



MACKENZIE VALLEY ENVIRONMENTAL
IMPACT AND REVIEW BOARD

PRAIRIE CREEK ALL SEASON ACCESS ROAD PROJECT
(EA1415-01)
TECHNICAL SESSIONS

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Explorer Hotel, Yellowknife

June 15, 2016

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1	TABLE OF CONTENTS	
2		Page No.
3	List of Undertakings	7
4	List of Commitments	9
5		
6		
7	Discussion	10
8		
9		
10	Certificate of Transcript	276
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

1	List of Undertakings		
2	No.	Description	Page No.
3	21	To provide map of how CanZinc will	
4		access the Wolverine Airstrip	44
5	22	Proponent to provide information on the	
6		demobilization plan with regard to	
7		drainage, erosion, and sediment control	
8		matters prior to closing	49
9	23	CanZinc to explain what is covered in	
10		the table, and clarify the footprint of	
11		the channel being lost during	
12		realignment	61
13	24	CanZinc to elaborate on the summary	
14		table of square metres of impact and	
15		explain where the numbers come from	97
16	25	CanZinc will provide information on	
17		design flow (return period)	
18		requirements for any major temporary	
19		crossing and the length of time they	
20		are expected to be in place.	113
21	26	CanZinc to provide clear definitions; a	
22		clear description of the baseline	
23		condition and then a clear description	
24		of how proposed channel will represent	
25		that	160

1	LIST OF UNDERTAKINGS (Cont'd)		
2	No.	DESCRIPTION	PAGE NO.
3	27	CanZinc to provide a prioritized list	
4		of road crossings in terms of	
5		likelihood of disruption	182
6	28	CanZinc to provide an additional	
7		level of detail on efforts to minimize	
8		disturbance within the riparian	
9		zones	186
10	29	CanZinc will provide information on	
11		measures to minimize riparian	
12		disturbance during culvert and	
13		crossing installation	190
14	30	CanZinc to advise how peak flows were	
15		estimated and flood level modelling.	196
16	31	CanZinc will provide information on	
17		measures to restore riparian zones and	
18		areas around crossings affected by	
19		the development	234
20			
21			
22			
23			
24			
25			

1	LIST OF COMMITMENTS		
2	NO.	DESCRIPTION	PAGE NO.
3	9	CanZinc commits to monitoring TSS	
4		specifically to understand the effects	
5		of water flowing over road sections	
6		designed to be submerged during high-	
7		water events (measuring upstream and	
8		downstream of the section during high	
9		water events).	174
10	10	Canadian Zinc will perform some type	
11		of permafrost monitoring plan	247
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

1 --- Upon commencing at 8:46 a.m.

2

3 CO-FACILITATOR BARB SWEAZEY: Welcome,
4 everyone, to day 3 of the technical session. It's
5 Barb here at Stratos. Apologies for our later start
6 this morning. We had a -- a few -- we were working
7 through some of the undertakings. So we just wanted
8 to get a bit of clarity on that, so that's why it took
9 us a little bit longer this morning, so apologies for
10 our late start.

11 I think we only have one (1) new
12 participant here from CanZinc. Is that right? That's
13 the only new participant. So perhaps I could just get
14 you to introduce yourself to the group.

15 MR. BILL ROZEBOOM: Yes, my name is
16 Bill Rozeboom. I'm with Tetra Tech EBA. And I've
17 been working on the Sundog Creek realignment. That's
18 the part that I'll -- speaking to this morning.

19 CO-FACILITATOR BARB SWEAZEY: Great.
20 Thank you very much, Bill. Welcome.

21 So in terms of our agenda -- Barb, from
22 Stratos. In terms of our agenda today, we are going
23 to pause, because we're halfway through, just to do a
24 reading through of the undertakings so that they're
25 into the transcription.

1 There has been a -- a draft. And a few
2 parties have had the chance -- those that were
3 involved in -- in the undertakings have had a chance
4 to look through. So we've made a few changes. We
5 would like to just read through and make sure that
6 people are comfortable with the undertakings as they
7 are currently written.

8 Two (2) things to note. One (1) is
9 that those undertakings and the commitments will also
10 be circulated after the technical session, at which
11 point you can also provide additional comment if you
12 have questions or concerns.

13 Secondly, we haven't put in the timing
14 on these undertakings, you know, This is to be done by
15 this date. Notionally, we were kind of working with a
16 June 30th date, but recognize that with the -- with
17 the number of undertakings, that that might be a bit
18 tight.

19 So, CanZinc, I -- I wonder if that
20 might be something you can think on over the next day
21 or two (2) as to what seems reasonable in terms of a
22 timeframe for some of these undertakings, that we
23 could close -- close our session tomorrow. Just
24 making sure we're comfortable with -- with an agreed
25 timeframe for completing the undertakings.

1 Once we review the undertakings this
2 morning, I would like to just make sure that there are
3 no additional questions on road design, the agenda
4 item that we covered yesterday. If there are any out
5 -- outstanding questions, people could ask that.
6 Otherwise, we'll move right into the road -- sorry,
7 project description questions, particularly as they
8 relate to water. That's our focus this morning, as is
9 indicated on your agenda.

10 The two (2) first ones that we'd really
11 like to -- to make sure that we give enough time for
12 is the Sundog Creek alignment and the major water
13 course crossings. Of course, there are several other
14 bullets. And you may have additional questions, but
15 those we definitely want to make sure that we have
16 time for this morning.

17 Are there any other questions or
18 comments about what's happened so far, our day ahead
19 of us, agenda for today? Are we good to roll?

20 Are there people that have joined us on
21 the phone?

22

23 (BRIEF PAUSE)

24

25 MR. BRADLEY SUMMERFIELD: Brad, from

1 Environment and Climate Change Canada. David is on
2 the phone, but he's telling me that he can't hear
3 right now.

4

5 (BRIEF PAUSE)

6

7 MR. BRADLEY SUMMERFIELD: I'll -- I'll
8 double-check with him, but he -- he's on. David, can
9 you hear us?

10 MR. DAVID LAVERDIERE (BY PHONE): Hi,
11 good morning. Now I can hear you. Thank you.

12 MR. BRADLEY SUMMERFIELD: Okay.
13 Great. Thanks.

14 CO-FACILITATOR BARB SWEAZEY: It's
15 Barb, from Stratos. I also have a note that Dave may
16 have a question at some point today regarding dust
17 suppression, because he wasn't able to ask that on day
18 1. So I do have a note that we need to come back to
19 Dave at some point for that question.

20 MR. BRADLEY SUMMERFIELD: Yeah, that's
21 Dave Fox. He is hopefully going to be here in person
22 later today.

23 CO-FACILITATOR BARB SWEAZEY: Sorry,
24 wrong Dave. Okay. Thank you.

25 So at that, I'm going to turn it over

1 to Stefan to -- to read through the undertaking. And
2 the process will be it -- unless you have a question
3 or concern about the undertaking, we'll just pause
4 briefly and then we'll move to the next one, but if
5 you do have a question or concern, please make sure
6 that you indicate so.

7 So, Stefan, I'll turn it to you, and
8 I'll show it on the slide.

9 CO-FACILITATOR STEFAN REINECKE: Sure.
10 All right. So Stefan Reinecke, from Stratos. We have
11 approximately ten (10) undertakings for both day 1 and
12 day 2. And just to clarify, are we going to read
13 through commitments, as well? No, okay.

14 So I think perhaps if -- if there are
15 any issues of -- that require a bit of further
16 deliberation, if possible, either we'll do those very
17 quickly, or if they require more discussion, perhaps
18 those could go to a sidebar discussion, if that's
19 appropriate.

20 Undertaking 1:

21 "CanZinc is to identify
22 implications, cost, or other of
23 containing and disposing of
24 groundwater offsite instead of using
25 soak away pumps."

1 Undertaking 2:

2 "Parks Canada and CanZinc to discuss
3 need for additional assessment of
4 ecosystems that will be disturbed so
5 as to tailor reclamation approaches
6 and potentially further examination
7 of potentially permanent impacts,
8 e.g., those associated with
9 permafrost degradation."

10 Undertaking number 3:

11 "CanZinc will follow up with DFN in
12 relation to recent changes to
13 project and implications for aquatic
14 resources."

15 There were some questions around the
16 clarity of this undertaking. I'm looking to the two
17 (2) parties involved regarding that one, and if there
18 could be a head nod or a -- a 'no' sign to indicate
19 confirmation of clarity.

20 MR. DAVID HARPLEY: It's Dave Harpley.
21 I -- I remember this coming up, but the undertaking
22 doesn't actually plug me into exactly what the issue
23 was, but I'm sure I can resolve that with Dean
24 directly, so.

25

1 (BRIEF PAUSE)

2

3 MR. DAVID HARPLEY: Dave Harpley. No,
4 Carrie, I guess.

5 MS. CARRIE BRENEMAN: Carrie Breneman,
6 Dehcho First Nations. Yeah, we can talk about it at
7 the break.

8 CO-FACILITATOR STEFAN REINECKE:
9 Great. Thank you very much, and just relay that back
10 to me, and we can make an adjustment. Stefan
11 Reinecke, from Stratos.

12 Undertaking 4:
13 "CanZinc will provide information in
14 table form to correlate habitat
15 assessments conducted on specific
16 water crossings in light of KP
17 changes made recently."

18

19 (BRIEF PAUSE)

20

21 CO-FACILITATOR STEFAN REINECKE: Yeah.
22 "In light of kilometre posting changes made recently."

23 Undertaking 5:

24 "GNWT to provide the water sampling
25 program on the Inuvik to Tuk

1 Highway."

2 So that's the sampling during con --
3 highway construction.

4 Undertaking number 6:

5 "DFO will provide report on no-net
6 loss projects and monitoring
7 statistics."

8 Undertaking 7:

9 "CanZinc, DFO, and Parks Canada will
10 communicate..."

11

12 (BRIEF PAUSE)

13

14 MR. RICK WALBOURNE: Rick Walbourne,
15 GNWT-ENR. I just want to clarify on that Undertaking
16 6 (sic). So we did provide a copy of the complete
17 water licence, which has the surveillance network
18 program attached to that. So that's -- I just want to
19 clarify that was provided, and that's what our
20 understanding of the undertaking was. I just want to
21 clarify that you were just looking for the water
22 licence, and not some additional water sampling
23 program. Thank you.

24 CO-FACILITATOR STEFAN REINECKE:

25 Stefan Reinecke, from Stratos. That is correct.

1 (BRIEF PAUSE)

2

3 CO-FACILITATOR STEFAN REINECKE:

4 Undertaking 7. CanZinc -- Stefan Reinecke, from
5 Stratos.

6 Undertaking 7:

7 "CanZinc, DFO, and Parks Canada will
8 communicate on outstanding
9 information requirements and
10 analysis related to fish and fish
11 habitat loss/gain, including impacts
12 of blasting to enable DFO to reach a
13 determination and inform the Board
14 prior to the hearing phase."

15 Undertaking 8:

16 "CanZinc and Parks will meet and
17 report back regarding appropriate
18 water monitoring approaches,
19 including parameters, frequency,
20 sampling locations, and application
21 of an adaptive management approach."

22 And we have a question mark under this
23 undertaking regarding Environment Canada and Climate
24 Change's sort of involvement and -- and also providing
25 information here? Does --

1 MR. BRADLEY SUMMERFIELD: Brad, from
2 Environment and Climate Change Canada. We're just
3 looking over them right now, and we'll let you know
4 before the conclusion of the session tomorrow. So
5 they're just having a look at it right now, and we'll
6 get back to you with that.

7 THE CO-FACILITATOR STEFAN REINECKE:
8 Stefan Reinecke, from Stratos. Thank you.

9 Undertaking 9, "CanZinc will provide"--

10 MR. DAVID HARPLEY: Excuse me.

11 CO-FACILITATOR BARB SWEAZEY: Oh,
12 sorry.

13 MR. DAVID HARPLEY: It's Dave Harpley.
14 It was my understanding that this wasn't actually an
15 undertaking, but more of a commitment. Because, in my
16 opinion, it's not something we need to deal with now.
17 It's more of a detail at the permitting stage.

18 MS. SACHI DE SOUZA: Sachi, with the
19 Board. If this meeting is going to produce meeting
20 notes that will inform what you're going to provide,
21 the undertaking is for you to meet to discuss that.
22 The outcomes of that meeting will be reported, whether
23 that is -- involves you doing additional work. If
24 that's the agreement that's met, that's a different
25 thing. But right now, it's that you're going to -- to

1 determine what needs to be done, and the undertaking
2 is that you will meet.

3 MR. DAVID HARPLEY: Dave Harpley.
4 Like I said, it was my understanding it was a
5 commitment to do this, not to do it now, because I
6 don't think it's a -- something that needs to be done
7 now. And judging by Garry's nodding next to me, he
8 agrees.

9 CO-FACILITATOR BARB SWEAZEY: Parks
10 Canada...?

11 MR. GARRY SCRIMGEOUR: Garry
12 Scrimgeour, Parks Canada. I -- my recollection was we
13 -- we didn't call this an undertaking, so that we
14 weren't going to be constrained with this two (2) week
15 period.

16 I agree with David. I thought it was a
17 commitment to meet. We've already -- Parks Canada has
18 -- has created a -- an expanded document on this, just
19 a paragraph or two (2), which would be helpful to
20 initiate discussions with CanZinc and with ECC, should
21 they be interested in doing so.

22 CO-FACILITATOR BARB SWEAZEY: Barb,
23 from Stratos. So should we work on rewording this --
24 should we then move this into commitments? I'm
25 understanding from both CanZinc and Parks Canada that

1 we should push this into a commitment.

2 MR. GARRY SCRIMGEOUR: Garry
3 Scrimgeour, Parks Canada. I would be comfortable
4 keeping it as an undertaking, as long as we're not
5 constrained to a time period that may not be
6 productive.

7 CO-FACILITATOR BARB SWEAZEY: So one
8 (1) or the other? It doesn't matter?

9 MR. DAVID HARPLEY: It's Dave Harpley.
10 I guess my main issue here is this is a detail that is
11 not really necessary at this stage. It's not really
12 going to inform anything. We've undertaken that we
13 will meet and get a suitable monitoring approach at --
14 at the appropriate time. We don't need to do this
15 now.

16 MS. SACHI DE SOUZA: Sachi, with the
17 Board. So we won't call this a commitment or an
18 undertaking. We look forward to, if that meeting
19 informs the EA, to receive the notes on it. And if it
20 doesn't, that's okay. So it will not be on the
21 commitment or undertaking list.

22

23 (BRIEF PAUSE)

24

25 CO-FACILITATOR BARB SWEAZEY: Barb,

1 for Stratos. I believe both of you want it as a
2 commitment. Thumbs up from Parks and CanZinc. Moving
3 on.

4 CO-FACILITATOR STEFAN REINECKE:
5 Stefan Reinecke, from Stratos. So we'll move
6 Undertaking 8 to a commitment, and we're looking to
7 Environment Canada for agreement on that, but I -- our
8 understanding is that you're still going to provide
9 further comment as to your involvement? Environment
10 Canada...?

11 MR. BRADLEY SUMMERFIELD: Brad
12 Summerfield, with Environment and Climate Change
13 Canada. Yeah, I mean, it's fine as a commitment, but
14 we'll let you know tomorrow about our participation.

15 CO-FACILITATOR STEFAN REINECKE:
16 Stefan Reinecke, from Stratos. Thank you. GNWT, do
17 you have a comment?

18 MR. RICK WALBOURNE: Yeah, Rick Wal --
19 Rick Walbourne, ENR. Can I just get some confirmation
20 on that meeting if they're going to be discussing just
21 wat -- water quality monitoring within the park or
22 outside.

23 And I didn't think a commitment was
24 necessary. It was my understanding that, for
25 instance, GNWT and Canadian Zinc would have similar

1 conversations, excuse me, down the road...

2

3 (BRIEF PAUSE)

4

5 MR. RICK WALBOURNE: But if it needs a
6 commitment, I'd like GNWT to be added separately. We
7 can talk on the out -- outside of the park, or, like,
8 we can work on the specifics of that later.

9 But I'm similar -- similar to what the
10 guys were saying that I don't know if it needs to be
11 completed as an undertaking during the EA, but it's my
12 understanding that those discussions would take place
13 between Canadian Zinc and GNWT regardless.

14 But if it's a commitment, then I'd like
15 to see GNWT added at -- in some way. Thank you.

16 CO-FACILITATOR BARB SWEAZEY:

17 CanZinc...?

18 MR. DAVID HARPLEY: It's Dave Harpley.
19 I've -- I've got no problem with that and that --
20 that's part of the reason I wanted to defer this,
21 because this will likely go into a -- some form of a
22 plan which will be submitted to -- and all parties can
23 will have an opportunity to comment, so.

24 CO-FACILITATOR BARB SWEAZEY: Barb,
25 from Stratos. Thank you.

1 CO-FACILITATOR STEFAN REINECKE:

2 Stefan, from Stratos.

3 Undertaking number 9:

4 "CanZinc will provide additional
5 information on the removal of water
6 from standing water bodies -- or
7 standing water, including
8 identifying the water bodies and how
9 the maximum withdrawal of 10 percent
10 of volume will be determined and
11 over what time period."

12 Undertaking 10:

13 "Parks will provide additional
14 vegetation data for the record."

15 If Parks Canada -- is it necessary to
16 provide more detail on what -- what data this is?

17 Okay. I'm getting a head nod from Parks. Thank you
18 very much.

19 So moving on to...

20 Okay. So before I move onto the commit
21 -- excuse me, the undertakings for day 2, were there
22 any additional comments regarding the day 1
23 undertakings?

24

25 (BRIEF PAUSE)

1 MS. CARRIE BRENNEMAN: Carrie Breneman,
2 Dehcho First Nations. For Undertaking number 7, I
3 just wanted some clarity on the timing of when they'd
4 be reporting back to the Board. It's prior to the
5 hearing phase, but is there any chance that it could
6 be moved back prior -- prior to the technical reports
7 so that other parties can see what's being done on
8 this offsetting plan prior to us writing our reports?

9 MR. BRETT WHEELER: Thanks, Carrie.
10 It's Brett Wheler, with the Board. It -- that --
11 that's what we mean by hearing phase, but, Dave, do
12 you have something to add there?

13 MR. DAVID HARPLEY: It's Dave Harpley.
14 Yeah, we rec -- we recognize that issue, and I think
15 the parties -- or at least I've -- I've discussed it
16 with DFO and we're going to try and get the matter
17 resolved before technical reports.

18 Obviously no promises, but that's the
19 intent.

20 MR. BRETT WHEELER: Thanks, Dave. So
21 we'll reflect that in the wording so it's clear to
22 everyone.

23 Okay. Just -- I was following up on
24 the -- Undertaking number 2, the one that we were sort
25 of a little bit uncertain on the -- the clarity of

1 what was being asked for. Oh, sorry, number 3.

2 "CanZinc to followup with DFN in
3 relation to recent changes to
4 project and implications for aquatic
5 resources."

6 Carrie suggested that this was
7 particularly with regard to the realignment. You
8 know, the realignment that we've been -- been showing
9 up on -- on the screen, and -- and as it says in the
10 undertaking, implications for aquatic resources that
11 perhaps may arise due to the alignment.

12 So it sounded like Carrie was looking
13 for a confirmation or clarity on how potential impacts
14 to aquatic resources have been considered in light of
15 the realignment. I'm -- I'm seeing nods, so.

16 MR. DAVID HARPLEY: Dave Harpley. I'm
17 fine with that. But, Carrie, is that what you're
18 looking for?

19 MS. CARRIE BRENEMAN: Yes, that's what
20 I'm looking for.

21 MR. BRETT WHEELER: Okay, thanks. And
22 the -- the other issue was, what I had recorded on --
23 on the board over there and in -- and in my notes as --
24 - as Undertaking number 3 was -- was something
25 slightly different, so -- so perhaps there -- there's

1 an additional -- there may be an additional
2 undertaking.

3 I want to bring that up with Liidlii
4 Kue and -- and Canadian Zinc. What I have here is:

5 "Canadian Zinc to follow up with
6 Liidlii Kue First Nation regarding
7 the new design and considerations of
8 traditional knowledge related to the
9 new design."

10 And -- and Dean suggested that that new
11 design means -- means the all-weather nature of the
12 road as compared to the winter road -- or pardon me,
13 the all-season road and the -- again, the alignment.

14 So -- so I just wanted to check in with
15 Dean and -- and with Dave regarding a possible
16 additional undertaking for Canadian Zinc to follow up
17 with Liidlii Kue on the consideration of traditional
18 knowledge in the design.

19 Dave, did you want to...?

20 MR. DAVID HARPLEY: Dave Harpley. I
21 guess I didn't understand that that was necessarily an
22 undertaking. Certainly, we heard from Dean that there
23 was concerns from LKFN regarding the fact that -- that
24 we currently have an IBA between the parties, but that
25 was based on the previous project. And the -- the

1 project is different with the all-season road, and
2 therefore, there are some issues arising from that.

3 And Dean expressed the interest to meet
4 with us to discuss those issues. And we responded
5 that we were trying to do just that, so we're intent
6 on doing that. I don't know that it needs to be an
7 undertaking.

8 MR. BRETT WHEELER: And Brett Wheeler,
9 for the Board. Thanks, Dave.

10 Dean, is there -- can we get
11 confirmation from you whether there was a -- a
12 slightly separate issue that was focussed on
13 traditional knowledge and -- or whether that -- that
14 could be -- that would fit or be wrapped up in the
15 discussion you had yesterday about -- about meeting in
16 general?

17

18 (BRIEF PAUSE)

19

20 MR. DEAN HOLMAN: So we do -- we do
21 feel -- feel that a meeting is definitely in order.
22 And both Liidlil Kue and Canadian Zinc have expressed
23 interest to do that. As far as a commitment or --
24 and/or undertaking, I think we've already -- well,
25 basically, we've already -- sorry, I just lost my

1 thought, here.

2

3 (BRIEF PAUSE)

4

5 MR. DEAN HOLMAN: I think it's good
6 just the way it is. Thank you.

7 MR. BRETT WHEELER: Okay. Thank you.

8

9 (BRIEF PAUSE)

10

11 CO-FACILITATOR STEFAN REINECKE:

12 Stefan, with Stratos. Anything else on day 1
13 undertakings before we move on? Great.

14 So day 2 undertakings, starting at
15 number 11:

16 "CanZinc to provide a map showing
17 where the road alignment crosses
18 unglaciated areas and describe if
19 and how this information affects
20 predictions of impacts on species at
21 risk and on rare plant assemblages."

22 Undertaking 12:

23 "CanZinc to provide information of
24 skills and experience available in
25 the communities and show how these

1 align with those required by the
2 project as listed in the DAR."

3 Undertaking number 13:

4 "Review Board to post 2009 rare
5 plant report from the MVLWB registry
6 to the public record for this EA."

7 Undertaking 14:

8 "CanZinc will confirm whether the
9 original effects assessment for the
10 winter road considered loss of
11 habitat and habitat fragmentation
12 for migratory birds and avian
13 species at risk."

14 Undertaking 15:

15 "Parks Canada will provide a written
16 description to CanZinc on its
17 expectations regarding baseline
18 wildlife data collection, effective
19 long-term monitoring, considerations
20 for protection of critical habitat,
21 and adaptive management, and during
22 which phase of the process these
23 need to occur."

24 Undertaking 16:

25 "CanZinc and Parks to provide

1 information on wildlife and
2 vegetation characteristics by road
3 segment, including alternative
4 segments in order to allow a risk
5 assessment to account for these in
6 terms of consequences from a spill."

7 Originally, this undertaking applied to
8 CanZinc, and there was a subsequent conversation with
9 Parks where they agreed that they would also provide
10 their -- their input on this matter. So I'm just
11 looking over to Parks for acknowledgement.

12 MS. ALLISON STODDART: So I just --
13 sorry, Allison Stoddart, with Parks Canada. I just
14 want to make sure it's clear that for this
15 undertaking, it's what Parks currently has available
16 to it that, you know, we will provide from, you know,
17 knowledge of our staff within the park and, you know,
18 any documentation that we have, we -- we will provide
19 to you.

20 However, we're -- we're not going to be
21 going out and doing any additional work to -- to find
22 this information.

23 MR. ALAN EHRLICH: Hi. It's Alan
24 Ehrlich, for the Review Board. Good morning,
25 everyone. My understanding of the discussion

1 yesterday was the goal was to get information on, if
2 you'll forgive the word, sensitive areas along the
3 route, not just general information on wildlife and
4 vegetation characteristics.

5 Now, I can come up with synonyms for
6 sensitive if the word 'sensitive' is problematic.
7 It's used in legislation. It's a real word. But
8 that's what I heard asked for. As I speak, I see Dr.
9 Oboni nodding his agreement that that's what he's
10 looking for.

11 Parks Canada, do you understand that
12 that's what this is looking for?

13 MS. ALLISON STODDART: Allison
14 Stoddart, with Parks. Yes, we do.

15 MR. ALAN EHRLICH: Okay. So in that
16 case, can you please have the undertaking reflect the
17 -- the point that it's not just information on
18 wildlife and vegetation characteristics. It's -- it's
19 areas of particularly sensitive wildlife and
20 vegetation, not just a listing of characteristics.

21 And was this a -- a map? I thought you
22 were looking for -- I speak to Dr. Oboni now. You
23 were asking for a -- a -- for a -- a map of the length
24 of the road -- or a -- a illustration of the length of
25 the road indicating which sections are particularly

1 biologically sensitive. Please, Dr. Oboni, could you
2 clarify that?

3 DR. CESAR OBONI: Cesar Oboni. Or --
4 or a table with the kilometres describing which area
5 are described as sensitive area.

6 MR. ALAN EHRLICH: Okay. Alan
7 Ehrlich. So it says "by road segment" up there. I --
8 I guess that's sufficient, then, so that you can
9 figure out which chunks are more -- would be more
10 vulnerable to a spill. I observe that this is not
11 about the likelihood of a spill in any given area.
12 It's about the sensitivity of receptors.

13 I -- so I think everyone's clear on
14 that. It looks like the -- the improved wording here,
15 we'll get it. I was just concerned that the way we
16 had drafted it before, the meaning would have actually
17 not been captured by the undertaking. Thank you.

18 CO-FACILITATOR STEFAN REINECKE: Parks
19 Canada, are you okay with that wording?

20

21 (BRIEF PAUSE)

22

23 CO-FACILITATOR STEFAN REINECKE:

24 Great. Stefan Reinecke, with Stratos. I'm getting a
25 acknowledgment from Parks Canada. A thumbs up. Thank

1 you.

2 CanZinc, did you have any comments?

3 MR. DAVID HARPLEY: No. Dave Harpley.

4 No.

5 CO-FACILITATOR STEFAN REINECKE: Okay.

6 Thank you very much. Stefan, from Stratos.

7 Continuing with the undertakings.

8 Undertaking 17:

9 "CanZinc will provide their
10 significance conclusions for each
11 wildlife species that is a valued
12 component in this EA."

13 Undertaking 18:

14 "Parks to provide information on
15 what is important with respect to
16 restoring natural drainage pan --
17 patterns, why, suggestions on how
18 this might be achieved, and how this
19 can be demonstrated at closure, i.e.
20 demonstrating success in restoring
21 natural drainage patterns."

22 Undertaking 19:

23 "Road alignment. CanZinc will
24 calculate missing curvature data for
25 a section, kilometre posting 34 to

1 39, and provide this information."

2 Parks Canada, do you have a comment?

3 MS. ALLISON STODDART: Hi. Allison
4 Stoddart, with Parks Canada. So just to go back to
5 Undertaking 18. Sorry, I'm just going to use the
6 other microphone, because -- so our -- our
7 understanding with regards to our conversation with
8 regards to natural drainage was that we had asked the
9 Proponent to provide a -- a monitoring program to
10 ensure that natural drainage would be maintained.

11 And so -- and so I'm not a hundred
12 percent sure what -- what type of information -- like,
13 the -- the Proponent has committed within its
14 documents to maintain natural drainage. And so our --
15 our expectation is that they will do that in whatever
16 methods they had proposed. And what we are asking for
17 is that it is monitored so that if something perhaps
18 isn't maintained properly, they will have an adaptive
19 way of managing that. So I'm not -- I'm not a hundred
20 percent sure what -- what we're -- we're to provide
21 here.

22 MS. SACHI DE SOUZA: Sachi, with the
23 Board. Thanks for that, Allison. The main thing for
24 us was why it's important to Parks Canada.

25 CO-FACILITATOR STEFAN REINECKE:

1 Stefan Reinecke, with Stratos. And this had also been
2 captured as a commitment for CanZinc. And so that's
3 in the table below under 'commitments'. So there are
4 -- there are two (2) parts to it. There's an
5 undertaking for Parks regarding some sort of
6 justification and specificity on expectations there,
7 as well as a commitment for the Proponent.

8 MS. ALLISON STODDART: Hi. Allison
9 Stoddart, with Parks. Okay. That's clear. I guess
10 the only thing, then, that I would change in that
11 undertaking is, so:

12 "Parks Canada to provide information
13 on what is important with respect to
14 restoring natural drainage patterns
15 and why. Suggestions on how this
16 might be achieved."

17 I don't know if we feel comfortable in
18 terms of telling the Proponent how to do that. I
19 mean, that really is their -- you know, the -- the --
20 they're the ones who are going to be maintaining this
21 natural drainage, and -- and it's up to them to let us
22 know how they're going to do that. So -- so from my
23 perspective, we can demonstrate why we think it's
24 important for them to do that and -- and to monitor
25 it. Okay. Thanks.

1 CO-FACILITATOR STEFAN REINECKE:

2 Stefan, with Stratos. Thanks, Parks Canada.

3

4 (BRIEF PAUSE)

5

6 CO-FACILITATOR STEFAN REINECKE: Okay.

7 Is the last part of the undertaking satisfactory, or

8 does that fall into the same concern you had with what

9 we just removed?

10 MS. ALLISON STODDART: Allison

11 Stoddart, with Parks Canada. I would just take the

12 last part out altogether.

13

14 (BRIEF PAUSE)

15

16 CO-FACILITATOR STEFAN REINECKE:

17 Stefan, with Stratos. Thanks, Allison. I'll just re-

18 read the Undertaking number 18 for clarity:

19 "Parks Canada to provide information

20 on what is important with respect to

21 restoring natural drainage patterns

22 and why."

23 Undertaking 19: "CanZinc will

24 calculate" -- oh, no, sorry. I'm falling behind here.

25

1 (BRIEF PAUSE)

2

3 CO-FACILITATOR STEFAN REINECKE: All
4 right. So the next one (1) we had to cover here was
5 Undertaking number 20:

6 "CanZinc will describe the basis for
7 the engineer's conclusions that the
8 road can be constructed without the
9 use of runaway lanes and/or railings
10 with reference to sections of the
11 road that have steeper grades,
12 tighter curves, and narrower running
13 surfaces.

14 CanZinc will also provide examples
15 of other resource roads that face
16 similar circumstances and where
17 similar design decisions have been
18 made."

19 So that's -- that's it for the
20 undertakings. I'm looking around the room to see if
21 there are any final comments regarding the
22 undertakings for day 2.

23 MR. ALAN EHRLICH: Hi, it's Alan
24 Ehrlich, from the Board. Just a general comment.
25 Remember that we're all being transcribed. And that

1 means when you're looking at the undertakings and
2 commitments and you're carrying them out, I encourage
3 you to refer to the transcript to remember the context
4 of the discussion that the commitment or undertaking
5 came out of, because in the past, that has helped
6 participants clarify some of these undertakings which
7 may be a bit general.

8 The wording of the undertaking is very
9 important. The discussion now is important. But
10 please don't look at it in isolation. Also go back to
11 the discussion to -- for -- if you need to further
12 clarify the intent. Thank you.

13 CO-FACILITATOR BARB SWEAZEY: Barb,
14 from Stratos. Thank you. So we'll do the same
15 exercise tomorrow on the undertakings achieved from
16 today and from tomorrow. The commitments, if we have
17 time, we'll do that tomorrow. If not, the commitments
18 will be circulated as part of the follow-up meeting
19 notes for your review and comment.

20 So I want to just ask if there are any
21 additional questions that weren't raised yesterday
22 that you would like to regarding road design and
23 alignment? Cesar...?

24 MR. CESAR OBONI: Cesar Oboni. So I
25 went back to check the Allnorth report of May 10th and

1 I rea -- and I noticed that the cross sections and
2 longitudinal profiles I count for 19 kilometres out of
3 the hundred and eighty-four (184). So would -- could
4 we get the remaining 88.3 percent of the stretch?

5 MR. DAVID HARPLEY: It's Dave Harpley.
6 So, Cesar, the approach we took is -- is that we were
7 going to provide more detail on certain sections of
8 the road that could then be used as a surrogate for a
9 larger part of the road with similar properties,
10 rather than provide a design for the whole section
11 which is basically going to be the same, and it's just
12 a redundant work at this stage, because it's -- you
13 know, we're at the preliminary design stage. We're
14 not at the detailed design stage.

15 I mean, we've provided the alignment,
16 obviously, and -- and crossing details, but it's not
17 our intent to do a full design of the whole road at
18 this point.

19 MR. CESAR OBONI: Cesar Oboni. So
20 just to make things clearer, so you have calculated
21 volumes and -- without having defined the -- the cross
22 section in longitudinal profiles?

23

24 (BRIEF PAUSE)

25

1 MR. DAVID HARPLEY: It's Dave Harpley.
2 So what we did was, you know, in the section that we
3 did the design on and it gives us cross section
4 information, we then extrapolated that over the longer
5 section of the road that it's representative of to
6 derive a volume.

7 So we have generated volumes for the
8 entire road.

9

10 (BRIEF PAUSE)

11

12 MR. CESAR OBONI: Cesar Oboni. Thank
13 you.

14 CO-FACILITATOR BARB SWEAZEY: Yes,
15 GNWT...?

16 MS. VERONIQUE D'AMOURS GAUTHIER: This
17 is Veronique D'Amours Gauthier, from the GNWT
18 Department of Land. It's not a question. It's just I
19 would like to provide clarification regarding the
20 question I asked yesterday on the flight that might be
21 diverted to Nahanni Butte followed by personal
22 busing.

23 We asked for clarification to DOT
24 regarding the road to Nahanni Butte, and this is the
25 response they provided to us. The road on both sides

1 of the river to Nahanni Butte and to Highway 7 is
2 gener -- is gravel all-season road maintained by DOT.

3 There is no bridge across the river or
4 ferry operated by DOT. There might be a boat of some
5 sort that people use to cross the river, not during
6 the winter. So during the winter, there is a highest
7 crossing of the river maintained by DOT. Therefore,
8 during winter mo -- month it is one (1) continuous DOT
9 corridor from Nahanni Butte to Highway 7.

10 Outside of winter, the road itself,
11 it's still built as an all-season road but it is not
12 continuous DOT route due to absence of river crossing.
13 Therefore, the construction of the road might be all-
14 season but because of an operating perspective, the
15 only continuity is during winter road -- winter
16 season, sorry, which makes it a DOT winter road.

17 So this is just to provide
18 clarification regarding the road to the community.
19 Thank you.

20 CO-FACILITATOR BARB SWEAZEY: Thank
21 you. Barb, from Stratos. Any other questions on road
22 design or alignment? Yes, Gilles, Parks?

23 MR. GILLES LUSSIER: Gilles Lussier,
24 Parks Canada. Just further to our discussion on the
25 road widths, we had discussed yesterday and -- and

1 they had mentioned -- the Proponent mentioned
2 revisiting those sections where it was initially
3 proposed to reduce to a 4-metre width, and so I think
4 that there's a recognition that that might get
5 revisited.

6 But also wanted to make note of the
7 design standards that would be applied if we're
8 referencing the BC forestry road manual; that there is
9 typically a widening on curves, as well. So if you
10 could -- if there could be a comment from the
11 Proponent on that, as well.

12 MR. DAVID HARPLEY: It's Dave Harpley.
13 So my colleague is telling me that it's standard
14 procedure to have a widening on curve, so I think
15 we're in sync on this.

16 MS. SACHI DE SOUZA: Sachi, with the
17 Board. You mentioned on the presentation you gave yes
18 -- or two (2) days ago, the Wolverine Airstrips there,
19 there's no road -- access road to the airstrip.

20 Can you please provide a figure showing
21 where that access road would be? You've got access
22 roads to other borrow locations, and it would be
23 helpful to understand where that would be.

24 MR. DAVID HARPLEY: It's Dave Harpley.
25 It's a winter airstrip and it's a winter access, which

1 was pre -- predates our involvement on the project
2 constructed by Cadillac. We can find a map showing
3 where that access is if that's what you're looking
4 for.

5 MS. SACHI DE SOUZA: Yes. We would
6 like to know how you are going to access the airstrip
7 from the proposed alignment. And thank you for
8 confirming that the Wolverine Airstrip will only be
9 used as a winter airstrip.

10 MR. DAVID HARPLEY: It's Dave Harpley.
11 I think we've stated two (2) or three (3) times that
12 it's a winter only airstrip, so we access by -- if
13 we're going to use it, by winter road.

14 CO-FACILITATOR BARB SWEAZEY: Barb,
15 from Stratos. So we'll record the getting of the map
16 as an undertaking, but no other action required, I
17 think, on this one.

18

19 --- UNDERTAKING NO. 21: To provide map of how
20 CanZinc will access the
21 Wolverine Airstrip

22

23 CO-FACILITATOR BARB SWEAZEY: Are
24 there any questions on road design and alignment?
25 Yes, Gilles, go ahead, Parks Canada.

1 MR. GILLES LUSSIER: This question
2 pertains to some of the construction methodology, so I
3 don't know whether it's okay to bring up at this
4 point. Gilles Lussier, Parks Canada. It's made note
5 of in some of the documentation that there are many
6 segments where construction is proposed in winter
7 months.

8 But in the road construction and
9 operations plan there's a recognition that one should
10 avoid installing major culverts in cold temperatures
11 or working with frozen material. So I was just hoping
12 the Proponent could provide what best practices they
13 might implement to avoid these frozen materials in --
14 in backfill.

15

16 (BRIEF PAUSE)

17

18 MR. BRAD MAJOR: Brad Major, with
19 Allnorth. With -- with the major crossings there is -
20 - there is a structural backfill component, which we
21 do not like to do in frozen conditions because
22 obviously frozen backfill doesn't compact well.

23 So to -- to work around that what we
24 would do, or we would -- what we would implement is we
25 would do a temporary crossing during the winter

1 construction, and then come back in a -- in a more
2 favourable season to put in the final crossing when it
3 can be done appropriately.

4

5 (BRIEF PAUSE)

6

7 MR. BRAD MAJOR: Brad Major, with
8 Allnorth. My colleague just asked about the minor
9 crossing locations so, you know, the -- the smaller
10 diameter culverts. We would generally put those in
11 during winter construction, so the smaller cross
12 drains, the centre line cross drains, and we would
13 very carefully select non-frozen material at that time
14 the best we could.

15 CO-FACILITATOR BARB SWEAZEY: Parks,
16 do you have a follow-up question?

17

18 (BRIEF PAUSE)

19

20 CO-FACILITATOR BARB SWEAZEY: GNWT, do
21 -- are you guys -- do you guys -- just one (1) second,
22 Rick. Do you have a follow-up question, or do --
23 shall I go to GNWT? Go ahead, Parks, and then I'll
24 come to you.

25 MR. GILLES LUSSIER: Gilles Lussier.

1 So just to confirm, the intent is -- would be to use
2 non-frozen material even for the -- the smaller
3 diameter culverts?

4 MR. BRAD MAJOR: Brad Major, Allnorth.
5 Yes, that would be the intent.

6 CO-FACILITATOR BARB SWEAZEY: GNWT...?

7 MR. RICK WALBOURNE: Rick Walbourne,
8 ENR. I just wanted to get some clarification there
9 because I was under the understanding on Monday when
10 we -- when we talked about crossing installations and
11 monitoring downstream it was my -- my impression that
12 the crossings were actually going to be installed
13 under frozen conditions.

14 I thought that's what I heard on
15 Monday, but now I'm hearing that they're going to be
16 done in non-frozen conditions, potentially in the
17 summer. Can I -- so can I just get some clarification
18 from Canadian Zinc, and if I seem -- I'm a little
19 confused on that. Thank you.

20

21 (BRIEF PAUSE)

22

23 MR. BRAD MAJOR: Brad Major, with
24 Allnorth. In response to that, there'll -- there will
25 definitely be certain aspects of crossings that we

1 will try to -- or that will be installed in the
2 winter, just for -- for ease of construction.

3 The point we were talking about with
4 Parks Canada is it's the structural backfill
5 component. So it's -- you know, it's the soils over -
6 - over a culvert or at the ends of a -- of a structure
7 where you want to make sure you're achieving
8 compaction that require a non-frozen condition.

9 CO-FACILITATOR BARB SWEAZEY: Thank
10 you. So, GNWT, is that specific enough for you, and
11 to help answer your question?

12 MR. RICK WALBOURNE: Rick Walbourne,
13 ENR. Yeah, that's fine. Thank you.

14 CO-FACILITATOR BARB SWEAZEY: And
15 going back to Parks Canada, are there any follow-up
16 questions related to this thread that we've just been
17 talking about? Similar? Okay. So go ahead.

18 MR. GILLES LUSSIER: Gilles Lussier.
19 Also with regard to winter construction. Obviously
20 there's a -- a good deal of importance on the timing
21 of the shutting down of construction in advance of
22 thaw conditions in -- in the spring of -- or the start
23 of -- of runoff.

24 So if the Proponent could either pr --
25 provide a strategy or -- or on assessing when that

1 end-of-season shutdown might occur, and who they might
2 collaborate with on -- on making that determination.
3 And as well as allowing enough time for removing
4 temporary structures, establishing drainage, and --
5 and so forth, rather than just a construction shutdown
6 immediately in advance of runoff.

7 MR. DAVID HARPLEY: Dave Harpley. I
8 think that's an undertaking.

9

10 --- UNDERTAKING NO. 22: Proponent to provide
11 information on the
12 demobilization plan with
13 regard to drainage,
14 erosion, and sediment
15 control matters prior to
16 closing

17

18 THE CO-FACILITATOR BARB SWEAZEY:
19 Barb, from Stratos. Is there a particular timing
20 around that undertaking that we need to note? Like,
21 relative to the project. No? Just leave it?

22

23 (BRIEF PAUSE)

24

25 MS. SACHI DE SOUZA: Sachi, with the

1 Board. Parks, something that I think might help here
2 is just if you could explain what specifically you're
3 concerned about with shutting down construction in a
4 certain way and at a certain time.

5 So are you concerned about runoff and
6 erosion? Are you concerned about changing the -- the
7 ground thermal regime? If you could just explain
8 that, that would help us and -- and a lot of people in
9 the room.

10 MR. GILLES LUSSIER: Gilles Lussier,
11 Parks. Yeah, it would be primarily with regard to
12 erosion and sediment control where if there are not
13 preparations done as part of your demobilization
14 there's a -- a risk to -- to drainage, erosion, and
15 sediment control matters. And so it's just to -- to
16 have that demobilization plan spelled out in the
17 construction operations would be great.

18 MS. SACHI DE SOUZA: Okay. So --
19 Sachi. With -- with that information we'll leave it
20 as an undertaking and we'll leave it with CanZinc to
21 tell us at the end of the -- the tech session the --
22 the time frame for when they can respond to these
23 undertakings. We'll consider it one (1) that does
24 need to be responded to as a result of the tech
25 session for the EA.

1 CO-FACILITATOR BARB SWEAZEY: Thank
2 you. Barb, from Stratos. Are there other questions
3 on road alignment? Yeah, Toby...?

4 MR. TOBY PERKINS: Toby Perkins. Can
5 you confirm what the -- the hydrotechnical design
6 basis for the road alignment will be? So I'm thinking
7 open water flood levels; for example, whether the road
8 will be designed and -- and crossings to a hundred
9 flood, two hundred (200) year flood, that kind of
10 thing. And, similarly, what considerations there are
11 for ice effects or in culverts whether they'll be
12 plugged and jammed prior to freshet. And also, at
13 larger crossings, ice jam flooding. And then on top
14 of that or in -- in conjunction with that what
15 freeboard -- specifically what freeboard allowances
16 will be considered in the design criteria.

17 THE CO-FACILITATOR BARB SWEAZEY:
18 Barb, from Stratos. Just -- CanZinc, would that be
19 helpful to break those one (1) at a time, or is it
20 okay -- okay. Dave's okay. All right.

21

22 (BRIEF PAUSE)

23

24 CO-FACILITATOR BARB SWEAZEY: So I
25 think CanZinc has a response ready.

1 MR. DAVID HARPLEY: It's Dave Harpley.
2 So on the issue of the design standard it's Q100. As
3 far as ice effects go, that was a consideration that
4 our engineers specifically asked about and it was
5 something that we specifically looked for evidence of
6 in the field during the assessments.

7 There's -- there's one (1) crossing
8 location that we're aware is a common icing location.
9 That's -- I think it's twenty-three point four (23.4)
10 or five (5). It's a major crossing over Sundog Creek
11 tributary. There may also be some icing issues at the
12 Grainger Gap crossing at, I think, it's one twenty-
13 five (125) something. It's at the east side of the
14 Gap, anyway.

15 But also this is an issue that's going
16 to be revisited during the detail design phase to
17 ensure that we're not going to have, you know,
18 significant ice effects. And, what was the third
19 component again? Oh, freeboard.

20 I think the assumption we went in with
21 was a minimum one metre. But my colleagues are
22 telling me that they altered it to one point five
23 (1.5) in a number of locations.

24 CO-FACILITATOR BARB SWEAZEY: Barb,
25 from Stratos. Thank you. Are there follow-up

1 questions from Knight Piesold?

2 MR. TOBY PERKINS: Thanks for that. I
3 just want to confirm that -- so I noted at some of the
4 crossings the -- the hydraulic design was done,
5 assuming there's no structures in place.

6 And then there's -- on the crossing
7 designs it shows a flood level TBD. I just want to
8 confirm, do you think you've appropriately sort of
9 considered these design criteria and the information
10 that's been provided, for example, of the -- the
11 bridge crossings are significantly lower than -- than
12 what's going to be required. It may not be
13 appropriate for the effects assessment.

14

15 (BRIEF PAUSE)

16

17 MR. BILL ROZEBOOM: Bill Rozeboom,
18 Tetra Tech EBA. If I understand the question right,
19 yes, the -- the hydraulic parameters provided for the
20 design at this stage are based on the existing channel
21 geometry and slope. And -- and we have stated that --
22 that it does not reflect any encroachments which may
23 be provided.

24 And the intent was that as the design
25 evolves and you know what the encroachment might be,

1 that the design would be reassessed at that time.

2 MR. TOBY PERKINS: Yes, I agree. That
3 was my understanding as well. I just want to make
4 sure -- I guess I'm interested to make sure that -- I
5 guess -- and -- and when I was reviewing the crossings
6 I noticed some fairly substantial constrictions of the
7 -- the flood plain, that kind of thing, and I just
8 want to make sure what's been designed is appropriate.

9 I mean, it doesn't necessarily need to
10 be done quantitatively at this stage, but I wouldn't
11 want to just see the one hundred (100) year flood
12 plain without any enc -- encroachments taken as the
13 level and then finding that the -- in fact the one
14 hundred (100) year flood level is significantly on the
15 order of a couple metres higher and the -- the
16 approach is inappropriate and not appropriately
17 assessed.

18 So hopefully there's been some
19 recognition of those constructions that --
20 recognitions that the flood levelling -- flood level
21 modelling isn't as will be in place once constructed
22 and appropriate conservatism has been included in the
23 -- the alignments.

24 So like I say, to make sure that what
25 is being assessed is appropriately similar to what

1 will be designed, also what will be appropriately
2 similar to what will be constructed.

3 MR. BRAD MAJOR: Brad Major, with
4 AllNorth. I guess the answer is, yes. We have talked
5 about it, and, you know, ultimately, the crossing,
6 which is that -- that complete flood plain, will be
7 designed appropriately to pass that Q100 flow so we're
8 not constricting the channel.

9 And that -- that will be, you know, an
10 iterative process where we've looked at, you know, the
11 Q100 of the channel as it sits today, and then what --
12 what the impact will be when -- when the crossing is
13 on it and -- and what impacts that will have and how
14 we will accommodate that.

15 CO-FACILITATOR BARB SWEAZEY: Barb,
16 from Stratos. Are there any other questions on road
17 design and alignment? Yes, Cesar...?

18 MR. CESAR OBONI: Cesar Oboni. So I
19 would -- my question is: Do you have a list of
20 prioritized list of road crossing in terms of
21 likelihood of disruption?

22 MR. DAVID HARPLEY: Dave Harpley. I
23 didn't quite hear the last bit of that question.

24 MR. CESAR OBONI: Cesar Oboni. Do you
25 have a prioritized list of road crossing in terms of

1 likelihood of disruption?

2 MR. DAVID HARPLEY: Dave Harpley. I
3 think the simple answer to that is, no. We would
4 consider them all major crossings and -- and consider
5 each one from an issue of what could go wrong.

6 MR. CESAR OBONI: Cesar Oboni. I -- I
7 understand that. But there are certainly some cross -
8 - some crossing that -- in which you're putting more
9 effort because you recognize that there are increased
10 likelihood of disruption on the road.

11 So do you have a prioritized list of
12 those sections?

13

14 (BRIEF PAUSE)

15

16 MR. DAVID HARPLEY: It's Dave Harpley.
17 Cesar, I mean, we don't have a list per se. We do
18 recognize that certain crossings pose more challenges
19 than others, but then they were -- those
20 considerations were included in the development of the
21 design.

22 CO-FACILITATOR BARB SWEAZEY: Go
23 ahead, Toby.

24 MR. TOBY PERKINS: Toby Perkins.
25 Yeah, I think, on a similar line of reasoning, like,

1 in terms of major crossings, I identified several
2 which I didn't see any particular concern with. But I
3 certainly came up with a bit of a short list in my own
4 mind, those crossings that were much more susceptible
5 to failure from fan and -- and geomorphic hazards and,
6 also, those which are much more likely to cause
7 significant impact -- well, maybe I shouldn't say
8 significant, cause impact to hydraulics and sediment
9 transport, fish habitat, these kinds of things.
10 Crossings that were significantly encroaching into the
11 flood plain certainly at the hundred year flood level
12 and -- and based on some back-of-the-envelope
13 calculations potentially into a much, much smaller
14 flood -- flood -- on the order of a few years
15 probably.

16 So I -- I certainly personally had --
17 had a short list of -- of crossings which I would like
18 to see more detailed consideration and detailed
19 information provided on.

20 MR. DAVID HARPLEY: It's Dave Harpley.
21 I don't know what you want us to say. If there's
22 something -- information you need, then pro -- ask us
23 for it.

24 MS. SACHI DE SOUZA: Sachi, with the
25 Board. With that in mind, if we're -- we're segueing

1 here to the -- the major crossings that I'm going to -
2 - I think it's wise to just let this keep going for a
3 little bit. We might have to backtrack to road design
4 and Sundog Creek. We will definitely get to Sundog
5 Creek.

6 But if we can just go through some of
7 the -- the key crossings that we've identified as
8 having a potential concern, have a discussion about
9 them. And if at the end of that it becomes clear we
10 need some more information, we'll then make that a
11 formal request.

12 You might have more information on your
13 ha -- hand right now that you could provide, and we'd
14 appreciate that. So we'll just go through some of the
15 key ones we want to discuss right now.

16 CO-FACILITATOR BARB SWEAZEY: Barb,
17 from Stratos. Is it helpful to put any maps up to
18 help with this conversation or is it okay just to
19 refer to it by their kilometre markings?

20

21 (BRIEF PAUSE)

22

23 MR. DAVID HARPLEY: It's Dave Harpley
24 here. I just have a little bit of a concern regarding
25 schedule. We had expected to be discussing the creek

1 realignment this morning. We've also got probably our
2 aquatic biologist on the phone because as I understood
3 it there were going to be aquatic questions this
4 morning.

5 We have all afternoon to consider
6 engineering issues, so it would be my preference that
7 we cover the environmental side this morning.

8 CO-FACILITATOR BARB SWEAZEY: Okay.
9 Thank you for that suggestion, Dave, and for letting
10 us know who you've got here to help answer questions.

