

MACKENZIE VALLEY ENVIRONMENTAL

IMPACT AND REVIEW BOARD

TECHNICAL MEETINGS FOR THE NICO GOLD

COBALT-BISMUTH-COPPER PROJECT, NT

FORTUNE MINERALS LIMITED

Mackenzie Valley Review Board Staff:

Facilitator Alan Ehrlich

Facilitator Chuck Hubert

HELD AT:

Yellowknife, NT

February 8, 2012

Day 2 of 3



“When You Talk - We Listen!”



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1	TABLE OF CONTENTS	
2		Page No.
3	List of Undertakings	7
4		
5	Follow-up from previous day	8
6		
7	Question Period Re SARA Species, Waterfowl	
8	and other Wildlife	11
9		
10	Question Period Re Water Quality Objectives	
11	Water Management and Treatment	21
12		
13	Question Period Re Fish and Fish Habitat	124
14		
15	Question Period Re Water, Hydrology, and	
16	Hydrogeology	126
17		
18	Question Period Re General Questions on Water	126
19		
20	Workshop Lead by Fortune on Co-Disposal Facility	135
21		
22		
23		
24	Certificate of Transcript	184
25		

1	LIST OF UNDERTAKINGS	
2	Number	Description Page No.
3	5	Fortune Minerals to provide a more
4		detailed assessment of impacts for
5		upland breeding birds (i.e., common
6		nighthawk, olive-sided fly catcher,
7		and rusty blackbird) based on what
8		they know about their distribution
9		in the RSA and what habitats will be
10		impacted by the footprint of the
11		project and the indirect effects 13
12	1 (EXPANDED)	Fortune Minerals to also include
13		discussion about the processing of
14		the brine and what would be done
15		with the post-processed brine, where
16		that water would go, as it's still a
17		significant volume of water, and
18		then finally how they would be
19		handling the precipitates from
20		that brine process 106
21		
22		
23		
24		
25		

1 --- Upon commencing at 9:09 a.m.

2

3 THE FACILITATOR HUBERT: Welcome again,
4 everybody. Take our seats, we'll get started, please.
5 Okay, good morning, ladies and gentlemen. It's good to
6 see you all. Welcome to the -- day 2 of the NICO
7 project technical session.

8 Again it's good to see everybody out,
9 and I look forward to good discussions today. The
10 first thing I'd like to do is introduce Shannon Hayden,
11 who is a new environmental assessment officer with the
12 Review Board. She'll be assisting me with the NICO
13 file from this point on.

14 And also to note that I will be away for
15 the next month, from February 12th coming back on March
16 12th, and Shannon will be the lead on the file during
17 that time. So that will be the time when responses to
18 the undertakings occur. There will be a -- an official
19 note to file on that put on the public -- public
20 registry, but I just thought I'd mention it. So
21 welcome, Shannon.

22 I'd like to remind everybody that we
23 request people sign in on our sign-in sheet each day,
24 including today, and thanks for doing that. And also a
25 note that -- from Wendy that that should be done as

1 legibly as possible.

2 As far as the agenda goes, we did -- did
3 not get down to the topic of SARA species, waterfowl,
4 and other wildlife yes -- yesterday, so we'll start
5 with that. And we had allotted forty-five (45) minutes
6 for that, and we'll -- we'll do that this morning.

7 After that we'll move into the water
8 issues as is described on -- on our agenda for today,
9 for Wednesday. I'd like to -- to start, however, with
10 some of the homework items that Fortune had agreed to
11 complete for today. And so I'd like to turn the mic
12 over to Rick Schryer right now to give us an idea of
13 what he found out.

14 MR. RICK SCHRYER: Thank you, Chuck.
15 Rick Schryer, Fortune Minerals. Good morning,
16 everyone. Thanks for coming. We had four (4) home --
17 homework items that I'd like to report on.

18 The first was the review -- review of
19 other CDFs being used in other -- at other mining
20 locations. That document will be ready at noon, and
21 we'll be submitting it to the Board for distribution to
22 the various parties.

23 The air quality response that Todd Slack
24 had requested, our air quality gentleman, will be here
25 this afternoon. And I'll quiz him, and we should be

1 able to develop a response probably this evening and
2 have it ready for presentation tomorrow.

3 The caribou TK question that Allice
4 Legat had asked me yesterday, I went to the website.
5 There was an awful lot of recommendations on the
6 website. I wasn't exactly sure which one I was
7 supposed to be looking at. So I downloaded the PDF
8 file. And is Allice here? No.

9 Okay. If I could just -- I've
10 downloaded the file. I just want to make sure I'm
11 looking at the right thing. And then I can review it.
12 And then I can give you back your com -- some comments
13 on it.

14 The final issue we had to deal with was
15 the height of this -- the potential height of this --
16 of the co-disposal facility. And Tom Rinaldi will be
17 responding to that question. Thank you.

18 MR. TOM RINALDI: Tom Rinaldi, Fortune
19 Minerals. We looked at the design of the CDF last
20 night, the engineers and myself, and with respect to
21 the height of the ridge in the area, and we've
22 determined that with the first year -- few years of
23 experience we will determine what the actual percent
24 infill is between -- in the void space with the waste
25 material and the tailings. And we will be able to

1 adjust the shape of the facility that any -- if any
2 increase in height is required it will still maintain
3 non-visibility from Hislop Lake because of the ridge
4 height. Thank you.

5 MR. JOHN BRODIE: It's John Brodie.
6 Can I just ask a question of clarification on that
7 answer. Does that mean then that you would expand the
8 footprint to stay below the ridge height?

9 MR. TOM RINALDI: Tom Rinaldi, Fortune
10 Minerals. No, we would not expand the footprint on the
11 west or the northwest area. The ridge height in that
12 area is higher, so we could increase the height in that
13 part of the CDF and it would still maintain non-
14 visibility or being hidden from -- from the view of the
15 lake surface.

16 THE FACILITATOR HUBERT: Thanks very
17 much for those responses. And we look forward to the
18 follow-up on a couple of those, as Rick had mentioned,
19 later on today. With that, I'd like to move directly
20 onto the topic that we did not get to yesterday. That
21 being SARA species, waterfowl, and other wildlife.

22 And I'd like to begin with questions by
23 Environment Canada.

24

25 QUESTION PERIOD RE SARA SPECIES, WATERFOWL, AND OTHER

1 WILDLIFE:

2 MR. JAMES HUDSON: This is James
3 Hudson, with the Canadian Wildlife Service. My first
4 question pertains to species at risk. In the DAR
5 there's an assessment generally for upland breeding
6 birds. And it's noted that three (3) species at risk
7 for upland birds were detected in the surveys and the
8 habitat types in which they are detected are provided,
9 and their densities and those habitat types are
10 provided in the DAR. But there's no actual specific
11 assessment of impacts to those species at risk.
12 There's just a general assessment for upland breeding
13 birds.

14 So I was wondering if the Developer
15 would be prepared to provide a more detailed assessment
16 of impacts for those species based on what they know
17 about their distribution in the RSA and what habitats
18 will be impacted by the footprint of the project and
19 the indirect effects.

20 THE FACILITATOR HUBERT: Thank you.
21 And which species are those specifically?

22 MR. JAMES HUDSON: For upland breeding
23 birds, that would be common nighthawk, olive-sided fly
24 catcher and rusty blackbird.

25 THE FACILITATOR HUBERT: Thank you.

1 Can Fortune respond to that, please? It's Chuck
2 Hubert, with the Review Board. Sorry, I should have
3 said my name first. Go ahead.

4 MR. DAMIAN PANAYI: Damian Panayi. Ye
5 -- yes, James, we can provide that information. And
6 we'll maybe talk to you in the coming days as to
7 specifically what in -- what information you need
8 there.

9 MR. JAMES HUDSON: Okay. Yep, that
10 works for me.

11 THE FACILITATOR HUBERT: To clarify,
12 should I consider that -- or should the Board consider
13 that an undertaking?

14 MR. JAMES HUDSON: I guess that depends
15 on how long the Developer thinks it would take them to
16 put that information together.

17 MR. DAMIAN PANAYI: Yeah, we can make
18 that an undertaking, Chuck.

19 THE FACILITATOR HUBERT: Thank you very
20 much. That will be Undertaking number 5.

21

22 --- UNDERTAKING NO. 5: Fortune Minerals to provide
23 a more detailed assessment
24 of impacts for upland
25 breeding birds (i.e.,

1 common nighthawk, olive-
2 sided fly catcher, and
3 rusty blackbird) based on
4 what they know about their
5 distribution in the RSA and
6 what habitats will be
7 impacted by the footprint
8 of the project and the
9 indirect effects

10

11 THE FACILITATOR HUBERT: Please
12 continue.

13 MR. JAMES HUDSON: Okay. My next
14 questions are just maybe a clarification about how the
15 development of the co-disposal facility's going to
16 proceed and how protection of migratory birds and their
17 nests is going to occur throughout the life of the co-
18 disposal facility.

19 The way I understand it, the dike is
20 going to be built. And then the grid ponds aren't
21 going to be drained right away, and water's going to
22 pond behind the dike. And then they're going to start
23 infilling, building new cells and filling them in as
24 they go. There's supposed to be some removal of trees
25 and brush prior to the construction of the co-disposal

1 facility, but as I understood, they're not removing the
2 organic layer right away. So that means there could be
3 habitat available for birds to nest within that large
4 co-disposal facility.

5 And I'm just wondering if they can
6 clarify how they'll go about protecting nests and how
7 long it will take to actually cover over the entire
8 valley floor, I guess, where that co-disposal facility
9 is going to be built.

10

11 (BRIEF PAUSE)

12

13 MR. DAMIAN PANAYI: Yes, James, this
14 obviously applies to the Migratory Birds Act and this
15 is something which Fortune and Environment Canada need
16 to work together on to make sure that we're in
17 compliance with that Act. So I think we'll be planning
18 further discussions with Environment Canada as we
19 proceed towards permitting.

20 MR. JAMES HUDSON: Okay. I guess that
21 works for us, but we just need to know when those
22 discussions will occur and if -- I guess -- they should
23 go on the public record as -- whatever mitigation
24 measures you decide to implement should be part of the
25 public record, I think.

1 THE FACILITATOR HUBERT: Thank you for
2 that. Yes, I -- agreed. And if discussions occur
3 between Fortune on this topic and CWS, it would be
4 great if the meeting reports of -- of what was
5 discussed and -- and what findings occurred, if that
6 can go on the public record that'd be great. We look
7 forward to that.

8

9 (BRIEF PAUSE)

10

11 MR. JAMES HUDSON: Okay. I think
12 that's it for questions from me.

13 MS. MARJORIE MATHESON-MAUND: Hi,
14 Marjorie Matheson-Maund, Tlicho Government. I have a
15 question, the Species at Risk NWT Act came into force
16 February 1st, 2010. The DAR used Mackenzie Valley
17 draft guidelines outlining their expectations for
18 considering ef -- effects to species at risk until such
19 a time that the Species at Risk Act of the NWT was
20 fully implemented.

21 So I was just wondering why that wasn't
22 used, the NWT Species at Risk Act that came into effect
23 November 2010.

24 MR. DAMIAN PANAYI: Damian Panayi.
25 Yes, this NWT Species at Risk Act is -- is in force

1 now. I hope I'm -- I'm not going to get my terminology
2 right, but as I understand the actual list of species,
3 which are being protected by that Act, hasn't been
4 fully developed yet.

5 MS. MARJORIE MATHESON-MAUND: That's
6 correct.

7 MR. DAMIAN PANAYI: So in the meantime
8 we're using the -- the list of species which are
9 provided in this booklet here. And for the -- for the
10 record that's the Species at Risk in the Northwest
11 Territories, 2010 edition. And it's -- we're following
12 Mackenzie Valley Review Board guide -- or guidance by
13 selecting our species at risk from this booklet.

14 MS. MARJORIE MATHESON-MAUND: Okay.
15 There's another booklet out, I think, that actually --
16 it's a guide to species in the NWT currently listed, or
17 considered for listing under Federal and Territorial
18 species. They have four (4) mammals, nine (9) birds,
19 and three (3) fish listed in the Tlicho region as
20 either sensitive, maybe at risk, threatened, at risk,
21 or a special concern. And a number of plants may also
22 be of concern in the region.

23 The Fortune DAR lists only one (1)
24 mammal and six (6) birds which may be of special
25 concern or threatened. So I was just wondering why the

1 information in the DAR was different than in the NWT
2 2010 Species at Risk Guide.

3 And I do have a few of the photocopied -
4 - sorry, pages here. For instance, general -- NWT
5 general species at risk rank the grizzly bear as
6 sensitive, Kozcak (phonetic) -- Kozbeck (phonetic),
7 says there's special concern. Federal species at risk
8 says, No status. The wolverine, the NWT species -- or
9 general status rank is sensitive, Kozwick (phonetic) is
10 special concern. Federal species at risk is, No
11 status. Woodland caribou, the boreal population is
12 listed as sensitive. COSEWIC is threatened and federal
13 Species at Risk Act is threatened.

14 So I'm just wondering why the
15 difference, and I was hoping that perhaps -- well,
16 maybe answer that question first. Thanks.

17 MR. DAMIAN PANAYI: Damian Panayi.
18 I'll refer you to Table 15.2-1 --

19 MS. MARJORIE MATHESON: Yes.

20 MR. DAMIAN PANAYI: -- in the DAR. And
21 that's where we provided the list of species at risk
22 and their status at the time when we developed this
23 document, which is early 2010, if I recall. Then --

24 MS. MARJORIE MATHESON: I'm wondering
25 if perhaps it could be updated? Using current

1 information?

2 MR. DAMIAN PANAYI: It -- the list that
3 we provided in the DAR is consistent with the li -- the
4 species at risk listed in the species at risk in the
5 Northwest Territories document. And with regards to
6 some of the other species you mentioned there, yes,
7 there are other species at risk in the Northwest
8 Territories and -- and possibly in the Tlicho region.
9 But, there -- they weren't within our study area which
10 is why they weren't included.

11 MS. MARJORIE MATHESON: Okay. I beg to
12 differ, because we all know that the species may or may
13 not be in the area, such as our discussion yesterday
14 with the woodland caribou. I think that it would be
15 really -- I guess I would really think it important
16 that Fortune look, perhaps, at the updated information
17 and -- and review it.

18 MR. DAMIAN PANAYI: Damian Panayi.
19 Yes, I think we'll be working with Environment Canada
20 to make sure that we're meeting our responsibilities
21 under the species at risk act. But, other than that,
22 you know, if we don't see the species in the study area
23 and we have no evidence that they are present, you
24 know, based on the evidence that we had when we were
25 going through the -- developing and preparing the

1 environmental assessment, that's -- that's the
2 information we have to go on at the time.

3 And, I guess, follow -- following up
4 from that, there will be environmental monitoring going
5 on at the project throughout construction and operation
6 if it goes ahead. And so during that time if there's
7 any species at risk which are found to be in the
8 project study area which weren't in the -- you know,
9 identified during baseline studies, then those would
10 obviously be addressed at that time.

11 THE FACILITATOR HUBERT: Thank you. Do
12 you have further questions?

13 MS. MARJORIE MATHESON-MAUND: No,
14 that's fine.

15 THE FACILITATOR HUBERT: Great.
16 Further from Tlicho government, or any other party in
17 the audience?

18

19 (BRIEF PAUSE)

20

21 THE FACILITATOR HUBERT: Thank you.
22 Chuck Hubert, Review Board. I'll take that as
23 sufficient discussion then on our agenda topic of SARA
24 species, waterfowl and other wildlife. Is -- are
25 parties in agreement with that?

1 QUESTION PERIOD RE WATER QUALITY OBJECTIVES, WATER
2 MANAGEMENT, AND TREATMENT:

3 THE FACILITATOR HUBERT: Excellent.
4 Without further ado, we'll move into today's topic,
5 water quality objectives, water management and
6 treatment is how we phrased it in -- in our agenda.

7 And I'd like to mention as well that --
8 to thank all parties who assisted in -- in compilation
9 of the agenda. I think -- I thought that was useful
10 that parties provided suggestions and times during the
11 -- during this meeting when -- when topics could --
12 could occur. And the Board did its best to -- to try
13 to schedule and accommodate those requests.

14 So for water quality issues, I'd like to
15 begin with the Tlicho government, please.

16 CHIEF CLIFFORD DANIELS: Good morning
17 and thank you. My name is Chief Daniels from Behchoko.
18 When we're discussing water, we all know here around
19 the table, water is very important. Important to all
20 of us and all the wildlife and plants. The liquid of
21 life.

22 Especially when there's a project
23 upstream of Behchoko, we're very concerned. Because
24 we're downstream of this project that the Developer
25 will be seeking. History shows there should be fear of

1 any project upstream of any community or settlement.

2 The flow of water from the river naturally flows

3 through Behchoko.

4 Our people fear always the worst case
5 scenario. Could history repeat itself? We've had many
6 deaths due to cancer and other illnesses, and we've
7 always asked these questions. What is really the cause
8 of these illnesses and deaths? And that question still
9 lingers to this day.

10 Could it be to the previous projects
11 upstream, like Rayrock Mine. And the hearings like
12 this, it'd be good to have it at impacted communities
13 because there's lots of people in my community that
14 really want to hear what's going on here. We are
15 impacted downstream of this. Out of the three (3)
16 community -- out -- out of the four (4) communities in
17 our region, we're the ones that are downstream. Other
18 communities might benefit more. But that's how -- I
19 mean, that -- that's really up to the Developer, but
20 there is concern when it comes to water.

21 We don't have enough information to make
22 sense of the water management with this proposed mine.
23 Wetland treatments may not work. We may need -- we may
24 need to treat the water forever. We're not a hundred
25 percent sure on this.

1 Then -- and -- and in our -- in our
2 agreement, the Tlicho agreement, this is an agreement
3 between GNWT, the Federal government, and the Tlicho
4 Government, and the signators have signed this
5 agreement, and this agreement is constitutionally
6 protected. The reason I say that, in chapter 21,
7 there's a section in 21.2.3 that states:

8 "The Tlicho First Nation has a right
9 to have waters which are on or flow
10 through or adjacent -- adjacent to
11 Tlicho lands remain -- remain
12 substantially unaltered as to
13 quality, quantity, and rate of flow
14 when such waters are on, or flow
15 through, or adjacent to Tlicho
16 lands."

17 And the other one is, the Developer has
18 to prove to us water quality, quantity, and rate of
19 flow will not be harmed.

20 And like I'd started off, we're
21 downstream so we are very, very worried of anything
22 happening upstream, not specifically your mine. Not
23 Developer's mine.

24 Any community that's downstream of any
25 projects should really seriously -- their concern

1 should be taken seriously. There's rivers everywhere,
2 there's lakes everywhere, and there's projects
3 happening everywhere, but the impacted communities
4 should really, really be listened to. Mahsi.

5 THE FACILITATOR HUBERT: Thank you very
6 much for those comments, and be assured that the Rev --
7 Review Board takes into account the views of
8 communities to a -- very -- it's very important to the
9 Review Board. So thanks very much.

10 Do you have specific questions, Tlicho
11 Government, with water issues for Fortune?

12 MR. GERD WIATZKA: Gerd Wiatzka, SENES.
13 We -- in -- in reviewing the data, we had concerns
14 about the use of -- of humidity cell data directly. We
15 felt that, well that's not an appropriate way to do it,
16 that ultimately you use the upper ranges of the -- the
17 quality, and that likely that represented a reasonable
18 expectation of future water qualities. But we'd like
19 to see the data.

20 And so the real question here is, you
21 know, can you provide the supporting data to show that
22 the estimates that you used based on the direct
23 humidity cell data is appropriate for -- for the
24 modelling?

25 MR. KEN DE VOS: Ken -- Ken De Vos,

1 with Golder Associates. So I think there's -- there's
2 a couple of things in there. The answer is yes, we --
3 we -- the data is provided. The Appendix 7.2 provides
4 the water quality -- an outline of the water quality
5 model and references the humidity cell data. All of
6 the humidity cell data is provided in Annex A, which is
7 the geochemistry report. So all of that information is
8 provided. And I can -- well, it's all listed in 7.2,
9 which humidity cells were used.

10 With respect to the type of model used,
11 we used an equilibrium-based approach for the modelling
12 for this site, as opposed to a kinetic-based approach.
13 And we feel that's representative and relevant for this
14 site, based on the design of the CDF. So that if --
15 for -- for a kinetic-based approach, if we were going
16 to expect acid generation at this site then we ud --
17 would use a kinetic-based approach with the mass loads
18 likely as -- as you're -- you were suggesting.

19 If we design this site such that we
20 don't see the acid generation then we'll go with an
21 equilibrium-based approach, which is also defined in
22 the different types of guidelines in terms of the
23 different ways of modelling the site.

24 MR. GERD WIATZKA: Thank you.

25 THE FACILITATOR HUBERT: Thank you.

1 Further questions from Tlicho Government?

2 MR. GERD WIATZKA: We -- we have
3 questions on the water treatment, but I think that'll
4 be on -- at a later part in this session.

5 THE FACILITATOR HUBERT: Thank you.
6 Would other parties have questions on more of the water
7 quality hum -- humidity cell testing issue?

8

9 (BRIEF PAUSE)

10

11 MR. PAUL GREEN: It's Paul with Water
12 Resources. Paul Green. Strictly humidity cell, or
13 water quality objectives, broad, or what -- what were
14 you looking for?

15 THE FACILITATOR HUBERT: You can be as
16 broad as you'd like. Thanks.

17

18 (BRIEF PAUSE)

19

20 MR. BARRY ZAJDLIK: Barry Zajdlik, on
21 behalf of AANDC. When I reviewed the Golder
22 documentation with respect to the -- the water quality
23 in Peanut and NICO Lakes there were several comments
24 that implied that there's substantive groundwater flows
25 into those lakes. I'm wondering about the ability of

1 the CDF to contain seepage; and if it doesn't contain
2 seepage, I'm wondering what the -- what kind of water
3 will be flowing into those lakes that would be
4 untreated.

5

6 (BRIEF PAUSE)

7

8 MR. KEN DE VOS: Ken De Vos, Golder
9 Associates. At this point we don't consider that any
10 water or seepage from those piles would be flowing
11 directly into those lakes untreated. It will be
12 reporting to the containment ponds at the base of the
13 pile from where it -- it will either be pumped through
14 to the treatment plant or it will undergo wetland
15 treatment prior to being discharged.

16 MR. BARRY ZAJDLIK: Barry Zajdlik, a
17 follow-up question. Have you done groundwater flow
18 studies in the vicinity?

19 MR. MARC ROUIGER: Marc Rouiger, Golder
20 Associates. The -- the main way we studied the
21 watersheds was through hydrology and base flow and --
22 and flow monitoring. We also developed a numerical
23 model of the region to capture how groundwater might
24 flow between the different parts of the watersheds.
25 And that's part of the DAR. It's in the -- the 3D

1 hydrological model section.

2 MR. BARRY ZAJDLIK: Barry Zajdlik. Are
3 you referring specifically to surficial flows?

4 MR. MARC ROUIGER: No, the -- the --
5 no, no, I'm not.

6

7 (BRIEF PAUSE)

8

9 MR. BARRY ZAJDLIK: Barry Zajdlik.
10 There's discussion of a contingency pond that might be
11 used for flow balancing. So my impression is that that
12 flow balanced water will not be treated.

13 What evaluation in the vicinity of the
14 proposed contingency plans have you done?

15

16 (BRIEF PAUSE)

17

18 MR. RICK SCHRYER: Rick Schryer,
19 Fortune Minerals. At this time, really the contingency
20 pond is ju -- just that, a contingency. Act -- we
21 really don't plan on using it. If we run into a
22 condition where we have flows that are unacceptable for
23 discharge, we would simply put them back in the reclaim
24 pond, the CDF, where we have ample storage for any
25 emergency situation.

1 But at this time, we're not thinking of
2 using the contingency pond for any additional treatment
3 or settling out of -- of water. Because we've moved to
4 a reverse osmosis system there's no need for that.
5 We're very confident that with the small amount of flow
6 that we have coming out of this mine, which is around
7 1,500 cubic metres a day, that we'll be very able to
8 treat all the water that we need to discharge through
9 that system.

10

11 (BRIEF PAUSE)

12

13 MR. BARRY ZAJDLIK: We may have a
14 follow-up question on that once we have a discussion
15 then. Thank you.

16 You're -- you're planning on using an RO
17 treatment instead of ion exchange. And the use of the
18 RO unit -- I went through your table last night and I
19 looked at the nitrogen, phosphorus and potassium
20 levels. And for nitrogen and potassium, they're going
21 to increase by ten (10) times relative to the ion
22 exchange treatment, and phosphorus will be increasing
23 by almost two (2) times.

24 Do you have any comments to make on the
25 potential for utrification (phonetic) when you use a RO

1 unit versus ion exchange?

2 MR. JOHN FAITHFUL: John Faithful,
3 Golder Associates. Thanks, Barry. The -- the
4 modelling that we undertook for the assessment of
5 effects, to -- to NICO and peanut, assume the -- the
6 levels of nitrogen and phosphorus inputs to the system
7 from the -- from an ionic exchange system.

8 With respect to -- to those predictions,
9 the phosphorus loading was -- was determined to be
10 relatively similar to background conditions for NICO
11 and Peanut. We haven't evaluated the -- the potential
12 effects for nitrogen and phosphorus in those receiving
13 environments under the RO plant discharge
14 specifications.

15 MR. BARRY ZAJDLIK: Barry Zajdlik.
16 Would you consider doing that additional modelling?

17 MR. JOHN FAITHFUL: Yes, we would. In
18 terms of the timeframe for that, we'll -- we'll have to
19 -- we'll -- we'll talk internally, and -- and then get
20 back to the -- to the Chair on that.

21 THE FACILITATOR HUBERT: Thanks.
22 Perhaps this -- later today?

23 MR. JOHN FAITHFUL: John Faithful,
24 Golder Associates. Yes, Chuck.

25 THE FACILITATOR HUBERT: Chuck Hubert,

1 Review Board. Thanks very much. We look forward to
2 that.

3 Continuing questions from AANDC?

4 MR. BARRY ZAJDLIK: Yes. I noticed
5 that most of the -- the guidelines that you're
6 proposing to use for the Fortune site are CCME water
7 quality guidelines. The site is -- is naturally
8 mineralized and the CCME water quality guidelines are -
9 - are -- the water quality will exceed the CCME water
10 quality guidelines in some cases but not all.

11 In addition to the CCME water quali --
12 quality guidelines, you're proposing your own derived
13 SSWQOs, or site specific water quality objectives. And
14 those are all greater than the CCME water quality
15 guidelines. When I do the calculations or the -- the
16 comparison of the -- the proposed SSWQOs and the CCME
17 water quality guidelines, the ratios are -- vary from
18 three (3) to ten (10) times higher.

19 If you look at copper, for example,
20 which I chose kind of randomly last night, the medium -
21 - median concentration for copper is 1 microgram per
22 litre in Peanut Lake, and the CCME water quality
23 guideline is double that. If -- and I have to note
24 that the CCME water quality guideline is for total
25 copper and would be even lower for dissolved copper.

1 The proposed SSWQO is twenty-two (22)
2 time -- or 22 micrograms per litre, which is twenty-two
3 (22) times higher than the natural bra -- background.
4 And the proposed SSWQO is based on dissolved copper.
5 So if you use -- you used -- generated a SSWQO for
6 total copper it would be even higher. So the ratio of
7 twenty-two (22) times higher would be even higher would
8 be even higher in that case.

9 Why are you proposing SSWQOs that are so
10 much higher than what you're capable of meeting based
11 on the ion exchange or even the RO predictions?

12

13 (BRIEF PAUSE)

14

15 MR. JOHN FAITHFUL: John Faithful,
16 Golder Associates. Barry, thanks -- thanks for that
17 question. The -- the relevance -- well, the -- the
18 derivation of site specific water quality objectives
19 was -- was a requirement of -- of the terms of
20 reference. It also is a -- is a relevant -- a relevant
21 -- a relevant process in terms of evaluating a
22 threshold to determine an aquatic effect to NICO and --
23 and Peanut Lake.

24 The -- the risk assessment team that --
25 that considered the derivation of those site specific

1 water quality objectives looked at a number of things.
2 And, quite rightly, you pointed out earlier that that
3 particular watershed is highly mineralized, and -- and
4 by virtue of a lot of those headwaters coming into
5 contact with the ore will assume a lot of the chemical
6 characteristics of that particular ore and move through
7 that -- that aquatic system.

8 They applied a -- an approach that is
9 consistent with the CCME guidelines, which is to look
10 at the baseline water chemistry characteristics, look
11 at the species of -- of biota that -- that include the
12 -- the microscopic algae through to -- to the fish, and
13 then look at the toxicity literature in order to
14 evaluate the site specific water quality objectives.
15 They applied that approach and -- and derived the site
16 specific water quality objectives.

17 With respect to your particular example
18 of copper, I can't speak to that directly. It is
19 something that -- that I'd like to refer to our risk
20 assessment team. But, I -- and I think I'd leave it at
21 that.

22 MR. BARRY ZAJDLIK: Barry Zajdlik.
23 Sorry, John. I didn't get the answer that I was
24 looking for, I think. It's: Why are the guidelines
25 that you chose are the -- higher than what you can

1 achieve?

2

3 (BRIEF PAUSE)

4

5 MR. JOHN FAITHFUL: The -- the site
6 specific water quality objectives were -- were
7 developed to be protective of the -- of the
8 environment. They are independent of the treatment
9 technologies and they take into account the -- the
10 natural biota as well as the natural conditions with
11 respect to water chemistry.

12 MR. BARRY ZAJDLIK: Barry Zajdlik. I
13 understand that they are toxicity-based and -- and
14 protective in the sense that you've captured all the
15 sensitive species in the ecosystem. But, I think that
16 the baseline studies for the zooplankton and
17 phytoplankton, at least, are quite limited.

18 Do you think that you've adequately
19 characterized the sensitive zooplankton and
20 phytoplankton species in the receiving environment?

21

22 (BRIEF PAUSE)

23

24 MR. JOHN FAITHFUL: John Faithful,
25 Golder Associates. I'll refer that to -- to the -- the

1 aquatic team and I'll provide a response.

2 In terms of the -- the baseline studies,
3 many of the baseline studies her -- were establi --
4 well, stretch back to 1998, and, to the extent
5 possible, in terms of both biota that include plankton
6 they -- they would have been based on seasonal surveys.
7 But, I'll provide -- I'll -- I'll refer to our fish
8 team and provide a response to that.

9 THE FACILITATOR HUBERT: Chuck Hubert,
10 Review Board. Thanks very much. It's recognized that
11 there's some crossover between, you know, the water
12 issues and -- and aquatic issues, so please go ahead.
13 Thanks.

14 MR. GARY ASH: Gary Ash, from Golder
15 Associates. The phytoplankton/zooplankton sampling was
16 conducted during the course of the baseline studies.
17 And we looked at doing the sampling. It was primarily
18 done in the summer of 2005, so have a fairly good
19 representation of the -- the baseline species that were
20 there at that -- at that time.

21 Also with the -- with the site-specific
22 water quality objectives, it also looks at, I guess,
23 general phytoplankton and zooplankton populations in a
24 regional basis as well. So I feel that it's adequate
25 for the -- the characterization of the -- of the system

1 in terms to be protective.

2 MR. BARRY ZAJDLIK: Barry Zajdlik. My
3 understanding is that you did a single sample in Burke
4 and Peanut Lakes in one (1) year during the open water
5 season. I'm not sure how you could characterize
6 seasonal variability and temporal variability with a
7 single sample. And by single sample, I mean a single
8 sampling event, not just one (1) -- one (1) grab.

9 MR. GARY ASH: The sampling that was
10 conducted in Burke did look at two (2) different
11 habitat types, both the shallow and the deep, and there
12 were three (3) samples, I believe, taken at each of
13 those locations. So it would be that point in time,
14 but generally that characterizes the phytoplankton and
15 zooplankton that were present at that point in time.

16 MR. BARRY ZAJDLIK: Barry Zajdlik.
17 Just to reiterate, I don't think it would capture the
18 seasonal or temporal variation.

19

20 (BRIEF PAUSE)

21

22 MR. GARY ASH: Gary Ash from Golder
23 Associates. Yes, you're correct on that, that it was
24 only one (1) point in time, but it would characterize
25 it for typically the open water period in that -- at

1 that point in time.

2

3 (BRIEF PAUSE)

4

5 MR. BARRY ZAJDLIK: Barry Zajdlik.

6 We've -- we've talked about the SSWQO derivation
7 process, which is toxicity-based as opposed to what is
8 achievable. And the follow-up question is -- refers to
9 Chief Daniels' quotation of Section 21.2.3 of the
10 Tlicho agreement, where it talks about the right to
11 water quality which is unaltered. It seems to me that
12 the SSWQOs are inconsistent with that statement and the
13 Tlicho agreement.

14

15 (BRIEF PAUSE)

16

17 MR. JOHN FAITHFUL: John Faithful,
18 Golder Associates. Thanks, Barry. We certainly
19 appreciate the -- the comments from -- from Chief
20 Daniels.

21 I think the site-specific water quality
22 objectives again take into account the -- the natural
23 water chemistry and the -- the natural biotic
24 assemblages within that particular -- particular
25 watershed. The -- the operation or the project itself

1 will result in -- in changes to -- to water quality, or
2 water chemistry, within that watershed.

3 With respect to our assessment, we
4 evaluate knowing -- having an understanding of the
5 background conditions and -- and understanding how the
6 project may potentially affect water quality, and to
7 the extent that it may affect water quality within that
8 particular watershed.

9 We make various assumptions that give us
10 a strong indication that our -- our assessment is going
11 -- is not going to underestimate those potential
12 effects. And we carry that through our assessment with
13 the conclusions that -- that are based around those
14 assumptions that -- that show that by the time that the
15 watershed reaches Marian River, the cha -- although
16 there -- there may be changes at the Marian River as a
17 result of the project, that those -- under the -- under
18 the conservative assumptions that we've applied, are --
19 are within the -- the variability of the background
20 concentrations.

21 And so there's -- there's no taking away
22 from the fact that -- that as a result of the project
23 there will likely be changes to the water quality, it's
24 -- it's the evaluation of those changes with respect to
25 aquatic health that our risk test -- assessment team

1 has conducted with the -- and arrived at the conclusion
2 that there'll be negligible to the low -- to low to
3 negligible effects to aquatic health, and negligible
4 effects to wildlife health and to human health.

5 MR. BARRY ZAJDLIK: Barry Zajdlik.

6 Thanks for the answer, John. Could I just read what
7 I've written then? I'm trying to capture what you
8 said. Is this correct that you said that the use of
9 SSWQOs pre -- will be predicted to be within a natural
10 range once you reach Marian Lake?

11 MR. JOHN FAITHFUL: No, I -- I don't
12 think I said that, Barry. Let me -- let me rephrase.
13 I said the confluence of Mar -- Marian River, the site-
14 specific water quality objectives are applied to Burke
15 -- to NICO Lake and to Peanut Lake. Site-specific
16 water quality objectives are being derived for Burke
17 Lake and for the confluence of the Burke Lake outfall
18 with Marian River. That -- that -- that information is
19 -- is still being prepared by the risk assessment team.

20 But, in terms of the assessment within
21 the DAR, we utilized those nodes of NICO Lake, Peanut
22 Lake, Burke Lake, and the confluence of the Burke Lake
23 stream with the Marian River.

24 MR. BARRY ZAJDLIK: Barry Zajdlik. Did
25 you just say that you were developing SSWQOs for points

1 further downstream?

2

3 (BRIEF PAUSE)

4

5 MR. JOHN FAITHFUL: No. I'll -- I'll
6 stand corrected there. The SSWQOs are -- are
7 established for NICO and Peanut Lake.

8 MR. BARRY ZAJDLIK: Oh. Barry Zajdlik.
9 Thanks for the correction. The next question I have
10 has to do with the SSWQOs again, and how are you
11 proposing to account for exposure due to contaminants
12 that become entrained in the food chain?

13

14 (BRIEF PAUSE)

15

16 MR. JOHN FAITHFUL: John Faithful,
17 Golder Associates. Thanks, Barry. The -- the answer
18 to your question will be provided in the detailed risk
19 assessment that -- and I can't give you the schedule on
20 that just yet, but when we do find out the schedule
21 I'll -- I'll let you -- let you know, Chuck.

22 THE FACILITATOR HUBERT: Thanks very
23 much. I look forward to that -- again. Please
24 proceed.

25 MR. BARRY ZAJDLIK: Do you -- do you

1 have any idea when the -- the risk assessment will be
2 conducted and what exactly it will cover? Of
3 particular concern is food chain effects.

4 MR. JOHN FAITHFUL: John Faithful,
5 Golder Associates. We're just going to -- we're just
6 going to confirm any of the information that we've
7 provided in the DAR to that respect.

8 With re -- regards to the schedule for
9 the risk assessment, as I indicated, we will provide
10 you with that hopefully by the end of today. Well,
11 provide Chuck with that time frame.

12 THE FACILITATOR HUBERT: Thank you.
13 And once you -- Fortune provides it to the Review Board
14 we will ensure it's provided to everybody else, all --
15 all of the parties. Thanks.

16 MR. BARRY ZAJDLIK: Barry Zajdlik,
17 again. How do the SSWQOs, deal with synergistic
18 effects?

19 MR. JOHN FAITHFUL: John Faithful,
20 Golder Associates. Again, Barry, I'm going to have to
21 refer to the detailed risk assessment. And again, once
22 we have an indication of when that's scheduled to be
23 completed we'll advise the -- the Chair.

24

25 (BRIEF PAUSE)

1 MR. JOHN FAITHFUL: John Faithful,
2 Golder Associates. Barry, I will also refer you to
3 Section 7.6, or Appendix 7.6 of the water quality key
4 line of inquiry, that provides a summary of the
5 derivation of each of the site-specific water quality
6 objectives.

7 MR. BARRY ZAJDLIK: Barry Zajdlik.
8 Yes, I did read the -- those derivations, and I didn't
9 see anything on addressing synergism or food chain
10 effects. I do have a -- a couple of follow-up
11 questions.

12 One (1) is on a specific derivation.
13 You used the biotic ligand model for the SSWQO for
14 copper. I'm wondering if you used a synoptic set of
15 measurements as input to that model, or are you -- you
16 using the ranges of the input variables as inputs?

17 MR. JOHN FAITHFUL: John Faithful,
18 Golder Associates. Again, I'm going to have to refer
19 to the risk assessment -- detailed risk assessment.
20 And, again, we'll provide an indication of when that
21 will be available.

22 John Faithful, again. In advance of
23 that, Barry, we will attempt to get that question off
24 you specifically and try and provide a response as
25 homework, if that's acceptable to the Chair.

1 THE FACILITATOR HUBERT: That is
2 acceptable, provided -- Chuck Hubert, Review Board --
3 provided -- can that be accomplished for tomorrow?

4 MR. JOHN FAITHFUL: John Faithful,
5 Golder Associates. We will confirm that with the
6 Chair. Also, Barry, if with respect to the other
7 questions that you've asked today, with -- that we
8 would refer to the -- the detailed risk assessment,
9 we'll -- we'll -- we can talk at -- at a break, make
10 sure that we document all of your questions fully and
11 then provide Chuck with an -- an indication of when we
12 can get that homework back to you.

13 THE FACILITATOR HUBERT: Thanks very
14 much. It's appreciated that Fortune and -- and AANDC
15 and their consultants will speak together and -- and
16 address these and, hopefully, come up with some
17 questions and res -- response follow up that Fortune
18 can provide. Thanks.

19 It's -- it's getting near the first
20 break. But if there's follow up topics from AANDC
21 please proceed now.

22 DR. GINGER GIBSON: I'm Ginger Gibson.
23 I'd like to just ask a question before you move to the
24 next topic on this same area. Is that okay?

25 The -- I think we just noted that the

1 same thing that was noted by AANDC, that the site water
2 quality objectives are much higher, especially for
3 arsenic. A couple areas of concern, arsenic, copper,
4 in particular, and nitrates. And so we'd like to be
5 party to those discussions and party to the -- any of
6 the answers that come through from that.

7 We're also -- I'd like to flag that the
8 risk assessment -- that depending on what comes out
9 from that risk assessment, that there may need to be
10 further IRs or further discussions with respect to what
11 we see in that risk assessment. Because until we can
12 actually dig into it, it's hard to know on both of
13 these topics -- on the -- on the risk assessment and on
14 the site water quality objectives. I think it -- it
15 bears more fruitful discussion once there's more
16 information available. Thanks.

17 THE FACILITATOR HUBERT: Thank you very
18 much. And I agree that that's fair that parties have
19 the opportunity to review the risk assessment document
20 and -- and if there are questions, the Board will make
21 a determination on how to -- how to deal with any
22 outstanding issues once the document is provided.
23 Thanks.

24 MR. JOHN FAITHFUL: John Faithful,
25 Golder Associates. Thanks, Chuck. Thanks, Dr. Gibson.

1 I -- I will refer -- although the detailed risk
2 assessment is not read -- is not currently available,
3 we have drawn up a summary upon some of their
4 conclusions in Section 7 of the DAR. It's Section 7.3,
5 Section 7.8 and sect -- Section 7.9.

6 THE FACILITATOR HUBERT: Thanks very
7 much. Any -- anything further on -- on this topic
8 right now?

9 MR. BARRY ZAJDLIK: Barry Zajdlik.
10 Realizing that these questions will probably be
11 addressed in the risk assessment, I'd still like to ask
12 them. For the BLM model that you used that was written
13 by HydroQual. There's a Monte Carlo version of that
14 model.

15 Did you use that version, as I think it
16 would be more appropriate?

17 MR. JOHN FAITHFUL: John Faithful,
18 Golder Associates. Barry, I'll take that question and
19 add that to the -- the homework that you've -- you've
20 given us.

21 MR. BARRY ZAJDLIK: Barry Zajdlik. One
22 (1) final question. Can you make the raw baseline data
23 publicly available in an electronic spreadsheet?

