 percent and 55 percent respectively, which the KIA finds unreasonable given our experience with Newmont and Orbit 25 brine spill at Boston camp in July of 2011. Drilling fluid containing potassium chloride had spilled onto the land and subsequently entered a nearby water body. About 1,200 square metres of tundra was damaged due to elevated chloride levels. The deterious (sic) substance had entered the water body and dissipated quickly in a few days with no loss of fish or damage to aquatic -- to the aquatic environment.

Environment Canada at the time had charged Newmont in Orbit Garant with breaking federal environmental laws. Both Newmont and Orbit Garant agreed to contribute to the -- Environment Canada's environment fund. No reclamation work was done by the federal government to the lakes since no damage was done.

The KIA investigated possible means of land reclamation. If no actions were taken, it would take 15 to 20 years for the land to recover through natural re-vegetation. Human intervention would require experimentation in the restoration of the tundra and remediation work based on the experimental results. The human intervention and reclamation of land would be

about $3 million. This clearly illustrates that the liability is primarily with the land and not water. INAC's split of land and water liability of 45 and 55 percent would expose KIA to an excessive amount of risk as landowner.

The KIA strongly believes that, given the substantial benefits to the Inuit and that all technical issues have been resolved, that the amendment to the Doris North Type A water licence is warranted. This pending satisfactorily resolving the split of land and water liability with INAC. If the split of land and water liability is not resolved, KIA still supports the amendment of the water licence and will exercise the conditions of its framework agreement in the commercial lease to TMAC to meet its reclamation needs.

I -- the KIA recommends the approval of TMAC application for the amendment of the Type A water licence for the Doris North Mine site. We thank you, and we are open to any questions.

THE CHAIR: Thank you. Before I move on to the questioning to the Kitikmeot Inuit Association, I think this would be an opportune time for a health break. 15 minutes.

(ADJOURNMENT)

THE CHAIR: Welcome back. Next we -- as I indicated earlier, we'll have questioning to KIA by the

applicant. Any questions to the Kitikmeot Inuit Association by the applicant?

MR. ROBERTS: Thank you, Mr. Chairman. John Roberts, TMAC Resources. We have no questions for the KIA, but we would like to take the opportunity to thank the KIA for their continuing support of the project and also to highlight the attributes of the relationship that we have with the KIA, which we find to be very productive and very helpful.

We have -- as you know, we have concluded the framework agreements with the KIA that includes an IIBA, and as John outlined, the inclusion of an Inuit environmental advisory council, and all those things are part, I think, of a -- of a beneficial and ongoing and growing relationship of trust that helps us as -- as we proceed working with this landowner to develop the land. We value that relationship very much, and we look to it being continued and very productive, and thank you very much for that.

Mr. Chairman, that's -- those are my remarks.

THE CHAIR: Thank you. Environment Canada and Climate Change, any questions to the Kitikmeot Inuit Association?

MR. DAHL: Mark Dahl, honestly no questions this time.

THE CHAIR: Honestly?

INAC?
Indigenous and Northern Affairs Canada Questions the Kitikmeot Inuit Association
MS. COSTELLO: Thank you, Mr. Chair. Karen Costello for Indigenous and Northern Affairs Canada. I'm just seeking a little bit of clarification from the Kitikmeot Inuit Association on their determination of the apportionment of security. Regardless of what the quantum is, in their -- the information that they have presented in -- and this morning they filed a document which, because we've been here, we haven't had a chance to fully review from BGC, but I was hoping that they could clarify how they made that determination of the 84/16 split. Thank you, Mr. Chair.
THE CHAIR: Thank you.
MR. ROESCH: This is John Roesch here for the KIA. BGC Engineering had reviewed both SRK's cost model and had looked at INAC's and even SRK's comparison of their model to INAC's model. Their assessment was first based on a direct and indirect estimate, and with the direct-cost estimate, they looked at what were land components, in their opinion, and what were water. And for the indirect, they basically spread it in proportion to what they had done with the direct. So that's how they came up with an 84 percent and 16 percent split. And I had provided

this information in advance to both INAC and TMAC several, several days ago, and INAC -- I mean, TMAC submitted it as part of their presentation at this meeting. And the NWB has a copy too because I know TMAC was submitting it as part of their proposal. So it's all in that memorandum from our engineering consultant.

And we strongly believe at the KIA that INAC's split of land to water of 45 percent to 55 percent exposes the KIA to an excessive amount of risk as landowner. And I gave a very clear reason from our history as why we believe this isn't equitable. Because damage to the land takes a long time to recover compared to the water, and the costs of reclaiming land in the north are very high due to logistics of bringing people up here. So it's a very clear example to show that a 45/55 percent split is not equitable for us.

And we find how INAC's consultant came up with that split to be questionable, and there are details that we understand are proprietary with their consultant which we do not have access to. So we made our comments, and our engineers made their comments based on available information, and that's what you have.

THE CHAIR: INAC.

MS. COSTELLO: Thank you very much,

Mr. Chair. Indigenous and Northern Affairs appreciates the clarification provided by the Kitikmeot Inuit Association, and we will be considering that and reviewing that further, and we hope to be able to speak to that when we address reclamation cost estimates later during this hearing. Thank you.

THE CHAIR: Thank you. Any further questions from INAC? No? Thank you.

The public, any questions from the general public to Kitikmeot Inuit Association?

Staff?

Nunavut Water Board Staff Questions Kitikmeot Inuit Association

MS. AUTUT: Thank you, Mr. Chair. Stephanie Autut with the Nunavut Water Board. Although you referenced water-user compensation being part of the framework agreement, can KIA confirm that, as required of the Board under Section 63 of the Nunavut Waters and Nunavut Surface Right Tribunal Act, there are no outstanding issues of water-user compensation?

MR. ROESCH: John Roesch here for the KIA. Yes, I can confirm there are no outstanding issues concerning water compensation under the water licence. We have covered it under our framework agreement and our annual payment.

MS. AUTUT: Thank you, Mr. Chair.

Stephanie Autut, Nunavut Water Board. No further questions from staff.

THE CHAIR: Thank you. Any further questions from staff?

MS. AREDES: Sonia Aredes, Nunavut Water Board. No further questions. Thank you.

THE CHAIR: Board members, any question? Thank you.

Next we have Environment Canada and Climate Change to do your presentation.

And, Teresa, please swear in the witnesses.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. If I can have the witnesses state and spell their name for the record, please.

MR. DAHL: Mark Dahl, M-A-R-K, D-A-H-L.

MS. WILSON: Anne Wilson, A-N-N-E, W-I-L-S-O-N.

MS. MEADOWS: Do you wish to be sworn of affirmed?

MS. WILSON: Sworn.

MARK DAHL, ANNE WILSON, Sworn

MS. MEADOWS: Thank you. It's my understanding, Mr. Dahl, that you have exhibits to be filed in respect of your submission, the first being the PowerPoint submission but that there's been a

little bit of a difficulty in printing with respect to the translated copies of the presentation, and so we will await those being filed later today when you have the print copies of those; is that correct?

MR. DAHL: The -- Mark Dahl for Environment Canada. The presentations are bilingual. The English/Inuinnaqtun is problematic. The English/Inuktitut is fine, and it's here.

MS. MEADOWS: Thank you, Mr. Chair. Legal counsel for the Nunavut Water Board. So let the record show we will be marking those as the next two exhibits in this hearing, and then when you have the corrected copy, you can provide me with the hard copy.

Thank you, Mr. Chair.

EXHIBIT 13 - Hard Copy PowerPoint Presentation Environment and Climate Change Canada's Final Presentation Regarding Amendment No. 1 to Doris North Project Type A Water Licence 2AM-DOH1323 (English/Inuinnaqtun)

EXHIBIT 14 - Hard Copy PowerPoint Presentation Environment and Climate Change Canada's Final Presentation Regarding Amendment No. 1 to Doris North Project Type A Water Licence 2AM-DOH1323 (English Inuktitut)

Presentation By Environment and Climate Change Canada

MR. DAHL: Mouse and presentation.

Good afternoon, Mr. Chair and Board members and everyone else. My name is Mark Dahl, and I will be presenting on behalf of Environment and Climate Change Canada, or ECC, today. My role on this file is the coordination of a team of experts reviewing water quality and waste management aspects of TMAC's application. I am accompanied by Anne Wilson who is a water quality expert on this team. In this presentation, I'll briefly outline Environment and Climate Change Canada's mandate, highlight the relevant legislation and give an overview of our role in the process. Anne will then summarize the status of the issues raised by ECC during the review of the amendment proposal.

So how do you advance? As an expert department, Environment and Climate Change Canada reviews development proposals for potential environmental impacts and provides scientific advice to regulators and Boards such as the Nunavut Water Board on issues falling within our mandate.

The Department of the Environment Act gives the ECCC -- oops, yes -- responsibilities for environmental management and protection. Through this Act, Environment and Climate Change Canada is mandated to preserve and enhance water quality and to conserve and

protect Canada's water resources. Sometimes it works. Sometimes it doesn't.

More broadly speaking Environment and Climate Change Canada also has responsibilities for weather forecasting, regulation of boundary waters, and general coordination of federal environmental policies and programs. For a water licence, the Department focuses on protecting water quality as well as on effective waste management and the protection of air quality as they relate to water quality. ECCC relies on several acts to deliver on its mandate, but in the context of this review, the most important of these acts is the Fisheries Act and the Canadian Environmental Protection Act. Environment and Climate Change Canada shares the administration of the Fisheries Act with the Department of Fisheries and Oceans. ECC's responsibilities under the Fisheries Act includes Section 36 of the Act which is a key pollution-prevention provision that prohibits the introduction of harmful substances into waters frequented by fish.