11 So is there anyone who is what I would
12 say vehemently opposed to moving right to Sundog Creek
13 realignment?

14

15 (BRIEF PAUSE)

16

17 CO-FACILITATOR BARB SWEAZEY: Okay.
18 So is that the best place to start in terms of who's
19 here to be able to answer questions? Okay. So let me
20 just do a time check. So it's -- it's ten (10) to
21 10:00. Do you want to -- do you want to take one (1)
22 or two (2) questions, and maybe aim for a break 10:15,
23 10:30, something like that? We'll get through some.

24 MR. DAVID HARPLEY: It's Dave Harpley.
25 Can we just confirm that John Wilcockson is on the

1 line?

2 MR. JOHN WILCOCKSON (BY PHONE): This
3 is John Wilcockson, with Hatfield Consultants. I'm on
4 the line.

5 CO-FACILITATOR BARB SWEAZEY: John, or
6 Joe?

7 MR. JOHN WILCOCKSON (BY PHONE): It's
8 John.

9 CO-FACILITATOR BARB SWEAZEY: Thank
10 you very much, John. Okay. So who would like to ask
11 the first question regarding Sundog Creek align --
12 realignment?

13

14 (BRIEF PAUSE)

15

16 CO-FACILITATOR BARB SWEAZEY: Okay.
17 So we've got Julie from DFO.

18 MS. JULIE MARENTETTE: Hi. Julie
19 Marentette, with Fisheries and Oceans Canada. First
20 question relates to again the size of the stream
21 realignment. The major portion of the Sundog Creek
22 realignment is -- is running from kilometre point 35.5
23 to 36.9. And from our IR responses we learned that
24 the new channel is about 3,200 square metres but the
25 documents submitted don't appear to address the loss

1 of the size of the channel that's been lost.

2 There was an Allnorth memo dated March
3 18th, 2016, that indicated a table that summarized
4 kind of the footprints of encroachments into the flood
5 plain on Sundog Creek that mentioned realignment.
6 It's not clear if this table is intended to include
7 the footprint of the channel that's now proposed to be
8 dewatered and diverted.

9 Could we clarify whether that
10 information is in that document? Thanks.

11 MR. DAVID HARPLEY: It's Dave Harpley.
12 I think this is going to need to be an undertaking as
13 well.

14 CO-FACILITATOR BARB SWEAZEY: Barb, to
15 follow up -- to explain what is actually covered in
16 the table. That's the undertaking?

17 MS. JULIE MARENTETTE: Yes, and
18 clarify the exact footprint of the channel that's
19 being lost during that realignment.

20

21 --- UNDERTAKING NO. 23: CanZinc to explain what is
22 covered in the table, and
23 clarify the footprint of
24 the channel being lost
25 during realignment

1 CO-FACILITATOR BARB SWEAZEY: Okay.

2 Thank you. Additional questions on the Sundog
3 realignment?

4

5 (BRIEF PAUSE)

6

7 MR. TOBY PERKINS: Toby Perkins. I
8 guess -- yeah, my questions are related to, I guess,
9 most of an engineering nature but also effects. And
10 so I see quite a comprehensive hydrologic -- or sorry,
11 I should say, hydraulic assessment of the -- of the
12 proposed diversion and things, but I see very little
13 mention of sediment transport.

14 And this is often overlooked in my
15 experience. But certainly from what we can see from
16 these -- the photos up here there's been some
17 assessment of the channel activity, some review of
18 previous air photos and -- and comparison to current
19 air photos. But I see very little effect -- basically
20 no discussion of how sediment will be passed through
21 this propo -- proposed diversion. Some talks about
22 maintenance but I'd like -- be interested to know how
23 much sediment you think is moving, and what sort of
24 maintenance is required.

25 I'd also like to note that often

1 sediment will -- typically sediment transports --
2 sediment moves sporadically and infrequently, and
3 certainly during an event on the order of -- like the
4 annual freshet or certainly a larger event,
5 maintenance is probably going to be ineffective.
6 There may be a little -- little material accumulated
7 in the channel prior to that event but during that
8 event there could be significant deposition causing --
9 causing this proposed diversion to be overtopped, and
10 -- and fail.

11 And so, yeah, I guess -- I guess my
12 question is:

13 What consideration of the sediment load
14 that's moving down the river has been included, and
15 how you propose to -- to manage that sediment load?

16 MR. DAVID HARPLEY: It's Dave Harpley.
17 It -- it may be, Toby, that the information you're
18 looking for is not in that hydraulic document you're
19 referring to, and -- and perhaps you haven't found it
20 all. I'm not sure.

21 But I -- I do recollect that we have
22 some discussion on the -- the sediment transport and
23 management in other parts of our submissions. And we
24 do recognize that there periodically could be
25 significant bed load movement. And we've anticipated

1 that there could be locations where there's sediment
2 accumulation; that is, if -- if left unchecked it
3 could -- could result in an unintended avulsion.

4 So our approach to that is basically to
5 -- to continue to monitor that realignment for such
6 accumulation. I mean, if necessary we propose to go
7 in and remove a -- an accumulation at a time when the
8 -- the channel is dry to avoid the avulsion risk.

9 MR. TOBY PERKINS: Toby Perkins.
10 Stepping back a little bit, can you clarify why this
11 is the preferred option rather than just protecting
12 the road? I mean, from the velocities that are
13 predicted there it doesn't seem like it would be undue
14 to just protect the road alignment and let the channel
15 live as it wants to live per se.

16 MR. DAVID HARPLEY: It's Dave Harpley.
17 We've elected to take this approach because we're
18 trying to keep the road on the south bank of the --
19 the canyon. And in this stretch the creek is entirely
20 along the south bank. So we will basically be
21 building the road in the creek and -- and having to
22 move the creek over. So the only logical solution we
23 see to provide room for both is to divert the creek
24 into a channel that it used to occupy.

25

1 (BRIEF PAUSE)

2

3 MR. TOBY PERKINS: Toby Perkins. So
4 you mentioned that the -- you want to keep the
5 alignment on the south side, and that's where the
6 channel currently is.

7 Has it been considering moving the
8 alignment across to the north side? I mean, obviously
9 that would require a couple of crossings, but that may
10 be preferable to this -- this consid -- with this
11 option.

12 MR. DAVID HARPLEY: It's Dave Harpley.
13 Yes, we did consider alternatives, including crossing
14 to the -- the north side; that would have involved two
15 (2) rather significant crossings across the flood
16 plain. We felt that there was significant risk
17 associated with those crossings, particularly to the
18 approaches.

19 I don't want to -- or rather I -- I
20 think I'd like to state that while data on velocities
21 may seem to indicate that this is a relatively gentle
22 stream, we've seen from our own observations in
23 Prairie Creek and -- and elsewhere in the region
24 during periods of heavy rainfall, prolonged heavy
25 rainfall, that these systems turn into raging

1 torrents. So mindful of that is -- is really why
2 we're trying to separate the road from the creek, so
3 the road can basically -- I mean, the creek can -- can
4 do its thing if it wants to and minimize the risk to
5 the road.

6 MR. TOBY PERKINS: Just -- Toby
7 Perkins. Just to agree with your comment on the
8 raging torrents, and that's largely why I'm concerned
9 about this engineered channel, to try and constrain
10 this channel that's moving large amounts of water and,
11 presumably, large amounts of sediment at the same
12 time. It seems like a high risk option.

13 MS. SACHI DE SOUZA: Sachi, with the
14 Board. You mentioned that you considered the risks to
15 be too high for crossing the road -- crossing the
16 creek. And the preference is to keep the road on the
17 south -- south side of the slope.

18 Can you explain what specifically those
19 risks were for why you -- and in your opinion -- in
20 your per -- the preference is to move it -- to cross
21 the creek? Or not to cross the creek and to realign
22 it?

23 MR. DAVID HARPLEY: It's Dave Harpley.
24 The risk is erosion and potential overtopping of the
25 approaches. Basically hydraulic risks associated with

1 crossing a flood plain that potentially can have a
2 large flood coming down it.

3 MS. SACHI DE SOUZA: Sachi, with the
4 Board. Regardless, you're in this creek that has that
5 potential, so quantitatively can you describe the
6 difference in risk from realigning versus crossing?

7 MR. DAVID HARPLEY: It's Dave Harpley.
8 It was our engineering opinion that the risks to the
9 road were less by maintaining it on the south side of
10 the flood plain and separating the main channel from
11 the road over this section where the creek wants to
12 currently flow down the south side and that those
13 risks are substantially less than if we plan to cross
14 the flood plain and the main channel twice.

15 The other consideration is that at the
16 end of this stretch a very large tributary of Sundog
17 comes in from the north and -- which is almost equal
18 in catchment size to the -- the main stem. So we're
19 just about doubling flows. So I'm not sure how much
20 more quantification you need.

21 It's -- it seems to me it's a -- it's a
22 -- from an engineering perspective it's a relatively
23 straightforward choice of the lower of the risk.

24 CO-FACILITATOR BARB SWEAZEY: Barb,
25 from Stratos. Parks, do you still have a question?

1 Maybe the -- you could go ahead. Is it -- it's all
2 related to this same topic?

3 MR. GARRY SCRIMGEOUR: Garry
4 Scrimgeour, of Parks Canada. The -- part of the
5 important mandate of our agency is to maintain the
6 ecological integrity of -- of areas such as Nahanni
7 National Park Reserve.

8 In a previous IR number 25, we've
9 identified the potential that the realignment, the
10 creation of a new stream channel will provide a lower
11 level of ecological integrity compared to a channel
12 that has been formed, and stabilized and that's
13 basically with a natural range of variability that a
14 stream would -- would act.

15 Now, our suggestion is that the digging
16 of the channel will create fish habitat that is of
17 lower quality than existing natural stream channels.
18 That the period that the realigned stream channel
19 takes to more fully approximate a natural stream
20 channel is somewhat unknown.

21 But we would anticipate mobilization of
22 sediments to reduce the productive capacity of that
23 new stream channel. And as such, we would consider
24 that to be a reduction in the quality of fish habitat
25 and that would initiate a discussion of offsetting and

1 compensation.

2 CO-FACILITATOR BARB SWEAZEY: Is there
3 a particular question that you would like to -- to
4 raise here, Garry, for a response, or is that more for
5 just a statement?

6 MR. GARRY SCRIMGEOUR: Garry
7 Scrimgeour, Parks Canada. I think one (1) point is
8 that the Department of Fisheries and Oceans, the
9 Proponent, and Parks Canada have agreed to increase
10 lines of communication where potential habitat
11 assessments and compensation will be discussed.

12 We -- we appreciate that. We think
13 it's a very good idea. In terms of quantifying
14 benthic macroinvertebrates, our specific request is
15 that the Proponent develop a monitoring program to
16 compare the abundance of benthic macroinvertebrates
17 upstream of the realigned segment within the realigned
18 segment and downstream of the realigned segment to
19 quantify the extent that benthic invertebrate
20 productivity has been initially diminished and then
21 returns to more -- to levels that are more appropriate
22 of reference conditions.

23 CO-FACILITATOR BARB SWEAZEY: Thank
24 you. CanZinc, a comment or a response to that, or do
25 we go to John? Oh, okay. Hang on one (1) second.

1 Alan, do you want to go ahead and ask a clarifying
2 question, please?

3 MR. ALAN EHRLICH: Thanks. It's Alan
4 Ehrlich, for the Review Board. Garry, I -- just a
5 question of clarification, the impact that you
6 described about the change in quality of this stream
7 bed as fish habitat, do you consider that impact to be
8 significant?

9 MR. GARRY SCRIMGEOUR: Garry
10 Scrimgeour, Parks Canada. Our agency's commitment to
11 maintain the ecological integrity of parks and
12 national areas would -- would indicate that that is
13 significant.

14 MR. ALAN EHRLICH: Okay. Thank you.

15 MR. DAVID HARPLEY: It's Dave Harpley.
16 I think Garry is indicating that this is part of the
17 discussion we intend to have, including DFO, regarding
18 fisheries habitat in general.

19 So rather than get into the nitty
20 gritty of where we agree or disagree, I think we
21 should rather defer until that time.

22 CO-FACILITATOR BARB SWEAZEY: Barb,
23 from Stratos. Is that -- is -- that need to be
24 recorded as an undertaking or -- or a commitment, or
25 is it just sort of one (1) of those things that is

1 already agreed and it doesn't need to be recorded as
2 an undertaking?

3 MR. DAVID HARPLEY: It's Dave Harpley.
4 It's my impression that we can include it in our
5 already planned discussion.

6 CO-FACILITATOR BARB SWEAZEY: Thank
7 you. Additional que -- additional...

8 MR. BRETT WHELER: Brett Wheler --
9 Brett Wheler, for the Board. Garry, can you -- can
10 you please confirm that -- that that's what you're
11 referring to? It wasn't clear to me whether you're
12 asking for something new that's sort of over and
13 above, or whether you're requesting information, or
14 whether you're suggesting another agenda item to -- to
15 the -- the meeting, as -- as David referred to.

16 Can you clarify that, particularly with
17 respect to the -- the specific request you made about
18 this proposal for monitoring of benthic invertebrates?
19 Thanks.

20 MR. GARRY SCRIMGEOUR: Garry
21 Scrimgeour, Parks Canada. Thank you. My expectation
22 is that the discussion with DFO and the Proponent
23 would address specific issues, such as short-term
24 degradation of fish habitat. That would be one (1)
25 topic.

1 There will be longer term losses in
2 fish habitat, which is another discussion of item
3 where the road would occupy the larger flood plain,
4 and that would be a loss of stru -- a loss of fish
5 habitat, a reduction of ecological integrity within
6 the flood plain minimally for the life of the mine and
7 perhaps longer, depending on the persistence of the
8 road.

9 So as we go through the items today,
10 what I will do is identify specific items for
11 discussion, the monitoring of benthic
12 macroinvertebrates upstream within and downstream
13 would be one (1) of those, and I expect there's going
14 to be several others.

15 I would like those identified in -- in
16 part only just to remind us that those topics are up
17 for discussion when we have those discussions.

18 MR. BRETT WHEELER: Brett Wheler, for
19 the Board. Okay, thanks, Garry. So -- so you are
20 essentially agreeing that the forum that we've already
21 discussed and have an undertaking on for discussion is
22 a -- is a place where these topics can be brought up.
23 You would like to -- us to keep track, and -- and I'm
24 sure you're keeping track as well, of these specific
25 agenda items.

1 So -- so I suggest that -- that we'll
2 note those, and they'll be noted again in the
3 transcript, of course, but we'll -- we won't note them
4 again in a separate or additional way from what we've
5 already noted as -- as a meeting and various
6 discussions to happen on these topics.

7 I'd appreciate you bringing them up.
8 Thanks.

9 CO-FACILITATOR BARB SWEAZEY: Barb,
10 from Stratos. DFO, did you have something to add to
11 this?

12 MS. JULIE MARENTETTE: Julie
13 Marentette, with Fisheries and Oceans Canada. Yes, I
14 think this can be part of the discussions that will
15 happen as part of Undertaking 7. Yeah, thanks.

16 CO-FACILITATOR BARB SWEAZEY: Thank
17 you for that.

18

19 (BRIEF PAUSE)

20

21 MR. BILL ROZEBOOM: Bill Rozeboom,
22 Tetra Tech.

23 CO-FACILITATOR BARB SWEAZEY: Can you
24 just speak a little closer to the mic? Sorry. Thank
25 you.

1 MR. BILL ROZEBOOM: Bill Rozeboom,
2 Tetra Tech. I want to point out that the -- the --
3 what's being termed the new channel is actually a
4 historic channel that was naturally formed by the
5 stream. Our hydraulic modelling suggests that the --
6 the hundred year will basically pass in either the old
7 channel or the new channel.

8 Why -- why it has episodically gone to
9 one (1) or the other we don't know. It might
10 landslides or some other blockage. But the point is,
11 is that the -- the design for the new channel, which
12 is really reactivating a historic naturally-created
13 channel, is to restore -- restore dimensions in slopes
14 and cross-sections which are similar to the existing
15 channel.

16 So it -- it is really kind of
17 reactivating a -- a historic channel, which -- which
18 should come with natural environmental benefits. It
19 should have a similar sediment carrying capacity.

20 MR. TOBY PERKINS: Toby Perkins. So
21 the proposed realignment, would the channel be forced
22 to stay in there? Would it be a riprap channel or --
23 I mean, there's some description of berms at the
24 upstream end, and that kind of thing. But beyond
25 that, can the channel evolve naturally, or would it be

1 continually maintained, excavated, dredged, and
2 reshaped into a trapezoidal-type channel?

3 MR. BILL ROZEBOOM: Bill Rozeboom,
4 Tetra Tech. Again, the -- the existing channel has
5 dimension slopes which seem to be pretty stable under
6 existing conditions without riprap, although there is
7 a hard bank on one (1) side, yes.

8 The -- the intent is to construct the
9 new channel with the same dimensions without riprap or
10 other stuff, the expectation being that the sediment
11 transport through the reach is normally sort of
12 stable. We -- we don't see any great instability. So
13 it will need to be monitored, yes, but we have a -- a
14 good expectation that it will perform quite
15 favourably.

16 MR. DAVID HARPLEY: So it's Dave
17 Harpley. Just to add to Bill's description to be more
18 specific to your question, yes, we will divert it. We
19 will maintain the berm, that it stays diverted. We're
20 also knowledge of -- well, cognizant of the fact that
21 there are a few spots along the reach where
22 historically, it seems that it has taken a different
23 route, or at least had a -- had a side channel. Those
24 would be bermed as well.

25 Within the general area of the

1 realignment, the -- the creek can basically do what it
2 wants to, but we will monitor and try and ensure that
3 it doesn't actually try and evolves back to its
4 current location.

5

6 (BRIEF PAUSE)

7

8 MR. TOBY PERKINS: Toby Perkins.

9 Okay, thanks for that clarification. I guess I just
10 want to note, too, that I guess the hydraulic
11 modelling, the -- the hundred-year hydraulic modelling
12 in the areas doesn't even show the active channel as
13 being completely weighted.

14 I do have some questions about the
15 flood flow calculations and things. I won't go into
16 them right now, but I -- I just want to also reiterate
17 or make it clear that that's not -- not necessarily a
18 surprising result, the fact that we see this active
19 area with no vegetation on it and a large flood not
20 filling that. That's not necessarily surprising, but
21 the reason it's maintained as active is because it is
22 so dynamic. Every year, every freshet, the channel
23 moves around a little bit.

24 So besides doing a hydraulic model that
25 shows the current condition, there still -- there

1 clearly needs to be consideration for a larger active
2 area, and I understand some of your comments, and I
3 see potential there, but I'm not clear on the details,
4 and I'm not -- I'm not sure on the -- the -- again,
5 the risk and the survivability of the -- the proposed
6 approach.

7 I'll try and -- maybe I'll try and
8 come back with a question -- a more specific question,
9 but I just wanted to document that concern, I guess.

10 CO-FACILITATOR BARB SWEAZEY: Barb,
11 here from Stratos. I wonder whether or not we have
12 time for one (1) more question before we pause for a
13 break, and then we'll -- we'll certainly come back to
14 this, but just to give everyone a chance to break. So
15 Parks Canada, did you have one (1) additional
16 question?

17 Before I go to you, Garry, CanZinc, was
18 there something you wanted to say in response to
19 Toby's comment before I turn to Parks Canada?

20 MR. DAVID HARPLEY: It's Dave Harpley.
21 I -- I think it would be perhaps helpful for Bill to
22 explain the process that we went through with this
23 realignment, because originally we were actually
24 proposing a longer realignment but we shortened it,
25 and Bill can explain why.

1 MR. BILL ROZEBOOM: Bill Rozeboom,
2 Tetra Tech. Yes, we -- we share the same concerns you
3 do, that this is a very dynamic, highly active system.
4 The -- the initial proposal had a lot more
5 realignment. And as you can see, the -- particularly
6 downstream of KP 37, there's this large, large
7 tributary that comes in. There -- there's no
8 stability what all -- whatsoever. There's no
9 vegetation. It -- it's just total -- totally random,
10 and we've advised that you should not try any
11 realignment. They're just not going to hold up.

12 In the reach we're talking about, we
13 were quite surprised, actually, when you look at
14 historic air photos, that it does seem to be quite
15 stable. So you -- you don't -- when -- when you look
16 at the LIDAR data, and you can see underneath the
17 vegetation, you can see that historically, or
18 geologically, the -- the river has been -- or the
19 stream has been all over the place.

20 But in recent years, it -- it actually
21 seems to be fairly stable. So my -- my sense is that
22 it -- it's maturing geologically, and -- and it's --
23 it's slowly entrenching itself, and it is staying in
24 its main channel. There's -- there's other stuff
25 going on, with a big flood, or landslides or -- or big

1 sediment inputs, yes. There -- there will be episodic
2 events, but I do believe that -- that this has a very
3 good chance of being pretty stable with -- with
4 minimal maintenance.

5 CO-FACILITATOR BARB SWEAZEY: Thank
6 you, Bill. I was going to go to Parks Canada with a -
7 - with your question.

8 MR. GARRY SCRIMGEOUR: Garry
9 Scrimgeour, with Parks Canada. We appreciate that
10 many parties are recognizing that this is a highly
11 dynamic, highly active, highly unstable hydrological
12 system. We -- we would recognize that perhaps recent
13 stable flows have created certain conditions with --
14 with stream channel morphometry. But our view is that
15 over the longer period, the fact is that these flood
16 plains are very extensive in width. We expect that
17 they're highly dynamic.

18 And the point -- which I'll make two
19 (2) points. The first one (1) is that we will have a
20 discussion on the identification of fish habitat
21 defined as 'ordinary mean high water' versus a broader
22 evaluation of the width of the flood plain. One (1)
23 ref -- reflects sort of a relatively short period, one
24 (1) or two (2) years, in terms of measuring the -- the
25 ordinary high water level versus the -- the flow

1 raging that maintains this incredibly extensive flood
2 plain. Parks Canada shares the perspective with DFO
3 in terms of evaluating habitat for fish, but our
4 consideration is broader in that we are viewing a
5 healthy, dynamic flood plain as being important. And
6 also related to that, a healthy, dynamic riparian
7 zone.

8 CO-FACILITATOR BARB SWEAZEY: Barb,
9 from Stratos. So, Garry, just to clarify. That is an
10 additional agenda item on the meeting that you will be
11 having with the three (3) parties? DFO, do you have
12 anything to add to that?

13 MS. JULIE MARENTETTE: Julie
14 Marentette, with Fisheries and Oceans Canada. Yes,
15 flood plain issues were one (1) of the things that we
16 wanted to bring up today, just in terms of how they're
17 defined, active flood plain is something that we would
18 consider fish habitat. Historic or old flood plain,
19 not necessarily so. And we had some questions about
20 how those two (2) are differentiated. Because right
21 now, my understanding is that they're kind of loosely
22 differentiated based on -- on the intensity of -- of
23 vegetation determined through photographic analysis.

24 Has there been any ground truthing to
25 establish whether what is being called the old or

1 historic flood plain has actually not been flooded for
2 twenty (20) plus years? Thank you.

3 CO-FACILITATOR BARB SWEAZEY: CanZinc,
4 is that something you can respond to?

5 MR. DAVID HARPLEY: Dave Harpley.
6 Again, I think that's probably best left for our
7 discussion, otherwise it's going to be a rather long
8 answer.

9 CO-FACILITATOR BARB SWEAZEY: And --

10 MS. SACHI DE SOUZA: Sachi de Souza,
11 with the Board. If we can just hold that question.
12 I've got some more questions about that, which I would
13 like to know the answer to during this session. So we
14 can do that after the break.

15 CO-FACILITATOR BARB SWEAZEY: Okay.
16 So why don't we do that? It's 10:17, so how about we
17 take a fifteen (15) minute break, be ready to go
18 10:33, roughly? See you then.

19

20 --- Upon recessing at 10:18 a.m.

21 --- Upon resuming at 10:36 a.m.

22

23 CO-FACILITATOR BARB SWEAZEY: Okay,
24 folks. Barb, from Stratos, we'll reconvene. So we're
25 going to continue on the conversation and questions

1 related to the Sundog Creek alignment at this point.

2 So I -- we haven't heard from the folks
3 from GNWT. Do you guys have questions that you would
4 like to -- to raise?

5 MR. RICK WALBOURNE: Rick Walbourne,
6 GNWT. Try not to weigh in here too much, but I do
7 have a couple of quick questions, I think. I think
8 this one should be pretty easy, but I just want
9 confirmation.

10 So I'm assuming, then, that the new
11 alignment of Sundog Creek is going to persist post-
12 closure. Just -- can you just confirm that? I'll
13 leave it there.

14 MR. DAVID HARPLEY: Dave Harpley.
15 That's correct.

16 MR. RICK WALBOURNE: Thank you for
17 that. One (1) other quick question. ENR had asked an
18 IR -- just a second.

19

20 (BRIEF PAUSE)

21

22 MR. RICK WALBOURNE: GNWT 25. It was
23 just regarding any potential for thermal erosion of
24 permafrost in the -- in the realignment. Canadian
25 Zinc had replied that course gravel and galvo

1 (phonetic) occur, and permafrost is highly unlikely to
2 occur.

3 I just want confirmation, is that some
4 -- is that just a general statement regarding the
5 existence of permafrost, or is that something they've
6 observed on site through their studies? Or I'm just
7 wondering if there was a reference for that, or if
8 that was just a -- a general observation? Thank you.

9 MR. DAVID HARPLEY: It's Dave Harpley.
10 It's a reference to the location of the realignment
11 and -- and the very course nature of the bed material
12 at location. And it's my understanding that it's
13 highly unlikely to have permafrost in that kind of
14 material, but my colleague behind me, who probably
15 needs to be introduced, can correct me if I'm in --
16 incorrect.

17 CO-FACILITATOR BARB SWEAZEY: Barb,
18 from Stratos. Let's just that that opportunity to
19 introduce your additional participant.

20 MR. KEVIN JONES: Okay. I'm Kevin
21 Jones, Vice President of Arctic Development with Tetra
22 Tech EBA. And I'm a permafrost geotechnical
23 engineering engineer. You are indeed correct, Dave.
24 The amount of water that's flown down that river over
25 the decades and millennium would make it highly,

1 highly, highly unlikely in this relatively warm
2 permafrost regime to have any permafrost within that
3 flood plain at all.

4 MR. RICK WALBOURNE: Rick Walbourne,
5 ENR. Thanks for those answers. I have nothing else
6 on Sundog. We have some other comments later
7 regarding crossings in general, and some on the
8 mitigation, but I'll leave it there for now. Thank
9 you.

10 CO-FACILITATOR BARB SWEAZEY: Thanks
11 very much, GNWT. Environment and Climate Change
12 Canada, have you any questions related to Sundog
13 Creek? We haven't heard from you. Yes? Hang onto
14 that for a second, Brad. Yeah, go ahead, Parks.

15 MR. GARRY SCRIMGEOUR: Garry
16 Scrimgeour, Parks Canada. Just for clarity, we'd like
17 a commitment from the Proponent that reclamation of
18 berms created as part of the Sundog Creek stream
19 realignment reclaimed as part of their reclamation
20 program.

21 MR. DAVID HARPLEY: It's Dave Harpley.
22 Can we park that one for a little while?

23 CO-FACILITATOR BARB SWEAZEY: Barb,
24 from Stratos. Would you like to come back to it later
25 today, Dave, is that what you're kind of thinking,

1 maybe? Okay. So we're going to put it on -- yeah, go
2 ahead, Sachi.

3 MS. SACHI DE SOUZA: Sachi, with the
4 Board. Garry, just to -- just to confirm, it's a --
5 you want the berms taken out because you want the
6 Sundog Creek channel creek to be returned to -- have
7 the ability to go back to its original condition, and
8 that's important to you in terms of what the area
9 looks like after closure once the project is gone?

10 And if it wasn't returned back, you
11 would -- I'll just leave it there. Sorry.

12 MR. GARRY SCRIMGEOUR: Garry
13 Scrimgeour, Parks Canada. Yes, we would assume that
14 the berms would be removed. They would be a feature
15 of the flood plain that would naturally not be there.
16 Therefore, we -- we don't think it should be there.

17 If it was to not be removed, we would
18 consider that to be a reduction and a -- a biol -- a
19 abiotic -- a -- an abiotic feature and, therefore, a
20 reduction in the quality of that flood plain habitat.

21 MS. CARRIE BRENEMAN: Carrie Breneman,
22 Dehcho First Nations. Garry, from the perspective of
23 fish and fish habitat, what impact would removing the
24 berms have once they've -- like, after the stream's
25 been realigned?

1 MR. GARRY SCRIMGEOUR: Garry
2 Scrimgeour, Parks Canada. Probably in the simplest
3 form, it would just allow the river -- the active
4 river channel, the flowing portion, to move where it
5 wanted to, so it would be unconstrained by a manmade
6 feature.

7 MR. CHUCK HUBERT: Chuck Hubert, with
8 the Review Board. Is John Wilcockson still on the
9 line?

10 MR. JOHN WILCOCKSON (BY PHONE): Yes,
11 I am. This is John Wilcockson, with Hatfield
12 Consultants.

13 MR. CHUCK HUBERT: So I understand
14 that an effects assessment of the impacts of this
15 Sundog realignment to fish and aquatic life was done
16 for the -- the original, like I said, about a 3
17 kilometre length ali -- alignment.

18 And I guess the question is: What's a
19 -- a similar effects assessment on fish and aquatic
20 life done for this modified about a kilometre and a
21 half most recent alignment and -- and, if so, what --
22 were there any differences in the conclusions of that
23 effects assessment on impacts, whether there are
24 significant adverse impacts to fish and aquatic life
25 from either alignment?

1 MR. JOHN WILCOCKSON (BY PHONE): John
2 Wilcockson, with Hatfield Consultants. Yes, impact
3 assessment was done. The -- whether or not there was
4 any difference between the two (2), I mean, it -- it
5 comes down to a difference in the -- the total area of
6 habitat.

7 It's -- it's kind of an interesting
8 zone, because it's -- it's -- appears to be completely
9 dry. It goes to ground during much of the year, so it
10 -- it doesn't appear to have much in the way of
11 habitat for a large portion of the year. But there is
12 a potential that benthic invertebrates still might
13 hunker down and -- and reside in interstitial spaces,
14 and repopulate the stream perhaps quicker when water
15 does resume flowing.

16 So I guess my -- my answer is that it -
17 - it's -- I guess it's -- it's a -- a difference in --
18 in the quantity of -- of habitat. That being said, we
19 anticipate that the new habitat that is created after
20 the alignment will be very similar to the existing
21 habitat in both situations.

22 MR. CHUCK HUBERT: Thanks. Chuck
23 Hubert, with the Review Board. So did the second asse
24 -- effects assessment of the -- the shorter realigned
25 portion at Sundog also consider effects on fish and

1 aquatic life from -- from any changes to sediment
2 loading or sediment transport along this new realigned
3 stretch?

4 MR. JOHN WILCOCKSON (BY PHONE): That
5 was mostly addressed, I think, in -- in a -- an IR
6 question regarding sediment loading and -- and
7 deposition. So the concern being that the new channel
8 created will have fine material that the existing
9 channel would not have because if this is material
10 that would have been deposited between the rocks when
11 the old channel was -- was active.

12 And in order to -- to resume that old -
13 - older channel, machinery's going to be used to -- to
14 reduce the -- the height, or the -- or -- or the beds,
15 reduce the beds to encourage the channel to -- to
16 exist again. So that finer material would be then
17 exposed.

18 So the concern being that that exposed
19 material now when the -- the flow is -- is resuming
20 going down to that -- that older channel is going to
21 be picked up, and then redeposited further downstream,
22 and -- and potentially affecting fish spawning habitat
23 and -- and habitat for benthic invertebrates.

24 One (1) -- one (1) factor here that
25 should be considered is that because the materials

1 throughout this -- the flood plain is -- is very
2 porous, that it's not necessary that -- that it's
3 going to be sort of a -- a situation where just after
4 the diversion is made and the water starts flowing
5 that all the water that's flowing in that new channel
6 is going to be picking up -- or I should say all the
7 water that's going through the -- the Sundog in
8 general and reappearing on -- on the -- the bottom end
9 of the diversion area is going to be flowing through
10 that -- that new -- or that -- the older channel that
11 is -- is reactivated.

12 Because the material is so porous,
13 likely a lot of that water is going to still go
14 through the older channel and -- and through the --
15 the flood plain in general, and -- and perhaps this is
16 something that hydrologists could -- could talk to.

17 So it -- it's a question about, well,
18 how much -- how much material is going to be res --
19 resuspended, and I -- I don't think it's going to be a
20 large, significant amount. So I -- I hope that
21 answers your question.

22 CO-FACILITATOR BARB SWEAZEY: CanZinc,
23 and then Parks.

24 MR. DAVID HARPLEY: Yeah. It's Dave
25 Harpley. So I -- I just want to kind of summarize, as

1 it may have been a little difficult to pick up
2 everything that John was saying. So there are two (2)
3 issues here, one (1) is sediment, and the other one
4 (1) is the old channel.

5 Regarding sediment, we had quite a bit
6 of discussion internally on -- on this particular
7 issue. John mentioned fine sediment. I think perhaps
8 more accurately, you could -- we could say finer
9 sediment, because pretty much all the material in this
10 area is coarse. I mean, there's --there's sand size
11 and -- and go through gravel to cobble. There's a lot
12 of cobble.

13 We do expect that there'll be a -- a
14 period of adjustment. When the water -- after the
15 diversion is put in place, and water starts flowing
16 the spring, there'll be a period of adjustment as
17 water enters the new channel. It will likely pick up
18 some material. We expect a lot of it will be
19 immediately redeposited between the interstices of the
20 significant cobble material in the area. There may be
21 some that persist a little further downstream.

22 But I think in general, our expectation
23 is with this system, like any other of these mountain
24 streams in the area, is that the amount of bed load is
25 entirely dependent on the amount of water and velocity

1 in the system. And that when the flow is gentle, the
2 water is clear, and when the flow isn't gentle,
3 everywhere is turbid, both upstream in the new channel
4 and downstream. So that -- that, to us, is the
5 overriding factor.

6 Coming back to the old channel, what --
7 what John is referring to in terms of flow is that
8 when we construct the road where the channel currently
9 is, we will not be occupying the entirety of the
10 existing channel. There'll be part of it that will be
11 remaining.

12 Because the material in the -- in the
13 alluvium is very permeable, when water levels are
14 high, there will be water -- standing water adjacent
15 to the road. It won't have any velocity in it, but
16 there will be some water, and there will be a small
17 amount of flow. So that's what John is referring to.

18 MS. SACHI DE SOUZA: John, it's Sachi,
19 from the Board. Can you please confirm what sediment
20 size you're talking about when you say "fine," just
21 for my own knowledge? Are you talking about the sand
22 size, or are you talking about small gravel? David
23 Harpley just mentioned it's "finer", but I would just
24 like to understand my -- myself a little bit better
25 what that range is.

1 MR. JOHN WILCOCKSON (BY PHONE): Yeah.

2 No, I -- I would say anything that's sand and smaller.

3 CO-FACILITATOR BARB SWEAZEY: Parks
4 Canada, did you have a question related to this that
5 you wanted to ask?

6 No? Okay. Sorry. Additional
7 questions on the Sundog Creek realignment? Yes, DFO?

8 MS. JULIE MARENTETTE: Julie
9 Marentette, Fisheries and Oceans Canada. I noted in
10 the Allnorth memo from March 18th that there was
11 discussion of some smaller realignments apart from the
12 main realignment.

13 Do you know at this point how many of
14 those there are likely to be where the channel has
15 been shifted over because the encroachment by the road
16 prism is fully into the active channel? Thanks.

17

18 (BRIEF PAUSE)

19

20 MR. DAVID HARPLEY: It's Dave Harpley.
21 So in the document you're referring to, we give
22 percentages of habitat loss based on encroachment into
23 the current creek channel. And it -- it seems that
24 there are three (3) separate locations upon which that
25 encroachment occurs over a length of -- or -- or

1 totalling the length of 1.5 kilometres.

2 CO-FACILITATOR BARB SWEAZEY: Barb,
3 from Stratos. DFO, does that help to clarify, or do
4 you have additional questions?

5 MS. JULIE MARENTETTE: Julie
6 Marentette, Fisheries and Oceans Canada. Yes, I think
7 getting a -- a table of those precise locations and
8 quantities as opposed to ranges of percentages will be
9 something that can be dealt with as part of
10 Undertaking 7. Thanks.

11 CO-FACILITATOR BARB SWEAZEY: Barb,
12 from Stratos. Just to clarify, that will be part of
13 the meeting that the three (3) of you are talking
14 about? Is that what you just said, Julie?

15 MS. JULIE MARENTETTE: Yes.

16 MS. SACHI DE SOUZA: It's Sachi, with
17 the Board. Could we please know those locations right
18 now? If -- we need to know. I know there's one (1)
19 downstream of the rel -- realignment at thirty-seven
20 point seven five (37.75) that's on the screen right
21 now. I know that at this point, downstream of the
22 realignment, Allnorth has -- CanZinc has stated
23 through the Allnorth appendix that they will have to
24 shift the active channel a little bit to the north, I
25 believe, down on the screen. So I know that's one (1)

1 location.

2 Can you please identify right now what
3 the other locations are? And if they're in this
4 report that was attached to the April 11th submission,
5 that would be useful for all -- everyone in the room
6 right now.

7

8 (BRIEF PAUSE)

9

10 MR. DAVID HARPLEY: It's Dave Harpley.
11 So while -- while Ernie here is figuring out the exact
12 locations, as you pointed out, one (1) of the
13 encroachment locations is on the screen at thirty-
14 seven point seven (37.7). And there are two (2) more
15 upstream of the diversion, approximately around the
16 thirty-five (35) to thirty-six (36) location.

17

18 (BRIEF PAUSE)

19

20 MR. DAVID HARPLEY: It's Dave Harpley.
21 Do you want more specifics on these encroachments
22 right now?

23 MS. SACHI DE SOUZA: Right now, I -- I
24 think a starting point is where they are, and then I
25 think after everyone sees them and understands it, we

1 might have -- I might have more questions and other
2 parties might -- might have more questions.

3

4 (BRIEF PAUSE)

5

6 CO-FACILITATOR BARB SWEAZEY: Are
7 there additional ones that we need to talk about? Are
8 you working on still identifying additional beyond the
9 37.7 and the 35 to 36? Are there additional ones?

10 MR. DAVID HARPLEY: It's Dave Harpley.
11 I thought you wanted the general idea, which is where
12 we're going to stop right now. But in the meantime,
13 we're quantifying it a little better for when the
14 question comes back later.

15 MS. SACHI DE SOUZA: Sachi, with the
16 Board. So right now on this figure, could you just
17 point out specifically where they are if -- on this
18 aerial photo? It would just help all of us right now.

19 MR. ERNIE KRAGT: Ernie Kragt. If --
20 if we scroll down, we -- we have a table where we
21 define each of these sections and -- and roughly the
22 percentage of the -- the footprint of the road that
23 occupies the -- so, sorry, go back up a bit. Go back
24 to see what page. Start with page 6, so.

25

1 (BRIEF PAUSE)

2

3 MR. ERNIE KRAGT: Oh, there, okay. So
4 just -- just scroll down a little bit. Okay, so I get
5 into the site descriptions here. So in here, we -- we
6 break -- we break down the percentage of the road
7 prism that may occupy the active flood plain.

8 So, in this case, we -- we identified
9 that there is pretty much outside the active flood
10 plain. This one's 25 to 50 percent of the road prism
11 is within the flood plain on this section. This gets
12 into a little greater percentage.

13 So it -- it's fairly detailed here of -
14 - of what -- what we figure the road prism and where
15 it -- where it's occupying the -- the stream active
16 channel. So if -- if you wish, we can go through item
17 by item, but it -- it does explain it quite well here.

18 CO-FACILITATOR BARB SWEAZEY: Barb,
19 from Stratos. DFO, a followup question?

20 MS. JULIE MARENTETTE: Yeah. Julie
21 Marentette, Fisheries and Oceans Canada. This is the
22 same document where there's that summary table at the
23 end that totals around 16,000 square metres of impact.
24 That's been summarized, all -- all of these.

25 But what we're interested in is knowing

1 each individual impact, because those numbers came
2 from somewhere, and we need to see where they come
3 from.

4 CO-FACILITATOR BARB SWEAZEY: Is this
5 the table you're referring to?

6 MS. JULIE MARENTETTE: Yes.

7 CO-FACILITATOR BARB SWEAZEY: So does
8 CanZinc understand the request that's coming from DFO
9 to modify this table? Sachi, is that -- is that
10 addressing your question -- or your concern? So it --
11 that's an undertaking, yes? Okay.

12

13 --- UNDERTAKING NO. 24: CanZinc to elaborate on
14 the summary table of
15 square metres of impact
16 and explain where the
17 numbers come from

18

19 CO-FACILITATOR BARB SWEAZEY: Thank
20 you. I realized I had gone to Environment Canada, and
21 then I forgot about you. I -- would you, Brad or your
22 colleague on the phone, have a question at this time?

23 MR. BRADLEY SUMMERFIELD: Brad
24 Summerfield, with Environment and Climate Change
25 Canada. No, not at this time.

1 CO-FACILITATOR BARB SWEAZEY: How
2 about Liidlil Kue First Nations? Do you have
3 questions on the Sundog Creek realignment? We haven't
4 had a chance to hear from you this morning.

5 MR. DAVID HARPLEY: We're of the
6 understanding that Parks Canada, the GNWT, DFO are to
7 meet and discuss some aspects that we're actually
8 depending upon, as well, so we'll -- we don't have any
9 comments at this time. Thanks.

10 MS. CARRIE BRENNEMAN: Carrie Breneman,
11 Dehcho First Nations. I think from -- it's been very
12 informative listening to this section on the Sundog
13 Creek realignment. And I think for us, we're looking
14 for an evidence-based approach on what the impacts on
15 fish and fish habitat are.

16 I'm just looking at page 18 of the
17 Hatfield Consultants memo regarding TSS and fish
18 health. And in this, Hatfield states that:

19 "During flood flows, incremental
20 input of TSS from the new channel is
21 anticipated to be negligible."

22 Has there been any work done on what
23 they anticipate the TSS will look like, like, what
24 range of numbers that would be?

25 CO-FACILITATOR BARB SWEAZEY: Barb,

1 from Stratos. I'll turn that to John. Is that right?

2 John, perhaps you can respond?

3 MR. JOHN WILCOCKSON (BY PHONE): John
4 Wilcockson, with Hatfield Consultants. No, we have
5 not done any quantitative assessment of the
6 quantities.

7 MS. CARRIE BRENEMAN: John, you said
8 previously that the sediments in the channel would be
9 fine. Do you think that the TSS would exceed what you
10 would expect in the original -- like in Sundog Creek
11 prior to the diversion, so in the original channel of
12 Sundog Creek?

13 MR. JOHN WILCOCKSON (BY PHONE): John
14 Wilcockson, with Hatfield. I think there could be --
15 I -- I agree with Dave that a lot of the material in
16 the creek bed would be of a courser nature, just --
17 just due to the amount of -- of flow and dynamic --
18 dynamicness of the system.

19 I do think there could be a short
20 period of time as water begins to go to the new
21 channel where there would be a -- a higher TSS load.
22 What that number would be, I don't know. It's -- it's
23 difficult to say.

24 I just -- I don't anticipate that it is
25 going to be a sig -- significant issue, just because

1 that the -- the -- there is a -- there is a large
2 amount of water that is going to interstices still in
3 the -- the old channel that would -- would serve to
4 keep the water clearer.

5 So I -- I guess my -- my answer is I --
6 I am not sure. I think there will be a short period
7 of time where the TSS would be higher, but I -- I
8 don't know the significantness of that in a
9 quantitative way, but my opinion is that is not going
10 to be -- is not going to cause significant damage to
11 downstream benthic invertebrates or fish.

12 MS. CARRIE BRENNEMAN: And also in your
13 report, you state that fish living in Sundog Creek
14 have likely adapted to short periods of high TSS
15 water. Could you just explain that statement? Is
16 that a thing that fish living in high TSS environments
17 tend to be adapted to high TSS?

18 MR. JOHN WILCOCKSON (BY PHONE): In
19 order to live in this -- this system, through -- they
20 would have had to be exposed to periods where there's
21 a large amount of rainfall, and where the system does
22 become engorged, and there's a lot of flow.

23 During those periods, the TSS would be
24 high and the fish would have to -- they -- they would
25 have no choice but to stay within the system unless

1 they were able to find a side channel that they could
2 duck into.

3 So that -- I guess that's my answer
4 that they -- they have -- they have no choice but to
5 live in that system. So in that sense, they are --
6 they are -- yeah. Does -- does that answer your
7 question?

8 MS. CARRIE BRENEMAN: I'm just
9 wondering if you're taking measurements of what the
10 TSS looks like, or what would be a range of acceptable
11 TSS for fish in Sundog Creek?

12 MR. JOHN WILCOCKSON (BY PHONE): No, I
13 -- I don't have -- I don't have any numbers. My
14 experience of -- of -- with the creek is being there
15 during the summer and seeing -- being downstream of
16 the diversion area where there was flow, and then also
17 several times flowing over -- flying over the -- the
18 section where the diversion was planned where there
19 was no flow.

20 CO-FACILITATOR BARB SWEAZEY: Barb,
21 from Stratos. Before I turn to Parks Canada, I'm
22 wonder, Carrie, if you could just help articulate why
23 this -- this particular line of questioning is --
24 what's the impact or the significance of this impact
25 that you're talking about, that -- why it's important

1 to have this information?

2 MS. CARRIE BRENNEMAN: Carrie Breneman,
3 Dehcho First Nations. I think for me I'm just trying
4 to understand what the effect of the Sundog Creek
5 realignment from a TSS perspective would have on fish
6 in Sundog Creek.

7 So in terms of what I think the impacts
8 are, I -- I don't know. I'm just -- I -- I'm trying
9 to assess the information that the Pro -- Proponent's
10 put forward and what that means in terms of fish and
11 fish health in Sundog Creek.

12 MR. DAVID HARPLEY: So your -- your
13 question was specific to quantification of TSS and
14 measurement of TSS. John is correct that we didn't
15 specifically measure TSS, and we were talking
16 specifically about the flood situation.

17 Sundog wasn't in flood at the time when
18 we were out there doing an assessment, but as I
19 mentioned earlier, we have been in the area,
20 specifically Prairie Creek, during periods of flood.
21 And you can literally go from a clear stream to a
22 chocolate coloured stream (sic) in -- in a matter of
23 hours. We didn't measure the TSS in the chocolate
24 water, but I could suggest that it's very high. So I
25 imagine it's the same situation in Sundog.

1 As John also mentioned, we don't
2 exactly know how much TSS the new channel would
3 generate during initial flows, but I doubt that it's
4 going to be anything approaching the chocolate colour
5 in nature. I can -- that -- that's the evidence that
6 we -- that we have right now. So just to give you
7 some background information.

8 MS. SACHI DE SOUZA: Sachi, with the
9 Board. Two (2) questions. First off, what evidence
10 is there that it won't become -- become that chocolate
11 colour water that you're referring to?

12 MR. DAVID HARPLEY: Because we've seen
13 it in Prairie Creek, and they're both similar mountain
14 streams.

15 MS. SACHI DE SOUZA: Sachi, with the
16 Board. Between people who have been in the Nahanni
17 National Park, Canadian Zinc and Parks Canada, have --
18 has anyone seen Sundog Creek during freshet, and have
19 pictures, or some sort of words on this?

20

21 (BRIEF PAUSE)

22

23 MR. JONATHAN TSETSO: Jonathan Tsetso,
24 Parks Canada. Have I actually observed it directly
25 during freshet on a regular basis? No. But on an

1 opportune basis, yes, I have flown over that area
2 during freshet, and the water can be very turbid.

3 And really, it -- it can vary from year
4 to year, depending on the weather patterns as well.
5 It can be a very flashy system, because there isn't a
6 lot of vegetation up in elevations, so the creek
7 itself is very responsive to -- to rain and -- and
8 things like that, as well.

9 CO-FACILITATOR BARB SWEAZEY: Thank
10 you. So, Dave, and then we're going to go -- I know
11 you have a question. Oh, a response. Can we go to
12 Parks Canada first, please?

13 MR. GARRY SCRIMGEOUR: Garry
14 Scrimgeour, with Parks Canada. Our approach is very
15 consistent with what John Wilcockson has said, that in
16 the absence of any empirical modelling putting
17 quantification to increases in TSS with the stream
18 realignment, in the absence of that, we think it's
19 very reasonable to -- to acquire an environmental
20 monitoring program that assesses the effect as opposed
21 to quantifying the stressor.

22 That's the basis for our -- our
23 suggestion to have a monitoring program of benthic
24 invertebrates upstream within the aligned channel, and
25 immediately downstream. So that's the rationale.

1 A second point would be to -- to
2 suggest that fish have evolved in a system and,
3 therefore, are resistant to stresses resulting from
4 TSS is -- is not quite the way I would phrase it. I
5 would suggest that increases in TSS provide stress to
6 fish. They're not favourable conditions for growth,
7 survival, and -- and other life history attributes.

8 So I think it's fair to say that they
9 can tolerate the system, but to say that when a
10 freshet comes through or a disturbance man-made due to
11 the realignment, that that's not going to be
12 accompanied with stress, I think it's highly likely
13 that increases in turbidity will affect fish. The
14 magnitude is not well known, so that's another key
15 point. So to say that they're in a system that's
16 flashy doesn't preclude that their -- their health is
17 not impacted. Thank you.

18 MS. SACHI DE SOUZA: Sachi, with the
19 Board. You mentioned that you think a monitoring
20 program's a -- a step to understanding the effects of
21 TSS or turbidity from the -- the realignment. A
22 monitoring program itself is not actually mitigating
23 an effect, and you've just said you're concerned about
24 the effect of increased turbidity on fish and
25 described that it could potentially be very important

1 to Parks Canada.

2 With that in mind, what would be
3 appropriate mitigations if the TSS reached a certain
4 level, given that you have a dir -- you have voiced
5 that this is a big concern for you with respect to
6 fish health near Sundog Creek?

7 MR. GARRY SCRIMGEOUR: Garry
8 Scrimgeour, Parks Canada. It is a concern for Parks
9 Canada. And the specifics of offsetting or
10 compensation would be a -- a point of discussion with
11 DFO, the Proponent, that I think has been committed
12 to. Yeah --

13 CO-FACILITATOR BARB SWEAZEY: Barb,
14 from Stratos. Oh --

15 MR. GARRY SCRIMGEOUR: Yeah. Garry
16 Scrimgeour, Parks Canada. So that -- that discussion
17 of compensation or offsetting is the specific points
18 of discussion. And that would be mitigation.

19 CO-FACILITATOR BARB SWEAZEY: Barb,
20 from Stratos. CanZinc...?

21 MR. DAVID HARPLEY: Yeah, it's Dave
22 Harpley. I had -- I had a clarification, and then a -
23 - and now I'll have an additional comment. The
24 clarification was that there seems to be a focus on
25 freshet in terms of higher -- higher flows and -- and

1 turbidity. I just wanted to point out that in -- in
2 the area, what we see, in fact, is that summer
3 rainfall periods create higher water levels than
4 freshet, or at least they have done for several years
5 now. So it's not just the freshet period, it's --
6 it's specifically certain events during the summer.
7 Intense rainfall events, usually during July or
8 August, which create the highest water volumes.

9 The comment regarding sediment and --
10 and impact and, therefore, mitigation. That's
11 something else that we've discussed internally. And I
12 think it may be useful to describe how this system
13 behaves on a seasonal basis. The species of fish that
14 most commonly are using this system is Arctic
15 grayling. There are slimy sculpins in the system. We
16 haven't found any other fish species in Sundog.

17 Arctic grayling, it seems, migrate in
18 the spring. They come up from -- from downstream as
19 flows increase in the system, and then they are able
20 to pass canyons and dry sections, and then migrate
21 upstream, presumably to spawn or to hang out during
22 the summer. So when flows start in the spring, we
23 don't believe a majority of those grayling are
24 actually going to be present at that time. There
25 certainly will be some grayling that will have

1 survived the winter in some of the larger pools in the
2 system. There are some large pools that are
3 approximately a kilometre, a kilometre and a half
4 downstream of this specific location we're talking
5 about.