24 MR. RICK SCHRYER: Rick Schryer,
25 Fortune Minerals. I just want to be sure which raw

1 data you're referring to. In terms of -- are you
2 talking about the baseline water quality?

3 MR. BARRY ZAJDLIK: Barry Zajdlik.
4 That's correct.

5

6 (BRIEF PAUSE)

7

8 MR. RICK SCHRYER: Rick Schryer,
9 Fortune Minerals. I'm told that that -- that data was
10 made available on the public registry but only in PDF
11 format. So if you only have a hard copy of the DAR you
12 may not have seen it. But we'll dig it out. We'll dig
13 out the specific PDF reference for you.

14 MR. BARRY ZAJDLIK: Barry Zajdlik. I
15 did look at the PDFs and -- in the appendic -- in the
16 appendices, and I only saw summary statistics there. I
17 can refer you specific to page 8 of Peanut Lake, the
18 deep layer where you provide mina (phonetic) and maxima
19 and a median for a sample size of six (6). So that's
20 definitely not the raw data. The raw data were not
21 provided, as far as I could tell. Thank you.

22 MR. RICK SCHRYER: Rick Schryer, with
23 Fortune Minerals. I'll check back -- into that and get
24 back to you.

25 THE FACILITATOR HUBERT: Thanks very

1 much. Tlicho...?

2 DR. GINGER GIBSON: A question for the
3 health risk -- or for the human health risk assessment
4 that you'll be putting forward to see if you've
5 addressed -- Health Canada guidelines require that
6 perceived risk, the idea that perceived risk is a real
7 human health impact. It also follows through on these
8 -- the guidelines to suggest that perceived risk can
9 influence traditional use. And traditional use is
10 significant in that -- in that area. We've -- the
11 traditional knowledge study will show the extent and --
12 of the traditional use of that area.

13 The Chief Daniels this morning referred
14 to the impacts of Rayrock. Impacts of Rayrock have
15 been that people are avoiding an area. So they're
16 avoiding the area due to their perception and their
17 belief of contamination in both fish and in water. So
18 I'd like to ask you to -- to let us know if you've
19 addressed that question of perception, and also of the
20 -- the impact of avoidance on people's ability to
21 practice their traditional rights, but also on people's
22 ability to maintain their -- their di -- their diet.

23 So, you know, even though the -- the
24 guidelines may not be surpassed according the
25 scientific evidence, the -- the guidelines for

1 traditional knowledge may be surpassed. And so the
2 impact on traditional use can still be there regardless
3 of what the contaminants -- what -- what is revealed in
4 the contaminants.

5 So I'd like to ask you if you've managed
6 to address that in the -- in the risk assessment
7 looking at that pathway of impact. Thanks.

8 MR. RICK SCHRYER: Rick Schryer,
9 Fortune Minerals. That's something I'm going to have
10 to check with the risk team. But in terms of the
11 perceived risk and avoidance of potential -- potential
12 areas, I would like to have some guidance from the Kwe
13 Beh Working Group and the Tlicho Government in terms
14 of, first of all, if there are known areas that people
15 avoid and if -- and then even what would be, you know,
16 the -- what I'm thinking of is, if you're talking about
17 avoidance, how big of a -- of a circle do we give
18 around a particular area. Is it 2 kilometres, 5
19 kilometres, 10 kilometres, to give some sort of idea of
20 what we're talking about in terms of actual avoidance.

21 If there's some sort of guidance you can
22 give us on that, because, otherwise, we'd just be
23 guessing in terms of perceived avoidance and -- and dis
24 -- or sort of area lost to potential traditional land
25 use practices. And I'd rather -- I'd rather have some

1 input from you on that.

2 DR. GINGER GIBSON: I'm not going to
3 give input off the top of my head, but -- but certainly
4 I think that's it's an important discussion. I -- I'd
5 like to note that there's a lot of literature out there
6 available, publicly-available literature on the impacts
7 of avoidance, also on the -- the nature of -- of
8 contaminant advisories and how those can impact on --
9 on use and -- and avoidance of areas and -- and flag
10 the idea that -- that there not be any communication of
11 risks that are perceived by scientists that aren't
12 necessarily backed up.

13 Just because we can measure it doesn't
14 mean that it should be publicly -- that it should be --
15 becoming an issue. And I think -- I think there's two
16 (2) things there. Part of it is that there's a
17 responsibility for science to not raise flags on
18 traditional foods where it's unwarranted because it
19 does have a very bi -- big impact on people's sense of
20 security and on their pursuit of traditional
21 livelihoods.

22 But the -- the flip side of that is also
23 that I think that -- well, we -- we certainly can have
24 more dialogue on this. But I -- I would like to know
25 whether that line of inquiry has been followed in the -

1 - in the risk assessment and whether you have plans and
2 thought through the question of -- of mitigation
3 efforts should there be any contamination. Thanks.

4 MR. RICK SCHRYER: Rick Schryer,
5 Fortune Minerals. Again, I'm not going to speak off
6 the top of my head. That's something I need to verify
7 with the risk team in terms of their inclusion of that.
8 I know that they were looking at the Health Canada
9 guidelines. But, anyway, I'm not going to -- I'm not
10 going to say yes, until I actually know for absolutely
11 sure that they have.

12 And in terms of, you know, mitigation of
13 -- of contamination, I think that's something that we -
14 - we'll need to discuss down the road when we actually
15 have a better idea if that's actually going to happen
16 or not. Thank you.

17 THE FACILITATOR HUBERT: Chuck Hubert,
18 Review Board. Thanks very much. I'd -- I'd encourage
19 the Kwe Beh Working Group and to -- to continue to
20 discuss the issue of perception of risks with Fortune
21 Minerals in -- in their preparation of the -- the risk
22 analysis. Thanks.

23 DR. GINGER GIBSON: Ginger Gibson. But
24 we can consider that to be homework, that you'll get
25 back to us about whether or not the -- those elements

1 of Health Canada guidelines were adhered to in your
2 risk assessment, correct?

3 MR. RICK SCHRYER: Rick Schryer,
4 Fortune Minerals. That's correct.

5 MR. JOHN FAITHFUL: John Faithful,
6 Golder Associates. Chuck, I have a response to -- to
7 Barry's question around the -- the raw data -- the
8 baseline raw data.

9 Within Annex C of the aquatic baseline
10 report, in Appendix 4, the raw water quality data for
11 the project from 2003 to 2010 is provided. We'll
12 endeavour to get a version of that in Excel form and
13 provide it to Chuck.

14 THE FACILITATOR HUBERT: Thanks.
15 Typically, we don't post anything other than PDF on our
16 public registry. However, I can certainly forward an
17 Excel document to whichever party would request it.

18 MR. JOHN FAITHFUL: John Faithful,
19 Golder Associates. Yes, Chuck. We will provide you
20 with an Excel version, or you can direct anybody who is
21 interested in it. Or...

22 THE FACILITATOR HUBERT: If -- thanks
23 very much. If Fortune simply provides the Excel
24 documentation to me, I will forward it to whoever
25 requests it.

1 With that, we are a few minutes afer 10.
2 And I'd like to take a break and -- and thank everybody
3 for their comments and responses so far. So let's take
4 a bit of a break and -- fifteen (15) minutes perhaps,
5 and I will call you back then. Thanks again.

6

7 --- Upon recessing at 10:10 a.m.

8 --- Upon resuming at 10:30 a.m.

9

10 THE FACILITATOR HUBERT: Chuck Hubert,
11 with the Review Board. Welcome back, everybody. We'd
12 like to continue now with the topic water quality
13 objectives or any related water management discussion.
14 If -- if you can get a party to show interest in
15 something along those lines, now's the time. Thanks.
16 Please go ahead.

17 DR. GINGER GIBSON: Ginger Gibson,
18 Tlicho Government. We noted with interest the question
19 that the -- the -- that sampling had been done in the
20 summer for the little critters at the bottom of the
21 lake.

22 And we're wondering if Golder is
23 intending or will make a commitment to do sampling over
24 a temporal -- different temporal scate -- scale and --
25 and in different areas so that we have a broader sense

1 of the little critters that are down there.

2

3 (BRIEF PAUSE)

4

5 MR. RICK SCHRYER: Rick Schryer,
6 Fortune Minerals. Were you referring to the benthic
7 invertebrate survey or the zooplankton/phytoplankton
8 survey?

9 DR. GINGER GIBSON: Zooplankton and
10 phytoplankton.

11 MR. RICK SCHRYER: Great. And another
12 point of clarification. So you're requesting
13 additional baseline work?

14 DR. GINGER GIBSON: That's correct.

15

16 (BRIEF PAUSE)

17

18

19 MR. RICK SCHRYER: Rick Schryer,
20 Fortune Minerals. Yes, we'll go ahead and do some
21 additional zooplankton sampling.

22 What I would suggest, I've -- I've run a
23 number of these programs before. A spring/summer/fall
24 event is usually the way I would approach this in terms
25 of get -- capturing seasonality. As you know,

1 zooplankton and especially phytoplankton populations
2 change dramatically during seasons. You know,
3 initially you get green algae, then blue-green algae,
4 and then you get replacement by other species, so my
5 suggestion here would be a spring/summer/fall program.

6 THE FACILITATOR HUBERT: Thanks for
7 that response. Can -- can I get that phrased as a
8 commitment from Fortune, please, for the record?

9 MR. RICK SCHRYER: Rick Schryer,
10 Fortune Minerals. Yes, Fortune Minerals commits to
11 doing additional baseline sampling for zooplankton and
12 phytoplankton.

13 My suggestion is that we would do it in
14 this calendar year to -- to allow for that include --
15 inclusion of that in the planning of the aquatic
16 effects monitoring program.

17 THE FACILITATOR HUBERT: Chuck Hubert.
18 Thanks very much. Follow up from Kwe Beh Working
19 Group?

20 DR. GINGER GIBSON: I just want to turn
21 to AANDC to see if that is along the lines of what you
22 would hope to see.

23 MR. BARRY ZAJDLIK: Barry Zajdlik.
24 Yeah, that -- that would gives us a handle on seasonal
25 variation, but it wouldn't do much for temporal

1 variation.

2 We'd have basically two (2)
3 observations. I think -- I can't remember when the --
4 the last single sample was collected, but it was
5 probably in mid-summer. So you'd have one (1) mid --
6 two (2) -- two (2) data points there.

7 The other point is that under-ice
8 sampling represents that worst-case scenario in terms
9 of water quality. And the -- the bio -- the biota at
10 the end of the summer -- winter rather can be quite
11 different than what you see coming up in the springtime
12 as the blooms start to happen. So it would probably be
13 a good idea to get an understanding of what the under-
14 ice zooplankton are, and possibly phytoplankton as
15 well.

16 MR. RICK SCHRYER: Rick Schryer,
17 Fortune Minerals. Yeah, we'll take that into
18 consideration when we design the -- the actual program.

19 MR. BARRY ZAJDLIK: Barry Zajdlik.
20 Excuse me, I wasn't expecting such a quick reply, so
21 I'm choking on this danish.

22 The -- will you provide an outline for
23 people to review and comment on on your proposed
24 sampling plan then?

25 MR. RICK SCHRYER: Rich Schryer,

1 Fortune Minerals. Yes, we'd be glad to share that.

2 THE FACILITATOR HUBERT: Thanks very
3 much. Chuck Hubert. And once Fortune provides that,
4 we will, as the Review Board, provide that to all
5 parties as well. Thanks.

6

7 (BRIEF PAUSE)

8

9 DR. GINGER GIBSON: Ginger Gibson,
10 Tlicho Government. I'd like to draw on a -- another
11 point that we made earlier. On the Health Canada
12 Guidelines for Human Health Risk Assessment suggest
13 that psychosocial effects should be taken into
14 consideration in -- in risk assessments.

15 So I'd like to see those specifically
16 referred to in the Human Health Risk Assessment that is
17 being pr -- produced and -- and conducted. And just to
18 draw this point out I'll ask Chief Daniels and -- and
19 John B. Zoe to talk about the -- the question of the
20 psychosocial impacts of -- of the removal of certain
21 species from use because of the perceived impact and --
22 to -- to help you understand this point. Mahsi.

23 THE FACILITATOR HUBERT: Please
24 proceed.

25 MR. JOHN B. ZOE: Mahsi. I'll -- I'll

1 do it on behalf of -- an expansion of what Chief
2 Daniels was talking about this morning. John B. Zoe,
3 Tlicho Government.

4 At the site or the footprint of Fortune
5 Minerals, the footprint that it's going to create,
6 there are plans on the runoffs, the water quality, how
7 that will be taken care of. All these plans are in
8 place, but there's always the -- the unknown of whether
9 something will get into the river system and it's --
10 it's those fears, I think, that -- that we have,
11 whether it's through perception or in reality. It's
12 one (1) of those un -- unfortunate things where we have
13 a -- a history of Rayrock that's been fresh in people's
14 minds since the -- that property has been worked in the
15 -- in the '50s.

16 But, what we know is that the Kwet'ia is
17 just a -- is a -- is a Tlicho word to describe where
18 the -- where the rock goes into the water. But that
19 rock itself runs all the way up to Great Bear, Great
20 Bear Lake, so it's -- it's that rock that in the -- in
21 the Aboriginal view, is that same rock that runs all
22 the way from Great Bear all the way to Rayrock and
23 where it goes into the water; and that's why they call
24 it Kwitina, going into the water.

25 So we're talking about that -- that same

1 rock in our perception. But, unlike Rayrock, where it
2 didn't quite get into a fully operational stage and the
3 -- and the leftover material was -- was not that big,
4 like it's not a mountain of gravel, but whereas in this
5 development there are plains -- plans to contain as
6 much as they can, but it still is hundreds of times
7 bigger in -- in waste rock and in -- in the footprint
8 alteration. So the -- the fears will always be there.

9 But when we're talking about impact,
10 we're always curious about what is going to be impacted
11 unless we record what was there before, or even from
12 memory put onto paper what would be considered to be
13 quality or quantity of flow that might have preexisted
14 that development.

15 And what we know is that with the
16 Behchoko, another big fear that -- and again, it's
17 unfortunate that it's -- it's a history that this
18 development is going to -- you know, the fears that
19 it's going to bring back.

20 Was the water quality -- the water
21 quality has gone down at -- at such an alarming rate
22 back in the early '60s that -- that an eva -- an
23 evacuation order was put into place. And so that's
24 where the relocation of the community was planned out.
25 And that's how Edzo community was born so that the

1 whole community can be back with it into this new
2 community so that they can get -- get away from the
3 contamination of water. Okay, so that's the history of
4 that area.

5 But part of the history is that it
6 created literally two (2) communities into one (1).
7 And so, like Chief Daniels would say in -- in other
8 forums, that the funding was never readjusted to take
9 into consideration the -- the cost of linking those two
10 (2) communities because they're separated by at least
11 15 kilometres of road, okay? And we're still being
12 funded by -- by governments as a single community, so
13 we would -- were never able to catch up to that.

14 But at the same time, the -- in the --
15 to force people to move, that the community of Behchoko
16 was put into a development freeze, that there would be
17 no more housing built, no more new infrastructures
18 would be built -- built to the -- to the point where
19 there was no development for at least seven (7) years.
20 That led to overcrowding, that led to a whole bunch of
21 -- of other things.

22 So that if you look at the latest GNWT
23 statistics, that you'll find that the communities, the
24 Tlicho communities, lag way behind all the other
25 communities in the North in overcrowding, because that

1 history of at least forty (40) years nobody ever
2 bothered catching up to it. So we're -- we're dealing
3 with -- with the -- with a community that was never
4 fairly dealt with in catching up to it, and at least be
5 on a level playing -- playing field where there is a
6 lack of monies for services in the Territories anyways.
7 But -- but in -- in some ways, that -- we're a
8 subsurface to that in -- in the way the program is
9 delivered.

10 So those are issues that -- that were
11 created by water contamination in the 60s, okay? Those
12 -- that's another fear I think that -- that people
13 would look at. But because we're dealing with -- with
14 not only Behchoko, but Behchoko is -- is I guess the
15 depository of all the waters that flow and go right
16 into the community itself; that it's fed by the rivers
17 of Ehtseke. I'm not sure what the English words are.
18 I just understand them in English -- in Tlicho. But
19 you have Kweyailli, Tsoti dee, Ttka t'o deh, Kiagoti
20 deh, Hozì deh, Wehveti deh. Wod vbite deer (phonetic),
21 deh t'sa t'sa, Kwekateli, all these ten (10) -- ten
22 (10) rivers and creeks, major ones, that flow into
23 Marian Lake, and they gush right past the community of
24 Behchoko in the narrows. And that's where the
25 community water supply comes from.

1 And it also -- where the supply comes
2 from, where the pipe is actually drawing water from,
3 it's also the richest fishery probably in the whole
4 region, okay? And that's why the community is built
5 where it is now.

6 So there's not only the flow and
7 quantity of -- of water, but there's also the impact --
8 possible impact on the fish. And in pre-contact times,
9 you may know or might have heard, and you can see it at
10 the museum, where the original nets were made of -- out
11 of willow bark woven together create -- to create a
12 net. And so in Indian language itself it -- it's
13 called "flowing through the willows," because that's
14 where the water flow through the willow nets. So that
15 tells you a lot about how important the fishery is --
16 is in the area.

17 But, where the development is -- where
18 the development is, is that the water eventually flows
19 into the river system to just below Squirrel Lake,
20 Ketlute (phonetic) in -- in the Tlicho language. And
21 Tumi Lake, or Timits ahti, which is a rich fishery and
22 it also includes the village that used to be there.

23 But, there are a lot of other grave
24 sites associated with all these things and a lot of
25 them are on the banks of the river. And there's a lot

1 of erosion -- natural erosion and some escalated by the
2 water flows that are altered by the introduction of
3 beavers in the -- in the early years. But, those --
4 some of them have completely disappeared from the
5 erosion. We know that.

6 But, also in K'iagoti, which is Hislop
7 Lake, you know, there is -- you have eagles nest that's
8 sort of -- is a testimony of the amount of fish that's
9 in the area, as well -- as well as the waterfowl.

10 But, like, yesterday we were talking
11 about that -- that river being one (1) of the main
12 arteries, that it has the largest concentration of --
13 of earlier villages that have been abandoned over time.
14 And I just want to capture some of the things that we
15 talked about yesterday, about maybe having young people
16 introduced to the landscape, going out on to the land.
17 Yes, we've been doing that for a number of years to,
18 hopefully, revive those communities, because some of
19 the cabins are still there.

20 So I just want to mention some of the --
21 the communities that exist between -- between Hislop
22 Lake and Marian Lake. We know that there's at least
23 two (2) communities on -- on Hislop Lake itself. And
24 you have Timi et' sati, which was another community,
25 and Det a' a' et sati, Etedli, Detayto, Haili. So at

1 least seven (7) earlier villages that existed along
2 that -- along that river system that has a potential
3 for alteration on quality and quantity.

4 But, most of the -- the food source that
5 people depended on in the area was -- is moose, beaver,
6 muskrats, ducks, the fur bearing animals and -- and,
7 most of all, the -- the fishery.

8 So one (1) of the things that I -- that
9 I wanted to mention was, are there any plans, or how do
10 we monitor the -- the changes in those areas downstream
11 that might affect the -- what was existing there
12 before? How do we monitor that?

13 I know that there's going to be a lot of
14 monitoring about the outflow, but -- but there's always
15 a chance that some things will get into the -- into the
16 main system that's going to alter it for -- for a long
17 time to come.

18 And so I just wanted to interject with -
19 - with these kind of little stories, so to -- to keep -
20 - to keep the -- the technical session grounded in some
21 way. Mahsi cho.

22 THE FACILITATOR HUBERT: Chuck Hubert,
23 Review Board. Thanks very much for that discussion of
24 the -- the actual and perceived risks from communities
25 to both water quality and -- and aquatic -- health of

1 aquatic life and how that may, in actuality or per --
2 in a perceived way, affect -- affect community members,
3 and for placing that in historical context for us.

4 Thanks.

5 If I can get Fortune to respond to the
6 question on monitoring of changes to the aquatic
7 ecosystem. Thanks.

8 MR. RICK SCHRYER: Rick Schryer,
9 Fortune Minerals. Thank you for those comments, John.
10 It's always informative.

11 We've been having initial discussions,
12 and I'm going to put Mark Cliffe-Phillips on the spot
13 here, about having a group starting from Marian River,
14 and correct me if I get the terminology wrong, the
15 Marian River watershed, I can't remember if it was
16 management group or whatever, but initial discussions,
17 in terms of -- we're going to have the monitoring
18 basically that's around the mine site that would be
19 part of the water licence, right, the SNP stations.

20 We're going to have an aquatic effects
21 monitoring program, which will look beyond the borders
22 of the mine. And even further than that, our concept
23 was that what would be a regional water -- monitoring
24 body that would look at sites sort of beyond the -- the
25 proximity of the mine and that that kind of monitoring

1 would be done by Tlicho people.

2 What I was specific -- you know,
3 examples of the sampling stations that I was thinking
4 of is maybe the -- the headwaters into the Mar -- into
5 Marian Lake, and then the water quality upstream of the
6 water intake in Behchoko would be two (2) examples of
7 areas that we could -- we could include in that type of
8 regional monitoring program.

9 Fortune Minerals has already started to
10 sample water quality in Hislop Lake, both where the
11 water -- the Marian River enters and exits Hislop Lake.

12 We don't anticipate any water quality
13 changes to Hislop Lake due to this project, but in
14 terms of perceived contamination, we thought it best to
15 start collecting data on Hislop Lake now so that we can
16 demonstrate down the road that there are no changes.

17 And if that's something that, you know,
18 the -- the -- this regional group would take -- take
19 over, that would be great, in terms of including that
20 in their sort of regional program, both upstream and
21 downstream of the project, just to be able to
22 demonstrate what changes are in the watershed.

23 So -- and like I said, I've already had
24 initial discussions with the Wek'eezhii Land and Water
25 Board. I don't know where they are on that -- on that

1 management group yet. But it's certainly something
2 that Fortune Minerals would be willing to participate
3 in, in terms of providing the Tlicho an opportunity to
4 look at things, like I said, on a -- on a regional
5 basis in terms of water quality. Thank you.

6 MR. MARK CLIFFE-PHILLIPS: Thanks,
7 Rick. This is Mark Cliffe-Phillips with the Wek'eezhii
8 Land and Water Board. I love being put on the spot
9 like that.

10 But just in response to what Rick was
11 talking about, this was a very preliminary idea that
12 we've been discussing as an initiative that would come
13 out of what we've been calling the Wek'eezhii forum,
14 which is an organization that's made up of the
15 Wek'eezhii Land and Water Board, the Wek'eezhii
16 Renewable Resource Board, and Tlicho's Lands Protection
17 Department.

18 At the moment, there's only two (2)
19 programs that have sort of been started in -- within
20 this -- this preliminary framework, and one (1) was --
21 I'll -- I'll maybe let Karin talk a bit about that, but
22 it's a fisheries monitoring program with some water
23 quality sampling in the -- in the Marian Lake area and
24 Russell Lake area.

25 And the Land and Water Board's been

1 working with communities on training members in water
2 quality sampling, primarily dealing with their -- their
3 water licence compliance. But we're trying to build up
4 the capacity at the -- the local level for water
5 quality monitoring.

6 So anything beyond that we -- will --
7 we'll talk and -- and work on. But as I said, it's
8 very preliminary, but we're working on getting the
9 capacity up in the community to -- to help with this
10 program if it moves forward. Karin's going to leave
11 that out.

12 THE FACILITATOR HUBERT: Thanks very
13 much. I noticed that. Thanks for the -- the update on
14 that. And while you're in that corner, Stacy, Kathy
15 Racher had requested earlier an opportunity to present
16 some information. And since the microphone is right
17 there, this might be the time. Thanks.

18 DR. KATHY RACHER: Hello, everyone.
19 It's Kathy Racher call -- calling. It feels like I'm
20 calling from the back row here.

21 Just listening to the discussion today,
22 and I've read our -- our -- the KG team here has -- has
23 read the DAR, and we -- we wanted to participate in the
24 technical sessions, and all through the EA so that we
25 know what's coming -- oops -- when it shows up at our

1 doorstep, when -- whenever that will be.

2 One of the things that we've talked a
3 lot about today are -- are water quality things, which
4 obviously is going to be a big part of our licence if -
5 - if the project should go there. And we've talked a
6 lot about estimates and predictions, about what's going
7 to happen in the environment, what's going to -- how is
8 the co-disposal facility going to work with regard to
9 seepage, how -- how's the reverse osmosis going to
10 work, how's the receiving environment going to respond,
11 you know.

12 You can do more sampling for
13 zooplankton, for example, which I think has been agre -
14 - agreed to. But in the end, we'll be left with --
15 with a large series of predictions upon which we have
16 to make a decision whether this project goes ahead or
17 not. And that's always the way. It doesn't matter how
18 good a job everyone does; there -- there's still
19 predictions in the end.

20 Our experience at the Wek'eezhii Land
21 and Water Board, dealing with other files, is that
22 things don't always go according to prediction.
23 Sometimes things go better. Sometimes operations are
24 better than was predicted during the EA. Sometimes
25 certain things are not as good. Sometimes the

1 environment -- receiving environment responds to the
2 stress of -- of inputs in a way that is better than
3 what was predicted, and sometimes it responds much
4 differently than anyone anticipated.

5 That's not the fault of the EA process
6 or any people involved in it. People do the best they
7 can. That's just nature. And one difficulty we have,
8 because we'll be managing this project from -- from
9 construction right through to closure and post-closure,
10 is we need to know what the boundaries are on -- on
11 changes to the environment.

12 So when you have a prediction and you
13 make a ruling that, okay, based on the predicted
14 effects, we don't think that there'll be a significant
15 adverse effect, if -- if the predicted effects are
16 true, then we agree that's not a significant adverse
17 effect. That's -- that's an important thing to know,
18 and that's the minimal thing that the Review Board will
19 definitely do.

20 What we would like to see is: What
21 would significant look like to -- to everybody? The
22 proponent has, in their DAR, put forward a number of
23 definitions for what they think significant looks like,
24 which is fair. They were asked to do that, and they've
25 done their best job of that.

1 But I -- I suppose what we would like to
2 see at the end of this process is an idea from all
3 parties, and hopefully from the Review Board itself, on
4 what significant would look like if we were to reach
5 it.

6 We -- we call this the significance
7 threshold, and it will help us to manage the project
8 going forward. So if -- if predictions don't come out
9 to be true, we still know how to manage the project, we
10 still have an idea of what everyone thought was an
11 appropriate level of change for the environment in
12 exchange for the -- the many benefits the mine will
13 bring to -- to people locally and in Canada.

14 And we think that it's appropriate to
15 have this discussion during the environmental
16 assessment, because this is the stage at which we're
17 discussing not only environmental effects, but we're
18 also discussing benefits, socioeconomic benefits of the
19 project. When it gets to the water licensing phase, we
20 no longer talk about those benefits so much. We just
21 talk about environmental effects.

22 So the Wek'eezhii Land and Water Board
23 has -- has written a two (2) page learned discourse
24 that was in the Integrated Environmental Assessment
25 Management journal last year. This two (2) page

1 discourse is on our website, www.wlwb.ca, in the
2 publication section. You can find it to get an idea of
3 what I'm talking about in terms of significance
4 threshold, and it's important in regulating the mine
5 later on. And we've also got guidelines on how that
6 might be implemented in a water licence.

7 And I guess I'm just asking everyone to
8 take a read and to -- and -- and with the hopes that
9 everyone will put forward their idea of what the
10 significance threshold is for this project so that we
11 can better manage it. And what we've encountered with
12 the other projects that we have under our purview is
13 we're having to do this work now in the regulatory
14 phase.

15 So if it's not done during the EA, we'll
16 have to do it during the regulatory phase. But I -- I
17 still think it's much more appropriate to have the
18 discussion before the mine is built rather than later
19 on, after the mine is built and running - better for
20 all parties.

21 So do we have anything to add from the
22 gang here? Okay, I'll leave it at that. Thank you.

23 THE FACILITATOR HUBERT: Thanks very
24 much, Dr. Racher, and we -- the Board will place that
25 document you referred to on our website and it will go

1 to all parties.

2 MR. BARRY ZAJDLIK: In furtherance to
3 what Kathy said, AANDC has prepared a two (2) page
4 document that is targeting communities and -- to enable
5 them to generate their own community-specific effects
6 levels that could be built into monitoring programs.
7 And we can make that two (2) page document available.

8 THE FACILITATOR HUBERT: Thanks very
9 much. Can we continue with questions? Tlicho
10 Government, perhaps?

11 MR. GERD WIATZKA: Mr. Gerd Wiatzka,
12 SENES. In terms of water and water quality objectives,
13 we've spent a lot of time talking about that, and
14 yesterday you provided in -- some information on water
15 treatment and the RO process.

16 We generally, you know, respect the fact
17 that RO is -- is a new technology. It's -- it's a --
18 it's a state of the art technology. But looking at the
19 document we really didn't have much in the way of
20 information to assess what's there, how it's going to
21 be done, what your different flows are, how you handle
22 your brine, how you -- all the technical aspects.

23 So what we'd respectfully ask is a) to
24 get -- I think you had a -- you said there's a summary
25 coming out shortly, and then b) to get the technical

1 backup for the design so that we can look at that and -
2 - and provide informed comments back to you on -- on
3 that.

4 MR. RICK SCHRYER: Rick Schryer,
5 Fortune Minerals. Yes, we did commit to providing that
6 summary document of how the RO would be operated. I'm
7 going to have to check on the timeline for providing a
8 detailed design, because I don't think that's completed
9 yet.

10 So I'm going to -- I -- like I said,
11 before I misspeak, I'm going to have to check on when
12 that actually would be provided. And hopefully I'll
13 have an answer for you before this -- these technical
14 meetings are over.

15 MR. GERD WIATZKA: Gerd Wiatzka, SENES.
16 Thank you very much. I guess we'll talk tomorrow about
17 closure and -- and -- but the RO has been suggested as
18 also a -- an alternate should the wetland system not
19 work. So if there is some costing information that you
20 can provide in how you're looking at that in terms of
21 both operating costs and -- and closure costs, I think
22 that would be extremely helpful as well.

23 THE FACILITATOR HUBERT: Thanks very
24 much and we look forward to Fortune providing a time
25 frame when that can be presented. Thanks.

1 MR. GERD WIATZKA: At this point in
2 time I -- I wasn't really thinking about talking about
3 the wetlands. I was thinking of that more as -- as a
4 closure item, but I'm not sure if the Chair would like
5 to discuss that now or -- or at the closure session?

6 THE FACILITATOR HUBERT: Thanks. Chuck
7 Hubert. I'd like to defer the talk of the wetlands to
8 the closure session, please. Thanks.

9 DR. GINGER GIBSON: Ginger Gibson,
10 Tlicho Government. I just want to reflect on what
11 Kathy Racher said and what Barry brought up as well in
12 -- with respects to the question of significance and
13 what would significance look like.

14 I'd like the Developer to please comment
15 on the -- their acknowledgement of the Tlicho
16 agreement, firstly. And -- and specifically comment on
17 whether they -- they'll be reflecting and -- and
18 utilizing the guide that's pro -- produced in the --
19 the broad guidance that's there in the Tlicho agreement
20 in -- in that section that Chief Daniels referred to
21 this morning, whether that will be something that's
22 considered in the determination of the site water
23 quality objectives.

24 And secondly, I -- I just wanted to
25 thank both Barry and Kathy for raising those two (2)

1 documents and -- and suggest that it will be a really
2 useful thing for us to look at if we can get copies of
3 those today, to take a look at that and actually be
4 able to have a -- a debrief internally on that, and
5 maybe present some perspectives on the Tlicho
6 Government perspective of -- of what is significant.

7 And not that we could reasonably achieve
8 that in the course of homework tonight, but that we at
9 least could begin to reflect on that question so that
10 we could usefully contribute to that dialogue on -- on
11 what significance will look like, especially in the --
12 in the context of this proposed development operating
13 entirely within the context of a -- Tlicho -- Tlicho
14 lands and all of the water coming away from it going
15 directly into Tlicho lands, Tlicho fisheries, and --
16 and Tlicho drinking water. Mahsi.

17 THE FACILITATOR HUBERT: Thank you,
18 yes. I'm in entire agreement that that's valuable and
19 we look forward to -- to those discussions and the --
20 the result of them. Absolutely.

21 MR. RICK SCHRYER: Rick Schryer,
22 Fortune Minerals. Yes, Fortune Minerals will commit to
23 having those discussions on significance with the
24 Tlicho government in terms of looking at -- you know,
25 and forward towards the design of the AEMP, but also

1 the thresholds that we use.

2 DR. GINGER GIBSON: Ginger Gibson,
3 Tlicho government. I'd also like to ask you, once
4 again, just to clarify your perspective on whether you
5 will be adhering to the Tlicho agreement guidelines
6 that are set out there on water quality, water
7 quantity, and rate of flow.

8 In addition, I mean I think that we
9 could reasonably ask the Developer to achieve what is
10 economically possible in terms of your technology for
11 taking care of water so that you could -- you have
12 quite a buffer built into what you've got currently on
13 the -- on the record.

14 And we'd like to see, given what is
15 articulated in the Tlicho agreement, we'd like to see
16 the Developer commit to doing as best a job as possible
17 on water quality and -- and rate of flow. So that
18 there -- that -- that Tlicho agreement is both a
19 guiding document to the Developer and something that is
20 clearly stated in -- in the Developer's goals.

21 MR. RICK SCHRYER: Rick Schryer,
22 Fortune Minerals. I'm going to have to go back to the
23 Tlicho agreement to exactly read what the wording is.
24 In terms of Fortune Minerals doing its absolute best in
25 terms of water quality, I think we can already show

1 that we've already made considerable efforts towards
2 that goal.

3 As I presented in the presentation
4 yesterday, we have made a number of changes to the
5 project based almost solely on water quality objectives
6 and improving water quality, in terms of reducing the
7 mine footprint, moving to a co-disposal system.

8 And with -- and with the -- the co-
9 disposal system, the -- the objective there was
10 primarily water quality at closure, which we were told
11 by the Tlicho people was their biggest concern.

12 The -- the recycling of water at site,
13 where we've gotten our discharge down to 1,500 cubic
14 metres a day, which is a very low volume discharge.
15 And then moving to a reverse osmosis system for
16 operations, which, again, improves our water quality
17 especially in respect to selenium and ammonia.

18 So I'm not saying no to your request,
19 Ginger. I'm simply saying I'd like to review that
20 before I -- before I actually give a specific response.

21 DR. GINGER GIBSON: Thank you. That's
22 fine.

23 DR. KATHY RACHER: Hi, Kathy Racher
24 from the Wek'eezhii Land and Water Board. I just
25 wanted to comment in terms of the Tlicho agreement and

1 where it says -- I can't remember the exact quote,
2 about waters being unaltered in terms of quality and
3 quantity and flow. And the -- the more that we know
4 about what people think "unaltered" means.

5 Because, "unaltered," does that mean
6 that the concentration of aluminum shouldn't change by
7 more than a microgram per litre? Or, does -- from
8 background -- or does that mean a change in the ability
9 to use the water the way it has been -- always been
10 used? Because there's a substantial difference in the
11 water quality between those two (2) situations.

12 And I think the Proponent has generally
13 been looking at the -- the toxicity-based values or
14 values based on CCME guidelines are about protecting
15 the use of water, which is what the land and water
16 board will do as well. But that doesn't mean that the
17 water won't be changed in terms of quality. You can --
18 you can always measure a change. Almost always measure
19 some kind of change.

20 And the -- the other comment in terms of
21 the land and water board has a policy of water quality
22 -- water quality and effluent quality management
23 policy. We just call it the water quality policy.
24 That speaks to the need to both protect water uses,
25 which is important, and to minimize pollution. So the

1 land and water board's own processes will also look at
2 -- to ensure that the Proponent is doing what's
3 reasonable to minimize pollution.

4 However, anything that comes out of this
5 proceeding in terms of what's important is -- is --
6 will be very helpful to us later.

7 THE FACILITATOR HUBERT: Thanks for
8 clarifying that. Would Tlicho government like to -- or
9 is -- is the Tlicho government in a position to respond
10 to that in any way?

11 DR. GINGER GIBSON: Ginger Gibson,
12 Tlicho government. I think we need to have discussions
13 on this question and I'm grateful for it being raised.
14 Certainly, water use is -- is an important element, but
15 minimizing pollution also will be, especially given
16 what John B. Zoe raised this morning with respect to
17 discontinued use in areas where people feel that there
18 is pollution. And so we'll have some internal dialogue
19 on this, and -- and reflect on it.

20 THE FACILITATOR HUBERT: Thank you very
21 much. Tlicho Government, you've had the floor for the
22 last little -- little while, would you -- do you have
23 any follow-up questions? No, that's it? Okay. AANDC,
24 perhaps?

25

1 (BRIEF PAUSE)

2

3 MR. BARRY ZAJDLIK: Barry Zajdlik for
4 AANDC. I wanted to clarify a discussion that -- that
5 wasn't in the document on mixing zones.

6 It's my understanding that SSWQOs apply
7 to the end of the pipe that discharges into Peanut
8 Lake. Is that correct?

9

10 (BRIEF PAUSE)

11

12 MR. JOHN FAITHFUL: John Faithful,
13 Golder Associates. We're just reviewing that response,
14 and we'll -- we'll come back to the -- to the Chair
15 shortly.

16 THE FACILITATOR HUBERT: Would you like
17 to proceed with another question in the meantime?

18 MR. BARRY ZAJDLIK: Yes --

19 THE FACILITATOR HUBERT: We won't
20 forget that one (1), though.

21 MR. BARRY ZAJDLIK: Yes, Mr. Chair, I
22 have an additional question. It's actually a point of
23 clarification.

24 You refer to toxicity reference values
25 in Burke Lake and Marian Lake, and you're going to use

1 those to assess potential impacts. I'm wondering how
2 the toxicity reference values are linked to SSWQOs.

3 MR. JOHN FAITHFUL: Bar -- John
4 Faithful, Golder Associates. Thanks, Barry. I'm going
5 to add that to the list of the homework questions
6 regarding the risk assess -- the detailed risk
7 assessment.

8 MR. BARRY ZAJDLIK: Barry Zajdlik. I'm
9 not sure that it's a risk assessment question. It --
10 it certainly could be included in a risk assessment,
11 but it has more to do with management practices and --
12 and sort of the zone of influence of the project.

13 My understanding is that SSWQOs applied
14 at the end of the pipe will be protective to a certain
15 degree and we haven't really agreed on what those
16 SSWQOs are. But the superposition of -- of toxicity
17 reference values at a different point in the receiving
18 environment has me very confused as to what you're
19 trying to achieve. So I agree that it could be in the
20 ERA, but I also think it's a separate matter that needs
21 to be discussed.

22 MR. JOHN FAITHFUL: John Faithful,
23 Golder Associates. Thank you, Barry, but I'm -- I am
24 going to li -- add that to the list of -- of the
25 homework questions and provide a response to you as

1 soon as I can.

2 THE FACILITATOR HUBERT: Thank you.
3 Since you've asked twice and you got the same answer
4 twice, I guess we'll -- we'll leave that one at that.

5 MR. RICK SCHRYER: Rick Schryer,
6 Fortune Minerals. In terms of the actual size of the
7 mixing zones, that was calculated in Appendix 7-IV,
8 Peanut Lake Diffuser Design.

9 To give an example, the -- near-field
10 mixing zone in Peanut Lake is about 9 metre -- metres
11 from the port exit -- from the -- the actual port of
12 the diffuser. So the mixing zone boundaries were
13 calculated based on the diffuser design for Peanut
14 Lake.

15 THE FACILITATOR HUBERT: Thank you.
16 Does that answer your question?

17 MR. BARRY ZAJDLIK: Barry Zajdlik.
18 Yes, it -- it partly answers the question.

19 I'm wondering if you are going to try
20 and avail yourself of dilution within Peanut zone to
21 back-calculate effluent quality criteria at the
22 diffuser based on SSWQOs, or the SSWQOs are going to be
23 your effluent quality criteria?

24

25 (BRIEF PAUSE)

1 MR. JOHN FAITHFUL: John Faithful,
2 Golder Associates. The -- the site-specific water
3 quality objectives are -- are the receiving water qual
4 -- quality receiving water thresholds and not the --
5 the end -- sorry, the -- the effluent quality criteria.

6 MR. BARRY ZAJDLIK: Barry Zajdlik. So
7 you -- are you then proposing to discharge at higher
8 concentrations than the SWQO -- SSWQOs?

9

10 (BRIEF PAUSE)

11

12 MR. JOHN FAITHFUL: The site-specific
13 water quality objectives are the receiving water body
14 guidelin -- thresholds, so that -- we'll be discharging
15 at high concentrations.

16 MR. BARRY ZAJDLIK: Barry Zajdlik. Can
17 I bring your attention to Section 3.9 of the DAR where
18 it says that:

19 "Water released from the site during
20 construction, operations, or closure
21 must meet the site-specific water
22 quality objectives."

23 To me that implies that the water that
24 comes out of the discharger -- or sorry, the diffuser,
25 will meet the SSWQOs. That's on page 3-50.

1 (BRIEF PAUSE)

2

3 THE FACILITATOR HUBERT: While we wait
4 for Fortune to respond, just to clarify, when you say,
5 "end of diffuser," is -- are you using the same -- is
6 that equivalent language as -- as end-of-pipe, which is
7 a typical phrase?

8 MR. BARRY ZAJDLIK: Thanks for the
9 question, Chuck. Yes, it is end-of-pipe.

10 MR. JOHN FAITHFUL: John Faithful,
11 Golder Associates. Thanks, Barry. The intent is to
12 meet site-specific water quality objectives for any
13 water that's released on site for the basis of
14 protecting the receiving environment.

15 MR. BARRY ZAJDLIK: Barry Zajdlik. So
16 just to clarify, when you say, "released," you mean
17 coming at the end of the pipe?