Environment Canada -- sorry, Environment and Climate Change Canada also has pollution-prevention responsibilities under the Canadian Environmental Protection Act, or CEPA, which in -- this Act enables a number of regulations, guidelines, and codes of practice that are designed to protect the environment

from the introduction of toxic substances. It is from this perspective that the Department provides recommendations and advice to the Nunavut Water Board and the Nunavut Impact Review Board.

Hang on. Sorry. Technical difficulties again.

ECC has participated in all phases of the Doris North water licensing process, including the review of the original project way back in 2007 and before. During the review of both the original project and the amendment application, ECCC has provided scientific expertise regarding water, sediment, and effluent quality.

When reviewing the TMAC amendment application, Environment and Climate Change Canada identified some issues that we felt needed to be addressed to ensure that the environment was protected. ECCC and TMAC have worked together to resolve those issues, and we look forward to ongoing discussions regarding monitoring and mitigation. The issues that Environment and Climate Change Canada identified related to four general themes. These themes were monitoring site locations in the receiving environment, predicting and understanding effluent composition, the parameters to be monitored in the effluent and in the receiving environment, and the management of mine water.

Anne Wilson will now take over and provide an

overview that were raised and the status of these issues. Thank you.

MS. WILSON: Thank you. Anne Wilson with Environment and Climate Change Canada. And I don't usually sit close enough to the mic, so I'll try and be mindful.

The first slide that I'll speak to deals with the monitoring program for Robert's Bay, and while I'll acknowledge this is a little bit downstream of what the Water Board looks at, it also speaks to our confidence that what the proponent is doing upstream at the mine site is appropriate and that there won't be any harm.

We had raised concerns with the ability of the initial proposal for the monitoring program to detect effluent effects in the marine environment. Ongoing work has been done on the marine study design in collaboration with the aquatic monitoring framework working group and with Environment and Climate Change Canada's environmental effects monitoring staff, as is -- we'll also be monitoring under the Metal Mining Effluent Regulations. TMAC has revised the study design and has collected baseline data this summer, and at this point, Environment and Climate Change Canada considers these concerns resolved.

Our next slide is in respect of predicting effluent composition. Effluent is made up from a

number of sources, whether it's water -- contact water collected on the surface or water that comes in from the underground mine or water that's been used and goes through the process plant. ECCC had previously raised concerns about tracking the quality of various components contributing to the effluent chemistry. This has been resolved through TMAC providing the site water and load balance earlier this year, and TMAC is committed to update their modeling on an annual basis which will entail ongoing monitoring of the source constituents that make up the effluent, and accordingly we feel that this one is considered resolved.

Moving now to the monitoring parameters, which are under the aquatic effects monitoring program as well as the various management plans dealing with groundwater and site water. We've had a lot of discussions on what will be monitored, how often it will be monitored, and how it will be reported.

In June, TMAC convened a technical meeting, and following on discussions at and after that meeting we're satisfied that the aquatic effects monitoring program includes appropriate parameters, appropriate sites, and sufficient frequency. We do appreciate TMAC's collaborative approach, and we look forward to the next iteration of the aquatic effects monitoring plan.

I did want to note that with respect to the reporting of the monitoring results we would support a requirement in the amended water licence for data to be submitted monthly to the Nunavut Water Board so that it can be on the public registry and available to all the parties. This would be for the monthly mine water outflow quality, for the full characterization of effluent quality, and for the quarterly quality of the TIA characterization, the expanded suite sampling.

Next is mine water management, and, of course, this has been a topic of a lot of attention in our department. Because effluent will be discharged to the ocean, it will be regulated under the Metal Mining Effluent Regulations. Initially the mine water's going to be very saline and, as described by John previously, would not pass the prescribed toxicity test that requires rainbow trout to be used. Unfortunately, the Metal Mining Effluent Regulations have no wiggle room on that as they are written now.

To address that, a marine test using stickleback is being developed. An invertebrate test is also under development. And there have to be changes to the regulations to allow use of other test protocols. These changes are underway. Until all this can occur, interim water management will be needed.

Next slide. Actually you can go to the next one.

I jumped head. As outlined by TMAC, the water management approach will be to use the Tailings Impoundment Area to hold the saline effluent until it can be discharged to Robert's Bay. This is contingent -- the discharge is contingent on finalizing the bioassay test-reference methods, and ECCC does not anticipate delays with this.

There is some uncertainty with the timing of the amendment of the regulations, and while TMAC's expectation is reasonable -- and as John said, ECCC is moving as quickly as possible to meet that goal -- the timelines are not fully within Environment Canada -- and Climate Change Canada's control. There's public consultation involved. And so those issues we would say were substantially resolved absolutely to the extent that we can influence them, but ...

I'd just like to say thank you very much to the proponent and their consultants for very collaborative working relationship and to the Board. I love coming to Cambridge Bay, and it's wonderful to be a part of these proceedings in such a constructive venue. Thank you.

THE CHAIR: Thank you. Thank you, Environment Canada. Questions to Environment Canada from the applicant?

MR. ROBERTS: Mr. Chairman, John Roberts,

TMAC Resources. I wonder if I could have a moment to confer with my colleague. I do have a question.

THE CHAIR: Don't hesitate to ask for a short break if you need more time.

TMAC Resources Incorporated Questions Environment and Climate Change Canada

MR. ROBERTS: Mr. Chairman, we're ready. John Roberts -- excuse me. John Roberts, TMAC Resources. My question is for Ms. Wilson. Anne, I wonder if you could confirm that Environment and Climate Change Canada has identified no difficulties, no technical difficulties in the development of test species for the -- for the saline toxicity test?

MS. WILSON: Thank you. Anne Wilson, Environment and Climate Change Canada. My understanding is that the development is well underway. In fact, a poster is going to be presented on the new test method at the upcoming Canadian exotoxicity workshop next weekend, which tells me it's out in the public, and we're happy to have it that way. That would be for the fish method.

There would also have to be an invertebrate species test method, and that is following on the first one. It's not quite as far along.

MR. ROBERTS: Thank you, Mr. Chairman and Anne. That was helpful. I have another

comment/clarification. To clarify, the reporting request that Environment and Climate Change Canada has put forward to share various monitoring data with Nunavut Water Board and others -- to clarify that the request in particular for the effluent discharge in that part of the request, we agreed to provide that, by all means, to the Water Board and others who may be interested, but we would suggest that that should not be a part of the water licence. The reason being that if it becomes a condition of the water licence it is enforceable and given that that is part of Environment Canada's jurisdiction under the MMER, we feel that would be a double-jeopardy situation, and we don't feel it should be a part of the water licence accordingly. Thank you.

MS. WILSON: Thank you. Anne Wilson, Environment and Climate Change Canada. I appreciate the position that TMAC is in there. The MMER reporting is between the regulatory information system and the proponent, and that data isn't available to anyone else. So the issue is that the operational information that will help the rest of us know if things are going as expected and if we, you know, have any red flags coming up for future reviews, it would need to be on the public registry of the Water Board.

Typically that would have been under the Schedule

J reporting and month -- in a monthly report, and in any event, I would expect, as TMAC has committed to and is typical in licences, an annual rollup of all the data, but I don't understand why there would be a concern with having that as a licence condition.

MR. ROBERTS: Mr. Chairman, I'd reiterate that we understand the request for information, and we're happy, as I said, to provide that information. We -- I would note that the -- there is no doubt a very good reason why Environment Canada does not want the effluent information from various mines across the country to be in the public domain and, therefore, why it's secreted away inside Environment Canada's system. So that being said, as -- and I'm not quite sure what that is. I suspect there's a very good legal reason. But in any event, we are happy, as I said, to provide that information, but once again, we feel it's inappropriate in the water licence as should -- should there be a noncompliance issue, that is a compliance that is a matter of -- for dealing with with Environment Canada. And since that discharge goes into saltwater and the Water Board's jurisdiction is, I understand, to be freshwater, then I don't believe it's appropriate to have a condition of the licence that would deal with an area of discharge that is not within the Water Board's jurisdiction.

So perhaps I could seek some clarification from the Board's or the Board's counsel on the jurisdiction of the Water Board in this matter.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. It's always a dangerous thing when everyone is looking at the Board's legal counsel to explain the Board's jurisdiction to them on these issues.

I think -- I think there's a general sense that the reporting from a convenience perspective in terms of the use of the Water Board's public registry as a mechanism for communicating that information generally is sort of accepted on a voluntary basis, if that's correct, from TMAC's perspective. Their hesitation, however, if I'm understanding it correctly, is that they do not want it as a term or condition of the licence that would be in and of itself enforceable and in some respects potentially giving jurisdiction to the Board over a discharge into the marine environment notwithstanding the fact that we do not have jurisdiction over discharges into the marine environment.

That being said, I think the question of whether or not something that has been agreed upon sort of in these proceedings ends up being rolled into a schedule, in terms of reporting, I would have the -- I would

share the same hesitation of including that in the schedule given that the Board does not have jurisdiction to require monitoring or effluent criteria in the marine environment. The question always becomes then why is it, you know, a term or condition in a licence?

So what I would suggest, however, is because there is agreement here you may want to enter into a voluntary agreement that basically says you'll provide that information in the form of your annual report or your monthly reports under the licence, but then it's an agreement between you and Environment and Climate Change Canada and is not a term or condition of the licence expressly.

Thank you, Mr. Chair.

MS. WILSON: Anne Wilson, Environment and Climate Change Canada. I just want to make sure it's clear that I'm not asking for anything that wouldn't normally be reported under Schedule J monitoring. And with respect to the jurisdictional issue, I think we've got a nice precedent with the Iqaluit and Rankin water licences. Both of those licences have monitoring required of the upstream effluent and have no end-of-pipe criteria or marine monitoring requirements.

The issue, of course, would be if there was any spill, any monitoring -- sorry, any water quality data

would be useful in those events, and it would seem reasonable that any data for -- the water quality data for effluent in the process plant or leaving the process plant or in the TIA or leaving the TIA would be within the regulated area.