6 So what I'm trying to suggest here is
7 that if there is a period of readjustment with this
8 realignment, as we anticipate, we think it will be
9 relatively short. It's our expectation that this
10 adjustment is probably mostly going to be over by the
11 time these migrating fish actually come up the system.
12 So we're really talking about grayling that have hung
13 out the winter in these deeper pools downstream.

14 Whether they -- you know, the
15 additional TSS might reach that far downstream. The
16 answer is, we don't know for sure. And we -- we're
17 not sure how much sediment. We kind of think it's not
18 going to be much, but there's a possibility that it's
19 some. Is it sufficient that we would think that it
20 requires mitigation? Kind of unlikely at this point.
21 I'm not sure what mitigation we could apply that would
22 be effective. And probably whatever we attempted to
23 do would cause more trouble than just leaving it
24 alone.

25 MS. SACHI DE SOUZA: Sachi, with the

1 Board. Bill, earlier you mentioned that the realigned
2 channel will have the capacity, and potentially it
3 will need to be dredged to carry that capacity over
4 the life of the project.

5 With the -- the dredging in mind, I
6 guess the first question: Do you have an idea of how
7 frequently you would need to go in and doing the
8 dredging? Second off, would it be as a result of
9 freshet? And, thirdly, when physically would you do
10 it?

11 And then I have a follow-up question
12 for the fish for John on the phone of: When you were
13 saying that the effects to fish from sediment are --
14 are going to be minimal, does that account for the
15 potential sediment that's mobilized as a result of
16 dredging the Sundog Creek realignment based on the --
17 the timeframe that Bill's probably about to describe
18 to me?

19

20 (BRIEF PAUSE)

21

22 MR. DAVID HARPLEY: It's Dave Harpley.
23 Hopefully I remember all the different components of
24 the question. In terms of the -- the frequency of
25 dredging, do we expect it to be frequent? No, we

1 don't. I would expect that potentially over a period
2 of perhaps two (2), to three (3), or four (4) years,
3 it may be an accumulation that we would want to
4 address, but I don't think this is going to be an
5 annual thing.

6 When would we do it? We would do it in
7 the late fall, potentially even in the late summer.
8 There are -- there are certainly -- have certainly
9 been times in the later summer period when this
10 stretch of the creek has been entirely dry. So we can
11 either do it then, or we can wait into the fall if
12 necessary, when there's no flow in the system and --
13 and do it then.

14 I think that was what you had asked
15 before the aquatic stuff, so I'll pass it over to
16 John.

17

18 (BRIEF PAUSE)

19

20 MR. JOHN WILCOCKSON (BY PHONE): I'm --
21 CO-FACILITATOR BARB SWEAZEY: John,
22 are you still on the line and did you hear the
23 question?

24 MR. JOHN WILCOCKSON (BY PHONE): I'm
25 just trying to -- to -- may -- maybe it would help me

1 if -- if the question could be repeated.

2 CO-FACILITATOR BARB SWEAZEY: Sachi,
3 can I get you to do that, please?

4 MS. SACHI DE SOUZA: Hi, John. It's
5 Sachi here. My question was: The impacts from TSS
6 you described as being low. And I was wondering if
7 that assess -- that your evaluation considered the
8 effects from dredging the Sundog Creek realignment
9 during operations, not just from the construction of
10 the realignment?

11 MR. JOHN WILCOCKSON (BY PHONE): No.
12 For me, it was considering just the realignment and
13 not repetitive dredging. I was under the impression
14 that once the realignment was created, that it would
15 be self-maintaining.

16 MS. SACHI DE SOUZA: The potential for
17 effects downstream of the realignment from TSS to fish
18 as a result of dredging, is there a potential there?

19 MR. DAVID HARPLEY: It's Dave Harpley.
20 Can I jump in here? I would rather we have a -- kind
21 of a reason -- consideration for that kind of answer
22 rather than kind of presage on for an off-the-cuff
23 answer here in this forum, so let's either do a in --
24 intervention, or undertaking, or something of that
25 nature.

1 MS. SACHI DE SOUZA: Sure. Before we
2 get to that, I think Toby's got a question. And that
3 might help inform an undertaking here.

4 MR. TOBY PERKINS: Toby Perkins.
5 Yeah, I just want the -- you commented that you expect
6 dredging to occur every three (3) to four (4) years
7 was the number you mentioned. I just wanted to know
8 if there's any basis for that assumption?

9 MR. DAVID HARPLEY: Dave Harpley. Not
10 really, no. It's just an expectation of how we expect
11 the system to behave. I mean, we -- we do think
12 there's going to be an accumulation over time, but I -
13 - I kind of doubt that it's going to occur on a -- on
14 a every year basis.

15 MR. TOBY PERKINS: Toby Perkins. I
16 think my experience would be that, in a system like
17 this, this is the only potential for substantial need
18 for dredging or works to make it successful. And I
19 haven't heard or seen evidence to suggest that three
20 (3) to four (4) years is an appropriate or a likely
21 timeframe for -- for maintenance requirements.

22 I -- I would certainly be interested to
23 see more information on the -- certainly more
24 information on the -- the basis for that assumption or
25 the rationale for it.

1 MR. GARRY SCRIMGEOUR: Garry
2 Scrimgeour, with Parks Canada. We would echo Toby's
3 comments that I think a little more quantitative
4 information would be helpful to many to not only
5 better understand the frequency of dredging but also
6 the spatial extent, and the potential environmental
7 effects. Thank you.

8 CO-FACILITATOR BARB SWEAZEY: Barb,
9 from Stratos. So do we articulate this as an
10 undertaking, or is that a commitment? How do we want
11 to make sure that this question gets answered?

12 MS. SACHI DE SOUZA: Sachi. Is -- on
13 the -- I'm talking -- the -- Toby is going to clarify
14 what specifically the Board is looking for, and I
15 might follow up with the -- the tie-in to the fish
16 component of that undertaking.

17

18 (BRIEF PAUSE)

19

20 MR. GARRY SCRIMGEOUR: May I? Garry
21 Scrimgeour, with Parks Canada. Because this isn't a
22 part of our ability to assess environmental effects,
23 we would be comfortable with an undertaking.

24

25 --- UNDERTAKING NO. 25: CanZinc will provide

1 information on design flow
2 (return period)
3 requirements for any major
4 temporary crossing and the
5 length of time they are
6 expected to be in place.
7

8 MR. TOBY PERKINS: Yes, so it's until
9 -- in order to better understand the frequency and
10 likely magnitude or extent of maintenance works, we
11 would like to see more information on how or what the
12 potential sediment accumulation would be, and along
13 with that documentation describing when and where
14 maintenance is expected, the methods for determining
15 which areas would -- would need to be dredged. So
16 pre-freshet, are you going to do work or post-freshet,
17 describing the times that maintenance would be needed
18 and, therefore, when it would be undertaken.

19 I guess also methods for disposal of
20 dredge material, where that would be placed. And --
21 and obviously a consideration of the environmental
22 effects of that maintenance -- dredging maintenance
23 works.

24 MS. SACHI DE SOUZA: Sachi, with the
25 Board. So in addition to that, that information would

1 then inform the assessment of potential impacts to
2 fish from the dredging activities, the storing of
3 dredged material. So is there going to be -- how
4 often it's going to happen will affect potentially how
5 much sediment and what the TSS would be downstream of
6 the realignment. And given that that might happen on
7 a three (3) to four (4) year basis, or potentially
8 more frequently, what that impact is to fish on an
9 annual basis, and then overall for the project.

10 CO-FACILITATOR BARB SWEAZEY: Barb,
11 from Stratos. So, CanZinc, are you comfortable with
12 that undertaking that's been articulated? Yes? Okay.
13 Thank you. DFO...?

14 MS. GEORGINA WILLISTON: All right.
15 Sorry, Georgina Williston, with Fisheries and Oceans
16 Canada.

17 In addition to fish, we should probably
18 add on "and fish habitat" because the fish are using
19 the habitat. So it -- we need to have an
20 understanding of both the impacts of, I guess, TSS
21 which is more of a water quality perspective but also
22 the physical habitat and the ability of the fish to
23 use that habitat before a dredge, after a dredge, and
24 any impacts that sediment accumulation could have on
25 fish habitat, and then the removal of that sediment

1 and accumulations impact on fish and fish habitat.

2 CO-FACILITATOR BARB SWEAZEY: Okay.

3 Thank you for that clarification and addition. We'll
4 record that in the undertaking draft.

5 Okay. Additional questions on the
6 Sundog Creek realignment? DFO...?

7 MS. JULIE MARENTETTE: Julie
8 Marentette, Fisheries and Oceans Canada.

9 Before the break I'd actually asked a
10 question about flood plain definition, and I don't
11 think we got an answer on that on the record. If we
12 could just go back to that question, where I'd asked
13 about how confident we were in -- in defining active
14 versus old flood plains using photographs, and whether
15 or not that would be ground truthed. Thanks.

16 CO-FACILITATOR BARB SWEAZEY: Barb,
17 from Stratos. So I do recall the question.

18 Part of what I took away was that that
19 might be a discussion for when you gather together but
20 am I understanding, Julie, that it would be helpful to
21 have a conversation in the room right now about that
22 to -- to help inform that conversation?

23 MS. JULIE MARENTETTE: Yes, it would
24 be good for everyone to know. Thank you.

25 CO-FACILITATOR BARB SWEAZEY: So Barb,

1 from Stratos. CanZinc, do you have some thoughts on
2 that, please?

3 MR. DAVID HARPLEY: Yeah. It's Dave
4 Harpley. So the photograph is -- photography we have -
5 - image that we have is fairly good and quite clear,
6 and -- and it seems to us that there's a clear
7 distinction between -- for the most part between parts
8 of the flood plain that's currently being utilized and
9 parts that aren't, because they're either partially
10 vegetated or totally vegetated.

11 We made the conservative assumption,
12 for the most part, that whatever was not vegetated --
13 not vegetated and appeared quite white looking, in
14 other words, the gravel was exposed, that that was
15 actually active habitat. And that's what we included
16 in our calculation.

17 The only exception to that calculation
18 is the portion of the -- the old channel that we're
19 proposing to reactivate as the realignment; that is
20 not well vegetated. There are some indications of a
21 little bit of vegetation starting in it, but it --
22 it's our feeling at this point currently that channel
23 is not habitat at this present moment in time.

24 So that's -- that's how we approach the
25 distinction between the differing habitats.

1 (BRIEF PAUSE)

2

3 CO-FACILITATOR BARB SWEAZEY: Just
4 before I go to you, Toby, DFO, has that helped to
5 clarify and provide some definition for you?

6 MS. JULIE MARENTETTE: Julie
7 Marentette, Fisheries and Oceans Canada. Just to
8 confirm the -- the channel that's to be reactivated is
9 not flooded annually.

10 Is there -- is there an idea of the
11 frequency at which it would have been flooded if the
12 initial definition of old or historic floodplain was
13 1:20? Thanks.

14 MR. DAVID HARPLEY: It's Dave Harpley.
15 All the imagery we have indicates that that particular
16 channel hasn't carried water for some time. Of course
17 we're limited by the aerial photography at the time
18 the photography was taken.

19 So to the extent of those limitations,
20 we -- we don't believe it's active but, beyond that,
21 we can't say.

22 MS. JULIE MARENTETTE: Thank you.

23 CO-FACILITATOR BARB SWEAZEY: So I
24 have a question from Toby and then to Parks. Go ahead
25 to Parks first. Thanks.

1 MR. GARRY SCRIMGEOUR: Garry
2 Scrimgeour, Parks Canada. I think the recent
3 discussion is very helpful to us because it provides
4 clarity on what is active flood plain and what's the
5 flood plain, how an image would be classified.

6 So I think as DFO requested earlier, we
7 -- we would look forward to another level of detail on
8 -- on how quant -- how fish habitat was quantified,
9 not only in terms of the percentage of the road prism,
10 but also the -- the numerator and denominator of those
11 calculations.

12 I think we're seeing some figures put
13 up on the screen that might be a good basis for
14 discussions with DFO and the proponent and Parks
15 Canada to better understand how those calculations
16 were derived and the extent that we have -- that we
17 understand how they're calculated and also potentially
18 agreement on -- on how they were calculated.

19 MS. SACHI DE SOUZA: Sachi, with the
20 Board. So is part of this then an undertaking for a
21 better more definitive definition of what's been
22 described as the active flood plain, the active
23 channel, the high water mark. I think those are the
24 key ones that are -- are mentioned in this Allnorth
25 Report from April 11th submission.

1 So to start with if we could get that
2 clear that would help inform future discussions about
3 fish and fish habitat and effects to fish and fish
4 habitat.

5 MS. JULIE MARENTETTE: Julie
6 Marentette, Fisheries Oceans Canada. Yes, I agree
7 those are the key points for delineating fish habitat,
8 thanks.

9 MS. SACHI DE SOUZA: Sachi, with the
10 Board. So CanZinc, can -- are you comfortable with
11 this undertaking to provide those definition of active
12 flood plain, active channel, old -- ordinary high
13 water mark and historic flood plain? And if it could
14 be -- yes?

15 MR. DAVID HARPLEY: Dave Harpley. I
16 think it's already encapsulated by the undertaking we
17 already have on record.

18 MS. SACHI DE SOUZA: Sorry, which
19 undertaking specifically is that right now?

20 MR. DAVID HARPLEY: The one (1) where
21 there's DFO, Parks, and ourselves need to communicate
22 together and figure out where we are in terms of
23 habitat loss and gain and so on.

24 MS. SACHI DE SOUZA: So -- Sachi, with
25 the Board. Respectfully, all parties need that

1 information right now. The Board itself would
2 appreciate that information. It could inform that
3 discussion. But for the record those definitions are
4 being requested as an undertaking.

5 MR. DAVID HARPLEY: Dave Harpley. It
6 was my understanding that we were going to collaborate
7 and -- and provide this information and then get back
8 to the Board. So -- including parties. So again, I
9 think we've already covered it.

10 MS. SACHI DE SOUZA: Sachi De Souza,
11 with the Board. The -- the concern here is that
12 there's information in this meeting. The meeting may
13 not happen within a certain time frame, which is
14 before an undertaking deadline. Regardless of the
15 outcomes of that meeting, this information is needed.
16 The staff would appreciate this information. And if
17 it's going to be provided at that meeting, let's get
18 it on the record right away. These are definitions
19 that are used in materials provided by CanZinc to
20 date. And they're necessary, in the Board staff's
21 opinion, right now.

22 MR. DAVID HARPLEY: Dave Harpley.
23 Correct me if I'm mistaken, but this morning you
24 indicated that you would be expecting Canadian Zinc to
25 give you an indication in the next few days on the

1 timing of these various undertakings. We will do
2 that, which includes the one (1) already agreed to
3 between the parties regarding fish habitat. And when
4 we are able to provide this evidence am -- amongst the
5 group and come to a suitable juncture in the
6 discussion where we can submit it to the Board, then
7 we will do so.

8 CO-FACILITATOR BARB SWEAZEY: Barb,
9 from Stratos. We're just looking at the wording of
10 the undertaking because I wonder if the wording is
11 just simply in reference to the agreement that you --
12 three (3) parties will meet and talk about these kinds
13 of things.

14 So I'm wondering whether or not we need
15 to tease out -- I -- I think this is what I'm hearing
16 -- tease out two (2) separate undertakings. One (1)
17 is the agreement that the three (3) parties will meet
18 and talk about this range, which we're kind of adding
19 to the bulleted list of agenda items.

20 What I'm hearing is that this one (1)
21 particular piece of information would be helpful to
22 have separate from, or in -- in advance of, talking
23 about the full range and the agreement that we have
24 that the three (3) parties will meet. That's --
25 that's my interpretation of what's happened so far.

1 MR. MARK CLIFFE-PHILLIPS: Mark
2 Cliffe-Phillips, with the Board. Just to -- to give a
3 bit of more clarification why the -- the Review Board
4 staff is asking for this.

5 These are terms that are being
6 referenced within your submissions. And we don't see
7 this as an outcome of the meeting that's currently in
8 the undertaking. We're -- we're looking just for the
9 information that is supporting the information already
10 on the record.

11 MR. DAVID HARPLEY: Yeah, it's Dave
12 Harpley. I -- I think we're talking the same thing.
13 That's what I'm driving at. We can't have our
14 discussion on these aspects without producing the
15 information that -- that's just been described.

16 I'm not suggesting that we're going to
17 hold that information until, for example, such time as
18 DFO might make a determination. I'm simply saying, I
19 don't know what the time frame is yet on producing the
20 information, but when we do produce it we'll provide
21 it.

22

23 (BRIEF PAUSE)

24

25 MR. MARK CLIFFE-PHILLIPS: I

1 appreciate -- Mark, from the Review Board. I -- I
2 appreciate those comments, David.

3 I think it is just in terms of some of
4 the discussion that may be ongoing throughout the day.
5 There may be some assumptions that are being made by
6 parties and Review Board staff and technical advisors
7 that may be based on a misrepresentation of what those
8 -- those key terms or definitions are. And having a -
9 - a description of what those mean will allow us to
10 have more meaningful discussions today.

11

12 (BRIEF PAUSE)

13

14 CO-FACILITATOR BARB SWEAZEY:

15 Parks...?

16 MR. GARRY SCRIMGEOUR: Garry
17 Scrimgeour, Parks Canada. I think the definitions are
18 probably sporadically present throughout several
19 documents. Bringing together would be helpful. But
20 I'd like to expand that it's not just the definitions
21 of specific terms, it's actually how were they
22 quantified, for -- for example, imagery
23 interpretation.

24 That -- that's also a point of
25 discussion in terms of defining an active -- an active

1 part of the flood plain based on vegetation. It's --
2 there's another level of -- of interpretation that's
3 rather important in that regard.

4 So I'm -- I think that's a discussion
5 point that we could have at some point. But it was my
6 understanding that it was an undertaking and,
7 therefore, it would be tied to a specific time period.

8 MR. DAVID HARPLEY: Dave Harpley.
9 Maybe I'm -- I'm confused here. But I thought this
10 discussion was about quantification of these various
11 aspects, and that's what I was talking about.

12 If you're talking about definitions,
13 well, then I think we already have defined them. If
14 you go to page 2 of that document up there it gives
15 you definitions.

16

17 (BRIEF PAUSE)

18

19 MR. TOBY PERKINS: Toby Perkins.
20 Yeah, I had read and recognized the definitions in the
21 Allnorth document from March 18th, 2016. But I just
22 note that these definitions are inconsistent in -- in
23 other documents that have been provided by -- possibly
24 not by Allnorth, but by other parties, so again,
25 inconsistency in definitions.

1

2

(BRIEF PAUSE)

3

4

CO-FACILITATOR BARB SWEAZEY: So --

5

Barb here. I'm not 100 percent sure where we're at,

6

to be honest. Perhaps someone else sees it a little

7

more clearly than me. What I'm going to suggest is

8

that we just park this conversation for the moment.

9

It seems to me there's a little bit of

10

questioning around consistency in definitions.

11

There's a question around how some of the calculations

12

were achieved. And then there's a question around the

13

process and timing of when we addressed those pieces.

14

So with the -- with the permission of

15

the parties around the table, I'm going to suggest we

16

just put this in the -- in the parking lot to come

17

back to to make sure that -- there may be a few little

18

side conversations that happen over lunch that might

19

help us to be able to nail down a more clear path

20

forward in terms of what our expectations are and what

21

is doable.

22

Is there -- anyone have anything else

23

to add to that before we move on to another question?

24

25

(BRIEF PAUSE)

1 CO-FACILITATOR BARB SWEAZEY: Okay.

2 So the additional questions that there may be around
3 the Sundog Creek realignment. Yes, go ahead, Carrie.

4 MS. CARRIE BRENEMAN: Carrie Breneman,
5 Dehcho First Nations. I was just wondering if you
6 could describe where the spawning habitat along Sundog
7 Creek is?

8 CO-FACILITATOR BARB SWEAZEY: Barb,
9 from Stratos. Can we go to John to help answer that
10 question, please?

11 MR. JOHN WILCOCKSON (BY PHONE): Sure.
12 Yeah, this is John Wilcockson, from Hatfield
13 Consultants.

14 So spawning habitat for grayling
15 consists generally of -- of gravels. And we did note
16 some of these types of gravels on a tailout of a -- of
17 a large pool, the one (1) place that we set down just
18 downstream of -- of the diversion area.

19 So that would be one (1) clear type of
20 spawning area that exists. And I -- I imagine that
21 that exists in a number of places in the -- the main
22 channel.

23 It's my knowledge, as well, that -- or
24 my understanding that the grayling also use side
25 channels for spawning in the area. Just a little bit

1 downstream there is -- there are some significant
2 other tributaries coming in, and grayling have been
3 found in those just in the -- in the spring, and I
4 assume that they are there for the purpose of
5 spawning.

6 CO-FACILITATOR BARB SWEAZEY: Carrie,
7 are there follow-up questions?

8 MS. CARRIE BRENEMAN: Could you just
9 describe what the impact on spawning and spawning
10 habitat would be from the Sundog Creek realignment in
11 the context of kind of TSS and some of the dredging
12 conversations we had today?

13 MR. JOHN WILCOCKSON (BY PHONE):
14 Right. Well, for -- a large concern of -- of higher
15 suspended material is that this material is going to
16 deposit within gravels that grayling would use for
17 spawning. And essentially what that does is result in
18 smothering, and -- and eggs not developing, or the --
19 you -- you know, on the flip side, that the -- now
20 that the gravels are embedded with finer material,
21 fish would decide not to use that area for spawning
22 anymore.

23 So it's -- it's a potential concern if
24 TSS levels are very high and if this material does
25 settle out in the interstices of -- of productive

1 spawning areas.

2 CO-FACILITATOR BARB SWEAZEY: Barb,
3 from Stratos. Thank you, John. I -- I'm wondering if
4 DFO or Parks Canada have any additional questions
5 related to spawning that -- to follow on from Carrie's
6 questions, or have we covered this topic? Yeah, go
7 ahead.

8

9 (BRIEF PAUSE)

10

11 MS. GEORGINA WILLISTON: Georgina
12 Williston, with Fisheries and Oceans Canada. I think
13 this kind of circles back, because I had a comment,
14 actually, when we were talking about this before, but
15 then we -- we sort of moved on.

16 But -- so when we're looking at the --
17 a couple of things. If we're looking at the channel
18 realignment and the new channel, we would want it
19 constructed in such a way that it doesn't produce
20 sediment, or at least no sediment that -- beyond
21 anything that was background. That would be somewhat
22 unacceptable, because we don't want a channel that's
23 bleeding sediment, because if it is doing that, then
24 it's not stable and it's eroding. So that's a problem
25 for not just the fish but probably the fact that we

1 needed to keep this channel here to protect the road
2 infrastructure.

3 And so then we would want the channel
4 designed and made with materials that keep it stable
5 and don't -- don't add sediment to the system,
6 especially if we have, you know, spawning beds
7 downstream. That would -- that would be unacceptable,
8 because then that would -- we would be, you know,
9 destroying more habitat downstream, and that would
10 increase your serious harm under the Fisheries Act.

11 And so any sort of -- we would want
12 that mitigated. It's not something we'd offset for in
13 the future, and if we were going to offset for it,
14 that would sort of have to be an impact that's
15 identified upfront. But we wouldn't want to get to
16 that point. We would want to design and mitigate up
17 front so that we're not producing a channel that's
18 adding any additional sediment to the system.

19 It's a water quality issue for others
20 that do water quality, but then it's -- becomes a -- a
21 Fisheries and Oceans Canada issue under the Fisheries
22 Act, because now we're adding material that wouldn't
23 have gone there naturally, and it -- as -- as the -- I
24 can't remember his name on the phone -- said, it could
25 smother eggs. It could, you know, destroy spawning

1 habitat. And anything from eggs to larval fish.

2 So that's sort of -- we would want a --
3 that would -- yeah, be more of a design -- design
4 phase issue, and -- oh, I can't remember what else I
5 wanted to say. Is that it? I think so. I think
6 that's it for now. I might think of something
7 afterwards. Thanks.

8 CO-FACILITATOR BARB SWEAZEY: Anything
9 from CanZinc?

10 Additional questions? Yes.

11 MS. CARRIE BRENEMAN: Carrie Breneman,
12 Dehcho First Nations. John, maybe you could respond
13 to how you could address this issue of mitigating
14 sediments in the design phase?

15 MR. DAVID HARPLEY: Dave Harpley --

16 MR. JOHN WILCOCKSON (BY PHONE): John
17 Wilcockson with Hatfield --

18 MR. DAVID HARPLEY: -- John, just --
19 John, I don't --

20 MR. JOHN WILCOCKSON (BY PHONE): --
21 yeah, I think Dave is best to answer that question.

22 MR. DAVID HARPLEY: Sorry.

23 CO-FACILITATOR BARB SWEAZEY: Barb,
24 here. So I think Dave was going to answer.

25 MR. DAVID HARPLEY: Yeah. Dave

1 Harpley. I -- I think again, that's -- that's kind of
2 a leading question that -- that probably puts John in
3 a -- in a bit of an uncomfortable position about
4 having to come up with an answer off-the-cuff, and I'd
5 rather have a reason -- thoughtful response.

6 CO-FACILITATOR BARB SWEAZEY: In the
7 form of an undertaking?

8 MR. DAVID HARPLEY: Dave Harpley.
9 Yeah, if that's what you want to do, sure.

10 CO-FACILITATOR BARB SWEAZEY: Carrie?
11 Okay. Just a question from the Review Board staff.
12 Is it a possibility that we might be able to get that
13 kind of information sometime in this technical
14 session, that John might be able to provide that,
15 perhaps even tomorrow?

16 MR. DAVID HARPLEY: Dave Harpley. I
17 can't guarantee that. We -- we need to talk
18 internally. He's there. I'm here. So that's a
19 little difficult.

20 CO-FACILITATOR BARB SWEAZEY: So,
21 Carrie, would you be able to just help us articulate
22 the -- the undertaking so that both John and CanZinc
23 are understanding the request?

24 MS. CARRIE BRENEMAN: Sure. Just give
25 me one (1) second.

1 (BRIEF PAUSE)

2

3 CO-FACILITATOR STEFAN REINECKE: Might
4 it be helpful for us to offer some suggested wording?
5 Sorry, not to rush you. Stefan from Stratos.

6 MS. CARRIE BRENEMAN: Carrie Breneman,
7 Dehcho First Nations. I mean, I'm kind of following
8 up on what DFN -- or DFO said, but a wording around
9 looking at a road design approach for mitigation
10 measures to address TSS in the context of spawning
11 habitat?

12 I'll -- I'll ask for some -- since it's
13 a followup kind of from what DFO said, I'll -- I'll
14 let them maybe add some wording in there.

15 MS. GEORGINA WILLISTON: Georgina
16 Williston, Fisheries and Oceans Canada. So what we
17 thought maybe was -- I guess what we're looking for is
18 the design considerations and mitigation measures that
19 will be incorporated into the -- the newly designed
20 channel realignments, I guess, that'll ensure that the
21 channel is stable and that there's no negative impacts
22 on fish and fish habitat downstream of the realignment
23 resulting from, I guess, either suspended sediment and
24 then the deposited sediment, if that makes sense.

25 CO-FACILITATOR BARB SWEAZEY: CanZinc,

1 does that make sense in terms of an undertaking?

2 Thank you. Parks Canada, did you have something to
3 add?

4 MS. ALLISON STODDART: Allison
5 Stoddart, with Parks Canada. So thank you to DFO for
6 the clarification in terms of -- in terms of dealing
7 with TSS. Just as a followup to that, so am I then to
8 understand in terms of DFO's requirements in terms of
9 building these -- you know, a -- a new channel, that
10 then dredging would not be something that -- that
11 would be part of that new channel?

12

13 (BRIEF PAUSE)

14

15 MS. GEORGINA WILLISTON: So --
16 Georgina Williston, with Fisheries and Oceans Canada.
17 I think it depends on how the -- do you mean during
18 the construction of the channel or are we talking
19 about the maintenance of the channel?

20 MS. ALLISON STODDART: The
21 maintenance.

22 MS. GEORGINA WILLISTON: The
23 maintenance. I don't know that we have a really good
24 understanding yet of the -- the dredging in the
25 maintenance of the channel. It -- it really does have

1 an impact, I think, if we're realigning Sundog Creek
2 and then now if we're looking at the new channel as
3 perhaps the offset.

4 If that channel is going to be dredged
5 then that really does have a big impact on how that's
6 going to function as fish and fish habitat in the
7 future. So a routine dredge of that really does
8 change the assessment, I think, of the impacts on
9 that.

10 And dredging itself is an activity that
11 has its own mitigation and monitoring associated with
12 and in its own best management practices of it. And I
13 think if there are ways to mitigate the sort of the
14 negative impacts to fish and fish habitat downstream,
15 the time of year that you do the dredging is
16 important.

17 One (1) you do it during low flows, not
18 when it's -- or, you know, not when it's going to
19 rain, or, you know, when the creeks are at its lowest
20 levels. And then there's different turbidity -- well,
21 I guess it might be a little shallow there for a
22 turbidity curtain, but there is -- you can isolate the
23 area maybe and dredge it.

24 So there's definitely measures that
25 would have to be sort of put in place during the --

1 the construction phase to -- to not have -- because
2 you wouldn't want water flowing through the system as
3 you're dredging. That's sort of not a best management
4 practice and not generally how, when we review
5 projects, that how we look for them to be done.

6 So there is a little bit of thought, I
7 think, to be put around how that is going to be done
8 both from a maintenance perspective and the -- the
9 creation of the new channel. If it's going to be --
10 does it have to be dredged below the channel? That I
11 don't know. It's not clear to me at this point. Or
12 is the -- is it more just a movement of rocks above
13 the channel? But I'm not -- I'm not entirely sure. I
14 don't think we're sure.

15 CO-FACILITATOR STEFAN REINECKE: Thank
16 you, Fisheries and Oceans. Stefan Reinecke, from
17 Stratos here.

18 So just as a reminder we do have an
19 undertaking on getting more information regarding
20 dredging, including frequency, methods, locations,
21 extent, and estimates of impacts on fish and fish
22 habitat. And the just had a fol -- an additional
23 undertaking regarding design and construction of the
24 real -- of the -- of the channel in a way that
25 minimizes sediment impacts where we'll finalize the

1 wording on the second one (1). We've got a question -
2 - a comment from Can -- Canadian Zinc.

3 MR. DAVID HARPLEY: Yes. Dave
4 Harpley. I -- I just want to be clear on what we're
5 talking about here because there seems to be some
6 misconception. During construction of the channel
7 we're proposing -- proposing to deepen it, so that the
8 -- the elevation of the base of the channel is either
9 the same or lower than the current channel, just to
10 ensure that the flow goes into the new channel and
11 doesn't stay in the old channel.

12 Having completed that during the
13 operations phase, what we're planning -- or what --
14 what we expect we're going to need to do periodically
15 is to go to certain locations along the channel to
16 remove accumulated material. We're not talking about
17 the whole channel here. We're just talking about
18 specific locations where there may be accumulations.

19 Probably dredging -- and -- and it's
20 our fault. We probably introduced the word, but I
21 think it's probably the wrong word. Because dredging
22 implies that there's actually water there and you're -
23 - you're pulling material out of -- of standing water.
24 That's not the case. This is an -- basically an
25 excavation because we would be doing this work when

1 the whole system is dry.

2 CO-FACILITATOR BARB SWEAZEY: Barb.

3 Thank you for that clarification. So we have about
4 seven (7) minutes before lunch. We have time probably
5 for one (1) or two (2) more related questions and then
6 we'll break. Parks...?

7 MR. GARRY SCRIMGEOUR: Garry
8 Scrimgeour, with Parks Canada. I think our
9 perspective is that in the absence of any empirical
10 sediment transport model that it's difficult to
11 quantify the -- the extent of dredging or excavation.
12 And so there are uncertainties there. We're happy
13 that there's a -- a commitment to address those. And
14 as long as we capture the point that this is not just
15 on fish, fish habitat. This is about healthy streams
16 in terms of benthic macroinvertebrates and -- and
17 other components of the stream food web. Thank you.

18 MR. DEAN HOLMAN: Dean Holman, from
19 the Liidlii Kue First Nation. I'm just wondering if
20 there -- this is in regards to embeddedness,
21 reliability, and fish mobility.

22 Just the -- of gravel and substrate, is
23 -- is there examples of methodologies for measuring
24 integrity of the spawning areas, if they are affected?
25 And are there -- are there examples of successful

1 realignments similar to the proposed realignment? Not
2 necessarily just to spawning areas, but also to
3 mobility of, I guess, the newly spawned or fry? Thank
4 you.

5 CO-FACILITATOR BARB SWEAZEY: We'll go
6 to John to see if you have some thoughts on Dean's
7 question. John, on the phone...?

8 MR. JOHN WILCOCKSON (BY PHONE): John
9 Wilcockson, with Hatfield Consultants. My
10 understanding is that a -- there is a proportion of --
11 of sand that fish will allow in -- in spawning gravel.
12 Off -- off the top of my head I do not know what that
13 proportion is and it's something that I would have to
14 -- I would have to look into and get back to you on.

15 The second part of the question was
16 about similar situations where there were, I'd say,
17 construction resulted in -- in deposition of fine
18 material and the extent of impacts on fish and fish
19 habitat.

20 Maybe -- maybe -- could you re --
21 please repeat the question?

22 MR. DEAN HOLMAN: So regarding
23 embeddedness, reliability and fish mobility in -- in
24 regards to gravel and substrate, is there examples of
25 methodologies for measuring integrity of the spawning

1 areas and mobility -- or general areas between where
2 the fish have hatched and where they -- over winter,
3 for instance, if they are affected and are there
4 examples of successful realignment similar to the
5 proposed realignment?

6 MR. JOHN WILCOCKSON (BY PHONE): John
7 Wilcockson, with Hatfield. I am not aware of an
8 assessment of impacts on fish and fish habitat and
9 spawning under a similar situation. There may be
10 something in the literature.

11 However, there are -- there are
12 measures of -- there are ways of measuring the
13 suitability of -- of habitat for spawning. So those -
14 - those are -- are readily available in the
15 literature.

16 MS. JULIE MARENTETTE: Julie
17 Marentette, Fisheries and Oceans Canada.

18 I'm just bringing in some information
19 from other major projects in the North, different
20 environments. But we have had proponents in the past
21 measure sediment deposition on spawning shoals by the
22 use of tiles and monitoring the rate at which sediment
23 was swept away from those tiles to see whether
24 currents were appropriate to keep those spawning
25 shoals clean, just a comment there. Thanks.

1 MR. DEAN HOLMAN: Is that -- one (1)
2 followup question here. Is that something tha -- let
3 me see. Is that some -- is that a measurement tool or
4 is that a methodology that can be used -- or that will
5 be used or could be used over the long period of time
6 or short period of time? What's the -- what's the
7 timing -- or time line with the -- sorry, with the
8 monitoring -- using that as a monitoring tool?

9 MS. JULIE MARENTETTE: Julie
10 Marentette, Fisheries and Oceans Canada. The intent
11 of that particular study was during construction, so
12 the extent of the monitoring went for the duration of
13 construction period. I think, as long as you would
14 anticipate impacts, that's the length of time that it
15 would have to be monitored.

16 MR. DEAN HOLMAN: Could -- could this
17 be something that Canadian Zinc could do?

18 MR. DAVID HARPLEY: Dave Harpley.
19 It's something we can consider, but it's not something
20 I'm going to commit to right now.

21 MR. CHUCK HUBERT: Chuck Hubert, with
22 the Review Board. So my understanding is that
23 Canadian Zinc's consultants, Allnorth and -- and
24 others, have considerable experience constructing
25 these types of roads in -- in BC and -- and through

1 northern BC and throughout the North.

2 Are there examples that you're aware of
3 -- you know, we've been talking about this Sundog
4 situation, dynamic channel where a realignment of, you
5 know 1 1/2 kilometres is proposed.

6 Is there examples that you're aware of
7 where this has been -- been done and -- and where some
8 type of monitoring has ensued to determine what the
9 impacts were, what some of the mitigations were to --
10 in that situation and -- and over the areas, what --
11 what sort of stabilization occurred? Do you have
12 examples?

13

14 (BRIEF PAUSE)

15

16 MR. BILL ROZEBOOM: Bill Rozeboom,
17 Tetra Tech. So we -- we don't have an example of a --
18 a parallel relocation that -- that worked. We -- we -
19 - in the engineering literature, we have examples of
20 things that did not work. The -- the approach that
21 has been taken here has been to take an existing
22 functional channel, which is the existing channel,
23 determine its geometry, its slope, its gradient, and
24 to replicate that in the new alignment.

25 So to the extent that the existing

1 channel is accessible and stable, we believe that --
2 assuming that we excavate into comparable materials,
3 that the replacement channel will be similarly stable.

4 MR. CHUCK HUBERT: Okay, thanks.

5 Chuck -- oh, sorry -- sorry. So you mentioned that --
6 that, you know, you incorporated lessons learned from
7 these types of realignments that haven't worked.

8 Is -- is there some sort of, I -- I
9 don't know, way of compiling those lessons learned
10 that you're going to incorporate into this
11 realignment, or is that -- is everything determined
12 from those lessons learned of -- of unsuccessful
13 realignments already incorporated into your
14 information?

15 MR. BILL ROZEBOOM: Bill Rozeboom,
16 Tetra Tech. Traditional realignments and engineering
17 have involved stable channels, which is a concrete
18 channel, or gaping channel, or some -- something
19 that's structurally stable. The problem with channels
20 in native materials, typically channel things have
21 been done to improve flood conveyance, for instance.
22 Improved flood conveyance increases velocities, and if
23 you have a erosive materials you can trigger
24 instabilities, which causes degradation and all sorts
25 of other problems.

1 So again, the -- the key here is that a
2 channel is believed to be in some regime balance with
3 materials that it -- that it interacts with. And in
4 the case of the Sundog Creek, we have an existing
5 channel in its native surrounding materials, and we
6 actually have a historic -- his -- historic channel
7 that we're going to reactivate presumably in the same
8 materials.

9 So assuming that the premise is correct
10 that when we deepen the -- the old channel to the
11 grade of the current channel, and we encounter similar
12 materials, the new channel should perform as well and
13 be as stable as the existing channel, because we've --
14 we've maintained that balance of the -- of the geology
15 that the channel is interacting with, and -- and the
16 hydrology of the system.

17 MR. CHUCK HUBERT: Thanks very much.
18 That's -- that's helpful. Is it possible that there
19 might be somewhere out there a parallel type
20 realignment attempt? Is -- is it possible to do some
21 sort of literature search beyond what you're aware of
22 currently? I mean, it's a big world, right. But --
23 but it -- it must have happened somewhere.

24 MR. BILL ROZEBOOM: Bill -- Bill
25 Rozeboom. We -- we did make some internal inquiries,

1 and -- and we just didn't come up with anything.

2 CO-FACILITATOR BARB SWEAZEY: Carrie --

3 MS. CARRIE BRENNEMAN: Carrie Breneman,

4 Dehcho First Nations. So just to clarify, the other

5 examples that you've looked at haven't worked, but you

6 feel like this one will work because the stream where

7 you're going to realign presumably will have materials

8 that are similar to the active stream? Like, your --

9 your realigned stream will be similar to the stream --

10 the actual Sundog Creek right now?

11 And you used "presumably" that the same

12 materials would be found in the creek. Do you know

13 that the materials are the same, or is that to be

14 determined?

15 MR. BILL ROZEBOOM: Bill Rozeboom.

16 It's -- it's an assumption. We -- we know that the --

17 the historic channel that we want to reactivate, the

18 deposits there were deposited by Sundog Creek. The

19 existing channel has -- has materials that have been

20 brought into it by -- by Sundog Creek. The -- the one

21 (1) unknown is we do not know the -- the depth of the

22 alluvial -- the alluvial materials but -- but if -- if

23 there -- if there's sufficient depth of -- of alluvial

24 materials there -- if there's sufficient depth of --

25 of alluvial materials, we should encounter comparable

1 materials. And if the materials are the same, and the
2 geometry is the same, and they hydrology is not being
3 changed, it should be as stable as the existing.

4 MS. CARRIE BRENNEMAN: Wouldn't it be
5 helpful to know if the materials are actually the
6 same, then? Because you're saying, you know, if -- if
7 all of these materials are the same, then presumably
8 it should be comparable. But if you don't know that
9 the materials are the same, can -- can you kind of...

10

11 (BRIEF PAUSE)

12

13 MR. BILL ROZEBOOM: Bill Rozeboom.
14 The -- the material -- the -- the origin of the
15 materials is the same. What -- what we don't know is
16 the depth. So we -- we think that the existing -- the
17 -- the existing at the channel is deeper than the old
18 channel that -- next to it.

19 So -- so either there's been some
20 filling of the old channel that we're going to
21 reactivate, or there's been a gradual deepening and
22 erosion of -- of the channel where it now exists.

23 So what we don't know is whether the --
24 the depth of the materials is -- is -- there -- there
25 the -- that's the -- that's the one (1) unknown that -

1 - that I can't answer. It would be nice to know it.
2 If it turns out that in deepening the channel there,
3 there are other materials encountered, it would be
4 prudent then to replace that -- those bottom materials
5 with -- with the -- the other materials from the flood
6 plain areas.

7 So -- so that again, you're -- you're
8 using the same materials which are originating from
9 the upper Sundog Creek watershed.

10 CO-FACILITATOR BARB SWEAZEY: Barb,
11 from Stratos. I understand there's a follow-up
12 question from Toby. It -- can I just ask, is it on
13 the same thread?

14 MR. TOBY PERKINS: Yeah.

15 CO-FACILITATOR BARB SWEAZEY: Okay.

16 MR. TOBY PERKINS: Toby Perkins. So I
17 agree with the premise that the proposed channel will
18 match the existing geometry and alignment and things.
19 But I think the disagreement I have with that is that
20 my assumption is that it that it's not just the
21 current active channel, or the current channel that
22 the system is in balance with. It's the larger
23 system.

24 Looking at the -- at Figure 4 from the
25 Tetra Tech -- anyway, looking at the -- the stock of

1 photos, there seems to be a fair bit of change between
2 1949 and 1994, and then additional the air photo I
3 assume is from a different -- the air photo that
4 mapped on a slightly different...

5 So again, my -- I agree with the -- the
6 overall premise, but my assumption is that it's the
7 larger system that -- that it's in balance with, not
8 just the -- the current active weather channel.

9 CO-FACILITATOR BARB SWEAZEY: Barb,
10 here. I'm -- I'm just looking at the time and
11 thinking this might be an okay time for us to break.
12 We -- we will come back after lunch. And if we need
13 to revisit this conversation, we will.

14 I also realize that we have a lot of
15 other items related to water for the project
16 description that we may need to -- to get through as
17 well. So let's pause for a break. It's ten (10)
18 after 12:00. Let's come back for ten (10) after 1:00
19 to continue. Thank you.

20

21 --- Upon recessing at 12:09 p.m.

22 --- Upon resuming at 1:19 p.m.

23

24 CO-FACILITATOR BARB SWEAZEY: Good
25 afternoon. Barb, speaking. So a couple of

1 housekeeping and points of order. We actually had a
2 suggestion from CanZinc that perhaps it might be
3 helpful to increase everyone's awareness and
4 understanding of the proposed realignment,
5 particularly the Sundog Creek piece, to have Bill walk
6 us through a little bit more of the background
7 information to help us understand the context and some
8 -- perhaps address some of the information gaps.

9 So we're actually going to have Bill do
10 that walkthrough, and then we'll have time for a few
11 more questions related to Sundog -- or Sundog Creek
12 realignment. At that point, you will -- if you're
13 looking at your agenda you'll go, Wow, we spent a lot
14 of time on that first bullet but that's an important
15 bullet that we had a lot of questions about.

16 So we acknowledge that there are still
17 probably several questions related to the project
18 description as it relates to water, so once we're
19 finished wrapping up Sundog we will move through those
20 questions.

21 On the agenda you'll see that starting
22 at 1:00 we had another series of prompts around the
23 project description, things like permafrost, flies,
24 and so on. That actually carries on until tomorrow
25 morning, so if we don't get it fully underway we do

1 have time blocked for tomorrow morning with a
2 continuation of that discussion.

3 So I just wanted to give you a heads up
4 and confirm also with CanZinc that John will be able
5 to stay with us this afternoon if there's additional
6 questions related to water. Is that -- is that good?

7 MR. DAVID HARPLEY: I believe so, but
8 we should check.

9 CO-FACILITATOR BARB SWEAZEY: John,
10 are you --

11 MR. JOHN WILCOCKSON (BY PHONE): Yeah,
12 this is John Wilcockson, with Hatfield. I'm here.

13 CO-FACILITATOR BARB SWEAZEY: And --

14 MR. JOHN WILCOCKSON (BY PHONE): I can
15 stay.

16 CO-FACILITATOR BARB SWEAZEY: Perfect,
17 thank you. Okay.

18

19 (BRIEF PAUSE)

20

21 CO-FACILITATOR BARB SWEAZEY: Bill,
22 you have the pointer with you, and you're ready to go
23 ahead? And you'll just signal when you want us to
24 change figures on the computer? Perfect. Thank you.
25 I'll turn it over to Bill.

1 (BRIEF PAUSE)

2

3 MR. BILL ROZEBOOM: Testing. Okay.

4 Over lunch we went over some of the points that we
5 discussed in the morning, and we just wanted to fill
6 in with some of the information. The first one has to
7 do with the depth of excavation for putting the
8 channel back in its old alignment.

9 So this -- this figure is Figure 3 from
10 the report by Tetra Tech, and we have cross-sections
11 'C' and 'D' which -- which cover the place where the
12 alignment -- realignment is occurring. From that, we
13 can see that the maximum -- the maximum depth of
14 excavation will be in the order of 2 to 3 metres.

15 And that depth that -- that's --
16 geologically it's pretty shallow so we're quite
17 confident that we're going to be digging into alluvial
18 materials. So we -- we expect that we will have --
19 you know, the -- the alluvial materials that are
20 characteristic of the reach.

21 Could you move to the Figure 7, please?
22 So what Figure 7 shows is our simulation of the
23 hundred-year water levels in -- in the reach, and
24 there's two (2) things I want to call to your
25 attention. First, there's the -- the question of how

1 -- how much of the -- the -- you know, what's --
2 what's flood plain versus what is not.

3 And in the -- in the reach where the
4 realignment is shown there's really very little water
5 that's going into that over bank channel. And at
6 lower water levels, like, at a two (2) year flow, it's
7 -- it's almost dry. So this -- this historic channel
8 presently gets water only infrequently.

9 If we go down to these -- I'm not as
10 good as Mike, I apologize. If we go downstream where
11 this tributary comes in, at the hundred year flow the
12 -- much -- much of the flood plain areas are active
13 with -- with water. So that -- that says a little bit
14 about, you know, what's -- what's a flood plain versus
15 what's a channel.

16 Could you go to the next slide, please?
17 So this is back to the figure that I showed you
18 earlier. This is now the -- the two (2) year
19 discharge. Under the two (2) year discharge, and also
20 the hundred year discharge, all of the water will be
21 contained with -- within the excavated channel.

22 The thing about this is that the
23 velocities that we're achieving in the excavated
24 channel are on the upper end of what you get in the
25 natural channel upstream and downstream. So with --

1 with the higher velocities there's really no reason
2 for any deposition to occur.

3 And I think what's more likely is that,
4 if there is a maintenance need in that excavated
5 channel, it's going to be more the lateral erosion,
6 not -- not deposition. And those are the points I
7 wanted to make.

8

9 (BRIEF PAUSE)

10

11 MR. BILL ROZEBOOM: I didn't queue
12 this slide, but it's 1 -- I think it's slide number 1
13 in -- in the report figures. No. The next one,
14 please. So there's a question of, you know, what --
15 what is the active channel. Is -- is it the local
16 active channel, which is what I've been focussing on,
17 or is it a larger regional channel which includes all
18 the braids? And this is a question -- it's -- it's a
19 good question. It's one that I ask myself.

20 So the -- the departure from the old
21 and new happens around here. So here's the channel
22 that we want to reactivate. And the old channel is
23 coming on -- along the south bank.

24 What I -- what I suspect has happened
25 is that, historically, we've had a bunch of landslides

1 at the upper end of this. So my -- my hypothesis is
2 that the historic landslides which you can see by the
3 shadows in -- in the -- in the arch phase is what has
4 blocked the channel causing the channel to temporarily
5 relocate to what -- to the position that we're now
6 going to reestablish.

7

8 (BRIEF PAUSE)

9

10 CO-FACILITATOR BARB SWEAZEY: Barb,
11 from Stratos. Thanks very much, Bill. So I wonder if
12 there -- I know we sort of left at break with a
13 question that -- or a comment that Toby had thrown out
14 for consideration.

15 Before we go back to that, I wonder if
16 there are any particular questions for Bill based on
17 what you just described that you would like to just
18 test or follow up with him before we open it up to any
19 additional questions.

20

21 (BRIEF PAUSE)

22

23 CO-FACILITATOR BARB SWEAZEY: No?
24 Yes? Okay. So, Toby, could I just get you to reframe
25 where we left off at lunch? And -- and there may be

1 others that want to add to that question -- comment.

2 Do you need a reminder? Are you okay?

3

4 (BRIEF PAUSE)

5

6 MR. TOBY PERKINS: Toby Perkins. So I
7 think -- thanks for that. There's some additional --
8 additional clarification there. That's -- that's
9 helpful. I think my comment before lunch was simply -
10 - you know, we sort of talked about using the existing
11 channel as a proxy for the -- the proposed realignment
12 and things. There'd been some comments made about it
13 maintaining the same character and this kind of thing.
14 And so I just sort of reiterate that.

15 And then just to sort of follow-up
16 about -- on this discussion here. I see on figure 9
17 in this -- in this report here the channel is
18 described as approximately 20 metres wide, 1.5 metres
19 deep to match existing channel endpoints and things.
20 So, I mean, based on that description I wouldn't say
21 that that is comparable to the existing system. I
22 mean, the existing system is much wider than that with
23 bars and -- and active areas and things.

24 And so I feel there's a little bit of
25 discrepancy between what's being described here, this

1 -- this channel 20 metres wide, 1.5 metres deep. I'm
2 not sure if that's what was modelled, whether a -- a
3 sort of a trapezoidal-type channel was put into the
4 model to represent that. And the -- the sort of the
5 fish habitat and the -- the description of the natural
6 morphology, natural regime that's been described and
7 things. I feel like there's a discrepancy there. So
8 that was just more just to sort of reiterate the
9 comment before and then sort of tie it with some of
10 this -- this commentary here. That's all I had to
11 say.

12

13 MR. BILL ROZEBOOM: If -- if I may --
14 Bill Rozeboom. This -- this was a preliminary design.
15 So -- so the intent is to tweak it and -- and make it
16 as close as possible to the existing.

17 MR. TOBY PERKINS: Toby Perkins.
18 That's appreciated. I just think in terms of
19 assessing the effect of the proposal we need to know
20 more about what's being proposed explicitly. So
21 that's it.

22 CO-FACILITATOR BARB SWEAZEY: Are
23 there additional questions? Dean, go ahead.

24 MR. DEAN HOLMAN: Thank you. Thank
25 you for the presentation. It really opened up my eyes

1 here. I'm just wondering about the -- the gradient
2 where -- or whether you have gradient data from where
3 the landslide -- this historical landslide occurred.
4 And then from there to the confluence. I was also
5 thinking about the -- the speed at -- or the rate of
6 flow at which the water is -- is going, if that's
7 going to be changed. Because you're changing --
8 you're also changing the angle in which the confluence
9 is to -- to the major -- the other major stream.

10 MR. BILL ROZEBOOM: Again, the -- Bill
11 -- Bill Rozeboom. The -- the alignment drawn there is
12 following a historic channel. So, you know, that --
13 that confluence position is something which has
14 occurred historically. The -- the gradient in the
15 flows, as -- as I just mentioned, this is a
16 preliminary design and it -- it's not a final design.
17 But the objective continues to be to imitate and
18 approximate the existing channel hydraulics to the
19 extent possible.