18

19 (BRIEF PAUSE)

20

21 MR. JOHN FAITHFUL: As you rightly
22 pointed out, Barry -- John Faithful, Golder Associates.
23 Water released from the site during construction
24 operations and procee -- and -- and enclosure will meet
25 site-specific water quality objectives. The water

1 quality in the effluent criteria for the RO plant and -
2 - and that assigned to any seepage is -- is -- will
3 meet site-specific water quality objectives.

4 MR. RICK SCHRYER: Rick Schryer,
5 Fortune Minerals. I just want to clarify our position
6 here. Why we're looking confused is because what it
7 sta -- that basically what's in the DAR was with the IX
8 (phonetic) system.

9 We then switched to the RO system.
10 Where we weren't going to meet site-specific water
11 quality objectives at the end-of-pipe was for ammonia
12 and selenium, right. And that's why we moved --
13 primarily the move was made to RO to deal with both
14 ammonia and selenium, which at the time weren't going
15 to be at acceptable levels for discharging to the
16 environment.

17 That was the primary reason for moving
18 to reverse osmosis, to get rid of those two (2)
19 problematic elements. And we've been able to do that.
20 So we will be able to meet site-specific water quality
21 objectives at end-of-pipe with the R -- reverse osmosis
22 system in place.

23 MR. BARRY ZAJDLIK: Barry Zajdlik. So
24 you -- you say that you will meet the proposed SSWQOs
25 at the end of pipe. I'm concerned that -- the worry is

1 such that if the SSWQOs aren't met or -- or sorry, are
2 modified based on subsequent dialogue, that your
3 position will change as to whether you'll be able to
4 meet those at the end of pipe and modified SSWQOs.

5 Can you comment on that?

6

7 (BRIEF PAUSE)

8

9 MR. JOHN FAITHFUL: John Faithful,
10 Golder Associates. I mean, the -- the object of the
11 project design is to -- to be protective of the
12 environment. And if there is any -- if based on the
13 proposed site-specific water quality objectives there's
14 -- there is any modification that would still meet the
15 -- the -- Fortune's objective of being protective in
16 the aquatic environment.

17 MR. BARRY ZAJDLIK: Barry Zajdlik.
18 Thank you. I have no further questions.

19 MR. JOHN BRODIE: This is John Brodie,
20 for AANDC. I have a number of questions pertaining to
21 the storage and movement of water in the co-disposal
22 facility, and then within the site operations in
23 general.

24 My first question concerns the volume of
25 water that's to be stored in the voids of the tailings

1 and waste rock. And, specifically, I'm interested in
2 what is the anticipated degree of saturation in the
3 tailings and the degree of saturation in the void
4 spaces of the waste rock.

5 MR. KEN BOCKING: Ken Bocking, Golder
6 Associates. When the tailings are deposited they are -
7 - there's a liquid-solid separation happens, and then
8 the tailings settle down. And, at that point, they're
9 saturated. They will drain slowly over time but will
10 always retain a relatively high water content. The --
11 the mine rock elements in the CDF we expect will drain
12 quite rapidly, and so they'll have a very low water
13 content.

14 MR. JOHN BRODIE: John Brodie. Just
15 for clarity then, we -- you're saying that the waste
16 rock will be substantially unsaturated within the co-
17 disposal facility?

18 MR. KEN BOCKING: Ken Bocking, Golder
19 Associates. Yes, that's -- that's correct. The
20 interlayers of tailings are the -- the main vehicle
21 that reduces the access of oxygen to -- to the waste
22 rock. The rock layers, you're -- you're right, they
23 will be at a low degree of saturation.

24 MR. JOHN BRODIE: Sorry. John Brodie.
25 In the DAR you've provided some drawings which indicate

1 a cross-section, continuous layers of tailings and
2 waste rock in a multiple horizontal sequence. However,
3 in plan view, the depositional plan is for the
4 construction of cells, a number of cells within any
5 given horizontal layer of the co-disposal facility.

6 And so I'm wondering, what is the
7 potential for those waste rock layers to become
8 interconnected vertically such that there is continuous
9 void space that's connected vertically within the waste
10 rock pile in the rock material?

11 MR. KEN BOCKING: Ken Bocking, Golder
12 Associates. I think the plan view is the best
13 representation. Basically, we're -- our concept is to
14 have cells approximately 200 x 200 metres on each
15 layer, depositing tailings into those. And -- but then
16 on the next lift above that the -- the cell is -- is
17 offset, so you don't have an end dike that's continuous
18 from one (1) layer into another.

19 MR. JOHN BRODIE: It's John Brodie.
20 With respect to the waste rock which is partially
21 saturated and the reliance on mostly saturated tailings
22 for the control of air ingress. Have you looked at how
23 that control of air ingress will limit the oxidation of
24 the PAG rock?

25 MR. KEN DE VOS: Ken -- Ken De Vos with

1 Golder Associates. With respect to the first part of
2 your -- your question, it's -- the -- the limitation
3 for acid generation isn't dependent on the saturated
4 tailings.

5 The tailings themselves provide a
6 physical barrier, so it's diffusion of oxygen and --
7 and it can be through -- you know, saturation will help
8 reduce the amount of oxygen that gets through, but it's
9 not dependent on saturation.

10 The -- the second part of your question
11 is -- well, the second part as I interpret your
12 question, would be with respect to oxidation of the
13 waste rock itself. The -- there will be ample areas
14 within the pile and ample storage capacity in the pile
15 to place the -- the acid-generating material between
16 signi -- or -- and beneath significant zones of both
17 tailings and waste rock.

18 So the distance that that oxygen has to
19 travel under diffusion conditions limits the rate of
20 oxidation of that material. And the tailings
21 themselves that would -- would be placed in there would
22 be non-acid generating.

23 MR. JOHN BRODIE: It's John Brodie. I
24 guess the first thought I have to that is, are you then
25 suggesting that it will be a subset of the waste rock

1 management strategy to specifically target known PAG
2 material and make sure that it's preferentially placed?

3 MR. KEN BOCKING: Ken Bocking, Golder
4 Associates. Yes, we've indicated that the rock
5 classified as Type 3 has to be disposed inside of the
6 CDF, not in the perimeter dikes and -- and certainly
7 not in the seepage collection pond dams.

8 MR. JOHN BRODIE: It's John Brodie. I
9 -- I understood that was the case previously. And --
10 and certainly, general placement of rock that is low
11 oxidation potential or low -- low risk of acid
12 generation, that seems reasonable.

13 But we heard yesterday that, depending
14 on which analysis is used, 10 to 19 percent of the rock
15 would be considered acid-generating. And -- and the
16 concept that we've heard this morning is that the
17 construction of the pile will limit oxygen entry into
18 these materials, but it will not prevent it.

19 So, therefore, I'm wondering what --
20 what -- is there anything specific planned for that
21 material that would be acid-generating to further
22 reduce the risk associated with its oxidation?

23 MR. KEN DE VOS: Ken De Vos with Golder
24 Associates. The -- it -- it comes down to a rate
25 limitation. There is -- there is sufficient

1 neutralization potential within the tailings themselves
2 to neutralize acidity that's produced within the rock.
3 When you take into account -- you -- you don't stop the
4 -- the oxygen that goes through but with each
5 increasing metre of cover thickness the rate that
6 oxygen can penetrate through diffusion processes red --
7 is reduced by orders of magnitude.

8 So as you increase the thickness of the
9 overlying tailings and -- and limit the amount of air
10 that can get in -- into that material, you -- you come
11 to a point where you can no longer produce the acidity
12 that would be required to have acidic drainage.

13 So although the materials have the
14 potential, that potential is locked up. And we see
15 that in existing tailings impoundments. We see that
16 with -- even if you look at the materials on site, it's
17 -- it's -- if you go into an outcrop, the surface will
18 have oxidized. But, once you get down into that
19 material, it's unoxidized material. So there's a
20 number of processes that -- that come into effect.

21 Now, that said, we do expect that --
22 that the pile will seep and that arsenic and selenium
23 will come out. Wetlands have been used in the past to
24 treat not only arsenic and selenium, but acidic
25 drainage. And there will be treatment available. So

1 there -- there -- yes, some oxygen will go into the
2 pile. We don't expect the rate that that oxygen can
3 get in -- into the pile to be able to produce any
4 substantial acidity.

5 Overall, the sulphide content in this --
6 both the waste rock and the -- and the ore is low -- or
7 in the tailings, sorry, is low. So we expect that will
8 primarily be -- we'd be dealing with arsenic and
9 selenium at the -- at the seepage of this pile as
10 opposed to acidic drainage.

11 MR. JOHN BRODIE: It's John Brodie. I
12 guess in summary then, is it correct to say then that
13 some portion of the waste rock will be unsaturated, and
14 operationally, and probably post-closure, there will be
15 some ingress of air and some ingress of water through
16 this pile?

17 MR. KEN BOCKING: Ken Bocking, Golder
18 Associates. It is correct that the rock will be at a
19 low degree of saturation, and there will be some
20 ingress of water and some ingress of oxygen.

21 I want to make the point though that the
22 alternative to the co-disposal facility is -- is a
23 waste dump, conventional waste dump where you, you
24 know, literally doze the large rock into a pile and
25 then, yes, you put a thin cover over it at the end.

1 It's -- it's very well known in the literature that
2 when that happens not only do -- do you get diffusion
3 of oxygen into the pile, which is fairly slow, but you
4 get massive convection currents and things going on
5 where the air actually flows through the voids. And --
6 and that even gets augmented by temperature from acid
7 generation and so on.

8 I just want to make the point that with
9 the CDF, you know, introducing multiple layers of
10 tailings indeed in the maximum section we're going to
11 have, you know, fifteen (15) to twenty (20) layers of
12 tailings vertically. It's very obvious that that
13 interrupts and prevents any kind of convection flow.
14 And so it's for that reason alone the oxygen flux,
15 albeit not zero, is reduced by orders of magnitude.

16 MR. JOHN BRODIE: It's John Brodie. I
17 -- I agree that you would have significant reduction of
18 air flow through that pile, and it's been a number of
19 years since I did any reading on this subject.

20 But my recollection is that even
21 depleting the oxygen in the pour space down to 1
22 percent of -- of the -- of the air in that pour space
23 is still sufficient oxygen for acid generation
24 processes to proceed. So I would be interested to see
25 if -- if -- what your thoughts are, or what your plans

1 are to characterize the degree to which those tailings
2 layers will limit the ingress of air.

3 MR. KEN DE VOS: John, thanks -- thanks
4 for your -- your comment and, you know, we've -- we've
5 done testing on over three hundred (300) samples of --
6 of rock. We've done testing on the process plant
7 tailings. There's ample literature out there, and it -
8 - it grows every year with respect to the behaviour of
9 oxygen and oxidation of sulphide wastes.

10 So, you know, I encourage you to read
11 some of the -- the recent literature and papers on
12 that, but the -- the behaviour of oxygen as it -- as it
13 migrates down into the pile is -- is very strongly
14 limited by the -- the type of material in that pile.
15 And -- and the tailings and -- and the hydraulic
16 conduct -- or the -- the porosity of that tailings will
17 limit the oxygen influx into this pile, and -- and you
18 end up -- what you end up with is a layering type of
19 system. So that there -- if there is oxidation, it
20 starts to occur from surface downwards in -- into the
21 pile when its -- when it behaves like a tailings.

22 Now, this type of pile will behave like
23 a tailings just simply because of the nature and -- and
24 how we're putting this together. We're not going to
25 have a huge waste rock dump. We're going to have a

1 pile that behaves like a tailings pile, which means
2 that it's -- it's diffusion limited and oxygen limited
3 in terms of -- of the rate of oxidation and the release
4 of -- of oxidation products. And that -- that is and
5 was considered in terms of how we put together the
6 water quality estimates.

7 MR. JOHN BRODIE: John Brodie. Thank
8 you for that. I -- I don't think I'm going to pursue
9 this any further right now. Relating to the layering
10 of the pile with tailings and waste rock, and -- and
11 you indicated that you thought the tailings originally
12 would be fully saturated on deposition but that they
13 would drain down to some unsaturated state. Have you
14 looked at what the -- or tried to assess, predict what
15 the vertical permeability through this system would be
16 in terms of the downward migration of water from one
17 (1) layer to the next?

18 MR. KEN BOCKING: Ken Bocking, Golder
19 Associates. We haven't looked at it quantitatively.
20 It -- it's common knowledge that the permeability of
21 tailings is in the order of ten (10) to the minus five
22 (5) to ten (10) to the minus six (6) centimetres per
23 second, but we haven't quant -- analyzed it
24 quantitatively. It's low.

25 MR. JOHN BRODIE: John Brodie. Thank

1 you for that. I think I'll -- I'll move on to a couple
2 of more general questions relating to the site water
3 balance.

4 My first question relates to the open
5 pit. And I'm looking at a water balance figure called,
6 "End of Operations Water Balance." And it shows
7 evaporation and seepage going to the open pit. And I'm
8 just wondering if that refers to the groundwater inflow
9 to the pit.

10 MR. KEN BOCKING: Ken Bocking, Golder
11 Associates. That's meant to be the net of evaporation
12 and inward seepage.

13 MR. JOHN BRODIE: John Brodie. So, for
14 clarity, that means that there's some evaporated loss
15 from the pit walls and there's a groundwater inflow,
16 and the number we see here is the net of those two (2)?

17 MR. KEN BOCKING: Ken Bocking, Golder
18 Associates. Yes, if I understood you, that's correct.

19 MR. JOHN BRODIE: Thank you. John
20 Brodie. In the water balance figures, and also in the
21 text, it refers to the contingency pond. And I'm
22 wondering what criteria would be employed -- would --
23 would -- in -- in both using that contingency pond.

24

25 (BRIEF PAUSE)

1 MR. KEN BOCKING: Ken Bocking, Golder
2 Associates. The contingency bond -- pond was actually
3 included in the earlier design when we were looking at
4 other types of water treatment, even before the IX, in
5 -- in which we thought there -- there was some
6 possibility of a sediment load that needed to be
7 settled out.

8 When we went to IX, and now finally
9 we've gone to RO, it was judged that that's extremely
10 unlikely to happen. And -- and so the decision was
11 made not to construct a contingency pond as part of the
12 original construction. It's -- it's mentioned in there
13 in the footprint that if there became a need during
14 operations, if the judgment was that it would be useful
15 to improve water quality then it would be built.

16 MR. JOHN BRODIE: Thanks for that
17 response. I think maybe the -- the question was partly
18 what would some of the criteria for that need be.

19 MR. RICK SCHRYER: Rick Schryer,
20 Fortune Minerals. When we submitted the DAR we were
21 still using an IX system and there was a remote
22 possibility that the contingency pond might be needed,
23 which is why, just to be conservative, we left it in
24 the mine footprint as a maximum possible footprint for
25 the project. Now that we've moved to a reverse osmosis

1 system there's no need for the contingency pond, it's
2 off the map.

3

4 (BRIEF PAUSE)

5

6 MR. GERD WIATZKA: Gerd Wiatzka, SENES.

7 While -- John, while you're looking for your question
8 if I could just ask Ken -- two (2) Kens, I guess, in
9 terms of -- one (1) of the issues is -- is, of course,
10 acid rock drainage, and that's always an issue for any
11 mine site. And -- and what you're saying is both the
12 approach and the mineralogy should allow Fortune to --
13 to manage that in a reasonable manner. And -- and I
14 don't think we question that other than some of the
15 technical details and the assumptions.

16 You know, our -- our comment is that --
17 that you have neutral drainage and you've talked about
18 the ammonia and selenium coming off so -- and we'll
19 talk about it more tomorrow at closure. But -- but
20 certainly, you have these things that will have metal -
21 - metal loads coming off both during operations and --
22 and into the long term. And so that ties into the
23 question of treatment technologies and the need to
24 treat potentially in the long term.

25 And I just don't want to have that

1 thought lost while we're talking about ARD. You know,
2 you have a million tonnes of material that under
3 neutral drainage conditions will have some seepage and
4 some of that seepage will require treatment. And I
5 think it's important recognition that that -- you know,
6 you guys are managing that or you're proposing to
7 manage it, but it's not related to whether it go acidic
8 or not. That issue will still be there.

9 I've also heard you, a couple of times,
10 comment, both Rick and -- and others about you've gone
11 to this point in -- in terms of design and management
12 practice to minimize things. And -- and yesterday
13 Ginger asked about a -- a fatal FEMA analysis and
14 alternatives analysis. And I think -- and we can talk
15 about it tonight when we talk about co-disposal, but I
16 think it would do Fortune Minerals a -- a service if
17 you put some of the benefits and some of your thinking
18 into numbers or tables, or something that could be
19 shared with Tlicho and others to sort of say, Well,
20 when you look at the original concept of multiple waste
21 rock dumps you would have had this, this, and this.
22 And here's the kind of loadings that might have come
23 off in those scenarios.

24 What you're looking at now, you have
25 this, this, and this. And here's the kind of loadings

1 you're looking at and here's the management and why
2 it's easier both on a physical point of view and from a
3 chemical point of view, et cetera.

4 So I -- you know, we talked about it a
5 bit yesterday and -- and we'll probably talk about it
6 tonight and I would urge you to consider sort of
7 putting some -- a plain-language summary of those kind
8 of benefits and issues that still re -- remain on the
9 table.

10 MR. RICK SCHRYER: Rick Schryer,
11 Fortune Minerals. As you mentioned we can -- we can
12 discuss that further tonight and talk a little bit
13 about the details of that, but I'm not opposed to that
14 idea because I know we have the water quality data.

15 I will repeat my one (1) comment that
16 beyond the water quality for some of these design
17 features it didn't -- the analysis didn't proceed
18 beyond that point because the water quality stopped us
19 dead in our tracks. And so we just -- we moved onto
20 other considerations.

21 MR. GERD WIATZKA: Yeah, again, at a
22 high level you could probably say you've got, you know,
23 three times the surface area, three times the options
24 for air to get into un -- unimpacted, or basically raw
25 waste rock, et cetera, et cetera. So I -- I just think

1 you could shed some perspective on it to the people
2 around the table.

3 MR. KEN DE VOS: Ken De Vos, with
4 Golder Associates. I -- I can give you a very high-
5 level perspective on that now and -- and we didn't do a
6 lot of additional calculations, I can tell you that,
7 because when we first looked at the waste rock dump and
8 the potential for acid generation, and we looked at
9 even 10 to 15 percent of that rock generating acidity,
10 that would very quickly result in the entire waste rock
11 dump producing acidity. There was not enough buffering
12 capacity in the remaining rock itself.

13 When we started adding the tailings in
14 then we -- we saw a lot of benefits to doing that. But
15 with the rock itself it -- the result was, essentially,
16 the humidity cell that -- that contained the -- the low
17 pH high metal concentration water, in addition to the
18 arsenic and selenium. So, you know, it's recognized
19 that -- that treatment is required whether it's a
20 wetland or -- or an RO system.

21 The costs for treatment where you have
22 to adjust the pH first before you get into -- get into
23 adjustments for arsenic and selenium and even the
24 ability to treat with the wetland when you -- when you
25 start lowering that pH, the cost becomes substantial

1 and -- and the -- the difficulties become substantial.
2 You can do it. It's -- it's possible to do it, but it
3 -- it adds complexity.

4 So that's -- was some of the rationale
5 behind how we got to, well, we need -- need to think of
6 a -- a better way if we can of disposing this. And
7 even if it's not perfect, it's going to be a lot better
8 than -- than the original -- just the conventional way
9 that things have been done before.

10 So we want to get to a point where we're
11 -- we're looking at solutions to potential problems
12 proactively.

13 DR. GINGER GIBSON: Ginger Gibson,
14 Tlicho Government. I just want to ask when -- I know
15 that you built cells last summer and then opened the
16 tap to see what was coming out. I'm wondering when
17 that data is going to be available in terms of what
18 you're seeing coming off of those test piles?

19

20 (BRIEF PAUSE)

21

22 MR. RICK SCHRYER: Rick Schryer,
23 Fortune Minerals. Ken informs me that we do have some
24 preliminary data from the first samples that were
25 taken. He hasn't reviewed them yet. But once they've

1 been reviewed and we're satisfied that they're correct
2 and that they've been actually QA/QC'd, we don't have a
3 problem with sharing with -- that information.

4 MR. PAUL GREEN: It's Paul Green with
5 water resources. Just -- just quickly on the
6 contingency pond. So we under -- from what was just
7 said, we understand that you're -- you're not going to
8 need one and prob -- and won't build one.

9 And I'll just -- you know, I'll ask
10 Chuck this as well. Do we need a commitment on that?
11 That you're not going to need one? And my
12 understanding is that if there is any potential that
13 you are going to build one in the future, we should
14 discuss it now as part of the EA. But if it's going to
15 be completely off the table then a commitment would --
16 would sort of take it away and we don't need to talk
17 about it any more.

18 And -- and, Chuck, I'll just get -- get
19 your input there as well?

20 THE FACILITATOR HUBERT: Thanks, Paul.
21 I agree. If -- if Fortune could clarify that in a
22 definitive way that the project design no longer
23 includes the contingency pond, one (1) way or the
24 other, please -- a response would be great. Thanks.

25 MR. RICK SCHRYER: Rick Schryer,

1 Fortune Minerals. Yes, we can confirm that the
2 contingency pond will no longer be required for the
3 operations of this project. The only caveat I'll throw
4 into that is that that is the location where Wetland
5 number 4, at year 120, would be built as I've shown --
6 shown in my presentation yesterday, would be built, in
7 that exact same location.

8 So, but that's a hundred -- that's not
9 an operational thing, that's a wetland, you know, in
10 the -- in the far future. The locations just happen to
11 be the same.

12 THE FACILITATOR HUBERT: Thanks. And a
13 wetland isn't a contingency pond, either. Thank you,
14 Rick. And it -- does that satisfy you, Paul?

15 MR. PAUL GREEN: I bel -- I think that
16 satisfies us. Thanks.

17 THE FACILITATOR HUBERT: Five (5) more
18 minutes. If you have about five (5) minutes more worth
19 of questions, and then we'll break for lunch. Thanks.

20 MR. JOHN BRODIE: Yeah. I'll be less
21 than five (5) minutes. Just a -- a follow up, I guess,
22 on that contingency pond. I would hope that by saying
23 you don't need a contingency pond that, if necessary,
24 you might have a much smaller polishing pond at the
25 effluent -- at the endpoint of your water treatment

1 plant, just as a operational buffer that would -- I'm
2 basically suggesting that you've said you're not going
3 to have a contingency pond, but a much smaller pond
4 might still be an appropriate component of your water
5 treatment system.

6

7

(BRIEF PAUSE)

8

9 MR. RICK SCHRYER: Rick Schryer,
10 Fortune Minerals. The surge pond that's in the -- the
11 plans, the mine footprint, is available for that kind
12 of use. So there is a pond there.

13 MR. JOHN BRODIE: Thank you for that.
14 One (1) last comment then. As Gerd commented earlier
15 on the RO plant, it's tough for us to, you know,
16 provide much questions, because we've only got a few
17 sentences about that. And when you do come back with
18 more information, I hope that that would include
19 discussion about the processing of the brine and what
20 would be done with the post-processed brine, where that
21 water would go, because it's still a significant volume
22 of water, and then finally how you would be handling
23 the precipitates from that brine process. And that's
24 all I have. Thank you.

25 THE FACILITATOR HUBERT: Thanks very

1 much. Could that information be included in
2 Undertaking number 1 from yesterday, regarding the RO
3 plant? Thanks.

4 MR. RICK SCHRYER: Rick Schryer, Fortune
5 Minerals. I'm pretty sure we did commit to that
6 yesterday, but if not, we will now.

7

8

9 --- UNDERTAKING NO. 1 (EXPANDED):

10 Fortune Minerals to also include
11 discussion about the processing of
12 the brine and what would be done with
13 the post-processed brine, where that
14 water would go, as it's still a
15 significant volume of water, and then
16 finally how they would be handling
17 the precipitates from that brine
18 process

19

20 THE FACILITATOR HUBERT: Thanks. It's
21 doubly undertaken (sic), if that's a word. All right.
22 Thanks very much everybody for your questions and
23 answers.

24 It -- let's break for lunch now and
25 return at one o'clock, if we can. So thanks again, and

1 see you at 1:00.

2

3 --- Upon recessing at 11:51 a.m.

4 --- Upon commencing at 1:11 p.m.

5

6 THE FACILITATOR HUBERT: Welcome back,
7 everybody. It's Chuck with the Review Board. Twelve
8 (12) minutes or so after 1:00. If we can get started,
9 and renew our discussions with water quality issues,
10 water quality objectives, water management, and
11 treatment.

12 Just a note. Just before lunch, Fortune
13 provided the Review Board with the co-disposal
14 practises in mine waste management document. This was
15 the promised case histories study that Fortune
16 suggested they provide parties with. It will be on the
17 website, our website shortly. For now there are some
18 copies in the back, all -- on the back table, although
19 they're probably picked over by now, but more will be
20 coming.

21 And so early in the afternoon here there
22 will be, I don't know, twenty (20) or twenty-five (25)
23 copies of it, and -- and parties are free to pick them
24 up. And it should assist, as well, in -- in the CDF
25 discussions that will happen after the meeting here

1 after 5:00 that I believe Fortune is presenting.

2 With that, I'd like to maybe continue on
3 with some topics specific to water quality, water
4 quality objectives, or water management. And maybe
5 address those before we get into any crossover type
6 questions that are -- have more to do with fisheries or
7 aquatic life.

8 And I believe Dr. Racher would like to
9 clarify perhaps some -- an early undertaking,
10 Undertaking number 1, which was to provide information
11 on the reverse osmosis, the -- the change from using
12 reverse osmosis as effluent treatment. So I'll let --
13 please proceed.

14 DR. KATHY RACHER: Kathy Racher,
15 Wek'eezhii Land and Water Board. I'd just -- I wasn't
16 sure in -- with the original DAR, Fortune has made
17 predictions of water quality in the downstream
18 receiving environment based on your estimates of what
19 would come out of the end of pipe, which have now
20 changed based on the RO. And I noticed that a number
21 of parameters like some of the soluble major ions, like
22 chloride and calcium and a couple of others, are
23 predicted to have higher effluent confer --
24 concentrations than previously.

25 And I just -- I wondered if you're going

1 to update the predications for downstream water
2 quality? Current -- your current predictions say that
3 at Marian River almost everything will meet the range
4 of nat -- natural variability by the time you get to
5 Marian River. And I -- I don't know if that has
6 changed at all. Maybe it hasn't. But are you going to
7 be doing that modelling as parting -- part of this
8 undertaking?

9 MR. JOHN FAITHFUL: John Faithful,
10 Golder Associates. Dr. Racher, that -- that's correct.
11 We made an actual undertaking to actually update the
12 model based on the new effluent concentrations.

13 DR. KATHY RACHER: All right. Kathy
14 Racher for Wek'eezhii Land and Water Board. Thanks. I
15 just wanted to clarify. Thank you.

16 THE FACILITATOR HUBERT: And thanks,
17 Fortune, for clarifying that. That's excellent. Now
18 we're clear on it. So does Fortune have anything --
19 any follow-up from possible discussions with other --
20 other parties to update us with?

21 MR. RICK SCHRYER: Rick Schryer,
22 Fortune Minerals. Not at this time, but we're working
23 on it, and we're trying to move things along as quickly
24 as possible.

25 THE FACILITATOR HUBERT: Chuck Hubert,

1 Review Board. Thanks very much. With that, I'd like
2 to --

3 MS. JANE FITZGERALD: Jane Fitzgerald,
4 Environment Canada. I just have a couple of questions,
5 kind of to follow up with Kathy's questions. So the
6 changes to the model based on the change in the water
7 treatment system. One (1) of our -- EC's IRs was asking
8 for a description of the anticipated concentrations of
9 contaminants in the surface water of the co-disposal
10 facility. We're particularly interested in this
11 related to migratory birds.

12 And we're wondering if there would be
13 any change with the deposition of products related to
14 the RO into the -- the co-disposal facility? And we're
15 kind of wondering, also, what the composition of those
16 products will be -- or byproducts?

17

18 (BRIEF PAUSE)

19

20 MR. KEN DE VOS: Ken De Vos with Golder
21 Associates. Yeah, I mean, we're -- we're looking at
22 those treatment systems now and -- and we have some
23 water quality from those treatment systems. We haven't
24 pulled that into the model as yet. We'll be doing
25 another iteration of the -- of the model as we go

1 forward, once we get more information.

2 I mean, I don't expect it to be a huge
3 change in the ultimate ponds downstream of -- of the
4 CDF for the seepage coming out of the CDF, but that's
5 something that we would need to put into the model to
6 get some -- some quantitative numbers.

7 MS. JANE FITZGERALD: Jane Fitzgerald,
8 Environment Canada. So would this be related to the
9 tech -- technical document that's being prepared?

10 MR. KEN DE VOS: Ken De Vos with Golder
11 Associates. I would expect that that would -- would
12 come following that document. That would be something
13 that we would -- Fortune would likely be providing as
14 we get more information further in the process.

15 MS. JANE FITZGERALD: Jane Fitzgerald,
16 Environment Canada. Okay. And, just to clarify, we're
17 also interested in what the -- the water quality of the
18 reclaim pond itself would be. Because birds might be
19 landing there.

20 My next question relates to our MMER.
21 We would just like clarity on what the end of pipe
22 concentrations are for all the MMER applicables --
23 parameters. Specifically, I'm not sure where to find
24 the information on cyanide, TSS, and radium.

25 MR. JOHN FAITHFUL: John Faithful,

1 Golder Associates. We'll -- we'll review that
2 information and provide that as a -- as a -- as
3 homework. And if there is any -- if there is any
4 update regarding the -- the RO, we'll make sure that
5 that's -- the RO plan, we'll make sure that that's --
6 that's included in the table.

7 MR. RICK SCHRYER: Rick Schryer,
8 Fortune Minerals. I'd just like to follow up with what
9 -- what was said previously. In specific, in relation
10 to cyanide, you remember that we're only producing a
11 concentrate now at site. We're not processing gold on
12 site. So we're actually -- there's no cyanide use at
13 all at the -- at the NICO project.

14 MS. JANE FITZGERALD: Jane Fitzgerald,
15 Environment Canada. No, to clarify, this is directly
16 related to Schedule 4 of the MMER and cyanide is listed
17 as a parameter. That's why I ask about it. Oh, I'm
18 sorry. At -- at end of pipe.

19 MR. RICK SCHRYER: Rick Schryer,
20 Fortune Minerals. Just -- yeah, and I realize what
21 your request is about in terms of whether or not we'll
22 meet regulatory guidelines for MMER. I just wanted to
23 point out to you that we expect cyanide levels to be
24 virtually nonexistent simply because we're not using
25 it.

1 THE FACILITATOR HUBERT: Thanks very
2 much. We have that marked -- marked down as homework.
3 And -- and, for the acronym MMER, is Mine Metal
4 Effluent Regulations. Thanks. Anything further?

5 MS. JANE FITZGERALD: Jane Fitzgerald,
6 Environment Canada. No, thank you.

7 THE FACILITATOR HUBERT: Thanks.
8 Further questions on -- on the water quality,
9 measurement of water and -- and treatment and just to
10 sort of close out that specific topic before we move
11 more into aquatic life.

12 Anything from any party?

13

14 (BRIEF PAUSE)

15

16 MR. FONS SCHELLEKENS: Fons
17 Schellekens, Natural Resources Canada. Yeah, per --
18 perhaps one (1) thing, following an Information Request
19 response from the proponent to Natural Resources Canada
20 Information Request. It's our Information Request NRCan
21 19. And the follow-up question there was we didn't see
22 a TDS profile -- vertical profile through -- for -- for
23 the water potentially flowing into NICO Lake and --
24 yeah, I think it's mainly NICO Lake from the co-dis --
25 disposal facility.

1 I -- I was wondering if -- if you have
2 provided that somewhere in the DAR, or in responses to
3 Information Requests?

4 MR. JOHN FAITHFUL: John Faithful,
5 Golder Associates. Just to confirm the question, you
6 are looking for a TDS concentration profile for any
7 discharge from the site to NICO Lake.

8 MR. FONS SCHELLEKENS: Sorry, that's
9 right.

10 MR. JOHN FAITHFUL: Okay. We -- we
11 have that information. I'll find the source in the DAR
12 that can -- and refer the -- refer you to that.

13 MR. FONS SCHELLEKENS: Fons
14 Schellekens. Thank you very much.

15

16 (BRIEF PAUSE)

17

18 MR. FONS SCHELLEKENS: And then --
19 yeah, one (1) -- one (1) more point. I -- I think it
20 will be very helpful for all Intervenors.

21 I -- I didn't see anywhere in the -- in
22 the DAR or in responses to Information Requests, a map
23 with the -- the project footprint, including the CDF
24 and all the project infrastructure that also included
25 the boreholes and cross sections.

1 And I think that -- such a thing is --
2 is very valuable when you can see that all on one (1)
3 map. And so I -- I think it's just a matter of
4 overlays, just combining maps that -- that you already
5 have, because we received quite a bit of useful
6 information in response to our Information Request 1.4,
7 one-four (1.4), for example. And if that could be
8 combined with maps that you have of the project
9 footprint, then that would be very useful to have.

10 MR. MARC ROUIGER: Marc Rouiger, Golder
11 Associates. Maybe at the break you can give me a list
12 of the kind of overlays you would like, and we can --
13 we can provide them. And I can probably point you to
14 some of the overlays that may already suit your needs
15 in the DAR now.

16 MR. FONS SCHELLEKENS: That would be
17 very helpful.

18 THE FACILITATOR HUBERT: Thanks very
19 much. That sounds like a suitable solution to the
20 request. Any further strictly-water-issue questions
21 before we dive into fish?

22

23 (BRIEF PAUSE)

24

25 MS. MADELAINE PASQUAYAK: My name is

1 Madelaine Chocolate Pasquayak. This person -- this
2 question that I'm about to ask is -- is just something
3 that I've been wondering about. For -- there was -- I
4 do a lot of TK work. And I recall an Elder that once
5 said -- he said, We've never ever had any problem with
6 water in the past before, he said, before the
7 development of mining in our area.

8 He said, We've never heard of anybody,
9 you know, being harmed by water. And that's always
10 been a concern for my family and my community because I
11 recall a time when -- when we lived in Ray Lakes. We
12 didn't have our water -- we didn't have any water
13 treatment plant.

14 And all the time that we lived in that
15 area and travelled out in the land you could, you know,
16 just go anywhere on the land. You can dip your cup in
17 water and drink it, you know, right from the lake
18 without any fear for your life or, you know.

19 And I recall that one (1) summer when my
20 family went to Ray to visit with family and friends.
21 That summer, all the family members got sick. And I
22 recall some of them were -- be -- became better again.
23 But there is one (1) young brother, who at the time was
24 9 years old, who died, you know, from drinking water
25 that was untreated.

1 And, you know, when I think back on
2 that, you know, sometime it -- it pains me. You know,
3 it hurts me. You know, it's -- it's a loss. And I
4 never really had an opportunity to -- to deal with that
5 loss, you know. And I often wonder -- he's not the
6 only one. You know, we've had a lot of members of our
7 community that have died, you know, since -- since
8 Rayrock Mine.

9 And I often wonder, you know, why -- why
10 aren't we voicing our concern, you know, why aren't we
11 telling the developments that's going on there, you
12 know, we would like, you know, to have, you know,
13 close, you know, monitoring of the waters that's out
14 there.

15 And I recall the last several years when
16 I went to school I found out that 2.5 percent of the
17 world's water is freshwater. So that tells me that
18 97.5 percent is ocean water, saltwater. So I asked
19 myself the question: Where is that 2.5 percent
20 freshwater? And I got to thinking and I realized it's
21 found here -- right here in Canada. And I thought:
22 Whereabouts in Canada? And I thought, It's certainly
23 not in the Great Lakes because, you know, I understand
24 that there -- it's not drinkable. So I thought, Where
25 is that fresh water that is drinkable. And I thought,

1 It's right here in the north.

2 And I thought, The Elders were correct.
3 They would like to keep the water as clear and pristine
4 as possible. And -- and the great concern that the
5 people have expressed to me is that any chemicals
6 that's found in the mine site, you know, might damage
7 the water. And I know that -- that they don't want any
8 harm done to the water. So I think, you know, it's
9 very important for us that we work very closely with
10 the mining companies so that -- so that the water
11 quality is kept safe, you know, it's drinkable.

12 Right now, you know, having -- I was
13 raised in Hislop Lake. My family had a house there.
14 My mom -- my mom and dad had a house there, and it wa -
15 - it was -- it burned down when there was a forest
16 fire. And I recall some very fond me -- memories, you
17 know, of my family out in Hislop Lake. And when I
18 think, you know, of the possible damage that might
19 happen out there, you know, it -- it just, you know,
20 scares me to think that any link that I have of the
21 memories of the past, you know, might get, you know,
22 wasted, you know. And it's like, no, I'd like to keep,
23 you know, those memory fresh in my mind if I can
24 because those were my happy years, you know.

25 And so, you know, that's -- that's our -

1 - that's my position and the position of my immediate
2 family. And I want to -- to state that, you know,
3 we're a little concerned about this CDF that we -- I
4 keep hearing about so often. And -- and I understand
5 that if this CDF is -- yeah, is put in place at the
6 mine site, and there's never been one, you know, like
7 it in the north, that raises a lot of questions.

8 You know, when you're -- when you hear
9 words like "runoffs" and "seepage" and "drainage," you
10 know, like you get concerned. You know, like where is
11 that going to come from, you know? There's rainfall
12 and snow melting in the spring, you know, and so
13 there's -- like there's going to be continue --
14 continuous seepage and drainage going on.

15 So the question that came to mind was of
16 all the -- of all the mine -- southern mines that have
17 this CDF in use at the present time, what are their
18 studies? Like if there's any studies done on drainage
19 and seepage, if there's any water around those --
20 around the CDFs down there, what's the quality of the
21 water like? Is it drinkable? Can a person safely go
22 to these drainage areas and -- you know, and sip water
23 or drink water and -- and, you know, and drink it
24 confidently knowing that no -- there'll be no harm to
25 their -- to their bodies? That's a question I had in

1 my mind. Mahsi.

2 THE FACILITATOR HUBERT: Thanks very
3 much for the question. And in -- in partial response,
4 I believe we have several copies now at -- on the back
5 table that you can pick up that are the case histories
6 that Fortune has prepared on CDF, or co-disposal
7 facilities.

8 Sorry, I'll stop using the acronyms, co
9 -- and -- but I'd like Fortune maybe to -- to elaborate
10 on that question a bit, if -- if they can respond to
11 it. Thanks.

12

13 (BRIEF PAUSE)

14

15 MR. RICK SCHRYER: Rick Schryer,
16 Fortune Minerals. Thank you, Madelaine, for your
17 question. We recognize that there's water management
18 issues associated with the co-disposal facility.

19 We've talked quite a bit about not only
20 what happens on the surface of the CDF, but what
21 happens inside of it, right, in terms of chemical
22 reactions that could happen and -- and how we're trying
23 to prevent those from happening by locking up the rocks
24 with the -- with the tailings.

25 So we -- we have developed a plan to

1 manage the water that comes in contact with the co-
2 disposal facility and the water that's coming out of
3 the co-disposal facility by collecting it and, if -- if
4 -- if required, treating it prior to release to the
5 environment.

6 So we've considered, you know, the water
7 aspects of the co-disposal facility not only during
8 operations, but also at closure.

9 MS. MADELAINE PASQUAYAK: Thank you for
10 responding, but that wasn't the question. The question
11 was: These studies that are done in the South, is there
12 any reports of the water drainage that's happening from
13 the CD -- disposal sites that drain into local waters
14 that may be out there or rivers?

15 You know, how safe is that, is -- is the
16 question. Mahsi.

17 MR. KEN DE VOS: Ken De Vos, with
18 Golder Associates. I think -- we can talk about co-
19 disposal facilities, but when we talk about co-disposal
20 facilities, I think we need to understand -- and -- and
21 it will depend on the mine, the -- the types of rocks
22 that are encountered at that specific mine, the types
23 of metals that are encountered at that specific mine,
24 and the overall environment of that -- that mine.

25 So with respect to -- you -- you know, I

1 think the case studies that -- that Mr. Bocking put
2 forward are -- are more physically on -- on which mines
3 have been put together.

4 But -- but there have been chemical
5 studies in -- in water quality monitoring at -- at
6 those mine sites. And -- and the results vary, and the
7 water management plans for each mine are developed
8 specifically for that mine. And, you know, any modern
9 mine now has to meet a water quality standard before
10 they can discharge their water.

11 So the answer to your question is
12 there's a lot of information out there, and it's
13 presented at conferences. There's an international
14 conference on acid rock drainage that -- that takes
15 place every three (3) years. The next one is in
16 Ottawa.

17 And there -- so there's a number of
18 papers on -- on all different types of drainage
19 chemistry and what can be done for different types of
20 mine sites, including co-disposal facilities.

21 So, yes, there's a lot of information
22 out there, and the water management practices will vary
23 depending on the mine, from treatment to release if the
24 water's good. But, you know, there -- there's not a
25 generalization we can make about either CDFs or mines

1 in general.

2 It -- it's specific to the types of
3 rocks and the -- and the system that they have in place
4 at that specific mine. So -- but all mines in -- in
5 place today do have to meet stringent discharge
6 criteria.

7 It -- it hasn't always been that way,
8 and in the past, there's -- there's many examples of
9 where things haven't gone as planned or -- or as people
10 would have wished.

11 But I -- I -- you know, there -- there
12 has been progress made, and -- and now mines do have to
13 meet those discharge standards, those stringent
14 discharge standards.

15 MS. MADELAINE PASQUAYAK: Thank you for
16 helping me understand this a little bit better.
17 Yesterday, when I asked for a copy of the recovery
18 strategy for the woodland caribou for the Tlicho
19 Government, I only asked for a copy of this because I'm
20 very involved in the TK work, and I wanted to get as
21 many copies as possible so that with all the concerns
22 that's raised here, you know, like it would help me to
23 know how to generate questions that we can ask the TK
24 once the work -- once the work gets started. And so
25 that was the reason for my asking for a copy.