So that -- those are just my thoughts on that. But some of the aspects that would be of strong interest would be the groundwater monitoring data which would, in -- if they weren't moved into a monitoring plan -- sorry, and management plan, would be included under one of the schedules and would routinely have monthly reporting. So it's just I didn't want to lose access to the ongoing data that we normally get to look at.

MR. ROBERTS: Mr. Chairman, can we have a break to confer, please, ten minutes?

THE CHAIR: How much time do you need? Five? Ten?

MR. ROBERTS: Five minutes.

THE CHAIR: Five minutes.

(ADJOURNMENT)

MR. ROBERTS: Mr. Chair, we are ready. I'll ask our legal counsel to respond.

MS. KOWBEL: Christine Kowbel, TMAC. So with the -- I guess with the backdrop that TMAC has agreed to provide this information as a matter of

course, the fact that there are discharge -- there are reporting requirements outside the Board's jurisdiction that have been reflected in Schedule J's -- in other water licences in Nunavut is, in our view, irrelevant because it may well be that there are examples in other licences, but, to us, the key question is whether there's jurisdiction over the reporting requirement. And in this case, I think we've heard from the Board's counsel, and the Board is of the view that it is not, and TMAC's of the firm view that this -- that this is not -- this -- because of the ultimate discharge location, this is not a reporting requirement that is supported under the Act.

I also wanted to remind the Board and to remind Environment Canada this is all information that will be submitted to Environment Canada as part of the MMER reporting requirements, and so there's no information that Environment Canada wouldn't have even if there was not a commitment from TMAC -- or not an agreement with TMAC to provide this information under the water licence to the Water Board.

And so I guess that is our final view of these things, that this reporting requirement should not be reflected in Schedule J of the licence, and in our view, it would be beyond the jurisdiction of the Board to include this reporting requirement within the water

licence. Thank you.

MS. WILSON: Anne Wilson, Environment and Climate Change Canada. And the parts of the monitoring data that are separate from the MMER and have nothing to do with the MMER are the ones that are of interest for me to be reported monthly. So those would include things like the mine water outflow quality. Did we get it right as far as the salinity? Are things going as predicted? Other things would be parameters that are being monitored under the water management plan that aren't even required by the Metal Mining Effluent Regulations. So this is entirely separate in my mind from the MMER. The MMER data I don't ever see. That's between the company and the part of Environment Canada that deals with that, so I'm not even looking at that as being part of this issue. It's more to keep myself educated on what is going on with the water quality on the parts that are eventually going to be of environmental concern, whether it is on the surface at the mine site or ultimately into some receiving environment.

I don't want to beat this one to death too much more. I think the Board has heard both our sides on this, and we'll just leave it with them. Thanks.

MR. ROBERTS: Mr. Chairman, John Roberts, TMAC Resources. I would like to make one final

statement on this as well. And as we have said, we are happy to provide that information to Ms. Wilson for her edification and comfort, but we do not see any reason why that should be a part of the water licence. Thank you.

THE CHAIR: Anything else?

MS. WILSON: Anne Wilson, Environment and Climate Change Canada. I trust that what John meant to say would be to the public registry, not to myself personally; right?

MR. ROBERTS: It can go to the public registry but I'll wager it'll be a short subscription list.

THE CHAIR: Thank you.

Kitikmeot Inuit Association, any questions to Environment Canada climate change?

MR. ROESCH: This is John Roesch for the Kitikmeot Inuit Association. We have no questions for Environment and Climate Change Canada. Thank you.

THE CHAIR: Thank you.

INAC?

MS. COSTELLO: Thank you, Mr. Chair. Karen Costello for Indigenous and Northern Affairs Canada. We have no questions for Environment and Climate Change Canada. Thank you.

THE CHAIR: Thank you, INAC.

Any questions to Environment Canada from the general public? No.

Staff?

MS. AUTUT: Thank you, Mr. Chair. Stephanie Autut, Nunavut Water Board. The staff have no questions for Environment and Climate Change Canada. Thank you.

THE CHAIR: Thank you. Board members? Thank you. Thank you, Environment Canada.

Next we have on the agenda INAC to do their presentation. Teresa, please swear in the witnesses. Thank you, Teresa. I have just been informed that INAC's presentation is about an hour and a half so what we'll do now is we will adjourn until tomorrow morning so INAC can do their presentation tomorrow morning. Because we have the evening session tonight, it would be highly desirable for you to do your presentation in the morning at 9. And we'll adjourn for now, and then we'll do our community session tonight at 7.

MS. COSTELLO: Thank you, Mr. Chair. Karen Costello, Indigenous -- for Indigenous and Northern Affairs Canada. We very much appreciate the Board's consideration with respect to the length of our presentation. We'd be happy to present -- be ready to present for 9 AM tomorrow morning. Thank you.

THE CHAIR: We'll see you at 7 tonight.

Thank you.

(DINNER ADJOURNMENT AT 4:23 PM)

(PROCEEDINGS RECOMMENCED AT 7:15 PM)

Community Session

Opening Remarks by Nunavut Water Board Chair

THE CHAIR: Good evening, everyone, and welcome to the community session on the Nunavut Water Board's public hearing in relation to an amendment application filed by TMAC Resources Incorporated with the Nunavut Water Board for Water Licence 2AM-DOH1323.

My name is Thomas Kabloona, and I am the Chair of the Nunavut Water Board, and I will be chairing tonight's session. Today's session is part of the Nunavut Water Board's public hearing to consider amendments to this licence which authorizes the use of water and deposit of waste associated with Doris North Gold Mine project. This public hearing marks the final opportunity for TMAC, interveners, and members of the community to present their comments, issues, the questions about the amendment application to the Board before the Board and makes its decision.

The Nunavut Water Board appreciates you all turning out to participate in this important meeting. Before we proceed with today's session, please let us begin with a prayer, and I will ask Henry Ohokannoak to do the opening prayer, please.

(Opening Prayer)

THE CHAIR: Thank you. For those of you who were not here this morning when we started the public hearing, I have a few brief housekeeping introductory remarks, and then I will turn the microphone over to the staff of the Nunavut Water Board to provide everyone with a summary of the Water Board's process in general in relation to this amendment application to the applicant, TMAC Resources Incorporated, to present the amendment application and to the interveners in this application, the Kitikmeot Inuit Association, Indigenous and Northern Affairs Canada, and Environment Canada (sic) Climate Change Canada to present summaries of their technical-review comments.

Now, on to a few brief housekeeping items. There will be interpretation available throughout the hearing, and earpieces are available from the table located to my right. Channel 2 is English, and Channel 4 is Inuinnaqtun. When you are speaking into the microphone, please turn off your earpiece to avoid feedback.

Secondly, the Board appreciates it if everyone signs in on the sign-in sheet located at the tables just as you come in. This is an important record of the hearing, and we appreciate your help in making sure

it is complete. The washrooms are located just as you enter the hall, and there are exits located just where you come in and at the back of the hall. There will be coffee, tea, and snacks located at the tables on the right side of the hall. During breaks, please help yourself to the food provided. There are agendas for the hearing available at the table as you come in. Please pick one up and follow along.

Now I would like to introduce all the Board -- all of the Board and staff before we proceed to the presentations in the agenda. I will be chairing this panel, and with me today are members of the panel -- or Board members Ross Mrazek to my right and Makabe Nortok to my left. Several staff members who have contributed to the NWB's administration and the technical review of the application are present along with legal counsel to the Board. I will introduce the individuals attending today. When I say their name, I ask that you wave so that people know who you are.

Stephanie Autut, Executive Director; Dave Hohnstein, Director of Technical Services; Ben Kogvik, secretary/interpreter to the Board; Sonia Aredes, Technical Advisor; Ida Porter, Licensing Administrator; and Teresa Meadows, legal counsel to the NWB. We have two interpreters helping us this evening. In addition to Ben Kogvik, secretary to the Board and interpreter,

we also have Henry Ohokannoak who is from Cambridge Bay. For audio support we have Ryan Dempster from Pido Productions with us. If you experience any difficulties with your headsets, he will be able to provide assistance. To ensure an accurate record of these proceedings are kept, we have with us a court reporter, Sara Anderson, from Dicta Court Reporting Incorporated. To assist Sara, I ask that all parties please state their name prior to speaking.

Tonight's session will involve presentation by the Nunavut Water Board's technical staff and the presentation by the applicant, TMAC Resources Incorporate, and presentation by the interveners, Kitikmeot Inuit Association, Indigenous and Northern Affairs Canada, and Environment and Climate Change Canada.

Following each presentation, I will invite anyone who wishes to ask questions or provide the panel with their comments to step up to the microphone and speak on the record. I encourage everyone with questions please step up and ask, but to make sure our public-hearing record is accurate and to assist our court reporter and interpreters before speaking, please wait until you have a microphone to speak and state your name and speak directly, clearly, and slowly into the microphone. Please be mindful of the interpreters

as you go and avoid the use of acronyms and abbreviations if you can. We appreciate your participation, assistance, in making sure we're all heard and understood in this hearing.

I will now turn the microphone to Board's technical staff to walk you through how this application has progressed to this point.

MS. AREDES: Good night.

MR. HOHNSTEIN: Good night?

MS. AREDES: Good evening. This is a short presentation about the TMAC application for the amendment of the Water Licence Type A relative to the Doris North Project. The list of the topics in the presentation is first about the Nunavut Water Board background information. Second, we're going to talk about the authorizations that the Nunavut Water Board may issue, Nunavut Water Board Type A licensing process, licences issued to the project. Then we go directly to the project and the licence issued to the project, Doris North Project overview, a scope of the application, application status, and next steps.

Okay. The Nunavut Water Board is an institution of public government established under Article 13 of the Nunavut Land Claim (sic) Agreement, has responsibilities and powers over the regulation use and management of freshwater in the Nunavut settlement

area. Objectives of the Nunavut Water Board are to provide for the conservation and utilization of waters in Nunavut, except in national parks, in a manner that provide optimum benefit for the residents of Nunavut in particular and Canadians in general.