20 MR. DEAN HOLMAN: Thank you. One (1)
21 more question I had. There was a comment that you had
22 made about -- that there will be no depe -- deposition
23 within the realignment.

24 But will there be a change in
25 deposition at the after -- well, where the confluence

1 is? The -- the reason being that I asked the question
2 is the concer -- again, the concern between -- or the
3 concern over migratory routes from -- from a -- a
4 spawning area to overwintering area.

5 MR. BILL ROZEBOOM: Bill Rozeboom.
6 The objective is to keep the stream away from the
7 road. And at the upstream end or the downstream end
8 the -- the channel -- the channel will continue to
9 move as it has moved historically. And so long as the
10 channel does not threaten the road it'll just be
11 allowed to do its normal thing which -- which is to
12 say that you -- you can look at the -- at the existing
13 condition today and there's -- there's nothing that's
14 fixed about it the -- the existing channel position
15 will fix, particularly at the downstream end where you
16 have the influence of the tributary coming in from the
17 north. So that -- that position will change naturally
18 over time.

19 MR. DEAN HOLMAN: Thank you. Dean,
20 LKFN.

21 MR. DAVID HARPLEY: It's Dave Harpley.
22 Just a follow-up to Toby's comment. If there's
23 additional material that you think you need to
24 understand the basis for our position that the new
25 channel's going to be the same as the existing then I

1 would encourage you to be specific on what that
2 requirement is and provide it to us so we can respond.

3 CO-FACILITATOR BARB SWEAZEY: Barb,
4 from Stratos. Is that something you might want to
5 think about, Dean, or is there a specific Information
6 Request, or -- sorry. Sorry. And then I'll go to DFO
7 after you.

8 Toby, did you want to respond or
9 articulate now? Sorry, my mistake.

10 MR. TOBY PERKINS: Toby Perkins, yes,
11 I -- I think the specific request is along the lines
12 of the request for definitions earlier. We'd like to
13 see a document that clearly describes what you are
14 defining as the active channel, the -- the flood plain
15 and other units within that area.

16 We'd like a clear description of the
17 baseline condition and then a clear description of how
18 your proposed channel will represent that. And so I -
19 - I would -- I would consider it sufficient -- well, I
20 would consider it appropriate to describe the existing
21 situation.

22 Say, This is what we're propos --
23 proposing to build. These areas will remain active or
24 available for active channel migration and use, but
25 basically a description of what's there currently and

1 where -- and what you propose to build that will
2 replicate that existing condition.

3 MR. DAVID HARPLEY: It's Dave Harpley.
4 I guess what I was driving at is that maybe you'd want
5 to write up an undertaking that we can respond to,
6 because there may be other things that you want to add
7 to that and difficult for you to roll them all off
8 here now in a few seconds.

9 CO-FACILITATOR BARB SWEAZEY: Barb,
10 here. So we have a -- an initial sort of crafting of
11 some of the ideas. Perhaps we can have a look at that
12 afterwards to make sure it covers them. Thank you for
13 that.

14

15 --- UNDERTAKING NO. 26: CanZinc to provide clear
16 definitions; a clear
17 description of the
18 baseline condition and
19 then a clear description
20 of how proposed channel
21 will represent that

22

23 CO-FACILITATOR BARB SWEAZEY: DFO...?

24 MS. JULIE MARENTETTE: Hi, Julie
25 Marentette, with Fisheries and Oceans Canada.

1 Just a general comment with the
2 understanding that these are preliminary designs; that
3 more advanced will be forthcoming is that we will be
4 looking for considerations to fish passage. This is
5 an important issue for us and we have guidance on
6 calculations for swimming performance that would need
7 to be reviewed and -- and demonstrated in -- in the
8 newer and updated designs to show that fish can still
9 move through the new channel comparably to the old
10 channel. Thanks.

11 MR. GARRY SCRIMGEOUR: Garry
12 Scrimgeour, Parks Canada. We'd like to echo our
13 interest also in engineering designs to ensure fish
14 passage not only within the alignment, but also within
15 culverts. And we expect that this will be a -- a
16 discussion point with the -- with the three (3)
17 parties.

18

19 (BRIEF PAUSE)

20

21 CO-FACILITATOR BARB SWEAZEY: Barb,
22 here. Perhaps the -- the request on the fish -- fish
23 passage might be something that we could add into the
24 list of requirements that Toby was working on. Is
25 that something that might be acceptable? Okay. Okay.

1 Great. Thank you.

2 Are there any outstanding questions on
3 the -- the Sundog Creek realignment that you would
4 like to ask at this time? Toby...?

5 MR. TOBY PERKINS: Sorry, I don't mean
6 to be too persistent, but back to the sort of
7 alternative assessment. So in the previous proposal
8 there was a diversion proposed, sign -- significantly
9 longer than what's currently proposed. It was decided
10 that should be reduced to this 1.5/1.4 kilometre
11 length.

12 And in there it was decided that the
13 road could be protected, particularly from thirty-one
14 (31) -- sorry, I'm losing my distances, but basically
15 downstream of the -- approximately from --
16 approximately KP37 down the side of the road could be
17 protected in that range. I'm still not clear why it
18 can't be protected in this 1.4 kilometre range,
19 particularly when we look at KP38, which is a -- a
20 pinch point, presumably higher flows, higher
21 velocities, some big challenges there.

22 And it's been decided that's
23 acceptable. Was there a reason why the road can't
24 just be protected and the -- and the river left to be,
25 to some extent, in that -- in that 1.4 kilometre reach

1 where the -- where the divergent is proposed?

2

3 (BRIEF PAUSE)

4

5 MR. DAVID HARPLEY: It's Dave Harpley.

6 To answer your question why can't we, well, we could.

7 I mean that could be the approach. But to do that you

8 would have to excavate the other bank of the existing

9 channel into currently vegetated terrain, stable

10 terrain, in order to compensate and provide the same

11 capacity of the channel.

12 In addition, you would have to armour

13 the entire length of the road because the creek would

14 be up against the -- the road for that entire length.

15 And you would also have to deal with the maintenance

16 issues associated with that close proximity and flood

17 events, and so on.

18 So given that situation, and -- and

19 what it would necessitate in terms of a fairly

20 significant excavation, we think that the -- the risks

21 and the work involved are better by realigning the

22 creek as we proposed.

23 MR. TOBY PERKINS: Toby Perkins. So

24 you're willing to accept those challenges in the -- in

25 the other sections but you feel that overall it's

1 better to -- to remove it -- to move it back from the
2 -- the road alignment in this location for overall
3 efficiency and -- and maintenance, and those kinds of
4 things?

5 MR. DAVID HARPLEY: Dave Harpley. Not
6 so much a case of willing to accept, it's -- it's more
7 a case of no other better option, particularly if you
8 look at that thirty-eight (38) location you can see
9 it's a narrow spot. It's a steep, very high bluff on
10 the south side. There's really no where else to go.
11 So that -- that's the only option in that location.

12 We would -- we would like to be off the
13 flood plain wherever we can; that's what we've done in
14 the section from about thirty-six and a half (36 1/2)
15 to thirty-eight (38) where we can get off the flood
16 plain with a little bit of blasting of a couple of
17 rock nobs. That's what we've proposed to do to avoid
18 the creek, particularly over this stretch which I
19 think is going to be a bit of a challenge with these
20 two (2) -- you know, with the tributary coming in.

21 But there's other locations where we
22 just don't have a better option, and we're just going
23 to have to armour and deal with it.

24 MR. TOBY PERKINS: Thank you.

25 CO-FACILITATOR BARB SWEAZEY: Barb

1 here. Are there any other questions on the Sundog
2 Creek realignment?

3

4 (BRIEF PAUSE)

5

6 CO-FACILITATOR BARB SWEAZEY: Parks,
7 do you have any other questions on this one? No?
8 GNWT?

9

10 (BRIEF PAUSE)

11

12 CO-FACILITATOR BARB SWEAZEY: DFO?

13

14 (BRIEF PAUSE)

15

16 CO-FACILITATOR BARB SWEAZEY: ECCC?

17 Yeah.

18 MS. CARRIE BRENNEMAN: Carrie Breneman,
19 Dehcho First Nations. The issue of fish -- or a few
20 other -- other reviewers mentioned fish -- fish
21 passage, and I was wondering, Canadian Zinc, if you
22 could describe the work that's been done on fish pass
23 -- fish passage on Sundog Creek?

24 MR. BILL ROZEBOOM: The -- again, the
25 -- Bill -- Bill Rozeboom. The -- the approach is to

1 have geometry in the relocated channel that is
2 equivalent to geometry in the existing channel, and as
3 a result of that since we're not changing hydrology
4 the fish, the velocities of flow, the variability of
5 flow, should be unchanged from the existing
6 conditions, so there -- there's no -- there's no real
7 change.

8 The other thing to recognize is that
9 this -- this reach is often dry, especially the upper
10 half, so it's -- it's intermittent fish pass -- fish
11 passage at best.

12 MS. CARRIE BRENNEMAN: And I -- I was
13 just curious what work you've -- like what baseline
14 work you've done on fish passage through Sundog Creek,
15 and kind of what that looks like?

16

17 (BRIEF PAUSE)

18

19 MR. DAVID HARPLEY: Dave Harpley. I
20 don't really think that this is a baseline situation
21 here. It's not something where you go out and measure
22 a passage currently, and then go back and confirm that
23 it's still the case after. We've simply used the
24 available data, and remote sensing to -- to generate
25 the preliminary engineering design that provides the

1 same geometry that's there already.

2 So that's the logic that velocities
3 won't change and therefore passage as it is at present
4 won't -- won't change either.

5

6 (BRIEF PAUSE)

7

8 MS. CARRIE BRENNEMAN: Carrie Breneman,
9 Dehcho First Nations. I think given the interest that
10 we have and some of these issues around -- around the
11 Sundog Creek realignment, in one (1) of the
12 undertakings there was an interest in having
13 discussions between Canadian Zinc, Parks Canada, and
14 DFO on the realignment and what the offsetting would
15 look like.

16 And I think, for us, we'd just like to
17 be involved in some of those discussions specifically
18 pertaining to fish impacts, mitigations, monitoring,
19 and adaptive management. We don't need to be
20 involved, I feel like, in the technical aspects of the
21 road design, but just to be in the loop on some of
22 those discussions, if that's possible within this
23 process.

24 MR. DEAN HOLMAN: Sorry, Dean Holman
25 here, from LKFN. That's something also echoed by

1 LKFN. Thanks.

2 CO-FACILITATOR BARB SWEAZEY: Barb,
3 from Stratos. Thank you. So I'm seeing some nods
4 from DFO and from Parks Canada. CanZinc, thoughts on
5 this?

6 MR. DAVID HARPLEY: It's Harpley. I
7 mean, in principle, I'm not in -- I'm not objecting,
8 but I think that was the intent all along. And it's
9 not just in respect to a few other additional parties,
10 it's everybody.

11 CO-FACILITATOR BARB SWEAZEY: Barb
12 here. So just to clarify, that it's not necessarily
13 just the three (3); that it would be open to other
14 parties as those topics are of interest to them?

15 MR. DAVID HARPLEY: It's Dave Harpley.
16 It's that when we have something concrete to bring
17 back to the group, we will, and it will be shared with
18 everybody.

19

20 (BRIEF PAUSE)

21

22 MR. MARK CLIFFE-PHILLIPS: Mark Cliff-
23 Phillips, with the -- the Review Board. I'm hearing
24 two (2) separate items here, I -- I think, David. I -
25 - I think there's one (1) ask, which is for additional

1 parties to be privy to the conversations. And I think
2 what I'm hearing from yourself is that all parties
3 would be able to comment on the outcomes of the
4 conversations between Parks Canada, DFO, and Canadian
5 Zinc.

6 Is -- is that off base or...? I'm just
7 trying to understand your position.

8 MR. DAVID HARPLEY: It's Dave Harpley.
9 Yeah, I think you're -- you're probably accurate.
10 What -- I guess what I'm driving at is I heard Carrie
11 say they don't need to be involved in the technical
12 aspects, they just want to be involved in the
13 discussion, which is fine.

14 I guess my feeling is, and my
15 colleagues here at Parks and DFO can comment, there's
16 some technical work we need to get through before we
17 actually are at a suitable point to have that
18 discussion.

19 MR. MARK CLIFFE-PHILLIPS: Thanks for
20 the clarification. I was just making sure that we're
21 on the same page from the Review Board perspective.

22

23 (BRIEF PAUSE)

24

25 CO-FACILITATOR BARB SWEAZEY: Are

1 there any ques -- any -- excuse me, any other
2 additional comments?

3 MS. CARRIE BRENEMAN: Carrie Breneman,
4 Dehcho First Nations. I think what I'm say -- saying
5 is that -- and, I mean, forgive me, I -- I haven't
6 been involved with offsetting of the creek before, but
7 there are probably aspects that you're going to be
8 talking about that are specific to kind of engineering
9 and design. But then you might be having
10 conversations about how those -- those design
11 specifications impact fish and fish habitat.

12 Is that correct?

13

14 (BRIEF PAUSE)

15

16 MS. JULIE MARENTETTE: Julie
17 Marentette, with Fisheries and Oceans Canada. My
18 understanding is that we first need to work out
19 technical details about the footprint and whatnot and
20 that will be used to determine the need for an
21 authorization.

22 And if that authorization need is
23 identified, that's when offsetting comes in. And
24 that's when we bring in consultation with other
25 parties both with the design and both with the -- the

1 general principles around that offsetting thing.

2 Is -- is that also what -- what your --
3 your understanding is?

4 MS. CARRIE BRENNEMAN: Yeah, so I think
5 in that -- this to me makes sense. So in that -- if
6 an authorization is needed and you go to that
7 consultation phase, I feel like us being involved in
8 that consultation phase would be appropriate.

9 CO-FACILITATOR BARB SWEAZEY: Barb
10 here. Thank you. It looks like we have agreement,
11 Canadian Zinc, Parks Canada, DFO, LKFN, Dehcho.
12 Great. Okay.

13 Cesar, any additional questions? No?
14 James and Toby, any additional questions on the Sundog
15 Creek alignment? No. Review Board staff? Okay.
16 Okay. Check.

17 So what we're -- what I would invite us
18 to do now is you may have additional questions related
19 to the project descriptions as it relates to water.
20 And on the agenda there are several different bullet
21 points, everything from major and minor water
22 crossings, road footprint with flood plains, potential
23 for road washout, mitigations and alternatives,
24 temporary water crossings. And there may be other
25 categories. So this is a -- this would be a great

1 time to branch into additional questions related to
2 the project description and water. We'll start with
3 GNWT. Thanks, Rick.

4 MR. RICK WALBOURNE: Rick Walbourne,
5 ENR. I'm glad we're off Sundog Creek, so I can kind
6 of weigh in on some other areas.

7 Regarding -- there was an IR-ENR-15,
8 which was specific to some road design that was
9 provided by Canadian Zinc, and I think it was in the
10 Allnorth report. It was specific to some crossings,
11 which were to be designed to allow flood periods or
12 overflow to pass over -- over the road as opposed to
13 the crossing. And we had identified some concerns in
14 that regard regarding erosion issues if the overflow
15 was actually being channelled over -- over the road.

16 In the IR response, I think, from
17 Allnorth there was actually some mitigation measures
18 outlined, which -- which seemed appropriate, so we
19 appreciate that.

20 My one (1) question is that one (1) of
21 the rationales from Allnorth was that -- and this goes
22 back to TSS, which we've already talked about quite a
23 bit. But there was a similar response that flood
24 conditions or -- or high water events would naturally
25 have high TSS in the river, and that's one (1) of the

1 rationale that it -- it wouldn't be a concern.

2 I guess my question then: What does
3 Canadian Zinc or their consultants propose in terms of
4 monitoring during those high flood events on those
5 crossings during which water is allowed to pass over
6 the road, to -- to assess although there is high TSS
7 in the -- in the creek, to determine what the
8 difference is between up and downstream to determine
9 what the actual extent of the effect would be? Thank
10 you.

11 MR. DAVID HARPLEY: Dave Harpley. I
12 think based on what I said earlier regarding the
13 change in bed load with flow velocity and how that
14 affects TSS would probably give you a good indication
15 of the natural bed load that would be in the system,
16 and that you would be hard-pressed to see any
17 difference upstream versus downstream. But we would
18 be amenable to taking some measurements to prove that
19 and, you know, resolve that -- resolve and confirm
20 that situation.

21 MR. RICK WALBOURNE: Thanks -- thanks
22 for that, David. So is that then a commitment from
23 Canadian Zinc that that monitoring would occur during
24 the -- during those events? Again, it's specific to
25 high -- high flood events if you did see water passing

1 over the road, so it would be a -- a pretty
2 significant high water event? Or I guess is that a
3 commitment at this point, or is that something you
4 foresee down the road and specific to action levels or
5 adaptive management? Thank you.

6 MR. DAVID HARPLEY: Dave Harpley. We
7 can make it a commitment now. I -- I would prefer
8 that the commitment is that once we've demonstrated
9 that there really is no significant difference
10 upstream versus downstream that -- that the
11 requirement can fall away.

12

13 --- COMMITMENT NO. 9: CanZinc commits to
14 monitoring TSS
15 specifically to understand
16 the effects of water
17 flowing over road sections
18 designed to be submerged
19 during high-water events
20 (measuring upstream and
21 downstream of the section
22 during high water events).

23

24 MR. RICK WALBOURNE: Thanks. Rick,
25 ENR. I guess the commitment I'm looking for is the

1 monitoring to determine whether or not there's an
2 effect. So I'm not -- I'm just trying to confirm that
3 we're on the same page, here.

4 We're looking for a commitment that
5 monitoring would occur during those events, and then,
6 yeah, if there was no effect it would -- it could fall
7 away. We can work out the particulars on that later.
8 I just want to confirm that we're on the same page,
9 here.

10 MR. DAVID HARPLEY: It's Dave Harpley.
11 So as I understand it, we're monitoring TSS. And --
12 and if there's no significant difference between
13 upstream and downstream, then there can be no
14 significant effect.

15 MR. RICK WALBOURNE: Rick Walbourne,
16 ENR again. The commitment, again, is to conduct
17 monitoring to make that effect, whether or not there
18 is a difference in TSS up and downstream during those
19 events. I'm still not sure that we're on the same
20 page here.

21 I think Sachi wants to interject.

22 MS. SACHI DE SOUZA: It's Sachi, with
23 the Board. CanZinc has committed to monitoring TSS in
24 creeks. Rick would like that, from what I understand,
25 to capture monitoring to be inclusive of events where

1 water is potentially going over the road. And that's
2 the time variable you are concerned about right now.
3 The intent of that and the purpose of that is to
4 understand if there are potential impacts as a result
5 of water going over the road to TSS that could affect
6 fish.

7 So what Rick is asking for specifically
8 is the time component of the TSS monitoring at those
9 locations. CanZinc, are you comfortable with the time
10 component of the TSS monitoring?

11 MR. DAVID HARPLEY: Dave Harpley.
12 Yes.

13 CO-FACILITATOR BARB SWEAZEY: Thank
14 you. So we've taken our first stab at working on the
15 wording of the commitment, so it would be helpful for
16 both of you to probably have a look at that.

17 Okay. Any other questions from GNWT at
18 this time? Okay. How about we go to DFO? Do you
19 have any questions on -- on this category?

20 MS. JULIE MARENTETTE: Julie
21 Marentette, Fisheries and Oceans Canada. When it
22 comes to water crossings, we received Table 2-1 as
23 part of our IR responses where you -- the Proponent
24 categorized the footprint of each of the water
25 crossings by habitat lost or altered.

1 And in reviewing this table, I note
2 that there are a lot of zeros. And I'm wondering if
3 the footprint has been calculated without
4 incorporating a consideration of riprap installation
5 for stream bank stabilization. There's been mention
6 in -- in a description of -- of some of the water
7 crossings that dikes will be constructed downstream to
8 stabilize the banks.

9 Can we confirm whether or not this has
10 been incorporated into those footprints? And I
11 understand that some of these details may come out of
12 our discussions. As part of Undertaking 7 we'll be
13 looking for precise numbers, but just as a -- as a
14 general response would be helpful. Thanks.

15 MR. DAVID HARPLEY: It's Dave Harpley.
16 Where it appears from the preliminary design of the
17 crossing that either the abutment or the armouring
18 associated with it encroaches on habitat, we've
19 provided those numbers.

20 So where you have zeros, it's based on
21 a -- an assumption that the designer provides for the
22 abutment and armouring to be entirely out of the
23 current high -- well, above the current high water
24 mark.

25 CO-FACILITATOR BARB SWEAZEY: DFO,

1 does that -- does that clarify, or do you have a
2 follow-up question, or need more information?

3

4 (BRIEF PAUSE)

5

6 MS. JULIE MARENTETTE: Julie
7 Marentette, with Fisheries and Oceans Canada. I think
8 we can discuss this in -- in more detail with
9 Undertaking 7. I -- there are a couple crossings
10 where I thought I might have seen riprap being placed
11 below the high water mark, but perhaps my
12 understanding is incorrect.

13 So we can clear that up as part of
14 Undertaking 7. Thanks.

15 CO-FACILITATOR BARB SWEAZEY: Great.
16 Thank you very much. Environment Canada...? No.
17 Okay. LKFN, do you have some questions on this
18 category?

19 MR. DEAN HOLMAN: Dean Holman, with
20 LKFN. We do. We're just formulating questions right
21 now, but if we could speak after maybe everyone else
22 speaks? Thanks.

23 CO-FACILITATOR BARB SWEAZEY: No
24 problem. Didn't mean to put you on the spot. I'll
25 open it up to others, then, who may have questions for

1 the -- for the project description as it relates to
2 water.

3 DR. CESAR OBONI: Cesar Oboni
4 speaking. So is there a list of prioritize -- or is
5 there a prioritized list of channel avulsion segments,
6 including likelihood and potential consequences, that
7 is available?

8 MR. DAVID HARPLEY: Could that
9 question be repeated, please?

10 DR. CESAR OBONI: Cesar Oboni. Yes.
11 Is there a prioritized list of channel avulsion
12 segments, including likelihoods and potential
13 consequences that is -- that would be available?

14

15 (BRIEF PAUSE)

16

17 MR. DAVID HARPLEY: Dave Harpley. So
18 it -- it seems what we currently have is consideration
19 of risks for each crossing. We haven't compiled them
20 into any list and prioritized them. We've just dealt
21 with them individually.

22 DR. CESAR OBONI: Cesar Oboni. Could
23 I -- could we have provided such a list?

24 CO-FACILITATOR BARB SWEAZEY: Barb
25 here. Cesar, perhaps it would be helpful to explain

1 why that list would be helpful, and the impacts and so
2 on that you would be wanting to have addressed by this
3 piece of information.

4

5 (BRIEF PAUSE)

6

7 DR. CESAR OBONI: Cesar Oboni
8 speaking. So in the scope of work, it's -- the focus
9 is on where the road design increased likelihood of an
10 accident, and therefore, it would be under -- it would
11 be nice to have a list of where those segments are
12 located.

13 MR. DAVID HARPLEY: It's Dave Harpley.
14 So the -- just so I understand the train of thought
15 here, your idea is if you have a listing of crossings
16 at risk of damage from erosion due to avulsion, you
17 can then estimate which crossings might result in an
18 accident because damage has occurred and it wasn't
19 recognized?

20

21 (BRIEF PAUSE)

22

23 DR. CESAR OBONI: Cesar Oboni
24 speaking. I understand that disruption is not
25 considered, but disruption in the traffic and thus by

1 interdependency increase the likelihood of a traffic
2 acc -- accident susceptible of impact on the
3 environment, and health and safety. Therefore, it
4 would be good to have that list so that when we're
5 doing the risk assessment, we can focus our attention
6 on those high risk segments.

7 MR. DAVID HARPLEY: It's Dave Harpley.
8 I -- I'm not trying to avoid doing the list. I think
9 we can do it. I'm just wondering about how useful
10 it's going to be to you. I'm trying to get to where
11 you want to be in terms of the information you need.

12 If an avulsion event occurs at a
13 crossing, it will be because of a precipitation event.
14 In the event of that occurring, the first thing that's
15 going to happen is somebody's going to go out on the
16 road, like an inspector or a -- a construction crew,
17 or whatever, to go and check all these sections and
18 crossings to see, in fact, whether there has been
19 damage, and then they would be repaired.

20 So I'm -- I'm struggling to understand
21 the link between risky crossing, erosion, and then an
22 accident.

23

24 (BRIEF PAUSE)

25

1 CO-FACILITATOR STEFAN REINECKE:

2 Stefan, from Stratos. Cesar, is there any additional
3 information that you can provide, like, certain
4 parameters that the Proponent could provide you that
5 would help you with your -- with your work, or is it
6 simply having specific consequence and probability
7 figures?

8 Is there -- is there -- are there other
9 technical parameters that you can specify that the
10 Proponent might have on hand?

11 DR. CESAR OBONI: Cesar Oboni. No.
12 What I want is a pri -- prioritized list of road
13 crossing in terms of likelihood of disruption. And
14 that's what I asked this morning if you have. And,
15 ultimately, what's what I'm interested in.

16 MR. DAVID HARPLEY: It's Dave Harpley.
17 Well, if that's what you want, and the Board feels
18 it's -- it's appropriate, then that's fine.

19 DR. CESAR OBONI: Cesar Obo -- Cesar
20 Oboni. Thank you.

21

22 --- UNDERTAKING NO. 27: CanZinc to provide a
23 prioritized list of road
24 crossings in terms of
25 likelihood of disruption

1 CO-FACILITATOR BARB SWEAZEY: Thank
2 you. Are there additional questions from the Review
3 Board? And I'm also not sure if Parks have any
4 additional questions. You may. Any from the Review
5 Board in this segment?

6

7 (BRIEF PAUSE)

8

9 CO-FACILITATOR BARB SWEAZEY: Parks,
10 are you -- do you have a couple questions? Okay,
11 please go ahead.

12 MR. GARRY SCRIMGEOUR: Garry
13 Scrimgeour, Parks Canada. Earlier this afternoon we
14 alluded to Table DFO 2-1 titled, "Fish bearing
15 crossings habitat." In that table, there are, I
16 believe, ten (10) stream -- ten (10) question marks
17 related to the presence of fish.

18 I -- I'm going to direct a -- a
19 question to the Proponent, and a question to DFO. If
20 they could just provide clarity in terms of what --
21 what are the consequences of having a question mark on
22 the presence of fish in Grainger tributary and one (1)
23 of the Polje tributaries? Thank you.

24 MR. DAVID HARPLEY: It's Dave Harpley.
25 We put a question mark because we don't have evidence

1 -- or rather we suspect that the habitat is poor. And
2 we suspect that fish likely are present, but we can't
3 prove it. So that's why the question mark. And then,
4 thereafter, we've basically assumed that it is habitat
5 and proceeded accordingly.

6

7

(BRIEF PAUSE)

8

9

MS. JULIE MARENTETTE: Julie
10 Marentette, Fisheries and Oceans Canada. Yes, for the
11 purposes of assessment, a question mark is a 'yes' for
12 us. If that question mark needs to be changed to a
13 'no' later, that would -- there would need to be
14 additional baseline data collected to verify that
15 'no'.

16

And following up on that. Crossings
17 where there are culvert installations expected where
18 fish presence is a 'yes' or a question mark, we would
19 need to see consideration for fish passage at those
20 culverts as well. I know the Proponent has mentioned
21 that the culverts will be oversized. And while this
22 can be a method to address fish passage issues, it can
23 also create them, because it may divert the flow over
24 a broader surface area.

25

So again, with -- with the

1 understanding that finalized designs for these
2 culverts are not yet in place, we would need to see
3 more specific and precise considerations of fish
4 passage concerns at those culverts.

5

6 (BRIEF PAUSE)

7

8 CO-FACILITATOR BARB SWEAZEY: Barb
9 here. So is there any additional undertaking that's
10 required here, or was this information exchange and
11 expectations only? Okay. Yeah, okay.

12 Additional questions from Parks Canada?

13 MR. GARRY SCRIMGEOUR: Garry
14 Scrimgeour, Parks Canada. I'd like to address IR-22
15 from Parks Canada.

16 This IR -- so maintaining healthy
17 ecosystems is an issue of significance to Parks
18 Canada. The IR specifically identified five (5)
19 points. The first three (3) points talk about
20 additional details on crossing structures. We're
21 pleased with the Proponent's response, and the first
22 three (3) parts have been resolved.

23 The second two (2) parts, I'm asking
24 for additional information on measures that will be
25 taken to minimize riparian disturbance during the

1 installation of culverts and bridges. It could be
2 simply a synopsis of what is being done and reference
3 to the guidelines or standards that will be followed.
4 The second point is point 5, which addresses velo --
5 potential velocity barriers. And that looks like it's
6 going to also be resolved with discussions with --
7 with Canadian Zinc and DFO. So the request is for a
8 commitment to provide an additional level of detail on
9 efforts to minimize disturbance within the riparian
10 zones. Thank you.

11 CO-FACILITATOR BARB SWEAZEY: So that
12 would -- we would actually frame, I think, as an
13 undertaking, because it's information. CanZinc,
14 comment, reaction? It's okay. Okay. So we'll work
15 on the wording for those -- it's two (2) pierces to
16 it, right? You -- you talked about the two (2)? Or
17 is it just the riparian one? Okay.

18 All right. It's just the first one,
19 the riparian one, correct? Okay. The second one (1)
20 will be dealt with on the other group. Okay. Great.
21 Thank you.

22

23 --- UNDERTAKING NO. 28: CanZinc to provide an
24 additional level of detail
25 on efforts to minimize

1 disturbance within the
2 riparian zones
3

4 CO-FACILITATOR BARB SWEAZEY: Other
5 questions from Parks Canada.
6

7 (BRIEF PAUSE)
8

9 MR. GARRY SCRIMGEOUR: Garry
10 Scrimgeour, Parks Canada. Restoring disturbed land is
11 of issue of significance to Parks Canada. What we
12 would -- would request is that the Proponent provide
13 another level of detail regarding restoration efforts
14 within riparian zones and, in fact, more broadly to
15 other areas associated with the construction of
16 bridges and culvert.

17 As I mentioned, for -- for efforts to
18 minimize disruption, it could be as simple as a
19 synopsis on what efforts are going to be taken, and a
20 reference to specific guidelines and standards that
21 will be adopted. Thank you.

22 CO-FACILITATOR BARB SWEAZEY:
23 CanZinc...?

24 MR. DAVID HARPLEY: It's Dave Harpley.
25 I guess I don't have a problem with that. I'm just

1 wondering about the appropriateness of the timing of
2 it.

3 CO-FACILITATOR BARB SWEAZEY: Parks
4 Canada, do you have a thought on the timing?

5 MR. GARRY SCRIMGEOUR: Garry
6 Scrimgeour, Parks Canada. That's a very good point.
7 I -- I think given a number of priority issues that
8 are being put to Canadian Zinc, I would not encumber
9 them with requesting this to be completed urgently,
10 certainly not within a couple of weeks. So I would
11 say if -- if there is a -- if there's an agreement
12 that it could be addressed within a month, that would
13 -- that would be okay with us.

14 CO-FACILITATOR BARB SWEAZEY: Just
15 wondering, in terms of the timing, will you need that
16 information to help inform your own recommendation
17 about the -- the significance?

18

19 (BRIEF PAUSE)

20

21 MS. SACHI DE SOUZA: Parks Canada, I
22 have a question for you, if that's okay. Sachi De
23 Souza.

24 Earlier in the day or yesterday, you
25 discussed how restoring natural drainages at closure

1 is important to you. And considerations for what
2 closure looks like is a -- a part of the EA. So is
3 what you're requesting tie into that sort of train of
4 thought, and therefore relevant to your decision about
5 the environmental assessment of this project.

6 MR. GARRY SCRIMGEOUR: Garry
7 Scrimgeour, Parks Canada. Yes, and thank you.

8

9 (BRIEF PAUSE)

10

11 CO-FACILITATOR BARB SWEAZEY: CanZinc,
12 do you have a response or react -- does this help in
13 terms of clarifying the timing, or do you have any
14 additional input?

15 MR. DAVID HARPLEY: Dave Harpley. No.
16 I'm just wanting to confirm if they need it during the
17 process, or it can wait until permitting, that's all.

18 MR. GARRY SCRIMGEOUR: Garry
19 Scrimgeour, Parks Canada. Our preference is to
20 receive it as a part of this process. And our hope is
21 that the -- the materials being requested are not
22 overly onerous whatsoever. Thank you.

23 CO-FACILITATOR BARB SWEAZEY: Barb
24 here. Thank you. So may -- maybe in light of our
25 discussion tomorrow and looking at all the

1 undertakings and timing, we can factor this one (1) in
2 as well. Okay. Thank you.

3

4 --- UNDERTAKING NO. 29: CanZinc will provide
5 information on measures to
6 minimize riparian
7 disturbance during culvert
8 and crossing installation.

9

10 CO-FACILITATOR BARB SWEAZEY: So I
11 will come to you in one (1) moment, DFO. Review
12 Board, do you have -- you can wait?

13

14 (BRIEF PAUSE)

15

16 CO-FACILITATOR BARB SWEAZEY: DFO,
17 questions?

18 MS. GEORGINA WILLISTON: Georgina
19 Williston, with Fisheries and Oceans Canada. I think
20 we just wanted to maybe add on to Parks Canada's
21 comments on the riparian vegetation. It is important,
22 I think, for the assessment and to be able to sort of
23 conclude that there'll be no significant impacts from
24 excessive riparian vegetation removal.

25 We've had a couple projects now in the

1 -- in the Northwest Territories where when -- we've
2 seen when, you know, they've done too much land
3 clearing and too much vegetation clearing, and then
4 it's hard to install sediment erosion controls
5 properly that that material ends up in the creek. And
6 we either get it as a water quality issue, or we get a
7 serious harm issue where now the -- the material has
8 deposited onto the -- onto the fish habitat.

9 So it -- it is important that there is
10 an awareness of minimizing the removal as much as
11 possible, and understanding that it's not so easy for
12 it to just be replanted, or it's not going to
13 revegetate all that quickly, so the key is site prep
14 being careful with that.

15 CO-FACILITATOR BARB SWEAZEY: Thank
16 you. I think that that's probably being factored into
17 one (1) of the undertakings?

18 Okay. Good. Thank you. Review
19 Board...?

20 MS. SACHI DE SOUZA: Sachi, with the
21 Review Board. In the Alpine Solutions' avalanche
22 assessment, one (1) of the recommendations was that if
23 structures such as bridges are to be installed at the
24 creek or river crossings near Avalanche Pass, that an
25 assessment of the potential avalanche impact should be

1 undertaken.

2 The Allnor -- or the Alpine Solutions's
3 report identifies avalanche risks in the first 40
4 kilometres of the road. It also identified avalanche
5 areas east of Grainger Gap where, we might discuss
6 this tomorrow, the -- the new preferred alignment
7 might be closer to those avalanche risks where the
8 winter road alignment wasn't.

9 What I -- I was hoping to get is a
10 commitment from CanZinc to ensure that potential
11 avalanche impacts are considered in the final design
12 for bridges that are in avalanche areas.

13

14 (BRIEF PAUSE)

15

16 MR. DAVID HARPLEY: It's Dave Harpley.
17 The reason I'm pausing here is I think it's a little
18 bit complicated, given the fact that we have an
19 authorized winter road. We have a prior avalanche
20 risk study which identified paths along Sundog but no
21 where else. And I'm thinking of proximity of bridges.

22 So I will -- I'm going to need to get
23 my head around all that, and -- before I commit to a
24 commitment.

25 MS. SACHI DE SOUZA: Sachi, with the

1 Board. So to clarify, we -- we understand and we
2 appreciate that the winter road was assessed and
3 permitted.

4 The avalanche assessment that was
5 provided by Canadian Zinc was completed in 2012, and
6 assumes the winter road operation period, which
7 roughly goes to say March. And the avalanche risks
8 may extend beyond March, first off.

9 Second off, in the winter road
10 alignment there were not permanent bridge structures
11 in place. Those are a component of the all-season
12 road. So in that regards -- and then they've
13 identified areas, the 40 kilometre section from the
14 mine to Cat Camp where there are avalanche risks,
15 where CanZinc has identified where they will need
16 bridge permit structures, bridges.

17 With that in mind, if there's a risk to
18 a bridge from an avalanche, it's important to be
19 considered. And so the Ask here is that when CanZinc
20 is doing its detailed design for bridges, which are
21 permanent structures, that they consider potential
22 impacts from an avalanche as was recommended in the
23 Alpine Solutions Report that you provided.

24 MR. DAVID HARPLEY: Okay. It's Dave
25 Harpley. So now you've clarified the -- the Ask in

1 terms of detail design. I don't have any issue with
2 it. I don't think any of the bridges we're proposing
3 are proximal to the pass that have been identified.
4 So I don't think it's going to be an issue. But I
5 don't have a problem with it being confirmed, the
6 detail design.

7 CO-FACILITATOR BARB SWEAZEY: Thank
8 you. So we can maybe work on the, again, draft
9 wording of the commitment and have -- have you guys
10 look at it? Thank you. Parks Canada, it sounds like
11 you want to weigh in here.

12 MS. ALLISON STODDART: Allison
13 Stoddart, with Parks Canada. All right. Could we
14 also just add to that commitment whether or not there
15 was consideration of risk of avalanche in the
16 placement of construction camps?

17

18 (BRIEF PAUSE)

19

20 CO-FACILITATOR BARB SWEAZEY: CanZinc,
21 thoughts on that request?

22 MR. DAVID HARPLEY: Dave Harpley.
23 Same answer.

24 CO-FACILITATOR BARB SWEAZEY: Great.
25 Any additional question on this category, project

1 description as it relates to water? Yes, go ahead,
2 Toby.

3 MR. TOBY PERKINS: Toby Perkins. So
4 in relation to peak flow estimates, I note that the
5 peak flow calculations are based on three (3)
6 watershed Canada stations for watersheds ranging from
7 485 square kilometres, I believe, up to fourteen
8 thousand (14,000) and then that relationship is then
9 applied to -- on the order of one (1) to -- I think
10 the largest is 700 square kilometres.

11 But most of the crossings, anyway, that
12 have been assessed are under 50 square kilometres. So
13 it's quite an extrapolation of the relationship there.
14 This isn't necessarily uncommon practice, but I would
15 certainly be interested to see a discussion of the
16 stations that were used and whether they were
17 appropriate for extrapolation down to the smaller
18 watersheds and whether these smaller watersheds have
19 similar characteristics to the regional stations used.

20 Additionally, in terms of peak flows,
21 there's been no consideration, as far as I can tell,
22 for climate change. And, again, commonly there would
23 be some climate change allowance on peak flow
24 estimates.

25 So from these two (2) observations, I

1 have concern that peak flows may have been
2 underestimated. And then moving on to flood level --

3 CO-FACILITATOR BARB SWEAZEY: Can we
4 just pause right there --

5 MR. TOBY PERKINS: Sure.

6 CO-FACILITATOR BARB SWEAZEY: --
7 before we move on? Thank you. So would you like to
8 respond? Yes.

9 MR. DAVID HARPLEY: It's Dave Harpley.
10 I'm going to have to ask you to put that into an
11 undertaking because Bill snuck out be -- while I
12 wasn't looking and he's the only one (1) who can
13 answer that.

14 CO-FACILITATOR BARB SWEAZEY: Thank
15 you. We can do that. And maybe we'll just get a
16 little bit of input from you, Toby, on framing that.
17 Thanks, Dave. A followup question?

18

19 --- UNDERTAKING NUMBER 30: CanZinc to advise how peak
20 flows were estimated and
21 flood level modelling.

22

23 MR. TOBY PERKINS: Yeah, and I can
24 certainly provide that information. Following on then
25 to the flood level modelling. So the flood level

1 modelling assumed normal depth -- assumed normal depth
2 --

3 MR. DAVID HARPLEY: Dave Harpley.
4 It's going to be the same answer, so I'm not sure if
5 you want to ask the question.

6

7 (BRIEF PAUSE)

8

9 CO-FACILITATOR BARB SWEAZEY: Just so
10 we can have the question on the record, can you just
11 go ahead and state it? And, Dave, a followup question
12 for you, when is Bill expected back?

13 MR. DAVID HARPLEY: I don't know if he
14 is. I'm just going to have to find that out.

15 CO-FACILITATOR BARB SWEAZEY: We'll
16 make that an undertaking for you, Dave.

17

18 (BRIEF PAUSE)

19

20 MR. DAVID HARPLEY: Dave Harpley.
21 Apparently, he's coming back at three o'clock, but
22 we'll try and expedite his return.

23 CO-FACILITATOR BARB SWEAZEY: So, yes,
24 so he's coming back in? So then we'll just pause, and
25 we'll come back to it. Thank you for checking on

1 that.

2 Are there questions that might not have
3 to do with Bill? While they're conferring, Parks
4 Canada, you're done, right? No more questions in this
5 category, or do you have other questions?

6 MS. ALLISON STODDART: Are we just
7 talking in general --

8 CO-FACILITATOR BARB SWEAZEY: In
9 general, the 8:30 twelve o'clock slot.

10 MS. ALLISON STODDART: Yeah. So, yes,
11 we do still have --

12 CO-FACILITATOR BARB SWEAZEY: You
13 still have a couple questions there.

14 MS. ALLISON STODDART: Yeah, yeah.
15 Not related to the --

16 CO-FACILITATOR BARB SWEAZEY: Not
17 related to this. Okay, fine. I'll be just right
18 back. Yes, do you have a question? That they may be
19 answered without Bill? Okay, go ahead, Toby, one (1)
20 more question.

21 MR. TOBY PERKINS: So this was sort of
22 a train of thought in terms of peak flows and flood
23 levels and things. But then I was going to lead into
24 the comment I made earlier, that several of the
25 crossings, the flood levels shown in the modelling are

1 -- or that they show substantial flooding across the
2 flood plain and then the channel, and then the bridge
3 crossings will constrict that.

4 And -- and I would like to see an
5 assessment of what -- what return period flood or what
6 flood level do -- do the bridge crossing structures
7 impede or reduce -- sorry, yeah, impede. And then --
8 the interest there would be in ter -- in terms of
9 DFO's comments earl -- earlier about footprint impacts
10 and that kind of thing. If the bridge structure's
11 proposed encroach into annual flooding levels, then
12 that would be of -- of interest, so.

13

14 (BRIEF PAUSE)

15

16 CO-FACILITATOR BARB SWEAZEY: Okay, so
17 Toby has a little bit more to add that may help to
18 clarify the question a little bit more.

19 MR. TOBY PERKINS: Toby Perkins. Yes.
20 Sorry, just -- just to cry -- try and clarify.
21 Certainly crossings that I identified to that were
22 potentially quite significant with the Polje Creek
23 crossing at 55 -- 53.5 kilometres, road kilometre, and
24 the Tetcela Ri -- River crossing at 89.8 and, also,
25 Grainger River at 124.5. It's these ones that have a

1 significant channel constriction.

2 CO-FACILITATOR STEFAN REINECKE:

3 Stefan, from Stratos. Could you just repeat the first
4 two (2) numbers?

5

6 (BRIEF PAUSE)

7

8 MR. TOBY PERKINS: Toby Perkins. The
9 -- the kilometre -- the crossings that I mentioned
10 there were Polje Creek at 55 -- 53.5 kilometres,
11 Tetcela River at 89.8 kilometres, and Grainger River
12 at 124.5. Those were three (3) specific examples that
13 I had.

14

15 (BRIEF PAUSE)

16

17 MR. BRAD MAJOR: Okay. Brad Major,
18 with Allnorth. Currently, for the three (3) crossings
19 I guess that we're talking about, each one of these
20 are on fairly flat and wide -- wide flood plains.

21 What we've done in the preliminary
22 stages is we have -- we have spanned a hundred percent
23 of what we would deem the active channel or -- or, you
24 know, the -- the seasonal flow or the -- or the every
25 -- every two (2) years. So the Q2 is -- is just what

1 we would call it.

2 The next stages, which would be in the
3 detail design, would be to model what that crossing
4 would look like at -- at the larger stages, and -- and
5 see what needs to be done to -- to pass that -- that
6 larger design flow, right? So that may be a larger
7 structure, or it may be additional structures within -
8 - within that channel footprint, right?

9 MR. TOBY PERKINS: Toby Perkins. So
10 the commitment at the moment is that the -- the bridge
11 crossings will not encroach on the two (2) year flood
12 level.

13 Is that the commitment?

14 MR. BRAD MAJOR: Yes, that would be --
15 yeah. We are -- at a minimum, we would be spanning
16 the active flood channel, yes.

17 THE CO-FACILITATOR BARB SWEAZEY: I'm
18 going to go Parks Canada now for a question.

19

20 (BRIEF PAUSE)

21

22 MR. GILLES LUSSIER: Gilles Lussier,
23 Parks Canada. This question relates to a footprint
24 within the flood plains. And there is some definition
25 provided for a road footprint in the flood plains, but

1 we were hoping for additional clarification on borrow
2 sources within the flood plains and how those might
3 relate to high watermarks, et cetera, and whether that
4 is something known at this point or will be coming
5 about with the specific borrow pit plans to come.

6 MR. DAVID HARPLEY: It's Dave Harpley.
7 I believe that the borrows that we have identified in
8 historical flood plains are located in areas that are
9 since stabilized and partially vegetated, so that
10 they're actually not part of the currently active
11 flood plain, therefore, shouldn't pose a problem in
12 terms of flood risk.

13 But again, it would be something
14 revisited during the process of borrow pit development
15 plan proc -- as part of detail design.

16

17 (BRIEF PAUSE)

18

19 CO-FACILITATOR BARB SWEAZEY: It's
20 Barb here. Parks, do you need just a couple more
21 minutes to finish? I think if -- with your
22 permission, may I go back to Toby for a follow-up
23 question? CanZinc, I hope you're okay jumping back?
24 Thank you. Toby or Sachi...?

25 MR. TOBY PERKINS: Toby Perkins. I

1 just wanted some clarity on this image here. So this
2 was provided in IR-407 response. And it shows the lin
3 -- road alignment crossing the large gravel plain
4 there. I'm not sure exactly what morphological
5 feature that is. But I didn't see any description on
6 how the road would cross that area, any commentary at
7 all on culverts or -- or otherwise?

8 I'm just looking for some
9 clarification. I believe the alternate alignment
10 actually comes on the north side of that, but as my --
11 my understanding is that both alignments are still
12 being considered, so.

13 MR. DAVID HARPLEY: It's Dave Harpley.
14 To the best of my knowledge, I'm not sure where the
15 road -- the -- actually we need the preferred
16 alignment on this picture, but preferred alignment
17 would actually come around here and join back into the
18 road, so it wouldn't actually cross either this, or
19 this here. It does cross it further up.

20 MR. TOBY PERKINS: Toby Perkins. So
21 only the preferred option -- preferred alignment is
22 being considered now? Should we take the other
23 alignment out, or do we need to consider both at this
24 stage?

25 MR. DAVID HARPLEY: It's Dave Harpley.

1 Well, I mean, that's our preference subject to the
2 Board's decision, but we kept the -- the two (2) in
3 because the red line was what was in the DAR, and we
4 developed the alternative alignment subsequent to the
5 DAR, so that's why it's left in.

6 But we've been clear that we think the
7 preferred alignment is as I've just described, because
8 it avoids crossing back over Grainger River somewhere
9 in this area and climbing the scarp, which is going to
10 acquire quite a bit of rock work, including crossing a
11 fish-bearing stream again. So we think this -- this
12 alignment up here is superior.

13

14 (BRIEF PAUSE)

15

16 MR. TOBY PERKINS: Toby Perkins. So
17 in one (1) of the Allnorth figures, that outwash area
18 is shown as a borrow area. Is that -- is that
19 correct, and is that -- area been characterized, and -
20 - I guess from my perspective, I'm not clear of why it
21 looks like that. It seems that it would be
22 susceptible to -- to flooding or -- or sediment
23 hazards. And that's BP123A on -- on the figures.

24 MR. DAVID HARPLEY: It's Dave Harpley.
25 We're just putting up that information, but before we

1 get there, I think one (1) thing to point out is you
2 can see on that figure where the red line is. That's
3 actually the existing winter road that was built in
4 the '80s.

5 And you can see it's still there
6 clearly visible and intact. So it would suggest to us
7 that that historical outwash fan hasn't been active
8 for some time, or at least thirty (30) odd years, and
9 is vegetating. So I'm not -- even if we have a borrow
10 source there, I'm not sure where that would be a
11 concern.

12

13 (BRIEF PAUSE)

14

15 MR. DAVID HARPLEY: So Dave Harpley
16 again. Yes, we do have proposed borrows in that area.
17 In fact, the -- there's quite a large borrow defined
18 currently covering a -- a good section of that outwash
19 -- old outwash fan. Of course, that's preliminary at
20 this stage. We need to follow it up with more
21 investigation and confirm the -- the boundaries of
22 that proposed borrow.

23 We're also indicating a -- a borrow in
24 -- of the area in between the old and current outwash
25 fan locations, because there's -- it seems to be

1 there's -- there's rock in there that we can borrow
2 and use as gravel material.

3

4 (BRIEF PAUSE)

5

6 CO-FACILITATOR BARB SWEAZEY: Do you
7 have any follow-up questions on this side here?

8 MR. JAMES HALEY: James Haley, Knight
9 Piesold. If I could just ask for a clarification in
10 relation to -- sorry, I think shown earlier? Yeah,
11 shows a -- a previous river alignment in 1962, so does
12 that mean that the main channel is flowing ever --
13 across that area in 1962 air photos?

14 MR. DAVID HARPLEY: It's Dave Harpley.
15 I -- I don't have the mapping in front of me, so I
16 can't really tell you exactly, but it's my
17 understanding that the main channel, the main stem
18 hasn't changed.

19 It's that outwash fan which is a
20 tributary to the main stem that has changed sometime
21 in the past.

22

23 (BRIEF PAUSE)

24

25 MR. JAMES HALEY: Yeah, yeah. James

1 Haley, Knight Piesold. Yeah, I guess what -- what I'm
2 saying is, a large fan, which on -- on the four (4)
3 days it was definitely flood deposits on the fan
4 through this area. And somewhere on the terrain
5 mapping, it show -- it shows an old -- there's a red
6 line going through here that relates to a 1962
7 photograph.

8 So it's -- really, we -- we want to
9 understand what -- whether that's the channel which
10 has avulsed to the other side of the fan on those air
11 photographs, or whether it was just a -- a small
12 channel avulsion. What -- what was really the scale
13 of was what going on on the -- on the air photographs.
14 I just -- I just need to understand that a little bit
15 more. Thank you.

16 MR. DAVID HARPLEY: It's Dave Harpley.
17 I -- I still guess I don't really still understand the
18 -- the question, but maybe it'll help to clarify
19 matters if I kind of describe what I think is going on
20 here. Here's the main channel.

21 And it goes through here and -- and
22 flow -- well, upstream is this lake here, which we
23 call Gap Lake. And I don't think that this main
24 channel -- main stem location has changed in the
25 recent past.

1 It is this outwash fan which used to
2 come through here and has now avulsed and is now
3 coming through here.

4 CO-FACILITATOR BARB SWEAZEY: James,
5 does that help to clarify, or do you have an
6 additional question?

7 MR. JAMES HALEY: Yeah, that -- that
8 was -- that was kind of a -- what -- what we thought -
9 - what the thought was, yeah, that -- that it was a
10 perhaps a flood event which occurred on -- looking at
11 the pic -- looking at the map there on the right side
12 of the fan, which is perhaps apparent on those
13 photographs, but the -- that's got implications to the
14 road design, if -- if -- for the original alignment.

15 But if -- if it -- if it moves and it's
16 -- it's kind of pref -- preferred alignment, it's not
17 -- not an issue, but it's still an issue for -- for
18 potential borrow area in terms of risks.

19 MR. DAVID HARPLEY: So -- Dave
20 Harpley. I'll go back to what I just said. Based on
21 what we can see from the photograph and the fact that
22 that's been stable for at least thirty-six (36) years,
23 I wouldn't think there'd be a risk to the borrow.

24 In addition to that, my colleagues
25 informed me that the borrow is actually a backup

1 borrow. So if there was any issue there, we simply
2 wouldn't use it.