1 And so I'd be interested in -- in
2 getting whatever studies you can get your hand on so
3 that I -- we can relay this to the Elders. The Elders,
4 as you know, are very disadvantaged in that they are
5 not educated. You know, they can't -- they don't speak
6 a word of English. And it takes somebody like me to --
7 to teach them and to share the information, you know,
8 that I hear here, you know, with them.

9 So, you know, you need to work with us
10 so that we -- we can, you know, learn a lot of things
11 that we need to learn, and also be able to share that
12 with the Elders, because they are the ones that are
13 greatly concerned about the land and the water. Mahsi.

14 THE FACILITATOR HUBERT: Thank you.
15 Thanks very much. If -- I noticed that DFO is sitting
16 patiently at the table. And so perhaps if we could
17 switch -- switch to aquatic fish -- fish habitat -- we
18 have it described as on our agenda. Now is a good
19 time.

20

21 QUESTION PERIOD RE FISH AND FISH HABITAT:

22 MR. RICK WALBOURNE: It's Rick
23 Walbourne with Fisheries and Oceans. I just wanted to
24 make a statement, actually. We had initially requested
25 some time on the agenda and some topics. However, we

1 provided those topics to Fortune, and we had a meeting
2 on January 4th.

3 All the information was provided to
4 Fisheries on January 10th and was provided to the
5 Review Board and is on the registry. So we have no
6 further questions at this time.

7 THE FACILITATOR HUBERT: Thanks very
8 much. And the Review Board is pleased to hear that
9 parties have met with Fortune and encourage this type
10 of dialogue anytime during -- throughout the various
11 phases of the EA, and thanks very much for that.
12 That's great.

13 Any other parties wish to ask Fortune
14 questions regarding fish or aquatic hab -- habitat?

15

16 (BRIEF PAUSE)

17

18 THE FACILITATOR HUBERT: Actually, I
19 want to take another -- Chuck Hubert, with the Review
20 Board. When I take a further look at my agenda, I seem
21 to have skipped a line here. Yeah, yeah, but nobody
22 pointed it out to me. But --

23 MR. RICK SCHRYER: Water, hydrology --

24 THE FACILITATOR HUBERT: Anyway,
25 thanks. Since that seems to be it for now with -- with

1 fish and fish habitat -- and we can always come back to
2 it later.

3 But my apologies to everybody here.

4 Let's move on to hydrology and hydrogeology and any
5 questions on that would be great now. Thanks.

6

7 QUESTION PERIOD RE WATER, HYDROLOGY, AND HYDROGEOLOGY:

8 THE FACILITATOR HUBERT: Well, if

9 nobody is raising their hand and requesting questions
10 on any of that, is there -- are there any follow-up
11 questions, then, from topics that we've chatted about -
12 - water related or fisheries related -- throughout the
13 day that parties want further information on from
14 Fortune?

15

16 QUESTION PERIOD RE GENERAL QUESTIONS ON WATER:

17 MR. BARRY ZAJDLIK: Barry Zajdlik, not
18 Chief Daniels. I had a question regarding potential
19 toxicity. I don't believe you've had the ability yet
20 to generate a synthetic effluent. Is that correct?

21 MR. RICK SCHRYER: Rick Schryer,
22 Fortune Minerals. Yes, we have. In our last pilot
23 plant test, what we did is we actually took the water
24 that came off of the process right -- production of a
25 concentrate that we didn't put through the rest of the

1 process plant, so we did have about 400 litres of water
2 that was off the tailings.

3 Now, it's not -- they're -- they're --
4 I've got to make a distinction here. This was water
5 from just solely the production of the concentrate. It
6 wasn't water that was typical of what had -- what would
7 be gone -- would come out of the CDF initially, because
8 it wouldn't be exposed to everything else, right.

9 But we did have water from the
10 production of the concentrate, and that is what we were
11 using for that bench scale testing in Denver for the --
12 the testing of the passing -- passive treatment system.
13 So we do have some effluent.

14 It's interesting that actually the --
15 the effluent that came off of there was actually far
16 too dilute, and we actually had to put it through the
17 RO system to get a brine, to actually get it close to
18 concentrations that we felt would be typical of the
19 CDF, and then we ran it through the passive system, so.

20 MR. BARRY ZAJDLIK: Barry Zajdlik.
21 That's -- that's gratifying. I guess there -- where
22 I'm going with all this is if you could simulate an
23 effluent that would typify operating conditions, could
24 you do toxicity tests on some of the regulatory
25 species?

1 (BRIEF PAUSE)

2

3 MR. RICK SCHRYER: Rick Schryer,
4 Fortune Minerals. I believe in the future we will have
5 the ability to produce an influent that is typical of
6 what would go into the ETF, or the RO plant. And I
7 think it would be prudent for Fortune Minerals to do --
8 I -- I believe you're talking about whole effluent
9 toxicity tests, right, on rainbow trout, and...

10 MR. BARRY ZAJDLIK: Barry Zajdlik.
11 Yes, that's correct.

12 MR. RICK SCHRYER: Okay. So we're
13 talking about whole effluent toxicity tests. Yeah, we
14 could do -- we could do some of those. You know, I
15 think it's to our advantage to demonstrate that our
16 effluent is not toxic, so. Thank you.

17 THE FACILITATOR HUBERT: Anything
18 further?

19 MR. BARRY ZAJDLIK: Barry Zajdlik. No,
20 nothing further.

21 THE FACILITATOR HUBERT: Thanks very
22 much. If -- if there are no further questions on our
23 current agenda items as we have listed here at the
24 moment -- and first of all, I'll ask once more if -- if
25 -- before considering further options, if there's any

1 questions the parties might have for Fortune on our
2 agenda for today.

3

4 (BRIEF PAUSE)

5

6 THE FACILITATOR HUBERT: Thanks. It's
7 good -- good to see a satisfied crowd, or that's my
8 interpretation, perhaps premature; but in any case,
9 that's excellent.

10 There's a couple ways we could proceed
11 from here. We could either have the CDF presentation
12 that Fortune was going to do from 5:00 p.m. and beyond,
13 or -- as one (1) option.

14 MR. RICK SCHRYER: Sorry, we were --

15 THE FACILITATOR HUBERT: No problem,
16 it's allowed. One (1) option for -- for proceeding
17 with the rest of today is we could have -- I understand
18 Fortune was planning on a CDF presentation after 5:00
19 with the Tlicho Government and -- and other parties
20 invited.

21 Would it be acceptable to -- to do that
22 this afternoon instead?

23 MR. RICK SCHRYER: Rick Schryer,
24 Fortune Minerals. I already know that Tlicho won't be
25 in a position to do that, because their consultant is

1 not here.

2 DR. GINGER GIBSON: Tlicho Government,
3 Ginger Gibson. That's fine. We would do it now.

4 MR. RICK SCHRYER: Do you want to do it
5 now? Okay. Just to be clear, it's not a presentation.
6 We were just going to basically sit down in a meeting
7 and -- and hash out issues in terms of the CDF.

8 So it was just going to be kind of a
9 workshop setting. But that's fine with us; we can do
10 it right now.

11 THE FACILITATOR HUBERT: Yeah, I -- I
12 think it would be useful, since there -- there's
13 probably people who are interested in it.

14 Is this -- is this too large a -- an
15 outfit? No? Okay. Then -- then I think that would be
16 more useful. Is it -- do parties need -- or will other
17 parties need to be -- to have members of their team in
18 attendance to discuss issues such as closure and
19 reclamation, for instance?

20 MR. JOHN BRODIE: Chuck, it's John
21 Brodie for AANDC. I think that discussion would be
22 more fruitful for all of us if we had a chance to read
23 and digest what they've just provided to us, in terms
24 of background, before we were to go further into the
25 discussion of their project specifics.

1 THE FACILITATOR HUBERT: Thanks very
2 much. That's a good point. Could that still be done
3 perhaps later this afternoon? However, after -- I know
4 it's fifty (50) pages, but is that an option?

5 MR. JOHN BRODIE: It's John Brodie. I
6 was reading it as you were bringing this subject up, so
7 I'm trying.

8 THE FACILITATOR HUBERT: I'll -- I'll
9 float something out there then. Is it -- would it be
10 useful to reconvene at, say, 3:00, after pe -- parties
11 have had a chance to go through this material, and --
12 and whoever is interested from members in the audience,
13 to reconvene then and -- and do a workshop on the co-
14 disposal facility?

15 MR. JOHN BRODIE: It's John Brodie.
16 That would work for -- for me.

17 MR. RICK SCHRYER: Rich Schryer,
18 Fortune Minerals. I just want to state, Fortune's
19 amenable to whatever works best for the -- for this
20 audience.

21 THE FACILITATOR HUBERT: And -- and the
22 -- the Review Board of course agrees with that. So
23 three o'clock is a suggested time right now to
24 reconvene, after having read the material. And I
25 believe there's still copies remaining at the back.

1 If -- if we could do that, if
2 everybody's agreeable to that, or -- then I think it's
3 a good idea. If anybody's not agreeable, please raise
4 your hand.

5

6 (BRIEF PAUSE)

7

8 THE FACILITATOR HUBERT: Excellent.
9 Thanks very much. And at three o'clock, we will have
10 coffee, by the way, and -- and I believe some -- some
11 things to nibble. Cookies is the request, at three
12 o'clock. And that should give parties time to go
13 through the material, and we'll come back then. See
14 you then. Bye.

15

16 --- Upon recessing at 1:46 p.m.

17 --- Upon resuming at 3:00 p.m.

18

19 THE FACILITATOR HUBERT: Welcome back,
20 everybody. It's three o'clock and, as agreed to
21 earlier this afternoon before our break, we thought
22 we'd have a bit of a workshop lead by Fortune on co-
23 disposal facility.

24 We can begin in two (2) minutes, after
25 everybody's loaded up their tea and coffee and maybe

1 taken advantage of some of the little treats out there
2 on the table.

3

4 (BRIEF PAUSE)

5

6 THE FACILITATOR HUBERT: Okay. Welcome
7 back, everybody. This should be an interesting talk on
8 the co-disposal facility and some -- we look forward to
9 the discussion based in part on Fortune's preparation
10 of the case studies document.

11 I'd like to start this afternoon with a
12 bit of a round table of introdu -- introducing people
13 and their names and -- and who they're affiliated with.
14 So if we can start with that I'll go around the table
15 and then -- and then back this way.

16 MR. JOHN BRODIE: John Brodie, Brodie
17 Consulting, representing AANDC.

18 MR. PAUL GREEN: Paul Green with the
19 Water Resources Division of AANDC.

20 MR. HENRY ZOE: Henry Zoe with Tlicho
21 Government.

22 DR. GINGER GIBSON: Ginger Gibson,
23 Tlicho Government.

24 MR. KEN DE VOS: Ken De Vos with Golder
25 Associates.

1 MR. KEN BOCKING: Ken Bocking, Golder
2 Associates.
3 MR. RICK SCHRYER: Rich Schryer,
4 Fortune Minerals.
5 MR. CHARLIE NITSIZA: Charlie Nitsiza,
6 Fortune Minerals.
7 MR. TOM RINALDI: Tom Rinaldi, Fortune
8 Minerals.
9 MR. JASON PARVIAINEN: Jason
10 Parviainen, Golder Associates.
11 MR. TYREL LLOYD: Ty -- Ty Lloyd,
12 McElhanney Consulting.
13 MR. MIKE DECARLO: Mike DeCarlo,
14 Fortune Minerals.
15 MR. JIM MUCKLOW: Jim Mucklow, Fortune
16 Minerals.
17 MR. JOHN FAITHFUL: John Faithful,
18 Golder Associates.
19 MS. JEN GIBSON: Jen Gibson, Golder
20 Associates.
21 MR. CAMERON STEVENS: Cam Stevens,
22 Golder Associates.
23 MR. GARY ASH: Gary Ash, Golder
24 Associates.
25 MR. MARC ROUIGER: Marc Rouiger, Golder

1 Associates.

2 MR. BRETT WHEELER: Brett Wheeler,
3 Wek'eezhii Land and Water Board.

4 MR. GLEN SORENSEN: Glen SORENSEN,
5 Minerals, Oils, and Gas, GNWT.

6 MS. KERRI GARNER: Kerri Garner, Tlicho
7 Government.

8 MS. SARAH BAINES: Sarah Baines, SENES
9 Consultants.

10 MS. MADELAINE PASQUAYAK: Madelaine
11 Chocolate Pasquayak, Tlicho Government.

12 MR. JOHN B. ZOE: John B. Zoe, Tlicho
13 Government.

14 MR. LOUIE AZZOLINI: Louie Azzolini,
15 observer.

16 MR. SONNY ZOE: Sonny Zoe, Tlicho
17 Government.

18 MR. JOHN KING: John King -- John King,
19 Natural Resources Canada.

20 MR. LIONEL MARCINKOSKI: Lionel
21 Marcinkoski, Aboriginal and Northern Affairs.

22

23 WORKSHOP LEAD BY FORTUNE ON CO-DISPOSAL FACILITY:

24 THE FACILITATOR HUBERT: Thanks very
25 much. And we will keep the trans -- transcription on

1 as -- as previously so that there will be a recording
2 of the meeting. But I'd -- I'd like to you -- to have
3 participants feel free to -- to question and answer at
4 will and not be restrained at all by the fact of -- of
5 recordings.

6 So, please, whoever would like to start
7 with questions for -- for the co-disposal facility. I
8 look forward to it. Go ahead.

9 DR. GINGER GIBSON: Thank you very
10 much. Ginger Gibson, Tlicho Government. It's a steep
11 learning curve. I didn't finish the document. I'm
12 only on page 38. So I can only speak to what I've
13 read. And, in addition, I -- I want to note that
14 Fortune Minerals has given the Tlicho Government the --
15 the two (2) reports that I think will also be offered
16 to the public record, they suggested yesterday. And I
17 think that they'll be useful for future discussions in
18 terms of the -- the reasoning behind and the -- and the
19 options analysis that was done by the Company.

20 It -- it was interesting in the break
21 talking with people about their main concerns. And --
22 and we've talked about the co-disposal concept a lot in
23 the Kwe Beh Working Group in the Tlicho Government.
24 And -- and the -- the three (3) bottom line issues were
25 -- that were raised to me by Chief Daniels and Chief

1 Nitsiza and Sunny Zoe were on -- on what ground will
2 this be built, on what kind of ground and how stable
3 will it be, could there be lateral movement, could
4 there be sideways movement.

5 It's -- people are imagining it with,
6 you know, the -- the rocks being there, and then the
7 tailings being on top and the tailis -- tailings being
8 liquidy and being able to provide -- there -- there
9 being the possibility of some sideways movement. And
10 then the question of could things ooze out. So those
11 are very simple ways of phrasing things.

12 And when I looked into the document I
13 found a whole number of issues that I would classify as
14 potential failure issues. And -- and what I'd like to
15 see from Fortune Minerals in particular is a real
16 discussion of the potential failures, and then the
17 planning around them. And -- and I'm not a
18 professional engineer, so I'm not going to be capturing
19 all of the potential failures, and I might be wrong
20 about some of them. But the things that I saw running
21 across through this document were ice entrainment.

22 And I don't feel that Fortune has given
23 us a good answer on the question of the possibility of
24 ice entrainment, of ice being locked up within
25 tailings, and then that being a possibility for -- for

1 -- if there's melting, for the -- for movement to occur
2 within the -- the facility, so there being that -- that
3 question that Chief Daniels raised of could there be
4 settling, could there be horizontal placement movement.

5 One (1) of the case studies indicated
6 there had been some settling and horizontal movement,
7 so ice entrainment or ice damming. The potential for
8 moisture gain was raised in another of the case
9 studies. And so I think that the question of the water
10 content within the tailings themselves as they're
11 placed on the co-disposal facility is one (1) that's
12 significant.

13 And -- and I understand that the -- the
14 process through which the tailings will be dewatered,
15 but the question of just how much water is in the co-
16 disposal facility and the potential for there to be
17 higher water content in the co-disposal facilities
18 seems to be one (1) that we don't have enough
19 information about or -- it's both an operational issue
20 and a -- and a potential failure issue.

21 I think that I read something about the
22 possibility of luk -- liquification of tailings in
23 seismic events. And so there's a number of issues
24 that, in a very preliminary read of this, that I would
25 identify as things that we'd like to see the thinking

1 done on. And -- and I would expect to see that come
2 forward in -- in what would be classed as a failures
3 mode effects analysis.

4 Operational issues that we've tracked on
5 co-disposal, one (1) of the possible -- it's both a
6 failure and an operational issue, would be poorly
7 thickened tailings, fugitive dust, tracking of tailings
8 from -- as you're -- as you're moving around the site,
9 tracking of tailings as a dozer is moving onto a site
10 and -- and moving about. So tracking tailings back out
11 into the site, and there -- therefore, some pollution
12 issues from that. Any thickening issues and, finally,
13 I think just the storage issue of -- of the actual
14 construction of the facilities and -- and the cells and
15 -- and if water is -- is an issue, how that -- how that
16 can be both resolved as an operational issue.

17 There's -- there would be -- like, I
18 said, I think it's a really steep learning curve. And
19 -- and I'm grateful for this paper that was, obviously,
20 brought together for us. I'm grateful for it for --
21 for helping us think these things through. It seems to
22 me the next step is really pulling it -- those
23 potential issues forward and -- and thinking about them
24 in terms of how they could play out in this site.

25 An associated concern that we've raised

1 is that because we have so few case studies to draw on,
2 the -- the management guidelines are simply -- I don't
3 think that they're -- I haven't seen management
4 guidelines on co-disposal facilities. I don't know if
5 there are some that are existing. I'm sure there must
6 be.

7 But the -- the -- we learn so much as we
8 build these things. And so I don't think that the time
9 has been there operationally in engineering for us to
10 have really strong operational guidelines to assist
11 people in the field.

12 So I'd -- I'd like to see the -- the
13 more progressive the thinking is at this stage and the
14 harder we think about these things collectively, I
15 think the closer you can get to a solid operational
16 guidelines that -- that think through these issues.

17 MR. KEN BOCKING: Ken Bocking, Golder
18 Associates. I was writing feverishly. I -- I hope to
19 have written down most of those many points. Just --
20 just to -- as a preamble, we prepared this document
21 fairly quickly, because we realized that people were
22 concerned about co-disposal being a new technology,
23 which -- which it is.

24 And so the objective was to -- was to
25 find examples of co-disposal in -- in the literature

1 and -- and from our -- our own practice and -- and to
2 bring them forward to demonstrate that although it's
3 new, there are a number of instances where it has been
4 successfully applied.

5 And -- and there's -- the table lists a
6 number of facilities. Now, some of them are co-
7 disposal, and others are there as examples of thickened
8 tailings deposition in -- in cold climates. And then
9 we give some details on, it must be, six (6) or seven
10 (7) particular case histories.

11 In the discussion, we -- we did a little
12 bit of -- a very quick thing about terminology. Co-
13 disposal, you'll find, if -- if you read the
14 literature, is -- the terminology is not settled. It's
15 -- it's -- it's very inconsistently used. And so we've
16 defined three (3) different types for the purpose of
17 this memo and it -- probably the world will use it
18 differently.

19 But we're talking in terms of co-
20 placement, which is just broadly placing mine rock and
21 tailings kind of as separate entities in an overall
22 facility.

23 Co-deposition is what we're calling --
24 what we're proposing at NICO, wherein we're -- we're
25 not actively blending the tailings and the rock, but

1 we're placing it in layers, and -- and we're trying to
2 get it to, to some extent,
3 flow one (1) into the other.

4 And then, finally, co-mingling, which --
5 which is something that's been -- there's been a lot of
6 academic work on that. And that's kind of the ideal
7 blending of tailings and rock together to reduce
8 permeability and so on.

9 The -- the problem with co-mingling is
10 it's -- it's either impossible to do practically -- and
11 certainly, at least in the case of, you know, coarse,
12 open pit rock and tailings, you can't pump it. And so
13 it's quite difficult to -- to handle.

14 Just -- just to -- to go through our
15 case histories, I'm just going to describe them for you
16 in terms of the type of co-disposal.

17 The Neves Corvo example I would call co-
18 placement, because they're building dikes of rock and
19 putting paste tailings inside it. Greens Creek is co-
20 mingling. They have got filtered tailings and existing
21 piles of rock and they're -- they're actually mixing
22 them together with dozers and so on. It's on a very
23 small scale.

24 The Cerro De Maimon in Dominican
25 Republic, I -- I would call layered co-deposition, it's

1 placing rock and tailings and then rock on top. And --
2 and that is similar to NICO in -- in principle, albeit
3 with fewer layers. There's the -- the Krumovgrad case
4 history, as I'd call cellular co-placement. In other
5 words, they're making cells and putting paste tailings
6 inside. Nunavik is cellular co-placement again.
7 They're -- they're using the -- the mine rock to form
8 berms. And in that case they're lining it and putting
9 thickened tailings inside.

10 Unnamed mine in South Africa, cellular
11 co-placement. Brukunga in Australia is co-mingling and
12 that's -- they're taking a closed mine with problematic
13 drainage and they're blending the tailings and rock
14 together. And Snap Lake, cellular co-deposition I'd
15 call that. Okay. Are there any questions about these
16 variety of techniques and...

17 DR. GINGER GIBSON: Just -- I was
18 noticing that it was an unnamed mine. I just recently
19 had an unnamed baby. I just thought it was hilarious
20 that it was an unnamed mine. Just kind of lighten your
21 load.

22

23 (BRIEF PAUSE)

24

25 MR. KEN BOCKING: Ken Bocking, Golder

1 Associates. My colleague has just reminded me to -- to
2 indicate that while NICO does not perfectly match any
3 one (1) of these examples, the techniques that we're
4 going to use at NICO all have precedent in these
5 examples. In other words, if -- if we're talking about
6 placing mine rock overtop of tailings, you'll see
7 examples of that in here. If you're talking about
8 placing thickened tailings in the winter, you'll see
9 examples of that in there. So management of water in -
10 - in the winter, again, examples in here.

11 So that's what we're trying to achieve
12 is there -- there are no perfect analogues of what
13 we're proposing at NICO in -- in composite, but in
14 individual techniques I think that we've -- we've
15 demonstrated those.

16 MR. KEN DE VOS: Yeah, Ken De Vos, with
17 Golder. I mean, you can go even further is that for
18 each individual site there is no analogue. Each site -
19 - each mine site is a new entity of itself that has to
20 be treated, you know, on its own merits and with a
21 design -- designed for its own merits. So we're trying
22 to take the -- the best of what we see and what we've
23 been able to achieve at other locations and apply it to
24 this site as well.

25 MR. KEN BOCKING: Ken Bocking. I -- I

1 could just go through the questions that I've -- I've
2 scribbled down and -- and try and answer them one (1)
3 at -- one (1) at a time.

4 Well, you were asking about management
5 guidelines. Certainly they're -- it -- it's true that
6 there aren't any published government management
7 guidelines for something like this. But I do mention
8 that we did do a CDF management plan, and it's appended
9 to the DAR. Maybe somebody can help me with which one
10 it is. Three point two (3.II) roman numeral. Yeah.
11 So there's a discussion in there about operations and
12 contingencies and so on.

13 Also in there we say that -- that
14 there's a commitment in there to -- to have a formal
15 operation and surveillance plan when the mine goes into
16 operation. You know, which -- which is becoming a
17 fairly standard practice at mines and it really
18 prescribes that if this happens this person is
19 responsible and they do this. So -- so that would be
20 put in place.

21

22 (BRIEF PAUSE)

23

24 MR. KEN BOCKING: And -- and certainly
25 you -- you had another question about physical

1 stability. Again, in the DAR, we -- we showed some
2 stability cross-sections that we did, conventional
3 slopes to build the analysis. And it took into account
4 the foundation conditions that we found. There was a
5 clay layer in there.

6 We modelled the co-disposed tailings and
7 rock as if it was tailings. So the -- the strength --
8 saturated tailings. So the strength that we used was
9 the same as if it was saturated tailings. In fact, we
10 know that with the inclusion of rock it's going to be
11 stronger than that, but we -- we used the -- the
12 tailings value.

13 When we did the analysis, the overall
14 factor of safety was two point two (2.2) under static
15 conditions. And that's quite high. In a way, that's
16 not surprising because we've got -- the perimeter dike
17 is twenty (20) -- at least 25 metres thick of rock, and
18 -- and the overall slope is 4 to 1, so that's -- that's
19 why it's that stable.

20 You asked about seismicity. The -- the
21 seismic coefficient here is -- is relatively low on
22 the world scale. And we did a pseudo-static analysis,
23 where you put on acceleration on the stability model,
24 and it reduced the factor of safety to two point zero
25 (2.0).

1 Oh, I guess I should say that -- yeah.
2 The -- the CDA requirements -- Canadian Dam Association
3 requirements are a static factor of safety greater than
4 one point five (1.5), and a pseudo-static greater than
5 one point one (1.1), I believe. So we're well above
6 both those requirements. So what we've designed is --
7 is a very stable structure.

8

9 (BRIEF PAUSE)

10

11 MR. KEN BOCKING: Ken Bocking, Golder
12 Associates. My colleague has suggested that I indicate
13 what a 4 to 1 slope is like. It -- it is quite simply
14 a run of 4 metres for a rise of 1. It's a 25 percent
15 slope. If you -- if you dumped a pile of sand, it
16 would be -- it would stand at about 30 degrees, which
17 is -- help me out -- 1.7 to 1? So it's about -- it's
18 about half the angle that sand would form at. Twice as
19 flat as -- as loose sand, I guess you could say.

20

21 (BRIEF PAUSE)

22

23 MR. KEN BOCKING: I've been reminded
24 that the run of mine rock, which will -- which will
25 form the -- the perimeter dike, rock is -- mine rock is

1 -- is really quite strong. It'll -- it'll -- it would
2 form a slope of about 1.4 to 1, if it was just free --
3 freely dumped. So that -- that's -- you know, not 45
4 degrees but -- but pretty close.

5 May -- maybe I can just ask if there's
6 other questions and respond.

7 THE FACILITATOR HUBERT: I -- I wrote
8 down a couple that I heard that possibly were missed,
9 or not missed, but -- sorry, go ahead.

10 MR. JOHN BRODIE: It's John Brodie.
11 Are -- are you going to finish with Ginger's questions,
12 or I'm fine if you want to finish with that first. I -
13 - I do have some questions and comments, but I'm happy
14 if you want to finish that first.

15 DR. GINGER GIBSON: Can I suggest that
16 we keep rolling because I -- I can ask those again
17 after. I'd like to hear what you have to say, and then
18 I may have additional questions. And I'm certain that
19 you'll come across -- that you'll go on through those
20 questions, as well.

21 MR. JOHN BRODIE: Okay. Thank you.
22 It's John Brodie. As with everyone else, I've had an
23 hour for a speed read through this document. It's a
24 fair bit of information to get through. And -- and
25 that's -- you know, I kind of skipped to those examples

1 that I thought were -- or maybe I should say I -- I
2 read it in light of trying to cro -- glean from it
3 those examples that were most applicable to the Fortune
4 NICO project.

5 And I appreciate the verbal comments
6 that you provided, pointing out the -- the different
7 types of co-disposal, co-placement, and co-mingling as
8 a way of clarifying that. I thought that wa -- was
9 quite useful.

10 And in reading this, I guess two (2)
11 things are on my mind. One (1) was the issues of the
12 physical properties of -- of the co-disposed pile and
13 strength and permeability, et cetera. And I concur
14 with your comments in general. This type of co-
15 disposal would be expected to produce superior strength
16 to just the tailings deposit and the numbers that
17 you've just told us on the stability of the structure
18 seem, in principle, what I would expect for this and --
19 and, in fact, aren't the focus of my concerns.

20 But in reading this document, the piece
21 that stood out the most in my mind was the second
22 bullet on page 37. I'd like to draw your attention to
23 that. And this is the example that pertains to the co-
24 mingling of acid-generating mine waste in a mine
25 rehabilitation project in Australia.

1 And as I read that second bullet, what
2 they're telling us is that where they had basically
3 desiccated tailings, or ver -- the lowest possible
4 moisture content of the co-mingle product, the rate of
5 oxidation was un -- was not distinctly different from
6 an open rock pile and that when they were able to
7 maintain that material at -- at the peak saturation of
8 a well-mixed product, that the oxidation rate went --
9 went to zero.

10 So when I think of that comment, or that
11 observation in the context of the NICO project, where
12 we -- we're anticipating -- or, your target is 50
13 percent of the voids being filled, and possibly not
14 well filled, but at least filled, that would suggest to
15 me that -- that this plan would have, at least in terms
16 of controlled oxidation, 50 percent of the oxidation
17 rate as if the material was in an open rock pile.

18 Now, there would be some other
19 offsetting factors due to the layer effect that would
20 adjust from that. And I don't know how that would
21 incorporate edge effects in the layering in terms of --
22 of lateral ingressive of oxygen into this system. My
23 point here is that, as I read this, it suggests to me
24 that the co-disposal concept is certainly superior to
25 the open waste rock piles that were previously

1 proposed, but it doesn't leave me with the conclusion
2 that it's good enough to assume that we don't have
3 oxidation problems.

4 MR. KEN DE VOS: Thanks. Ken De Vos,
5 with Golder Associates. You know, when I -- when I
6 read that, they're looking at two (2) field trials that
7 are less than half a metre high, so. And -- and I -- I
8 agree with their conclusion that when you have half a
9 metre -- less than half a metre of material and it
10 desiccate, you're going to get oxygen through that
11 material.

12 We wouldn't be proposing to have less
13 than half a metre of -- of non-acid-generating material
14 above the potentially acid-generating materials. So,
15 you know, I think that's -- in this case, yes, that's
16 correct. You know, we're not saying that -- that it's
17 going to stop ox -- oxidation completely, but to make a
18 jump from a half-metre-high pile to then assume that
19 you're going to get more than half the oxidation rate
20 without considering the diffusion rate of oxygen
21 through a thickness of -- of isolated air, I think
22 would -- is -- is a little bit premature as well.

23 So I -- I take your point, yes. You
24 know what, there's -- there's going to be oxygen moving
25 through this pile. But, you know, I don't think you

1 can automatically jump from a -- a half-metre thick
2 test cell to a -- a very large pile, either.

3 MR. JOHN BRODIE: It's John Brodie. In
4 -- in principle, I think, you know, your -- your
5 comment is true. You -- you can't extrapolate that
6 far. But we also know that a very large pile like this
7 co-disposal facility will breathe barometrically,
8 irrespective of diffusion and layers of -- of tailings.
9 In other words, there -- there are other forces that
10 will cause air movement in this system.

11 And we can see from these other examples
12 that although there's reductions in permeability in
13 areas, that the entire pile does not have a -- a
14 reduction in permeability with respect to water. And
15 so water will migrate through this pile and -- and we
16 have -- we don't have a full story in front of us to
17 tell us to what extent the geochemical processes will
18 be slowed down by this concept. I agree, it's probably
19 better than in a conventional open waste rock pile, but
20 is it enough better to be satisfied that we are looking
21 at a good design?

22 And I guess, on that point, there was
23 one (1) piece that I was trying to glean from these
24 examples, here, which I felt was missing, is that,
25 particularly the examples where there's a geochemical

1 issue such as this one we're just describing, we're not
2 told whether or not these co-mingling efforts still
3 required a cover. And if so, what type of a cover to
4 ensure that there was not adverse environmental
5 effects?

6 In other words, did they do co-mingling
7 and that was good enough? Or did they do co-mingling
8 and then still have to put a very good cover to
9 mitigate environmental effects? I think that would be
10 a very useful addition to this discussion.

11 MR. KEN BOCKING: Ken Bocking, Golder
12 Associates. Again, there's a few questions in there,
13 but I think -- certainly, I can think of some of those
14 examples where they did indeed have a cover. Nunavik
15 will have a -- a geomembrane cover and rock. Yeah, I -
16 - I think many of them will have a cover. And -- and,
17 of course, we are proposing a cover as well.

18 You -- you talked about the -- the waste
19 rock breathing barometrically. And I understand what
20 you're saying. Certainly, in an open rock pile as the
21 pressure increases outside the pile air will flow in --
22 into the -- the rock. And -- and the opposite can
23 occur as well. And -- and that will happen at NICO
24 with respect to the perimeter dike. And for any
25 fingers of rock that are connected with -- with the

1 perimeter dike that -- that can happen.

2 But you have to appreciate that
3 comparing our co-disposal facility to an open rock
4 pile, we're in a much better condition because that can
5 only happen -- because the way we're configuring the
6 overlapping cells, we're -- we're going to disconnect
7 the -- the zones of rock in the interior. So the area
8 that will be influenced by that kind of air flow will
9 be around the periphery. So we're reducing that
10 effect.

11 We talked, of course, earlier -- in the
12 earlier session about the convective currents that --
13 that happen in a waste rock pile. And -- and I think
14 that, you know, as I said at that time, on -- on the
15 high section we've got fifteen (15) or twenty (20)
16 layers of tailings over the full height, and that
17 clearly is going to interrupt that kind of flow. So I
18 -- I think we're going to reduce the -- the advective
19 flux of -- of oxygen through that rock by orders of
20 magnitude compared to an open pile.

21 MR. JOHN BRODIE: It's John Brodie. I
22 -- I think we could probably digress into all sorts of
23 nuances about how that pile might be constructed.

24 I -- I think in principle, you know,
25 will it have less convection and air movement than an

1 open waste rock pile? I -- I think that's quite clear.
2 Will it have enough to prevent or substantially
3 mitigate the kinds of problems that might otherwise
4 arise, the kinds of problems that led the Company away
5 from the open waste rock pile in the first place? I --
6 I haven't seen that argument yet. I've only seen that
7 it will be better than an open waste rock pile, but
8 will it be good enough? I -- I don't know that answer.

9 MR. KEN BOCKING: Ken Bocking. Just to
10 put some perspective on it, any -- any cover -- there's
11 no cover that prevents infiltration or completely
12 prevents oxygen intrusion. A good cover reduces it to
13 a low level, both oxygen flux and -- and infiltration.
14 And -- and that's what we're -- we're trying to
15 achieve, is -- is to reduce it to a lower level.

16 And -- and, you know, the configuration
17 of the -- of the CDF is -- is -- well, we've -- we've --
18 - I guess I'm going over old ground there. We -- we
19 feel that's going to certainly reduce the oxygen influx
20 in and of itself. But the cover -- once -- once we
21 place the cover -- cover and closure, that's going to
22 reduce the infiltration. We've suggested it'll be
23 about 15 percent of mean annual precipitation. And
24 it's going to reduce the oxygen influx as well,
25 intuitively, but we haven't actually even predicted

1 that.

2 MR. KEN DE VOS: Yeah, Ken De Vos with
3 -- with Golder. I -- there -- there's a paper by, I
4 believe it's Luke Payant (phonetic), and it was
5 presented many years ago now, that talks about oxygen
6 diffusion and -- and provides predictive equations for
7 oxygen diffusion with depth. And it's a fairly simple
8 calculation. And -- and what it shows is in a tailings
9 type of environment that the -- the rates of oxygen
10 diffusion with depth go down by orders of magnitude as
11 you start to get on the scale of -- of metres.

12 And, you know, so we're -- we're talking
13 about having a pile here with overlying cover that's --
14 how -- how thick is it, Ken?

15 MR. KEN BOCKING: One (1) metre plus --

16 MR. KEN DE VOS: About a metre.

17 MR. KEN BOCKING: -- .25 percent.

18 MR. DEN DE VOS: And then we have
19 another quarter metre of sand, and we'll have tailings
20 over top of -- a layered system of tailings -- metres
21 of tailings, and metres of non-acid-generating rock
22 above our -- where we're proposing to put the -- any --
23 any acid-generating material.

24 So what we end up with is an incredibly
25 thick sequence of non-acid-generating materials that

1 any oxygen, were it to migrate into the pile, and we're
2 not saying it's not going to get into the pile, the
3 rate at which that can get down to those -- those
4 acidic materials are such, and the composition of
5 tailings is such, that the rate of acid generation
6 would be -- would be minimal. It's not going to stop
7 oxidizing. There's going to be some small amount of
8 oxidation that is going to happen with that material in
9 the base of the pile. It's going to happen. It can't
10 be stopped.

11 The rate -- what -- what we need to look
12 at now is -- is how quickly can that oxidize, and with
13 the design of the pile and the amount of oxygen that
14 can get in there and the amount of buffering capacity
15 of the tailings -- so even if acidity is produced in
16 these -- these acidic materials, the water that that
17 acidity enters still has to make its way from where it
18 was -- that acidity was produced to the edge of the
19 pile, or down and through the pile. So it still has to
20 flow through tailings that have excess neutralization
21 potential relative to the -- the potential for acid
22 generation. The mineralogy test shows that some of
23 that is indeed in carbonate form, so it still has to
24 flow through material that contains carbonate and can
25 neutralize that acidity.

1 Now, when you start balancing the rate,
2 even with simple equations, you very quickly come to
3 the conclusion that, you know, if this pile is designed
4 in a layer cake form, and if we have up to several
5 metres of -- of free air that -- that's occluded either
6 through the tailings or through confined zones of waste
7 rock, that there's simply not enough -- the rate simply
8 can't sustain enough acid generation to form acidic
9 drainage even though those reactions will happen at
10 some low rate.

11 DR. GINGER GIBSON: Ginger Gibson,
12 Tlicho Government. I -- I'd like to review a few of
13 the things that we don't know, just in light of what
14 you've said, a few of the things that we don't know.
15 One (1) -- one (1) thing that we don't know, and though
16 -- though we may agree with you in the end once we've
17 seen the data, that the .3 percent sulfide sulfur
18 content, where that -- that that was the right cutoff.

19 We don't know that there -- there's
20 doubt right now that what you've classified, the types
21 of rocks, the way that you've classified rocks is -- is
22 going to be the way that minimizes pollution in the
23 sense that we -- we -- there could be more acid-
24 generating rock than you've predicted. So we don't
25 know that.

1 And -- and the implication of not
2 knowing that is that if it turns out that there's much
3 more acidic, potentially, generating rock, then this
4 pile could have more of that type of rock in it. There
5 could be other implications.

6 The other thing that we don't know,
7 because we haven't got the results back from the test
8 piles, is what's coming off of the test piles that
9 you've currently constructed. So we don't know what
10 the level of the acids is or what the level of the
11 metals that are leaching out from those test piles are.
12 So it's another gap in our knowledge for understanding
13 how co-disposal works.

14 We also don't know -- because those test
15 piles are only small, little test piles and no one
16 could build what you're -- we couldn't -- we can't test
17 the big, big pile, we don't know if the way that things
18 react in those test piles will be how things react in
19 the big pile itself. So that's another area, a gap of
20 knowledge.

21 What our colleague from AANDC has just
22 pointed out is that we don't know the extent to which
23 the geochemical processes will be slowed down. And
24 right now, we're relying on good information about how
25 air travels, oxygen travels. We're relying on -- on

1 the idea that the tailings will slow things down. But
2 I think, again, it's an -- it's an area -- a gap in
3 knowledge about how -- how much slowed down those
4 processes will be.

5 And so as a result, the Tlicho
6 Government, when looking at this -- these three (3)
7 gaps in knowledge, we were -- we are hopeful that there
8 will be more -- we -- we know there will be more
9 information that comes from Golder on these elements,
10 especially on -- we know that you're going to provide
11 us the data that illustrates why a .3 percent cutoff is
12 the right cutoff.

13 We know that you're going to provide us
14 the test results on what comes off of those test piles.
15 But then we're all going to have to determine together
16 and think carefully about how much we believe the geo -
17 - the processes, the geochemical processes, are going
18 to slow down in this pile to -- to determine the
19 ultimate answer, the ultimate question of -- of is it -
20 - is the water that's coming off of the co-disposal
21 pile -- pile remarkably polluted?

22 Is it -- is it so polluted that the
23 Tlicho Government can't accept that operating in the --
24 in the heart of the Tlicho Gover -- land claim?

25 And is it releasing metals into the

1 environment -- selenium, arsenic, into the environment
2 -- at levels that are too high to accept, given what
3 the Tlicho land -- land claim agreement requires?

4 So I feel like there's -- there's those
5 gaps to fill so that we can really dig into this in
6 order to understand those questions. I mean, I think,
7 really, ultimately, it is a question of reducing the
8 air and reducing the -- the water that gets in there.
9 And just how much that occurs is -- is going to be
10 something we're going to have to all struggle through.

11 MR. KEN BOCKING: Ken Bocking. I'd
12 like to respond on -- on one (1) aspect of what you
13 said, you know, will the water be polluted. We --
14 we've said that there will be low levels of -- of
15 metals and -- and perhaps even some acidity coming off,
16 although it -- it's likely to be internally buffered.

17 But you have to keep in mind that
18 there's the undertaking to always collect and monitor
19 that water and treat it, if possible, by the wetland
20 treatment system. You know, if we get it down to a low
21 enough level and it's amenable to wetland treatment,
22 then that's obviously a good solution for everyone.

23 But the commitment is also in the DAR
24 that if -- if that can't be shown to work, then -- then
25 active treatment will carry on.

1 MR. KEN DE VOS: Ken De Vos with --
2 with Golder Associates. So I -- I understand where
3 you're coming from, I think, with your concerns. And I
4 know that some of this stuff is difficult to understand
5 without getting into it in detail.

6 There -- there has been a lot of testing
7 done. You know, we do have a lot of samples. We do
8 have a lot of ABA analysis. We have mineralogy
9 analysis. We have NAG testing. And I'm more than
10 happy to go through that data with whoever wants to sit
11 down and go through the data.

12 You know, but it's -- it's -- I don't
13 know if it's something that can be done in a few
14 minutes here. But if, you know, we look at annex A and
15 we look -- we have test plots showing the acid
16 generation potential as a function of -- of the sulfide
17 content. We have mineralogical analysis that show the
18 different types of minerals that are -- are in -- in
19 there. So, you know, we're pretty confident with the -
20 - the sulfide values that we're -- we're choosing.