Based on its mandate, the Nunavut Water Board may issue any of the following authorizations to regulate the use of water and/or deposit of waste for activities or undertakings occurring within the Nunavut settlement area. The Nunavut Water Board may issue approval without a licence, a Type B water licence, and a Type A water licence. This week's public hearing and community session are for a Type A water licence application filed to amend the Type A water licence for the Doris North Project, 2AM-DOH1323. This is a schematic of the -- of the licensing process for a Type A licence.

Once the application is received, the technical staff perform a preliminary technical review, and after a preliminary technical review and if the application is complete, it goes for a notice of application and requests for technical review. Parties submit written representation. We have the technical meeting and a community meeting, and after that, we have a prehearing conference. A prehearing conference decision is issued. If directed in the prehearing conference

decision, it will require the applicant to provide additional information.

After that, after the prehearing conference, we give a notice of -- of public hearings that is with 60 days of minimum. During the notice -- or during this time, parties exchange written interventions, where in this moment here, that is Nunavut holds a public hearing and a community meeting, and where the Board will issue a decision to approve or to not approve the application.

So if the Nunavut Water Board issue a decision to approve the application, it goes to the Minister. The Minister can approve the issuance of the water licence or cannot approve the issuance of the water licence.

Licence issued to the project: The first licence issued to the project was also a Type A 2AM-DOH713 (sic) issued by the Nunavut Water Board on September 19, 2007, and expired in September 2013. This licence authorized use of 480,000 cubic metres of water per year and deposit of waste in support of mining and milling undertaking.

This licence has three approved amendment (sic). The Number 1 authorized relocation of explosive mixing and storage facility; the Amendment Number 2 authorizes infrastructure expansion; and the Amendment Number 3 issued by the Board authorize change in waste rock

management.

The current licence is 2AM-DOH1323 that was issued by the Nunavut Water Board on August 16, 2013, and will expire on August 15, 2023; authorizes the same quantity of water that the previous licence and subaqueous deposition of tailing into the Tailings Impoundment Area, TIA; the controlled discharge of effluent from the TIA to the Doris Creek is the place where Doris North Project is.

This is a place where the Doris North Project is. This is a view of the Doris North Project. Doris North Project is located on Inuit-owned land in the Kitikmeot Region south of Robert (sic) Bay approximately 125 kilometres south of Cambridge Bay. It's an underground gold mine. First was planned two years of life of mine and use as water source Doris and Windy Lakes. It's -- the processing is milling with cyanide leaching process. The gold dore bar are the final product.

The project was under care and maintenance from 2009 until summer 2015. Construction restarted in summer 2015, and the company expect to start operation in January 2017.

TMAC apply (sic) for an amendment on June 2015, and this amendment of the water licence take into account TMAC mine plan change. One is an extension in

the life of the mine from the two to six years and an increase in the milling rate up to 2,000 tonnes per day. Between 1,000 and 2,000 tonnes per day.

The proposed amendment changed the type and the quantity of waste to be generated and the water and waste management strategies. Because of the mining below the Doris Lake, during the mining, they will -- the company expect to find saline groundwater, some -- and the amount of saline mine water -- saline mine water they will find is around 3,000 cubic metre per day.

Other -- the company expects to modify the tailings deposition strategy to include a combination of backfill underground and subaerial deposition between the Tailings Impoundment Area.

So the company's proposing to discharge up to 7,000 cubic metres per day of effluent from the Tailings Impoundment Area to Robert's Bay. The current licence authorizes discharge to Doris Creek. The effluent -- this discharge is not under the jurisdiction of the Nunavut Water Board because it's on -- in the sea.

So consequence of the change in the mine plan, there is going to be an increase in waste rock, domestic waste, hazardous and nonhazardous waste and an increase in -- because of the -- increase of the life

of the mine and increase in the milling rate.

Between the proposed change during closure and reclamation, the -- they expect to cover the tailings with rock and breaching of the dam. The TIA effluent, once compliant, will discharge and go into Doris Creek post closure. The waste rock will be disposed of underground, none on surface, some can be in construction.

The application was submitted to the Board on June 15, 2015, so TMAC, once submit the application, states its decide (sic) for -- to have a -- coordinate process between the Nunavut -- to Water Board and the NIRB, Nunavut Impact review. In that way, this licence process has been managed like a coordinate (sic) process.

On November 4, 2015, the Nunavut -- the NIRB and the Nunavut Water Board provided notice of TMAC's submission and called for a technical review.

On January 28/29, 2016, the Nunavut Water Board hosted the technical meeting and community session in Cambridge Bay following the NIRB's technical meeting. On June 24, 2016, the Nunavut Water Board held a prehearing conference via teleconference.

On July 7, 2016, the Nunavut Water Board issued a prehearing conference decision report and notice of public hearing. All submissions are on the Nunavut

Water Board FTP site available to the public.

Throughout the review process, the applicant, the Kitikmeot Inuit Association, Indigenous and Northern Affairs, Environment and Climate Change Canada, Fisheries and Ocean (sic) have all contributed in assisting the Nunavut Water Board moving the application to this stage of the process. The Nunavut Water Board recognize and appreciate the participation of the various parties and requests that they continue to do so and work together for the remaining stages of the process.

Okay. This meeting is for the Nunavut Water Board to obtain feedback and comment related to the application from the members of the community. The Nunavut Water Board encourage everyone in attendance to ask questions about the Nunavut Water Board process application and related issues. If you would like to provide your question in written form, please contract Ida.

This is the Nunavut Water Board staff contact information that were already introduced by the Chair. Stephanie Autut, Executive Director; David Hohnstein, the Director of Technical Services; Ben, Director on -- Board Administration and Communication; and Ida Porter, Licence Administration -- Administrator. Thank you.

THE CHAIR: Thank you. Any questions from

community members to the Nunavut Water Board? Any questions from interested parties to the Nunavut Water Board? No.

Next we have the applicant.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board.

Mr. Roberts, it's my understanding that you have two presentation -- two hard copies of the presentation materials that you're going to present in association with the community session, and is it your intention to mark those as the next two exhibits in the public hearing?

MR. ROBERTS: John Roberts, TMAC Resources. Yes, it's our intention to have those marked as exhibits. Thank you.

MS. MEADOWS: Thank you, Mr. Roberts. Let the record show that these will be marked as Exhibits Number 15 and 16 in this public hearing. Thank you, Mr. Chair. Nothing further from me.

EXHIBIT 15 - Hard Copy PowerPoint Presentation TMAC Resources Inc. Nunavut Water Board Hearing Doris Water Licence Amendment 2AM-DOH1323, Community Presentation (English)

EXHIBIT 16 - Hard Copy PowerPoint Presentation TMAC Resources Inc. Nunavut

Water Board Public Hearing Doris Project
Water Licence Amendment 2AM-DOH1323
(Inuktitut)

THE CHAIR: Thank you, Teresa.

Go ahead.

Presentation by the TMAC Resources Incorporated

MR. ROBERTS: Thank you, Mr. Chair. My name is John Roberts, and I'm vice president environment for TMAC Resources. I'd like to address the members of the community, Elders, and the other participants in this hearing, and to describe a little bit about the Doris project that TMAC something is carrying out in the Hope Bay Belt. I'll move through fairly quickly. I have a number of slides. The content of some of these slides was already covered by the Water Board's presentation so I will move fairly quickly along those and add a little colour where I can.

First of all, who is TMAC Resources? TMAC Resources is a Canadian-based exploration and development company. It's based in Toronto, and it's publicly traded, being listed on the Toronto Stock Exchange. It is comprised of a highly experienced team of exploration geologists and develop -- people with experience in developing and working in the Arctic in the mining business in remote circumstances.

Hope Bay is the only project that TMAC has. It is

the sole focus of the company and is -- and is the -- attracts all of our attention. We're very proud to be in Nunavut and particularly proud of the partnership we have forged with the Kitikmeot Inuit Association. We have concluded commercial lease arrangements, framework agreement, and IIBA with the Kitikmeot Inuit Association, and we value very greatly the strong working relationship we have with that organization. Our vision is to promote responsible development in and support of sustainable development for the Kitikmeot Region, and Nunavut, and with our landowner and community partners.

TMAC is here to mine gold in Hope Bay. The -- you can see here a -- from a sample of rock from the Hope Bay Belt, Doris Mine, that this is a -- that there's gold in those rocks. This is what it looks like. What it means is jobs for Nunavummiut, development for the -- for the territory, and, of course, benefits for TMAC as well.

Let me spend a moment on this slide to speak hopefully to the relative simplicity of mining. While the mining business is complicated and doing all this properly, maybe -- entail many steps, mining itself is fairly simple. A mine, of course, is a hole in the ground from which an -- into which go three things: air, water, and explosives. Explosives to break the

rock, water to keep things wet, and air to -- for the miners.

From that hole in the ground come three things: waste rock, and that's the rock that does not have any gold in it; or that's the rock that does have gold in it and we separate that as it comes out of the -- of the mine; and water that we put down in the mine but also water that make leak into the mine from the surrounding rocks.

This water is -- typically finds its way in discharge out to the environment after treatment perhaps or maybe not, depending on the situation. But in any event, it's disposed safely to the environment. The ore is -- needs to be processed. The -- as you -- as you recall from this drawing, ore is contained in the rock, so we need to get the rock away from the gold or the gold out of the rock, and that's done in a processing plant. The ore goes into the processing plant -- processing plant, along with reagents and freshwater and out comes gold, of course, and tailings. Tailings are the finely ground pieces of rock that are left over after the gold is removed. In our case, we have two streams of tailing, one of which goes to the Tailings Impoundment Area. That's about 94 percent. And the other 6 percent goes back for backfill into the -- into the mine, along with waste rock that also

goes back into the mine. We need this to mine safely, to fill the mine back up in order to mine safely, and at the end of our mine life, there will be no waste rock left on the surface.