3

4 (BRIEF PAUSE)

5

6 CO-FACILITATOR BARB SWEAZEY: So we're
7 done with this question. I know that there was a
8 question related to timing on your question that we
9 had started while they were having a conference. Do
10 you have any follow up? You don't remember? No,
11 okay.

12 So if this is a new question, I'm going
13 to -- it's not a new question. Gilles, you have a
14 follow-up question? Okay, we're going to do the
15 follow-up question. And then we're going to break.

16 MR. GILLES LUSSIER: Gilles Lussier.
17 No, just a -- a clarification, then. I -- I think --
18 I think we have an understanding that with the borrow
19 sources, that on a site-by-side basis -- site-by-site
20 basis, there'll be an assessment and -- and kind of a
21 review.

22 And in these cases where there's a
23 proximity to flood plain our water table, we'll --
24 there'll be details and discussions on proximities and
25 buffers, et cetera.

1 CO-FACILITATOR BARB SWEAZEY: Okay.

2 So just -- just two (2) things. One (1) is Alan's
3 going to come up and say one (1) word -- a couple
4 words. I just want to have a sense in the room. How
5 many more questions do we have in this category of
6 project descriptions as it relates to water? Can I
7 just get a bit of an indication for planning purposes.

8 And, Bill, when we come back from
9 break, we have a couple questions for you, peak flow
10 and one (1) other question. You have two (2), and
11 Toby has a couple, and you guys have a couple. Okay,
12 so we still have a few more questions to do. Okay.

13 So, Alan, I'm going to turn it to you.
14 And when you're done, I'll you know how long you have
15 for break.

16 MR. ALAN EHRLICH: Thanks. I won't
17 consume too much of the break with this. This
18 morning, there were many subjects where one (1) party
19 or another did not have all the information we needed
20 for the discussion here. And, as a result, there are
21 plans to hold many discussions...

22

23 (BRIEF PAUSE)

24

25 MR. ALAN EHRLICH: There are plans to

1 hold many discussions at other times later on.

2 Some of those will yield information
3 that is intended to be relevant to the environmental
4 assessment. One (1) advantage of discussing stuff in
5 a technical session is it's transcribed and it goes on
6 the public record.

7 I wanted to point out that there's a
8 mechanism that the Review Board has to capture the
9 discussions from these sidebar meetings. There's a
10 specific form that we've got. It's on our -- our
11 website.

12 Go under "public registries." Scroll
13 down to "forms," and you'll see a form to describe a
14 meeting. It lists what the topic is of the meeting.
15 I think it asks what positions the attendees went in
16 there with, what the -- to summarize -- there's a
17 space to summarize the discussion. There's a space to
18 summarize any commitments that came out of the
19 meeting, a space to describe any actions that result
20 from the meeting, and any conclusions. And there's a
21 space where each party to the meeting can sign that
22 they agree that this description of the meeting is an
23 accurate representation of what happened during the
24 meeting.

25 We do this so that parties that aren't

1 all sitting in on these meetings still have some
2 understanding of what transpired where they might not
3 be interested enough to want to go to the meeting or
4 take part in the meeting, but are interested enough to
5 want to understand what happened.

6 And so when you hold the various
7 meetings that everyone's talked about this morning and
8 may -- others that may come up later in the technical
9 session, please use those forms so that for the sake
10 of transparency and fairness, there are agreed-upon
11 summaries of those meetings on our public record that
12 will also help the Board consider them during its --
13 its deliberations.

14 I'm not suggesting that that need be
15 the only summary of the meeting. Obviously, sometimes
16 there are more detailed reports that are relevant as
17 outcomes of these things. But if you do hold those
18 meetings, please use those forms.

19 If you have any trouble finding them,
20 please contact the Review Board. We'll be happy to --
21 to point them out to you. Thank you.

22 CO-FACILITATOR BARB SWEAZEY: Barb,
23 from Stratos. Thanks, Alan. So it's fourteen (14)
24 minutes to 3:00. So shall we try and be back at three
25 o'clock? Thank you. See you then.

1 --- Upon recessing at 2:47 p.m.

2 --- Upon resuming at 3:05 p.m.

3

4 CO-FACILITATOR BARB SWEAZEY: Okay,
5 folks. Barb here. So let's start with the questions
6 that we'd like to direct towards Bill, if we could.
7 So there is, I believe, two (2) sets. The first one
8 (1) is on peak flows. Yes? So I'm going to turn that
9 over to Toby.

10 MR. TOBY PERKINS: Toby Perkins. So I
11 was asking a little earlier, but the -- the one
12 hundred (100) year peak flow is to determine, based on
13 three (3) regional water survey Canada stations. The
14 watershed areas range from 495 square kilometres up to
15 14,500 square kilometres. And in the crossings that
16 we're assessing here, most of them are less than 50
17 square kilometres. So I'm just asking in this piece
18 about the applicability of those regional stations.

19 And I note that this is an uncommon
20 practice, but I would be interested to see where the -
21 - the hydrology characteristics of those watersheds
22 have been considered, particularly the smaller ones
23 and -- and whether the -- the projected peak flows
24 likely over or underestimate or -- or otherwise the --
25 the expected peak flows in these project watersheds.

1 MR. BILL ROZEBOOM: Bill Rozeboom,
2 Tetra Tech. Yes, we -- we did have three (3)
3 stations. These are three (3) stations which we
4 selected when we did the initial work for Canadian
5 Zinc back in 2007/2008, I believe. At that time, the
6 focus was -- was on the Prairie Creek itself. The
7 reports we've done have noted that the -- the basinary
8 discrepancy that you're mentioning. More recently, we
9 have done some checks where we've included some
10 smaller stations, which unfortunately are quite far
11 away. We don't have anything that's really in
12 proximity.

13 What the -- what my conclusion was, is
14 that if we consider the -- the other smaller distant
15 small stations, the regional curve that we're using
16 with the exponent of point seven five (.75) is giving
17 us numbers which are conservatively high. And -- and
18 in my opinion, if we're conservatively high, that's a
19 good thing. There's -- there's no reason to try to,
20 you know, get chintzy.

21 In -- in some of the earlier reports I
22 also make note that we are basing these flows on
23 relatively large basins. And if there's smaller
24 crossings which are particularly vulnerable to the --
25 the size of the peak flow, that it should be looked at

1 again or -- or a conservative number be adopted.

2 MR. TOBY PERKINS: Okay. Thanks for
3 that. That's great. And then the other piece on peak
4 flows is there doesn't seem to be any specific
5 inclusion of climate change.

6 Is there a specific inclusion of
7 climate change?

8 MR. BILL ROZEBOOM: No, there's --
9 there's no explicit inclusion of climate change. This
10 is a relatively new fad in the hydrologic business.
11 There is a report I did in 2010, I believe it was,
12 responding to climate change questions. And in that
13 one, I looked at the periods of record we did have
14 again for the same stations we're working with, did
15 normalized annual runoff at least for the seasonal
16 period where the -- where the stations are active, and
17 also looked at normalized peak flows. And -- and
18 those results did not show any trends of any sort.

19 The -- the climate change work that's
20 being done now suggests, you know, the hundred year
21 peak flows might be going up by 10 or 20 percent. But
22 this -- it -- it's -- it's -- it -- to me, when the --
23 the climate change projections are more important when
24 you're looking of project of long duration, because
25 when you're looking at -- at short-term projects, the

1 -- the chance of you getting a really extreme event is
2 really small in the first place. So I -- I would not
3 be that concerned about climate change effects for the
4 Canadian Zinc project.

5

6 (BRIEF PAUSE)

7

8 MR. TOBY PERKINS: Okay. Thanks for
9 that. That's clarifying, and certainly comments I've
10 heard other times and probably used myself, so thanks
11 for that. In -- in my recent experience in BC
12 guidance, the standard practice is to -- to use a
13 factor of safety of around 10 to 20 percent, similar
14 to what you to what you commented on for projects with
15 design lifes in the order of 20 percent.

16 So that's sort of my -- sorry, design
17 lifes in the order of twenty (20) years. That's just
18 in my most recent experience, and I'll leave that with
19 you. I mean, I think it comes into both how
20 conservative the regional scaling is, and -- and
21 potential change. So as long as you feel comfortable,
22 that is -- the peak flow valleys are appropriate and
23 somewhat conservative, and that's -- that's fine.

24

25 (BRIEF PAUSE)

1 CO-FACILITATOR BARB SWEAZEY: Toby,
2 did you have a follow-up question, or any other
3 questions of clarification?

4 MR. TOBY PERKINS: And then moving
5 onto flood level assessment, just so I note that the
6 flood levels were based on normal depth assumptions.
7 So one (1) cross section, and then assuming you have
8 no more depth. There was no infrastructure included
9 in the crossings, and also quite a few of the -- the
10 cross sections show that the flow is super critical,
11 which I would say is uncommon for alluvial -- alluvial
12 channels, and these three (3) assumptions potentially
13 lead to underestimated water levels.

14 Can you comment on those -- those
15 questions, I guess?

16 MR. BILL ROZEBOOM: I would agree that
17 typically a channel would be capped at a critical
18 flow, not a super critical flow, because of the
19 turbulence with -- with bed movement. Without going
20 and seeing which stations you're looking at, I -- I
21 don't know.

22 The results which I've been presenting
23 typically have included both the water surface depth
24 and also the energy grade line. The energy grade line
25 being how high the water would pile up if it hit

1 something like a bridge abutment. So ideally, the
2 design would consider the -- the higher of the levels.

3

4 (BRIEF PAUSE)

5

6 MR. TOBY PERKINS: Thanks for that. I
7 appreciate those comments, both on peak flows and the
8 flood levels. And I guess I just request that in
9 further analysis, they be con -- continue to be
10 considered, and -- and recognized, I suppose, by -- by
11 others who are considering the information provided.

12 MR. BILL ROZEBOOM: Bill Rozeboom,
13 Tetra Tech. Yes. And -- and again the -- you -- the
14 -- the work we've been doing has -- has all been kind
15 of preliminary design, with -- with the qualifications
16 that we're -- we're giving you, and through procedures
17 like this and working with Allnorth, we can, you know,
18 combine our efforts and -- and get -- make sure that
19 the appropriate values are incorporated.

20 So this is -- this, again, is a
21 preliminary step towards -- towards getting to a final
22 design which considers the other things which we're
23 talking about.

24 CO-FACILITATOR BARB SWEAZEY: Great.
25 So are there any additional follow-up questions

1 required at this time on this one? No, it's okay?

2 Okay. So I know LKFN and Dehcho, or are they
3 together? Separate? Do you want to go ahead, Carrie?

4 MS. CARRIE BRENEMAN: Carrie Breneman,
5 Dehcho First Nations. My first question, Rick raised
6 the question this morning about water over the road.
7 And I was just wondering what sections along the road
8 will have water flowing over it, and if Canadian Zinc
9 perceives this as an issue for washout or safety
10 concerns?

11

12 (BRIEF PAUSE)

13

14 MR. DAVID HARPLEY: It's Dave Harpley.
15 There's one (1) location in particular that, that
16 concern is appropriate for. It's a tributary to
17 Prairie called Casket Creek at kilometre 6.2. That's
18 where the road crosses the flood plain at -- of Casket
19 Creek quite close to the mouth.

20 It's a location where the crossing is
21 basically constrained by topography. We can't go
22 upstream to find a better crossing location. So we're
23 having to cross the flood plain. So the approach that
24 Allnorth took in the design was to provide a lower
25 elevation armoured embankment crossing such that if

1 there was a -- a flood it would overtop rather than
2 washout.

3 This -- we're just having some deb --
4 debate as to whether there is a -- any other crossing
5 that is comparable to that and we haven't concluded
6 that yet.

7 CO-FACILITATOR BARB SWEAZEY: It's
8 Barb, here. Like do you -- are we talking a couple
9 minutes or are we talking a lot more time?

10 MR. DAVID HARPLEY: Dave Harpley.
11 Maybe a minute.

12 CO-FACILITATOR BARB SWEAZEY: Okay.

13

14 (BRIEF PAUSE)

15

16 MR. DAVID HARPLEY: It's Dave Harpley,
17 again. So there is another crossing at 39.8, which is
18 another tributary to Sundog. The western approach to
19 that crossing, the road crosses a fairly long section
20 of historical floodplain.

21 And Allnorth feel that the same
22 approach to the embankment height and protection is
23 warranted there just as a precaution against the main
24 stem carrying a significant flow and that flow not
25 being constrained by the current active floodplain and

1 it wanting to go south.

2 MS. CARRIE BRENNEMAN: Okay. So my
3 understanding is you'll have armourment and the water
4 will flow overtop rather than washout. Are there any
5 residual issues with having water kind of washed over
6 the road?

7 Like do you have concerns about ice
8 during freeze up or...

9

10 (BRIEF PAUSE)

11

12 MR. ERNIE KRAGT: Ernie Kragt,
13 Allnorth. So the approach taken here is -- it's
14 important to recognize that this is to deal with
15 situations where we get above normal flood levels
16 which would probably occur on -- on a ten (10) year
17 basis perhaps.

18 The idea is to protect your major
19 structure -- infrastructure, so your bridges. The
20 evidence on this flood plain when we look at the old
21 alignment suggests that the -- the water strength is
22 not that great over this vast flood plain, so there
23 isn't a great threat to -- to the road structure
24 considered.

25 The other -- the other component is --

1 is that the -- we expect this event to happen in the -
2 - in the late spring when you're getting the runoff.
3 And most likely your road operations would be shut
4 down, so there wouldn't be that threat. And then it
5 just becomes a road monitoring program where our road
6 operations manager that we prescribe would -- would
7 inspect and -- and carry out any relevant maintenance
8 to -- to ensure the safety of the road.

9 MS. CARRIE BRENEMAN: Thank you. I
10 have one (1) other question. In Parks -- in their
11 line of questioning they were talking about removal of
12 structures and restoration of riparian areas. I just
13 wanted to know if that same approach would be used
14 outside of the park?

15

16 (BRIEF PAUSE)

17

18 MR. ERNIE KRAGT: So Ernie Kragt,
19 Allnorth. Within our management plans, and I believe
20 it's called the Erosion and Sedimentation Plan, and in
21 a few other plans, we -- we do actually go into a fair
22 amount of detail on how we intend to manage riparians
23 both prior to and into construction and -- and the
24 followup after -- after construction, and then into --
25 in -- in carrying on even into the reclamation of the

1 road later on.

2 The approach within parks and -- it'll
3 be the same approach across the whole road fundament -
4 - fundamentally. So we -- we don't see any difference
5 between parks and -- and outside the park.

6 CO-FACILITATOR BARB SWEAZEY: Toby,
7 did you have a followup question about one (1) of the
8 crossings?

9

10 (BRIEF PAUSE)

11

12 MR. TOBY PERKINS: Toby Perkins. So
13 at Casket Creek -- sorry, I missed -- were discussing
14 -- I missed a little bit of the start of that
15 discussion, but was the plan to train the creek? So I
16 know that the fan apex from photos appears to a
17 hundred or a couple hundred metres upstream of the
18 crossing. Is the plan to train the channel to stay in
19 that alignment or do you think it's sufficiently
20 stable there right now?

21

22 (BRIEF PAUSE)

23

24 MR. DAVID HARPLEY: Dave Harpley.
25 Yeah, that is the plan. And currently, that channel

1 appears to be stable against the southern bank of the
2 creek. But we think it's appropriate to minimize the
3 risk that it decides to shoot off to the north, so
4 we're planning to put some armour kind of in the form
5 of a berm or a spur upstream to try and keep it from
6 going anywhere else other than under the bridge.

7 MR. TOBY PERKINS: Toby Perkins. And
8 so there was some discussion about the road alignment
9 being overtoppable in -- in a large flood event or
10 whatever.

11 If the channel did avulse the plan
12 would be to put it back under the current -- in the
13 current channel and under the current -- and under the
14 bridge crossing that's been constructed?

15 MR. DAVID HARPLEY: It's Dave Harpley.
16 I'm -- I'm going a little deaf myself. So I'm
17 struggling to hear all the question. But I'll -- I'll
18 give it a shot and you can -- we can come back if you
19 need to. Bear in mind that this particular crossing
20 and the flood plain is a little more complicated than
21 just the single channel because there's actually a
22 tributary that comes in on the north side. So in
23 flood situation, that's obviously bringing water as
24 well. Plus the -- the flood plain kind of acts like a
25 bathtub, much like lower Sundog does. In which case

1 when it -- when it's very wet and when there's a lot
2 of water there's just a multiple number of channels.

3 The main one (1) I expect will still go
4 under the bridge, but there will be a lot of -- there
5 will be some sid -- subsidiary channels that won't.
6 And -- and so those we'll naturally have to train to
7 go through culverts that'll be installed in the
8 embankment and we'll deal with that that way. And
9 beyond that we are into the overtopping situation and
10 the protection we discussed.

11 MR. TOBY PERKINS: Thanks for that. I
12 guess part of my questioning is just sort of related
13 to fish habitat and channel morphology downstream of
14 the crossing. And, I mean, I guess from the few
15 photos I've seen it looks like the fan downstream of
16 the crossing is still quite active. And that
17 evolution is in part due to the -- the location of the
18 channel and also its ability to move across the
19 channel.

20 Would there be a monitoring program to
21 assess downstream habitat or channel morphology
22 downstream of the crossing?

23 MR. DAVID HARPLEY: Dave Harpley. I'm
24 -- I guess I need to ask for what purpose would the
25 monitoring be conducted?

1 MR. TOBY PERKINS: To confirm that
2 sediment processes, depositional processes similar to
3 baseline conditions, make sure that a -- a multi-
4 thread channel doesn't become a single-thread channel
5 due to constraintment or -- or -- yeah, channel
6 constraintment.

7 And also that -- I mean, I guess part
8 of my concern also is that if a channel is constrained
9 into one (1) -- one (1) thread, therefore it ought to
10 transport more material which would have otherwise dep
11 -- deposited on the fan. And that -- that the tow of
12 the fan may progress further out into Prairie Creek.
13 And so I'd be interested to see what that evolution
14 is.

15 MR. DAVID HARPLEY: Dave Harpley. So
16 you do recognize that the -- there is already a bridge
17 and a crossing at this location? And there has been
18 so for some time. And this -- this fan, as you can
19 see in the picture, is -- is well developed. In fact,
20 you can see that it historically developed further
21 south.

22 And it -- and it's been -- you know,
23 it's being vegetated. There's tree growth there. So
24 there's multiple braids in the channel already. I
25 don't think that's going to change with what we're

1 doing. All -- all we're proposing to do is raise --
2 lengthen and raise the existing bridge and armour the
3 embankment and put in larger culverts. So we're not
4 altering the current situation there too much.

5 MR. TOBY PERKINS: Toby Perkins. So
6 my interest is not in stopping it doing that. It's
7 allowing it to continue to do that. And I think in
8 this photo we can see up here it looks like the winter
9 road has been washed out in two (2) or three (3)
10 locations, if I'm correct. So presumably the channel
11 has been active and moving around in those locations
12 since the winter -- the road was last maintained.

13 I understand your approach to protect
14 the road. That's fine. But I guess what I'm saying
15 is that it appears -- appears to be concern that that
16 process may be altered, the natural process may be
17 altered and -- and, therefore, the effects to fish,
18 fish habitat, could be -- there could be effects to
19 fish and fish habitat.

20 MR. DAVID HARPLEY: It's Dave Harpley.
21 Yes, you're correct. The old winter road is shown in
22 that photograph. And there evidently has been some
23 activity over the last thirty-five (35) years. You
24 can also see that if you go upstream the road crosses
25 right where that spur ends. And that section is

1 relatively stable in terms of channel location. You
2 can see the main channel on the south bank, and you
3 can see that tributary close to the north bank.

4 So those channels will be maintained by
5 a bridge and a culvert, respectively. So I -- I don't
6 see that we're going to be altering the natural
7 situation to any significant degree.

8 CO-FACILITATOR BARB SWEAZEY: Is this
9 related, Chuck?

10 MR. CHUCK HUBERT: Chuck Hubert, with
11 the Review Board. So this is kilometre 6.8, Gasket
12 Creek, correct? My understanding is that there's --
13 you know, the -- the question about impacts was to
14 fish and fish habitat as -- potentially.

15 So my question is, I'm aware that
16 there's bull trout spawning in Funeral and -- and
17 Prairie, correct? What's -- how -- what's the
18 distance from this location to where those spawning
19 habitats might be, and whether they're -- they're
20 downstream of this?

21 MR. DAVID HARPLEY: It's Dave Harpley.
22 To my knowledge we only know of confirmed bull trout
23 spawning habitat in tributaries to Prairie Creek.
24 Funeral is one (1) of them. We have found bull trout
25 in other similar tributaries further north on Prairie,

1 which we had been looking at as candidates for a bull
2 trout occupancy study. There have not been
3 confirmation of spawning of bull trout in Casket.

4 I think there has -- there have been
5 sightings of bull trout in Casket, and we actually
6 constructed an offset just below this area right in
7 here and downstream in the last few years, and because
8 of this flood plain here there is seepage that
9 emanates from this flood plain, and it has formed a
10 little side channel which flows down and joins
11 Prairie.

12 And we -- we did some work in that side
13 channel as part of this offset work, and found that it
14 actually was good habitat and had quite good numbers
15 of sculpin and bull trout. So -- and it caused us to
16 modi -- modify our approach to the offset. So they're
17 in the system, for sure.

18 I -- I think bull trout getting up this
19 -- this braided system is a challenge, and it's
20 probably only possible when flows are higher so that
21 they're able to pass because without those higher
22 flows this is basically dry, and then, you know,
23 passage is impossible.

24 MR. CHUCK HUBERT: Thanks very --
25 Chuck Hubert, with the Board. Thanks very much. Is

1 that -- is there a report on that offsetting work that
2 you just referred to and -- and, if so, could we have
3 that material for the record?

4 MR. DAVID HARPLEY: Dave Harpley.

5 Yes, there is and, yes, you can.

6 MR. CHUCK HUBERT: Thanks.

7 CO-FACILITATOR BARB SWEAZEY: Great.

8 Thank you very much. So no more questions related to
9 the questions that Dehcho proposed?

10

11 (BRIEF PAUSE)

12

13 CO-FACILITATOR BARB SWEAZEY: Okay.

14 So I believe LKFN, you have a question? Dean...?

15 MR. DEAN HOLMAN: Thank you. Dean, LK

16 -- Liidlili Kue First Nation. I -- some of the --

17 some of the comments, or some of the discussions that

18 have happ -- or have been happening have answered some

19 of my questions.

20 However, there is -- I just want -- I

21 was interested to know from the -- from Canadian Zinc

22 besides delineated variables considered according to

23 the map legends that you provided, and besides safety

24 concerns on bridges versus culverts, what was -- you

25 know, what was -- were -- what were some of the other

1 variables, such as changes in seasonal flow regime,
2 water depth, and water velocity that are considered in
3 whether you chose a bridge or a culvert?

4 And this again has to do with concerns
5 that are surround effects to flow and fish passage,
6 and also competition between different spis -- species
7 of fish.

8

9 (BRIEF PAUSE)

10

11 MR. DAVID HARPLEY: It's Dave Harpley.

12 So my colleagues are telling me that the -- the
13 primary considerations are road alignment and the
14 amount of flow and the size of the channel.

15 But I also want to point out that there
16 were two (2) specific crossings where there was a
17 choice between large culverts or a span crossing.
18 Twenty point something (20.?) is one (1) of them and I
19 think forty-three point something (43.?) is the other.

20 Both locations are not fish bearing
21 crossings.

22 MR. DEAN HOLMAN: Thank you. That was
23 all I had.

24 CO-FACILITATOR BARB SWEAZEY: Parks
25 Canada...?

1 MR. GILLES LUSSIER: Gilles Lussier.

2 This question relates to the potential for washout.

3 We touched on it earlier. As we approach kilometre 38
4 in one (1) of those constrictions there is an earlier
5 submitted cross-section that shows the use of gabion
6 for armouring.

7 And I just was hoping the propoment --
8 proponent could describe the design selection for the
9 armouring there, whether this is just preliminary in
10 nature and -- and if there's still a armouring
11 selection to come at those choke points?

12

13 (BRIEF PAUSE)

14

15 MR. ERNIE KRAGT: Ernie Kragt,
16 Allnorth. Yeah, we spoke earlier about this. The use
17 of gabions is one (1) of the options, but we're not
18 necessarily considering that as our prime option. Use
19 of natural large rocks is -- is the preference.

20 So I'm not too sure exactly where that
21 came from, if it was just a concept or -- or not, but
22 that's our approach to -- to stabilizing the -- the
23 bank.

24 MR. GILLES LUSSIER: A question
25 regarding the temporary major crossings. Just because

1 depending on the potential construction delays, some
2 of those temporary crossings might be in for a longer
3 duration than -- than desired at times. What return
4 period might be selected for the -- the temporary
5 crossings, temporary major crossings?

6 And will there be a depiction of these
7 temporary crossings on the general placement plans as
8 well?

9 MR. BRAD MAJOR: Brad Major, with
10 Allnorth. I would think to -- at this stage we
11 definitely haven't gotten to that level of detail as
12 to -- as into the actual planning of construction.
13 If, you know, if a temporary crossing structure would
14 be required more -- more than one (1) season.

15 That would almost have to be -- that
16 would definitely have to be a case by case basis. So
17 the -- the longer the season, obviously the longer the
18 return period, especially if it's on a larger crossing
19 where you're expecting trouble with ice flows and you
20 want to make sure that it's going to survive, you
21 know, the -- the freshette.

22 You know, so all those considerations
23 would -- would need to be considered at the time of
24 construction. As to whether we're putting them on the
25 plan, at this time I don't think we have plans to do

1 that, but we certainly can.

2

3 (BRIEF PAUSE)

4

5 MR. GILLES LUSSIER: Gilles Lussier,
6 with Parks. So just for clarification, would the
7 Proponent be able to provide, just to -- to assess the
8 potential for risk, a quick table, for example, if a
9 major temporary crossing is going to be in during the
10 -- during one (1) summer season, for example, what
11 return period might selected for that versus -- you
12 know, obviously, if it was a temporary for winter it
13 would be a different story all together.

14 If there would just be some rules of
15 thumb that you intend to apply?

16 MR. BRAD MAJOR: Brad Major, with
17 Allnorth. And, yes, it's something we can do.

18 CO-FACILITATOR BARB SWEAZEY: Stefan,
19 from Stratos. We'll note that as an undertaking then.

20

21 --- UNDERTAKING NO. 31: CanZinc will provide
22 information on measures to
23 restore riparian zones and
24 areas around crossings
25 affected by the

1 development

2

3 CO-FACILITATOR BARB SWEAZEY: Parks,
4 do you have any more questions? All good? DFO, did
5 you have any other questions in this category or you
6 were finished?

7 MS. JULIE MARENTETTE: Julie
8 Marentette. We're finished.

9 CO-FACILITATOR BARB SWEAZEY: You're
10 done. Okay, done. Cesar...? Review Board and Knight
11 Piesold...?

12 MR. TOBY PERKINS: Toby Perkins.
13 Earlier this morning GNWT asked about suspended
14 sediment monitoring at some crossings upstream and
15 downstream. Is this one (1) of the ones that was
16 included in that list and those commitment to monitor
17 suspended sediment at that location?

18 MR. DAVID HARPLEY: Dave Harpley. It
19 was the crossing, yes.

20

21 (BRIEF PAUSE)

22

23 CO-FACILITATOR BARB SWEAZEY: Okay,
24 check. That first bullet on our agenda, we're done.
25 Okay. So we are going to move on to the next category

1 on our agenda, which are several different components
2 related to the project description.

3 And I'm just looking to folks on the --
4 Sachi, can I just ask you? Do you want to start with
5 permafrost and thaw sensitive terrain or do you want
6 to do the whole bundle?

7 MS. SACHI DE SOUZA: Let's start with
8 -- let's start with -- pull up the whole bundle, and
9 maybe let's start with taking questions about karst.

10 CO-FACILITATOR BARB SWEAZEY:
11 Questions about karst, okay. So we're suggesting that
12 -- or the Review Board staff's suggesting that perhaps
13 we'll start our questions in the category of karst.

14 Are there folks who have questions on
15 that? Okay, go ahead, James.

16 MR. JAMES HALEY: Thank you. It's
17 James Haley, Knight Piesold. The first ques --
18 question related to karst. So just, I guess, looking
19 at karst in terms of a regional setting, focusing
20 really in the area of kilometre 55 to 60, close to the
21 ar -- in the ar -- areas where the Polje realignment
22 occurred.

23 There's been some discussion about the
24 solution features -- the -- the features close --
25 close to the alignment and whe -- the significance of

1 them. And I -- I guess a relatively minor
2 significance is being attributed to these features --
3 features based on the size and, also, the local
4 geology, the presence of dolostone as opposed to
5 limestone.

6 And I guess I want to tal -- jus --
7 just backtrack a little bit and talk -- look -- talk
8 about that in -- in the context of how things are
9 changing laterally between where the alignment is and
10 where the Poljes are. I'm trying to get a better
11 understanding as to what's changing over a distance of
12 say 300 metres or so to make the terrain in areas of
13 Polje -- of the Poljes so susceptible to dissolution
14 relative to the alignment.

15 So perhaps some -- can -- we're
16 starting to what's happening laterally in terms of
17 geology and hydrogeology to explain that -- these --
18 natural variation.

19

20 (BRIEF PAUSE)

21

22 MR. KEVIN JONES: Kevin Jones, Tetra
23 Tech. I'm not sure we understand what the reason is
24 for the difference to the south versus where the road
25 alignment is. The -- the thing being, it's different.

1 There's -- the -- the behaviour is quite unique from
2 where the poljes are to where the road alignment is.
3 So we could -- I -- I don't know what knowing what the
4 geology does for us given the historic behaviour of
5 where the road alignment is currently suggested to be,
6 what that helps with.

7

8 (BRIEF PAUSE)

9

10 MR. JAMES HALEY: Yeah, James Haley,
11 Knight Piesold. There's quite a lot of discussion in
12 the documents about large scale instability and some
13 of the mech -- mechanisms behind that. And some --
14 one (1) of the discussions is really about one (1) --
15 one (1) of the mechanisms for large scale instability
16 is being the collapse of karst according to some of
17 the information. And that causes retroga --
18 retrogressive instability.

19 So -- and -- so -- also on the terr --
20 on the terrain maps some of those areas have been
21 highlighted. So in terms -- in terms of the -- the
22 potential effect it's really the terrain instability
23 related to collapse of karst which is the concern.

24

25 (BRIEF PAUSE)

1 MR. KEVIN JONES: Kevin Jones, Tetra
2 Tech. I think -- I think collapse is a -- a little
3 bit of a alarmist comment, if you will. What we've
4 done, we're not undertaking a science project here.
5 We're undertaking a -- trying to put a road in the
6 best location.

7 And I think what we've done is put the
8 road in the best location. And we've done historic
9 evaluations of the appearance or the growth or
10 whatever of karst features within that area, and
11 avoided any places where we see significant changes in
12 a reasonable length of time. So I -- I guess that's
13 all I can say.

14 MS. SACHI DE SOUZA: Sachi, with the
15 Board. Kevin, earlier you used the words to describe
16 the terrain that's about 300 to 600 metres away from
17 the road alignment as 'unique with respect to karst'.
18 And I guess the confusion -- and we recognize the road
19 was realigned for the winter realignment to avoid some
20 of these -- these karst features given their -- what
21 you called 'unique characteristics'. And those, from
22 what you've descri -- described, are the surface or
23 the observed features right now to date from being on
24 the ground or seeing it from aerial photographs.

25 The question here is: Those

1 realignments were made for a number of reasons for the
2 winter road. The question is why is it considered
3 unique 300 metres away from the road? And why are
4 those not, in your opinion, the same characteristics
5 beneath the road right now?

6 MR. KEVIN JONES: Kevin Jones, Tetra
7 Tech. Well, my -- my comment would be if the
8 conditions were the same where we have the road
9 locating -- located currently, would we not expect to
10 have seen the same thing as we do 300 metres away?
11 That's what we're basing everything on the alignment
12 of. We could -- we could study karst 2 kilometres
13 away, but it's really of no -- it's of no importance
14 for the road.

15 I -- I am under -- I understand --
16 under -- you know, being very comfortable with the
17 geology because it certainly leads you to an
18 understanding of what has happened, and the reasons
19 why it has happened, but also visual observation of
20 what has been there for hundreds and hundreds and
21 hundreds of years is the best indication of how the
22 ground is behaving, and -- and is going to behave in
23 the future.

24

25 (BRIEF PAUSE)

1 MR. JAMES HALEY: James Haley here. I
2 just wonder if there's any information which can be
3 gleaned from published geology maps about any lateral
4 variations in geology which can explain the
5 susceptibility. And I just suppose it would be very
6 useful to have a basic view geological model of a
7 cross section, if you like, which showed from -- from
8 the road alignment down to the poljes to understand
9 where the majority changes and the hydrogeological
10 conditions. Just a very high level overview to
11 explain -- which might help to explain why the fishes
12 have developed where they have.

13 MR. KEVIN JONES: Kevin Jones, Tetra
14 Tech. I guess my -- my question is what -- what does
15 that do for us? And -- and barring the fact that the
16 official geology mapping and everything else for this
17 area is relatively limited and very coarse, I don't
18 think that -- you know, we could hunt and hunt and
19 hunt, and I don't think we're going to find anything
20 in there.

21 So again I'm not sure other than
22 scientific interest how this helps us put the road in
23 the best spot.

24 MR. ALAN TAYLOR: It's Alan Taylor
25 here. There's obviously not too many geologists in

1 the room here. I'm a geologist, and I'm very familiar
2 with the Ram Plateau, and what's been studied there
3 for the karst. And basically in a nutshell it's an
4 upwelling of carbonate rocks with the Nahanni
5 formation being a spongy limestone unit being
6 susceptible to the karstification.

7 But karst isn't always con -- not just
8 controlled by -- just by the lithologies. It's also
9 controlled by structures. And along the upwelling of
10 this broad Ram Plateau structure are foliations in the
11 rock joint plains which are formed by the upwelling,
12 and those are preferred aquifers that the water flows
13 along.

14 And this is what the poljes line up
15 on, is on the upwelling of that geology. And so the
16 road where we have it is more on the planks of that
17 upwelling, and that's why we're -- our preference
18 there.

19 And if you're looking for geology maps
20 there's not too many, but Morrow and Cook (phonetic)
21 have done, I forget what year it is, they basically
22 cover that region. And I'm trying to think of the
23 name of the professor from -- Derek Ford (phonetic)
24 from McMaster (phonetic) did a lot of studies in there
25 on that.

1 (BRIEF PAUSE)

2

3 CO-FACILITATOR BARB SWEAZEY: I'm just
4 going to ask the Review Board, do you need a few more
5 minutes or can we move onto another -- another set of
6 questions? You need a few more minutes.

7 So would you like us to turn to another
8 question and then we'll come back? Okay. Are there
9 other folks in the room that have questions related to
10 perhaps permafrost and frost sensitive terrain or
11 slides. Geohazards is another one. Maybe those are
12 good ones to start with.

13 GNWT, do you have any questions?

14 MR. RICK WALBOURNE: Rick Walbourne,
15 ENR. Another -- another question of such. I was just
16 -- well, I guess a question for Canadian Zinc. Is
17 there any anticipation for any kind of permafrost
18 monitoring plan to be established further down the
19 road? Again, it's maybe more of a commitment at this
20 time of another plan that might be kind of firmed up
21 through the permitting process.

22 And specifically what I'm thinking
23 about was something that would include monitoring of
24 active layer near -- and near surface permafrost
25 impacts from aggregate sources, the all-weather

1 highway, and watercourse crossings.

2 And I know we've touched briefly on
3 permafrost, whether or not it might be in certain
4 locations. Obviously the monitoring if you see -- if
5 you don't see any then there's not a lot of work, but
6 that would include specifics on the frequency or -- or
7 how it would be monitored and probably include, you
8 know, some type of adaptive management if permafrost
9 should be encountered.

10 So at this point I guess I'm looking
11 for if Canadian Zinc will commit to, you know,
12 formalizing some sort of permafrost monitoring plan.
13 I -- I think a commitment in the EA might be
14 sufficient in that regard. I'm just curious to see
15 what Canadian Zinc's thoughts are in that regard.
16 Thank you.

17

18 (BRIEF PAUSE)

19

20 MR. KEVIN JONES: Kevin Jones, Tetra
21 Tech. Certainly what the plan is -- is detailed
22 investigation to determine the extent of permafrost
23 along the road alignment. We -- we certainly expect
24 some. We're in discontinuous permafrost region. It's
25 a relatively warm permafrost. And once the details on

1 where it is, and what it is, and how -- its
2 characteristics, and what would be the predicted
3 impact on the road itself, certainly monitoring would
4 be considered.

5 I would, you know, as a -- as a
6 geotechnical engineer and thirty-five (35) years of
7 doing nothing but permafrost, that would be an
8 absolutely normal thing to do. There's very few roads
9 built in the arctic around here that -- that don't
10 have monitoring and it would certainly be logical,
11 likely a series of thermistor cables that, you know,
12 could be either -- could even be data logged for
13 continuous recovery of data.

14 And certainly with -- with that kind of
15 a monitoring program you will see changes in the
16 active layer, potential warming, if there is any, and
17 all of those things. So it would be a normal part of
18 design for a road in this kind terrain for sure.

19 CO-FACILITATOR STEFAN REINECKE:
20 Stefan -- Stefan Reinecke, from Stratos. I was going
21 to move on to a commitment. But did GNWT want to
22 respond?

23 MR. RICK WALBOURNE: Rick Walbourne,
24 ENR. No, it sound like we're on the same page there.
25 Whether or not that's a commitment, it sounds like

1 something that's pretty standard for, as I said, road
2 construction in this neck of the woods, so I -- I
3 think we're on the same page.

4 If you need to formalize some wording
5 around a commitment, I think that'll be fine.

6 CO-FACILITATOR STEFAN REINECKE: We
7 won't make the decision on that. I leave it to others
8 to weigh in on whether they would like to see a
9 commitment on this.

10 MR. KEVIN JONES: Kevin Jones, Tetra
11 Tech. I'll -- I'll throw one (1) other thing out
12 there. As geotechnical engineers and road designs in
13 -- in the arctic here, it would be our preference, and
14 it has been our preference on numerous projects, for
15 the GNWT to have instrumentation. And we tend to want
16 a lot more than you guys do, frankly, so we would be
17 pushing for a significant program.

18 CO-FACILITATOR BARB SWEAZEY: So just
19 to test, is it helpful to articulate this as a
20 commitment in the record or is it something that's
21 just a given? It's a given. Would you -- do you want
22 it to be recorded?

23 MR. RICK WALBOURNE: Rick Walbourne,
24 ENR. I'd just like to go back a little bit. I wasn't
25 sure if Canadian Zinc were asking GNWT to establish a

1 permafrost monitoring -- no, okay. I wasn't ready to
2 sign anyone up for that right now. It's not really my
3 area.

4 Yeah, like, I'm -- I feel like it's
5 something that's going to be done anyway. So if
6 there's no issue, I think we can put that as a
7 commitment very broadly, that Canadian Zinc will
8 perform some type of permafrost monitoring plan. We
9 have the commitment. Further down the road we can
10 finalize what that looks like. But I think that very
11 -- that very basic commitment I'd be fine with.
12 Canadian Zinc seems to be fine with that, as well.

13

14 --- COMMITMENT NO. 10: Canadian Zinc will perform
15 some type of permafrost
16 monitoring plan

17

18 CO-FACILITATOR BARB SWEAZEY: Great.
19 Thank you very much. Yes, Alan.

20 MR. ALAN EHRLICH: Hi. It's Alan
21 Ehrlich, for the Review Board. I'm not as comfortable
22 with GNWT telling us what Canadian Zinc is fine with.
23 Canadian Zinc, are you okay with making that into a
24 commitment?

25 CO-FACILITATOR BARB SWEAZEY: I got --

1 I got a nod and 'yes'. Sorry, it was unspoken. Thank
2 you.

3 CO-FACILITATOR STEFAN REINECKE:
4 Stefan Reineke, with Stratos. Could GNWT just clarify
5 for the record the rationale for establishing
6 permafrost monitoring. It obviously has some
7 structural value, but if you could clarify that in
8 terms of significance of impacts.

9 MR. RICK WALBOURNE: Rick Walbourne,
10 ENR. Sure. From us regarding significance of
11 impacts, again it would lead to slumping, excuse me,
12 not as much engineering from where I'm coming from,
13 it's more of water quality issue. Permafrost lead to
14 slumping, high TSS. There are other parameters
15 associated with permafrost that could affect the water
16 bodies in the area.

17 So we're looking at more from a -- me
18 personally from a water quality issue, but I'm sure
19 there are other people that have other reasons
20 structurally and -- and risk from the engineering
21 side, which is probably one (1) of the major reasons,
22 I would think, that Canadian Zinc would like to look
23 at it, as well.

24 CO-FACILITATOR BARB SWEAZEY: Great.
25 Thank you. Who else has a question that they would

1 like to ask? No, I think we can -- we're going to
2 kind of just go on the wild side and open it up a
3 little bit.

4 Are we going to go back to karst?

5 Pardon me? We put karst to bed for the moment?

6 Okay. Can we have Parks Canada ask a
7 question? Do you have a permafrost question?

8 MS. ALLISON STODDART: Yes.

9 CO-FACILITATOR BARB SWEAZEY: Okay.
10 Yes?

11 MS. ALLISON STODDART: Yes.

12 CO-FACILITATOR BARB SWEAZEY: Thank
13 you. Go ahead.

14 MR. JAMES HALEY: James Haley, Knight
15 Piesold. Okay. So in terms of the permafrost
16 considerations, and I -- I guess I'm integrating this
17 in with the findings of the terrain mapping now.
18 Basically the -- the area of -- the central portion of
19 the alignment run to the east part, so from about
20 kilometre 50 right to the end to about kilometre 100
21 and -- 187, I guess.

22 Those -- those fine-grain soils are --
23 are relatively extensive in those areas glacial
24 egustrian (phonetic) deposits, flood plain deposits,
25 organic soils, and also the glacial till deposits are

1 also likely fine-grained.

2 In the studies which talk about the --
3 the permafrost occurrences it's kind of noted that
4 permafrost is much more prevalent in the finer grained
5 soil. There was also a higher chances of getting
6 segregated ground ice. And in terms of mitigation
7 those conditions may lead to the need for additional
8 fill and also -- and for -- for -- perhaps particular
9 fill requirements in -- in terms of thaw stable fill.

10 So the -- the environmental --
11 potential environmental impact here is the amount of
12 the -- the foot -- the potential footprint of borrows
13 with -- with all these
14 materials coming from the borrow pits. And so I guess
15 -- I guess what I'm -- is the level of uncertainty and
16 to the extent to which thaw stable fill is going to be
17 required to mitigate permafrost degradation. And also
18 in terms of suitability of material and the
19 implications of that in terms of the -- the borrow
20 areas.

21 So I guess -- I guess with that -- with
22 that in mind is it possible you can then describe the
23 -- I guess the broad assumptions that are being made
24 at this stage in terms of the preliminary borrow area
25 assessment and the effects assessment with respect to

1 the anticipated extent of thaw stable fill that will
2 be needed.

3

4 (BRIEF PAUSE)

5

6 MR. KEVIN JONES: As -- as far as I
7 understand it there is --

8 CO-FACILITATOR BARB SWEAZEY: Could
9 you just state your name, just for the --

10 MR. KEVIN JONES: Oh, sorry.

11 CO-FACILITATOR BARB SWEAZEY: --
12 sorry, Kevin, to interrupt.

13 MR. KEVIN JONES: Sorry. Yeah, Kev --
14 Kevin Jones, Tetra Tech. From a thaw stable borrow
15 perspective I believe that there is well in excess of
16 the volumes required from -- from the identified. In
17 fact, many surplus borrow areas with good thaw stable
18 borrow fill.

19 So I don't think there is a shortage,
20 and I think Ernie would agree, of that material. So
21 certainly it -- it is required. You are right, James,
22 for embankment fill materials in the permafrost areas.
23 I would say it's ideally wanted everywhere, frankly,
24 not just in the permafrost regions though.

25 MR. JAMES HALEY: James Haley again.

1 Just looking at the -- going to the question of
2 suitability again. It was just -- was it --

3

4 (BRIEF PAUSE)

5

6 MR. JAMES HALEY: -- it's ta -- it's
7 table 14, sorry, in the Allnorth report. It gives
8 basic descriptions of the materials in the borrow
9 areas. And they use descriptions like 'fine sand,
10 silty sand, and sandy till'.

11 And so just a -- just a general
12 question is: Do those descriptions seem as if they'd
13 be potentially suitable for thaw stable fill?

14

15 (BRIEF PAUSE)

16

17 MR. DAVID HARPLEY: It's Dave Harpley
18 here. While my colleagues are compiling an answer,
19 something else occurs to me which may be relevant, and
20 that is that we specifically routed the road alignment
21 in a location to take advantage of more stable ground.

22 I'm thinking of the section from
23 Nahanni Butte up the toe of the front range to
24 Grainger Gap, and I'm also thinking of the preferred
25 alignment from Grainger Gap which heads north before

1 it crosses the valley to Wolverine Pass. Both of
2 those locations we've tried to route the road in
3 ground which we think is a lot more stable than
4 anywhere else and, in fact, may be on gravelly material
5 that historically came off those slopes.

6 So as I understand it from the
7 engineering team here, the first approach in terms of
8 borrow would be if the material is available right on
9 the road alignment, or right next to it, then that's
10 the first material that would be used. And then we'd
11 only go to borrows after that for any deficit.

12 So it's -- it's not just that we have
13 the ample borrows that have been identified and -- and
14 almost as many reserve borrows. You could argue that
15 the identified borrows themselves are backup because
16 we're -- we're intending to use material in the -- in
17 the right of way as much as possible first.

18 CO-FACILITATOR BARB SWEAZEY: Barb
19 here. CanZinc, is there anything else to add to the -
20 - to the question?

21

22 (BRIEF PAUSE)

23

24 MR. DAVID HARPLEY: It's Dave Harpley.
25 I -- I guess we may need to confirm what the question

1 actually is. I -- I think what the question is is
2 that all of the borrows are identified as silty sand
3 material, and therefore may not be suitable material
4 for borrows. Is that correct?

5 MR. JAMES HALEY: James Harley here.
6 I -- I guess there's two (2) components to it really.
7 Is -- the first thing I was really getting at was what
8 the -- as it stands what assumptions really are being
9 made in terms of the -- the extent of the -- perhaps
10 the alignment where -- where you're looking to --
11 where you anticipate using thaw stable fill.

12 Perhaps we -- where you're trying to
13 get -- so that we can understand what the potential
14 effect is because -- because it requires an additional
15 amount of fill over and above what perhaps you do
16 normally. So it was additional environmental effect,
17 was the first component.

18 And then the -- I guess what I'm also
19 getting at is the -- the -- there should be an
20 assumption in the borrow assessment for this material.
21 We're trying to get an understanding of that, and
22 there -- those assumptions really should take account
23 of a level of uncertainty.

24 And the level of uncertainty is related
25 to the length of the alignment which has been fill

1 truthed, which is probably about 20 percent of this
2 portion in terms of take -- putting holes in the
3 ground and getting samples out. And also uncertainty
4 about the nature of the -- between the borrows in
5 terms of suitability for thaw stable fill.

6 CO-FACILITATOR BARB SWEAZEY: It's
7 Barb here. Perhaps we can divide that into two (2)
8 questions. Let -- maybe just deal with the
9 assumptions -- the first set of assumptions question
10 first. Can we start there? And is that question
11 clear for you to answer?

12

13 (BRIEF PAUSE)

14

15 MR. KEVIN JONES: I -- I -- Kevin
16 Jones, Tetra Tech. I -- I'm not sure I -- I 100
17 percent understand James's point. He -- he asked
18 whether we needed thaw stable fill to build the road
19 embankment out of, and ideally you would probably
20 rather not use thaw unstable fill, i.e., something
21 that has more silt in it.

22 However, having said that there is a --
23 there's a benefit to using that material as well
24 because it is much better from a thermal perspective
25 if you're using it in a place where you're putting it

1 on permafrost because anything that has a higher
2 moisture content is much better at protecting the
3 underlying permafrost from thaw below your embankment
4 fill.

5 So it -- it's kind of a -- it's a
6 tradeoff, for -- for one. I've built roads all around
7 the world out of material with 30/40 percent silt in
8 permafrost terrain and they work okay. Drainage is
9 key, without question.

10 Embankment shape is key, without
11 question, in permafrost regions to avoid -- the -- the
12 worst thing is ponding of water. Much worse than bad
13 fill materials, or -- or anything else, so. So I
14 don't know, just saying those comments.

15 You know, ideally, yeah, nice clean
16 gravel would be lovely to build a road of. It's
17 easier to work with. Is it absolutely required? No.

18 MR. JAMES HALEY: Yeah, I guess really
19 where -- where I -- where I was trying to go, is it --
20 there should be an assumption, even if it's a very
21 high level assumption in terms of the bor -- very
22 preliminary borrow assessment which -- which feeds
23 into the effects assessment.

24 You know, what -- what additional
25 requirement of fill material is a -- in terms of

1 permafrost degradation mitigation? A very high level
2 sort of -- sort of estimate which feeds into the
3 effects of -- in terms of -- because it -- because it
4 -- the effect is you take more material out of the
5 borrower. That's -- that's the advi -- that's the
6 effect. What -- what's the assumption as to what's
7 the additional amount -- amount of material coming our
8 of those borrowers is to mitigate the permafrost
9 degradation.

10 So the thought is that very assumption
11 is based on the -- the level of the information
12 available. So you -- you go with more conservative
13 information -- assumptions. If you've got less
14 information then -- then reduce that for a time.

15

16 (BRIEF PAUSE)

17

18 CO-FACILITATOR STEFAN REINECKE:

19 Stefan, from Stratos here. Was the question clear for
20 Canadian Zinc? Yeah.

21 MR. KEVIN JONES: Kevin Jones, Tetra
22 Tech. I would say it's not clear and I don't want to
23 necessarily put words into James' mouth, but are you
24 saying that you're -- you're worried about excessive
25 permafrost degradation, thereby leading to the

1 requirement for a lot more material to put in thicker
2 embankments to lead to less degradation and then we're
3 not going to have enough suitable material?

4 MR. JAMES HALEY: I think the -- the
5 effects assessment needs to have some allowance for
6 the additional fill requirement for mitigation of
7 permafrost degradation. If -- if -- feel it's going
8 to be required.

9 And I -- I think -- because it's just
10 not clear what -- what assumptions are feeding into --
11 to the effects -- effects assessment at the moment in
12 that respect.

13 MS. SACHI DE SOUZA: Sachi, with the
14 Board. If I've got this correctly, the intent in this
15 130 kilometre section is you've got permafrost and you
16 want to protect against it degrading and we've all
17 agreed to that.

18 In order to limit the amount of
19 degradation and ensure the road is stable during the
20 duration of its life, you'll be placing thaw-stable
21 fill. The concern here is that an estimate of how
22 much thaw-stable fill -- there's a -- there's some
23 uncertainty about the amount of material that's going
24 to be needed.

25 And with that, given uncertainty, there

1 might be a bigger request or a bigger need for
2 materials from some of the borrow areas that do have
3 the thaw-stable fill. With that in mind, the
4 footprint in some of those borrow areas might be a lot
5 bigger and then the environmental effects associated
6 with those borrow areas say to water quality from
7 building a bigger borrow pit from sediment --
8 sedimentation or erosion potential, or the fact that a
9 larger borrow area has a bigger habitat footprint and
10 maybe you're getting into the grizzly bear area that
11 we were talking about two (2) days ago.

12 So the concern is, if there needs to be
13 more thaw-stable fill, is there access to it, first
14 off? And I think you said there's lots of locations.
15 But with that in mind, have the environmental effects
16 of making those locations bigger been considered at
17 this point in time?

18

19 (BRIEF PAUSE)

20

21 MR. DAVID HARPLEY: It's Dave Harpley.
22 So this is what I understand. And my colleagues can
23 come jump in if I misspeak here. But my understanding
24 here is that we're in discontinuous permafrost. We --
25 we know that we may encounter some permafrost in

1 certain locations over the section you reference, but
2 we don't anticipate that we're going to encounter it
3 predominantly just because of the location of the
4 alignment with respect to south and north and those
5 kind of slope issues.