21 And the pile is -- is such that, in
22 terms of the percentage of waste rock, we understand
23 that we need to be able to handle more or less
24 potentially acid-generating waste -- generating waste
25 rock than we predict, because we know that predictions

1 sometimes -- it's a geological system. And sometimes
2 things are different than -- than we anticipate.

3 So, you know, whether it's -- it's 10 to
4 15 percent, as -- as our data is suggesting it's going
5 to be, or whether it's 20 or 25 percent acid-generating
6 waste rock, the pile can handle those -- those
7 different -- different amounts. So there is some
8 redundancy built in there. You know, and -- and I'm
9 happy to go through that.

10 We're -- we do have tests that are
11 underway on site. The -- you know, I can tell you that
12 the pHs from the first few samples are neutral. But
13 we're going to -- that's the preliminary data. I'm
14 going to be looking at that data, and that's going to
15 be provided.

16 So we're going to continue to -- to
17 monitor what we're doing on site to provide some
18 assurance that -- that what we're proposing will move
19 forward or -- or -- and will work.

20 And then the other thing would be, in
21 terms of -- of -- we do still expect that there will be
22 some arsenic and -- and selenium coming off those
23 piles. And -- and that's the reason that there's
24 wetland downstream, as well as a treatment system.
25 That needs to be in place to -- to remove those metals.

1 And those technologies work, or can be adapted to work,
2 not only for arsenic and selenium, but also for
3 acidity, in terms of neutralization of pH.

4 So I think there is some redundancy
5 there. So we have layers of redundancy in the system
6 and -- and, of course, everything needs to be
7 monitored. And it needs to be adaptively managed.

8 But you know, I think there's some
9 pretty good things that this design has going for it.
10 No design is perfect. It needs to be monitored, but I
11 do think there's a -- a fair bit of data that we can
12 use to help us move through these and -- and help with
13 the understanding of these things.

14 MR. RICK SCHRYER: Rick Schryer,
15 Fortune Minerals. I just wanted to bring up one (1)
16 point that I think we just need to consider here. We
17 did some testing last summer of the water quality all
18 the way from the grid ponds down to where it enters
19 NICO Lake. And we did it above -- there's a -- there's
20 a small wetland between Little Grid Pond and NICO Lake,
21 about halfway up.

22 The water going into the pond -- that
23 wetland, from Little Grid Pond, had an arsenic level of
24 160 micrograms per litre. Upon exiting the pond on the
25 downstream side, the water quality was -- or, the

1 arsenic levels were 90 micrograms per litre. And it
2 meandered its way to NICO Lake, and it really didn't
3 change.

4 So the levels of arsenic that are
5 currently running into NICO Lake under natural
6 conditions are around 90 micrograms per litre. We're
7 proposing an SSWQO of 50, which is substantially less
8 than what is going -- currently going into the
9 environment with either equal or less flow than is
10 currently going in there because of some evaporation
11 and some water losses.

12 So I just need -- think we need to -- to
13 just -- I don't need a response or anything like that,
14 but I think we need to keep that in mind when we're
15 looking at what we're looking for in terms of
16 performance of the CDF and what we're trying to achieve
17 in terms of water quality objectives, that the natural
18 environment is already receiving a considerable level
19 of arsenic just from the rocks.

20 And that's -- the point here is the
21 rocks there leach arsenic. They're doing it right now.
22 And we're going to do our best to contain the -- the
23 worst of it in terms of the type 3 rock, make sure that
24 that's bottled up. But, you know, it -- as conditions
25 chan -- change and this mine doesn't go ahead, those

1 rocks are going to continue to leach arsenic until next
2 ice age.

3 DR. GINGER GIBSON: Ginger Gibson,
4 Tlicho Government. I -- I just wanted you to describe
5 -- I asked -- I mentioned that one (1) of our Tlicho
6 Government people had asked a question about if you
7 could describe the land on which -- the kind of rock on
8 which the co-disposal facility would be built.

9 And -- and secondly, I just want to
10 respond to the question on arsenic, even though you
11 didn't ask for a response, Rick. The -- the -- I mean,
12 of course there's naturally occurring arsenic. But
13 when people break things up and crush it up and grind
14 it, they open up all sorts of other surfaces. And I
15 know you know this. I'm explaining this for the
16 benefit of lots of other people in the room.

17 But you -- you -- by crushing it and
18 grinding it and breaking it up, you expose all sorts of
19 other areas that would not naturally be exposed. And
20 because those areas interact with water and with
21 oxygen, a lot more arsenic gets out into the
22 environment. So the process of mining generally does
23 liberate lots more than is naturally occurring, and
24 that's why we go through the kind of process that we're
25 going through now.

1 But if I can ask you to just describe
2 the ground underneath, that would be great.

3 MR. KEN BOCKING: Ken Bocking, Golder
4 Associates. Well, maybe I'll -- I'll just add a little
5 thing to what you said about the arsenic, is the
6 construction of the CDF and the way we're going to
7 manage the water, not only are we going to reduce the
8 concentration to the SSWQO, as Rick mentioned, but
9 we're also reducing the flows relative to the natural
10 condition, because during operations, of course, we're
11 collecting all that water from the seepage collection
12 ponds and taking it back into process. And there --
13 yes, there's going to be excess which needs to be
14 released, but it'll be treated and then released.

15 And then as we move into closure, it --
16 it's just the volume of seepage that we're predicting
17 out of the toe -- and that -- that, again, is -- is
18 quite a bit lower than the natural flow. And then in
19 the final stage of closure, we have that -- that
20 seepage continues at -- at the rate we've predicted.
21 And then we have also some discharge from the open pit.

22 But the sum of the open pit discharge --
23 and the open pit, I guess I should mention, it's going
24 into Peanut as well. So the -- the discharge into NICO
25 Lake is reduced to the level that's cu -- that's

1 seeping out of the dam perpetually and going through
2 the treatment system. So anyway, the -- you know what
3 I'm trying to say. The -- the flows are reduced
4 perpetually after the construction of the CDF.

5 Now, to -- to address the question of
6 the ground, we -- we did a number of boreholes along
7 the access of the seepage collection pond dams. And
8 basically along that access, there -- there's a lot of
9 rock outcrops.

10 But -- but this -- those three (3) dams,
11 which you'll see they're quite small if you look at the
12 model, they're on a foundation which typically has some
13 organics on the surface; in some cases, some -- some
14 glacial lacustrine clays; a little bit of till; and
15 then, at depth, we're -- we're into bedrock.

16 And those dams, we're going to construct
17 a cutoff trench. We're going to trench under the
18 foundation level and -- and backfill to -- to try and
19 intercept any possible seepage that would be in the
20 shallow soil strata underneath the -- the dams.

21

22 (BRIEF PAUSE)

23

24 DR. GINGER GIBSON: Ginger Gibson,
25 Tlicho Government. This is really the -- I mean, where

1 this is all going to come together is in closure. And
2 so I feel like tomorrow we have to have a really dis --
3 robust discussion about wetlands, the passive treatment
4 that you're discussing -- proposing, and the act --
5 potential active treatment.

6 So I think -- I -- I would like to
7 concur though with your comment, that I found, when I
8 started reading this document this afternoon, the
9 question of the closure, what -- what membrane or what
10 kind of cap was used on any of the facilities was one
11 (1) that was running immediately through my head, and
12 the contrast of what does -- what are -- what are we
13 proposing with NICO versus what is out there in -- in
14 the other locations. It would be -- be one really, I
15 think, to -- to take a look at.

16 So I -- I do want to suggest that
17 tomorrow I think we'll -- we'll go through many of
18 these threads again to really capture the questions of
19 closure.

20 MR. JOHN BRODIE: It's John Brodie. I
21 -- I agree that, you know, all these points of
22 discussion have a direct linkage to closure and long-
23 term water quality and whatever level or type of long-
24 term site care or water treatment might be required.

25 But before we leave the -- the thread of

1 the construction of the co-disposal facility, just a --
2 a couple of other thoughts, because we've heard your --
3 your comments that, you know, that we would have
4 wasterock with these tailings enclosures, so to speak,
5 and -- and it would be isolated, and it would be a, you
6 know, a very limited air entry into this system and --
7 and, correspondingly, a low -- a low entry of water as
8 well.

9 And -- and I'm not quite there with you
10 on the -- on the idea that you'd actually achieve that
11 for all of the pile. And I think that's an aspect that
12 you need to recognize that -- that there is edge
13 effects where the wasterock layers come out to the
14 perimeter of the -- to the type 1 perimeter of the co-
15 disposal facility.

16 It seems to me that this type of
17 facility, heading into a -- a winter operation, could
18 switch from 2 metre layers to, say, 5 metre layers to
19 deal with the problems of winter depositions, spigot
20 moving, these kinds of winter construction issues which
21 would create what I would see or -- or envision as
22 larger, more continuous conduits through the pile for
23 migration of -- of air and/or water.

24 So I'm just putting these points forward
25 to suggest that it would take more work to convince me

1 that, in fact, this pile will have a very low ingress
2 of air and very low -- or a low ingress of water as a
3 means of controlling the flushing of contaminants from
4 this pile.

5

6 (BRIEF PAUSE)

7

8 MR. KEN DE VOS: Ken De Vos, with
9 Golder. Now, I -- I'm not disagreeing with you with
10 respect to -- you know, I -- I think that the -- any
11 management plan that has to be put into place, if the
12 design is -- is dependent on these layers occurring and
13 the tailings intermingled, then the management plan and
14 the operational plans that are put in place to
15 construct this pile need to reflect that.

16 So I'm -- I'm not disagreeing with what
17 you're saying. If -- you know, we do have connections
18 if the layers are thicker, then -- then that would --
19 would be a different situation that -- that we're not
20 currently envisioning with respect to the design of
21 that pile.

22 MR. KEN BOCKING: Ken Bocking. Well, I
23 -- I take your point that certainly in the perimeter
24 dike, there is going to be an amount of airflow, before
25 it's covered, it's going to be comparable to the edge

1 of a -- of a wasterock pile.

2 And the wasterock management plan says
3 that that can only be type 2 or better rock.

4 The idea of -- you're -- you're sort of
5 talking, if -- if I can put words in your mouth, of a -
6 - kind of a halo of rock adjacent to the dike that
7 you're worried about, and it occurs to me that we
8 could, in a -- in an operational management plan, do
9 something like specify a certain distance away -- say 5
10 metres or something -- inside of that, we could -- we
11 could excavate a trench and pour tailings in.

12 We -- we could actually fairly easily
13 set up operations so we try and break that barometric
14 flow into the -- into the fingers in the internal. I -
15 - I think something like that could be planned at the
16 detailed stage.

17 MR. GERD WIATZKA: Gerd Wiatzka, SENES.
18 I apologize, I missed the earlier part of the
19 discussion, so you may have already commented on it.

20 It -- it seems to me that there's some
21 very interesting case studies in here, and -- and, you
22 know, but -- but none directly totally applicable.

23 And -- and certainly, as you mentioned
24 in your commissioning and -- and early stages of
25 operation, you have an opportunity to learn practically

1 as you're placing materials.

2 Have you considered sort of looking at -
3 - at instrumentation and -- and sort of a performance
4 monitoring program that, in addition to something as
5 you just mentioned to John, where you're looking -- a
6 proactive means of -- of isolating areas, et cetera,
7 you can actually test to see what -- what's happening
8 within the pile as -- as you're building the pile.

9 You know, you have eighteen (18) years,
10 and -- and certainly, I think you have -- I believe
11 it's robust enough that -- that you can look at things
12 and say it's working or not, and here's how we have to
13 change.

14 But I think you also need to have a
15 record of -- of performance so that you don't, at the
16 end of eighteen (18) years, say, Well, we got this huge
17 thing, and -- and how is it going to behave?

18 MR. KEN DE VOS: Ken De Vos with
19 Golder. Yeah. You know, I -- I think those are --
20 those are good ideas with respect to monitoring what's
21 going on in the pile, and I'm -- I'm certain that that
22 will have to be done.

23 I've sat through a couple of these
24 processes, and I'm sure the water licensing process
25 won't let us get away with not putting some sort of

1 monitoring in place, so...

2 MR. KEN BOCKING: Ken Bocking. Yeah,
3 it -- it -- we did say in the DAR somewhere that we --
4 we had plans to do lysimeters and -- and
5 instrumentation and monitoring.

6 We -- granted, we didn't detail it
7 because we haven't thought it through yet, but I -- I'm
8 sure it will be done.

9 THE FACILITATOR HUBERT: Rick, can I
10 get you to elaborate on -- on whether you recall that
11 specific commitment in the DAR?

12 MR. RICK SCHRYER: Rick Schryer,
13 Fortune Minerals. Yes, I remember seeing that. It's
14 in the project description.

15 You know, we don't know exactly where
16 they will go. I mean, I think that's something that --
17 that will come up in detail design, but I know that
18 that commitment was made in writing in the project
19 description for the DAR.

20 THE FACILITATOR HUBERT: Thanks.
21 That's valuable.

22

23 (BRIEF PAUSE)

24

25 MS. MADELAINE PASQUAYAK: Madelaine

1 Pasquayak, Tlicho Government. I just want to agree
2 with --with Gin -- Ginger when she said that this is a
3 steep learning curve.

4 Just reading over this technical
5 memorandum that was handed out, I had a chance to look
6 it over. There just wasn't enough time to read
7 everything through, but it -- it gave me a pretty good
8 sense, or understanding, of what co-disposal is all
9 about.

10 The article reads here:

11 "There are various forms of co-
12 disposal, depending on the degree of
13 mixing of the waste streams, and it
14 can be divided into three (3) forms."

15 And so you have co-placement, co-
16 deposition, co-mingling. And the article says, about
17 co-placement:

18 "This is the most common type of co-
19 disposal."

20 And co-depositions says -- it reads
21 here:

22 "This type of co-disposal has been
23 used in few mine sites."

24 And co-mingling:

25 "There are a few mines that have

1 adopted co-mingling."

2 So I was just kind of wondering -- I
3 just want to be clear in my mind, is NICO proposed to
4 use -- which --which of these three (3) forms is it
5 proposing to use?

6 MR. KEN BOCKING: Ken Bocking. We're -
7 - we're calling it layered co-deposition, which is the
8 second of the three (3) types.

9 If I can add here, I've been informed
10 that the undertaking to use -- to put in lysimeters is
11 in project description 3.14.7.

12 MS. MADELAINE PASQUAYAK: And I have
13 another question. Page 42. Can you tell me what "CIP"
14 stands for and what -- what is -- what is meant by CIP
15 process?

16 MR. KEN BOCKING: Ken Bocking. CIP is
17 -- it's an abbreviation for carbon in pulp. That's a -
18 -- that's a processing technique that they use to
19 extract gold. It uses cyanide. And I think that's the
20 -- oh, yeah, that's in respect to Musselwhite, yeah.
21 That's a -- that's a common technique to extract gold.

22 MS. MADELAINE PASQUAYAK: What did you
23 say CIP stands for again?

24 MR. KEN BOCKING: Carbon in pulp.
25 Yeah, I -- I should hasten to add that NICO is not

1 extracting gold on the sites. So there's -- there's no
2 -- none of that kind of processing at -- at NICO.

3 MS. MADELAINE PASQUAYAK: Well, I just
4 want to understand what it meant, and so thank you for
5 answering my question.

6

7 (BRIEF PAUSE)

8

9 MR. KEN BOCKING: Ken Bocking, of
10 Golder Associates. I -- I might not have fully
11 answered one (1) of the questions about stability or --
12 the concern was about the ground underneath it.

13 I -- I should add that when we did --
14 when we do a stability analysis, as -- as shown on that
15 section, we consider the -- the most susceptible
16 failure plane. And -- and that, in fact, does go
17 through the foundation. So that factor safety of 2.2
18 applies for a failure through the foundation as we
19 characterized it by doing the boreholes.

20

21 (BRIEF PAUSE)

22

23 MR. KEN BOCKING: Ken Bocking again.
24 As a clarification, on that section we had a strata of
25 glacial acrustian clay, till and bedrock underneath.

1 And the failure would -- would have gone through the
2 clay.

3 DR. GINGER GIBSON: Just a closing
4 comment from Ginger Gibson, Tlicho government. I think
5 I've made it -- we've made it clear that we are looking
6 forward to the future information on this. Those
7 pieces of information being already laid out. But, in
8 particular, also wanting to see the failure of -- modes
9 effects analysis and -- and perhaps asking the
10 Developer tomorrow whether you can commit to that.

11 Also, there was another thought
12 somewhere in my head but it seems to be late in the
13 day. All this technical reading has confused me. I
14 guess -- oh, the other thought was operational. I
15 raised a whole swathe of operational issues that, Ken,
16 that you didn't respond to. I don't expect you to
17 respond to them at this point. If you want to, you
18 can, but I -- I would expect that we should be looking
19 at very -- at -- at operational guidelines.

20 I know that you have them in the DAR,
21 but I don't think that they're dealing with all of the
22 conceptual issues that were raised in this report. So
23 I -- I expect we'd see more elaborated operational
24 guidelines to deal with many of those issues.

25 MR. KEN BOCKING: Ken Bocking. Yes, in

1 terms of the -- the CDF management plan, it's right to
2 characterize that as sort of a -- a preliminary thing.
3 It's -- it's not the operational monitoring and
4 surveillance manual that would be put in place for the
5 operations, which would be very much more detailed.
6 I'm -- I'm just looking at my list of your operational
7 issues. You were talking about fugitive dust.

8 When -- whenever you're running
9 equipment on tailings you're going to generate a little
10 bit of dust. Generally speaking, thickened tailings
11 are less susceptible to that than beached sandy
12 tailings. Generally speaking, we're going to be
13 dealing with tailings that are in a moist condition,
14 not very susceptible. But, as a contingency, if there
15 was a dust problem it would be very simple to just get
16 a water truck and -- and spray it down. And -- and
17 that wou -- should be in the operational management
18 plan.

19 THE FACILITATOR HUBERT: Chuck Hubert.
20 Just to -- to elaborate on that subject, I noticed in
21 particular with the Greens Creek example, and that's
22 Alaska coastal, which is a pretty damp spot. And they
23 mention on page 14, the second paragraph in 5.2.4 --
24 no, no, it's actually the -- just above that, the third
25 paragraph on that page. And it -- it talks about the

1 fact that contro -- controlling fugitive dust is -- is
2 a challenge during prolonged dry periods, particularly
3 under freezing conditions.

4 And if you can elaborate on that a bit.

5 MR. KEN BOCKING: Ken Bocking. Yeah,
6 that -- well, first of all, the context of that is
7 Greens Creek was running a filtered tailings operation
8 before they went to co-disposal. And the context is
9 that they had some problems with straight deposition of
10 filtered tailings, one (1) of them being dust, which I
11 would expect. And freeze-drying is a well-known
12 phenomenon that does lead to dust.

13 Another one (1) they also mentioned,
14 erosion and so on, and trafficability in the wet
15 conditions. And I think, although it isn't actually
16 stated in here, I'm reading between the lines, that one
17 (1) of the -- one (1) of the benefits of going to co-
18 disposal is to mitigate all three (3) of those
19 problems. In other words, they could put down -- by
20 mixing rock and tailings it's less susceptible to
21 dusting and they're going to gain more trafficability
22 and -- and reduce erosion.

23 But it -- it does remain that at NICO,
24 al -- although in many respects it's going to be better
25 than a conventional tailings situation for dusting,

1 there will -- there may be times and places when dust
2 can arise. And then they would have to deal with it on
3 a contingency basis by applying moisture, I would
4 think.

5 MR. KEN DE VOS: Ken De Vos. If I can
6 add to that. I mean, I think there's -- there's also a
7 large difference between filtered tailings and the type
8 of tailings that we'd be producing here. You know, a
9 filtered product is -- is generally a very, very fine
10 grain product as opposed to ground product, which is
11 like -- is -- is going to be produced at NICO.

12 THE FACILITATOR HUBERT: Thanks very
13 much. And I'd just like to mention that there's -- to
14 all parties here that there's a lot of expertise
15 sitting at the tables around here and I encourage you
16 to -- to make use of them as -- as much as possible.
17 It's -- it's not often you get the opportunity for --
18 to -- to question these -- these -- not, of course,
19 that the people in the audience aren't as smart
20 necessarily as anybody else, but the -- the -- there's
21 specific expertise here that, if we could use it, that
22 -- that's excellent.

23 MR. KEN BOCKING: Chuck, it's Ken
24 Bocking. One (1) of my colleagues pointed out that
25 something I said earlier might have inadvertently

1 misled people. I was talking about the water coming
2 out of -- in -- into NICO being reduced perpetually.

3 That -- that's correct, but the water
4 flowing out from the open pit into -- ultimately into
5 Peanut after a hundred and forty (140) years, that re -
6 - represents an increase in the flow to NICO. Sorry.
7 Sorry. I did misspeak again.

8 No, the wa -- the overflow water would
9 be directed into Peanut and, therefore, it would be an
10 -- it would represent an -- a small increase in the
11 flow to Peanut.

12

13 (BRIEF PAUSE)

14

15 DR. GINGER GIBSON: Ginger Gibson,
16 Tlicho Government. I have no longer have -- I have no
17 attention span left. I -- I have to leave.

18 THE FACILITATOR HUBERT: Com --
19 completely understood, but it was -- I should note it
20 was Tlicho's idea -- Government's idea to have this.
21 And -- and I hope you feel you've benefited from it, as
22 I think it was -- it was a good idea.

23 DR. GINGER GIBSON: We want to thank
24 the Developer for meeting with us and Golder Associates
25 definitely for being available to discuss this. And

1 we're really grateful to you for showing your expertise
2 and -- and also grateful that our colleagues are here
3 asking questions. Mahsi cho.

4 MR. KEN BOCKING: Ken Bocking. Thanks
5 for the opportunity and -- and I have to say that we
6 had a strategy. When we produced the document it was
7 to make it really long and to wear you down. For the
8 record, that's a joke.

9 THE FACILITATOR HUBERT: Thanks for the
10 clarification. If -- I -- I'll give parties in the
11 audience a final opportunity to formally ask questions
12 and -- and perhaps the -- Fortune and their team might
13 be available for private chats off the record as well.
14 But a -- a final off -- offer before I close the
15 meeting.

16

17 (BRIEF PAUSE)

18

19 THE FACILITATOR HUBERT: Okay. With
20 that, we look forward to you all bright and early at
21 nine o'clock tomorrow to start off with closure and
22 reclamation and -- and socioeconomic issues as well.

23 Thanks very much everybody for coming.
24 I'd like to thank Wendy for taking transcripts. I'd
25 like to thank the now absent PIDO personnel. I'd like

1 to thank Shannon, Paul, and others from the Review
2 Board that assisted me. I'd like to thank Fortune once
3 again and their team for being here, and all
4 participants, all parties. Thanks for being here and
5 we'll see you all tomorrow at 9:00.

6

7 --- Upon adjourning at 4:17 p.m.

8

9

10 Certified correct,

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14 _____

15 Wendy Warnock, Ms.

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<u>1</u>	1:00 107:1,8	<u>2</u>	146:17	45 9:5 148:3
1 7:12 17:23	1:11 107:4	2 1:24 8:6	147:14	4th 125:2
31:21	1:46 132:16	29:23	156:17	<u>5</u>
36:4,8,24	10 29:21	36:10	163:5	5 7:3
42:12	31:18	48:18	<u>3</u>	13:20,22
45:22 55:5	48:19 52:1	49:16	3 1:24 12:6	48:18
57:12 59:6	60:21,22	55:2,6	17:19	95:22
62:11 63:8	90:14	59:6,10	22:15	104:17,18,
66:20	95:21,22	62:23 65:6	31:18	21 170:18
80:20	101:9	66:18	36:12 90:5	172:9
88:18	163:3	70:23,25	122:15	5.2.4 179:23
93:21	10:10 52:7	72:3,7	136:24	5:00 108:1
95:17 98:9	10:30 52:8	74:25	141:16	129:12,18
100:15	106 7:20	78:11	158:17	50 131:4
103:23	10th 125:4	85:18	160:6,11	150:12,16
105:14	11 6:8	96:16 98:8	165:23	165:7
106:2,9	11:51 107:3	132:24	168:10	50s 57:15
108:10	12 107:8	136:15	175:14	<u>6</u>
110:7	120 104:5	149:10	176:4,8	6 17:24
113:18	124 6:13	151:6	180:18	46:19
114:19	126 6:16,18	170:18	3.14.7	95:22
115:2	12th 8:15,16	172:3	176:11	141:9
116:19,23	13 7:11	2.0 146:25	3.9 83:17	60s 58:22
129:13,16	135 6:20	2.2 146:14	3.II 145:10	60:11
138:5,11,1	14 179:23	177:17	3:00 131:10	<u>7</u>
8 139:5	140 182:5	2.5	132:17	7 6:3 45:4
142:3	15 52:4	117:16,19	30 147:16	59:19 63:1
144:3	59:11	20 93:11	300 94:5	141:10
145:2,3	93:11	107:22	3-50 83:25	7.2 25:3,8
146:18	101:9	146:17	37 149:22	7.3 45:4
147:13,14,	154:15	154:15	38 136:12	7.6 42:3
17 148:2	155:23	163:5	3D 27:25	7.8 45:5
149:11	163:4	200 88:14	<u>4</u>	7.9 45:5
152:23	15.2-1 18:18	2003 51:11	4 9:16 17:18	7-IV 82:7
156:15	160 164:24	2005 35:18	22:16	<u>8</u>
158:15	18 173:9,16	2010	51:10	8 1:23 6:5
161:12	184 6:24	16:16,23	104:5	46:17
164:15	19 90:14	17:11	112:16	<u>9</u>
166:5	113:21	18:2,23	146:18	9 17:18
169:11	1998 35:4	51:11	147:13,14	82:10
170:14	1st 16:16	2012 1:23	4:17 184:7	
177:11		21 6:11 23:6	40 60:1	
180:10,13,		21.2.3 23:7	400 127:1	
17 181:24		37:9	42 176:13	
1,500 29:7		22		
77:13		32:1,2,3,7		
1.1 147:5		25 107:22		
1.4 115:6,7				
148:2				
1.5 147:4				
1.7 147:17				

116:24	76:24	generating	48:20	153:10
9:00 184:5	absolutely	89:15	55:18	173:4
9:09 8:1	50:10	90:15,21	63:24	additional
90 165:1,6	75:20	149:24	82:6,11	29:2 30:16
97.5 117:18	academic	151:14	109:11	53:13,21
	142:6	156:23	139:13	54:11
	acceleration	162:24	actuality	80:22
<hr/>		163:5	64:1	101:6
A	146:23	acidic	actually	148:18
a.m 8:1	accept	91:12,24	15:7 17:15	address
52:7,8	160:23	92:10 99:7	44:12	43:16 48:6
107:3	161:2	157:4,16	50:10,14,1	108:5
AANDC 3:6	acceptable	158:8	5 61:2	168:5
26:21 31:3	42:25 43:2	159:3	73:12 75:3	addressed
43:14,20	85:15	acidity	77:20	20:10
44:1 54:21	129:21	91:2,11	80:22 93:5	45:11
72:3 79:23	access 87:21	92:4	97:2 103:2	47:5,19
80:4 86:20	168:7,8	101:9,11	109:11	addressing
130:21	accommodate	157:15,17,	112:12	42:9
133:17,19	21:13	18,25	124:24	adds 102:3
159:21	accomplished	161:15	125:18	adequate
ABA 162:8	43:3	164:3	126:23	35:24
abandoned	according	acids 159:10	127:14,15,	adequately
62:13	47:24	acknowledgem	16,17	34:18
abbreviation	68:22	ent 74:15	142:21	adhered 51:1
176:17	account 24:7	acronym	155:25	adhering
ability	34:9 37:22	113:3	170:10	76:5
26:25	40:11 91:3	acronyms	172:12	adjacent
47:20,22	146:3	120:8	173:7	23:10,15
78:8	achievable	across	179:24	172:6
101:24	37:8	137:21	180:15	adjourning
126:19	achieve 34:1	148:19	Adamczewski	184:7
128:5	75:7 76:9	acrustian	3:12	adjust 11:1
able 10:1,25	81:19	177:25	adapted	101:22
29:7 59:13	144:11,23	act 15:14,17	164:1	150:20
65:21 75:4	155:15	16:15,19,2	adaptively	adjustments
85:19,20	165:16	2,25 17:3	164:7	101:23
86:3 92:3	170:10	18:13	add 45:19	ado 21:4
124:11	acid	19:21	71:21	adopted
137:8	25:16,20	28:20	81:5,24	176:1
144:23	89:3 90:11	169:4	167:4	advance
150:6	93:6,23	active	176:9,25	42:22
162:23	98:10	161:25	177:13	advantage
Aboriginal	101:8	169:5	181:6	128:15
57:21	122:14	actively	adding	133:1
135:21	157:5,21	141:25	101:13	advective
absent	158:8,23	actual 10:23	addition	
183:25	162:15	12:10 17:2	31:11 76:8	
absolute	acid-		101:17	
			136:13	

154:18	20:25	algae 54:3	89:13,14	106:23
adverse	23:2,5	Allice 4:21	94:7	anticipate
69:15,16	37:10,13	10:3,8	analogue	65:12
153:4	74:16,19	allotted 9:5	144:18	163:2
advise 41:23	75:18	allow 54:14	analogues	anticipated
advisories	76:5,15,18	98:12	144:12	69:4 87:2
49:8	,23 77:25	allowed	analysis	110:8
AEA 3:25	161:3	129:16	50:22	anticipating
AEL 5:10	ahead 13:3	90:14	90:14	150:12
AEMP 75:25	20:6 35:12	alone 93:14	99:13,14	anybody
afer 52:1	52:16	already	100:17	51:20
Affairs	53:20	65:9,23	136:19	116:8
135:21	68:16	76:25 77:1	139:3	181:20
affect	136:8	115:4,14	146:3,13,2	anybody's
38:6,7	148:9	129:24	2	132:3
63:11 64:2	165:25	165:18	162:8,9,17	anyone 69:4
affiliated	ahti 61:21	172:19	177:14	anything
133:13	Aileen 4:8	178:7	178:9	23:21 42:9
Africa	air 9:23,24	alter 63:16	analyzed	45:7 51:15
143:10	88:22,23	alteration	95:23	67:6 71:21
afternoon	91:9 92:15	58:8 63:3	and/or	79:4 90:20
9:25	93:5,18,22	altered 62:2	170:23	109:18
107:21	94:2	alternate	Andrea 3:13	113:4,12
129:22	100:24	73:18	angle 147:18	128:17
131:3	151:21	alternative	animals 63:6	165:13
132:21	152:10	92:22	annex 25:6	anytime
133:11	153:21	alternatives	51:9	125:10
169:8	154:8,25	99:14	162:14	anyway 50:9
age 166:2	158:5	aluminum	annual	125:24
agenda 9:2,8	159:25	78:6	155:23	168:2
20:23	161:8	am 81:23	answer 11:7	anyways 60:6
21:6,9	170:6,23	amenable	18:16 25:2	anywhere
124:18,25	171:2	131:19	33:23 39:6	114:21
125:20	airflow	161:21	40:17	116:16
128:23	171:24	ammonia	73:13	apologies
129:2	al 5:14	77:17	82:3,16	126:3
ago 156:5	180:24	85:11,14	122:11	apologize
agre 68:13	Alan 1:13	98:18	136:3	172:18
agreeable	2:2	amount 29:5	137:23	APPEARANCES
132:2,3	alarming	62:8 89:8	145:2	2:1 3:1
agreed 9:10	58:21	91:9	155:8	4:1 5:1
16:2 68:14	Alaska	157:7,13,1	160:19	appended
81:15	179:22	4 171:24	answered	145:8
132:20	albeit 93:15	amounts	177:11	appendic
agreement	143:2	163:7	answering	46:15
	Alfonz 4:15	ample 28:24	answers 44:6	appendices
	algae 33:12		82:18	
	54:3			

46:16	64:1,6,20	165:1,4,19	assigned	135:1
Appendix	86:16	,21	85:2	140:18
25:3 42:3	108:7	166:1,10,1	assist	144:1
51:10 82:7	113:11	2,21 167:5	107:24	147:12
applicable	124:17	art 72:18	140:10	151:5
149:3	125:14	arteries	assisted	153:12
172:22	ARD 99:1	62:12	21:8 184:2	162:2
applicables	area 10:21	article	assisting	167:4
111:22	11:11,12	175:10,16	8:12	177:10
applied	19:9,13,22	articulated	associated	182:24
33:8,15	20:8 43:24	76:15	61:24	Association
38:18	47:10,12,1	Ash 2:17	90:22	147:2
39:14	5,16	35:14	120:18	assume 30:5
81:13	48:18,24	36:9,22	139:25	33:5
141:4	59:4 61:16	134:23	Associates	151:2,18
applies	62:9 63:5	aspect	25:1	assumptions
15:14	66:23,24	161:12	27:9,20	38:9,14,18
177:18	100:23	170:11	30:3,24	98:15
apply 80:6	116:7,15	aspects	32:16	assurance
144:23	154:7	72:22	34:25	163:18
applying	159:19	121:7	35:15	assured 24:6
181:3	160:2	assemblages	36:23	attempt
appreciate	areas 44:3	37:24	37:18	42:23
37:19	48:12,14	assess 72:20	40:17	attendance
149:5	49:9 52:25	81:1,6	41:5,20	130:18
154:2	63:10 65:7	95:14	42:2,18	attention
appreciated	79:17	assessment	43:5 44:25	83:17
43:14	89:13	7:4 8:11	45:18	149:22
approach	119:22	12:5,11,12	51:6,19	182:17
25:11,12,1	152:13	,15 13:23	80:13	audience
5,17,21	166:19,20	20:1 30:4	81:4,23	20:17
33:8,15	173:6	32:24	83:2	131:12,20
53:24	aren't 14:20	33:20	84:11,22	181:19
98:12	49:11 86:1	38:3,10,12	86:10	183:11
appropriate	117:10	,25	87:6,19	augmented
24:15,23	145:6	39:19,20	88:12 89:1	93:6
45:16	149:19	40:19	90:4,24	Australia
70:11,14	181:19	41:1,9,21	92:18	143:11
71:17	argument	42:19 43:8	95:19	149:25
105:4	155:6	44:8,9,11,	96:11,18	automaticall
approximatel	arise 155:4	13,19	97:2 101:4	y 152:1
y 88:14	181:2	45:2,11	109:10	avail 82:20
aquatic	arrived 39:1	47:3 48:6	110:21	available
32:22 33:7	arsenic 44:3	50:1 51:2	111:11	15:3 42:21
35:1,12	91:22,24	56:12,16	112:1	44:16
38:25 39:3	92:8	70:16,24	114:5	45:2,23
51:9 54:15	101:18,23	81:7,9,10	115:11	46:10 49:6
63:25	161:1	assessments	121:18	72:7 91:25
	163:22	56:14	133:25	
	164:2,23		134:2,10,1	
			8,20,22,24	

102:17	balancing	19:24	becoming	173:10
105:11	28:11	24:22	49:15	bench 127:11
182:25	158:1	25:14	145:16	beneath
183:13	banks 61:25	32:4,10	bedrock	89:16
avoid 48:15	Bar 81:3	35:6 38:13	168:15	benefit
avoidance	bark 61:11	69:13 77:5	177:25	22:18
47:20	barometric	78:14	Beers 5:24	166:16
48:11,17,2	172:13	82:13,22	beg 19:11	benefited
0,23	barometrical	86:2,12	begin 11:22	182:21
49:7,9	ly 152:7	108:18,20	21:15 75:9	benefits
avoiding	153:19	109:12	132:24	70:12,18,2
47:15,16	barrier 89:6	110:6	Beh 5:12	0 99:17
away 8:14	Barry 3:7	133:9	48:13	100:8
14:21 15:2	26:20	baseline	50:19	101:14
38:21 59:2	27:16	20:9 33:10	54:18	180:17
75:14	28:2,9	34:16	136:23	benthic 53:6
103:16	29:13	35:2,3,16,	behalf 26:21	berms 143:8
155:4	30:3,15	19 45:22	57:1	best 21:12
172:9	31:4 32:16	46:2	behave 94:22	65:14
173:25	33:22	51:8,9	173:17	69:6,25
awful 10:5	34:12	53:13	behaves	76:16,24
Azzolini	36:2,16	54:11	94:21 95:1	88:12
3:25	37:5,18	basically	behaviour	131:19
135:14	39:5,12,24	55:2 64:18	94:8,12	144:22
	40:8,17,25	85:7 88:13	Behchoko	165:22
	41:16,20	100:24	21:17,23	better 50:15
baby 143:19	42:2,7,23	105:2	22:3 58:16	68:23,24
back-	43:6	130:6	59:15	69:2
calculate	45:9,18,21	150:2	60:14,24	71:11,19
82:21	46:3,14	168:8	65:6	102:6,7
backed 49:12	54:23	basis 35:24	behind 14:22	116:22
backfill	55:19 72:2	66:5 84:13	59:24	123:16
168:18	74:11,25	181:3	102:5	152:19,20
background	80:3,18,21	beached	136:18	154:4
30:10 32:3	81:4,8,23	179:11	bel 104:15	155:7
38:5,19	82:17	bear 18:5	belief 47:17	172:3
78:8	83:6,16	57:19,20,2	believe	180:24
130:24	84:8,11,15	2	36:12	beyond
backup 73:1	,22 85:23	bearing 63:6	108:1,8	64:21,24
Baines 135:8	86:17	bears 44:15	120:4	67:6
Bains 5:15	126:17	beaver 63:5	126:19	100:16,18
balance	127:20	beavers 62:3	128:4,8	129:12
96:3,5,6,2	128:10,19	became 97:13	131:25	bi 49:19
0	Barry's 51:7	116:22	132:10	bigger 58:7
balanced	base	become 40:12	147:5	biggest
28:12	27:12,21	88:7 102:1	156:4	77:11
	157:9	becomes	160:16	Bill 2:14
	based 7:7	101:25		
	12:16 14:3			

bio 55:9	31:1 35:10	body 64:24	26:9,18	164:15
biota 33:11	41:13 43:2	83:13	27:6	bringing
34:10 35:5	44:20	bond 97:2	28:7,16	131:6
55:9	50:18	booklet	29:11	broad
biotic 37:23	52:11 56:4	17:9,13,15	32:13	26:13,16
42:13	63:23	borders	34:3,22	74:19
birds 7:5	65:25	64:21	36:20	broaden
12:6,7,13,	66:8,15,16	boreal 18:11	37:3,15	52:25
23 13:25	68:21	boreholes	40:3,14	broadly
14:16	69:18	114:25	41:25 46:6	141:20
15:3,14	70:3,22	168:6	53:3,16	Brodie 3:9
17:18,24	71:24	177:19	56:7	11:5 86:19
110:11	77:24	born 58:25	80:1,10	87:14,24
111:18	78:16,21	bothered	82:25	88:19
bit 52:4	107:7,13	60:2	83:10	89:23 90:8
66:21	108:15	bottled	84:1,19	92:11
100:5,12	109:14	165:24	86:7 96:25	93:16
115:5	110:1	bottom 52:20	98:4	95:7,25
120:10,19	125:5,8,20	136:24	102:20	96:13,19,2
123:16	131:22	boundaries	105:7	0 97:16
132:22	135:3	69:10	110:18	104:20
133:12	184:2	82:12	113:14	105:13
141:12	board's	bra 32:3	114:16	130:20,21
148:24	66:25 79:1	break	115:23	131:5,15
151:22	Bocking 2:21	43:9,20	120:13	133:16
164:11	87:5,18	52:2,4	125:16	148:10,21,
167:18	88:11 90:3	104:19	128:1	22 152:3
168:14	92:17	106:24	129:4	154:21
179:10	95:18	115:11	132:6	169:20
180:4	96:10,17	132:21	133:4	brother
blackbird	97:1 122:1	136:20	143:23	116:23
7:7 12:24	134:1	166:13	145:22	brought
14:3	140:17	172:13	147:9,21	74:11
blending	143:25	breaking	168:22	139:20
141:25	144:25	166:18	171:6	Brukung
142:7	145:24	breathe	174:23	143:11
143:13	147:11,23	152:7	177:7,21	Bruno 4:4
BLM 45:12	153:11	breathing	182:13	brush 14:25
blooms 55:12	155:9	153:19	183:17	buffer 76:12
blue-green	156:15,17	breeding 7:5	bright	105:1
54:3	161:11	12:5,12,22	183:20	buffered
board 1:3,12	167:3	13:25	brine	161:16
5:22 8:12	171:22	Brett 3:20	7:14,15,20	buffering
9:21	174:2	135:2	72:22	101:11
13:2,12	176:6,16,2	BRIEF 15:11	105:19,20,	157:14
17:12	4 177:9,23	16:9 20:19	23	build 67:3
20:22	178:25		106:12,13,	103:8,13
21:12	180:5		17 127:17	140:8
24:7,9	181:23,24		bring 58:19	
	183:4		70:13	
	bodies		83:17	
	119:25		141:2	