The reclaim -- the water that goes out of the processing plant is separated in the Tailings Impoundment Area and recirculated into the processing plant so as to minimize our use of freshwater. Excess water is discharged to the environment after -- in a same manner after being treated, if necessary, or perhaps directly if it meets the applicable standards. That's a fairly simple description of what mining actually is.

This is the same picture I believe that -- or more or less the same picture that Sonia showed me -- showed us just a moment ago. The Doris North Mine site is located here on the shores of Doris Lake. The camp, power plant, and fuel supply in the mill building, which we'll have a picture of later, ore pile, waste rock stockpile, there will be more waste rock here, and the Doris Mine Portal in this rock here.

This is -- I said air went into the mine. This is where the ventilation goes down through the mine. Tailings go to the Tailings Impoundment Area behind the -- the north dam, and there will be other dams that will contain the tailings in that area. Excess water

will be discharged, as Sonia said, to the -- to Robert's Bay along a pipeline that travels along the road and down to about here and then about 2 kilometres out in the bay to a satisfactory depth to ensure safe disposal.

This is a close-up of the Robert's Bay area, and as we said before, the proposed development will have new ore pads -- or sorry lay-down pads in this vicinity, and also the tailings line will -- or the discharge line, effluent discharge line will follow along out here and out into the ocean.

In Robert's Bay, we have our fuel storage, our port where we receive freight and fuel -- this is one of the freighters that came in this year -- and other fuel storage and general lay-down areas. As you progress south from Robert's Bay and the shore of the Arctic Ocean, you pass our airstrip, and our -- the road forms part of the airstrip. This is a 5,000-foot airstrip, about the same size as the -- as the airstrip here in Cambridge Bay.

At the end of the airstrip, our lay-down areas, there's another one just up here about the same size, and all of this -- these sea containers are -- contain the products and equipment and -- and consumables that we use to mine gold in Doris.

As you can see, there are a lot of crushed rock

pads constructed for the mill site and for roadways and the lay-down areas I showed you in Cambridge -- in Robert's Bay and at the airstrip. Virtually all of that rock came from this. We call it Quarry Number 2. The quarry contains a great deal more available building material, and this will be one of our major sources of building material for the foreseeable future. There will be a new one that will be in the area of the Tailings Impoundment on the other side of Doris Lake.

This is a picture of the mill building that we're currently constructing. This picture was taken probably --

MS. HAMM: July 16th.

MR. ROBERTS: -- July 16th. Says right there. I was going to say two months ago. Not too bad. And you can see here that some of the control equipment that will -- the switchgear that will run the processing facilities has already been moved into the -- into the -- into the building.

On Sunday when we were there with a tour of many of the people who are with us today, the first processing pieces of equipment were being hauled into the mill. So things are moving quickly at Hope Bay toward production.

Again, too many things to operate here. This is

our camp and workshops area. A bit of a close-up, you can see the camp is here. There's also a combination just here, and this building here has been converted from office space to accommodation as well. This is a warehouse area and a geological processing area where we do our samples. Up here is a power plant and the -- and fuel storage for that power plant as well.

This is the mine portal, and the portal is just as you go in there it looks kind of flat, but it's quickly -- dives down at about a 15 percent slope down a couple hundred metres into the earth. It accesses the ore body, and trucks bring the ore and the waste rock from this -- from this portal.

This gives you an idea, a bit of a close-up, of the Tailings Impoundment Area at the north end. This is the north dam, a very highly engineered structure that is carefully monitored to be sure that it is -- remains intact and good and strong and will retain water as we place tailings in the far north end of that area.

In the past, you will have heard of Doris North. This is the ore body that comprises Doris North, and Doris North is entirely in the permafrost area and was the subject of the previous water licence. The proposed amendment will allow TMAC to mine additional ore in the Doris connector and Doris central areas, and

these are the areas that are underneath Doris Lake and from which we would anticipate some leakage of water into the mine that would then have to be managed.

Because of the use of -- the appearance of this water from the under -- under-lake mining, those -- this is the reason that we need to -- or one of the reasons that we need to change our licence and seek -- seek amendments. This picture is intended to show the various facilities that need to be built to create an economic mining adventure in the -- in the Doris area, and, remember, we need to mine more gold so 2 hundred -- 2.5 million tonnes, and we'll be mining in a new area under the lake, and it will have a longer mine life.

The tailings area, as you can see, will be placed in the -- at the south end of the Tailings Impoundment Area. All the red on this are new facilities based on the requirements for the amendment. Another vent raise is going to be required here on this outcrop because the mining will be occurring in this area. Another vent raise right here, a new pad to -- to add to the lay-down area. Some more lay-down area here. As I said, some more roadway here to the west of Robert's Bay and then straight out with the pipeline to the disposal area. One of the key things about our new tailings disposal will be that it will not be under the

water but will be on land and in water, and this will -- is a major change to the -- to the proposal.

A little bit of history on the project. Many of you will know there have been several owners, and each of these owners has contributed a particular component of the life of the mine. BHP Billiton spent about 11 years here on the site exploring and generated some very good exploration information on where the gold is on the belt.

Miramar permitted the first Doris North water licence and received approval from this Board. Newmont then spent some time building the wonderful infrastructure that you've seen pictures of here just a moment ago and decided on -- in 2013, that they would not continue that activity. Rather they -- they sold the business to TMAC Resources, a company, as I said, that was specifically permitted and designed to build and operate the mining -- the mine at Doris Lake.

Sonia said -- told a little -- in a great deal of more detail about the Water Board process. This is a snapshot and shows that we have conducted a number of studies and submitted an application for review by NIRB and the Water -- and the various parties and then moving onto -- to passed the project certificate to the Water Board so we can get a water licence. And we'd like to thank the many parties that was -- that have

been involved in the reviewing of this work, and those parties include the Kitikmeot Inuit Association, the Government of Nunavut, Indigenous and Northern Affairs Canada, Environment and Climate Change Canada, Department of Fisheries and Oceans, Transport Canada, and Natural Resources Canada.

So I think the -- an important message there is that the project has been given very careful scrutiny by the experts and regulators of all those organizations, and overall that has -- that, along with our responses to -- to their comments, has improved the application and the proposal as we have gone forward.

TMAC is quite proud of the agreements that I referred to earlier with the Kitikmeot Inuit Association. These are agreements with the KIA and the NTI to support development at Hope Bay for the next 20 years. TMAC provided the agreements and that include the IIBA and water compensation and wildlife and other compensation programs and payments of -- for annual implementation payments for -- for the access to the land. In return, KIA provides that access and advice on how to develop the -- the work in a socially economic beneficial way and also in a -- in a way that protects the environment and natural resources of the area.

We believe there are substantial benefits for

Kitikmeot and Inuit in general. The IIBA is within the -- with the KIA will provide Inuit employment targets that will be set with the KIA. A total of $550 million will be spent on the construction and initial operation of the facilities, and Kitikmeot-based industries will have preferred business opportunities for 14 types of work on the site.

In addition, royalties and fees will be paid to the KIA and the NTI, and plus tax revenues will increase to the Government of Nunavut and, of course, the Government of Canada. Another picture from inside our mill, this time not dated but sometime before July 2016.

In terms of project changes, we are changing the mine life that's going -- becoming a six-year mine life as opposed to a two-year mine life. We'll have a -- the volume of ore will increase to 2.5 million tonnes. This will also increase the amount of tailings to 2.5 million tonnes. I've talked about the two vent raises. We will increase the milling rate to 2,000 tonnes per day in two steps: 1,000 tonnes per day in 2016 and increasing to 2,000 tonnes per day at the end of 2017.

Water supply will be continue to taken from Doris Lake for industrial purposes, but we anticipate no change in the permitted value that we will ask for. A reclaim pond will be established in the Tailings

Impoundment Area that will provide us with reclaimed water. Cyanide used in the processing of rock to extract gold will be chemically destroyed, and material containing that, the second stream of tailings, will be disposed of underground and away from the surface thereby reducing the risk to the environment.

Tailings will be placed in the Tailings Impoundment Area area, as I said. Again, it will be placed in a -- in a fashion on the surface of the land of 2.5 million tonnes. Near the south dam, we will begin to deposit tailings here and move northward. This will be contained by an interim dyke approximately midway in the Tailings Impoundment Area. And what this will do is create a relatively safe and stable surface for ease of reclamation of the site. The reclaim pond will be downstream of the interim dyke, and we'll have water flowing back and forth to the mill.

Let's have a look at some of the water management features on the site. This is our sedimentation pond, and all the contact water from the milling facilities reports to this pond before it is hauled or pumped to the Tailings Impoundment Area for -- for disposal and into the reclaim pond. Groundwater from the mine will also be pumped from the mine and eventually to the Tailings Impoundment Area.

The tailings -- the salt groundwater will be

intended to -- was originally intended to go to the ocean. It will go -- temporarily to be stored in the Tailings Impoundment Area and later on will also be hauled or pumped to the ocean.

In terms of waste management, we will have a nonhazardous waste landfill located in the Tailings Impoundment Area in a worked-out quarry that will be used to build the other facilities. Just to remind you of where the -- where the project changes are, it's in -- it's in this particular area, and then we -- and we need, again, to be mining additional ore under here and also to mine this ore.

Other changes, and I went quickly through before, we have lay-down area and work area around the -- around the -- the port. We have -- the camp size will increase to approximately 280 beds. Explosive storage will now occur in the Tailings Impoundment Area, and there's, of course, a closure cost estimate. The picture shows, as I pointed out earlier, some new lay-down areas that will be constructed. New lay-down area here. Work area. And a small road that will take the disposal pipeline, the effluent pipeline, out to Robert's Bay where it enters the bay and -- and out 2 kilometres to the discharge.