6 Having said that, again, we feel the
7 definition of borrow sources is such that we're not
8 going to be restricted in terms of the amount of
9 volume available. If your question is implying that
10 we may need to enlarge the borrow sources beyond the
11 areas that we've already defined, no.

12 The areas that we've already defined
13 more than encapsulate the excavation that would likely
14 occur for the borrow. In fact, we're expecting that
15 we will not need to utilize the full number of sources
16 that we've identified.

17

18 (BRIEF PAUSE)

19

20 CO-FACILITATOR BARB SWEAZEY: Okay.
21 So there may be a followup question, but at the
22 moment, we'll leave it and we'll move on. Next --
23 next question. Will that be it for permafrost? Is
24 there any other permafrost-related questions in the
25 room? We can always come back to it, as well.

1 I think, Parks Canada, you have a
2 question you would like to start with?

3 MS. ALLISON STODDART: Allison
4 Stoddart, with Parks Canada. So this question is with
5 regards to -- I guess it's under the slides and other
6 geohazards bullet, but it's with regards to avalanche.

7 So the Proponent provided us with the
8 Alpine Solutions report that was done for the winter
9 road alignment. And our question is: That -- because
10 that was done for the winter road alignment, are there
11 any other areas of the all-season road alignment that
12 need further assessment regarding the risk of
13 avalanche?

14 MR. DAVID HARPLEY: It's Dave Harpley.
15 When we hired Alpine -- is it resources? I'm not sure
16 what the full name is, but it's certainly Alpine
17 something. To do their study, they were basically
18 given all the relevant material of the project and the
19 road and given free range to basically determine what
20 their scope needed to be.

21 The looked at all the material and in
22 there, had a couple of recognizance, covered sections
23 of the road they felt were appropriate and honed in on
24 the section that they reported on, so their scope
25 wasn't limited.

1 If there were other sections of the
2 road other than the pieces they reported on that
3 warranted their attention, they would have addressed
4 them, so I have to assume that there aren't any of
5 those.

6 MS. ALLISON STODDART: Allison
7 Stoddart, Parks Canada. So just to be clear, the
8 company that did this assessment, then, had the
9 current all-season road alignment when they were doing
10 their assessment?

11 MR. DAVID HARPLEY: Dave Harpley. No,
12 they did not.

13 MS. ALLISON STODDART: Allison
14 Stoddart. So -- so just to be clear, they -- they
15 didn't know the current route alignment. They were --
16 they were doing it based on the winter road alignment?

17 MR. DAVID HARPLEY: Dave Harpley.
18 That's correct.

19 MS. ALLISON STODDART: Allison
20 Stoddart. So then again, just to be clear, there
21 aren't any other segments that perhaps the company
22 wasn't aware was going to become a road that need
23 further assessment?

24 MR. DAVID HARPLEY: Dave Harpley. The
25 only significant deviation we -- that has occurred

1 from the permanent winter road alignment to the
2 proposed all-season road alignment is to shift the
3 road to the south side of Sundog between kilometre 24
4 and 29. And that's actually avoiding some of the more
5 significant avalanche paths that were identified. So
6 I don't really see that there's an issue between
7 winter and all-season in terms of that -- that
8 assessment.

9

10 (BRIEF PAUSE)

11

12 CO-FACILITATOR BARB SWEAZEY: Parks
13 Canada, Sachi has a -- a question. Do you want me to
14 go to her for a minute while you're looking through
15 your -- your maps?

16 MS. ALLISON STODDART: Sure, that --
17 that's fine. Thanks.

18 CO-FACILITATOR BARB SWEAZEY: Okay.

19 MS. SACHI DE SOUZA: Sachi, with the
20 Board. In the Alpine Solutions report, they
21 identified, as you mentioned, that 40 kilometre
22 section from the mine to Cat Camp as high avalanche
23 risk areas. They also identified an area east of the
24 Grainger Gap as being a high avalanche risk area. And
25 in the Alpine Solutions report, at that time, they

1 considered the winter road alignment far enough away
2 to consider the avalanche risks to not be a big
3 concern for them.

4 The realignment that has been proposed
5 that's also rather major, in addition to Sundog Creek,
6 is the section from kilometre 104 to 124, which now
7 puts the road closer, if not at the toe, of the east
8 side of the Grainger Gap range. Given that -- this
9 proximity, it appears there may be some avalanche risk
10 for this new realigned section.

11 Can CanZinc -- would CanZinc be willing
12 to do an avalanche assessment in this new realigned
13 area for this 20 kilometre section? Or the section
14 that's very close to this east side of Grainger Gap.

15 MR. DAVID HARPLEY: It's Dave Harpley.
16 I'd need to refresh my memory of if indeed there was
17 an avalanche path identified for the east side of
18 Grainger Gap, which is what you're saying. But if
19 there was, then it's on the other side of the range
20 from the realignment you've just described.

21 MS. SACHI DE SOUZA: Sachi, with the
22 Board. I might be getting my easts and wests mixed up
23 here. But if the realigned section, regardless of --
24 of what that says right now, there is a realigned
25 section that's at the toe of a mountain slope here

1 from -- near kilometre 120. And it's important to
2 understand risks to the road from avalanches.

3 And would CanZinc please do an
4 avalanche assessment for this realigned section?

5

6 (BRIEF PAUSE)

7

8 CO-FACILITATOR BARB SWEAZEY: Are you
9 guy -- Parks Canada, did you want to enter in at this
10 time? Are you ready to enter in? Yeah? Okay. M-hm.
11 That's okay.

12 MS. ALLISON STODDART: Allison
13 Stoddart, with Parks Canada. So essentially what
14 we're looking for is whether or not there's been an
15 avalanche assessment done for those realignments that
16 are different from the winter road alignment.

17 And we'll give you, you know, one (1)
18 concerned area, of course, is the area along Sundog,
19 which I think has been fully assessed up to kilometre
20 35 1/2. However, from what we understand, the road
21 will now be on the south side right up against the
22 slope, and it does not look from the maps that we're
23 looking at that the assessment has gone beyond, I
24 guess thirty (30) -- thirty-five and a half (35 1/2).

25 So that's just an example of -- of an

1 area that -- that perhaps needs some further
2 assessment. So the question is, you know, are -- are
3 the areas that had been realigned, have they been
4 assessed for avalanche risk?

5 CO-FACILITATOR BARB SWEAZEY:

6 CanZinc...? They're sort of -- I guess -- are -- are
7 we talking about two (2) different chunks? Like,
8 Parks Canada, it seemed like you were in the thirty-
9 five (35) area, and the Review Board was in a
10 different area?

11 MS. ALLISON STODDART: Yeah, yeah.

12 CO-FACILITATOR BARB SWEAZEY: So
13 there's a couple of areas that are realigned, and
14 we're ask --

15 MS. ALLISON STODDART: Totally realign
16 --

17 CO-FACILITATOR BARB SWEAZEY: Okay.

18 MS. ALLISON STODDART: Yeah.

19 CO-FACILITATOR BARB SWEAZEY:

20 CanZinc...?

21 MR. DAVID HARPLEY: I'll just make a
22 comment here. I'm not going to make a commitment one
23 (1) way or the other at this point in time until we've
24 looked at this further.

25 But I would suggest that the reason the

1 avalanche paths, quote, "stop" in the -- in the map is
2 because the consultant basically decided that there
3 wasn't a risk beyond that location.

4 MS. ALLISON STODDART: Allison
5 Stoddart, Parks Canada. So it's my understanding that
6 they had the information on where the winter road was
7 aligned, and perhaps they didn't see a risk to the
8 winter road alignment in their analysis. But if they
9 had the information of the new alignment, that -- that
10 perhaps could be -- they may have a different
11 perspective on that. That -- that's just looking at
12 the maps and the -- the grades beside the road in some
13 areas, that -- that's a possibility.

14 I -- I have another question associated
15 with avalanche, and I -- so I might as well just go
16 ahead. In terms of the -- the report, the Alpine
17 Solutions's report, they have outlined a suite of
18 recommendations. And so our question is whether or
19 not Canadian Zinc is committed to following those
20 recommendations?

21 I can go through the -- the main
22 recommendations here. So first is:

23 "Road layout on the attached
24 avalanche hazard map should be
25 reviewed and confirmed once the road

1 alignment is finalized."

2 The second is:

3 "A helicopter-based reconnaissance
4 should be completed in order to
5 refine avalanche path locations and
6 hazard areas. The helicopter-based
7 access would allow for ground-based
8 assessments in those selected areas.
9 This reconnaissance could be
10 completed during summer or winter
11 seasons."

12 The third:

13 "If a more detailed risk assessment
14 is required, a linier risk analysis
15 should be undertaken. A typical
16 method which can be used to compare
17 with other industrial roads is the
18 avalanche hazard index."

19 Fourth is:

20 "An avalanche hazard management plan
21 should be prepared."

22 In this case it said "for the Prairie
23 Creek winter road." However, this would hopefully
24 apply as well to the all-season road alignment.

25 "The plan should specify all

1 measures employed to reduce risk to
2 vehicles and occupants, and in
3 addition, the plan should include an
4 emergency response plan."

5 And the final one is something that I
6 think Sachi has already brought up:

7 "If structures such as bridges are
8 to be installed at creek or river
9 crossings near avalanche paths along
10 the mountain segment of the road, an
11 assessment of potential avalanche
12 impacts should be undertaken."

13 We would also like to include in that
14 that any construction camps be included in that
15 assessment, as well. So our -- I know that's a long
16 list. That's directly from the report, so it -- it
17 doesn't have to be documented, obviously. But we just
18 want to understand whether or not Canadian Zinc is
19 committing to those com -- those recommendations in
20 the report.

21 CO-FACILITATOR STEFAN REINECKE:
22 Stefan, from Stratos. So just a point of information.
23 We do already have a commitment on that last piece
24 related to both the crossings and the camps.

25 MR. DAVID HARPLEY: It's Dave Harpley.

1 And we're already on record as committing to follow
2 through on the recommendations of the Alpine report.

3

4 (BRIEF PAUSE)

5

6 CO-FACILITATOR STEFAN REINECKE:

7 Stefan, from Stratos. Dave, could you clarify? Was
8 that within this meeting or previously?

9 MR. DAVID HARPLEY: Dave Harpley.

10 Previously.

11

12 (BRIEF PAUSE)

13

14 MS. ALLISON STODDART: Allison

15 Stoddart. So I'm just wondering if -- if we should

16 put in as a commitment as well or an undertaking to

17 identify whether or not additional avalanche risk

18 assessments need to be done on any alignments that are

19 outside of the winter road alignment.

20 MS. SACHI DE SOUZA: It's Sachi, with

21 the Board. Right now, my understanding is, CanZinc,

22 you're going to think about this and hopefully respond

23 in the next couple of days.

24 In addition to the -- the consideration

25 for the realignment and the fact that the all-season

1 road is, in some locations, different from the
2 previously approved and permitted winter road, the
3 other component within the avalanche assessment that
4 is necessary for this environmental assessment is the
5 seasonality.

6 The Alpine Solutions report was for a
7 winter road that was in operation from December
8 through February. It did not account for traffic on
9 the road throughout the spring season, so March,
10 April, May, when avalanches may be more likely to
11 occur.

12 And the other thing is that the -- the
13 classifications of avalanches did not account for
14 other terrain features that may augment the effect on
15 avalanche pushes.

16 So with the all-season road, CanZinc's
17 proposing to do a number of things construction-wise,
18 blasting, building new sections. And it's unclear if
19 the construction of the all-season road could have an
20 effect on the avalanche potential, the likely of an
21 avalanche have -- happening, and also, how an
22 avalanche could affect the all-season operation of a
23 road, which is why Board staff at this point in time,
24 and I -- I'm pretty sure Parks Canada thinks that an
25 avalanche assessment for the all-season road with an

1 emphasis on their realignments and the change in use
2 of the road is necessary.

3 MR. DAVID HARPLEY: It's Dave Harpley.
4 I'll stick to my previous comment, that I'm not going
5 to reply now and we'll think about it. But one (1)
6 comment I will make is, in the springtime, between
7 April and May and June, there won't be traffic on the
8 road, because there will be no crossing of the Liard
9 River, so no issue.

10 MR. MARK CLIFFE-PHILLIPS: Thank you,
11 David. It's Mark Cliffe-Phillips, with the Review
12 Board. Just in terms of the estimated time of your
13 response after consulting, do you have a general idea
14 of when you may be able to get back to the Board with
15 your response?

16 MR. DAVID HARPLEY: Dave Harpley. I
17 imagine we can give it some thought in the next day or
18 two (2).

19 MR. MARK CLIFFE-PHILLIPS: Thank you.

20 CO-FACILITATOR BARB SWEAZEY: Just --
21 so do we need to write that down as an undertaking, or
22 we'll put that on our parking lot of things to
23 revisit? It's okay for our parking lot, okay.

24 Okay, any additional questions related
25 to avalanche? Yes, go ahead, Carrie.

1 MS. CARRIE BRENNEMAN: Carrie Breneman,
2 Dehcho First Nations. A -- a question for Canadian
3 Zinc. In the report, it says that:

4 "Avana -- avalanches are not
5 expected to be frequent from
6 December to February."

7 One (1) thing in the report that wasn't
8 totally clear to me is if this was dependent on depth
9 of snow, like, completely dependent on depth of snow,
10 or if it was also dependent on warming events. And I
11 have two (2) questions about that. One (1) being is
12 that there tends to be a lot of interannual
13 variability in snow pack generally, or there can be,
14 and whether or not that that would affect avalanches
15 along the road alignment.

16 And then the second part of that is, is
17 that my experience living in both the Yukon and the
18 NWT is sometimes there are warming events that happen
19 in January, and you can get rain events during that
20 period of time too.

21 And if those -- you know, either these
22 years where you have high snow packs, or else where
23 you -- you have warming or rain events, if those would
24 be issues for avalanche potential along the road.

25 So, I mean, I understand in the report

1 that avalanches aren't expected to be frequent from
2 December to February, but there might be years where
3 you would have avalanche concern or warming events
4 that would, you know, cause concern for avalanches
5 along the road.

6 MR. DAVID HARPLEY: Dave Harpley. I
7 have nothing to comment, because I'm not equipped to
8 answer those kinds of questions.

9 MS. CARRIE BRENNEMAN: Could I get a
10 commitment for an answer to those types of questions?

11 CO-FACILITATOR BARB SWEAZEY: Barb
12 here. I'm wondering if that's all tied into the
13 avalanche sort of parking lot item that we've flagged
14 for -- for Dave to get back to us.

15 CanZinc, is that okay to put that one
16 (1) in there?

17 Okay. Any additional questions on this
18 thread? Okay. What -- yeah? Okay. Chuck...?

19 MR. CHUCK HUBERT: Chuck Hubert, with
20 the Review Board. Just to get back to karst for a
21 minute. We had mentioned that for just for a very
22 brief minute.

23

24 (BRIEF PAUSE)

25

1 MR. CHUCK HUBERT: There was the Derek
2 Ford report mentioned, and I looked on our registry.
3 I thought it was on there. It turns out it's not. So
4 if either Parks Canada, or could you send it -- thank
5 you, and we'll post it on the registry.

6

7 (BRIEF PAUSE)

8

9 CO-FACILITATOR BARB SWEAZEY: Barb
10 here. So my observation is that we're getting tired.
11 We can write that as an undertaking. I'm not saying
12 anything. What I would like to ask is I recognize
13 that there are consultants in the room with areas of
14 expertise.

15 Knowing the categories of questions
16 that we have this afternoon that are also on for
17 tomorrow, my question is, is there anyone in the room
18 today that we definitely need to ask questions and
19 direct before -- before the end of today, or will
20 people be back in the room tomorrow?

21 MR. DAVID HARPLEY: Dave Harpley,
22 we'll be back.

23 CO-FACILITATOR BARB SWEAZEY: And you
24 folks are back tomorrow as well? Yes. Okay. So what
25 do you think about just wrapping up a little bit early

1 and probably breaking all sorts of rules, but I'm
2 going to suggest that we come back at 8:30, fresh
3 legs, fresh eyes, same categories.

4 Have a good evening. Thank you for
5 your attention and cooperation today.

6

7 --- Upon adjourning at 4:42 p.m.

8

9

10

11 Certified correct,

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13

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15 _____

16 Bob Keelaghan, Mr.

17

18

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- 237:15	217:7	10:30 59:23	184 40:3	231:16
	219:15			240:12
<hr/> 1 <hr/>	222:10	10:33 81:18	186 8:9	254:6
1 10:11 11:8	223:7	10:36 81:21	187 249:21	255:7
13:18	225:3	100 54:11,14	18th 61:3	259:11
14:11,20	226:9	126:5	92:10	266:7
21:8 24:22	228:24	213:12	125:21	272:18
29:12 38:4	231:18	249:20		273:11
42:8 46:21	232:4,17	255:16	19 34:22	2:47 213:1
50:23	233:14		37:23 40:2	20 38:5 81:2
51:19 52:7	234:10	104 264:6	190 8:13	155:18
59:21	235:15	10th 39:25	1949 148:2	156:1
69:7,25	238:14,15	11 29:15	1962	215:21
70:25	246:11	113 7:20	206:11,13	216:13,15,
71:24	248:21	11th 94:4	207:6	17 231:18
72:13 74:9	265:17	119:25	1994 148:2	255:1
75:7	266:23			264:13
77:12,15	272:5	12 29:22	<hr/> 2 <hr/>	200 51:9
79:19,22,2	273:7,11	12:00 148:18	2 11:8,21	2007/2008
4 80:15	274:16	12:09 148:21	12:10	214:5
82:17	1.4	120 265:1	14:12	2009 30:4
88:24	162:18,25	124 264:6	15:1,17	2010 215:11
90:3,4	1.5 52:23	124.5 199:25	20:14,19	2012 193:5
93:18,25	93:1	200:12	24:21	2016 1:23
94:12	155:18	125 52:13	25:24	61:3
120:20	156:1	13 30:3	29:14 36:4	125:21
122:2,16,2	1.5/1.4	130 258:15	38:22	21 7:3 44:19
0	162:10	14 30:7	43:18	2-1 176:22
127:17,19	1/2 142:5	212:23	44:11	183:14
132:25	164:14	252:7	59:22	22 7:5 49:10
135:17	265:20,24	14,000 195:8	65:15	23 7:9 61:21
137:1	1:00 148:18	14,500	79:19,24	23.4 52:9
138:5	149:22	213:15	80:20 87:4	234 8:19
141:1	1:19 148:22	15 1:23	90:2 94:14	24 7:13
142:5	1:20 118:13	30:14	103:9	97:13
145:21	10 6:7 9:10	81:17	110:2	263:3
146:25	14:11	16 30:24	122:16	247 9:11
153:12	24:9,12	16,000 96:23	125:14	25 7:16 68:8
157:20	59:20	160 7:25	138:5	82:22
167:11	148:17,18	17 34:8	151:14,24	96:10
168:25	183:16	174 9:9	152:6,18,1	113:25
172:20,25	215:21	18 34:13	9 164:20	26 7:21
183:22	216:13	35:5 37:18	168:24	160:15
186:19	221:16	98:16	185:23	27 8:3
190:1,11	247:14		186:15,16	182:22
191:17,22	10:00 59:21		195:25	
195:9	10:15 59:22		200:4,25	
196:12	10:17 81:16		201:11	
198:19			204:2	
204:17			210:2,10	
205:1			213:7	
210:2,3,10				
,18 211:4				

276 6:10	245:6	53.5 199:23	<hr/>	44:3,6,12,
28 8:6	265:20,24	200:10	<hr/> A <hr/>	20 259:13
186:23	266:9	55 199:23	a.m 10:1	268:7
29 8:10	35.5 60:22	200:10	81:20,21	accessible
190:4	36 94:16	236:20	Abdelmejid	143:1
263:4	95:9	<hr/>	5:5	accident
<hr/>	164:14	<hr/> 6 <hr/>	ability 85:7	180:10,18
<hr/> 3 <hr/>	208:22	6 17:4,16	113:22	181:2,22
3 10:4 15:10	36.9 60:23	95:24	115:22	accommodate
26:1,24	37 78:6	6.2 219:17	225:18	55:14
44:11	37.7 94:14	6.8 228:11	abiotic	accompanied
80:11	95:9	60 236:20	85:19	105:12
86:16	37.75 93:20	600 239:16	able 13:17	according
92:24	38 164:8,15	61 7:12	59:19	230:22
93:13	232:3	<hr/>	101:1	238:16
110:2	39 35:1	<hr/> 7 <hr/>	107:19	accordingly
112:6,20	39.8 220:17	7 6:3 17:8	122:4	184:5
115:7	<hr/>	18:4,6	126:19	account 31:5
122:12,17,	<hr/> 4 <hr/>	25:2	132:12,14,	109:14
24	4 16:12	42:1,9	21 150:4	254:22
151:9,14	110:2	73:15	169:3	271:8,13
161:16	112:6,20	93:10	190:22	accumulated
168:13	115:7	138:4	229:21	63:6
185:19,22	147:24	151:21,22	234:7	137:16
195:5	207:2	177:12	272:14	accumulation
200:12,18	4:42 276:7	178:9,14	absence	64:2,6,7
213:13	40 192:3	700 195:10	42:12	110:3
214:2,3	193:13	75 214:16	104:16,18	112:12
217:12	263:21	<hr/>	138:9	114:12
227:9	43 231:19	<hr/> 8 <hr/>	absolutely	115:24
3,200 60:24	44 7:4	8 18:15 22:6	245:8	accumulation
3:00 212:24	485 195:7	8:30 198:9	256:17	s 116:1
3:05 213:2	49 7:8	276:2	abundance	137:18
30 8:14	495 213:14	8:46 10:1	69:16	accurate
196:19	4-metre 43:3	80s 205:4	177:17,22	169:9
205:8	<hr/>	88.3 40:4	218:1	211:23
265:24	<hr/> 5 <hr/>	89.8 199:24	acc 181:2	accurately
30/40 256:7	5 16:23	200:11	accept	90:8
300 237:12	52:10	<hr/>	163:24	achieved
239:16	185:18	<hr/> 9 <hr/>	164:6	34:18
240:3,10	186:4	9 6:4 9:3	acceptable	36:16
30th 11:16	50 96:10	19:9 24:3	101:10	39:15
31 8:16	195:12	155:16	161:25	126:12
162:14	213:16	174:13	162:23	achieving
234:21	249:20	97 7:15	access 1:6	48:7
34 34:25			7:4	152:23
35 94:16			43:19,21,2	acknowledge
95:9			5	149:16
227:23				

acknowledgement 31:11	activities 115:2	174:5 244:8	131:10 136:22	97:10
acknowledgment 33:25	activity 62:17	add 25:12	148:2	adjacent 91:14
acquire 104:19	135:10	73:10	150:5	adjourning 276:7
204:10	227:23	75:17	154:19	adjustment 16:10
across 42:3	acts 224:24	80:12	155:7,8	90:14,16
65:8,15	actual 145:10	115:18	156:23	108:10
199:1	173:9	126:23	158:23	adopted 187:21
206:13	233:12	130:5	168:9,25	215:1
223:3	actually 15:22	133:14	170:2	Adrian 5:6
225:18	19:14	134:3	171:13,14,	advance 48:21 49:6
act 68:14	33:16	155:1	18 172:1	122:22
130:10,22	47:12	160:6	182:2	advanced 161:3
action 44:16	61:15 74:3	161:23	183:2,4	advantage 211:4
174:4	76:3 77:23	190:20	184:14	252:21
actions 211:19	78:13,20	194:14	185:9,12,2	adverse 86:24
active 76:12,18,2	81:1 98:7	199:17	0,24	advi 257:5
1 77:1	103:24	253:19	186:8,24	advise 8:14
78:3 79:11	105:22	added 23:6,15	189:14	196:19
80:17 86:3	107:24	adding 122:18	194:25	advised 78:10
88:11	108:11	130:18,22	201:7	advisors 124:6
92:16	116:9	addition 114:25	202:1	aerial 95:18
93:24	117:15	115:17	208:6	118:17
96:7,9,15	124:21	116:3	218:25	239:24
116:13	129:14	163:12	250:7	affect 105:13
117:15	137:22	208:24	254:14,16	115:4
118:20	144:6	264:5	256:24	176:5
119:4,22	146:5	269:3	257:7	248:15
120:11,12	149:1,9,24	270:24	258:6	271:22
124:25	169:17	additional 8:6 11:11	270:17	273:14
145:8	172:15,17	12:3,14	272:24	affected 8:18
147:21	186:12	15:3 17:22	274:17	138:24
148:8	202:10	19:23	Additionally 195:20	140:3
152:12	203:10,15,	24:4,13,22	address 60:25	234:25
153:15,16	17,18	27:1,16	71:23	affecting 88:22
155:23	205:3	31:21	110:4	
159:14,23,	208:25	39:21 62:2	131:13	
24 200:23	222:21	71:7 73:4	133:10	
201:16	224:21	77:15	138:13	
202:10	229:5,14	80:10	149:8	
205:7	254:1	83:19 92:6	184:22	
215:16	263:4	93:4	185:14	
220:25	adapted 100:14,17	95:7,8,9	addressed 88:5	
225:16	adaptive 18:21	106:23	126:13	
227:11	30:21	108:15	180:2	
243:24	35:18	116:5	188:12	
245:16	167:19	127:2	262:3	
		129:4	addresses 186:4	
		130:18	addressing	

affects	188:11	aligned	264:1	allow 31:4
29:19	ahead 12:18	104:24	265:16	86:3 124:9
173:14	44:25	267:7	267:8,9	139:11
afternoon	46:23	alignment	268:1,24	172:11
59:5	48:17	12:12	270:19	268:7
148:25	56:23 68:1	26:11	273:15	allowance
150:5	70:1 84:14	27:13	alignments	195:23
183:13	85:2	29:17	54:23	258:5
275:16	118:24	34:23	203:11	allowances
afterwards	127:3	39:23	270:18	51:15
131:7	129:7	40:15	Allison 3:3	allowed
160:12	150:23	42:22	31:12,13	158:11
against	156:23	44:7,24	32:13	173:5
163:14	183:11	51:3,6	35:3,23	allowing
220:23	195:1	55:17	36:8	49:3 227:7
224:1	197:11	64:14	37:10,17	all-season
258:16	198:19	65:5,8	134:4,20	27:13 28:1
265:21	219:3	82:1,11	194:12	42:2,11
agency 68:5	236:15	86:17,21,2	198:6,10,1	193:11
agency's	249:13	5 87:20	4 249:8,11	261:11
70:10	267:16	142:24	261:3	262:9
agenda	272:25	147:18	262:6,13,1	263:2,7
10:21,22	aim 59:22	151:8,12	9 263:16	268:24
12:3,9,19	air 62:18,19	157:11	265:12	270:25
71:14	78:14	161:14	266:11,15,	271:16,19,
72:25	148:2,3	164:2	18 267:4	22,25
80:10	206:13	171:15	270:14	alluded
122:19	207:10,13	192:6,8	Allnor 192:2	183:14
149:13,21	airstrip 7:4	193:10	allnorth	alluvial
171:20	43:19,25	203:3,9,16	55:4	145:22,23,
235:24	44:6,8,9,1	,21,23	Allnorth	25
236:1	2,21	204:4,7,12	2:22,23	151:17,19
aggregate	Airstrips	206:11	39:25	217:11
243:25	43:18	208:14,16	45:19 46:8	alluvium
ago 43:18	Alan 2:4,16	221:21	47:4,24	91:13
259:11	31:23	223:19	61:2 92:10	all-weather
agreed 11:24	32:15 33:6	224:8	93:22,23	27:11
31:9 69:9	38:23	231:13	119:24	243:25
71:1 122:2	70:1,3,14	236:25	125:21,24	alone 108:24
258:17	210:13,16,	237:9,14,2	141:23	Alpine
agreed-upon	25 212:23	239:17	172:10,17,	191:21
212:10	241:24	240:11	21 200:18	192:2
agreeing	247:19,20	241:8	204:17	193:23
72:20	Alana 4:9,24	244:23	218:17	261:8,15,1
agreement	Alan's 210:2	249:19	219:24	6
19:24 22:7	alarmist	252:20,25	220:21	263:20,25
32:9	239:3	253:9	221:13	267:16
119:18	ali 86:17	254:10,25	222:19	270:2
122:11,17,	align 30:1	260:4	232:16	271:6
23 171:10	60:11	261:9,10,1	233:10	already
		1	234:17	
		262:9,15,1	252:7	
		6 263:1,2		

20:17	231:14	198:19	apex 223:16	18:21
28:24,25	250:11	230:18	apologies	21:13 40:6
71:1,5	254:15	answers 84:5	10:5,9	54:16
72:20 73:5	257:7	89:21	apologize	64:4,17
120:16,17	258:18,23	anticipate	152:10	77:6 98:14
121:9	260:8	68:21	apparent	104:14
122:2	amounts	87:19	208:12	117:24
123:9	66:10,11	98:23	Apparently	133:9
125:13	ample 253:13	99:24	197:21	142:20
143:13	analysis	108:8	appear 60:25	163:7
167:1	18:10	141:14	87:10	165:25
172:22	80:23	254:11	appearance	219:23
226:16,24	218:9	260:2	239:9	220:18,22
260:11,12	267:8	anticipated	APPEARANCES	221:13
269:6,23	268:14	63:25	2:1 3:1	222:13
270:1	and/or 28:24	98:21	4:1 5:1	223:2,3
altered	38:9	251:1	appeared	227:13
52:22	Andrea 4:8	anticipation	117:13	229:16
176:25	Andrew 4:6	243:17	appears 87:8	232:3,22
227:16,17	angle 157:8	Antoine 2:17	177:16	253:7
altering	annual 63:4	anymore	223:16	approaches
227:4	110:5	128:22	224:1	15:5 18:18
228:6	115:9	anyone 59:11	227:15	65:18
alternate	199:11	103:18	264:9	66:25
203:9	215:15	126:22	appendix	approaching
alternative	annually	247:2	93:23	103:4
31:3 162:7	118:9	275:17	applicabilit	appropriate
204:4	answer 48:11	anything	y 213:18	14:19
alternatives	55:4 56:3	21:12	application	18:17
65:13	59:10,19	29:12	18:20	21:14
171:23	81:8,13	80:12 92:2	applied 31:7	53:13
altogether	87:16	103:4	43:7 195:9	54:8,22
37:12	100:5	126:22	apply 108:21	69:21
am 86:11	101:3,6	129:21	234:15	106:3
100:6	108:16	131:1,8	268:24	112:20
116:20	111:21,23	145:1	appreciate	140:24
122:4	116:11	214:11	58:14	159:20
134:7	127:9	241:19	69:12 73:7	171:8
140:7	131:21,24	253:19	79:9	172:18
240:15	132:4	256:1,13	121:2,16	182:18
amenable	147:1	275:12	124:1,2	195:17
173:18	163:6	anyway 52:14	172:19	216:22
amongst	194:23	147:25	193:2	218:19
122:4	196:13	195:11	218:7	219:16
amount 83:24	197:4	247:5	appreciated	224:2
89:20	252:18	anywhere	156:18	261:23
90:24,25	255:11	224:6	approach	appropriatel
91:17	274:8,10	253:4		y 46:3
99:17	answered	apart 92:11		53:8
100:2,21	113:11			54:16,25
222:22				55:1,7
				appropriaten

ess 188:1	8,19	268:6,8	195:12	163:16
approved	205:16,24	275:13	265:19	177:18
271:2	206:13	aren't 117:9	266:4	187:15
approximate	207:4	211:25	assesses	248:15
68:19	208:18	262:4,21	104:20	259:5
157:18	229:6	274:1	assessing	267:14
approximatel	236:20	argue 253:14	48:25	Associates
y 14:11	239:10	arise 26:11	156:19	5:12
94:15	241:17	arising 28:2	213:16	assume 85:13
108:3	247:3	armour	assessment	128:4
155:18	248:16	163:12	15:3 30:9	148:3
162:15,16	249:18	164:23	31:5 53:13	262:4
April 94:4	250:24	224:4	62:11,17	assumed
119:25	259:9,10	227:2	86:14,19,2	184:4
271:10	263:23,24	armoured	3 87:3,24	197:1
272:7	264:13	219:25	99:5	assumes
aquatic	265:18	armouring	102:18	193:6
15:13	266:1,9,10	177:17,22	115:1	assuming
26:4,10,14	areas 8:18	232:6,9,10	135:8	53:5 82:10
59:2,3	29:18	armourment	140:8	143:2
86:15,19,2	32:2,19	221:3	162:7	144:9
4 88:1	68:6 70:12	articulate	181:5	217:7
110:15	76:12	101:22	184:11	assumption
aquifers	114:15	113:9	189:5	52:20
242:12	129:1	132:21	190:22	112:8,24
ar 236:21	138:24	159:9	191:22,25	117:11
arch 154:3	139:2	246:19	193:4	145:16
arctic 83:21	140:1	articulated	199:5	147:20
107:14,17	142:10	115:12	209:20	148:6
245:9	147:6	aspects	211:4	177:21
246:13	152:12	47:25 98:7	217:5	254:20
area	155:23	123:14	250:25	256:20,21
33:4,5,11	159:23	125:11	254:20	257:6,10
75:25	172:6	167:20	256:22,23	assumptions
76:19 77:2	187:15	169:12	258:5,11	124:5
85:8 87:5	192:5,12	170:7	261:12	217:6,12
89:9	193:13	asse 87:23	262:8,10,2	250:23
90:10,20,2	202:8	assemblages	3 263:8	254:8,22
4 101:16	213:14	29:21	264:12	255:9
102:19	222:12	assess 102:9	265:4,15,2	257:13
104:1	234:24	111:7	3 266:2	258:10
107:2	236:21	113:22	268:13	attached
127:18,20,	237:12	173:6	269:11,15	17:18 94:4
25 128:21	238:20	225:21	271:3,4,25	267:23
135:23	249:23	234:7	assessments	attempt
158:4	250:20	assessed	16:15 52:6	144:20
159:15	251:17,22	54:17,25	69:11	attempted
184:24	252:9	193:2	268:8	108:22
203:6	259:2,4,6	attendees	270:18	211:15
204:9,17,1	260:11,12		associated	
	261:11		15:8 65:17	
	263:23		66:25	
	266:3,13		135:11	
	267:13			

attention	272:25	214:11	46:15,20	156:22
151:25	273:24	239:16	47:6	159:3
181:5	274:3,13	240:3,10,1	48:9,14	160:9,23
262:3	avalanches	3 264:1	49:18,19	161:21
276:5	265:2		51:1,2,17,	164:25
attributed	271:10,13	B	18,24	165:6,12,1
237:2	273:4,14	backfill	52:24	6 168:2,11
attributes	274:1,4	45:14,20,2	55:15	169:25
105:7	Avana 273:4	2 48:4	56:22	171:9
Audrey 3:4	avian 30:12	background	58:16	176:13
augment	avoid	103:7	59:8,17	177:25
271:14	45:10,13	129:21	60:5,9,16	178:15,23
August 107:8	64:8	149:6	61:14 62:1	179:24
authorizatio	164:17	back-of-the-	67:24	183:1,9
n	181:8	envelope	69:2,23	185:8
170:21,22	239:19	57:12	70:22 71:6	186:11
171:6	256:11	backtrack	73:9,16,23	187:4,22
authorized	avoided	58:3 237:7	77:10 79:5	188:3,14
192:19	239:11	backup	80:8	189:11,23
available	avoiding	208:25	81:3,9,15,	190:10,16
29:24	263:4	253:15	23,24	191:15
31:15	avoids 204:8	bad 256:12	83:17	194:7,20,2
140:14	avulse	balance	84:10,23	4
159:24	224:11	144:2,14	89:22 92:3	196:3,6,14
166:24	avulsed	147:22	93:2,11	197:9,15,2
179:7,13	207:10	148:7	95:6 96:18	3
253:8	208:2	Band 5:10,20	97:4,7,19	198:8,12,1
257:12	avulsion	bank	98:1,25	6 199:16
260:9	64:3,8	64:18,20	101:20	201:17
avalanche	179:5,11	75:7 152:5	104:9	202:19,20
191:21,24,	180:16	153:23	106:13,19	206:6
25	181:12	163:8	110:21	208:4
192:3,4,7,	207:12	177:5	111:2	209:6
11,12,19	aware 52:8	224:1	113:8	210:1
193:4,7,14	140:7	228:2,3	115:10	212:22
,18,22	142:2,6	232:23	116:2,16,2	213:4,5
194:15	144:21	banks 177:8	5 118:3,23	217:1
261:6,13	228:15	Barb 1:12	122:8	218:24
263:5,22,2	262:22	2:10	124:14	220:7,8,12
4	awareness	10:3,5,19,	126:4,5	223:6
264:2,9,12	149:3	21	127:1,8	228:8
,17	191:10	13:14,15,2	128:6	230:7,13
265:4,15	away 14:25	3 19:11	129:2	231:24
266:4	116:18	20:9,22	131:8,23	234:18
267:1,15,2	121:18	21:7,25	132:6,10,2	235:3,9,23
4	140:23	23:16,24	0 133:25	236:10
268:5,18,2	158:6	39:13	138:2	243:3
0 269:9,11	174:11	41:14	139:5	246:18
270:17	175:7	42:20,21	145:2	247:18,25
271:3,15,2		44:14,23	147:10,15	248:24
0,21,22,25			148:9,24,2	249:9,12
			5	251:8,11
			150:9,13,1	253:18
			6,21	255:6,7
			154:10,23	260:20

263:12,18	68:13 74:6	bed 63:25	9 71:18	265:23
265:8	76:1	70:7 83:11	72:11	267:3
266:5,12,1	137:24	90:24	87:12	Bezner 5:8
7,19	159:25	99:16	88:23	bigger
272:20	162:14	173:13,15	100:11	259:1,5,7,
274:11	184:4	217:19	104:23	9,16
275:9,23	219:21	249:5	138:16	Bill 4:3
Bard 4:18	229:22	beds	berm 75:19	10:15,16,2
barriers	242:3,21	88:14,15	224:5	0 53:17
186:5	249:18	130:6	bermed 75:24	73:21 74:1
barring	261:17,19	begins 99:20	berms 74:23	75:3
241:15	267:2	behave	84:18	77:21,25
bars 155:23	basinary	112:11	85:5,14,24	78:1 79:6
bas 209:19	214:7	240:22	beside	109:1
base 137:8	basing	behaves	267:12	142:16
169:6	214:22	107:13	besides	143:15
based 27:25	240:11	behaving	76:24	144:24
53:20	basins	240:22	230:22,23	145:15
57:12	214:23	behaviour	Besner 5:2	146:13
80:22	basis 38:6	238:1,4	best 45:12	149:5,9
92:22	51:6	behind 37:24	46:14	150:21,25
109:16	103:25	83:14	59:18 81:6	151:3
124:7	104:1,22	238:13	131:21	153:11
125:1	107:13	believe 22:1	135:12	154:11,16
154:16	112:8,14,2	79:2 93:25	136:3	156:13,14
155:20	4 115:7,9	107:23	166:11	157:10,11
173:12	119:13	118:20	203:14	158:5
177:20	158:24	143:1	239:6,8	165:24,25
195:5	209:20	150:7	240:21	196:11
208:20	221:17	183:16	241:23	197:12
213:12	233:16	195:7	Betsaka 3:8	198:3,19
217:6	bathtub	202:7	5:10,22	210:8
237:3	224:25	203:9	better 91:24	213:6
257:11	BC 43:8	213:7	95:13	214:1
262:16	141:25	214:5	113:5	215:8
baseline	142:1	215:11	114:9	217:16
7:22 30:17	216:11	222:19	119:15,21	218:12
159:17	bear 224:19	230:14	163:21	Bill's 75:17
160:18	259:10	251:15	164:1,7,22	109:17
166:13,20	bearing	believed	219:22	biol 85:18
184:14	183:14	144:2	237:10	biologically
226:3	231:20	beneath	255:24	33:1
basic 241:6	become	240:5	256:2	biologist
247:11	100:22	benefit	beyond 74:24	59:2
252:8	103:10	255:23	95:8	birds 30:12
basically	226:4	benefits	118:20	bit 10:8,9
28:25	262:22	74:18	129:20	11:17
40:11	becomes 58:9	benthic	144:21	14:15
62:19	130:20	69:14,16,1	193:8	25:25 39:7
64:4,20	222:5		225:9	55:23 57:3
66:3,25			260:10	58:3,24

64:10	66:14 67:4	248:16	12:25	274:9
76:23 90:5	70:4 71:9	bor 256:21	13:7,12,20	Brett 2:6
91:24	72:19	borrow 43:22	19:1 22:11	25:9,10,20
93:24	81:11 85:4	202:1,5,14	97:23	26:21 28:8
95:23 96:4	86:8 87:23	204:18	braided	29:7
117:21	91:19	205:9,17,2	229:19	71:8,9
123:3	93:17	2,23 206:1	braids	72:18
126:9	95:16	208:18,23,	153:18	Brian 3:9,12
127:25	103:9,16	25	226:24	5:24
132:3	105:19	209:1,18	branch 172:1	bridge 42:3
136:6	109:1	250:14,19,	Braun-	53:11
148:1	113:14	24	Rodriguez	193:10,16,
149:6	114:25	251:14,17,	4:25	18
152:13	119:20	18 252:8	break 16:7	199:2,6,10
155:24	120:10,25	253:8	51:19	201:10
164:16,19	121:1,8,11	254:20	59:22	218:1
172:23	,20 122:6	256:22	77:13,14	224:6,14
192:18	123:2,3	259:2,4,6,	81:14,17	225:4
196:16	124:1,6	7,9	96:6 116:9	226:16
199:17,18	132:11	260:7,10,1	138:6	227:2
204:10	141:22	4	148:11,17	228:5
207:14	168:23	borrower	154:12	231:3
210:7	169:21	257:5	209:15	bridges
223:14	171:15	borrowers	210:9,15,1	186:1
237:7	175:23	257:8	7	187:16
239:3	182:17	borrows	breaking	191:23
246:24	183:3,5	202:7	276:1	192:12,21
249:3	190:12	205:16	Breneman	193:16,20
275:25	191:19,21	250:12	5:15 16:5	194:2
blasting	193:1	253:11,13,	25:1 26:19	221:19
18:12	211:8	14,15	85:21	230:24
164:16	212:12,20	254:2,4	98:10 99:7	269:7
271:18	228:11	255:4	100:12	brief 12:23
bleeding	229:25	bottom 89:8	101:8	13:5
129:23	235:10	147:4	102:2	16:1,19
blockage	236:12	boundaries	127:4	17:12 18:1
74:10	239:15	205:21	128:8	21:23 23:3
blocked	243:4	BP123A	131:11	24:25
150:1	247:21	204:23	132:24	28:18
154:4	258:14	Brad 2:23	133:6	29:3,9
bluff 164:9	263:20	12:25 19:1	145:3	33:21
board 1:4	264:22	22:11	146:4	37:4,14
18:13	266:9	45:18 46:7	165:18	38:1 40:24
19:19	270:21	47:4,23	166:12	41:10
21:17	271:23	55:3 84:14	167:8	45:16
25:4,10	272:12,14	97:21,23	170:3	46:5,18
26:23 28:9	274:20	200:17	171:4	47:21
30:4 31:24	Board's	201:14	219:4	49:23
35:23	204:2	233:9	221:2	51:22
38:24	boat 42:4	234:16	222:9	53:15
43:17 50:1	Bob 276:16	Bradley 3:21	273:1	56:14
57:25	bodies			58:21
	24:6,8			59:15

60:14 62:5	210:23	269:6	34:24	97:20,25
65:1 73:19	216:6,25	buffers	37:24	98:6
76:6 82:20	218:4	209:25	calculated	101:21
92:18	219:12	build 159:23	40:20	103:17,24
94:8,18	220:14	160:1	119:17,18	104:12,14
95:4 96:1	221:10	255:18	177:3	106:1,8,9,16
103:21	222:16	256:16	calculation	113:2,21
109:20	223:10,22	building	117:16,17	115:16
110:18	230:11	64:21	calculations	116:8
113:18	231:9	134:9	57:13	118:7
118:1	232:13	259:7	76:15	119:2,15
123:23	234:3	271:18	119:11,15	120:6
124:12	235:21	built 42:11	126:11	124:17
125:17	237:20	205:3	161:6	129:4,12
126:2,25	238:8,25	245:9	195:5	130:21
129:9	240:25	256:6	Camilia 5:5	133:16
133:1	243:1	bull	Camp 193:14	134:2,5,16
134:13	244:18	228:16,22,24	263:22	138:8
142:14	251:4	229:1,3,5,15,18	camps 194:16	140:17
146:11	252:4,15	bullet	269:14,24	141:10
150:19	253:22	149:14,15	Canada	160:25
151:1	255:13	171:20	3:2,21	161:12
153:9	257:16	235:24	13:1 15:2	167:13
154:8,21	259:19	261:6	17:9	168:4
155:4	260:18	bulleted	18:7,23	169:4
161:19	263:10	122:19	19:2	170:17
163:3	265:6	bullets	20:10,12,17,25 21:3	171:11
165:4,10,14 166:17	270:4,12	12:14	22:7,10,13	176:21
167:6	274:22,24	bunch 153:25	24:15	178:7,16
168:20	275:7	bundle	30:15	183:13
169:23	briefly 14:4	236:6,8	31:13	184:10
170:14	244:2	business	32:11	185:12,14,15,18
178:4	bring 27:3	215:10	33:19,25	187:5,10,11
179:15	45:3 80:16	busing 41:22	35:2,4,24	188:4,6,21
180:5,21	168:16	Butte	36:12	189:7,19
181:24	170:24	5:10,20	37:2,11,19	190:19
183:7	bringing	41:21,24	42:24	194:10,13
184:7	73:7	42:1,9	44:25 45:4	195:6
185:6	124:19	252:23	48:4,15	198:4
187:7	140:18	<hr/> C <hr/>	60:19 68:4	201:18,23
188:19	224:23	cables	69:7,9	213:13
189:9	broad 242:10	245:11	70:10	231:25
190:14	250:23	Cadillac	71:21	249:6
192:14	broaden	44:2	73:13	261:1,4
194:18	79:21 80:4	calculate	77:15,19	262:7
197:7,18	184:24		79:6,9	263:13
199:14	broadly		80:2,14	265:9,13
200:6,15	187:14		84:12,16	266:8
201:20	247:7		85:13 86:2	267:5
202:17	brought		92:4,9	271:24
204:14	72:22		93:6 96:21	275:4
205:13	145:20			
206:4,23				
209:4				

Canada's 190:20	15:2,11 16:13 17:9 18:4,7,16 19:9 20:20,25 22:2 23:17 24:4 26:2 29:16,23 30:8,16,25 31:8 34:2,9,23 36:2 37:23 38:6,14 44:20 50:20 51:18,25 61:21 69:24 77:17 81:3 89:22 93:22 97:8,13 106:20 113:25 115:11 117:1 120:10 121:19 131:9 132:22 133:25 149:2 150:4 160:15 168:4 174:13 175:23 176:9 182:22 186:13,23 187:23 189:11 190:4 192:10 193:15,19 194:20 196:19 202:23 234:21 253:19 264:11 265:3 266:6,20 270:21 274:15	CanZinc's 271:16 capacity 68:22 74:19 109:2,3 163:11 capped 217:17 capture 138:14 175:25 211:8 captured 33:17 36:2 carbonate 242:4 careful 191:14 carefully 46:13 Carrie 5:15 16:4,5 25:1,9 26:6,12,17 19 85:21 98:10 99:7 100:12 101:8,22 102:2 127:3,4 128:6,8 131:11 132:10,21, 24 133:6 145:2,3 146:4 165:18 166:12 167:8 169:10 170:3 171:4 219:3,4 221:2 222:9 272:25 273:1 274:9 carried 118:16	carries 149:24 Carrie's 129:5 carry 109:3 222:7 carrying 39:2 74:19 220:24 222:25 case 32:16 96:8 137:24 144:4 164:6,7 166:23 224:25 233:16 268:22 cases 209:22 Casket 219:17,18 223:13 229:3,5 Cat 193:14 263:22 catchment 67:18 categories 171:25 275:15 276:3 categorized 176:24 category 176:19 178:18 194:25 198:5 210:5 235:5,25 236:13 Catherine 2:8 4:25 cause 57:6,8 100:10 108:23 274:4 caused	229:15 causes 143:24 238:17 causing 63:8,9 154:4 central 249:18 centre 46:12 certain 40:7 47:25 50:4 56:18 79:13 106:3 107:6 121:13 137:15 182:3 244:3 260:1 certainly 27:22 56:7 57:3,11,16 62:15 63:3,4 77:13 107:25 110:8 112:22,23 188:10 195:15 196:24 199:21 216:9 234:1 240:17 244:21,23 245:3,10,1 4 251:21 261:16 Certificate 6:10 Certified 276:11 Cesar 5:12 33:3 39:23,24 40:6,19 41:12 55:17,18,2
---------------------------	--	--	---	---

4 56:6,17 171:13 179:3,10,2 2,25 180:7,23 182:2,11,1 9 235:10 cetera 202:3 209:25 challenge 164:19 229:19 challenges 56:18 162:21 163:24 chance 11:2,3 25:5 77:14 79:3 98:4 216:1 chances 250:5 change 3:21 13:1 19:2 22:12 36:10 70:6 84:11 97:24 135:8 148:1 150:24 157:24 158:17 166:7 167:3,4 173:13 195:22,23 215:5,7,9, 12,19,23 216:3,21 226:25 272:1 changed 146:3 157:7 184:12 206:18,20 207:24 changes 11:4 15:12	16:17,22 26:3 88:1 231:1 239:11 241:9 245:15 Change's 18:24 changing 50:6 157:7,8 166:3 237:9,11 channel 7:11,24 53:20 55:8,11 60:24 61:1,7,18, 24 62:17 63:7 64:8,14,24 65:6 66:9,10 67:10,14 68:10,11,1 6,18,20,23 74:3,4,7,1 1,13,15,17 ,21,22,25 75:2,4,9,2 3 76:12,22 78:24 79:14 85:6 86:4 88:7,9,11, 13,15,20 89:5,10,14 90:4,17 91:3,6,8,1 0 92:14,16,2 3 93:24 96:16 98:20 99:8,11,21 100:3 101:1 103:2 104:24 109:2 117:18,22 118:8,16 119:23	120:12 127:22 129:17,18, 22 130:1,3,17 133:20,21 134:9,11,1 8,19,25 135:2,4 136:9,10,1 3,24 137:6,8,9, 10,11,15,1 7 142:4,22 143:1,3,18 ,20 144:2,5,6, 10,11,12,1 3,15 145:17,19 146:17,18, 20,22 147:2,17,2 1 148:8 151:8 152:5,7,15 ,21,24,25 153:5,15,1 6,17,21,22 154:4 155:11,17, 19 156:1,3 157:12,18 158:8,10,1 4 159:14,18, 24 160:20 161:9,10 163:9,11 166:1,2 179:5,11 199:2 200:1,23 201:8,16 206:12,17 207:9,12,2 0,24 217:17 223:18,25 224:11,13, 21 225:13,18, 19,21 226:4,5,8, 24 227:10	228:1,2 229:10,13 231:14 channelled 172:15 channels 68:17 127:25 143:17,19 217:12 225:2,5 228:4 channel's 158:25 character 155:13 characterist ic 151:20 characterist ics 31:2 32:4,18,20 195:19 213:21 239:21 240:4 245:2 characterize d 204:19 check 27:14 39:25 59:20 150:8 171:16 181:17 235:24 checking 197:25 checks 214:9 chintzy 214:20 chocolate 102:22,23 103:4,10 choice 67:23 100:25 101:4 231:17 choke 232:11	chose 231:3 Chris 2:5 Chuck 2:2 86:7,13 87:22 141:21 143:4,5 144:17 228:9,10 229:24,25 230:6 274:18,19 275:1 chunks 33:9 266:7 circles 129:13 circulated 11:10 39:18 circumstance s 38:16 clarificatio n 41:19,23 42:18 47:8,17 70:5 76:9 106:22,24 116:3 123:3 134:6 138:3 155:8 169:20 202:1 203:9 206:9 209:17 217:3 234:6 clarified 193:25 clarify 7:10 14:12 17:15,19,2 1 33:2 39:6,12 61:9,18,23 64:10 71:16 80:9 93:3,12
---	---	---	--	---