146:3	Cam 134:21	caribou 10:3	119:3,5,17	142:11
159:16	Cameron 2:23	18:11	120:6,20	145:5,24
building	134:21	19:14	127:7,19	150:24
14:23	Canada 4:10	123:18	129:11,18	153:13,20
142:18	11:23	Carlo 2:12	130:7	155:19
173:8	15:15,18	45:13	145:8	171:23
built 14:20	19:19 47:5	carry 38:12	155:17	172:23
15:9	50:8 51:1	161:25	165:16	173:10
59:17,18	56:11	case 22:4	167:6	Certificate
61:4	70:13	32:8 90:9	168:4	6:24
71:18,19	110:4	107:15	179:1	Certified
72:6 76:12	111:8,16	120:5	CDFs 9:19	184:10
97:15	112:15	122:1	119:20	cetera
102:15	113:6,17,1	129:8	122:25	100:3,25
104:5,6	9	133:10	cell	149:13
137:2	117:21,22	138:5,8	24:14,23	173:6
163:8	135:19	140:1	25:5,6	cha 38:15
166:8	Canadian	141:10	26:7,12	chain 40:12
bullet	12:3 147:2	142:11,15	88:16	41:3 42:9
149:22	cancer 22:6	143:3,8	101:16	Chair 30:20
150:1	cap 169:10	151:15	152:2	41:23
bunch 59:20	capable	172:21	cells 14:23	42:25 43:6
Burke	32:10	cases 31:10	25:9	74:4
36:3,10	capacity	168:13	88:4,14	80:14,21
39:14,16,1	67:4,9	catch 59:13	102:15	challenge
7,22 80:25	89:14	catcher 7:6	139:14	180:2
burned	101:12	12:24 14:2	143:5	chan 165:25
118:15	157:14	catching	154:6	chance 63:15
Bye 132:14	capture	60:2,4	cellular	130:22
byproducts	27:23	cause 22:7	143:4,6,10	131:11
110:16	36:17 39:7	152:10	,14	175:5
<hr/>	62:14	caveat 104:3	centimetres	change 54:2
C	169:18	CCME	95:22	70:11
cabins 62:19	captured	31:6,8,9,1	Cerro 142:24	78:6,8,18,
cake 158:4	34:14	1,14,16,22	certain	19 86:3
calcium	capturing	,24 33:9	56:20	108:11
108:22	53:25	78:14	68:25	110:6,13
calculated	137:18	CD 121:13	81:14	111:3
82:7,13	carbon	CDA 147:2	148:18	165:3,25
calculation	176:17,24	CDF 10:19	172:9	173:13
156:8	carbonate	11:13	173:21	changed
calculations	157:23,24	25:14 27:1	certainly	78:17
31:15	care 57:7	28:24	37:18	108:20
101:6	76:11	87:11 90:6	49:3,23	109:6
calendar	169:24	93:9	51:16 66:1	changes
54:14	carefully	107:24	79:14	38:1,16,23
	160:16	111:4	81:10	,24 63:10
		114:23	90:6,10	64:6
			98:20	
			117:22	

65:13,16,2 2 69:11 77:4 110:6 chapter 23:6 characterist ics 33:6,10 characteriza tion 35:25 characterize 36:5,24 94:1 179:2 characterize d 34:19 177:19 characterize s 36:14 Charlie 2:15 134:5 chats 183:13 chatted 126:11 check 46:23 48:10 73:7,11 chemical 33:5 100:3 120:21 122:4 chemicals 118:5 chemistry 33:10 34:11 37:23 38:2 122:19 Chief 4:15,16 21:16,17 37:9,19 47:13 56:18 57:1 59:7 74:20 126:18 136:25 138:3 Chisholm	5:24 chloride 108:22 cho 63:21 183:3 Chocolate 116:1 135:11 choking 55:21 choosing 162:20 chose 31:20 33:25 Chuck 1:14 2:3 9:14 13:1,18 20:22 30:24,25 35:9 40:21 41:11 43:2,11 44:25 50:17 51:6,13,19 52:10 54:17 56:3 63:22 74:6 84:9 103:10,18 107:7 109:25 125:19 130:20 179:19 181:23 CIP 176:13,14, 16,23 circle 48:17 claim 160:24 161:3 clarificatio n 11:6 14:14 53:12 80:23 177:24	183:10 clarify 13:11 15:6 76:4 80:4 84:4,16 85:5 103:21 108:9 109:15 111:16 112:15 clarifying 79:8 109:17 149:8 clarity 87:15 96:14 111:21 Clark 5:20 classed 139:2 classified 90:5 158:20,21 classify 137:13 clay 146:5 177:25 178:2 clays 168:14 clear 109:18 118:3 130:5 155:1 176:3 178:5 clearly 76:20 154:17 Cliffe- Phillips 3:19 64:12 66:6,7 Clifford 4:16 21:16 climates	141:8 close 113:10 117:13 127:17 148:4 183:14 closed 143:12 closely 118:9 closer 140:15 closing 178:3 closure 69:9 73:17,21 74:4,5,8 77:10 83:20 98:19 121:8 130:18 155:21 167:15,19 169:1,9,19 ,22 183:21 clover 155:21 Cluff 4:5 co 14:17 77:8 87:16 120:8 121:1,18 131:13 132:22 138:15 141:6,12,1 9 142:17,19 149:14,23 170:14 175:11,15, 18 180:17 coarse 142:11 coastal 179:22 COBALT-	BISMUTH- COPPER 1:6 co- deposition 141:23 142:25 143:14 176:7 co- deposition s 175:20 co-dis 113:24 co-disposal 6:20 10:16 14:15,25 15:4,8 68:8 77:7 86:21 88:5 92:22 99:15 107:13 110:9,14 120:6,18 121:3,7,19 122:20 133:8 135:23 136:7,22 138:11,17 139:5 140:4,22,2 5 142:16 149:7 150:24 152:7 154:3 159:13 160:20 166:8 170:1 175:8,22 180:8 co-disposed 146:6 149:12 coefficient 146:21 coffee 132:10,25
---	---	---	---	--

cold 141:8	159:8	commitment	154:3	90:16
colleague	160:20	52:23 54:8	comparison	99:20
144:1	161:15	103:10,15	31:16	136:22
147:12	162:3	145:14	compilation	150:24
159:21	163:22	161:23	21:8	152:18
colleagues	182:1	174:11,18	complete	conceptual
181:24	183:23	commits	9:11	178:22
183:2	co-mingle	54:10	completed	concern
collect	150:4	common 7:5	41:23 73:8	17:21,22,2
161:18	co-mingling	12:23 14:1	completely	5 18:7,10
collected	142:4,9	95:20	62:4	22:20
55:4	143:11	175:18	103:15	23:25 41:3
collecting	149:7	176:21	151:17	44:3 77:11
65:15	153:2,6,7	communicatio	155:11	116:10
121:3	175:16,24	n 49:10	182:19	117:10
167:11	176:1	communities	complexity	118:4
collection	commencing	22:12,16,1	102:3	139:25
90:7	8:1 107:4	8 24:3,8	compliance	177:12
167:11	comment	59:6,10,23	15:17 67:3	concerned
168:7	55:23	,24,25	component	21:23
collectively	74:14,16	62:18,21,2	105:4	85:25
140:14	77:25	3 63:24	composite	119:3,10
com 10:12	78:20 86:5	67:1 72:4	144:13	124:13
182:18	94:4 98:16	community	composition	140:22
combined	99:10	22:1,13,16	110:15	concerns
115:8	100:15	23:24	157:4	24:13
combining	105:14	58:24,25	concentrate	86:24
115:4	150:10	59:1,2,12,	112:11	123:21
comes 22:20	152:5	15	126:25	136:21
44:8 60:25	169:7	60:3,16,23	127:5,10	149:19
61:1 79:4	178:4	,25 61:4	concentratio	162:3
83:24	commented	62:24 64:2	n 31:21	conclusion
90:24	105:14	67:9	62:12 78:6	39:1
121:1	172:19	116:10	101:17	151:1,8
160:9,14	comments	117:7	114:6	158:3
coming 8:15	10:12 24:6	community-	167:8	conclusions
9:16 13:6	26:23	specific	concentratio	38:13 45:4
29:6 33:4	29:24	72:5	ns 38:20	concur
55:11	37:19 52:3	companies	83:8,15	149:13
67:25	64:9 73:2	118:10	108:24	169:7
72:25	148:13	Company	109:12	condition
75:14	149:5,14	136:19	110:8	28:22
84:17	170:3	155:4	111:22	154:4
98:18,21	commissionin	comparable	127:18	167:10
102:16,18	g 172:24	171:25	concept	179:13
107:20	commit 73:5	compared	64:22	conditions
111:4	75:22	154:20	88:13	30:10
121:2	76:16	comparing		34:10 38:5
	106:5			89:19 99:3
	178:10			127:23

146:4,15 165:6,24 180:3,15 conduct 94:16 conducted 35:16 36:10 39:1 41:2 56:17 conduits 170:22 confer 108:23 conference 122:14 conferences 122:13 confident 29:5 162:19 confidently 119:24 configuratio n 155:16 configuring 154:5 confined 158:6 confirm 41:6 43:5 104:1 114:5 confluence 39:13,17,2 2 confused 81:18 85:6 178:13 connected 88:9 153:25 connections 171:17 conservative 38:18 97:23 consider	13:12 27:9 30:16 50:24 100:6 164:16 177:15 considerable 77:1 165:18 consideratio n 55:18 56:14 59:9 consideratio ns 100:20 considered 17:17 32:25 58:12 74:22 90:15 95:5 121:6 173:2 considering 16:18 128:25 151:20 consistent 19:3 33:9 constitution ally 23:5 construct 97:11 168:16 171:15 constructed 154:23 159:9 construction 14:25 20:5 69:9 83:20 84:23 88:4 90:17 97:12 139:14 167:6 168:4 170:1,20 consultant	129:25 consultants 43:15 135:9 Consulting 133:17 134:12 contact 33:5 121:1 contain 27:1 58:5 165:22 contained 101:16 containment 27:12 contains 157:24 contaminant 49:8 contaminants 40:11 48:3,4 110:9 171:3 contaminatio n 47:17 50:3,13 59:3 60:11 65:14 cont'd 3:1 4:1 5:1 content 87:10,13 92:5 138:10,17 150:4 158:18 162:17 CONTENTS 6:1 context 64:3 75:12,13 150:11 180:6,8 contingencie s 145:12 contingency	28:10,14,1 9,20 29:2 96:21,23 97:2,11,22 98:1 103:6,23 104:2,13,2 2,23 105:3 179:14 181:3 continue 14:12 50:19 52:12 72:9 108:2 119:13 163:16 166:1 continues 167:20 Continuing 31:3 continuous 88:1,8,17 119:14 170:22 contrast 169:12 contribute 75:10 contro 180:1 control 88:22,23 controlled 150:16 controlling 171:3 180:1 convection 93:4,13 154:25 convective 154:12 conventional 92:23 102:8 146:2 152:19	180:25 convince 170:25 Cookies 132:11 copies 75:2 107:18,23 120:4 123:21 131:25 co-placement 143:4,6,11 149:7 175:15,17 copper 31:19,21,2 5 32:4,6 33:18 42:14 44:3 copy 46:11 123:17,19, 25 corner 67:14 correct 17:6 36:23 39:8 46:4 51:2,4 53:14 64:14 80:8 87:19 92:12,18 96:18 103:1 109:10 118:2 126:20 128:11 151:16 182:3 184:10 corrected 40:6 correction 40:9 correspondin gly 170:7 Corvo 142:17 COSEWIC
---	---	--	--	--

18:12	82:21,23	cutoff	69:22	dead 100:19
cost 59:9	83:5 85:1	158:18	83:17 85:7	deal 10:14
101:25	96:22	160:11,12	87:25	41:17
costing	97:18	168:17	97:20	44:21
73:19	123:6	Cutten 4:3	108:16	85:13
costs 73:21	critters	CWS 16:3	114:2,11,2	117:4
101:21	52:20 53:1	cyanide	2 115:15	170:19
couple 11:18	cro 149:2	111:24	145:9	178:24
25:2 42:10	Croft 4:4	112:10,12,	146:1	181:2
44:3 96:1	cross 114:25	16,23	161:23	dealing
99:9	crossover	176:19	174:3,11,1	60:2,13
108:22	35:11		9 178:20	67:2 68:21
110:4	108:5	<hr/>	data	92:8
129:10	cross-	D	24:13,14,1	178:21
148:8	section	dad 118:14	9,21,23	179:13
170:2	88:1	dam 147:2	25:3,5,6	dealt 60:4
173:23	cross-	168:1	45:22	Dean 4:5
course 35:16	sections	damage	46:1,9,20	deaths
75:8 98:9	146:2	118:6,18	51:7,8,10	22:6,8
131:22	crowd 129:7	Damian 2:24	55:6 65:15	debrief 75:4
153:17	crush 166:13	13:4,17	100:14	DeCarlo
154:11	crushing	15:13	102:17,24	134:13
164:6	166:17	16:24 17:7	158:17	decide 15:24
166:12	cu 167:25	18:17,20	160:11	decision
167:10	cubic 29:7	19:2,18	162:10,11	68:16
181:18	77:13	damming	163:4,13,1	97:10
cover 15:7	cup 116:16	138:7	4 164:11	dee 60:19
41:2 91:5	curious	damp 179:22	day 1:24 6:5	deep 36:11
92:25	58:10	dams 90:7	8:6,23	46:18
153:3,8,14	current	168:7,10,1	22:9 29:7	deer 60:20
,15,16,17	18:25	6,20	77:14	defer 74:7
155:10,11,	109:2	Daniels 4:16	126:13	defined
12,20,21	128:23	21:16,17	178:13	25:21
156:13	currently	37:9,20	days 13:6	141:16
covered	17:16 45:2	47:13	De 2:12,18	definitely
171:25	76:12	56:18 57:2	5:24 24:25	46:20
create 57:5	159:9	59:7 74:20	27:8 88:25	69:19
61:11	165:5,8,10	126:18	90:23 94:3	182:25
170:21	171:20	136:25	101:3	definitions
created 59:6	currents	138:3	110:20	69:23
60:11	93:4	danish 55:21	111:10	definitive
Credence	154:12	DAR 12:4,10	121:17	103:22
2:25	curve 136:11	16:16	133:24	degree 81:15
Creek 142:19	139:18	17:23	142:24	87:2,3,23
179:21	175:3	18:1,20	144:16	92:19 94:1
180:7		19:3 27:25	151:4	
creeks 60:22		39:21 41:7	156:2,16,1	
criteria		45:4 46:11	8 162:1	
		67:23	171:8	
			173:18	
			181:5	

175:12	95:12	99:11	122:7	36:10
degrees	110:13	100:16	Developer	52:24,25
147:16	141:8	103:22	12:14	55:11
148:4	175:16	144:21	13:15	72:21
deh	180:9	152:21	21:24	81:17
60:19,20,2	depositional	157:13	22:19	122:18,19
1	88:3	164:9,10	23:17	141:16
delivered	depositions	171:12,20	74:14	149:6
60:9	170:19	174:17	76:9,16,19	150:5
demonstrate	depository	designed	178:10	162:18
65:16,22	60:15	144:21	182:24	163:2,7
128:15	depth	147:6	Developer's	171:19
141:2	156:7,10	158:3	23:23	differently
demonstrated	168:15	Det 62:25	76:20	69:4
144:15	derivation	detail 162:5	developing	141:18
DEN 156:18	32:18,25	174:6,17	19:25	difficult
Dene 5:5	37:6	detailed 7:4	39:25	142:13
densities	42:5,12	12:15	development	162:4
12:9	derivations	13:23	14:15	difficulties
Denver	42:8	40:18	58:5,14,18	102:1
127:11	derived	41:21	59:16,19	difficulty
Department	31:12	42:19 43:8	61:17,18	69:7
66:17	33:15	45:1 73:8	75:12	diffuser
depend	39:16	81:6	116:7	82:8,12,13
121:21	describe	172:16	developments	,22 83:24
depended	57:17	179:5	117:11	84:5
63:5	142:15	details	dewatered	diffusion
dependent	166:4,7	98:15	138:14	89:6,19
89:3,9	167:1	100:13	DFO 3:16	91:6 93:2
171:12	described	141:9	124:15	95:2
depending	9:8 124:18	Detayto	di 47:22	151:20
44:8 90:13	describing	62:25	dialogue	152:8
122:23	153:1	detected	49:24	156:6,7,10
175:12	description	12:7,8	75:10	dig 44:12
depends	7:2 110:8	determinatio	79:18 86:2	46:12
13:14	174:14,19	n 44:21	125:10	161:5
depleting	176:11	74:22	died 116:24	digest
93:21	desicates	determine	117:7	130:23
deposit	151:10	10:23	diet 47:22	digress
149:16	desiccated	32:22	differ 19:12	154:22
deposited	150:3	160:15,18	difference	dike
87:6	design 10:19	determined	18:15	14:19,22
depositing	25:14,19	10:22 30:9	78:10	88:17
88:15	55:18	develop 10:1	181:7	146:16
deposition	73:1,8	developed	different	147:25
	75:25	17:4 18:22	18:1	153:24
	82:8,13	27:22 34:7	25:22,23	154:1
	86:11 97:3	120:25	27:24	171:24
				172:6

dikes 90:6 142:18	disconnect 154:6	109:19 136:17	136:11 137:12,21 140:20 148:23 149:20 169:8 183:6	65:21 108:17 109:1 111:3 163:24 164:25
dilute 127:16	discontinued 79:17	disposal 14:18 77:9 87:17 113:25 121:2,13,1 9 131:14 132:23 138:16 141:7,13 149:15 170:15 175:12,19 180:18	documentatio n 26:22 51:24 documents 75:1 Dominican 142:24 done 7:14 8:25 27:17 28:14 35:18 52:19 65:1 69:25 71:15 72:21 94:5,6 102:9 105:20 106:12 118:8 119:18 121:11 122:19 131:2 136:19 139:1 162:7,13 173:22 174:8	downward 95:16 downwards 94:20 doze 92:24 dozer 139:9 dozers 142:22 Dr 3:21 4:20,21 43:22 44:25 47:2 49:2 50:23 52:17 53:9,14 54:20 56:9 67:18 71:24 74:9 76:2 77:21,23 79:11 102:13 108:8,14 109:10,13 130:2 133:22 136:9 143:17 148:15 158:11 166:3 168:24 178:3 182:15,23
dilution 82:20	discourse 70:23 71:1			
dip 116:16	discuss 50:14,20 74:5 100:12 103:14 130:18 182:25			
direct 24:22 51:20 169:22				
directed 182:9	discussed 16:5 81:21	disposed 90:5		
directly 11:19 24:14 27:11 33:18 75:15 112:15 172:22	discussing 21:18 66:12 70:17,18 169:4	disposing 102:6		
dis 48:23 169:2	discussion 7:13 19:13 20:23 28:10 29:14 44:15 49:4 52:13 63:23 67:21 70:15 71:18 80:4 105:19 106:11 130:21,25 133:9 137:16 141:11 145:11 153:10 169:3,22 172:19	dissolved 31:25 32:4		
disadvantage d 124:4		distance 89:18 172:9		
disagreeing 171:9,16		distinction 127:4		
disappeared 62:4		distinctly 150:5		
discharge 28:23 29:8 30:13 77:13,14 83:7 114:7 122:10 123:5,13,1 4 167:21,22, 24		distribution 7:8 9:21 12:17 14:5		
discharged 27:15	discussions 8:9 15:18,22 16:2 44:5,10 64:11,16 65:24 75:19,23 79:12 107:9,25	dive 115:21		
discharger 83:24		divided 175:14		
discharges 80:7		Division 133:19		
discharging 83:14 85:15		document 9:20 18:23 19:5 43:10 44:19,22 51:17 71:25 72:4,7,19 73:6 76:19 80:5 107:14 111:9,12 133:10		
			doorstep 68:1 double 31:23 doubly 106:21 doubt 158:20 downloaded 10:7,10 downstream 21:24 22:15,17 23:21,24 40:1 63:10	draft 16:17 drain 87:9,11 95:13 121:13 drainage 91:12,25 92:10 98:10,17 99:3

119:9,14,1 8,22 121:12 122:14,18 143:13 158:9 drained 14:21 dramatically 54:2 draw 56:10,18 140:1 149:22 drawing 61:2 drawings 87:25 drawn 45:3 drink 116:17 119:23 drinkable 117:24,25 118:11 119:21 drinking 75:16 116:24 dry 180:2 ducks 63:6 due 22:6 40:11 47:16 65:13 150:19 dump 92:23 94:25 101:7,11 dumped 147:15 148:3 dumps 99:21 during 8:16 20:6,9 21:10,11 35:16 36:4 54:2 68:24 70:15	71:15,16 83:19 84:23 97:13 98:21 121:7 125:10 167:10 180:2 dust 139:7 179:7,10,1 5 180:1,10,1 2 181:1 dusting 180:21,25 <hr/> E <hr/> EA 67:24 68:24 69:5 71:15 103:14 125:11 eagles 62:7 earlier 33:2 56:11 62:13 63:1 67:15 97:3 105:14 132:21 154:11,12 172:18 181:25 early 18:23 58:22 62:3 107:21 108:9 172:24 183:20 easier 100:2 easily 172:12 economically 76:10 ecosystem 34:15 64:7 EC's 110:7 edge 150:21	157:18 170:12 171:25 edition 17:11 educated 124:5 Edzo 58:25 ef 16:18 effect 16:22 32:22 69:15,17 91:20 150:19 154:10 effects 7:11 12:19 14:9 16:18 30:5,12 38:12 39:3,4 41:3,18 42:10 54:16 56:13 64:20 69:14,15 70:17,21 72:5 139:3 150:21 153:5,9 170:13 178:9 effluent 78:22 82:21,23 83:5 85:1 104:25 108:12,23 109:12 113:4 126:20 127:13,15, 23 128:8,13,1 6 efforts 50:3 77:1 153:2 Ehrlich 1:13	2:2 Ehtseke 60:17 eighteen 173:9,16 either 17:20 27:13 104:13 122:25 129:11 142:10 152:2 158:5 165:9 elaborate 120:9 174:10 179:20 180:4 elaborated 178:23 Elder 116:4 Elders 118:2 124:3,12 electronic 45:23 element 79:14 elements 50:25 85:19 87:11 160:9 Elsasser 3:23 else 41:14 127:8 148:22 181:20 emergency 28:25 employed 96:22 enable 72:4 enclosure 84:24	enclosures 170:4 encountered 71:11 121:22,23 encourage 50:18 94:10 125:9 181:15 endeavour 51:12 end-of-pipe 84:6,9 85:11,21 endpoint 104:25 engineer 137:18 engineering 140:9 engineers 10:20 English 60:17,18 124:6 ENR 3:12 ensure 41:14 79:2 153:4 enters 65:11 157:17 164:18 entire 15:7 75:18 101:10 152:13 entirely 75:13 entities 141:21 entity 144:19 entrained 40:12 entrainment 137:21,24
--	---	---	---	---

138:7	ERA 81:20	event 36:8	179:21	7:12 106:9
entry 90:17	erosion	53:24	examples	expansion
170:6,7	62:1,5	events	65:3,6	57:1
environment	180:14,22	138:23	123:8	expect 25:16
4:10 11:23	escalated	eventually	140:25	87:11
15:15,18	62:1	61:18	141:7	91:21
19:19	especially	everybody	144:3,5,7,	92:2,7
34:8,20	21:22 44:2	8:4,8,22	9,10	111:2,11
68:7,10	54:1 75:11	41:14	148:25	112:23
69:1,11	77:17	52:2,11	149:3	139:1
70:11	79:15	69:21	152:11,24,	149:18
81:18	160:10	106:22	25 153:14	163:21
84:14	essentially	107:7	excavate	178:16,18,
85:16	101:15	126:3	172:11	23 180:11
86:12,16	established	132:20	exceed 31:9	expectation
108:18	35:3	133:7	Excel	24:18
110:4	established	183:23	51:12,17,2	expectations
111:8,16	40:7	everybody's	0,23	16:17
112:15	estimates	132:2,25	excellent	expected
113:6	24:22 68:6	everyone	21:3	149:15
121:5,24	95:6	9:16 67:18	109:17	expecting
156:9	108:18	68:18	129:9	55:20
161:1	et 62:24,25	70:10	132:8	experience
165:9,18	100:3,25	71:7,9	181:22	10:23
166:22	149:13	148:22	excess	68:20
environmenta	173:6	161:22	157:20	expertise
l 1:2 8:11	Etedli 62:25	everything	167:13	181:14,21
20:1,4	ETF 128:6	109:3	exchange	183:1
70:15,17,2	eva 58:22	127:8	29:17,22	explaining
1,24	evacuation	164:6	30:1,7	166:15
153:4,9	58:23	175:7	32:11	expose
environments	evaluate	everywhere	70:12	166:18
30:13	33:14 38:4	24:1,2,3	Excuse 55:20	exposed
envision	evaluated	evidence	exist 62:21	127:8
170:21	30:11	19:23,24	existed 63:1	166:19
envisioning	evaluating	47:25	existing	exposure
171:20	32:21	exact 78:1	63:11	40:11
equal 165:9	evaluation	104:7	91:15	expressed
equations	28:13	exactly 10:6	140:5	118:5
156:6	38:24	41:2 76:23	142:20	extent 35:4
158:2	evaporated	174:15	exit 82:11	38:7 47:11
equilibrium-	96:14	example	exiting	142:2
based	evaporation	31:19	164:24	152:17
25:11,21	96:7,11	33:17	exits 65:11	159:22
equipment	165:10	68:13 82:9	expand	extract
179:9	evening 10:1	115:7	11:7,10	176:19,21
equivalent		142:17	EXPANDED	extracting
84:6		149:23		

177:1	131:1,8,21	factor	119:2	figures
extrapolate	132:8,19	146:14,24	fatal 99:13	96:20
152:5	133:6	147:3	fault 69:5	file
extremely	135:24	177:17	fear 21:25	8:13,16,19
73:22 97:9	148:7	factors	22:4 58:16	10:8,10
	174:9,20	150:19	60:12	files 68:21
	179:19	failure	116:18	fill 161:5
<hr/>	181:12	137:14	fears 57:10	filled
F	182:18	138:20	58:8,18	150:13,14
Facilitator	183:9,19	139:6	features	filling
1:13,14	facilities	177:16,18	100:17	14:23
8:3 11:16	120:7	178:1,8	February	filtered
12:20,25	121:19,20	failures	1:23 8:15	142:20
13:11,19	122:20	137:16,19	16:16	180:7,10
14:11 16:1	138:17	139:2	fed 60:16	181:7,9
20:11,15,2	139:14	fair 44:18	federal	final 10:14
1 21:3	140:4	69:24	17:17	45:22
24:5 25:25	141:6	148:24	18:7,10,12	167:19
26:5,15	169:10	164:11	23:3	183:11,14
30:21,25	facility	fairly 35:18	feel 25:13	finally 7:18
35:9 40:22	6:20 10:16	60:4 93:3	35:24	97:8
41:12	11:1 14:18	140:21	79:17	105:22
43:1,13	15:1,4,8	145:17	136:3	106:16
44:17 45:6	68:8 86:22	156:7	137:22	139:12
46:25	87:17 88:5	172:12	155:19	142:4
50:17	92:22	Faithful	161:4	findings
51:14,22	110:10,14	2:19	169:2	16:5
52:10	113:25	30:2,17,23	182:21	fine 20:14
54:6,17	120:18	32:15	feels 67:19	77:22
56:2,23	121:2,3,7	34:5,24	felt 24:15	130:3,9
63:22	131:14	37:17	127:18	148:12
67:12	132:23	39:11	152:24	181:9
71:23 72:8	133:8	40:5,16	FEMA 99:13	fingers
73:23 74:6	135:23	41:4,19	Fequet 3:22	153:25
75:17	136:7	42:1,17,22	feverishly	172:14
79:7,20	138:2,11,1	43:4 44:24	140:18	finish
80:16,19	6 141:22	45:17	fewer 143:3	136:11
82:2,15	152:7	51:5,18	field 60:5	148:11,12,
84:3	154:3	80:12	140:11	14
103:20	166:8	81:3,4,22	151:6	fire 118:16
104:12,17	170:1,15,1	83:1,12	fifteen 52:4	first 8:10
105:25	7	84:10,21,2	93:11	9:18 10:22
106:20	facility's	2 86:9	154:15	12:3 13:3
107:6	14:15	109:9	figure 96:5	18:16 23:8
109:16,25	fact 38:22	111:25		43:19
113:1,7	72:16	114:4,10		48:14
115:18	136:4	134:17		86:24
120:2	146:9	family		89:1,24
124:14	149:19	116:10,20,		
125:7,18,2	171:1	21		
4 126:8	177:16	118:13,17		
128:17,21	180:1			
129:6,15				
130:11				

96:4	27:17,21,2	8 115:16	28:19 31:6	131:18
101:7,22	2,24		41:13	133:9
102:24	28:11,12	food 40:12	43:14,17	forty 60:1
128:24	29:5 58:13	41:3 42:9	45:25	182:5
148:12,14	60:15,22	63:4	46:9,23	forty-five
155:5	61:6,14	foods 49:18	48:9	9:5
163:12	76:7,17	footprint	50:5,20	forum 66:13
180:6	78:3	7:10	51:4,23	forums 59:8
firstly	93:13,18	11:8,10	53:6,20	forward 8:9
74:16	142:3	12:18 14:7	54:8,10	11:17 16:7
fish 6:13	153:21	57:4,5	55:17	31:1 40:23
17:19	154:8,17	58:7 77:7	56:1,3	47:4
33:12 35:7	157:20,24	97:13,24	57:4	51:16,24
47:17 61:8	165:9	105:11	64:5,9	67:10
62:8	167:18	114:23	65:9 66:2	69:22 70:8
115:21	172:14	115:9	73:5,24	71:9 73:24
124:17,21	182:6,11	force	75:22	75:19,25
125:14	flowing	16:15,25	76:22,24	111:1
126:1	27:3,10	59:15	82:6 84:4	122:2
fisheries	61:13	forces 152:9	85:5 97:20	133:8
66:22	113:23	forest	98:12	136:8
75:15	182:4	118:15	99:16	139:2,23
108:6	flows 22:2	forever	100:11	141:2
124:23	26:24	22:24	102:23	163:19
125:4	28:3,22	forget 80:20	103:21	170:24
126:12	61:18 62:2	form 51:12	104:1	178:6
fishery	72:21 93:5	143:7	105:10	183:20
61:3,15,21	167:9	147:18,25	106:4,10	foundation
63:7	168:3	148:2	107:12,15	146:4
Fitzgerald	flushing	157:23	108:1,16	168:12,18
4:11 110:3	171:3	158:4,8	109:17,18,	177:17,18
111:7,15	flux 93:14	formal	22 111:13	frame 41:11
112:14	154:19	145:14	112:8,20	73:25
113:5	155:13	formally	120:6,9,16	framework
five 95:21	fly 7:6	183:11	125:1,9,13	66:20
104:17,18,	12:23 14:2	format 46:11	126:14,22	free 107:23
21 147:4	focus 149:19	forms	128:4,7	136:3
flag 44:7	follow-up	175:11,14	129:1,12,1	148:2
49:9	6:5 11:18	176:4	8,24	158:5
flags 49:17	27:17	Fortune 1:7	131:18	freely 148:3
flat 147:19	29:14 37:8	2:9 6:20	132:22	freeze 59:16
flip 49:22	42:10	7:3,12	134:4,6,7,	freeze-
float 131:9	79:23	9:10,15	14,15	drying
floor 15:8	109:19	10:18 11:9	135:23	180:11
79:21	113:21	13:1,22	136:14	freezing
flow 22:2	126:10	15:15 16:3	137:15,22	180:3
23:9,13,14	fond 118:16	17:23	149:3	fresh 57:13
,19	Fons 5:8	19:16	164:15	117:25
	113:16	24:11	174:13	
	114:8,13,1		183:12	
			184:2	
			Fortune's	
			86:15	

118:23	Gary 2:17	8:5	178:3,4	112:11
freshwater	35:14	geo 160:16	182:15,23	176:19,21
117:17,20	36:9,22	geochemical	Gin 175:2	177:1
friends	134:23	152:17,25	Ginger 4:20	Golder 2:16
116:20	Gas 135:5	159:23	43:22 47:2	3:3 25:1
front 152:16	Gavin 3:14	160:17	49:2 50:23	26:21
fruitful	general 6:18	geochemistry	52:17	27:8,19
44:15	12:12	25:7	53:9,14	30:3,24
130:22	18:4,5,9	geological	54:20 56:9	32:16
fugitive	35:23	163:1	74:9 76:2	34:25
139:7	86:23	geomembrane	77:19,21	35:14
179:7	90:10 96:2	153:15	79:11	36:22
180:1	123:1	Gerd 5:12	99:13	37:18
full 152:16	126:16	24:12	102:13	40:17
154:16	149:14	25:24 26:2	130:2,3	41:5,20
fully 16:20	generalizati	72:11	133:22	42:2,18
17:4 43:10	on 122:25	73:15 74:1	136:9,10	43:5 44:25
58:2 95:12	generally	98:6	143:17	45:18
177:10	12:5 36:14	100:21	148:15	51:6,19
function	72:16	105:14	158:11	52:22
162:16	78:12	172:17	166:3	80:13
funded 59:12	166:22	gets 70:19	168:24	81:4,23
funding 59:8	179:10,12	89:8 93:6	175:2	83:2
fur 63:6	181:9	123:24	178:3,4	84:11,22
furtherance	generate	161:8	182:15,23	86:10
72:2	72:5	166:21	Ginger's	87:5,18
future 24:18	123:23	getting	148:11	88:11 89:1
103:13	126:20	43:19 67:8	given 45:20	90:3,23
104:10	179:9	124:2	76:14	92:17
128:4	generated	162:5	79:15 88:5	95:18
136:17	32:5	Gibson 2:20	136:14	96:10,17
178:6	generating	4:20 43:22	137:22	97:1 101:4
	89:22	44:25 47:2	161:2	109:10
	101:9	49:2 50:23	gives 54:24	110:20
	158:24	52:17	glacial	111:10
	159:3	53:9,14	168:14	112:1
	162:24	54:20 56:9	177:25	114:5
gain 138:8	generation	74:9 76:2	glad 56:1	115:10
180:21	25:16,20	77:21	glean 149:2	121:18
Gameti 5:2	89:3 90:12	79:11	152:23	133:24
gang 71:22	93:7,23	102:13	Glen 135:4	134:1,10,1
gap	101:8	130:2,3	Glenn 4:7	8,19,22,23
159:12,19	157:5,22	133:22	GNWT 4:2,7	,25 140:17
160:2	158:8	134:19	23:3 59:22	143:25
gaps 160:7	162:16	136:9,10	135:5	144:17
161:5	gentleman	143:17	goal 77:2	147:11
Garner 4:19	9:24	148:15	goals 76:20	151:5
135:6	gentlemen	158:11	gold 1:5	153:11
		166:3		156:3
		168:24		160:9

173:19	grateful	63:20	25 50:9	105:22
177:10	79:13		51:1 56:12	106:16
182:24	139:19,20	groundwater	71:5 76:5	happen 50:15
gone 58:21	183:1,2	26:24	78:14	55:12 68:7
97:9 99:10	gratifying	27:17,23	112:22	97:10
123:9	127:21	96:8,15	140:2,4,10	104:10
127:7	grave 61:23	group 5:13	,16	107:25
178:1	gravel 58:4	48:13	145:5,7	118:19
gotten 77:13	great 16:4,6	50:19	178:19,24	120:22
Gover 160:24	20:15	54:19	guiding	153:23
government	53:11	64:13,16	76:19	154:1,5,13
4:15 5:3	57:19,22	65:18 66:1	gush 60:23	157:8,9
16:14	65:19	136:23	guys 99:6	158:9
20:16	103:24	grows 94:8		happens 87:7
21:15	117:23	guess 13:14		93:2
23:3,4	118:4	15:8,20,22	H	120:20,21
24:11 26:1	125:12	19:15 20:3	hab 125:14	145:18
48:13	126:5	35:22	habitat 6:13	happy 118:24
52:18	167:2	60:14 71:7	12:8,9	148:13
56:10 57:3	greater	73:16 82:4	15:3 36:11	162:10
72:10	31:14	89:24	124:17,21	163:9
74:10	147:3,4	92:12 98:8	125:14	hard 44:12
75:6,24	greatly	104:21	126:1	46:11
76:3	124:13	127:21	habitats 7:9	harder
79:8,9,12,	green 3:6	147:1,19	12:17 14:6	140:14
21 102:14	26:11,12	149:10	Haili 62:25	harm 118:8
123:19	54:3 103:4	152:22	half 147:18	119:24
129:19	104:15	155:18	151:7,8,9,	harmed 23:19
130:2	133:18	167:23	13,19	116:9
133:21,23	Greens	178:14	half-metre	hash 130:7
135:7,11,1	142:19	guessing	152:1	hasten
3,17	179:21	48:23	half-metre-	176:25
136:10,14,	180:7	guidance	high	haven't
23 145:6	grid 14:20	48:12,21	151:18	30:11
158:12	164:18,20,	74:19	halfway	81:15
160:6,23	23	guide	164:21	95:19,23
166:4,6	grind 166:13	17:12,16	halo 172:6	110:23
168:25	grinding	18:2 74:18	hand 124:2	123:9
175:1	166:18	guidelin	126:9	140:3
178:4	grizzly 18:5	83:14	132:4	155:6,25
182:16	ground	guideline	handed 175:5	159:7
governments	137:1,2	31:23,24	handle 54:24	174:7
59:12	155:18	guidelines	72:21	having 38:4
Government's	167:2	16:17	142:13	62:15
182:20	168:6	25:22	162:23	64:11,13
grab 36:8	177:12	31:5,7,8,1	163:6	71:13
grain 181:10	181:10	0,12,15,17	handling	75:23
granted		33:9,24	7:19	118:12
174:6	grounded	47:5,8,24,		131:24

156:13	114:20	58:17	26:5,15	huge 94:25
Hayden 8:10	115:17	59:3,5	30:21,25	111:2
head 49:3	helping	60:1 143:4	35:9 40:22	173:16
50:6	123:16	home 9:16	41:12	hum 26:7
169:11	139:21	homework	43:1,2,13	human 39:4
178:12	Henry 4:17	9:10,17	44:17 45:6	47:3,7
heading	133:20	42:25	46:25	56:12,16
170:17	here's	43:12	50:17	humidity
headwaters	99:22,25	45:19	51:14,22	24:14,23
33:4 65:4	100:1	50:24 75:8	52:10	25:5,6,9
health 38:25	173:12	81:5,25	54:6,17	26:7,12
39:3,4	he's 117:5	112:3	56:2,3,23	101:16
47:3,5,7	Hi 16:13	113:2	63:22	hundred
50:8 51:1	77:23	hope 17:1	67:12	22:24 94:5
56:11,12,1	hidden 11:14	54:22	71:23 72:8	104:8
6 63:25	high 83:15	104:22	73:23	182:5
hear 22:14	87:10	105:18	74:6,7	hundreds
119:8	100:22	140:18	75:17	58:6
124:8	101:4,17	182:21	79:7,20	hurts 117:3
125:8	146:15	hopeful	80:16,19	hydraulic
148:17	151:7	160:7	82:2,15	94:15
heard 61:9	154:15	hopefully	84:3	hydrogeology
90:13,16	161:2	41:10	103:20	6:16
99:9 116:8	higher 11:12	43:16	104:12,17	126:4,7
148:8	31:18	62:18 70:3	105:25	hydrological
170:2	32:3,6,7,8	73:12	106:20	28:1
hearing	,10 33:25	hopes 71:8	107:6	hydrology
119:4	44:2 83:7	hoping 18:15	109:16,25	6:15 27:21
hearings	108:23	horizontal	113:1,7	125:23
22:11	138:17	88:2,5	115:18	126:4,7
heart 160:24	highly 33:3	138:4,6	120:2	HydroQual
height	hilarious	hour 148:23	124:14	45:13
10:15,21	143:19	house	125:7,18,1	
11:2,4,8,1	Hislop 11:3	118:13,14	9,24 126:8	<hr/>
1,12	62:6,21,23	housing	128:17,21	<hr/> I <hr/>
154:16	65:10,11,1	59:17	129:6,15	i.e 7:5
HELD 1:20	3,15	how's	130:11	13:25
Hello 67:18	118:13,17	68:9,10	131:1,8,21	ice 55:14
help 56:22	historical	Hози 60:20	132:8,19	137:21,24
67:9 70:7	64:3	Hubert 1:14	133:6	138:7
89:7	histories	2:3 8:3	135:24	166:2
123:22	107:15	11:16	148:7	I'd
145:9	120:5	12:20,25	174:9,20	8:10,20,22
147:17	141:10	13:2,11,19	179:19	9:9,11,17
164:12	142:15	14:11 16:1	181:12	11:19,22
helpful	history	20:11,15,2	182:18	21:7,14
73:22 79:6	21:25 22:5	1,22 21:3	183:9,19	23:20
	57:13	24:5 25:25	16:11	33:19,20