It's our intention to continue to implement existing measures that protect the environment but to

revise plans for water management, aquatic effects monitoring, and for waste rock and ore management to accommodate the changes that we've made to the various mining activities and the locations of that. We have to change the water management plan because we have now groundwater entering the system. We changed the aquatic effects monitoring plan to recognize that we will no longer discharge water to freshwater but rather directly to the ocean. And the waste rock and ore management plan will be changed because all waste rock will now be used for backfill and ultimately will -- will find its way back into the mine.

We have developed some new plans as well for Tailings Area, operations, maintenance, and surveillance, and also for groundwater management. The groundwater is a -- certainly a -- an important issue, and we will be having various induction activities in the mine by drilling forward and grouting areas of high risk to minimize groundwater inflow.

In terms of issues that have been raised in the Nunavut Water Board process, for water, we have a number of lists here. These were brought forward since the -- since the technical meetings in January, and all of these matters have now been resolved in our discussions with the various reviewers, and these include site -- the site-wide water balance,

groundwater, Robert's Bay discharge, effluent discharge criteria, Doris Lake levels, and water crossings, et cetera.

Similarly, issues raised through the technical meeting and review process regarding waste management, including tailings management, the interim dyke filter, dust suppression on the -- on the tailings area, waste rock use, and underground disposal of oil-impacted materials have all been dealt with directly with the reviewers and have been resolved.

There are also issues brought forward regarding closure, Tailings area, water quality, groundwater quality, tailings cover, security cost estimate, and interim closure and remediation methods, and these have been resolved with the exception of the security cost estimate. There remains some outstanding difference in the estimated closure cost between TMAC and INAC, and this continues and will be -- we hope to be resolved before the end of this -- of this hearing.

In terms of management plans, as I said, we have submitted a variety of management plans, and I've outlined the -- the changes that are -- that have driven those -- those new plans. We anticipate that the Board, as it considers this application, will find in itself to prove -- to approve these plans so that we can operate the mine in a safe and environmentally

responsible way and in compliance with various regulations and procedures.

So, Mr. Chairman, our next steps, as you well know, is to complete this Water Board public hearing and look forward to your consideration and recommendation of a revised water licence to the Minister of -- or Indigenous and Northern Affairs Canada. At the same time, we are anticipating soon the project certificate that will come through the NIRB process. We also intend this year to complete construction of the mill building that I showed you earlier and hopefully to pour our first gold in January 2017. Mr. Chairman, those are my remarks, and I'd be happy to respond to questions from the public or others. Thank you very much.

THE CHAIR: Thank you. Any questions to TMAC from the public or interested parties?

Next we have Kitikmeot Inuit Association.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board.

Mr. Roesch, it's my understanding that you have two hard copy presentations of the presentation you're about to present, and you wish to file these as the exhibits in the hearing?

MR. ROESCH: This is John Roesch for the KIA. Yes, I do wish to file the two exhibits for the

hearing.

MS. MEADOWS: Thank you, Mr. Roesch. Teresa Meadows, legal counsel for the Nunavut Water Board.

Mr. Chair, I'll file those exhibits as the next two exhibits in this public hearing. Thank you. Nothing further from me.

THE CHAIR: Please go ahead.

EXHIBIT 17 - Hard Copy PowerPoint Presentation, Kitikmeot Inuit Association Technical Review of TMAC's Amendment Application for the Doris North Mine Site Type A Water Licence (English)

EXHIBIT 18 - Hard Copy PowerPoint Presentation, Kitikmeot Inuit Association Technical Review of TMAC's Amendment Application for the Doris North Mine Site Type A Water Licence (Inuktitut)

MR. ROESCH: Hello, everyone. I'm John Roesch, the Senior Hope Bay Project Officer For the Department of Lands and Environment For the Kitikmeot Inuit Association. I am responsible for project oversight for the KIA and provide input into the regulatory process on the Hope Bay project to both the NWB and to NIRB. In performing this role, I make use of KIA's consultants who are subject-matter experts in the area of wildlife, fisheries, aquatic environment,

and geotechnical engineering.

The purpose of this presentation is to provide a brief summary of our technical review of the amendment to the Doris Type A water licence. Our review covered wildlife issues, fisheries, aquatic environment, and geotechnical engineering. KIA conducted the review in a collaborative manner with TMAC Resources out of which we brought forward 14 issues to be resolved at the technical meeting and through further consultation. The KIA's mandate is to promote social economic, cultural, and environmental well-being. The Kitikmeot Region is generally within the red boundary. The pink and blue lands, which KIA owns -- the surface are -- are lands which KIA owns the surface right.

The Kitikmeot Inuit Association is a democratically elected not-for-profit society that represents the Inuit of the Kitikmeot Region of Nunavut. KIA protects and promotes the social, cultural, political, environmental, and economic interests of the Kitikmeot Inuit. As a result of the Nunavut Lands Claim Agreement (sic), Inuits are one of the largest private landowners in the world. Much of this privately owned land is in areas with high potential for mineral development. This land is a significant opportunity for Inuit if it is managed properly. We seek to optimize opportunities and manage

liabilities that are inherent with being a private landowner. If not, we will affect the well-being of a Kitikmeot Inuit membership.

The Hope Bay project is located on the mainland near the coast and approximately in the middle of the region. When the Inuit-owned land was selected for the Nunavut Lands Claim Agreement, Inuits knew that the Hope Bay area was highly prospective for mineral development. 120-kilometre length of surface lands that include some mineral rights were selected in the area. The brown areas are surface lands owned by KIA. BB56, BB57, 58, and 60 include our agreement with TMAC for the Hope Bay project.

The Hope Bay Green Stone Belt has been explored since 1965. Within this Green Stone Belt, over 850 kilometres of drilling has occurred since 1965. Most of the drilling has been focused around Doris, Madrid, and Boston. This project has changed ownership many times. Prior to TMAC, the last company to operate the Hope Bay project was Newmont. TMAC took over the project in 2012. On the map, you can see the location of some of the highest priority development sites in the Belt: Doris, Madrid, and Boston. The Hope Bay Green Stone Belt is unique because it demonstrates the capacity to hold several mining operations across the belt in the different stages of development operated by

one company.

This Green Stone Belt includes a permitted mine at Doris North. Several advanced exploration targets such as Madrid North and South and Boston Camp, which has preliminary mine plans developed, and many other identified high-quality exploration targets. TMAC has rights to all the minerals in this area. Once an operating mine is established, the efficiencies of belt-wide exploration can increase.

KIA's technical review concerns the amendment of the Type A water licence for the Doris North Mine site. Initiating production at the Doris North is critical to the development of the entire belt.

As indicated previously, 14 issues were brought forward to the technical meeting with the NWB and NIRB pertaining to Doris North amendments. These five concerned the Tailings Impoundment Area at Doris North. We raised concerns about the capacity of the TIA to handle mining expansion into Madrid, Patch Lake area; whether caribou would be attracted to the tailings in the TIA; the potential for dustfall in leaching from the TIA into the surrounding environment; trace metal contamination and the planned thickness of the cold cover for the tailings upon closure.

TMAC has responded to our recommendations and ran further simulations on dustfall which indicated it

would be contained within the TIA. In reviewing the additional simulations on water and load balancing, KIA found that the concentration levels of the metal contaminants were well below the Canadian Council of Ministers of the Environment and Mining Mineral Effluent Regulations and Guidelines indicating that the TIA water was nontoxic to caribou and birds.

Also, TMAC will develop adaptive management and risk assessment to keep caribou away from the TIA, and the tailings cover was found to be adequate upon further review. All five of these issues have been resolved. These five issues concern simulation models for the marine discharge into Robert's Bay and hydrogeology water balance at the mine site. The issues are considered to be of moderate concern by KIA requiring only additional water sampling and adjustments to model parameters to provide improved assurance on environmental impact.

Essentially, underground mine water is highly saline and is to be mixed with water from the TIA and is discharged into Robert's Bay. The salinity of the discharge should be less than the ocean and similar in temperature to minimize environmental impact on marine life. TMAC has taken our recommendations under consideration and ran further simulations using more conservative input parameters. The results indicate

that ocean discharge is well below Canadian Council of Ministers of the Environment Guidelines for the protection of marine and aquatic life. Canadian Council of Ministers of the Environment Guidelines are met within 1 metre of the diffuser at a dilution of 186 to 1 at a distance of 250 metres from the diffuser. Discharge dilutions are between 1,000 to 1 to 10,000 to 1. The discharge plume is trapped in deepwater between the ocean floor and the surface layer. No algae bloom will occur at the surface due to nitrates. These five issues are resolved.

Issues 11 and 12 also concern simulation models of water discharge and mixing with ocean water and are viewed by KIA as being of moderate risk to the environment. KIA essentially sought greater assurance on environmental impact of minerals and nutrients on ocean water to which TMAC has responded. TIA water quality was well below the Canadian Council of Ministers of the Environment and Mining Mineral Effluent Regulations and Guidelines and is nontoxic to wildlife or aquatic life.

Issue 13 concern the impact of water leakage from Doris Lake into the underground mine and its effects of the lake's water level. TMAC had conducted further water modeling and has committed to mitigation methods for plugging leaks and drill holes from exploration in

the lake. The expected impact on Doris Lake water levels is within the natural variation of its water levels.

Issue 14 concerns improving the deployment of cameras and data collection, determine if there is a zone of influence around the mine for grizzly bears. That is to know if they are either attracted or repelled by the mine site activities. This issue was of high concern to KIA since bears were known to travel through the area along the coast and is considered -- is a condition of the original project permit.

TMAC had taken our recommendations under advice and is updating the layout of its wildlife monitoring cameras and wildlife mitigation and monitoring program for the Doris North Mine site. And this issue was more of a concern that we addressed at NIRB. I just re-mention it here. So all four of these issues are resolved.