113:13	257:19,22	189:2	104:9	200:2
118:5	258:10	coarse 90:10	106:13,19	201:17
145:4	262:7,14,2	241:17	110:21	202:19
168:12	0 273:8	cobble	111:2	206:6
178:1	clearer	90:11,12,2	113:8	208:4
193:1	40:20	0	115:10	209:6
199:18,20	100:4	Co-	116:2,16,2	210:1
207:18	clearing	Facilitato	5 118:3,23	212:22
208:5	191:3	r 1:12,13	122:8	213:4
248:4,7	clearly 77:1	10:3,19	124:14	217:1
270:7	126:7	13:14,23	126:4	218:24
clarifying	159:13	14:9	127:1,8	220:7,12
70:1	205:6	16:8,21	128:6	223:6
189:13	Cliff 168:22	17:24 18:3	129:2	228:8
216:9	Cliffe-	19:7,11	131:8,23	230:7,13
clarity 10:8	Phillips	20:9,22	132:6,10,2	231:24
15:16,19	2:3	21:7,25	0 133:3,25	234:18
25:3,25	123:1,2,25	22:4,15	136:15	235:3,9,23
26:13	168:22	23:16,24	138:2	236:10
37:18	169:19	24:1 29:11	139:5	243:3
84:16	272:10,11,	33:18,23	145:2	245:19
119:4	19	34:5 35:25	147:10,15	246:6,18
183:20	climate	37:1,6,16	148:9,24	247:18,25
203:1	3:15,20	38:3 39:13	150:9,13,1	248:3,24
classificati	13:1 18:23	41:14	6,21	249:9,12
ons 271:13	19:2 22:12	42:20	154:10,23	251:8,11
classified	84:11	44:14,23	156:22	253:18
119:5	97:24	46:15,20	159:3	255:6
clean 140:25	195:22,23	47:6	160:9,23	257:18
256:15	215:5,7,9,	48:9,14	161:21	260:20
clear	12,19,23	49:18	164:25	263:12,18
7:21,22,23	216:3	51:1,17,24	165:6,12,1	265:8
25:21	climbing	52:24	6 168:2,11	266:5,12,1
31:14	204:9	55:15	169:25	7,19
33:13 36:9	close 11:23	56:22	171:9	269:21
58:9 61:6	156:16	58:16	176:13	270:6
71:11	163:16	59:8,17	177:25	272:20
76:17 77:3	219:19	60:5,9,16	178:15,23	274:11
91:2	228:3	61:14 62:1	179:24	275:9,23
102:21	236:20,24,	67:24	182:1	cognizant
117:5,6	25 264:14	69:2,23	183:1,9	75:20
120:2	closer 73:24	70:22 71:6	185:8	cold 45:10
126:19	192:7	73:9,16,23	186:11	collaborate
127:19	264:7	77:10 79:5	187:4,22	49:2 121:6
136:11	closing 7:8	80:8	188:3,14	collapse
137:4	49:16	81:3,9,15,	189:11,23	238:16,23
159:16,17	closure	23 83:17	190:10,16	239:2
160:15,16,	34:19	84:10,23	191:15	colleague
19 162:17	82:12 85:9	89:22 92:3	194:7,20,2	43:13 46:8
178:13	188:25	93:2,11	4	83:14
204:6,20		95:6 96:18	196:3,6,14	97:22
255:11		97:4,7,19	197:9,15,2	colleagues
		98:1,25	3	
		101:20	198:8,12,1	
			6 199:16	

52:21	10:1	192:23	commonly	17:16 55:6
169:15	comment	244:11	107:14	completed
208:24	11:11	commitment	195:22	23:11
231:12	22:9,17	19:15	communicate	137:12
252:18	23:23 35:2	20:5,17	17:10 18:8	188:9
259:22	38:24	21:1,17,21	120:21	193:5
collected	39:19	22:2,6,13,	communicatio	268:4,10
184:14	43:10 66:7	23 23:6,14	n 69:10	completely
collection	69:24	28:23	communities	76:13 87:8
30:18	77:19	36:2,7	29:25	273:9
colour	106:23	39:4	community	completing
103:4,11	107:9	70:10,24	42:18	11:25
coloured	129:13	84:17	compact	complicated
102:22	137:2	113:10	45:22	192:18
com 269:19	140:25	138:13	compaction	224:20
combine	154:13	173:22	48:8	component
218:18	155:1,9	174:3,7,8,	262:8,21	34:12
comes 67:17	156:9	13,25	company	45:20 48:5
78:7 87:5	157:21	175:4,16	143:2	52:19
95:14	158:22	176:15	145:25	113:16
105:10	161:1	186:8	146:8	176:8,10
152:11	169:3,15	192:10,24	155:21	193:11
170:23	186:14	194:9,14	220:5	221:25
176:22	198:24	201:10,13	comparably	254:17
203:10	217:14	235:16	161:9	271:3
216:19	239:3	243:19	compare	components
224:22	240:7	244:13	69:16	109:23
comfortable	266:22	245:21,25	268:16	138:17
11:6,24	272:4,6	246:5,9,20	compared	236:1
21:3 36:17	274:7	247:7,9,11	27:12	254:6
113:23	commentary	,14,24	68:11	comprehensiv
115:11	156:10	266:22	comparison	e 62:10
120:10	203:6	269:23	62:18	computer
176:9	commented	270:16	compensate	150:24
216:21	112:5	274:10	163:10	con 17:2
240:16	216:14	commitments	compensation	218:9
247:21	comments	6:4 9:1	69:1,11	242:7
coming 15:21	12:18	11:9 14:13	106:10,17	concept
67:2 91:6	24:22 34:2	20:24 36:3	competition	232:21
97:8 128:2	38:21 77:2	39:2,16,17	compiled	concer 158:2
153:23	84:6 98:9	211:18	179:19	concern
158:16	113:3	commits 9:3	compiling	14:3,5
164:20	124:2	174:13	143:9	37:8 57:2
197:21,24	155:12	committed	252:18	58:8,24
202:4	170:2	35:13	complete	77:9
208:3	190:21	106:11		88:7,18
248:12	199:9	175:23		97:10
250:14	216:9	267:19		106:5,8
257:7	218:7	committing		121:11
commencing	230:17	269:19		128:14,23
	256:14	270:1		
	commit 24:20	common 52:8		
	141:20			

158:2,3	47:13,16	44:8	67:15 77:1	126:10
173:1	48:22	confluence	80:4	consistent
196:1	69:22 75:6	157:4,8,13	111:21	104:15
205:11	79:13	,25	114:21	consists
219:16	105:6	confused	154:14	127:15
226:8	166:6	47:19	177:4	constrain
227:15	172:24	125:9	179:18	66:9
238:23	226:3	confusion	184:19	constrained
258:21	240:8	239:18	194:15	20:14 21:5
259:12	241:10	conjunction	195:21	219:21
264:3	250:7	51:14	270:24	220:25
274:3,4	conduct	consequence	consideratio	226:8
concerned	175:16	182:6	ns 27:7	constrainmen
33:15	conducted	consequences	30:19	t 226:5,6
50:3,5,6	16:15	31:6	51:10	constrict
66:8	225:25	179:6,13	56:20	199:3
105:23	conference	183:21	133:18	constricting
176:2	209:9	conservatism	161:4	55:8
216:3	conferring	54:22	185:3	constriction
265:18	198:3	conservative	189:1	200:1
concerns	confident	117:11	231:13	constriction
11:12	116:13	215:1	233:22	s 54:6
27:23 78:2	151:17	216:20,23	249:16	232:4
172:13	confirm 30:8	257:12	considered	construct
185:4	47:1 51:5	conservative	26:14	75:8 91:8
219:10	53:3,8	ly	30:10	constructed
221:7	59:25	214:17,18	51:16 53:9	38:8 44:2
230:24	71:10	consid 65:10	66:14	54:21 55:2
231:4	82:12 85:4	consider	88:25	129:19
conclude	91:19	50:23 56:4	111:7	177:7
190:23	118:8	59:5 65:13	180:25	224:14
concluded	150:4	68:23 70:7	192:11	229:6
220:5	166:22	80:18	193:19	constructing
conclusion	173:19	85:18	203:12,22	141:24
19:4	175:2,8	87:25	213:22	construction
214:13	177:9	141:19	218:10	17:3 42:13
conclusions	189:16	159:19,20	221:24	45:2,6,8
34:10 38:7	205:21	193:21	230:22	46:1,11
86:22	226:1	203:23	231:2	48:2,19,21
211:20	253:25	212:12	233:23	49:5
concrete	confirmation	214:14	240:2	50:3,17
143:17	15:19	218:2	245:4	111:9
168:16	22:19	264:2	259:16	134:18
condition	26:13	considerable	264:1	136:1,23
7:23 48:8	28:11 82:9	141:24	considering	137:6
76:25 85:7	83:3 229:3	consideratio	65:7	139:17
158:13	confirmed	n 27:17	111:12	141:11,13
159:17	194:5	52:3 57:18	128:11	181:16
160:2,18	228:22	63:13	232:18	187:15
conditions	267:25		considers	
45:21	confirming		consistency	

194:16	75:1	17:25	242:22	109:16
222:23,24	continuation	82:15	covered 7:9	110:10
233:1,12,2	150:2	83:15,23	12:4	111:8
4 246:2	continue	102:14	61:15,22	116:6
269:14	64:5 81:25	121:23	121:9	127:3,7
271:19	148:19	144:9	129:6	128:10
construction	158:8	170:12	261:22	135:1
s 54:19	218:9	186:19	covering	144:4
construction	227:7	204:19	205:18	145:10,12,
-wise	continues	227:10,21	covers	18,20
271:17	157:17	228:12,17	160:12	147:9
consultant	Continuing	254:4	crafting	149:5,11
267:2	34:7	262:18	160:10	162:3
consultants	continuity	276:11	create 68:16	163:13,22
2:22,23	42:15	correctly	107:3,8	164:18
60:3 86:12	continuous	258:14	184:23	165:2,23
87:2 98:17	42:8,12	correlate	created	166:14
99:4	245:13	16:14	20:18	167:11
127:13	control 7:7	corridor	79:13	170:6
139:9	49:15	42:9	84:18	171:15
141:23	50:12,15	cost 14:22	87:19 88:8	172:5
173:3	controlled	Counsel 4:23	111:14	173:7
275:13	242:8,9	count 40:2	creation	191:5,24
consultation	controls	couple 54:15	68:10	199:22
170:24	191:4	65:9 82:7	136:9	200:10
171:7,8	conversation	129:17	creek 1:6	214:6
consulting	31:8 35:7	148:25	10:17	219:17,19
272:13	58:18	164:16	12:12	223:13,15
consume	81:25	178:9	52:10	224:2
210:17	116:21,22	183:10	58:4,5,25	226:12
contact	126:8	188:10	59:12	228:12,23
212:20	148:13	190:25	60:11,21	264:5
contained	conversation	198:13	61:5	268:23
152:21	s 23:1	202:20	64:19,21,2	269:8
containing	126:18	210:3,9,11	2,23 65:23	creeks
14:23	128:12	220:8	66:2,3,16,	135:19
Cont'd 3:1	169:1,4	223:17	21 67:4,11	175:24
4:1 5:1	170:10	261:22	76:1	crew 181:16
8:1	conveyance	266:13	82:1,11	criteria
content	143:21,22	270:23	84:13,18	51:16 53:9
256:2	Cook 242:20	course 12:13	85:6	critical
CONTENTS 6:1	cooperation	73:3 82:25	92:7,23	30:20
context 39:3	276:5	83:11	98:3,13	217:10,17,
128:11	copy 17:16	118:16	99:10,12,1	18
133:10	Corporation	205:19	6 100:13	cross
149:7	2:15	265:18	101:11,14	40:1,21
237:8	correct	courser	102:4,6,11	41:3 42:5
continually		99:16	,20	46:11,12
		cover 38:4	103:13,18	56:7
		59:7	104:6	66:20,21
		151:11	106:6	67:13
				203:6,18,1
				9 217:7,10

219:23	54:5	161:15	214:15	58:23
241:7	56:4,18	184:20,21	curves 38:12	59:9,24
crosses	57:1,4,10,	185:2,4	43:9	61:11
29:17	17 58:1,7	186:1		63:16
219:18	65:9,15,17	203:7	<hr/>	64:16
220:19	84:7	225:7	<hr/> D <hr/>	65:12
227:24	171:22,24	227:3	damage	66:23 67:7
253:1	172:10	230:24	100:10	70:15 71:3
crossing	173:5	231:17	180:16,18	75:16
7:19 8:13	176:22,25	curious	181:19	77:20 81:5
40:16	177:7	166:13	D'Amours	82:14
42:7,12	178:9	244:14	41:16,17	83:9,23
45:25	180:15,17	current	D'Amours-	84:21,25
46:2,9	181:18	62:18	Gauthier	89:24
47:10	182:24	76:4,25	4:15	92:20
52:7,10,12	183:15	92:23	DAR 30:2	94:10,20
53:6	184:16	137:9	204:3,5	95:10
55:5,12,20	191:24	144:11	Darrell 3:8	99:15
,25 56:8	195:11	147:21	5:10	104:10
65:13	198:25	148:8	data	106:21
66:15	199:3,21	177:23	24:14,16	109:22
67:1,6	200:9,18	205:24	30:18	111:19
114:4	201:11	220:25	34:24	112:9
172:13	213:15	224:12,13	65:20	117:3
177:17	214:24	227:4	78:16	118:14
179:19	217:9	262:9,15	157:2	120:15
181:13,21	223:8	currently	166:24	121:5,22
182:13	231:16,21	11:7 27:24	184:14	123:11
185:20	232:25	31:15 65:6	245:12,13	125:8
190:8	233:2,5,7	67:12 91:8	date	131:15,21,
199:6,23,2	234:24	117:8,22	11:15,16	24,25
4 201:3	235:14	123:7	121:20	132:8,16
203:3	244:1	144:22	239:23	137:3
204:8,10	269:9,24	159:25	dated 61:2	141:18
219:20,22,	cross-	162:9	Dave 2:20	158:21
25	section	163:9	13:15,19,2	160:3
220:4,17,1	232:5	166:22	1,24 15:20	163:5
9 223:18	cross-	179:18	16:3 19:13	164:5
224:14,19	sections	200:18	20:3 21:9	166:19
225:14,16,	74:14	202:10	23:18	168:15
22 226:17	151:10	205:18	25:11,13,2	169:8
231:17	cry 199:20	223:25	0 26:16	173:11
233:13,18	culvert 8:12	238:5	27:15,19,2	174:6
234:9	48:6	240:9	0 28:9	175:10
235:19	184:17	currents	34:3 40:5	176:11
272:8	187:16	140:24	41:1	177:15
crossings	190:7	curtain	43:12,24	179:17
8:4,18	228:5	135:22	44:10 49:7	180:13
12:13	231:3	curvature	52:1 55:22	181:7
16:16	culverts	34:24	56:2,16	182:16
45:19	45:10	curve 43:14	57:20	183:24
47:12,25	46:10 47:3			187:24
51:8,13	51:11			189:15
53:4,11				192:16
				193:24

194:22	65:12	197:3,13,2	66:13 67:3	158:19
196:9,17	66:23 67:7	0 202:6	81:10 85:3	159:5
197:3,11,1	70:15	203:13,25	91:18	167:24
6,20 202:6	71:3,15	204:24	93:16	178:19
203:13,25	75:16	205:15	94:23	230:14,15
204:24	77:20 81:5	206:14	95:15	231:22
205:15	82:14 83:9	207:16	103:8,15	Dean's 139:6
206:14	84:21	208:19	105:18	deb 220:3
207:16	89:24	219:14	108:25	debate 220:4
208:19	91:22	220:10,16	111:4,16	decades
219:14	92:20	223:24	112:1	83:25
220:10,16	94:10,20	224:15	113:12	December
223:24	95:10 98:5	225:23	114:24	271:7
224:15	102:12	226:15	119:19	273:6
225:23	103:12	227:20	120:9,18,2	274:2
226:15	106:21	228:21	4 121:10	decide
227:20	109:22	230:4	175:22	128:21
228:21	111:19	231:11	188:21,22	decided
230:4	112:9	235:18	191:20	162:9,12,2
231:11	117:3	252:17	192:25	2 267:2
235:18	118:14	253:24	236:7	decides
252:17	120:15,20	259:21	239:14	224:3
253:24	121:5,22	261:14	258:13	decision
259:21	123:11	262:11,17,	263:19	189:4
261:14	124:2	24 264:15	264:21	204:2
262:11,17,	125:8	266:21	270:20	246:7
24 264:15	131:15,18,	269:25	deadline	decisions
269:25	22,25	270:9	121:14	38:17
270:7,9	132:8,16	272:3,11,1	deaf 224:16	Deck 3:11
272:3,16	137:3	6 274:6	deal 19:16	deem 200:23
274:6,14	141:18	275:21	48:20	deep 155:19
275:21	150:7	day 10:4	163:15	156:1
Dave's 51:20	158:21	11:20	164:23	deepen 137:7
David 2:15	160:3	12:18	221:14	144:10
3:22	163:5	13:17	225:8	deepening
13:1,8,10	164:5	14:11,12	255:8	146:21
15:20 16:3	166:19	24:21,22	dealing	147:2
19:10,13	168:6,15,2	29:12,14	134:6	deeper
20:3,16	4 169:8	38:22	dealt 93:9	108:13
21:9 23:18	173:11,22	124:4	179:20	146:17
25:13	174:6	188:24	186:20	defer 23:20
26:16	175:10	272:17	Dean 3:14	70:21
27:20 34:3	176:11	days 43:18	15:23	deficit
40:5 41:1	177:15	121:25	27:10,15,2	253:11
43:12,24	179:8,17	207:3	2	define 95:21
44:10 49:7	180:13	259:11	28:3,10,20	defined
52:1 55:22	181:7	270:23	29:5	
56:2,16	182:16	de 2:9 19:18	138:18	
57:20	183:24	21:16	139:22	
58:23	187:24	35:22	141:1,16	
59:24	189:15	43:16 44:5	156:23,24	
61:11	192:16	49:25	157:20	
63:16	193:24	50:18		
64:16	194:22	57:24		
	196:9			

40:21	127:5	104:4	159:20	27:7,9,11,
79:21	131:12	233:1	165:22	18 38:17
80:17	133:7	depends	207:19	39:22
125:13	145:4	134:17	211:13,19	40:10,13,1
205:17	165:19	depiction	232:8	4,17 41:3
260:11,12	167:9	233:6	239:15	42:22 43:7
defining	170:4	deposit	250:22	44:24
116:13	171:11	128:16	described	51:5,16
124:25	219:2,5	deposited	33:5 70:6	52:2,16
159:14	230:9	88:10	105:25	53:4,9,20,
definitely	273:2	133:24	111:6	24 54:1
12:15	delays 233:1	145:18	119:22	55:17
28:21	deliberation	191:8	123:15	56:21 58:3
47:25 58:4	14:16	226:11	154:17	74:11
135:24	deliberation	deposition	155:18,25	114:1
207:3	s 212:13	63:8 88:7	156:6	130:16
233:11,16	delineated	139:17	204:7	131:3,14
275:18	230:22	140:21	239:22	133:9,18
definition	delineating	153:2,6	264:20	136:23
116:10	120:7	157:22,25	describes	156:14
118:5,12	demobilizati	depositional	159:13	157:16
119:21	on 7:6	226:2	describing	166:25
120:11	49:12	deposits	33:4	167:21
201:24	50:13,16	145:18	114:13,17	170:9,10,2
260:7	demonstrate	207:3	description	5 172:8
definitions	36:23	249:24,25	7:2,22,23	177:16
7:21	demonstrated	depth	8:2 9:2	180:9
121:3,18	34:19	145:21,23,	12:7 30:16	192:11
124:8,17,2	161:7	24	74:23	193:20
0	174:8	146:16,24	75:17	194:1,6
125:12,15,	demonstratin	151:7,13,1	124:9	201:3,6
20,22,25	g 34:20	5 197:1	148:16	202:15
126:10	Dene 5:10,20	217:6,8,23	149:18,23	208:14
159:12	denominator	231:2	155:20	216:15,16
160:16	119:10	273:8,9	156:5	218:2,15,2
definitive	dep 226:10	Derek 242:23	159:16,17,	2 219:24
119:21	Department	275:1	25	232:8
degradation	5:17 41:18	derive 41:6	160:17,19	245:18
15:9 71:24	69:8	derived	172:2	designed 9:6
143:24	departure	119:16	177:6	51:8 54:8
250:17	153:20	descri	179:1	55:1,7
257:1,9,25	depe 157:22	239:22	195:1	130:4
258:2,7,19	dependent	describe	203:5	133:19
degrading	90:25	29:18 38:6	211:22	172:11
258:16	273:8,9,10	67:5	236:2	174:18
degree 228:7	depending	107:12	descriptions	designer
Dehcho 5:15	72:7 98:8	109:17	96:5	177:21
16:6 25:2		127:6	171:19	designs 53:7
85:22		128:9	210:6	161:2,8,13
98:11			252:8,9,12	185:1
102:3			design 7:17	246:12
			12:3	desired
				233:3

destroy 130:25	determining 114:14	183:14,19 186:7	75:5	28:15
destroying 130:9	develop 69:15	190:11,16 235:4	dimensions 74:13 75:9	31:25
detail 8:7 19:17 21:10 24:16 40:7 52:16 119:7 178:8 186:8,24 187:13 194:1,6 201:3 202:15 222:22 233:11	developed 204:4 226:19,20 241:12	DFO's 134:8 199:9	diminished 69:20	39:4,9,11 42:24 58:8 62:20 63:22 68:25 70:17
	developing 128:18	diameter 46:10 47:3	direct 183:18 213:6 275:19	71:5,22 72:2,11,17 ,21 79:20 81:7 90:6 92:11
	development 8:19 56:20 83:21 202:14 235:1	difference 67:6 87:4,5,17 173:8,17 174:9 175:12,18 223:4 237:24	directly 15:24 103:24 269:16	106:10,16, 18 116:19 119:3 121:3
	deviation 262:25	differences 86:22	disagree 70:20	122:6 123:14
detailed 40:14 57:18 96:13 193:20 212:16 244:21 268:13	dewatered 61:8	different 19:24 26:25 28:1 75:22 109:23 135:20 140:19 148:3,4 171:20 231:6 234:13 236:1 237:25 265:16 266:7,10 267:10 271:1	disagreement 147:19	124:4,25 125:4,10 150:2 155:16 161:16 169:13,18 189:25 195:15 210:20 211:17 223:15 224:8 236:23 238:11
	DFN 15:11 26:2 133:8		discharge 152:19,20	discussions 20:20 23:12 72:17 73:6,14 119:14 120:2 124:10 167:13,17, 22 177:12 186:6 209:24 210:21 211:1,9 230:17 238:14
details 40:16 77:3 170:19 177:11 185:20 209:24 244:25	DFO 17:5,9 18:7,12 25:16 60:17 70:17 71:22 73:10 80:2,11 92:7 93:3 96:19 97:8 98:6 106:11 115:13 116:6 118:4 119:6,14 120:21 123:18 129:4 133:8,13 134:5 159:6 160:23 165:12 167:14 168:4 169:4,15 171:11 176:18 177:25		discontinuou s 244:24 259:24	
			discrepancy 155:25 156:7 214:8	
determinatio n 18:13 49:2 123:18		differentiat ed 80:20,22	discuss 15:2 19:21 28:4 58:15 98:7 178:8 192:5	
determine 20:1 142:8,23 170:20 173:7,8 175:1 213:12 244:22 261:19		differing 117:25	discussed 25:15 42:25 69:11 72:21 107:11 151:5 188:25 225:10	
		difficult 90:1 99:23 132:19 138:10 160:7	discussing 22:20 58:25 211:4 223:13	
determined 24:10 80:23 143:11 145:14		digging 68:15 151:17	discussion 6:7 14:17,18	disposal 114:19 disposing 14:23
		dikes 177:7		
		dimension		

disruption	20:18	Donnalee	drafted	duck 101:2
8:5 55:21	61:10	3:11	33:16	due 26:11
56:1,10	63:18 77:9	DOT 41:23	drainage 7:7	42:12
180:24,25	92:21	42:2,4,7,8	34:16,21	99:17
182:13,25	96:22	,12,16	35:8,10,14	105:10
187:18	125:14,21	double-check	36:14,21	180:16
dissolution	159:13	13:8	37:21	225:17
237:13	documentatio	doubling	49:4,13	226:5
distance	n 31:18	67:19	50:14	Dufour 3:24
228:18	45:5	doubt 103:3	256:8	duration
237:11	114:13	112:13	drainages	141:12
distances	documented	Douglas 3:5	188:25	215:24
162:14	269:17	downstream	drains 46:12	233:3
distant	documents	9:8 47:11	drawn 157:11	258:20
214:14	35:14	69:18	dredge	during 7:11
distinction	60:25	72:12 78:6	114:20	8:12 9:6,8
117:7,25	124:19	88:21	115:23	17:2 23:11
disturbance	125:23	90:21 91:4	135:7,23	30:21
8:8,12	238:12	93:19,21	dredged 75:1	42:5,6,8,1
105:10	dolostone	100:11	109:3	5 45:25
185:25	237:4	101:15	114:15	46:11
186:9	done 11:14	104:25	115:3	52:6,16
187:1	20:1,6	107:18	135:4	61:19,25
190:7	25:7 46:3	108:4,13,1	136:10	63:3,7
disturbed	47:16	5 111:17	dredging	65:24
15:4	50:13 53:4	115:5	109:5,8,16	81:13 87:9
187:10	54:10	127:18	,25	98:19
divergent	86:15,20	128:1	111:8,13,1	100:23
163:1	87:3 98:22	130:7,9	8 112:6,18	101:15
diversion	99:5 107:4	133:22	113:5	102:20
62:12,21	136:5,7	135:14	114:22	103:3,18,2
63:9	142:7	152:10,25	115:2	5 104:2
89:4,9	143:21	158:7,15	128:11	107:6,7,21
90:15	164:13	162:15	134:10,24	111:9
94:15	165:22	173:8,17	135:10,15	134:17
99:11	166:14	174:10,21	136:3,20	135:17,25
101:16,18	186:2	175:13,18	137:19,21	137:6,12
127:18	191:2	177:7	138:11	141:11
162:8	198:4	225:13,15,	driving	173:4,5,23
divert 64:23	200:21	21,22	123:13	,24
75:18	201:5	228:20	160:4	174:19,22
184:23	209:7	229:7	169:10	175:5,18
diverted	210:14	235:15	dry 64:8	185:25
41:21 61:8	214:7,9	Dr 32:8,22	87:9	189:16
75:19	215:20	33:1,3	107:20	190:7
divide 255:7	235:10,24	179:3,10,2	110:10	202:14
doable	242:21	2 180:7,23	138:1	211:23
126:21	247:5	182:11,19	152:7	212:12
document	261:8,10	draft 11:1	166:9	221:8
	265:15	116:4	229:22	234:9,10
	270:18	194:8		258:19
				268:10
				273:19

dust 13:16	easts 264:22	257:3	219:25	enc 54:12
dynamic	easy 82:8	258:5,11	elevations	encapsulate
76:22 78:3	191:11	259:5,15	104:6	260:13
79:11,17	EBA 10:16	efficiency	else 29:12	encapsulated
80:5,6	53:18	164:3	84:5	120:16
99:17	83:22	effort 56:9	107:11	encounter
142:4	ECC 20:20	efforts 8:7	126:6,22	144:11
dynamicness	ECCC 165:16	186:9,25	131:4	145:25
99:18	echo 113:2	187:13,17,	164:10	259:25
	161:12	19 218:18	178:21	260:2
<hr/>	echoed	eggs 128:18	192:21	encountered
<hr/>	167:25	130:25	224:6	147:3
e.g 15:8	ecological	131:1	241:16	244:9
EA 21:19	68:6,11	egustrian	248:25	encourage
23:11 30:6	70:11 72:5	249:24	252:19	39:2 88:15
34:12	ecosystems	Ehrlich 2:4	253:4,19	159:1
50:25	15:4	31:23,24	256:13	encroach
189:2	185:17	32:15	273:22	199:11
244:13	effect 62:19	33:6,7	elsewhere	201:11
EA1415-01	102:4	38:23,24	65:23	encroaches
1:7	104:20	70:3,4,14	emanates	177:18
earl 5:25	105:23,24	210:16,25	229:9	encroaching
199:9	156:19	247:20,21	embankment	57:10
earlier	173:9	eighty-four	219:25	encroachment
102:19	175:2,6,14	40:3	220:22	53:25
109:1	,17 238:22	either 14:16	225:8	92:15,22,2
119:6	254:14,16	48:24 74:6	227:3	5 94:13
152:18	257:4,6	86:25	251:22	encroachment
159:12	271:14,20	110:11	255:19	s 53:22
173:12	effective	111:23	256:3,10	54:12 61:4
183:13	30:18	117:9	embankments	94:21
188:24	108:22	133:23	258:2	encumber
198:24	effects 9:4	137:8	embedded	188:8
199:9	30:9 51:11	146:19	128:20	end-of-
206:10	52:3,18	167:4	embeddedness	season
213:11	53:13 62:9	177:17	138:20	49:1
214:21	86:14,19,2	191:6	139:23	endpoints
232:3,4,16	3 87:24,25	203:18	emergency	155:19
235:13	105:20	245:12	269:4	Enercan 5:8
239:15	109:13	273:21	Emond 5:3	energy
early 275:25	111:8,17	275:4	emphasis	217:24
ease 48:2	113:7,22	Ejeckam 3:23	272:1	engineer
easier	114:22	Ekotla 5:24	empirical	83:23
256:17	120:3	elaborate	104:16	245:6
east 52:13	174:16	7:13 97:13	138:9	engineered
192:5	216:3	elected	employed	66:9
249:19	227:17,18	64:17	269:1	engineering
263:23	231:5	elevation	enable 18:12	
264:7,14,1	250:25	137:8		
7	256:23			

59:6 62:9	91:9	153:5	174:2	evidently
67:8,22	entrenching	172:14	181:12,13,	227:22
83:23	78:23	180:16	14 208:10	evolution
142:19	environment	181:21	216:1	225:17
143:16	3:20 13:1	191:4	222:1	226:13
161:13	18:23 19:2	222:20	224:9	evolve 74:25
166:25	22:7,9,12	259:8	events 9:7,9	evolved
170:8	84:11	erosive	79:2	105:2
248:12,20	97:20,24	143:23	107:6,7	evolves
253:7	178:16	especially	163:17	53:25 76:3
engineers	181:3	130:6	172:24	exact 61:18
52:4	environmenta	166:9	173:4,24,2	94:11
246:12	l 1:3 59:7	233:18	5	exactly
engineer's	74:18	essentially	174:19,22	15:22
38:7	104:19	72:20	175:5,19,2	103:2
engorged	113:6,22	128:17	5	203:4
100:22	114:21	265:13	273:10,18,	206:16
enlarge	189:5	establish	19,23	232:20
260:10	211:3	80:25	274:3	examination
ENR 22:19	250:10,11	246:25	everybody	15:6
47:8 48:13	254:16	established	168:10,18	example 51:7
82:17 84:5	259:5,15	243:18	everyone	53:10
172:5	271:4	establishing	10:4 25:22	123:17
174:25	environments	49:4 248:5	31:25	124:22
175:16	100:16	estimate	77:14	142:17
243:15	140:20	180:17	94:5,25	234:8,10
245:24	episodic	257:2	116:24	265:25
246:24	79:1	258:21	178:21	examples
248:10	episodically	estimated	33:13	38:14
ensued 142:8	74:8	8:15	149:3	138:23,25
ensure 35:10	equal 67:17	196:20	212:7	139:24
52:17 76:2	equipped	272:12	everything	140:4
133:20	274:7	estimates	90:2	142:2,6,12
137:10	equivalent	136:21	143:11	,19 145:5
161:13	166:2	195:4,24	171:21	200:12
192:10	Ernie 2:22	et 202:3	240:11	excavate
222:8	94:11	209:25	241:16	143:2
258:19	95:19 96:3	evaluating	everywhere	163:8
enter	221:12	80:3	91:3	excavated
265:9,10	222:18	evaluation	251:23	75:1
enters 90:17	232:15	79:22	evidence	152:21,23
entire 41:8	251:20	111:7	52:5	153:4
163:13,14	eroding	evaluations	103:5,9	excavation
entirely	129:24	239:9	112:19	137:25
64:19	erosion 7:7	evening	122:4	138:11
90:25	49:14	276:4	183:25	151:7,14
110:10	50:6,12,14	event	221:20	163:20
136:13	66:24	63:3,4,7,8	evidence-	260:13
177:22	82:23	event	based	exceed 99:9
entirety	146:22		98:14	

exception 117:17	79:16 90:13,18 99:10 109:25 110:1 112:5,10 137:14 151:18 161:15 222:1 225:3 240:9 244:23	61:15,21 66:18 77:22,25 96:17 97:16 100:15 179:25 237:17 241:4,11	216:1 eyes 156:25 276:3	falling 37:24
excess 251:15				familiar 242:1
excessive 190:24 257:24			<hr/> F <hr/>	fan 57:5
exchange 185:10			face 38:15	205:7,19,2 5 206:19 207:2,3,10 208:1,12 223:16 225:15 226:11,12, 18
excuse 19:10 23:1 24:21 170:1 248:11		explicit 215:9	fact 27:23 54:13 75:20 76:18 79:15 107:2 129:25 181:18 187:14 192:18 205:17 208:21 226:19 241:15 251:17 253:4 259:8 260:14 270:25	
exercise 39:15	expectation 35:15 71:21 75:10,14 90:22 108:9 112:10	Explorer 1:22		Fast 4:7
exist 88:16		exponent 214:16		fault 137:20
existence 83:5		exposed 88:17,18 100:20 117:14		favourable 46:2 105:6
existing 53:20 68:17 74:14 75:4,6 87:20 88:8 91:10 142:21,22, 25 144:4,13 145:19 146:3,16,1 7 147:18 155:10,19, 21,22 156:16 157:18 158:12,14, 25 159:20 160:2 163:8 166:2,5 205:3 227:2	expectations 30:17 36:6 126:20 185:11	expressed 28:3,22		favourably 75:15
	expected 7:20 58:25 114:6,14 184:17 197:12 213:25 273:5 274:1	extend 193:8		feature 85:14,19 86:6 203:5
	expecting 121:24 233:19 260:14	extensive 79:16 80:1 249:23	factor 88:24 91:5 190:1 216:13	features 236:24 237:2,3 239:10,20, 23 271:14
	expedite 197:22	extent 69:19 113:6 114:10 118:19 119:16 136:21 138:11 139:18 141:12 142:25 157:19 162:25 173:9 244:22 250:16 251:1 254:9	factored 191:16 fad 215:10 fail 63:10 failure 57:5 fair 105:8 148:1 222:21	February 271:8 273:6 274:2
	experience 29:24 62:15 101:14 112:16 141:24 216:11,18 273:17	extrapolated 41:4	fairly 54:6 78:21 96:13 117:5 163:19 200:20 220:19	feeding 258:10
exists 127:20,21 146:22		extrapolatio n 195:13,17	fairness 212:10 fall 37:8 110:7,11 174:11 175:6	feeds 256:22 257:2
expand 124:20	expertise 275:14			feel 28:21 36:17 145:6 155:24 156:7 163:25 167:20 171:7 216:21 220:21 247:4 258:7 260:6
expanded 20:18	explain 7:9,15 50:2,7	extreme		feeling
expect 72:13				

117:22	247:10	109:6	113:15	170:17
169:14	finalized	118:25	115:2,8,17	176:21
feels 182:17	185:1	127:5	,18,22,25	178:7
felt 65:16	268:1	131:12	116:1	184:10
261:23	finding	133:7	119:8	190:19
ferry 42:4	54:13	138:19	120:3,7	fishes
field 52:6	212:19	145:4	122:3	241:11
fifteen	findings	149:14	128:21	fit 28:14
81:17	249:17	151:6,25	129:25	fitsh 161:22
figure 33:9	fine 22:13	165:19	131:1	five
43:20	26:17	167:9	133:22	52:10,13,2
95:16	48:13 88:8	170:4,18	135:6,14	2 93:20
96:14	90:7 91:20	176:14	136:21	185:18
120:22	99:9	181:14	138:15,21	214:16
147:24	139:17	185:19,21	139:11,18,	266:9
151:9,21,2	169:13	186:18	23 140:2,8	fix 158:15
2 152:17	182:18	192:3	156:5	fixed 158:14
155:16	198:17	193:8	161:4,8,13	flagged
205:2	216:23	200:3	,22	274:13
figures	227:14	213:7	165:19,20,	flashy 104:5
119:12	246:5	216:2	22,23	105:16
150:24	247:11,12,	219:5	166:4,10,1	flat 200:20
153:13	22 252:9	230:16	4 167:18	flies 149:23
182:7	263:17	235:24	170:11	flight 41:20
204:17,23	fine-grain	236:17	176:6	flip 128:19
figuring	249:22	253:7,10,1	183:14,17,	flood 8:15
94:11	fine-grained	7 254:7,17	22	51:7,9
fill 151:5	250:1	255:9,10	184:2,18,1	53:7
250:8,9,16	finer 88:16	259:13	9,22 185:3	54:7,11,14
251:1,18,2	90:8 91:23	267:22	191:8	,20 55:6
2 252:13	128:20	273:2	225:13	57:11,14
254:11,15,	250:4	fish 18:10	227:17,18,	61:4 65:15
25	finish	57:9	19 228:14	67:1,2,10,
255:5,18,2	202:21	68:16,24	231:5,7,20	14 72:3,6
0	finished	70:7 71:24	fish-bearing	76:15,19
256:4,13,2	149:19	72:2,4	204:11	78:25
5	235:6,8	79:20	fisheries	79:15,22
258:6,21,2	firmed	80:3,18	5:17 60:19	80:1,5,15,
2 259:3,13	243:20	85:23	69:8 70:18	17,18 81:1
filling	first 3:14	86:15,19,2	73:13	84:3
76:20	5:15 12:10	4 87:25	80:14 92:9	85:15,20
146:20	16:6 25:2	88:22	93:6 96:21	89:1,15
final 38:21	27:6	98:15,17	115:15	96:7,9,11
46:2	60:11,19	100:11,13,	116:8	98:19
157:16	79:19	16,24	118:7	102:16,17,
192:11	85:22	101:11	120:6	20
218:21	98:2,11	102:5,10,1	129:12	116:10,14
269:5	102:3	1	130:10,21	117:8
finalize	103:9	105:2,6,13	133:16	119:4,5,22
136:25	104:12	,24 106:6	134:16	
		107:13,16	136:16	
		108:11	140:17	
		109:12,13	141:10	
		111:17	160:25	

120:12,13	152:6,11	focus 12:8	95:22	231:19
125:1	157:6	106:24	170:19	forum 72:20
143:21,22	166:4,5	180:8	171:22	111:23
147:5	173:13	181:5	176:24	forward
152:2,12,1	184:23	214:6	177:3	21:18
4 159:14	195:4,5,23	focusing	199:9	102:10
163:16	200:24	236:19	201:8,23,2	119:7
164:13,15	201:6	focussed	5 250:12	126:20
171:22	207:22	28:12	259:4,9	fourteen
172:11,23	210:9	focussing	footprints	195:7
173:4,25	213:12	153:16	61:4	212:23
196:2,21,2	214:25	fol 136:22	177:10	Fourth
5	216:22	foliations	forced 74:21	268:19
198:22,25	217:10,18	242:10	Ford 242:23	Fox 13:21
199:2,5,6	220:24	folks 81:24	275:2	fragmentatio
200:20	221:4	82:2 213:5	foresee	n 30:11
201:11,16,	231:1,5,14	236:3,14	174:4	frame 50:22
24,25	flowers	243:9	forestry	121:13
202:2,8,11	229:20	275:24	43:8	123:19
,12 207:3	flowing 9:5	followup	forget	186:12
208:10	86:4 87:15	26:2 96:19	242:21	framing
209:23	89:4,5,9	133:13	forgive 32:2	196:16
217:5,6	90:15	134:7	170:5	frankly
218:8	101:17	141:2	forgot 97:21	246:16
219:18,23	136:2	196:17	form 16:14	251:23
220:1	174:17	197:11	23:21 86:3	free 261:19
221:15,20,	206:12	222:24	132:7	freeboard
22	219:8	223:7	211:10,13	51:15
224:9,20,2	flown 83:24	260:21	224:4	52:19
3,24	104:1	follow-up	formal 58:11	freeze 221:8
229:8,9	flows 8:14	39:18	formalize	frequency
249:24	67:19	46:16,22	246:4	18:19
flooded 81:1	79:13	48:15	formalizing	109:24
118:9,11	98:19	52:25	244:12	113:5
flooding	103:3	109:11	formation	114:9
51:13	106:25	128:7	242:5	118:11
199:1,11	107:19,22	147:11	formed 68:12	136:20
204:22	135:17	155:15	74:4 229:9	244:6
floodplain	157:15	158:22	242:11	frequent
118:12	162:20	178:2	forms 211:13	109:25
220:20,25	195:20	202:22	212:9,18	273:5
flow 7:17	196:1,20	206:7	formulating	274:1
55:7 67:12	198:22	209:14,15	178:20	frequently
76:15	213:8,23,2	217:2	forth 49:5	109:7
79:25	5 214:22	218:25	forthcoming	115:8
88:19	215:4,17,2	food 138:17	161:3	fresh
91:1,2,7,1	1 218:7	foot 250:12	forty-three	276:2,3
7 99:17	229:10,22	footprint		
100:22	233:19	7:10		
101:16,19	242:12	61:7,18,23		
110:12	flying			
114:1	101:17			
137:10				

freshet 51:12 63:4 76:22 103:18,25 104:2 105:10 106:25 107:4,5 109:9	galvo 82:25 Gap 52:12,14 192:5 207:23 252:24,25 263:24 264:8,14,1 8	90:22 95:11 140:1 161:1 171:1 177:14 198:7,9 233:7 252:11 272:13	57:5 Georgina 5:18 115:14,15 129:11 133:15 134:15,16, 22 190:18	261:18,19 264:8 gives 41:3 125:14 252:7 giving 214:16 218:16
freshette 233:21	gaping 143:18	generally 46:10 127:15 136:4 273:13	geotechnical 83:22 245:6 246:12	glacial 249:23,25
front 130:17 206:15 252:23	gaps 149:8 Garry 3:7 20:11 21:2 68:3 69:4,6 70:4,9,16 71:9,20 72:19 77:17 79:8 80:9 84:15 85:4,12,22 86:1 104:13 106:7,15 113:1,20 119:1 124:16 138:7 161:11 183:12 185:13 187:9 188:5 189:6,18	generate 103:3 166:24 generated 41:7 gentle 65:21 91:1,2 geohazards 243:11 261:6 geological 241:6 geologically 78:18,22 151:16 geologist 242:1 geologists 241:25 geology 144:14 237:4,17 238:4 240:17 241:3,4,16 242:15,19	gets 96:11 113:11 152:8 getting 24:17 33:24 44:15 93:7 136:19 216:1 218:21 222:2 229:18 250:5 254:7,19 255:3 259:10 264:22 275:10 Gilles 3:10 42:22,23 44:25 45:1,4 46:25 48:18 50:10 201:22 209:13,16 232:1,24 234:5	glad 172:5 gleaned 241:3 Glen 4:14 GNWT 4:2 16:24 22:16,25 23:6,13,15 41:15,17 46:20,23 47:6 48:10 82:3,6,22 84:11 98:6 165:8 172:3 176:17 235:13 243:13 245:21 246:15,25 247:22 248:4
frost 243:10				GNWT-ENR 17:15
frozen 45:11,13,2 1,22 47:13				goal 32:1
fry 139:3				gone 74:8 85:9 97:20 130:23 265:23
full 40:17 122:23 260:15 261:16				gotten 233:11
fully 68:19 92:16 149:25 265:19				grade 144:11 217:24
function 135:6				grades 38:11 267:12
functional 142:22				gradient 142:23 157:1,2,14
fundament 223:3	Garry's 20:7			
fundamentall y 223:4	Gasket 228:11			
Funeral 228:16,24	gather 116:19			
future 120:2 130:13 135:7 240:23	Gauthier 41:16,17 gener 42:2 general 28:16 32:3 38:24 39:7 70:18 75:25 83:4,8 84:7 89:8,15	geometry 53:21 142:23 146:2 147:18 166:1,2 167:1 geomorphic	given 33:11 106:4 115:6 163:18 167:9 188:7 192:18 238:4 239:20 246:21 258:25	
<hr/> G <hr/>				
gabion 232:5				
gabions 232:17				
gain 120:23				

gradual 146:21	248:24	200:19	,19,21	265:24
grained 250:4	greater 96:12	204:20	88:22,23	halfway 10:23
Grainger 52:12	gritty 70:20	207:1,17	92:22	hand 58:13
183:22	grizzly 259:10	217:15	98:15	182:10
192:5	ground 50:7	218:8	115:18,19,	hang 69:25
199:25	80:24 87:9	225:12,14,	22,23,25	84:13
200:11	116:15	24 226:7	116:1	107:21
204:8	239:24	227:14	117:15,23	happ 230:18
252:24,25	240:22	236:18	119:8	happen 73:6,15
263:24	250:6	237:1,6	120:3,4,7,	115:4,6
264:8,14,1	252:21	239:12,18	23 122:3	121:13
8	253:3	241:14	127:6,14	126:18
gravel 42:2	255:3	243:16	128:10	181:15
82:25	ground-based 268:7	244:10	130:9	222:1
90:11	groundwater 14:24	249:16,21	131:1	273:18
91:22	group 10:14	250:14,15,	133:11,22	happened 12:18
117:14	122:5	21,23	135:6,14	122:25
138:22	168:17	253:25	136:22	144:23
139:11,24	186:20	254:6,18	138:15	153:24
203:3	growth 105:6	256:18	139:19	211:23
206:2	226:23	261:5	140:8,13	212:5
256:16	239:9	265:24	156:5	240:18,19
gravels 127:15,16	guarantee 132:17	266:6	170:11	happens 153:21
128:16,20	guess 16:4	guidance 161:5	176:25	happy 138:12
gravely 253:4	21:10	216:12	177:18	212:20
grayling 107:15,17,	27:21 33:8	guidelines 186:3	183:15	hard 75:7
23,25	36:9	187:20	184:1,4	191:4
108:12	54:4,5	guy 265:9	191:8	Hardisty 4:19
127:14,24	55:4 62:8	guys 23:10	225:13,21	hard-pressed 173:16
128:2,16	63:11	46:21 82:3	227:18,19	Harley 254:5
great 10:19	76:9,10	194:9	228:14,23	harm 130:10
13:13 16:9	77:9 86:18	210:11	229:14	191:7
29:13	87:16,17	246:16	259:9	Harpley 2:15
33:24	100:5	<hr/> H <hr/>	habitats 117:25	15:20 16:3
50:17	101:3	ha 58:13	228:19	19:10,13
75:12	109:6	habitat 16:14	Haley 2:12	20:3 21:9
162:1	114:19	18:11	206:8,25	23:18
171:12,25	115:20	30:11,20	207:1	25:13
178:15	133:17,20,	57:9	208:7	26:16
186:20	23 135:21	68:16,24	229:14	27:20 34:3
194:24	139:3	69:10	228:14,23	40:5 41:1
215:3	160:4	70:7,18	229:14	43:12,24
218:24	169:10,14	71:24	259:9	44:10 49:7
221:22,23	173:2	72:2,5	habitats 117:25	
230:7	174:2,25	79:20	228:19	
247:18	187:25	80:3,18	Haley 2:12	
		85:20,23	206:8,25	
		87:6,11,18	207:1	
			208:7	
			236:16,17	
			238:10	
			241:1	
			249:14	
			251:25	
			252:6	
			254:5	
			256:18	
			258:4	
			half 86:21	
			108:3	
			164:14	
			166:10	

52:1 55:22	187:24	112:19	32:8 47:14	124:19
56:2,16	189:15	143:7	82:2 84:13	133:4
57:20	192:16	145:5	112:19	144:18
58:23	193:24,25	170:5	169:10	146:5
59:24	194:22	179:19	216:10	149:3
61:11	196:9	220:5	hearing	155:9
63:16	197:3,13,2	233:11	18:14	176:15
64:16	0 202:6	having 19:5	25:5,11	177:14
65:12	203:13,25	40:21 58:8	47:15	179:25
66:23 67:7	204:24	64:21	122:15,20	180:1
70:15 71:3	205:15	80:11	168:23	246:19
75:16,17	206:14	124:8	169:2	helps 238:6
77:20 81:5	207:16	132:4	heavy 65:24	241:22
82:14 83:9	208:19,20	137:12	height 88:14	here's
84:21	219:14	167:12	220:22	153:21
89:24,25	220:10,16	170:9	helicopter-	207:20
91:23	223:24	182:6	based	he's 13:2,8
92:20	224:15	183:21	268:3,6	32:9
94:10,20	225:23	209:9	help 48:11	132:18
95:10 98:5	226:15	219:23	50:1,8	196:12
102:12	227:20	220:3	58:18	197:21,24
103:12	228:21	221:5	59:10 93:3	Hi 13:10
106:21,22	230:4	255:22	95:18	31:23 35:3
109:22	231:11	260:6	101:22	36:8 38:23
111:19	235:18	hazard	110:25	60:18
112:9	252:17	267:24	112:3	111:4
117:3,4	253:24	268:6,18,2	116:22	160:24
118:14	259:21	0	120:2	247:20
120:15,20	261:14	hazards 57:5	126:19	high 9:6,8
121:5,22	262:11,17,	204:23	127:9	66:12,15
123:11,12	24 264:15	head 15:18	132:21	79:21,25
125:8	266:21	24:17	149:7	91:14
131:15,18,	269:25	139:12	182:5	100:14,16,
22,25	270:9	192:23	188:16	17,24
132:1,8,16	272:3,16	heads 150:3	189:12	102:24
137:3,4	274:6	252:25	199:17	119:23
141:18	275:21	health 98:18	207:18	120:12
150:7	hatched	102:11	208:5	128:24
158:21	140:2	105:16	212:12	164:9
160:3	Hatfield	106:6	241:11	172:24,25
163:5	60:3 86:11	181:3	helped 39:5	173:4,6,25
164:5	87:2	healthy	118:4	174:2,22
166:19	98:17,18	80:5,6	helpful	177:23
168:6,15	99:4,14	138:15	20:19	178:11
169:8	127:12	185:16	43:23	181:6
173:11	131:17	hear	51:19	202:3
174:6	139:9	13:2,9,11	58:17	214:17,18
175:10	140:7	55:23 98:4	77:21	217:25
176:11	150:12	110:22	113:4	241:10
177:15	haven't	224:17	116:20	248:14
179:8,17	11:13	heard 27:22	119:3	256:21
180:13	63:19 82:2		122:21	257:1
181:7	84:13 98:3			263:22,24
182:16	107:16			
183:24				