43:23 44:7	34:25	105:1	16:20 71:6	114:23
45:11	35:1,7	106:5	implication	122:20
47:18	40:5,21	111:23	159:1	inclusion
48:5,25	45:18	112:17	implications	50:7 54:15
49:4 50:18	46:23	116:2	159:5	146:10
52:2	56:18,25	123:19	implied	inconsistent
56:10,15	66:21	127:22	26:24	37:12
74:7,14	71:22	131:7	implies	inconsistent
76:3 77:19	73:12 96:1	136:11	83:23	ly 141:15
108:2,15	103:9,18	137:17,18	important	incorporate
110:1	104:3,20	139:19,20	19:15	150:21
112:8	108:12	140:5	21:19 24:8	increase
118:22	114:11	142:15	49:4 61:15	11:2,12
120:9	120:8	148:12,13,	69:17 71:4	29:21 91:8
124:1	128:24	18 155:18	78:25	182:6,10
133:11	131:8	162:9	79:5,14	increases
136:2	133:14	163:8,13	99:5 118:9	153:21
137:14	167:4	166:15	impossible	increasing
140:12	183:10	168:3	142:10	29:22 91:5
143:4,14	illnesses	170:9,24	impoundments	incredibly
148:17	22:6,8	171:9,16	91:15	156:24
149:22	illustrates	173:21,24	impression	indeed 93:10
158:12	160:11	174:7	28:11	153:14
161:11	I'm 10:10	179:6	improve	157:23
181:13	15:5 17:1	180:16	97:15	independent
183:24,25	18:14,24	imagining	improves	34:8
184:2	26:25 27:2	137:5	77:16	Indian 61:12
idea 9:12	28:5 36:5	immediate	improving	indicate
41:1 47:6	39:7 41:20	119:1	77:6	87:25
48:19	42:14,18	immediately	inadvertentl	144:2
49:10	43:22 46:9	169:11	y 181:25	147:12
50:15	48:9,16	impact 1:3	include 7:12	indicated
55:13	49:2	47:7,20	33:11 35:5	41:9 90:4
66:11	50:5,9	48:2,7	54:14 65:7	95:11
70:2,10	55:21	49:8,19	105:18	138:5
71:2,9	60:17	56:21 58:9	106:10	indication
100:14	64:12	61:7,8	included	38:10
132:3	67:19	impacted	19:10	41:22
160:1	71:3,7	7:10 12:18	81:10 97:3	42:20
170:10	73:6,10,11	14:7	106:1	43:11
172:4	74:4 75:18	22:12,15	112:6	indirect
182:20,22	76:22	24:3 58:10	114:24	7:11 12:19
ideal 142:6	77:18,19	impacts 7:4	includes	14:9
ideas 173:20	79:13	12:11,16	61:22	individual
identified	81:1,4,8,2	13:24	103:23	144:14,18
20:9	3 82:19	47:14 49:6	including	infill 10:24
identify	85:25 87:1	56:20 81:1	8:24 65:19	
138:25	88:6 90:19	implement		
I'll 9:25	95:8	15:24		
18:18	96:5,7,21	implemented		
20:22	100:13			
	102:16			

infilling 14:23	infrastructure re 114:24	intending 52:23	154:17	issue 10:14 26:7 49:15
infiltration 155:11,13, 22	infrastructure res 59:17	intent 84:11	interrupts 93:13	50:20 98:10 99:8
inflow 96:8,15	ingress 88:22,23 92:15,20 94:2 171:1,2	interact 166:20	Intervenors 114:20	138:19,20 139:6,13,1 5,16 153:1
influence 47:9 81:12	ingressive 150:22	intercept 168:19	introdu 133:12	issues 9:8 21:14 24:11 35:12 44:22 60:10 98:9
influenced 154:8	initial 64:11,16 65:24	interconnect ed 88:8	introduce 8:10	100:8 107:9 120:18 130:7,18 136:24 137:13,14 138:23 139:4,12,2 3 140:16 149:11 170:20 178:15,22, 24 179:7 183:22
influent 128:5	initially 54:3 124:24 127:7	interest 52:14,18	introducing 93:9 133:12	
influx 94:17 155:19,24	initiative 66:12	interested 51:21 87:1 93:24 110:10 111:17 124:1 130:13 131:12	introduction 62:2	
information 13:5,7,16 18:1 19:1,16 20:2 22:21 25:7 39:18 41:6 44:16 67:16 72:14,20 73:19 103:3 105:18 106:1 108:10 111:1,14,2 4 112:2 113:18,20 114:3,11,2 2 115:6 122:12,21 124:7 125:3 126:13 138:19 148:24 159:24 160:9 178:6,7	input 42:15,16 49:1,3 103:19	interesting 127:14 133:7 136:20 172:21	intrusion 155:12	
	inputs 30:6 42:16 69:2	interior 154:7	intuitively 155:25	
	inquiry 42:4 49:25	interject 63:18	invertebrate 53:7	
	inside 90:5 120:21 142:19 143:6,9 172:10	interlayers 87:20	invited 129:20	it'd 22:12
	instance 18:4 130:19	internal 79:18 172:14	involved 69:6 123:20	item 74:4
	instances 141:3	internally 30:19 75:4 161:16	inward 96:12	items 9:10,17 128:23
	instead 29:17 129:22	international 1 122:13	ion 29:17,21 30:1 32:11	iteration 110:25
	instrumentat ion 173:3 174:5	interpret 89:11	ionic 30:7	it'll 148:1 155:22 167:14
informed 73:2 176:9	intake 65:6	interpretati on 129:8	ions 108:21	it's 7:16 8:5,8 11:5 12:6 13:1 17:11,16 24:8 25:8 26:11 27:25 33:24 35:10,24 38:23,24 41:14 43:14,19 44:12 45:4 49:4,18
informs 102:23	Integrated 70:24	interrupt	irrespective 152:8 IRs 44:10 110:7 isn't 89:3 104:13 180:15 isolated 151:21 170:5 isolating 173:6	

57:5,9,10, 11,20 58:4,16,17 ,19 60:16 61:3,12 64:10 66:1,22 67:7,19 70:14 71:4,15,17 72:17,18,2 0 80:6,22 81:9,20 88:19 89:2,6,8,2 3 90:2,8 91:16,17,1 9 92:11 93:1,12,14 ,16,18 95:2,20,24 97:12 98:1 99:5,7 100:2 101:18,19 102:2,7 103:4,14 105:15,21 106:14,20 107:7 113:20,24 115:3 117:3,20,2 2,24 118:1,8,11 ,22 122:12 123:2 124:22 127:3,14 128:15 129:6,16 130:5,20 131:4,5,15 132:2,20 136:10 137:5 138:19 139:5,18 141:2,14,1 5 142:10,13, 22,25 145:5,8 146:10,19	147:14,17 148:10,22, 23 151:2,16 152:3,18 154:21 155:24 156:4,7 157:2,6,9 159:12 160:2 161:16,21 162:12,13 163:1,3,4, 5 167:16,23 169:20 171:25 173:11,12 174:13 176:17 179:1,3,24 180:20,24 181:17,23 I've 10:9 39:7 53:22 65:23 67:22 99:9 104:5 116:3 127:4 136:12 145:1 147:23 148:22 155:6 173:23 176:9 178:5 IX 85:7 97:4,8,21 <hr/> J James 4:12 12:2,22 13:5,9,14 14:13 15:13,20 16:11 Jan 3:12 Jane 4:11	110:3 111:7,15 112:14 113:5 January 125:2,4 Jason 2:22 134:9 Jen 2:20 134:19 Jessica 2:6 Jim 2:13,15 134:15 job 68:18 69:25 76:16 John 2:16,19 3:9 4:22 5:7 11:5 30:2,17,23 32:15 33:23 34:5,24 37:17 39:6,11 40:5,16 41:4,19 42:1,17,22 43:4 44:24 45:17 51:5,18 56:19,25 57:2 64:9 79:16 80:12 81:3,22 83:1,12 84:10,21,2 2 86:9,19 87:14,24 88:19 89:23 90:8 92:11 93:16 94:3 95:7,25 96:13,19 97:16 98:7 104:20 105:13 109:9 111:25	114:4,10 130:20 131:5,15 133:16 134:17 135:12,18 148:10,21, 22 152:3 154:21 169:20 173:5 joke 183:8 Jordan 5:10 journal 70:25 ju 28:20 judged 97:9 judgment 97:14 jump 151:18 152:1 <hr/> K <hr/> Karin 5:20 66:21 Karin's 67:10 Kate 5:17 Kathy 3:21 67:14,18,1 9 72:3 74:11,25 77:23 108:14 109:13 Kathy's 110:5 Ken 2:18,21 24:25 27:8 87:5,18 88:11,25 90:3,23 92:17 94:3 95:18 96:10,17 97:1 98:8 101:3 102:23	110:20 111:10 121:17 133:24 134:1 140:17 143:25 144:16,25 145:24 147:11,23 151:4 153:11 155:9 156:2,14,1 5,16,17 161:11 162:1 167:3 171:8,22 173:18 174:2 176:6,16,2 4 177:9,23 178:15,25 180:5 181:5,23 183:4 Kens 98:8 Kerri 4:19 135:6 Ketlute 61:20 key 42:3 KG 67:22 Kiagoti 60:19 K'iagoti 62:6 kilometres 48:18,19 59:11 kinds 155:3,4 170:20 kinetic- based 25:12,15,1 7 King 5:7
---	--	--	---	---

135:18	65:5,10,11	152:2,6	171:12,18	let's 52:3
knowledge	,13,15	181:7	leach 165:21	106:24
47:11 48:1	66:23,24	larger	166:1	126:4
95:20	80:8,25	170:22	leaching	level 60:5
159:12,20	82:8,10,14	largest	159:11	67:4 70:11
160:3,7	113:23,24	62:12	lead 6:20	100:22
known 48:14	114:7	last 10:19	8:16	101:5
90:1 93:1	116:17	29:18	132:22	155:13,15
Kozbeck 18:6	118:13,17	31:20 55:4	135:23	159:10
Kozcak 18:6	143:14	70:25	180:12	161:21
Kozwick 18:9	164:19,20	79:22	learn	164:23
Krumovgrad	165:2,5	102:15	124:10,11	165:18
143:3	167:25	105:14	140:7	167:25
Kwe 5:12	lakes 24:2	117:15	172:25	168:18
48:12	26:23,25	126:22	learned	169:23
50:19	27:3,11	164:17	70:23	levels 29:20
54:18	36:4	late 178:12	learning	30:6 72:6
136:23	116:11	later 11:19	136:11	85:15
Kwekateli	117:23	26:4 30:22	139:18	112:23
60:21	land 48:24	71:5,18	175:3	161:2,14
Kwet'ia	62:16	79:6 126:2	least 34:17	165:1,4
57:16	65:24	131:3	59:10,19	li 19:3
Kweyailli	66:8,15,25	lateral	60:1,4	81:24
60:19	68:20	137:3	62:22 63:1	liberate
Kwitina	70:22	150:22	75:9	166:23
57:24	77:24	latest 59:22	142:11	licence
	78:15,21	layer 15:2	146:17	64:19 67:3
	79:1	46:18	150:14,15	68:4 71:6
	108:15	88:5,15,18	leave 33:20	licensing
	109:14	95:17	67:10	70:19
	116:15,16	146:5	71:22 82:4	173:24
	124:13	150:19	151:1	life 14:17
	135:3	158:4	169:25	21:21 64:1
Lacey 4:10	160:24	layered	182:17	108:7
lack 60:6	161:3	142:25	led 59:20	113:11
lacustrine	166:7	156:20	155:4	116:18
168:14	landing	176:7	leftover	lift 88:16
ladies 8:5	111:19	layering	58:3	ligand 42:13
lag 59:24	lands	94:18 95:9	Legat 4:21	light 149:2
laid 178:7	23:11,16	150:21	10:4	158:13
lake 11:3,15	66:16	layers 87:22	legibly 9:1	lighten
31:22	75:14,15	88:1,7	less 104:20	143:20
32:23	landscape	93:9,11	151:7,9,12	likely 24:17
39:10,15,1	62:16	94:2 142:1	154:25	25:18
7,21,22	language	143:3	162:23	38:23
40:7 46:17	61:12,20	152:8	165:7,9	111:13
52:21	84:6	154:16	179:11	161:16
57:20	large 15:3	164:5	180:20	limit 88:23
60:23	68:15	170:13,18		
61:19,21	92:24			
62:7,22,23	130:14			

90:17 91:9 94:2,17	listened 24:4	loadings 99:22,25	117:6 119:7	16:16 17:12
limitation 89:2 90:25	listening 67:21	loads 25:17 98:21	122:12,21 124:10	Madelaine 5:2 115:25
limited 1:7 2:10 34:17 94:14 95:2 170:6	listing 17:17	local 67:4 121:13	136:22 142:5	116:1 120:16
limits 89:19	lists 17:23 141:5	locally 70:13	162:6,7,8 166:21	121:9 123:15
line 42:4 49:25 125:21 136:24	literally 59:6 92:24	location 104:4,7	168:8 181:14	135:10 174:25
lines 5:25 52:15 54:21 180:16	literature 33:13 49:5,6 93:1 94:7,11 140:25 141:14	locations 9:20 36:13 104:10 144:23 169:14	lots 22:13 166:16,23	176:12,22 177:3
lingers 22:9	litre 31:22 32:2 78:7 164:24 165:1,6	locked 91:14 137:24	Louie 3:25 135:14	magnitude 91:7 93:15
lining 143:8	litres 127:1	locking 120:23	love 66:8	154:20 156:10
link 118:20	little 52:20 53:1 63:19 79:22 100:12 119:3 123:16 133:1 141:11 151:22 159:15 164:20,23 167:4 168:14 179:9	long 13:15 15:7 63:16 98:22,24 169:22,23 183:7	low 39:2 77:14 87:12,23 90:10,11 92:6,7,19 95:24 101:16 146:21 155:13 158:10 161:14,20 170:7 171:1,2	Mahsi 24:4 56:22,25 63:21 75:16 120:1 121:16 124:13 183:3
linkage 169:22	lived 116:11,14	longer 70:20 91:11 103:22 104:2 182:16	101:16 146:21 155:13 158:10 161:14,20 170:7 171:1,2	Maimon 142:24
linked 81:2	livelihoods 49:21	loose 147:19	lower 31:25 155:15 167:18	main 27:20 62:11 63:16 87:20 136:21
linking 59:9	Lloyd 3:4 134:11	Loretta 4:2	lowering 101:25	mainly 113:24
Lionel 3:10 135:20	load 97:6 143:21	loss 96:14 117:3,5	lowest 150:3	maintain 11:2,13 47:22 150:7
liquid 21:20	loaded 132:25	losses 165:11	luk 138:22	major 60:22 108:21
liquid-solid 87:7	loading 30:9	lost 48:24 99:1	Luke 156:4	mammal 17:24
liquidy 137:8		lot 10:5 33:4,5 49:5 61:15,23,2 4,25 63:13 68:3,6 72:13 101:6,14 102:7 116:4	lunch 104:19 106:24 107:12	mammals 17:18
liquificatio n 138:22			lysimeters 174:4 176:10	manage 70:7,9 71:11 98:13 99:7 121:1 167:7
list 6:3 7:1 17:2,8 18:21 19:2 81:5,24 115:11 179:6			<hr/> M <hr/>	
listed 17:16,19 18:12 19:4 25:8 112:16 128:23			MacDonald 5:14	
			Mackenzie 1:2,12	

managed 48:5 164:7	80:25 109:3,5	maximum 93:10 97:24	181:6 meandered 165:2	119:12 138:1
management 6:11 21:2,5 22:22 52:13 64:16 66:1 70:25 78:22 81:11 90:1 99:11 100:1 107:10,14 108:4 120:17 122:7,22 140:2,3 144:9 145:4,6,8 171:11,13 172:2,8 179:1,17	Marjorie 4:18 16:13,14 17:5,14 18:19,24 19:11 20:13 Mark 3:19 64:12 66:6,7 marked 113:2 mass 25:17 massive 93:4 match 144:2 material 10:25 58:3 88:10 89:15,20 90:2,21 91:10,19 94:14 99:2 131:11,24 132:13 150:7,17 151:9,11,1 3 156:23 157:8,24 materials 90:18 91:13,16 151:14 156:25 157:4,16 173:1 MATHESON 18:19,24 19:11 Matheson- Maund 4:18 16:13,14 17:5,14 20:13 matter 68:17 81:20 115:3 maxima 46:18	may 17:21,24 19:12 22:23 29:13 38:6,7,16 44:9 46:12 47:24 48:1 61:9 64:1 115:14 121:14 148:5,18 158:16 172:19 181:1 maybe 13:6 14:14 17:20 18:16 62:15 65:4 66:21 75:5 97:17 108:2,4 109:6 115:11 120:9 132:25 145:9 148:5 149:1 167:4 McElhanney 3:4 134:12 McMillan 4:10 mean 11:7 22:19 36:7 49:14 76:8 78:5,8,16 84:16 86:10 110:21 111:2 144:17 155:23 161:6 166:11 168:25 174:16	means 15:2 78:4 95:1 96:14 171:3 173:6 meant 96:11 176:14 177:4 meantime 17:7 80:17 measure 49:13 78:18 measurement 113:9 measurements 42:15 measures 15:24 median 31:21 46:19 medium 31:20 meet 83:21,25 84:12,24 85:3,10,20 ,24 86:4,14 109:3 112:22 122:9 123:5,13 meeting 16:4 19:20 21:11 32:10 107:25 125:1 130:6 136:2 182:24 183:15 meetings 1:5 73:14 melting	members 64:2 67:1 116:21 117:6 130:17 131:12 membrane 169:9 memo 141:17 memorandum 175:5 memories 118:16,21 memory 58:12 118:23 mention 8:20 21:7 62:20 63:9 145:7 167:23 179:23 181:13 mentioned 11:18 19:6 97:12 100:11 166:5 167:8 172:23 173:5 180:13 Menzies 2:4 Mercredi 2:5 merits 144:20,21 met 86:1 125:9 metal 98:20,21 101:17 113:3 metals 121:23 159:11 160:25 161:15

163:25	119:15	45:25	minimizing	146:23
metre 82:10	120:1	46:9,23	79:15	168:12
91:5	149:11,21	48:9	mining 9:19	modelled
151:7,9,13	161:17	50:5,21	116:7	146:6
156:15,16,	165:14	51:4	118:10	modelling
19 170:18	176:3	53:6,20	166:22	24:24
metres 29:7	minds 57:14	54:10	minus	25:11,23
77:14	mine	55:17 56:1	95:21,22	30:4,16
82:10	22:11,22	57:5 64:9	minutes 9:5	109:7
88:14	23:22,23	65:9 66:2	52:1,4	modern 122:8
146:17	29:6	73:5 75:22	104:18,21	modes 178:8
147:14	64:18,22,2	76:22,24	107:8	modification
156:11,20,	5 70:12	82:6 85:5	132:24	86:14
21 158:5	71:4,18,19	97:20	162:14	modified
172:10	77:7 87:11	99:16	misled 182:1	86:2,4
mic 9:11	97:24	100:11	missed	moist 179:13
microgram	98:11	102:23	148:8,9	moisture
31:21 78:7	105:11	104:1	172:18	138:8
micrograms	107:14	105:10	missing	150:4
32:2	113:3	106:5,10	152:24	181:3
164:24	117:8	109:22	misspeak	Moloney 2:10
165:1,6	118:6	112:8,20	73:11	mom 118:14
microphone	119:6,16	120:16	182:7	moment 66:18
67:16	121:21,22,	126:22	mitigate	128:24
microscopic	23,24	128:4,7	153:9	monies 60:6
33:12	122:6,7,8,	129:24	155:3	monitor
mid 55:5	9,20,23	131:18	180:18	63:10,12
mid-summer	123:4	134:4,6,8,	mitigation	161:18
55:5	141:20	14,16	15:23	163:17
migrate	143:7,10,1	135:5	50:2,12	monitored
152:15	2,18,20	136:14	mixing 80:5	164:7,10
157:1	144:6,19	137:15	82:7,10,12	monitoring
migrates	145:15	162:18	142:21	20:4 27:22
94:13	147:24,25	164:15	175:13	54:16
migration	149:24	174:13	180:20	63:14
95:16	165:25	mines 119:16	MMER	64:6,17,21
170:23	175:23	122:2,25	111:20,22	,23,25
migratory	mineralized	123:4,12	112:16,22	65:8 66:22
14:16	31:8 33:3	145:17	113:3	67:5 72:6
15:14	mineralogica	175:25	mode 139:3	117:13
110:11	1 162:17	mingling	model	122:5
Mike 2:12	mineralogy	142:20	25:5,10	173:4,20
134:13	98:12	149:24	27:23 28:1	174:1,5
million 99:2	157:22	minimal	42:13,15	179:3
mina 46:18	162:8	69:18	45:12,14	Monte 45:13
mind 118:23	minerals 1:7	157:6	109:12	month 8:15
	2:9 7:3,12	minimize	110:6,24,2	
	9:15 10:19	78:25 79:3	5 111:5	
	11:10	99:12		
	13:22	minimizes		
	28:19	158:22		

moose 63:5	museum 61:10	nets 61:10,14	nitrate 44:4	128:20
morning 8:5 9:6,15 21:16 47:13 57:2 74:21 79:16 90:16	muskrats 63:6 Musselwhite 176:20 MVEIRB 2:2 myself 10:20 117:19	neutral 98:17 99:3 163:12 neutralizati on 91:1 157:20 164:3	nitrogen 29:19,20 30:6,12 Nitsiza 2:15 4:15 134:5 137:1	noticed 31:4 67:13 108:20 124:15 179:20
Morr 3:14	<hr/> N <hr/>	neutralize 91:2 157:25	nobody 60:1 125:21 126:9	noticing 143:18
mostly 88:21	NAG 162:9	Neves 142:17	nodes 39:21	November 16:23
mountain 58:4	narrows 60:24	nibble 132:11	non 11:13	now's 52:15
mouth 172:5	nat 109:4	NICO 1:5 8:6,12 26:23 30:5,10 32:22 39:15,21 40:7 112:13 113:23,24 114:7 141:24 143:2 144:2,4,13 149:4 150:11 153:23 164:19,20 165:2,5 167:24 169:13 176:3,25 177:2 180:23 181:11 182:2,6	non-acid 89:22 non-acid- generating 151:13 156:21,25	np 2:2,16,23, 25 3:12,13,14 ,22,23 4:3,4,5,8, 15,21 5:10,14,17
move 9:7 11:19 21:4 33:6 43:23 59:15 85:13 96:1 109:23 113:10 126:4 163:18 164:12 167:15	natural 32:3 34:10 37:22,23 39:9 62:1 109:4 113:17,19 135:19 165:5,17 167:9,18	nonexistent 112:24	none 172:22 177:2	NPMO 5:17
moved 29:3 85:12 97:25 100:19	naturally 22:2 31:7 166:12,19, 23	non- visibility 11:3	non- visibility 11:3	NRCan 5:7 113:20
movement 86:21 137:3,4,9 138:1,4,6 152:10 154:25	nature 49:7 69:7 94:23	noon 9:20	noon 9:20	NT 1:6,22
moves 67:10	near-field 82:9	north 59:25 118:1 119:7	North 135:21	nuances 154:23
moving 77:7,15 85:17 139:8,9,10 151:24 170:20	necessarily 49:12 181:20	northwest 11:11 17:10 19:5,7	note 8:14,19,25 31:23 49:5 107:12 136:13 182:19	numeral 145:10
Mucklow 2:13 134:15	negligible 39:2,3	Nicole 2:7	noted 12:6 43:25 44:1 52:18	numerical 27:22
multiple 88:2 93:9 99:20	nest 15:3 62:7	night 10:20 29:18 31:20	nothing	Nunavik 143:6 153:14
Murray 4:3	net 61:12 96:11,16	nighthawk 7:6 12:23 14:1		NWT 16:15,19,2 2,25 17:16 18:1,4,8
		nine 17:18 183:21		<hr/> O <hr/>
				object 86:10
				objective 77:9 86:15 140:24
				objectives 6:10 21:1,5 26:13 31:13

32:18	124:23	Olivier 3:16	179:3,6,17	organic 15:2
33:1,14,16	o'clock	one-four	operationall	organics
34:6 35:22	106:25	115:7	y 92:14	168:13
37:22	131:23	ones 22:17	140:9	organization
39:14,16	132:9,12,2	60:22	operations	66:14
42:6	0 183:21	124:12	68:23	original
44:2,14	offer 183:14	onto 11:20	77:16	61:10
52:13	offered	58:12	83:20	97:12
72:12	136:15	100:19	84:24	99:20
74:23 77:5	officer 8:11	139:9	86:22 96:6	102:8
83:3,13,22	official	oops 67:25	97:14	108:16
84:12,25	8:18	ooze 137:10	98:21	originally
85:3,11,21	offset 88:17	open 36:4,25	104:3	95:11
86:13	offsetting	96:4,7	121:8	osmosis 29:4
107:10	150:19	142:12	145:11	68:9 77:15
108:4	oh 40:8	150:6,17,2	167:10	85:18,21
165:17	112:17	5 152:19	172:13	97:25
observation	147:1	153:20	179:5	108:11,12
150:11	176:20	154:3,20	opportunity	others
observations	178:14	155:1,5,7	44:19 66:3	99:10,19
55:3	Oils 135:5	166:14	67:15	108:22
observer	okay 8:5	167:21,22,	117:4	141:7
135:15	10:9 13:9	23 182:4	172:25	184:1
obvious	14:13	opened	181:17	otherwise
93:12	15:20	102:15	183:5,11	48:22
obviously	16:11	operated	opposed	155:3
15:14	17:14	73:6	25:12 37:7	Ottawa
20:10 68:4	19:11	operating	92:10	122:16
139:19	43:24	73:21	100:13	outcrop
161:22	59:3,11	75:12	181:10	91:17
occluded	60:11 61:4	127:23	opposite	outcrops
158:5	69:13	160:23	153:22	168:9
occur 8:18	71:22	operation	option	outfall
14:17	79:23	20:5 37:25	129:13,16	39:17
15:22 16:2	111:16	145:15,16	131:4	outfit
21:12	114:10	170:17	options	130:15
94:20	128:12	172:25	100:23	outflow
138:1	130:5,15	180:7	128:25	63:14
153:23	133:6	operational	136:19	outline 25:4
occurred	143:15	58:2 104:9	order 33:13	55:22
16:5	148:21	105:1	58:23	outlining
occurring	183:19	138:19	95:21	16:17
166:12,23	old 116:24	139:4,6,16	161:6	outside
171:12	155:18	140:10,15	orders 91:7	153:21
occurs 161:9	olive 14:1	171:14	93:15	outstanding
172:7	olive-sided	172:8	154:19	44:22
ocean 117:18	7:6 12:23	178:14,15,	156:10	
Oceans		19,23	ore 33:5,6	
			92:6	

overall 92:5	156:5,7,9	136:3	174:25	105:7
121:24	157:1,13	184:4	175:1	110:18
141:21	159:25	participate	176:12,22	113:14
146:13,18	166:21	66:2 67:23	177:3	114:16
overcrowding		particular	passing	115:23
59:20,25	<hr/> P <hr/>	33:3,6,17	127:12	120:13
overflow	p.m 107:4	37:24 38:8	passive	125:16
182:8	129:12	41:3 44:4	127:12,19	128:1
overlapping	132:16,17	48:18	169:3	129:4
154:6	184:7	137:15	past 60:23	132:6
overlays	PAG 88:24	141:10	91:23	133:4
115:4,12,1	90:1	178:8	116:6	143:23
4	page 6:2 7:2	179:21	118:21	145:22
overlying	46:17	particularly	123:8	147:9,21
91:9	70:23,25	110:10	paste 142:19	168:22
156:13	72:3,7	152:25	143:5	171:6
overtop	83:25	180:2	Pat 2:10	174:23
144:6	136:12	parties 9:22	Patenaude	177:7,21
ox 151:17	149:22	20:25	3:13	182:13
oxidation	176:13	21:8,10	pathway 48:7	183:17
88:23	179:23,25	26:6 41:15	patiently	Payant 156:4
89:12,20	pages 18:4	44:18 56:5	124:16	PDF 10:7
90:11,22	131:4	70:3 71:20	Paul 2:5 3:6	46:10,13
94:9,19	pains 117:2	72:1	26:11,12	51:15
95:3,4	Panayi 2:24	107:16,23	103:4,20	PDFs 46:15
150:5,8,16	13:4,17	109:20	104:14,15	pe 131:10
151:3,17,1	15:13	125:9,13	133:18	peak 150:7
9 157:8	16:24 17:7	126:13	184:1	peanut 26:23
oxidize	18:17,20	129:1,19	PAUSE 15:11	30:5,11
157:12	19:2,18	130:16,17	16:9 20:19	31:22
oxidized	paper 58:12	131:10	26:9,18	32:23 36:4
91:18	139:19	132:12	27:6	39:15,21
oxidizing	156:3	181:14	28:7,16	40:7 46:17
157:7	papers 94:11	183:10	29:11	80:7
oxygen 87:21	122:18	184:4	32:13	82:8,10,13
89:6,8,18	paragraph	partly 82:18	34:3,22	,20 167:24
90:17	179:23,25	97:17	36:20	182:5,9,11
91:4,6	parameter	party 20:16	37:3,15	penetrate
92:1,2,20	112:17	44:5 51:17	40:3,14	91:6
93:3,14,21	parameters	52:14	41:25 46:6	people 8:23
,23	108:21	113:12	53:3,16	22:4,13
94:9,12,17	111:23	Parviainen	56:7	47:15
95:2	partial	2:22	80:1,10	48:14
150:22	120:3	134:9,10	82:25	55:23
151:10,20,	partially	Pasquayak	83:10	59:15
24 154:19	88:20	5:2 115:25	84:1,19	60:12
155:12,13,	participants	116:1	86:7 96:25	62:15 63:5
19,24		121:9	98:4	65:1 69:6
		123:15	102:20	70:13
		135:10,11		77:11 78:4

79:17	144:12	182:2	145:25	160:18,21
101:1	164:10		149:12	162:21
118:5	perfectly	person 116:1	physically	163:6
123:9	144:2	119:21	122:2	170:11,22
130:13	performance	personnel	phytoplankto	171:1,4,15
133:12	165:16	183:25	n 34:17,20	,21 172:1
136:21	173:3,15	perspective	35:23	173:8,21
137:5	perhaps	75:6 76:4	36:14	piles 27:10
140:11,21	18:15,25	101:1,5	53:10	102:18
166:6,13,1	19:16	155:10	54:1,12	142:21
6 181:19	30:22 52:4	perspectives	55:14	150:25
182:1	72:10	75:5	phytoplankto	159:8,11,1
people's	79:24	pertaining	n/	5,18
47:20,21	108:9	86:20	zooplankto	160:14
49:19	113:18	pertains	n 35:15	163:23
57:13	124:16	12:4	pick 107:23	pilot 126:22
per 31:21	129:8	149:23	120:5	pipe 61:2
32:2 64:1	131:3	pH	picked	80:7 81:14
78:7 95:22	161:15	101:17,22,	107:19	84:17
113:17	178:9	25 164:3	PIDO 183:25	85:25 86:4
164:24	183:12	phase 70:19	piece 149:20	108:19
165:1,6	perimeter	71:14,16	152:23	111:21
perceived	90:6	phases	pieces 178:7	112:18
47:6,8	146:16	125:11	pile 27:13	pit
48:11,23	147:25	phenomenon	88:10	96:5,7,9,1
49:11	153:24	180:12	89:14	5 142:12
56:21	154:1	phonetic	90:17	167:21,22,
63:24 64:2	170:14	18:6,9	91:22	23 182:4
65:14	171:23	29:25	92:2,3,9,1	placed 89:21
percent	period	46:18	6,24	90:2
10:23	6:7,10,13,	60:20	93:3,18	138:11
22:25	15,18	61:20 85:8	94:13,14,1	placement
90:14	11:25 21:1	156:4	7,21,22	90:10
93:22	36:25	phosphorus	95:1,10	138:4
101:9	124:21	29:19,22	147:15	141:20
117:16,18,	126:7,16	30:6,9,12	149:12	142:18
19 147:14	periods	photocopied	150:6,17	places 181:1
150:13,16	180:2	18:3	151:18,25	placing 64:3
155:23	periphery	phrase 84:7	152:2,6,13	141:20
156:17	154:9	phrased 21:6	,15,19	142:1
158:17	permeability	54:7	153:20,21	143:1
160:11	95:15,20	phrasing	154:4,13,2	144:6,8
163:4,5	142:8	137:11	0,23	173:1
percentage	149:13	pHs 163:12	155:1,5,7	plain-
162:22	152:12,14	physical	156:13	language
perception	permitting	89:6 100:2	157:1,2,9,	100:7
47:16,19	15:19		13,19	plains 58:5
50:20	perpetually		158:3	plan 28:21
57:11 58:1	168:1,4		159:4,17,1	55:24
perfect			9	
102:7				

88:3,12	43:21	170:24	97:6,22	potentially
112:5	52:16 54:8	policy	137:9,23,2	38:6 98:24
120:25	56:23	78:21,23	5 138:22	113:23
145:8,15	74:8,14	polishing	possible 9:1	151:14
150:15	103:24	104:24	35:5 61:8	159:3
171:11,13	108:13	polluted	76:10,16	162:24
172:2,8	132:3	160:21,22	97:24	pour
179:1,18	136:6	161:13	102:2	93:21,22
plane 177:16	pleased	pollution	109:19,24	172:11
plankton	125:8	78:25	118:4,18	pr 56:17
35:5	plots 162:15	79:3,15,18	123:21	practically
planned	plus 156:15	139:11	139:5	142:10
58:24	point 8:13	158:22	150:3	172:25
90:20	27:9	pond 14:22	161:19	practice
123:9	36:13,15,2	28:10,20,2	168:19	47:21
172:15	4 37:1	4 29:2	181:16	99:12
planning	53:12 55:7	90:7	possibly	141:1
15:17	56:11,18,2	96:21,23	19:8 55:14	145:17
29:16	2 59:18	97:2,11,22	148:8	practices
54:15	74:1 80:22	98:1	150:13	48:25
129:18	81:17 87:8	103:6,23	post 51:15	81:11
137:17	91:11	104:2,13,2	post-closure	122:22
plans 28:14	92:21 93:8	2,23,24	69:9 92:14	practises
50:1	99:11	105:3,10,1	post-	107:14
57:6,7	100:2,3,18	2 111:18	processed	pre 39:9
58:5 63:9	102:10	164:20,22,	7:15	preamble
93:25	112:23	23,24	105:20	140:20
105:11	114:19	168:7	106:13	precedent
122:7	115:13	ponds 14:20	potassium	144:4
171:14	131:2	27:12	29:19,20	precipitates
174:4	145:10	111:3	potential	7:19
plant 27:14	146:14,24	164:18	10:15	105:23
30:13 85:1	147:4,5	167:12	29:25	106:17
94:6	150:23	poorly 139:6	30:11	precipitation
105:1,15	151:23	population	38:11	n 155:23
106:3	152:22	18:11	48:11,24	pre-contact
116:13	164:16	populations	63:2 81:1	61:8
126:23	165:20	35:23 54:1	88:7 90:11	predications
127:1	171:23	porosity	91:1,14	109:1
128:6	178:17	94:16	101:8	predict
plants 17:21	pointed 33:2	port 82:11	102:11	95:14
21:20	84:22	portion	103:12	162:25
play 139:24	125:22	92:13	126:18	predicted
playing 60:5	159:22	position	137:14,16,	39:9 68:24
please 8:4	181:24	79:9 85:5	19	69:3,13,15
13:1 14:11	pointing	86:3 119:1	138:7,16,2	108:23
21:15	149:6	129:25	0 139:23	155:25
35:12	points 39:25	possibility	157:21	
40:23	55:6		162:16	
	140:19		169:5	
	169:21			

158:24	presentation	pristine	proceeding	126:24
167:20	10:2 77:3	118:3	79:5	127:5,10
predicting	104:6	private	129:16	products
167:16	129:11,18	183:13	process 7:20	95:4
prediction	130:5	pro 74:18	32:21 37:7	110:13,16
68:22	presented	proactive	69:5 70:2	professional
69:12	73:25 77:3	173:6	72:15 94:6	137:18
predictions	122:13	proactively	105:23	profile
30:8 32:11	156:5	102:12	106:18	113:22
68:6,15,19	presenting	prob 103:8	111:14	114:6
70:8	108:1	probably	126:24	program
108:17	pressure	10:1 45:10	127:1	54:5,16
109:2	153:21	55:5,12	138:14	55:18 60:8
162:25	pretty 106:5	61:3 92:14	166:22,24	64:21
predictive	148:4	100:5,22	167:12	65:8,20
156:6	162:19	107:19	173:24	66:22
preexisted	164:9	115:13	176:15	67:10
58:13	175:7	130:13	processes	173:4
preferential	179:22	141:17	79:1	programs
ly 90:2	prevent	152:18	91:6,20	53:23
preliminary	90:18	154:22	93:24	66:19 72:6
66:11,20	120:23	problem	152:17	progress
67:8	155:2	103:3	159:23	123:12
102:24	prevents	116:5	160:4,17	progressive
138:24	93:13	129:15	173:24	140:13
163:13	155:11,12	142:9	processing	project 1:6
179:2	previous 6:5	179:15	7:13	7:11 8:7
premature	22:10	problematic	105:19	12:18 14:8
129:8	previously	85:19	106:11	20:5,8
151:22	90:9	143:12	112:11	21:22,24
preparation	108:24	problems	176:18	22:1 37:25
50:21	112:9	102:11	177:2	38:6,17,22
133:9	136:1	151:3	produce	51:11
prepared	150:25	155:3,4	128:5	65:13,21
12:15	primarily	170:19	149:15	68:5,16
39:19 72:3	35:17 67:2	180:9,19	produced	69:8
111:9	77:10	procee 84:24	56:17	70:7,9,19
120:6	85:13 92:8	proceed	74:18 91:2	71:10 77:5
140:20	primary	14:16	157:15,18	81:12
preparing	85:17	15:19	181:11	86:11
19:25	principle	40:24	183:6	97:25
prescribes	143:2	43:21	producing	103:22
145:18	149:18	56:24	101:11	104:3
present	152:4	80:17	112:10	112:13
19:23	154:24	93:24	181:8	114:23,24
36:15	prior 14:25	100:17	product	115:8
67:15 75:5	27:15	108:13	150:4,8	130:25
119:17	121:4	129:10	181:9,10	149:4,25
			production	150:11
				174:14,18

176:11	protection	42:4 51:23	71:12	84:12,25
projects	14:16	56:3 156:6	putting 47:4	85:1,3,11,
22:10	66:16	providing	94:24	20 86:13
23:25 24:2	protective	66:3	100:7	95:6 97:15
71:12	34:7,14	73:5,7,24	142:19	100:14,16,
prolonged	36:1 81:14	111:13	143:5,8	18
180:2	86:11,15	proximity	170:24	107:9,10
promised	prove 23:18	64:25	173:25	108:3,4,17
107:15	provide 7:3	prudent		109:2
properties	12:15	128:7	<hr/>	110:23
149:12	13:5,22	pseudo-	QA/QC'd	111:17
property	24:21	static	103:2	113:8
57:14	35:1,7,8	146:22	qual 83:3	118:11
proponent	41:9,11	147:4	quali 31:11	119:20
69:22	42:20,24	psychosocial	qualities	122:5,9
78:12 79:2	43:11,18	56:13,20	24:18	164:17,25
113:19	46:18	public 8:19	quality 6:10	165:17
proposed	51:13,19	15:23,25	9:23,24	169:23
22:22	55:22 56:4	16:6 46:10	21:1,5,14	quant 95:23
28:14	73:2,20	51:16	23:13,18	quantitative
31:16	81:25 89:5	136:16	24:17 25:4	111:6
32:1,4	105:16	publication	26:7,13,22	quantitative
55:23	107:16	71:2	31:7,8,9,1	ly
75:12	108:10	publicly	0,12,13,14	95:19,24
85:24	112:2	45:23	,17,22,24	quantity
86:13	115:13	49:14	32:18	23:13,18
151:1	137:8	publicly-	33:1,14,16	58:13 61:7
176:3	160:10,13	available	34:6 35:22	63:3 76:7
proposing	163:17	49:6	37:11,21	78:3
31:6,12	provided	published	38:1,6,7,2	quarter
32:9 40:11	12:8,10	145:6	3 39:14,16	156:19
83:7 99:6	17:9 18:21	pulled	42:3,5	question
141:24	19:3 21:10	110:24	44:2,14	6:7,10,13,
144:13	25:3,6,8	pulling	46:2 51:10	15,18
151:12	40:18	139:22	52:12 55:9	10:3,17
153:17	41:7,14	pulp	57:6	11:6,25
156:22	43:2,3	176:17,24	58:13,20,2	12:4 16:15
163:18	44:22	pump 142:12	1 63:3,25	18:16 21:1
165:7	46:21	pumped 27:13	65:5,10,12	22:8 24:20
169:4,13	51:11	purpose	66:5,23	27:17
176:5	72:14	141:16	67:2,5	29:14
protect	73:12	pursue 95:8	68:3 72:12	32:17 37:8
78:24	87:25	pursuit	74:23	40:9,18
protected	107:13	49:20	76:6,17,25	42:23
17:3 23:6	114:2	purview	77:5,6,10,	43:23
protecting	125:1,3,4		16	45:18,22
15:6 78:14	130:23		78:2,11,17	47:2,19
84:14	149:6		,21,22,23	50:2 51:7
	163:15		82:21,23	52:18
	provides		83:3,4,5,1	56:19 64:6
	25:3 41:13		3,22	74:12 75:9

79:13	115:20	74:11	167:20	175:10,20
80:17,22	119:7	77:23	rates 156:9	ready 9:20
81:9	123:23	108:8,14	rather 48:25	10:2
82:16,18	125:6,14	109:10,13,	55:10	real 24:20
84:9 86:24	126:5,9,11	14	71:18	47:6
89:2,10,12	,16 128:22	radium	ratio 32:6	137:15
96:4 97:17	129:1	111:24	rational	reality
98:7,14,23	136:7	rainbow	102:4	57:11
111:20	143:15	128:9	ratios 31:17	realize
113:21	145:1	rainfall	raw 45:22,25	112:20
114:5	148:6,11,1	119:11	46:20	realized
116:2	3,18,20	raise 49:17	51:7,8,10	117:20
117:19	153:12	132:3	100:24	140:21
119:15,25	161:6	raised	Ray	Realizing
120:3,10,1	169:18	79:13,16	116:11,20	45:10
7	177:11	118:13	Rayrock	really 19:15
121:10,16	183:3,11	123:22	22:11	22:7,14,19
122:11	quick 55:20	136:25	47:14	23:25 24:4
124:21	141:12	138:3,8	57:13,22	28:19,21
126:7,16,1	quickly	139:25	58:1 117:8	72:19 74:2
8 136:3	101:10	178:15,22	re	75:1 81:15
137:10,23	103:5	raises 119:7	6:7,10,13,	117:4
138:3,9,15	109:23	raising	15,18	139:18,22
145:25	140:21	74:25	11:25 21:1	140:10
160:19	157:12	126:9	41:8 100:8	145:17
161:7	158:2	ran 127:19	124:21	148:1
166:6,10	quite 33:2	randomly	126:7,16	161:5,7
168:5	34:17	31:20	182:5	165:2
169:9	55:10 58:2	range 39:10	reach 39:10	168:25
176:13	76:12	109:3	70:4	169:2,14,1
177:5	87:12	ranges 24:16	reaches	8 183:1,7
181:18	115:5	42:16	38:15	reason 23:6
questions	120:19	rank 18:5,9	react 159:18	85:17
6:18 11:22	142:13	Ranson 4:2	reactions	93:14
14:14	146:15	rapidly	120:22	123:25
16:12	147:13	87:12	158:9	163:23
20:12 22:7	148:1	rate	reading	reasonable
24:10	149:9	23:13,18	93:19	24:17 79:3
26:1,3,6	155:1	58:21	131:6	90:12
31:3 42:11	167:18	76:7,17	149:10,20	98:13
43:7,10,17	168:11	89:19	169:8	reasonably
44:20	170:9	90:24 91:5	175:4	75:7 76:9
45:10 72:9	quiz 9:25	92:2 95:3	178:13	reasoning
79:23	quotation	150:4,8,17	180:16	136:18
81:5,25	37:9	151:19,20	readjusted	recall 18:23
86:18,20	quote 78:1	157:3,5,11	59:8	116:4,11,1
96:2		158:1,7,10	reads	9,22
104:19				117:15
105:16				
106:22				
108:6				
110:4,5				
113:8				