In addition to the technical issues raised, the KIA would like to point out that we have signed with TMAC a comprehensive framework agreement for land access compensation and an Inuit Impact and Benefits Agreement. The IIBA addresses Inuit interests in the areas of employment, contracting, and training in relation to the Hope Bay project as a whole through its entire life span. Under the IIBA, an Inuit

environmental advisory committee has been established with TMAC which complements KIA's current environmental activities in the Department of Lands and Environment.

The IEAC allows for the local community to have input directly into TMAC on environmental concerns. Through the implementation committee with KIA and TMAC representatives, measures of the employment business development in training are being developed which fulfills social economic obligations under the Nunavut Land Claims Agreement.

The KIA receives monetary compensation through a variety of agreements, direct compensation through the framework agreement, and the IIBA for land access, quarry materials, and water usage, royalties from gold production, plus shareholdings in TMAC. NTI also gets a royalty on profit under its Mineral Rights Agreement with TMAC Resources Inc. All this creates a substantial benefit for Inuit in the region. As indicated previously, the KIA and TMAC have signed a Water Compensation Agreement as part of the framework for the Doris North Project. This agreement addresses Inuit Article 20 rights and TMAC obligations. As a result, there are no water compensation issues to be addressed by the NWB in the context of the TMAC Type A water licence amendment.

Currently KIA has $11.49 million in security and

both letters of credit and corporate guarantee under its commercial lease with TMAC Resources Inc. This level of security is inadequate for the Doris North Mine site given changes to the water licence and the development of the project. The KIA's engineering consultants has reviewed both TMAC and INAC's reclamation cost estimate and finds TMAC's to be reasonable for the mine site. The KIA discussed with TMAC and their engineering consultants the identified residual risks and cost escalators and our consultants' questions on these. The major conclusions of our engineering consultant was TMAC's reclamation cost estimate was reasonable and more accurate than INAC's reclamation cost estimate, and that the split between land and water liability was 84 percent and 16 percent. 84 percent for land for the KIA and 16 percent for water for INAC.

The 28.94 million quantum with its 20 percent contingency was found to be very reasonable after discussion with TMAC and having our questions answered. The KIA accepts and supports TMAC's cost estimate of 28.94 million for reclamation security for the Doris Mine site. The split of land and water liability of 84 percent and 16 percent is considered appropriate and equitable for the mine site given KIA's experience with the brine spill at Boston camp.

INAC's engineering consultant has a reclamation cost estimate of $44.12 million, substantially higher than TMAC's estimate. This primarily is due to indirect costs being 175 percent higher than TMAC's estimate of indirect cost. INAC's estimates use a five-year time horizon for reclamation work in contrast to TMAC's approximately two-year time horizon for performing reclamation work. INAC's estimate has about 50, the productive of TMAC's estimate, with -- which KIA finds questionable. The INAC estimate acknowledges that 98 percent of the quantum is associated with Inuit-owned land while only 2 percent is Crown land. The 43.42 million of Inuit-owned land security has a split of land and water liability of 45 percent and 55 percent respectively which the KIA finds unreasonable given our experience with the Newmont Orbit 25 brine spill at Boston camp in July of 2011.

Drilling fluid containing potassium chloride had spilled in -- onto the land and subsequently entered a nearby water body. About 1,200 square metres of tundra was damaged due to elevated chloride levels. The deleterious substance had entered into the water body and dissipated quickly in a few days with no loss of fish or damage to the aquatic environment.

Environment Canada at the time charged Newmont and Orbit Garant with breaking federal environmental laws.

Both Newmont and Orbit Garant agreed to contribute to Environment Canada's environmental fund. No reclamation work was done by the federal government to the lake since no damage was done.

KIA investigated possible means of land reclamation. If no actions are taken, it will take 15 to 20 years for the land to recover through natural re-vegetation. Human intervention would require experimentation in the restoration of tundra and remediation work based on experimental results. The human intervention and reclamation of land would be about $3 million. This clearly illustrates that liability is primarily with the land and not the water. INAC's split of land and water liability of 45 percent and 55 percent would expose KIA to an excessive amount of risk as a landowner. The KIA has successfully resolved all technical issues brought forward to the technical meeting with TMAC through our ongoing collaboration. Given this and the substantial benefits that will be obtained for Inuit from the Hope Bay project and the opening of the Doris North Mine site, we believe that the amendment of the Type A water licence is warranted and in the best interest of the Inuit people. I thank you, and I'm open to any questions.

THE CHAIR: Thank you. Any questions to

Kitikmeot Inuit Association from community members and interested parties?

Next we have Indigenous and Northern Affairs Canada to do their presentation. Our Board members with like a five-minute break so just bear with us for another five.

(ADJOURNMENT)

THE CHAIR: Welcome back. Our five minutes is coming right up so we'll proceed.

Teresa, would you swear in the witnesses, please.

MS. MEADOWS: Thank you, Mr. Chair, legal counsel for the Nunavut Water Board. If I can have the witnesses state and spell their name for the record, please.

MS. COSTELLO: Thank you, Mr. Chair. My name is Karen Costello, K-A-R-E-N, C-O-S-T-E-L-L-O.

MR. ABERNETHY: Hello. My name is David Abernethy. David, D-A-V-I-D, Abernethy, A-B-E-R-N-E-T-H-Y.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board.

Ms. Costello, it's my understanding that you wish to affirm.

KAREN COSTELLO, Affirmed

MS. MEADOWS: Thank you, Ms. Costello. It's my understanding that you wish to be -- have your

evidence sworn. Can you please put your left hand on the Bible, raise your right hand.

DAVID ABERNETHY, SWORN

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board.

Mr. Abernethy, it's my understanding that you have a -- two or three copies of the presentation materials that you were about to present at the community session?

MR. ABERNETHY: David Abernethy. I -- I have translated copies of the presentation. So there's Inuinnaqtun, which is on the screen. That's split with English. We also have a full English version and Inuktitut.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. And you wish to have those marked as the next three exhibits in this public hearing?

MR. ABERNETHY: I do. I have hard copies available that I can provide to you right after we present.

MS. MEADOWS: Thank you, Mr. Chair. Teresa Meadows, legal counsel for the Nunavut Water Board. I will mark those as the next three exhibits in this public hearing. Thank you, Mr. Chair. I have nothing further.

EXHIBIT 19 - Hard Copy PowerPoint, INAC/AANC TMAC Resources Incorporated Amendment Application No. 1 to Water Licence No. 2AM-DOH1323, Community Presentation, Nunavut Water Board Public Hearing (English)

EXHIBIT 20 - Hard Copy PowerPoint, INAC/AANC TMAC Resources Incorporated Amendment Application No. 1 to Water Licence No. 2AM-DOH1323, Community Presentation, Nunavut Water Board Public Hearing (Inuktitut)

EXHIBIT 21 - Hard Copy PowerPoint INAC/AANC TMAC Resources Incorporated Amendment Application No. 1 to Water Licence No. 2AM-DOH1323 Community Presentation Nunavut Water Board Public Hearing (English/Inuinnaqtun)

THE CHAIRPERSON: Thank you, Teresa. Go ahead with your presentation.

Presentation by the Kitikmeot Inuit Association

MS. COSTELLO: Thank you very much, Mr. Chair.

Good evening, everybody. My name is Karen Costello, and I am the Director of Resource Management for Indigenous and Northern Affairs Canada for the Nunavut regional office. I appreciate the opportunity

that the Water Board has provided to us to make a presentation to the community regarding the work we have done with respect to TMAC Resources application to amend its Type A water licence for the Doris North gold mine.

Throughout this presentation, you may hear me refer to Indigenous and Northern Affairs Canada as "the Department". It makes it a bit easier on the interpreters. I'm joined by David Abernethy who is with our water resources division. He is one of our regional coordinators and the project lead on this file.

So this slide outlines the topics we will discuss in this presentation. We will provide a brief overview of our roles and responsibilities. We'll take a few moments to discuss our contributions during the review process, we'll touch on components of our technical review, we'll speak to reclamation security, inspections conducted by the Department, and then offer some conclusions for the community to hear.

We've included a few photographs in our presentation. You've seen similar photos in TMAC's presentation. This one is a view of the Doris camp with the well-known mountain as the backdrop for the site.

The Department works under a number of laws and

regulations to ensure that the interests of Nunavummiut are protected. The different pieces of legislation are listed on this slide. They include the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the Nunavut Water Regulations, the Department of Indian Affairs and Northern Development Act, the Nunavut Land Claims Agreement Act, the Territorial Lands Act and its associated regulations, and finally the Arctic Waters Pollution Prevention Act and its associated regulations.

So in Slide 5, you will see a bit of an outline of our contributions through this review process. It started with TMAC making their submission in August 2015. We attended the technical meeting hosted by the Nunavut Water Board here in Cambridge Bay in January. We participated via teleconference in the Board's prehearing conference in June, and we are attending here as well.

I'll now turn the microphone over to David who will touch on some components of our technical review.

MR. ABERNETHY: Hello, Mr. Chair and everyone in attendance. This is David Abernethy. I will review the technical review themes that the Department covered in its review of TMAC's application and speak to certain points for each theme. The first is water quality and quantity predictions. This theme is

important because it deals with the management of freshwater at the mine site to ensure protection of surrounding water sources. The second theme is the Robert's Bay discharge monitoring. Discharge of water from the Tailings Impoundment Area to Robert's Bay or the ocean is not considered to be within the scope of the water licence. This activity will be addressed under the Metal Mining Effluent Regulations and may also require authorization under the Arctic Waters Pollution Prevention Act.

Here's another photo of Doris Lake looking from the northern end. So you're looking south. And Doris Lake I think, as most people know, is the largest -- well, the -- the lake right by the mine site that TMAC and all here have an interest in protecting, that it is not negatively impacted by mining operations. Thanks.