118:16	183:8,13	reference	71:4	reliance
174:10	recording	32:20	Regulations	88:21
received	136:1	46:13	113:4	relocation
115:5	recordings	80:24	regulatory	58:24
receiving	136:5	81:2,17	71:13,16	relying
30:12	recovery	references	112:22	159:24,25
34:20	123:17	25:5	127:24	remain 23:11
68:10 69:1	recycling	referred	rehabilitati	100:8
81:17	77:12	47:13	on 149:25	180:23
83:3,4,13	red 91:6	56:16	reiterate	remaining
84:14	reduce 89:8	71:25	36:17	101:12
108:18	90:22	74:20	related	131:25
165:18	142:7	referring	52:13 99:7	remarkably
recent 94:11	154:18	28:3 46:1	110:11,13	160:21
recently	155:15,19,	53:6	111:8	remember
143:18	22,24	refers 37:8	112:16	55:3 64:15
recessing	167:7	96:8,21	126:12	78:1
52:7 107:3	180:22	reflect	relates 96:4	112:10
132:16	reduced 91:7	74:10 75:9	111:20	174:13
reclaim	93:15	79:19	relating	remind 8:22
28:23	146:24	171:15	95:9 96:2	reminded
111:18	167:25	reflecting	relation	144:1
reclamation	168:3	74:17	112:9	147:23
130:19	182:2	regard 68:8	relative	remote 97:21
183:22	reduces	regarding	29:21	removal
recognition	87:21	81:6 106:2	157:21	14:24
99:5	155:12	112:4	167:9	56:20
recognize	reducing	125:14	relatively	remove
120:17	77:6 154:9	126:18	30:10	163:25
170:12	161:7,8	regardless	87:10	removing
recognized	167:9	48:2	146:21	15:1
35:10	reduction	regards 19:5	relay 124:3	rename 23:11
101:18	93:17	41:8	release 95:3	renew 107:9
recollection	152:14	region	121:4	Renewable
93:20	reductions	17:19,22	122:23	5:21 66:16
recommendati	152:12	19:8 22:17	released	repeat 22:5
ons 10:5	redundancy	27:23 61:4	83:19	100:15
reconvene	163:8	regional	84:13,16,2	rephrase
131:10,13,	164:4,5	35:24	3 167:14	39:12
24	refer 18:18	64:23	releasing	replacement
record	33:19	65:8,18,20	160:25	54:4
15:23,25	34:25 35:7	66:4	relevance	reply 55:20
16:6 17:10	41:21	registry	32:17	report 9:17
54:8 58:11	42:2,18	8:20 46:10	relevant	25:7 51:10
76:13	43:8 45:1	51:16	25:13	178:22
136:16	46:17	125:5	32:20,21	
173:15	80:24	regulating		
	114:12			

reporting 27:12	32:19	178:16,17	retain 87:10	3:17
reports 16:4 121:12 136:15	requirements 147:2,3,6	responding 10:17 121:10	return 106:25	9:12,14,15 11:18 28:18
represent 182:10	requires 161:3	responds 69:1,3	Rev 24:6	45:24 46:8,22
representati on 35:19 88:13	res 43:17	response 9:23 10:1 35:1,8 42:24 43:17 51:6 54:7 66:10 77:20	revealed 48:3	48:8 50:4 51:3 53:5,11,19 54:9
representati ve 25:13	resolved 139:16	Resource 66:16	reverse 29:4 68:9 77:15 85:18,21 97:25 108:11,12	55:16,25 64:8 66:7,10 73:4 75:21 76:21 82:5 85:4 97:19 99:10 100:10 102:22 103:25 104:14 105:9 106:4 109:21 112:7,19 120:15 124:22 125:23 126:21 128:3,12 129:14,23 130:4 131:17 134:3 164:14 166:11 167:8 174:9,12
represented 24:17	resources 5:21 26:12 103:5 113:17,19 133:19 135:19	80:13 81:25 97:17 103:24 113:19 115:6 120:3 165:13 166:11	review 1:3,12 8:12 9:18 10:11 13:2 17:12 19:17 20:22 24:7,9 31:1 35:10 41:13 43:2 44:19 50:18 52:11 55:23 56:4 63:23 69:18 70:3 77:19 107:7,13 110:1 112:1 125:5,8,19 131:22 158:12 184:1	
representing 133:17	respect 10:20 25:10 26:22 30:8 33:17 34:11 38:3,24 41:7 43:6 44:10 72:16 77:17 79:16 88:20 89:1,12 94:8 121:25 152:14 153:24 171:10,20 173:20 176:20	responses 8:17 11:17 52:3 114:2,22		
represents 55:8 182:6	respectfully 72:23	responsibili ties 19:20		
Republic 142:25	respects 74:12 180:24	responsibili ty 49:17		
request 8:23 51:17 77:18 112:21 113:18,20 115:6,20 132:11	respond 13:1 64:5 68:10 79:9 84:4 120:10 148:6 161:12 166:10	responsible 145:19		
requested 9:24 67:15 124:24		rest 126:25 129:17		
requesting 53:12 126:9		restrained 136:4		
requests 21:13 51:25 114:3,22		result 38:1,17,22 75:20 101:10,15 160:5	reviewed 26:21 102:25 103:1	rid 85:18
require 47:5 99:4		results 122:6 159:7 160:14	reviewing 24:13 80:13	ridge 10:21 11:3,8,11
required 11:2 91:12 101:19 104:2 121:4 153:3 169:24		resuming 52:8 132:17	revive 62:18	rightly 33:2 84:21
requirement			rich 55:25 61:21 131:17 134:3	rights 47:21
			richest 61:3	Rinaldi 2:11 10:16,18 11:9 134:7
			Rick 2:9	rise 147:14 risk 12:4,6,11 16:15,18,1

9,22,25	112:4,5	168:9	121:15	satisfy
17:10,13,2	127:17	172:3,6	safely	104:14
0	128:6	180:20	119:21	saturated
18:2,5,7,1	road 50:14	rocks 120:23	safety	87:9 88:21
0,13,21	59:11	121:21	146:14,24	89:3 95:12
19:4,7,21	65:16	123:3	147:3	146:8,9
20:7 32:24	robust 169:3	137:6	177:17	saturation
33:19	173:11	158:21	saltwater	87:2,3,23
38:25	rock	165:19,21	117:18	89:7,9
39:19	57:18,19,2	166:1	sample	92:19
40:18	0,21	rolling	36:3,7	150:7
41:1,9,21	58:1,7	148:16	46:19 55:4	saw 46:16
42:19 43:8	87:1,4,11,	roman 145:10	65:10	101:14
44:8,9,11,	16,22	room 166:16	samples	137:20
13,19	88:2,7,10,	Rougier 3:3	36:12 94:5	scale 52:24
45:1,11	20,24	Rouiger	102:24	127:11
47:3,6,8	89:13,17,2	27:19 28:4	162:7	142:23
48:6,10,11	5	115:10	163:12	146:22
50:1,7,21	90:4,10,14	134:25	sampling	156:11
51:2	91:2	round 133:12	35:15,17	scares
56:12,14,1	92:6,13,18	row 67:20	36:8,9	118:20
6	,24	RSA 7:9	52:19,23	scate 52:24
81:6,9,10	94:6,25	12:17 14:5	53:21	scenario
90:11,22	95:10	ruling 69:13	54:11	22:5 55:8
risks 49:11	98:10	run 28:21	55:8,24	scenarios
50:20	99:21	53:22	65:3 66:23	99:23
63:24	100:25	147:14,24	67:2 68:12	schedule
river 22:2	101:7,9,10	running	sand	21:13
38:15,16	,12,15	71:19	147:15,18,	40:19,20
39:13,18,2	122:14	137:20	19 156:19	41:8
3 57:9	141:20,25	165:5	sandy 179:11	112:16
61:19,25	142:7,12,1	169:11	SARA 6:7 9:3	scheduled
62:11 63:2	8,21	179:8	11:21,25	41:22
64:13,15	143:1,7,13	180:7	20:23	Schellekens
65:11	144:6	runoffs 57:6	Sarah	5:8
109:3,5	146:7,10,1	119:9	3:16,23	113:16,17
rivers 24:1	7	runs	4:10 5:15	114:8,13,1
60:16,22	147:24,25	57:19,21	135:8	4,18
121:14	150:6,17,2	Russell	sat 173:23	115:16
RO	5 152:19	66:24	sati	school
29:16,18,2	153:15,19,	rusty 7:7	62:24,25	117:16
5 30:13	20,22,25	12:24 14:3	satisfied	Schryer 2:9
32:11	154:3,7,13	Ryan 3:22	103:1	9:12,14,15
72:15,17	,19	<hr/>	129:7	28:18
73:6,17	155:1,5,7	<hr/>	152:20	45:24
85:1,9,13	156:21	safe 118:11	satisfies	46:8,22
97:9	158:7,24		104:16	48:8 50:4
101:20	159:3,4			51:3
105:15	162:22,25			
106:2	163:6			
108:20	165:23			
110:14	166:7			

53:5,11,19	74:24	20	156:25	sheet 8:23
54:9	166:9	168:7,19	series 68:15	She'll 8:12
55:16,25	sect 45:5	seeping	seriously	Shepard 2:14
64:8 73:4	section 23:7	168:1	23:25 24:1	shortly
75:21	28:1 37:9	seismic	service 12:3	72:25
76:21 82:5	42:3	146:21	99:16	80:15
85:4 97:19	45:4,5	seismic	services	107:17
100:10	71:2 74:20	138:23	60:6	showed 146:1
102:22	83:17	seismicity	session 8:7	showing
103:25	93:10	146:20	26:4 63:20	162:15
105:9	154:15	selecting	74:5,8	183:1
106:4	177:15,24	17:13	154:12	shown
109:21	sections	selenium	sessions	104:5,6
112:7,19	114:25	77:17	67:24	161:24
120:15	security	85:12,14	setting	177:14
125:23	49:20	91:22,24	130:9	shows 21:25
126:21	sediment	92:9 98:18	settle 87:8	67:25 96:6
128:3,12	97:6	101:18,23	settled 97:7	156:8
129:14,23	seeing	161:1	141:14	157:22
130:4	102:18	163:22	settlement	sic 106:21
131:17	174:13	164:2	22:1	sick 116:21
134:3	seeking	SENES 5:13	settling	sided 14:2
164:14	21:25	24:12	29:3	sideways
174:12	seem 125:20	72:12	138:4,6	137:4,9
science	149:18	73:15 98:6	seven 59:19	sign 8:23
49:17	seems 37:11	135:8	63:1 141:9	signators
scientific	90:12	172:17	several	23:4
47:25	125:25	sense 22:22	26:23	signed 23:4
scientists	138:18	34:14	117:15	signi 89:16
49:11	139:21	49:19	120:4	significance
scribbled	170:16	158:23	158:4	70:6
145:2	172:20	175:8	shallow	71:3,10
season 36:5	178:12	sensitive	36:11	74:12,13
seasonal	seen 46:12	17:20	168:20	75:11,23
35:6	140:3	18:6,9,12	Shannon	significant
36:6,18	155:6	34:15,19	8:10,16,21	7:17 47:10
54:24	158:17	sentences	184:1	69:14,16,2
seasonality	seep 91:22	105:17	shape 11:1	1,23 70:4
53:25	seepage	separate	share 56:1	75:6 89:16
seasons 54:2	27:1,2,10	81:20	124:7,11	93:17
seats 8:4	68:9 85:2	141:21	shared 99:19	105:21
second	90:7 92:9	separated	sharing	106:15
89:10,11	96:7,12	59:10	103:3	138:12
95:23	99:3,4	separation	shed 101:1	sign-in 8:23
149:21	111:4	87:7		similar
150:1	119:9,14,1	sequence		
176:8	9	88:2		
179:23	167:11,16,			
secondly				

30:10	sites 61:24	142:23	114:8	9:3
143:2	64:24	157:7	120:8	11:21,25
simple	121:13	159:15	129:14	12:4,6,11,
137:11	122:6,20	164:20	148:9	16,21
156:7	175:23	168:11	182:6,7	16:15,18,1
158:2	177:1	182:10	sort	9,22,25
179:15	site-	smaller	48:19,21,2	17:2,8,10,
simply 28:23	specific	104:24	4 62:8	13,16,18
51:23	35:21	105:3	64:24	18:2,5,7,8
77:19	37:21	smart 181:19	65:20	,10,13,21
94:23	39:15 42:5	Snap 143:14	66:19	19:4,6,7,1
112:24	83:2,12,21	snow 119:12	81:12	2,21,22
140:2	84:12,25	SNP 64:19	99:19	20:7,24
147:13	85:3,10,20	socioeconomi	100:6	33:11
158:7	86:13	c 70:18	103:16	34:15,20
Simpson 2:6	sitting	183:22	113:10	35:19 54:4
simulate	124:15	soil 168:20	172:4	56:21
127:22	181:15	solely 77:5	173:2,3,25	127:25
single	situation	127:5	179:2	specific
36:3,7	28:25	solid 140:15	sorts 154:22	12:10
55:4 59:12	171:19	soluble	166:14,18	24:10
sip 119:22	180:25	108:21	sounds	31:13
sit 130:6	situations	solution	115:19	32:18,25
162:10	78:11	115:19	source 63:4	33:14,16
site	six 17:24	161:22	114:11	34:6 39:14
25:12,14,1	46:19	solutions	South 121:11	42:12
6,19,23	95:22	102:11	143:10	46:13,17
31:6,7,13	141:9	somebody	southern	65:2 77:20
32:18,25	size 46:19	124:6	119:16	90:20
33:14,15	82:6	145:9	space 10:24	108:3
34:5 39:13	skipped	sometime	88:9	112:9
44:1,14	125:21	117:2	93:21,22	113:10
57:4 64:18	148:25	somewhere	spaces 87:4	121:22,23
74:22	Slack 5:5	114:2	span 182:17	123:2,4
77:12	9:23	174:3	Spare 5:18	174:11
83:19	slope 146:18	178:12	speak 33:18	181:21
84:13,23	147:13,15	Sonny 5:13	43:15 50:5	specifically
86:22	148:2	135:16	124:5	12:21 13:7
91:16 96:2	slopes 146:3	Sorensen 4:7	136:12	23:22 28:3
98:11	slow 93:3	135:4	170:4	42:24
112:11,12	160:1,18	sorry 13:2	speaking	56:15
114:7	slowed	18:4 33:23	179:10,12	74:16 87:1
118:6	152:18	83:5,24	speaks 78:24	90:1
119:6	159:23	86:1 87:24	special	111:23
139:8,9,11	160:3	92:7	17:21,24	122:8
,24	slowly 87:9	112:18	18:7,10	specificatio
144:18,19,	small 29:5		species 6:7	ns 30:14
24				specifics
163:11,17				130:25
169:24				specify
				172:9

speed 148:23	67:14	states 23:7	90:1	subject
Spencer 2:7	Staff 1:12	static	123:18	93:19
spent 72:13	stage 58:2	146:14	183:6	131:6
spigot	70:16	147:3	stream 39:23	179:20
170:19	140:13	stations	streams	submitted
spot 64:12	167:19	64:19 65:3	175:13	97:20
66:8	172:16	statistics	strength	submitting
179:22	stages	46:16	146:7,8	9:21
spray 179:16	172:24	59:23	149:13,15	subsequent
spreadsheet	stand 40:6	status	stress 69:2	86:2
45:23	147:16	18:8,9,11,22	stretch 35:4	subset 89:25
spring	standard	stay 11:8	Strictly	substantial
119:12	122:9	steep 136:10	26:12	78:10 92:4
spring/	145:17	139:18	strictly-	101:25
summer/	standards	175:3	water-	102:1
fall 53:23	123:13,14	step 139:22	issue	substantiall
54:5	stands	Stephen 5:25	115:20	y 23:12
springtime	176:14,23	Sterenber	stringent	87:16
55:11	start 9:4,9	3:8	123:5,13	155:2
Squirrel	14:22	Stevens 2:23	strong 38:10	165:7
61:19	55:12	4:8 134:21	140:10	substantive
SSWQO	65:15	stood 149:21	148:1	26:24
32:1,4,5	101:25	stop 91:3	stronger	subsurface
37:6 42:13	133:11,14	120:8	146:11	60:8
165:7	136:6	151:17	strongly	successfully
167:8	156:11	157:6	94:13	141:4
SSWQOs	158:1	stopped	structure	sufficient
31:13,16	183:21	100:18	147:7	20:23
32:9 37:12	started 8:4	157:10	149:17	90:25
39:9,25	23:20 65:9	storage	struggle	93:23
40:6,10	66:19	28:24	161:10	suggest 47:8
41:17 80:6	101:13	86:21	studied	53:22
81:2,13,16	107:8	89:14	27:20	56:12 75:1
82:22	123:24	139:13	studies 20:9	148:15
83:8,25	169:8	stored 86:25	27:18	150:14
85:24	starting	stories	34:16	169:16
86:1,4	64:13	63:19	35:2,3,16	170:25
sta 85:7	starts 94:20	story 152:16	119:18	suggested
stability	state 72:18	straight	121:11	73:17
146:1,2,23	95:13	180:9	122:1,5	107:16
149:17	119:2	strata	124:2	131:23
177:11,14	131:18	168:20	133:10	136:16
stable 137:2	stated 76:20	177:24	138:5,9	147:12
146:19	180:16	strategy	140:1	155:22
147:7	statement		172:21	suggesting
Stacy 2:4	37:12		stuff 162:4	25:18
	124:24			89:25
				105:2

163:4	22:25 36:5	170:18	120:5	tailis 137:7
suggestion	43:10	switched	124:16	taking 38:21
54:5,13	45:25	85:9	133:2,12,1	76:11
suggestions	50:11	SWQO 83:8	4 141:5	143:12
21:10	60:17 74:4	synergism	tables 99:18	167:12
suggests	81:9 90:2	42:9	181:15	183:24
150:23	106:5	synergistic	tailings	talk 13:6
suit 115:14	108:16	41:17	10:25	30:19 43:9
suitable	111:23	synoptic	86:25	56:19
115:19	112:4,5	42:14	87:3,6,8,2	66:21 67:7
sulfide	140:5	synthetic	0	70:20,21
158:17	165:23	126:20	88:1,15,21	73:16 74:7
162:16,20	173:24	system	89:4,5,17,	98:19
sulfur	174:8	29:4,9	20	99:14,15
158:17	surface	30:6,7	91:1,9,15	100:5,12
sulphide	11:15	33:7 35:25	92:7	103:16
92:5 94:9	91:17	57:9 61:19	93:10,12	121:18,19
sum 167:22	94:20	63:2,16	94:1,7,15,	133:7
summary 42:4	100:23	73:18	16,21,23	talked 37:6
45:3 46:16	110:9	77:7,9,15	95:1,10,11	62:15
72:24 73:6	120:20	85:8,9,22	,21 101:13	68:2,5
92:12	168:13	94:19	120:24	98:17
100:7	surfaces	95:15	127:2	100:4
summer 35:18	166:14	97:21 98:1	137:7,25	120:19
52:20	surficial	101:20	138:10,14,	136:22
55:10	28:3	105:5	22	153:18
102:15	surge 105:10	110:7	139:7,9,10	154:11
116:19,21	surpassed	123:3	141:8,21,2	talking 46:2
164:17	47:24 48:1	127:12,17,	5	48:16,20
Sunny 137:1	surprising	19 150:22	142:7,12,1	57:2,25
superior	146:16	152:10	9,20	58:9 62:10
149:15	surveillance	156:20	143:1,5,9,	66:11 71:3
150:24	145:15	161:20	13 144:6,8	72:13 74:2
superpositio	179:4	163:1,24	146:6,7,8,	99:1
n 81:16	survey	164:5	9,12	128:8,13
supply 60:25	53:7,8	168:2	149:16	136:21
61:1	surveys 12:7	170:6	150:3	141:19
supporting	35:6	systems	152:8	144:5,7
24:21	susceptible	110:22,23	154:16	156:12
suppose 70:1	177:15	<hr/>	156:8,19,2	172:5
supposed	179:11,14	<hr/>	0,21	179:7
10:7 14:24	180:20	table 6:1	157:5,15,2	182:1
sure 10:6,10	sustain	18:18	0 158:6	talks 37:10
15:16	158:8	21:19	160:1	156:5
19:20	swathe	29:18	170:4	179:25
	178:15	100:9	171:13	tap 102:16
	switch	101:2	172:11	target 90:1
	124:17	103:15	179:9,10,1	150:12
		107:18	2,13	targeting
		112:6	180:7,10,2	72:4
			0,25	
			181:7,8	

TDS 113:22 114:6	98:22,24 169:23,24	159:7,8,11 ,14,15,16, 18 160:14 162:15 173:7	148:21 177:4 182:23 183:24,25 184:1,2	151:4 174:20 181:12 183:4,9,23 184:4
tea 132:25	terminology 17:1 64:14 141:12,14			
teach 124:7				
team 32:24 33:20 35:1,8 38:25 39:19 48:10 50:7 67:22 130:17 183:12 184:3	terms 25:22 30:18 32:19,21 35:2,5 36:1 39:20 46:1 48:10,13,2 0,23 50:7,12 53:24 55:8 64:17 65:14,19 66:3,5 71:3 72:12 73:20 75:24 76:10,24,2 5 77:6,25 78:2,17,20 79:5 82:6 95:3,5,16 98:9 99:11 102:17 112:21 120:21 130:7,23 136:18 139:24 141:19 142:16 150:15,21 162:22 163:21 164:3 165:15,17, 23 179:1	testimony 62:8 testing 26:7 94:5,6 127:11,12 162:6,9 164:17 tests 127:24 128:9,13 163:10 text 96:21 thank 9:14 10:17 11:4 12:20,25 13:19 16:1 20:11,21 21:8,17 24:5 25:24,25 26:5 29:15 41:12 44:17 46:21 50:16 52:2 64:9 66:5 71:22 73:16 74:25 75:17 77:21 79:20 81:23 82:2,15 86:18 95:7,25 96:19 104:13 105:13,24 109:15 113:6 114:14 120:16 121:9 123:15 124:14 128:16 136:9	thanks 8:24 9:16 11:16 18:16 24:9 26:16 30:3,21 31:1 32:16 35:10,13 37:18 39:6 40:9,17,22 41:15 43:13,18 44:16,23,2 5 45:6 46:25 48:7 50:3,18,22 51:14,22 52:5,15 54:6,18 56:2,5 63:23 64:4,7 66:6 67:12,13,1 7 71:23 72:8 73:23,25 74:6,8 79:7 81:4 84:8,11 94:3 97:16 103:20,24 104:12,16, 19 105:25 106:3,20,2 2,25 109:14,16 110:1 113:1,4,7 115:18 120:2,11 124:15 125:7,11,2 5 126:5 128:21 129:6 131:1 132:9 135:24	that'd 16:6 that'll 26:3 that's 16:12 17:5,10 18:21 20:1,14 22:18,19 23:24 24:15 25:13 27:25 41:22 42:25 44:18 46:4,19 48:9 49:4 50:6,13,15 51:4 53:14 57:13,23 58:23,25 59:3 60:12,24 61:4,13 62:7,8 63:16 64:18 65:17 66:14 68:17 69:5,7,16, 17,18 73:8 74:18,19,2 1 75:18 77:21 79:23 83:25 84:13 85:12 86:25 87:19 88:9,17 91:2 96:11,18 97:9 98:10 102:4 104:8,9 105:10,23
tech 111:9				
technical 1:5 8:7 63:20 67:24 72:22,25 73:13 98:15 111:9 175:4 178:13				
technique 176:18,21				
techniques 143:16 144:3,14				
technologies 34:9 98:23 164:1				
technology 72:17,18 76:10 140:22				
temperature 93:6	Territorial 17:17			
temporal 36:6,18 52:24 54:25	Territories 17:11 19:5,8 60:6			
ten 29:21 31:18 60:21 95:21,22	test 38:25 102:18 126:23 152:2 157:22			
term				

106:21	there'll	156:3	179:10	17:19 19:8
109:10,17	39:2 69:14	157:7	thickening	20:16
111:4,9	119:24	158:7,19	139:12	21:15
112:5,6,17	there's	159:2	thicker	23:2,3,8,1
114:8	12:5,10,12	161:4,18	171:18	1,15 24:10
116:9	14:24	163:23	thickness	26:1
117:11,13	17:15 18:7	164:8,11,1	91:5,8	37:10,13
118:6,25	20:6 21:22	9 166:12	151:21	47:1 48:13
119:1,25	22:13 23:7	167:13	thin 92:25	52:18
121:2,12	24:1,2	168:8	third 179:24	56:10
123:22	25:1 26:24	172:20	thoughts	57:3,17
125:12	28:10 29:4	177:1	93:25	59:24
127:21	35:11	181:6,13,1	170:2	60:18
128:11	38:21	4,20	thread	61:20 65:1
129:7,9	43:20	they'll 15:6	169:25	66:3 72:9
130:3,9	44:15	74:17	threads	74:10,15,1
131:2	45:13	87:12	169:18	9
138:11	48:21	136:17	threatened	75:5,13,15
142:5,6	49:5,15,16	they're	17:20,25	,16,24
143:12	57:8	14:22 15:1	18:12,13	76:3,5,15,
144:11	61:6,7,25	29:20	threshold	18,23
146:15,18	62:22	47:15	32:22 70:7	77:11,25
148:3,25	63:13,14	59:10 87:8	71:4,10	79:8,9,12,
151:15	66:18	103:1	thresholds	21 99:19
155:1,14,1	68:18	107:19	76:1	102:14
9,21	72:24	127:3	83:4,14	123:18
156:13	78:10	133:13	throughout	129:19,24
158:5	86:13 87:7	138:10	14:17 20:5	130:2
159:19	91:19 94:7	140:3	125:10	133:20,23
160:20	96:14,15	142:18,21	126:12	135:6,11,1
161:22	98:1	143:5,7,8,	throw 104:3	2,16
163:13,14,	112:12	12,13	ties 98:22	136:10,14,
23	119:6,11,1	145:5	till 168:14	23 158:12
165:20,24	3,18,19	150:2	177:25	160:5,23,2
166:24	120:17	151:6	timeline	4 161:3
167:25	122:12,13,	165:21	73:7	166:4,5
170:11	17,21,24	168:11,12	timeframe	168:25
174:16,21	123:8	178:21	30:18	175:1
176:17,18,	128:25	180:21	timelime	178:4
19,20,21	129:10	they've	62:24	182:16
179:21	130:12	69:24	Timi	Tlicho's
181:22	131:25	102:25	Timits 61:21	66:16
182:3	138:1,23	103:2	TK 10:3	182:20
183:8	139:17	130:23	116:4	t'o 60:19
themselves	141:5	thick 146:17	123:20,23	today 8:9,24
89:5,21	142:5	152:1	Tlicho 4:15	9:8,11
91:1	143:3	156:14,25	16:14	11:19
138:10	145:11,14	thickened		30:22
therefore	148:5	139:7		41:10 43:7
90:19	151:24	141:7		67:21 68:3
139:11	152:12,25	143:9		75:3 123:5
182:9	153:12	144:8		129:2,17
	155:10			

today's 21:4	80:24	treating	120:22	25:22
Todd 5:5	81:2,16	121:4	131:7	36:11 97:4
9:23	126:19	treatment	142:1	121:21,22
toe 167:17	127:24	6:11	144:11,21	122:18,19
Tom 2:11	128:9,13	21:2,6	149:2	123:2
10:16,18	toxicity-	26:3	152:23	141:16
11:9 134:7	based	27:14,15	155:14	149:7
tomorrow	34:13 37:7	29:2,17,22	165:16	158:20
10:2 43:3	78:13	34:8 72:15	168:3	162:18
73:16	tracked	91:25 97:4	t'sa 60:21	176:8
98:19	139:4	98:23 99:4	Tsoti 60:19	typical 84:7
169:2,17	tracking	101:19,21	TSS 111:24	127:6,18
178:10	139:7,9,10	104:25	Ttitso 5:2	128:5
183:21	tracks	105:5	Ttka 60:19	typically
184:5	100:19	107:11	Tumi 61:21	36:25
tonight 75:8	traditional	108:12	turn 9:11	51:15
99:15	47:9,11,12	110:7,22,2	54:20	168:12
100:6,12	,21	3 113:9	turns 159:2	typify
tonnes 99:2	48:1,2,24	116:13	Twelve 107:7	127:23
top 49:3	49:18,20	122:23	twenty 93:11	Tyrel 3:4
50:6 137:7	trafficabili	127:12	107:22	134:11
143:1	ty	161:20,21,	146:17	
156:20	180:14,21	25 163:24	154:15	<hr/> U <hr/>
topic 9:3	training	168:2	twenty-five	ud 25:16
11:20 16:3	67:1	169:3,5,24	107:22	ultimate
20:23 21:4	trans 135:25	treatments	twenty-two	111:3
43:24 45:7	Transcript	22:23	32:1,2,7	160:19
52:12	6:24	treats 133:1	twice 82:3,4	ultimately
113:10	transcriptio	trees 14:24	147:18	24:16
topics 21:11	n 135:25	trench	Ty 134:11	161:7
43:20	transcripts	168:17	type 25:10	182:4
44:13	183:24	172:11	65:7 90:5	un 57:12
108:3	travel 89:19	trials 151:6	94:14,18,2	100:24
124:25	travelled	tried 95:14	2 108:5	150:5
125:1	116:15	trout 128:9	125:9	unacceptable
126:11	travels	truck 179:16	142:16	28:22
total 31:24	159:25	true 69:16	149:14	unaltered
32:6	treat 22:24	70:9 145:5	153:3	23:12
totally	29:8 91:24	152:5	156:9	37:11
172:22	98:24	try 21:12	159:4	78:2,4,5
tough 105:15	101:24	42:24	165:23	underestimat
towards	161:19	82:19	169:23	e 38:11
15:19	treated	145:2	170:14,16	undergo
75:25 77:1	28:12	168:18	172:3	27:14
toxic 128:16	144:20	172:13	175:18,22	under-ice
toxicity	167:14	trying 39:7	181:7	55:7
33:13		67:3 81:19	types 12:8,9	underneath
		109:23		

167:2	57:12	23:22	various 9:22	visit 116:20
168:20	58:17	65:5,20	38:9	voicing
177:12,25	unimpacted	urge 100:6	125:10	117:10
understand	100:24	useful 21:9	175:11	void 10:24
14:19 17:2	unit 29:18	75:2 97:14	vary 31:17	87:3 88:9
34:13	30:1	115:5,9	122:6,22	voids 86:25
56:22	unknown 57:8	130:12,16	vbite 60:20	93:5
60:18	unless 58:11	131:10	vehicle	150:13
103:7	unlike 58:1	136:17	87:20	volume 7:17
117:23	unlikely	149:9	Velma 3:8	77:14
119:4	97:10	153:10	ver 150:3	86:24
121:20	unnamed	usefully	verbal 149:5	105:21
123:16	143:10,18,	75:10	verify 50:6	106:15
129:17	19,20	usually	Veronica	167:16
138:13	unoxidized	53:24	5:24	Vos 2:18
153:19	91:19	utilized	version	24:25 27:8
161:6	unsaturated	39:21	45:13,15	88:25
162:2,4,22	87:16	utilizing	51:12,20	90:23 94:3
177:4	92:13	74:18	versus 30:1	101:3
understandin	95:13	utrification	169:13	110:20
g 36:3	untreated		vertical	111:10
38:4,5	27:4,11	<hr/> V <hr/>	95:15	121:17
55:13 80:6	116:25	valley	113:22	133:24
81:13	unwarranted	1:2,12	vertically	144:16
103:12	49:18	15:8 16:16	88:8,9	151:4
159:12	update 67:13	17:12	93:12	156:2,16,1
164:13	109:1,11,2	valuable	vicinity	8 162:1
175:8	0 112:4	75:18	27:18	171:8
understood	updated	115:2	28:13	173:18
15:1 90:9	18:25	174:21	view 11:14	181:5
96:18	19:16	value 146:12	57:21	<hr/> W <hr/>
182:19	upland 7:5	values	88:3,12	wa 118:14
undertaking	12:5,7,12,	80:24	100:2,3	149:8
13:13,18,2	22 13:24	81:2,17	views 24:7	182:8
0,22	upon 8:1	162:20	village	wait 84:3
106:2,9	45:3	variability	61:22	Walbourne
108:9,10	52:7,8	36:6 38:19	villages	3:17
109:8,11	68:15	109:4	62:13 63:1	124:22,23
161:18	107:3,4	variables	Virgl 2:16	walls 96:15
176:10	132:16,17	42:16	virtually	Warnock
undertakings	164:24	variation	112:24	184:15
6:3 7:1	184:7	36:18	virtue 33:4	wasn't 10:6
8:18	upper 24:16	54:25 55:1	visibility	16:21
undertook	upstream	variety	11:14	55:20 74:2
30:4	21:23	143:16		80:5
undertaken	22:1,11			108:15
106:21				121:10
underway				127:6
163:11				
unfortunate				

175:6	33:1,10,14	100:14,16,	waterfowl	77:24
waste 10:24	,16	18 101:17	6:7 9:3	108:15
58:7	34:6,11	103:5	11:21,25	109:14
87:1,4,15,	35:11,22	104:25	20:24 62:9	135:3
21	36:4,25	105:4,21,2	waters	welcome
88:2,7,9,2	37:11,21,2	2	23:9,14	8:3,6,21
0	3	106:14,15	60:15 78:2	52:11
89:13,17,2	38:1,2,6,7	107:9,10	117:13	107:6
5	,23	108:3,4,15	121:13	132:19
92:6,13,23	39:14,16	,17	water's	133:6
94:25	42:3,5	109:1,14	14:21	we'll 8:4
95:10	44:1,14	110:6,9,23	122:24	9:4,6,7,21
99:20	46:2 47:17	111:17	watershed	13:6 15:17
100:25	51:10	113:8,9,23	33:3 37:25	19:19 21:4
101:7,10	52:12,13	116:6,9,12	38:2,8,15	25:20 29:7
107:14	55:9	,17,24	64:15	30:18,19
149:24	57:6,18,23	117:17,18,	65:22	41:23
150:25	,24 58:20	25	watersheds	42:20 43:9
152:19	59:3	118:3,7,8,	27:21,24	46:12
153:18	60:11,25	10	Watt 5:18	50:14
154:13	61:2,7,14,	119:19,21,	ways 25:23	51:11
155:1,5,7	18 62:2	22,23	60:7	53:20
158:6	63:25	120:17	129:10	55:17 67:7
162:22,24	64:19,23	121:1,2,6,	137:11	68:14 69:8
163:6	65:5,6,10,	12	wear 183:7	71:15
175:13	11,12,24	122:5,7,9,	website	73:16
wasted	66:5,8,15,	10,22	10:4,6	79:18
118:22	22,25	124:13	71:1,25	80:14 82:4
wasterock	67:1,3,4	125:23	107:17	83:14
170:4,13	68:3,21	126:7,12,1	we'd 24:18	98:18
172:1,2	70:19,22	6,23	44:4 48:22	100:5
wastes 94:9	71:6	127:1,4,6,	52:11 55:2	104:19
water	72:12,14	9 133:19	56:1 72:23	110:24
6:10,11,15	74:22	135:3	76:14,15	112:1,4,5,
,18	75:14,16	138:9,15,1	92:8	21 132:13
7:16,17	76:6,11,17	7 139:15	132:22	156:19
9:7	,25	144:9	138:25	169:17
21:1,5,14,	77:5,6,10,	152:14,15	178:23	184:5
18,19	12,16,24	157:16	181:8	well-known
22:2,20,22	78:9,11,15	160:20	Wednesday	180:11
,24 23:18	,17,21,22,	161:8,13,1	9:9	well-mixed
24:11,18	23,24	9	Wehveti	150:8
25:4	79:1,14	164:17,22,	60:20	Wendy 8:25
26:3,6,11,	83:2,3,4,1	25	Wek'eezhii	183:24
13,22	3,19,21,23	165:11,17	5:20 65:24	184:15
27:2,10	84:12,13,2	166:20	66:7,13,15	we're 15:16
28:12	3,25	167:7,11	68:20	17:8,11
29:3,8	85:3,10,20	169:23,24	70:22	19:20
31:6,8,9,1	86:13,21,2	170:7,23		21:18,23,2
1,13,14,17	5 87:10,12	171:2		4 22:17,24
,22,24	92:15,20	173:24		23:20
32:18	95:6,16	179:16		
	96:2,5,6,2	182:1,3,8		
	0 97:4,15			

29:1,5	17 171:19	170:2	98:6	woodland
41:5 44:7	176:6,7	178:5	100:21	18:11
48:20	179:12	whatever	172:17	19:14
52:22	183:1	15:23	wildlife 6:8	123:18
57:25	west 11:11	64:16	9:4 11:21	wording
58:9,10	wet 180:14	124:2	12:1,3	76:23
59:11	wetland	131:19	20:24	work 15:16
60:2,7,13	22:23	169:23	21:20 39:4	22:23
64:17,20	27:14	Wheler 3:20	willing 66:2	53:13 67:7
67:3,8	73:18	135:2	willow	68:8,10
70:16,17	101:20,24	whenever	61:11,14	71:13
71:13	104:4,9,13	68:1 179:8	willows	73:19
80:13 85:6	161:19,21	Whereabouts	61:13	116:4
88:13	163:24	117:22	winter 55:10	118:9
93:10	164:20,23	whereas 58:4	144:8,10	123:20,24
94:24,25	wetlands	wherein	170:17,19,	124:9
99:1	74:3,7	141:24	20	131:16
102:10,11	91:23	whether	wish 125:13	142:6
103:1	169:3	49:25	wished	161:24
109:18,22,	we've 10:21	50:1,25	123:10	163:19
23	22:5,6	57:8,11	Witherly	164:1
110:10,12,	29:3 37:6	68:16	5:17	170:25
14,21	38:18 41:6	74:17,21	WLWB 3:19	worked 57:14
111:16	47:10	76:4 86:3	Wod 60:20	working 5:12
112:10,11,	62:17	99:7	wolverine	19:19
12,24	64:11	101:19	18:8	48:13
119:3	66:12,13	112:21	wonder	50:19
120:22	68:2,5	153:2	117:5,9	54:18
128:12	71:5,11	163:3,5	wondered	67:1,8
141:19,23,	72:13	174:10	108:25	109:22
24 142:1	77:1,13	178:10	wondering	136:23
144:3,5,11	85:19	whichever	12:14 15:5	173:12
,13,21	90:4,16	51:17	16:21	works 13:10
147:5	94:4,6	whoever	17:25	15:21
150:12	97:9,25	51:24	18:14,24	131:19
151:16	105:16	131:12	26:25 27:2	159:13
153:1	116:5,8	136:6	42:14	workshop
154:4,5,6,	117:6	162:10	52:22 81:1	6:20 130:9
9,18	120:19	whole	82:19 88:6	131:13
155:14	121:6	59:1,20	90:19	132:22
156:12,22	126:11	61:3	96:8,22	135:23
157:1	136:22	128:8,13	102:16	world 141:17
159:24,25	139:4,25	137:13	110:12,15	146:22
160:15	141:15	178:15	114:1	world's
161:10	144:14,22	Wiatzka 5:12	116:3	117:17
162:19,20	146:16	24:12	176:2	worried
163:10,13,	147:6	25:24 26:2	Wood 2:25	23:21
16,17,18	154:15	72:11		172:7
165:6,14,1	155:17,22	73:15 74:1		worry 85:25
5,16,22	158:16			
166:24	161:14			
167:6,9,10	167:20			
,16				
168:15,16,				

worst 22:4 165:23	174:7	84:8,15		
worst-case 55:8	you'll 47:4 50:24	85:23		
worth 104:18	59:23 86:3	86:17		
wou 179:17	141:13	126:17		
woven 61:11	144:6,8	127:20		
	148:19	128:10,19		
	168:11	zero 93:15		
writing 140:18	young 62:15	146:24		
174:18	116:23	150:9		
written 39:7	yourself 82:20	Zoe 4:17,22		
45:12	you've 34:14,18	5:10,13		
70:23	43:7 45:19	56:19,25		
140:19	47:4,18	57:2 79:16		
wrong 64:14	48:5 76:12	133:20		
137:19	79:21 82:3	135:12,16		
wrote 148:7	87:25	137:1		
www.wlwb.ca 71:1	98:17	zone 81:12		
	99:10	82:10,12,2		
	100:22	0		
	105:2	zones 80:5		
<hr/> Y <hr/>	126:19	82:7 89:16		
Ye 13:4	149:17	154:7		
Yellowknife 1:22	158:14,20,	158:6		
Yellowknives 5:5	21,24	zooplankton 34:16,19		
	159:9	35:23		
Yep 13:9	182:21	36:15		
		53:9,21		
yesterday 9:4 10:4	<hr/> Z <hr/>	54:1,11		
11:20	Zajdlik 3:7	55:14		
19:13	26:20	68:13		
62:10,15	27:16	zooplankton/ phytoplank ton 53:7		
72:14 77:4	28:2,9			
90:13	29:13			
99:12	30:15 31:4			
100:5	33:22			
104:6	34:12			
106:2,6	36:2,16			
123:17	37:5			
136:16	39:5,24			
yet 17:4	40:8,25			
40:20 66:1	41:16 42:7			
73:9	45:9,21			
102:25	46:3,14			
110:24	54:23			
126:19	55:19 72:2			
155:6	80:3,18,21			
	81:8 82:17			
	83:6,16			