The third theme that has been addressed by the Department is waste rock and tailings. The design and management of the above-ground Tailings Impoundment Area is an issue of concern to the Department, as well as the management of waste rock and tailings that will be permanently stored underground.

A fourth theme is mitigation measures, and in its review, the Department commented on dust control for the above-ground tailings that will be stored in the Tailings Impoundment Area.

On this slide is a picture, again, of Doris Lake looking towards the Tailings Impoundment Area where the light is shining, and that grey triangle is the north dam used to hold in the tailings. This -- this picture shows -- is from the viewpoint of standing on the north dam looking into the Tailings Impoundment Area, and I believe the equipment there is used for dewatering purposes.

A fifth -- the fifth and sixth themes are identified on this slide. Water treatment, in its review, the Department commented on the treatment of sewage effluent and cyanide in mill process water. It is noted that no additional treatment is planned for water from the Tailings Impoundment Area before ocean discharge. 'F' or 6: Theme 6 would be management plans and reports. Management plans describe how concepts are implemented, and monitoring reports document the results of project activities. The Department, like many interveners, reviewed management plans and monitoring reports provided by TMAC in its amendment application.

This slide shows a picture of Doris Creek with the north dam of the Tailings Impoundment Area above it. So Doris -- Doris Creek flows out of Doris Lake, and the Department, through its review both before the Nunavut Impact Review Board and the Nunavut Water

Board, had an interest in -- in reviewing the application to ensure that Doris Creek will be protected because it supports life downstream from Doris Lake. And TMAC has addressed the Department's concerns with this matter.

The final theme that the Department commented on is closure and reclamation planning. It is acknowledged that the final tailings cover design for the Tailings Impoundment Area will be submitted by TMAC to the Nunavut Water Board for approval prior to the construction of this cover. It is also acknowledged that water quality in the Tailings Impoundment Area must be satisfactory before the north dam can be breached following closure -- the completion of closure activities. The Department will be careful to review monitoring results to ensure that this is followed.

Now I will turn it back to Karen Costello.

MS. COSTELLO: Thank you, David. Karen Costello for Indigenous and Northern Affairs Canada. Financial reclamation security must be provided to ensure that the mine site is cleaned up and that the costs to make sure that the mine operator, rather than the Crown or the private landowner, who is the Kitikmeot Inuit Association, would be responsible. So TMAC is responsible for cleaning up the site before leaving it, but to cover a situation where they could

not, they are required to post a security deposit. That's what the financial assurance is. And this security deposit is the amount it would cost to reclaim or clean up the site, and this cost is developed based on the reclamation plan. INAC's current estimate is around 36.8 million, and TMAC's estimate is around 29.1 million. This is the one item where we are still working with the company on, and we'll continue our discussions during Day 2 of our technical -- of the technical component of this hearing.

The Department's work will not be done when a licence is issued. INAC has a field operations team. We have water resource officers who visit project sites to make sure an operator is complying with the water licences and other authorizations. Since July 2015, there have been three inspections at the Doris North site. All of these inspection reports and the company's responses are available on the Water Board's website. The Department's inspections demonstrate no major issues. TMAC is regularly engaged with our inspection staff. There have been a few minor spills reported. TMAC has been quick to respond, as outlined in their management plans, and the Department has no concerns.

We heard a little bit from TMAC earlier. They continue to explore to try and find more ore at Doris,

in the Doris area in the Hope Bay Belt, and this is a photograph -- it's a little dark, but it shows a helicopter bringing in supplies to a diamond drill. In INAC's review of this application, it made many comments, and other than right now, currently, not having agreement with TMAC on a reclamation cost estimate, we're satisfied with all of the responses TMAC has provided, and with that in mind, the water licence amendment application should be accepted with consideration of the Department's comments. And we hope to engage the Kitikmeot Inuit Association on the potential co-managing of reclamation security once we hopefully reach agreement with TMAC on what an appropriate reclamation cost estimate is.

Thank you very much for your time.

THE CHAIR: Thank you. Any questions to INAC from the general public or interested parties? Thank you.

Next we have Environment Canada and Climate Change.

MR. DAHL: Just -- Mark Dahl for Environment Canada. The presentation tonight is the same one that was given earlier, the -- it will be briefer speaking notes, but the exhibit is the same.

THE CHAIR: Whenever you're ready, just go ahead. Don't wait for me.

Presentation by Environment and Climate Change Canada

MR. DAHL: Thank you, Mr. Chair. Mark Dahl for Environment Canada, and I'll be presenting on behalf of Environment and Climate Change Canada this evening, and I'm accompanied by Anne Wilson, the water quality expert on the file.

Environment and Climate Change Canada reviews development proposals for potential impacts and provides scientific advice to the Nunavut Water Board on issues falling within our mandate. The Department of the Environment Act gives ECCC responsibility to preserve and enhance water quality and to conserve and protect Canada's water resources. More broadly speaking, ECCC also has responsibilities -- oops, excuse me. The -- we also have responsibilities to forecast daily weather and to regulate boundary waters and the general coordination of federal and environmental policies and programs.

This is a listing of the Acts under which we do our review, just for your information. Excuse me. Where are we? Just bear with me for a moment, please. We have two different -- for a water licence review, the Department's focus is on protecting water quality as well as on the effective waste management and the protection of air quality as they relate to water quality. It is from this perspective that ECCC

reviewed the applications and provided scientific expertise to the Nunavut Water Board during the review of the original Hope Bay project and this amendment application.

The issues that Environment Canada raised during the review fell into four -- under four themes. Those themes are listed here, and they include the monitoring locations and the receiving environment, which is Robert's Bay; predicting effluent composition; monitoring -- the monitoring parameters to be examined and monitored for; and the mine water management.

Anne Wilson will now speak to the more -- to the details of those themes.

MS. WILSON: Thank you. Anne Wilson with Environment and Climate Change Canada. And as Mark mentioned, we had several broad areas that we were concerned about. Environment and Climate Change Canada has participated in this review process since the first part of the amendment and came from the broader concerns down to more detailed levels.

Throughout those concerns, we've been able to work through them with TMAC and get to resolution on all the details that are important to understand the effects of the project and to manage and mitigate those. So these included everything from monitoring in the marine environment, and we're quite happy that there's a

robust environmental monitoring plan developed, and the baseline is -- is -- actually has been collected this year already. Next slide.

We had raised concerns of how they could be sure what the effluent was going to be like. If you take all the parts that -- combined to make the end-of-pipe effluent, in response, TMAC had modeled and has committed to update modeling on an annual basis using real data from their monitoring. So that gives us confidence that they'll know what's going on, and if you know what's going on, you can figure out what to do about any changes you might see.

There was quite a bit of discussion on the exact contaminants or parameters that should be monitored by TMAC. And I think we pretty well sorted out the what, the where, and the how often for the monitoring both upstream of the effluent release and in the freshwater receiving environment.

One of the big issues for TMAC is the management of the mine -- the water that comes in the mine. It's quite salty, and until there's a way for that to be discharged under Environment and Climate Change Canada's Metal Mining Effluent Regulations, they will be using their Tailings Impoundment Area to hold that water. So they've developed -- next one -- interim water management plans. Environment Canada is doing

our part to make the changes that are needed for this to happen. The timing will be tight, and TMAC will be doing the alternative water management until they can discharge under the MMER, or Metal Mining Effluent Regulations, to Robert's Bay.

I think that is all I had to say except for thank you for your time and attention, and any questions we would be glad to try and answer.

THE CHAIR: Thank you. Any questions to Environment Canada and Climate Canada from the general public or interested parties? Thank you very much.

This takes us to the end of our agenda for tonight's session. On behalf of the Nunavut Water Board, I would like to thank everyone for participating tonight and thank you to the community of Cambridge Bay for hosting these important meetings. A special thanks to all of the presenters tonight and all of the people who chose to join us this evening to share your views, comments, and questions with the Board.

In terms of what is next, the technical review component of the Board's public hearing will continue tomorrow right here starting at 9:00 AM, and we expect to wrap up that aspect of the public hearing by 3 tomorrow afternoon. Everyone is welcome to attend tomorrow's session. Good night. Hope to see you tomorrow.

PROCEEDINGS ADJOURNED TO 9:00 AM, SEPTEMBER 14, 2016

CERTIFICATE OF TRANSCRIPT:

I, Sara Anderson, certify that the foregoing pages are a complete and accurate transcript of the proceedings, taken down by me in shorthand and transcribed from my shorthand notes to the best of my skill and ability.

Dated at the City of Calgary, Province of Alberta, this 25th day of September 2016.

Sara Anderson, CSR(A)
Official Court Reporter

EXHIBITS ENTERED

SEPTEMBER 13, 2016

1	EXHIBIT 6 - Hard Copy Memo SRK Consulting,	33
2	Subject Doris Project: Closure and	
3	Reclamation Cost Estimates - Response to	
4	INAC's July 22, 2016, Submission (English)	
5		
6	EXHIBIT 7 - Electronic Copy Only, Excel	33
7	Spreadsheet RECLAIM 7.0 File TMAC Response	
8	to INAC's Revised Reclamation Cost	
9	Estimate Under RECLAIM 7	
10		
11	EXHIBIT 8 - Hard Copy Project Memorandum	34
12	Prepared By BGC Engineering Inc. For The	
13	Kitikmeot Inuit Association, Subject:	
14	Draft - Review of Interim Closure Cost	
15	Estimate For the Doris North Mine	
16	(English)	
17		
18	EXHIBIT 9 - Hard Copy Letter to John	34
19	Roberts from Brodie Consulting Ltd. Dated	
20	September 7, 2016, Re: Review of	
21	Reclamation Cost Estimate - Doris North	
22	Mine (English)	
23		
24	EXHIBIT 10 - Hard Copy Resume of Dr. John	87
25	Brodie (English) (Updated Resume filed on	
26	September 14, 2016, as Exhibit 30)	

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