273:22	153:25	Hubert 2:2	79:11	ideas 160:11
higher 54:15	157:14	86:7,13	hydrologists	identificati
99:21	158:9	87:22,23	89:16	on 79:20
100:7	226:20	141:21	hydrology	identified
106:25	253:5	143:4	144:16	57:1 58:7
107:3	history	144:17	146:2	68:9 72:15
128:14	105:7	228:10	166:3	96:8
153:1	hit 217:25	229:24,25	213:21	130:15
162:20	hold 78:11	230:6	hydrotechnic	170:23
218:2	81:11	274:19	al 51:5	172:13
229:20,21	123:17	275:1	hypothesis	185:18
250:5	210:21	hundred	154:1	192:4,20
256:1	211:1	35:11,19		193:13,15
highest 42:6	212:6,17	40:3		194:3
107:8	holes 255:2	51:8,9	<hr/>	199:21
highlighted	Holman 3:14	54:11,14	I	202:7
238:21	28:20 29:5	57:11 74:6	i.e 34:19	251:16
highly 78:3	138:18	152:11,20	255:20	253:13,15
79:10,11,1	139:22	200:22	I'm 247:4	254:2
7	141:1,16	213:12	IBA 27:24	260:16
83:1,13,25	156:24	215:20	ice 51:11,13	263:5,21,2
84:1	157:20	223:17	52:3,18	3 264:17
105:12	158:19	hundreds	221:7	identifies
high-water	167:24	240:20,21	233:19	192:3
174:19	178:19	hundred-year	250:6	identify
highway	230:15	76:11	icing	14:21
17:1,3	231:22	151:23	52:8,11	72:10 94:2
42:1,9	honed 261:23	hung 108:12	I'd 23:6,14	270:17
244:1	honest 126:6	hunker 87:13	62:22,25	identifying
hired 261:15	Hoos 2:19	hunt	65:20 73:7	24:8 95:8
historic	hope 5:25	241:18,19	116:9,12	I'll 10:18
74:4,12,17	89:20	hydraulic	124:20	13:7
78:14	189:20	53:4,19	132:4	14:7,8
80:18 81:1	202:23	62:11	139:16	37:17
118:12	hopefully	63:18	185:14	46:23 77:7
120:13	13:21	66:25 74:5	226:13	79:18
144:6	54:18	76:10,11,2	246:24	82:12 84:8
145:17	109:23	4	247:11	85:11 99:1
152:7	268:23	hydraulics	264:16	106:23
154:2	270:22	57:8	idea 69:13	110:15
157:12	hoping 45:11	157:18	95:11	133:12,13
238:4	192:9	hydrogeologi	109:6	150:25
239:8	202:1	cal 241:9	118:10	159:6
historical	232:7	hydrogeology	180:15	178:24
157:3	Hotel 1:22	237:17	221:18	198:17
202:8	hours 102:23	hydrologic	272:13	208:20
205:7	housekeeping	62:10	ideally	210:14
220:20	149:1	215:10	218:1	216:18
historically		hydrological	251:23	224:17
75:22			255:19	246:11
78:17			256:15	266:21
				272:4

illustration	181:8,9,10	272:17	248:8,11	e 54:16
32:24	,20 182:15	imitate	269:12	Inc 5:13
I'm 10:16	183:3,18	157:17	impede 199:7	include 61:6
13:25	185:23	immediately	implement	71:4
15:16,23	187:25	49:6 90:19	45:13,24	243:23
20:24 23:9	189:16	104:25	implications	244:6,7
24:17	192:17,21,	impact 1:4	14:22	269:3,13
26:15,16,2	22 196:10	7:14 55:12	15:13	included
0 31:10	197:4,14	57:7,8	26:4,10	54:22
33:24	201:17	70:5,7	208:13	56:20
35:5,11,19	203:4,8,14	85:23 87:2	250:19	63:14
37:24	204:20	96:23	implies	117:15
38:20	205:9,10	97:1,15	137:22	214:9
47:15,18	207:1	101:24	implying	217:8,23
51:6 54:4	209:12	107:10	260:9	235:16
58:1 60:3	210:13	115:8	importance	269:14
63:20 66:8	212:14	116:1	48:20	includes
67:19	213:8,17	128:9	240:13	122:2
72:23	224:16	130:14	important	153:17
77:3,4	225:23	135:1,5	34:15	including
82:10	227:10,14	170:11	35:24	18:11,19
83:6,15,20	228:15	181:2	36:13,24	24:7 31:3
,22 98:16	232:20	191:25	37:20 39:9	65:13
101:8,21	236:3	245:3	68:5 80:5	70:17
102:3,8	237:10,23	250:11	85:8	121:8
108:6,21	241:21	impacted	101:25	136:20
110:20,24	242:1,22	105:17	105:25	179:6,12
113:13	243:3,22	impacts 15:7	125:3	204:10
121:23	244:10,14	18:11	135:16	inclusion
122:14,15,	247:21	26:13	149:14	215:5,6,9
20	248:12,18	29:20	161:5	inclusive
123:13,16,	249:16	55:13	189:1	175:25
18 125:4,9	250:15	86:14,23,2	190:21	inconsistenc
126:5,7,15	252:22,24	4 98:14	191:9	y 125:25
129:3	254:18	102:7	193:18	inconsistent
132:18	255:16	111:5	215:23	125:22
133:7	261:15	115:1,20,2	221:14	incorporate
136:13	266:22	4 133:21	265:1	143:10
138:19	270:15	135:8,14	impossible	incorporated
140:18	271:24	136:21,25	229:23	133:19
141:20	272:4	139:18	impression	143:6,13
148:10	274:7,12	140:8	47:11 71:4	177:10
150:12	275:11	141:14	111:13	218:19
152:9	276:1	142:9	improve	incorporatin
156:1	image 117:5	167:18	143:21	g 177:4
157:1	119:5	176:4	improved	incorrect
162:14,17	203:1	180:1	33:14	83:16
168:3,7,23	imagery	190:23	143:22	178:12
169:2,6,10	118:15	192:11	inappropriat	increase
170:4	124:22	193:22		
172:5	imagine	199:9		
174:25	102:25	228:13		
175:2,19	127:20	243:25		
177:2				

69:9	influence	186:13	s 143:24	80:22
107:19	158:16	188:16	instability	intent 25:19
130:10	inform 18:13	190:5	75:12	28:5 39:12
149:3	19:20	196:24	238:12,15,	40:17
181:1	21:12	204:25	18,22	47:1,5
increased	112:3	210:19	install	53:24 75:8
56:9	115:1	211:2	191:4	141:10
105:24	116:22	218:11	installation	156:15
180:9	120:2	234:22	8:13 177:4	168:8
increases	121:2	238:17	186:1	176:3
104:17	188:16	241:2	190:8	258:14
105:5,13	information	257:11,13,	installation	interacting
143:22	7:5,16	14 267:6,9	s 47:10	144:15
incredibly	8:10,16	269:22	184:17	interacts
80:1	16:13	informative	installed	144:3
incremental	18:9,25	98:12	47:12 48:1	interannual
98:19	24:5	informed	191:23	273:12
indeed 83:23	29:19,23	208:25	225:7	interdependence
264:16	31:1,22	informs	269:8	ncy 181:1
index 268:18	32:1,3,17	21:19	installing	interest
indicate	34:14	infrastructure	45:10	28:3,23
14:6 15:18	35:1,12	re 130:2	instance	161:13
65:21	36:12	217:8	22:25	167:9,12
70:12	37:19 41:4	221:19	140:3	168:14
indicated	49:11	infrequently	143:21	199:8,12
12:9 61:3	50:19 53:9	63:2 152:8	instead	227:6
121:24	57:19,22	initial 78:4	14:24	241:22
indicates	58:10,12	103:3	instrumentat	interested
118:15	61:10	118:12	ion 246:15	20:21 54:4
indicating	63:17	160:10	intact 205:6	62:22
32:25	71:13	214:4	integrating	96:25
70:16	102:1,9	initially	249:16	112:22
205:23	103:7	43:2 69:20	integrity	182:15
indication	112:23,24	initiate	68:6,11	195:15
121:25	113:4	20:20	70:11 72:5	212:3,4
173:14	114:1,11,2	68:25	138:24	213:20
210:7	5	input 31:10	139:25	226:13
240:21	121:1,2,7,	98:20	intend 70:17	230:21
indications	12,15,16	189:14	222:22	interesting
117:20	122:21	196:16	234:15	87:7
individual	123:9,15,1	inputs 79:1	intended	interject
97:1	7,20	inquiries	61:6 211:3	175:21
individually	132:13	144:25	intending	intermittent
179:21	136:19	inspect	253:16	166:10
industrial	140:18	222:7	Intense	internal
268:17	143:14	inspector	107:7	144:25
ineffective	149:7,8	181:16	intensity	internally
63:5	151:6	instabilitie		90:6
	159:5			107:11
	178:2			
	180:3			
	181:11			
	182:3			
	185:10,24			

132:18	19:23	167:10	57:20	20 133:12
interpretati	IR 60:23	172:14	58:2,23	135:18
on 122:25	68:8 82:18	184:22	59:20,24	136:9,11
124:23	88:5	188:7	60:7	137:19,21
125:2	172:16	221:5	61:6,11	138:10
interrupt	176:23	260:5	63:16	139:13
251:12	185:16,18	273:24	64:16	141:19
interstices	IR-22 185:14	item 12:4	65:12	144:22
90:19	IR-407 203:2	71:14 72:2	66:23	145:16
100:2	IR-ENR-15	80:10	67:7,21,22	147:20,22
128:25	172:7	96:16,17	68:1 69:13	148:6,7,17
interstitial	isn't 35:18	274:13	70:3,15	151:16
87:13	54:21 91:2	items	71:3,4	152:6,7
intervention	104:5	72:9,10,25	75:16	153:5,12,1
111:24	113:21	122:19	76:21	8,19
introduce	195:14	148:15	77:20	157:16
10:14	221:23	168:24	78:9,22,23	158:21
83:19	242:7	iterative	81:7,16	160:3
introduced	isolate	55:10	83:9,10,12	162:22
83:15	135:22	it'll 158:10	84:21 85:4	163:5,25
137:20	isolation	207:18	87:7,8,17	164:6,9
Inuvik 16:25	39:10	223:2	89:2,17,19	166:10,21,
invertebrate	issue 15:22	it's 10:4	,24	23
69:19	21:10	13:14	91:18,23	168:6,8,10
invertebrate	25:14	15:20	92:20	,12,15,16
s 71:18	26:22	19:13,16,1	93:16	169:8
87:12	28:12	7,25 20:6	94:10,20	173:24
88:23	52:2,15	21:9,11	95:10	175:10,22
100:11	56:5 90:7	22:13	96:13,15	177:15,20
104:24	99:25	23:11,14,1	98:11	180:8,13
investigatio	130:19,21	8	99:22	181:7,10
n 205:21	131:4,13	25:4,10,13	101:25	182:16,18
244:22	161:5	,21 29:5	102:24,25	183:24
invite	165:19	31:14,15,2	103:3	186:5,13,1
171:17	185:17	3	104:18	4,15,18
involved	187:11	32:7,17,18	105:8,12	187:24
11:3 15:17	191:6,7	33:12	106:21	191:4,11,1
65:14	194:1,4	35:24	107:5,6	2
143:17	208:17	36:21,23	108:9,17,1	192:16,17
163:21	209:1	38:23	8 109:22	193:18,24
167:17,20	219:9	40:5,11,12	111:4,19	194:4
169:11,12	247:6	,16	112:10,13	195:13
170:6	248:13,18	41:1,5,18	114:8	196:9
171:7	263:6	42:11	115:4	197:4
involvement	272:9	43:12,13,2	117:3,22	199:25
18:24 22:9	issues 14:15	44:10,12	118:14,20	202:6,19
44:1	28:2,4	45:3,4	120:16	203:13,25
involves	52:11 59:6	48:4,5	121:17	204:5,24
	71:23	50:15	123:11	205:5
	80:15 90:3	52:1,2,9,1	124:20,21	206:14,16,
	163:16	0,12,13	125:1	19
		56:16	127:23	207:8,16
			128:23	208:15,16,
			129:24	17 209:13
			130:12,19,	211:5,10

212:23	217:22	111:4,11	259:23	144:1
215:22	225:15	127:9,11,1	jumping	191:13
219:1,14,1	256:6	2 128:13	202:23	256:9,10
6,20	258:14	129:3	junction	kilometre
220:7,16		131:12,16,	122:5	16:22
221:13	<hr/> J <hr/>	18,19,20	June 1:23	34:25
222:20	J.F 3:24	132:2,14,2	11:16	58:19
223:19	jam 51:13	2	272:7	60:22
224:2,15	James 2:12	139:6,7,8	jus 237:6	86:17,20
225:1	3:2 171:14	140:6	justificatio	108:3
226:22,23	206:8,25	150:4,9,11	n 36:6	162:10,18,
227:6,20	208:4,7	,12,14		25 193:13
228:21	236:15,16,	join 203:17	<hr/> K <hr/>	199:23
229:19	17 238:10	joined 12:20	Karla 2:18	200:9
231:11	241:1	joins 229:10	karst	219:17
233:18,20	249:14	joint 242:11	236:9,11,1	228:11
234:17	251:21,25	Jonathan 3:6	3,18,19	232:3
236:16	252:6	103:23	238:16,23	236:20
237:25	254:5	Jones	239:10,17,	249:20
238:22	256:18	83:20,21	20 240:12	258:15
240:13	257:23	237:22	242:3,7	263:3,21
241:24	258:4	239:1	249:4,5	264:6,13
242:3,8	James's	240:6	274:20	265:1,19
243:19	255:17	241:13	karstificati	kilometres
244:24	jammed 51:12	244:20	on 242:6	33:4 40:2
246:21	Jansen	246:10	Kathleen	93:1 142:5
247:2,4,20	4:9,24	251:6,10,1	4:17	192:4
248:13	January	3,14	Kaylee 4:22	195:7,10,1
250:3	273:19	255:15,16	Keelaghan	2 199:23
251:23	Jarret 4:19	257:21	276:16	200:10,11
252:6,17	Joe 60:6	judging 20:7	Kelly 4:16	213:14,15,
253:12,24	John 2:21	Julie 5:17	Kev 251:13	17 240:12
255:6	5:21 59:25	60:17,18	Kevin 83:20	kinds 57:9
256:5,16,2	60:2,3,5,7	61:17	237:22	122:12
0 257:22	,8,10	73:12	239:1,15	164:3
258:7,9	69:25	80:13 92:8	240:6	274:8
259:21	86:8,10,11	93:5,14,15	241:13	Knight
261:5,6,14	87:1 88:4	96:20 97:6	244:20	2:12,13
,16	90:2,7	116:7,20,2	246:10	53:1 206:8
264:15,19	91:7,17,18	3 118:6,22	251:6,10,1	207:1
265:1	92:1	120:5	2,13,14	235:10
267:5	99:1,2,3,7	140:16	255:15	236:17
269:25	,13 100:18	141:9	257:21	238:11
270:20	101:12	160:24	key 58:7,15	249:14
271:18	102:14	170:16	105:14	knowledge
272:3,11,2	103:1	176:20	119:24	27:8,18
3 275:3	104:15	178:6	120:7	28:13
I've 10:16	109:12	184:9	124:8	31:17
23:19	110:16,20,	235:7		75:20
25:15	21,24	July 107:7		91:21
81:12		jump 111:20		127:23
153:16				203:14
204:7				
216:9				

228:22	207:2	245:16	213:16	17:17,22
known 105:14	214:23	layout	257:13	LIDAR 78:16
202:4	224:9	267:23	258:2	life 72:6
KP 16:16	231:17	lead 198:23	lessons	86:15,20,2
78:6	232:19	217:13	143:6,9,12	4 88:1
KP37 162:16	238:12,15	248:11,13	let's 83:18	105:7
KP38 162:19	largely 66:8	250:7	111:23	109:4
Kragt 95:19	larger 40:9	258:2	121:17	258:20
96:3	51:13 63:4	leading	148:17,18	lives
221:12	72:3 77:1	132:2	213:5	216:15,17
222:18	108:1	257:25	236:7,8,9	light
232:15	147:22	leads 240:17	letting 59:9	16:16,22
Krogt 2:22	148:7	learned	level 8:7,15	26:14
Kue 3:14	153:17	60:23	53:7	189:24
27:4,6,17	201:4,6	143:6,9,12	54:13,14,2	Liidlii 3:14
28:22 98:2	227:3	least 25:15	0 57:11	27:3,6,17
138:19	233:18	75:23	68:11	28:22 98:2
230:16	259:9	107:4	79:25	138:19
	largest	129:20	106:4	230:16
	195:10	205:8	119:7	likelihood
	larval 131:1	208:22	125:2	8:5 33:11
	last 37:7,12	215:15	186:8,24	55:21
	55:23	leave 49:21	187:13	56:1,10
	227:12,23	50:19,20	196:2,21,2	179:6
lake	229:7	82:13 84:8	5 199:6	180:9
207:22,23	269:23	85:11	201:12	181:1
land 41:18	late 10:10	216:18	217:5	182:13,25
187:10	110:7	246:7	233:11	likelihoods
191:2	222:2	260:22	241:10	179:12
landslide	later 10:5	leaving	250:15	likely 23:21
157:3	13:22 23:8	108:23	254:23,24	57:6 89:13
landslides	84:6,24	legends	256:21	90:17
74:10	95:14	230:23	257:1,11	92:14
78:25	110:9	legislation	levelling	100:14
153:25	175:7	32:7	54:20	105:12
154:2	184:13	legs 276:3	levels 51:7	112:20
lanes 38:9	211:1	length 7:19	69:21	114:10
Langois 2:18	212:8	32:23,24	91:13	153:3
large	223:1	86:17	107:3	184:2
66:10,11	lateral	92:25 93:1	128:24	213:24
67:2,16	153:5	114:5	135:20	222:3
76:19 78:6	241:3	141:14	151:23	245:11
87:11	laterally	162:11	152:6	250:1
89:20	237:9,16	163:13,14	174:4	260:13
100:1,21	Laura 3:2	239:12	198:23,25	271:10,20
108:2	Laurie 4:21	254:25	199:11	limestone
127:17	Laverdiere	lengthen	217:6,13	237:5
128:14	3:22 13:10	227:2	218:2,8	242:5
203:3	layer 243:24	less 67:9,13	221:15	limit 258:18
205:17			Liard 272:8	limitations
			licence	

118:19	140:10,15	167:25	253:2	lost 7:11
limited	142:19	168:1	259:14,16	28:25
118:17	144:21	171:11	260:1	61:1,19,24
241:17	lithologies	178:17,20	268:5	176:25
261:25	242:8	219:2	271:1	lot 50:8
lin 203:2	little 10:9	230:14	logged	78:4 89:13
line 46:12	25:25	load	245:12	90:11,18
56:25	47:18	63:13,15,2	logic 167:2	99:15
60:1,4	58:3,24	5 90:24	logical	100:22
86:9	62:12,19	99:21	64:22	104:6
101:23	63:6 64:10	173:13,15	245:10	126:16
110:22	73:24	loading	long 21:4	148:14
141:7	76:23	88:2,6	81:7	149:13,15
204:3	84:22	local 153:15	138:14	177:2
205:2	90:1,21	237:3	141:5,13	220:9
207:6	91:24	located	158:9	225:1,4
217:24	93:24	180:12	210:14	238:11
222:11	95:13	202:8	215:24	242:24
242:14	96:4,12	240:9	216:21	244:5
lines 69:10	113:3	locating	220:19	246:16
159:11	117:21	240:9	269:15	253:3
linier	126:6,9,17	location	longer 10:9	258:1
268:14	127:25	52:8 76:4	41:4	259:4
link 181:21	132:19	83:10,12	72:1,7	272:22,23
list 6:3,4	135:21	94:1,16	77:24	273:12
7:1 8:1,3	136:6	108:4	79:15	274:13
9:1 21:21	149:6	164:2,8,11	162:9	lots 259:14
55:19,20,2	152:4,13	207:24	233:2,17	lovely
5 56:11,17	155:24	219:15,20,	longitudinal	256:16
57:3,17	164:16	22 225:17	40:2,22	low 111:6
122:19	192:17	226:17	long-term	135:17
161:24	196:16	228:1,18	30:19	lower 53:11
179:4,5,11	199:17,18	235:17	loop 167:21	67:23
,20,23	207:14	239:6,8	loosely	68:10,17
180:1,11	213:11	252:21	80:21	137:9
181:4,8	223:14	260:3	Loretta 3:20	152:6
182:12,23	224:16,20	267:3	Lorraine 4:4	219:24
235:16	229:10	locations	5:23	224:25
269:16	237:7	18:20	losing	lowest
listed 30:2	239:2	43:22 46:9	162:14	135:19
listening	246:24	52:23 64:1	loss 17:6	lunch 126:18
98:12	249:3	92:24	30:10	138:4
listing	275:25	93:7,17	60:25 72:4	148:12
32:20	live 64:15	94:3,12,13	92:22	151:4
180:15	100:19	136:20	120:23	154:25
lists 211:14	101:5	137:15,18	loss/gain	155:9
literally	living	164:21	18:11	Lussier 3:10
102:21	100:13,16	176:9	losses 72:1	42:23
literature	273:17	205:25		45:1,4
	LK 230:15	227:10,11		46:25
	LKFN 27:23	231:20		48:18
	158:20	244:4		

50:10	80:1	managing	178:6,7	256:7,25
201:22	maintenance	35:19	184:9,10	257:4,7
209:16	62:22,24	mandate 68:5	235:7,8	258:1,3,23
232:1,24	63:5 79:4	manmade 86:5	mark 2:3	261:18,21
234:5	112:21	man-made	4:12 5:20	materials
	114:10,14,	105:10	18:22	45:13
M	17,22	manual 43:8	119:23	88:25
machinery's	134:19,21,	map 7:3	120:13	121:19
88:13	23,25	29:16	123:1,25	130:4
Mackay 4:14	136:8	32:21,23	124:1	143:2,20,2
MACKENZIE	153:4	44:2,15,19	168:22	3
1:3	163:15	208:11	169:19	144:3,5,8,
macroinverte	164:3	230:23	177:24	12
brates	222:7	267:1,24	178:11	145:7,12,1
69:14,16	major 2:23	mapped 148:4	183:21,25	3,19,22,24
72:12	7:18 12:12	mapping	184:3,11,1	,25
138:16	45:10,18,1	206:15	2,18	146:1,5,7,
magnitude	9 46:7	207:5	272:10,11,	9,15,24
105:14	47:4,23	241:16	19	147:3,4,5,
114:10	52:10 55:3	249:17	markings	8
Mahoney 4:16	56:4 57:1	maps 58:17	58:19	151:18,19
main 21:10	58:1 60:21	238:20	marks 183:16	189:21
35:23	114:3	241:3	match 147:18	250:14
67:10,14,1	140:19	242:19	155:19	251:22
8 78:24	157:9	263:15	material	252:8
92:12	171:21	265:22	45:11	256:13
127:21	200:17	267:12	46:13 47:2	259:2
206:12,17,	201:14	March 61:2	63:6	matter 21:8
20	221:18	92:10	83:11,14	25:16
207:20,23,	232:25	125:21	88:8,9,16,	31:10
24 220:23	233:5,9	193:7,8	19	102:22
225:3	234:9,16	271:9	89:12,18	matters 7:8
228:2	248:21	Marentette	90:9,18,20	49:15
267:21	264:5	5:17	91:12	50:15
maintain	majority	60:18,19	99:15	207:19
35:14 68:5	107:23	61:17	114:20	Matthews 4:6
70:11	241:9	73:12,13	115:3	maturing
75:19	manage 63:15	80:13,14	128:15,20,	78:22
maintained	222:22	92:8,9	24 130:22	maximum 24:9
35:10,18	management	93:5,6,15	137:16,23	151:13
42:2,7	18:21	96:20,21	139:18	may 12:14
75:1 76:21	30:21	97:6	146:14	13:15 21:5
144:14	63:23	116:7,8,23	158:23	26:11 27:1
227:12	135:12	118:6,7,22	191:5,7	39:7,25
228:4	136:3	120:5,6	206:2	52:11
maintaining	167:19	140:16,17	226:10	53:12,22
36:20 67:9	174:5	141:9,10	250:18	63:6,17
155:13	222:19	160:24,25	251:20	65:9,21
185:16	244:8	170:16,17	253:4,8,10	90:1,20
maintains	268:20	176:20,21	,16	96:7
	manager		254:3,20	107:12
	222:6		255:23	110:3,25

113:20	243:11,19	173:18	Melissa	60:24
121:12	255:8	measures	4:5,18	96:23
124:4,5,7	259:10	8:11,17	memo 61:2	97:15
126:17	McManus 2:8	133:10,18	92:10	151:14
127:2	McMaster	135:24	98:17	155:18
137:18	242:24	140:12	memory	156:1
140:9	mean 22:13	172:17	264:16	223:17
148:16	25:11	185:24	mention	237:12
154:25	36:19	190:5	62:13	239:16
156:13	40:15 54:9	234:22	177:5	240:3,10
160:6	56:17	269:1	mentioned	M-hm 265:10
171:18,24	64:6,12	measuring	43:1,17	mic 73:24
177:11	65:8 66:3	9:7 79:24	61:5 65:4	microphone
178:25	74:23	138:23	66:14 90:7	35:6
183:4	79:21 87:4	139:25	91:23	migrate
184:23	90:10	140:12	102:19	107:17,20
189:24	112:11	174:20	103:1	migrating
193:8	124:9	mech 238:13	105:19	108:11
196:1	133:7	mechanism	109:1	migration
198:18	134:17	211:8	112:7	159:24
199:17	144:22	mechanisms	119:24	migratory
201:6,7	155:20,22	238:13,15	143:5	30:12
202:22	162:5	meet 18:16	157:15	158:3
212:8	163:7	19:21	165:20	Mike 152:10
226:12	168:7	20:2,17	184:20	millennium
227:16	170:5	20:2,17	187:17	83:25
250:7	178:24	21:13 28:3	200:9	mind 57:4,25
252:19	204:1	98:7	263:21	106:2
253:4,25	206:12	122:12,17,	274:21	109:5
254:3	216:19	24	275:2	193:17
259:25	225:14	meeting	mentioning	224:19
260:10,21	226:7	19:19,22	214:8	250:22
264:9	273:25	21:18	Menzies 2:7	259:3,15
267:10	meaning	22:20	met 19:24	mindful 66:1
271:10,14	33:16	28:15,21	method	mine 72:6
272:7,14	meaningful	39:18	184:22	193:14
maybe 57:7	124:10	71:15 73:5	268:16	263:22
59:22 68:1	means 27:11	80:10	methodologie	minimal 79:4
77:7 85:1	39:1	93:13	s 138:23	109:14
110:25	102:10	121:12,15,	139:25	minimally
125:9	meantime	17 123:7	methodology	72:6
131:12	95:12	211:14,19,	45:2 141:4	minimize
133:14,17	measure	20,21,22,2	methods	8:7,11
135:23	102:15,23	4	35:16	66:4
139:20	140:21	212:3,4,15	114:14,19	185:25
160:4	166:21	270:8	136:20	186:9,25
178:21	measurement	meetings	metre 52:21	187:18
189:24	102:14	211:9	metres 7:14	190:6
190:20	141:3	212:1,7,11	54:15	
194:8	measurements	,18		
196:15	101:9	Melander-		
207:18		Forde 4:20		
220:11				
236:9				

224:2	84:8	moment	188:12	225:18
minimizes	106:18	117:23	months 45:7	235:25
136:25	107:10	126:8	Moore 3:17	243:5
minimizing	108:20,21	190:11	morning	245:21
191:10	133:9,18	201:10	10:6,9,18	260:22
minimum	135:11	249:5	12:2,8,16	moved 25:6
52:21	172:17	258:11	13:11	129:15
201:15	250:6	260:22	31:24	158:9
minor 46:8	257:1	Monday	59:1,4,7	movement
171:21	258:6	47:9,15	98:4	63:25
237:1	mitigations	Monica 4:10	121:23	136:12
minute 81:17	106:3	monitor	149:25	217:19
220:11	142:9	36:24 64:5	150:1	moves 63:2
263:14	167:18	76:2	151:5	76:23
274:21,22	171:23	235:16	182:14	208:15
minutes	mixed 264:22	monitored	210:18	moving 22:2
138:4	mo 42:8	35:17	212:7	24:19
202:21	mobility	75:13	219:6	59:12
212:24	138:21	141:15	235:13	62:23
220:9	139:3,23	244:7	morphologica	63:14 65:7
243:5,6	140:1	monitoring	l 203:4	66:10
misconceptio	mobilization	9:3,11	morphology	196:2
n 137:6	68:21	17:6 18:18	156:6	217:4
misrepresent	mobilized	21:13	225:13,21	227:11
ation	109:15	22:21	morphometry	multi 226:3
124:7	model 76:24	30:19 35:9	79:14	multiple
missed	138:10	47:11	Morrow	225:2
223:13,14	156:4	69:15	242:20	226:24
missing	201:3	71:18	mostly 88:5	Muyambo 3:15
34:24	241:6	72:11	108:10	MVEIRB 2:2
misspeak	modelled	104:20,23	mountain	MVLWB 30:5
259:23	156:2	105:19,22	90:23	myself 91:24
mistake	modelling	135:11	103:13	153:19
159:9	54:21 74:5	140:22	264:25	216:10
mistaken	76:11	141:8,12	269:10	224:16
121:23	104:16	142:8	mouth 219:19	
mitigate	196:21,25	167:18	257:23	<hr/>
130:16	197:1	173:4,23	move 12:6	N
135:13	198:25	174:14	14:4 20:24	Nadia 4:21
250:17	modelling.19	175:1,5,11	22:5 24:20	Nahanni
257:8	6 8:15	,17,23,25	29:13	5:10,20
mitigated	modi 229:16	176:8,10	64:22	41:21,24
130:12	modified	222:5	66:20 86:4	42:1,9
mitigating	86:20	225:20,25	126:23	68:6
105:22	modify 97:9	235:14	149:19	103:16
131:13	229:16	243:18,23	151:21	242:4
mitigation	moisture	244:4,12	158:9	252:23
	256:2	245:3,10,1	161:9	nail 126:19
		5	164:1	narrow 164:9
		247:1,8,16	196:7	
		248:6		
		month 42:8		

narrower 38:12	62:9 83:11 99:16	nodding 20:7 32:9	234:19	55:18,24 56:6
Nation 3:14 5:15 27:6 138:19 230:16	103:5 111:25 232:10 255:4	nods 26:15 168:3	noted 53:3 73:2,5 92:9 214:7 250:3	179:3,10,2 2 180:7,23 182:11,19, 20
national 68:7 70:12 103:17	necessarily 27:21 54:9 76:17,20 80:19 139:2	non-frozen 46:13 47:2,16 48:8	notes 19:20 21:19 26:23 39:19	O'Brien 4:17 observation 83:8 240:19 275:10
Nations 16:6 25:2 85:22 98:2,11 102:3 127:5 131:12 133:7 145:4 165:19 167:9 170:4 219:5 273:2	168:12 195:14 232:18 257:23	normal 158:11 197:1 217:6 221:15 245:8,17	nothing 84:5 158:13 245:7 274:7	observations 65:22 195:25
native 143:20 144:5	necessary 21:11 22:24 24:15 64:6 89:2 110:12 121:20 271:4 272:2	normalized 215:15,17	noticed 40:1 54:6	obviously 25:18 40:16 45:22 48:19 65:8 114:21 212:15 224:23 233:17 234:12 241:25 244:4 248:6 269:17
natural 5:2 34:16,21 35:8,10,14 36:14,21 37:21 68:13,17,1 9 74:18 152:25 156:5,6 173:15 188:25 227:16 228:6 232:19 237:18	necessitate 163:19	north 65:8,14 67:17 93:24 140:19 142:1 158:17 203:10 224:3,22 228:3,25 252:25 260:4	Notionally 11:15 np 2:5,18,19 3:11,12,17 ,20,22,23 4:4,7,8,11 ,12,13,14, 16,17,18,1 9,20,21,22 ,23,24,25 5:2,3,5,20 ,21,22,23, 24,25	occupancy 229:2
negligible 133:21 135:14	neck 246:2	northern 142:1	numerator 119:10	occupants 269:2
negligible 98:21	Nestor 4:11	Northwest 191:1	numerous 246:14	occupies 95:23
naturally 74:4,25 85:15 130:23 158:17 172:24 225:6	network 17:17	note 11:8 13:15,18 43:6 45:4 49:20 62:25 73:2,3 76:10 125:22 127:15 177:1 195:4 213:19 214:22 217:5	nutshell 242:3 NWT 273:18	occupy 64:24 72:3 96:7
naturally-created 74:12	newer 161:8		objecting 168:7	occupying 91:9 96:15
nature 27:11	newly 133:19 139:3		objective 157:17 158:6 Obo 182:19 Oboni 5:12 32:9,22 33:1,3 39:24 40:19 41:12	occur 30:23 49:1 83:1,2 112:6,13 153:2 173:23 175:5 221:16 260:14 271:11 occurred 142:11

157:3,14	167:14	154:24	151:8	opinion
180:18	170:6,23	155:2	153:20,22	19:16
208:10	171:1	161:25	161:9	66:19 67:8
236:22	230:1	171:12,15,	205:19,24	100:9
262:25	offsite	16	207:5	121:21
occurrences	14:24	176:17,18	221:20	214:18
250:3	off-the-cuff	178:17	227:21	240:4
occurring	111:22	183:10	older	opportune
151:12	132:4	185:11	88:13,20	104:1
181:14	oh 19:11	186:14,17,	89:10,14	opportunity
occurs 92:25	26:1 37:24	19,20	Olivier 5:3	23:23
181:12	52:19	188:13,22	onerous	83:18
252:19	69:25 96:3	190:2	189:22	opposed
Oceans 5:18	104:11	191:18	ones 12:10	59:12 93:8
60:19 69:8	106:14	193:24	36:20	104:20
73:13	131:4	198:17,19	58:15	172:12
80:14 92:9	143:5	199:16	95:7,9	237:4
93:6 96:21	251:10	200:17	119:24	option 64:11
115:15	okay	202:23	199:25	65:11
116:8	13:12,24	209:11,14	213:22	66:12
118:7	14:13	210:1,11,1	235:15	164:7,11,2
120:6	21:20	213:4	243:12	2 203:21
129:12	24:17,20	215:2	one's 96:10	232:18
130:21	25:23	216:8	ongoing	options
133:16	26:21 29:7	219:1,2	124:4	232:17
134:16	32:15	220:12	onto 24:20	order 28:21
136:16	33:6,19	221:2	84:13	31:4 54:15
140:17	34:5	230:13	191:8	57:14 63:3
141:10	36:9,25	235:10,23,	217:5	88:12
160:25	37:6 45:3	25	243:5	100:19
170:17	48:17	236:11,15	open 51:7	114:9
176:21	50:18	243:8	154:18	149:1
178:7	51:20	247:1,23	168:13	151:14
184:10	58:18	249:6,9,15	178:25	163:10
190:19	59:8,17,19	256:8	249:2	195:9
o'clock	60:10,16	260:20	opened	216:15,17
197:21	62:1 69:25	263:18	156:25	258:18
198:9	70:14	265:10,11	operated	268:4
212:25	72:19 76:9	266:17	42:4	ordinary
odd 205:8	81:15,23	272:23,24	operating	79:21,25
offer 133:4	83:20 85:1	274:15,17,	42:14	120:12
official	92:6	18 275:24	operation	organic
241:16	96:3,4	old 74:6	193:6	249:25
offset	97:11	80:18,25	271:7,22	origin
130:12,13	115:12	88:11,12	operations	146:14
135:3	116:2,5	90:4 91:6	45:9 50:17	original
229:6,13,1	127:1	100:3	111:9	30:9 85:7
6	132:11	116:14	137:13	86:16
offsetting	143:4	117:18	222:3,6	99:10,11
25:8 68:25	147:15	118:12		208:14
106:9,17	148:11	120:12		
	150:17	137:11		
	151:3	144:10		
		146:17,20		

originally 31:7 77:23	164:2	20:19	89:23 92:3	39:6
originating 147:8	overflow 172:12,14	parallel 142:18 144:19	98:6 101:21 103:17,24 104:12,14 106:1,8,16 113:2,21 118:24,25 119:2,14 120:21 124:15,17 129:4 134:2,5 138:6,8 161:12 165:6 167:13 168:4 169:4,15 171:11 183:3,9,13 185:12,14, 15,17 187:5,10,1 1	participatio n 22:14 particular 49:19 57:2 69:3 90:6 101:23 118:15 122:21 141:11 154:16 219:15 224:19 250:8
others 56:19 72:14 130:19 141:24 155:1 178:25 212:8 218:11 246:7	overlooked 62:14	parameters 18:19 53:19 182:4,9 248:14		
otherwise 12:6 81:7 203:7 213:24 226:10	overly 189:22	pardon 27:12 249:5		
ought 226:9	oversized 184:21	park 22:21 23:7 31:17 68:7 84:22 103:17 126:8 222:14 223:5		particularly 12:7 26:7 32:19,25 65:17 71:16 78:5 149:5 158:15 162:13,19 164:7,18 213:22 214:24
ourselves 120:21	overtop 220:1 221:4	parking 126:16 272:22,23 274:13		particulars 175:7
outcome 123:7	overtoppable 224:9	parks 3:2,17 15:2 17:9 18:7,16 20:9,12,17 ,25 21:3 22:2 24:13,15,1 7 30:15,25 31:9,11,13 ,15 32:11,14 33:18,25 34:14 35:2,4,24 36:5,9,12 37:2,11,19 42:22,24 44:25 45:4 46:15,23 48:4,15 50:1,11 67:25 68:4 69:7,9 70:10,11 71:21 77:15,19 79:6,9 80:2 84:14,16 85:13 86:2		parties 11:2 15:17 23:22 25:7,15 27:24 79:10 80:11 95:2 120:25 121:8 122:3,12,1 7,24 124:6 125:24 126:15 161:17 168:9,14 169:1,2 170:25 211:25
outcomes 19:22 121:15 169:3 212:17	overtopped 63:9			party 210:18 211:21
outlined 172:18 267:17	overtopping 66:24 225:9			pass 55:7 74:6 107:20 110:15 165:22
outside 22:22 23:7 42:10 96:9 222:14 223:5 270:19	overview 241:10			
outstanding 12:5 18:8 162:2	overwinterin g 158:4			
outwash 204:17 205:7,18,1 9,24 206:19 208:1	<hr/> P <hr/>			
overall 115:9 148:6 163:25	p.m 148:21,22 213:1,2 276:7			
	pack 273:13			
	packs 273:22			
	page 6:2 7:2 8:2 9:2 95:24 98:16 125:14 169:21 175:3,8,20 245:24 246:3			
	Pain 4:3			
	pan 34:16			
	Paradis 5:6			
	paragraph			
			partially 117:9 202:9	
			participant 10:12,13 83:19	
			participants	

166:10	38:1 40:24	189:9	214:25	135:3
172:12	41:10	190:14	215:3,17,2	149:2,8
173:5	45:16	192:14	1 216:22	160:11
191:24	46:5,18	194:18	218:7	161:22
194:3	47:21	196:4	people 11:6	178:11
201:5	49:23	197:7,18,2	12:5,20	179:25
229:21	51:22	4 199:14	42:5 50:8	208:10,12
253:1	53:15	200:6,15	103:16	221:17
passage	56:14	201:20	248:19	236:12
161:4,14,2	58:21	202:17	275:20	237:15
3	59:15	204:14	per 56:17	243:10
165:21,23	60:14 62:5	205:13	64:15	250:8
166:11,14,	65:1 73:19	206:4,23	66:20	254:9,12,1
22 167:3	76:6 77:12	209:4	perceives	5 255:7
184:19,22	82:20	210:23	219:9	262:21
185:4	92:18	216:6,25	percent 24:9	266:1
229:23	94:8,18	218:4	35:12,20	267:7,10
231:5	95:4 96:1	219:12	40:4 96:10	period 7:17
passed 62:20	103:21	220:14	126:5	20:15 21:5
passing	109:20	221:10	200:22	24:11
173:25	110:18	222:16	215:21	68:18
past 39:5	113:18	223:10,22	216:13,15	79:15,23
140:20	118:1	230:11	255:1,17	90:14,16
206:21	123:23	231:9	256:7	99:20
207:25	124:12	232:13	percentage	100:6
Patenaude	125:17	234:3	95:22	107:5
4:8	126:2,25	235:21	96:6,12	108:7
path 126:19	129:9	237:20	119:9	110:1,9
264:17	133:1	238:8,25	percentages	114:2
268:5	134:13	240:25	92:22 93:8	125:7
paths 192:20	142:14	243:1	Perfect	141:5,6,13
263:5	146:11	244:18	150:16,24	193:6
267:1	148:17	251:4	perform 9:10	199:5
269:9	150:19	252:4,15	75:14	215:16
Patrick 4:12	151:1	253:22	144:12	233:4,18
patterns	153:9	255:13	247:8,14	234:11
34:17,21	154:8,21	257:16	performance	273:20
36:14	155:4	259:19	161:6	periodically
37:21	161:19	260:18	perhaps	63:24
104:4	163:3	263:10	10:13	137:14
pause 10:23	165:4,10,1	265:6	14:14,17	periods
12:23 13:5	4 166:17	270:4,12	26:11,25	65:24
14:3	167:6	274:24	35:17	100:14,20,
16:1,19	168:20	275:7	63:19 72:7	23 102:20
17:12 18:1	169:23	pausing	77:21	107:3
21:23 23:3	170:14	192:17	79:12	172:11
24:25	178:4	peak 8:14	87:14	215:13
28:18	179:15	195:4,5,20	89:15 90:7	Perkins 2:13
29:3,9	180:5,21	,23	99:2 110:2	51:4 53:2
33:21	181:24	196:1,19	126:6	54:2 56:24
37:4,14	183:7	198:22	132:15	62:7 64:9
	184:7	210:9		65:3
	185:6	213:8,12,2		66:6,7
	187:7	3,25		
	188:19			

74:20 76:8	permafrost-related	167:18	116:14	pile 217:25
112:4,15	260:24	pertains	207:11,13	pinch 162:20
114:8	permanent	45:2	208:13	Pink 4:5
125:19	15:7	Peter 4:7	239:24	pit 202:5,14
147:14,16	193:10,21	phase 18:14	photography	259:7
155:6	263:1	25:5,11	117:4	pits 250:14
156:17	permeable	30:22	118:17,18	placed
159:10	91:13	52:16	photos	114:20
162:5	permission	131:4,14	62:16,18,1	178:10
163:23	126:14	136:1	9 78:14	placement
164:24	202:22	137:13	148:1	194:16
195:3	permit	154:3	206:13	233:7
196:5,23	193:16	171:7,8	223:16	places
198:21	permitted	Phillips	225:15	127:21
199:19	193:3	168:23	phrase 105:4	239:11
200:8	271:2	phone 2:21	physical	placing
201:9	permitting	3:9 12:21	115:22	258:20
202:25	19:17	13:2,10	physically	plain
203:20	189:17	59:2	109:9	54:7,12
204:16	243:21	60:2,7	pic 208:11	55:6 57:11
213:10	persist	86:10 87:1	pick 90:1,17	61:5 65:16
215:2	82:11	88:4 92:1	picked 88:21	67:1,10,14
216:8	90:21	97:22	picking 89:6	72:3,6
217:4	persistence	99:3,13	picture	79:22
218:6	72:7	100:18	203:16	80:2,5,15,
223:12	persistent	101:12	226:19	17,18 81:1
224:7	162:6	109:12	pictures	84:3
225:11	person 13:21	110:20,24	103:19	85:15,20
226:1	personal	111:11	piece 122:21	89:1,15
227:5	41:21	127:11	149:5	96:7,10,11
235:12	personally	128:13	180:3	116:10
permafrost	57:16	130:24	213:17	117:8
9:11 15:9	248:18	131:16,20	215:3	119:4,5,22
82:24	perspective	139:7,8	269:23	120:12,13
83:1,5,13,	36:23	phonetic	pieces	125:1
22 84:2	42:14	83:1	126:13	147:6
149:23	67:22 80:2	242:20,23,	262:2	152:2,12,1
236:5	85:22	24 249:24	pierces	4 159:14
243:10,17,	102:5	photo 95:18	186:15	164:13,16
24	115:21	148:2,3	Pierre 5:3	199:2
244:3,8,12	136:8	227:8	Piesold	202:11
,22,24,25	138:9	photograph	2:12,13	203:3
245:7	169:21	117:4	53:1 206:9	209:23
247:1,8,15	204:20	207:7	207:1	219:18,23
248:6,13,1	251:15	208:21	235:11	221:20,22
5 249:7,15	255:24	227:22	236:17	224:20,24
250:3,4,17	267:11	photographic	238:11	229:8,9
251:22,24	pertaining	80:23	249:15	249:24
256:1,3,8,		photographs		plains 79:16
11				116:14
257:1,8,25				
258:7,15				
259:24,25				
260:23				

171:22	152:16	255:17	24 169:7	233:1
200:20	153:14	259:17	positions	234:8
201:24,25	179:9	266:23	211:15	238:22
202:2,8	183:11	269:22	possibility	245:16
242:11	212:9,18,2	271:23	108:18	250:11,12
plan 7:6	0 265:3	pointed	132:12	254:13
9:11 23:22	pleased	94:12	267:13	259:8
25:8 45:9	185:21	pointer	possible	269:11
49:12	plug 15:22	150:22	14:16	271:20
50:16	plugged	points 79:19	27:15	273:24
67:13	51:12	106:17	144:18,20	potentially
202:15	plus 81:2	120:7	156:16	15:6,7
222:20	224:24	149:1	157:19	47:16
223:15,18,	Pocklington	151:4	167:22	57:13 67:1
25 224:11	5:20	153:6	191:11	88:22
233:25	point 11:11	171:21	229:20	105:25
243:18,20	13:16,19	185:19	250:22	109:2
244:12,21	32:17	232:11	253:17	110:1,7
247:8,16	40:18 45:4	Polje 183:23	possibly	115:4,7
268:20,25	48:3	199:22	125:23	119:17
269:3,4	52:9,22	200:10	post 30:4	176:1
planks	60:22 69:7	236:21	82:11	199:22
242:16	74:2,10	237:13	275:5	217:12
planned 71:5	79:18 82:1	poljes	post-freshet	228:14
101:18	92:13	237:10,13	114:16	252:13
planning	93:20,21	238:2	posting	pr 48:24
137:13	94:14,24	241:8	16:22	practice
210:7	95:17	242:14	34:25	136:4
224:4	105:1,15	ponding	potential	195:14
233:12	106:10	256:12	26:13 58:8	213:20
plans 202:5	107:1	pool 127:17	66:24 67:5	216:12
210:21,25	108:20	pools	68:9 69:10	practices
222:19,21	117:22	108:1,2,13	77:3 82:23	45:12
233:7,25	124:24	poor 184:1	87:12	135:12
plant 29:21	125:5	porous	109:15	Prairie 1:6
30:5	130:16	89:2,12	111:16,18	65:23
Plateau	136:11	portion	112:17	102:20
242:2,10	138:14	60:21 86:4	113:6	103:13
please 14:5	149:12	87:11,25	114:12	214:6
32:16 33:1	161:16	117:18	115:1	219:17
39:10	162:20	249:18	128:23	226:12
43:20 70:2	169:17	255:2	171:22	228:17,23,
71:10	174:3	pose 56:18	176:4	25 229:11
91:19	186:4	202:11	179:6,12	268:22
93:17 94:2	188:6	position	186:5	pre 44:1
104:12	202:4	132:3	191:25	precaution
111:3	205:1	154:5	192:10	220:23
117:2	211:7	157:13	193:21	precipitatio
127:10	212:21	158:14,17,	208:18	n 181:13
139:21	214:16		216:21	precise 93:7
151:21	231:15,18,		232:2	177:13
	19 244:10			

185:3	147:17	27:25	63:5 81:6	243:21
preclude	148:6	62:18 68:8	83:14 86:2	processes
105:16	prep 191:13	162:7	108:10,22	226:2
predates	preparations	206:11	109:17	produce
44:1	50:13	272:4	115:17	19:19
predicted	prepared	previously	124:18	123:20
64:13	268:21	99:8	129:25	129:19
245:2	presage	270:8,10	132:2	producing
predictions	111:22	271:2	137:19,20,	123:14,19
29:20	prescribe	pri 182:12	21 138:4	130:17
predominantl	222:6	primarily	149:17	productive
y 260:3	presence	50:11	169:9	21:6 68:22
pref 208:16	183:17,22	primary	170:7	128:25
prefer 174:7	184:18	231:13	173:14	productivity
preferable	237:4	prime 232:18	176:16	69:20
65:10	present	principle	191:16	professor
preference	107:24	168:7	216:10	242:23
59:6	117:23	principles	221:16	profiles
66:16,20	124:18	171:1	229:20	40:2,22
189:19	167:3	prior 7:8	244:7	program
204:1	184:2	18:14	248:21	16:25
232:19	presentation	25:4,6,8	255:1,19	17:18,23
242:17	43:17	49:15	276:1	35:9 69:15
246:13,14	156:25	51:12 63:7	problem	84:20
preferred	presenting	99:11	23:19	104:20,23
64:11	217:22	192:19	129:24	105:22
192:6	presently	222:23	143:19	222:5
203:15,16,	152:8	prioritize	178:24	225:20
21 204:7	President	179:4	187:25	245:15
208:16	83:21	prioritized	194:5	246:17
242:12	presumably	8:3	202:11	program's
252:24	66:11	55:20,25	problematic	105:20
pre-freshet	107:21	56:11	32:6	progress
114:16	144:7	179:5,11,2	problems	226:12
preliminary	145:7,11	0	143:25	project 1:6
40:13	146:7	182:12,23	proc 202:15	12:7 15:13
156:14	162:20	priority	procedure	26:4 27:25
157:16	227:10	188:7	43:14	28:1 30:2
161:2	pretty 75:5	prism 92:16	procedures	44:1 49:21
166:25	79:3 82:8	96:7,10,14	218:16	85:9 109:4
177:16	90:9 96:9	119:9	proceeded	115:9
200:21	151:16	privy 169:1	184:5	148:15
205:19	174:1	pro 57:22	process 14:2	149:17,23
218:15,21	246:1	102:9	30:22	171:19
232:9	271:24	probability	55:10	172:2
250:24	prevalent	182:6	77:22	179:1
256:22	250:4	probably	126:13	189:5
premise	previous	57:15 59:1	167:23	194:25
144:9			189:17,20	210:6
			202:14	213:25
			227:16	

215:24	261:7	130:1	159:2	241:3
216:4	proponents	221:18	160:15	pull 236:8
236:2	140:20	227:13	163:10	pulling
239:4	Proponent's	258:16	182:3,4,22	137:23
261:18	102:9	protected	183:20	pumps 14:25
projected	185:21	162:13,17, 18,24	186:8,23	purpose
213:23	proportion	protecting	187:12	128:4
projections	139:10,13	64:11	190:4	176:3
215:23	propos	256:2	196:24	225:24
projects	159:22	protection	219:24	purposes
17:6 136:5	proposal	30:20	234:7,21	184:11
140:19	71:18 78:4	220:22	provided	210:7
190:25	156:19	225:10	17:19	push 21:1
215:25	162:7	prove 173:18	40:15	pushes
216:14	propose	184:3	41:25	271:15
246:14	63:15 64:6	provide	53:10,19,2	pushing
prolonged	160:1	7:3,5,16,2	3 57:19	246:17
65:24	173:3	1	121:17,19	puts 132:2
promises	proposed	8:3,6,10,1	125:23	264:7
25:18	7:24 35:16	6 11:11	172:9	putting 56:8
prompts	43:3 44:7	16:13,24	177:19	104:16
149:22	45:6 61:7	17:5,16	179:23	151:7
properly	62:12,21	19:9,20	193:5,23	204:25
35:18	63:9 74:21	22:8	201:25	233:24
191:5	77:5 139:1	24:4,13,16	203:2	255:2,25
properties	140:5	29:16,23	218:11	
40:9	142:5	30:15,25	230:23	<hr/>
propo 62:21	147:17	31:9,16,18	261:7	Q
propoment	149:4	34:9,14	provides	Q100 52:2
232:7	155:11	35:1,9,20	119:3	55:7,11
proponent	156:20	36:12	166:25	Q2 200:25
7:5	159:18	37:19	177:21	qualificatio
35:9,13	160:20	38:14	providing	ns 218:15
36:7,18	162:8,9	40:7,10	18:24	quality
43:1,11	163:1,22	41:19	proximal	22:21
45:12	164:17	42:17	194:3	68:17,24
48:24	199:11	43:20	proximities	70:6 85:20
49:10	205:16,22	44:19	209:24	115:21
69:9,15	230:9	45:12	proximity	130:19,20
71:22	263:2	48:25	163:16	191:6
84:17	264:4	49:10	192:21	248:13,18
106:11	proposing	58:13	209:23	259:6
119:14	77:24	64:23	214:12	quant 119:8
176:23	117:19	68:10	264:9	quantificati
182:4,10	137:7	105:5	proxy 155:11	on 67:20
183:19	159:23	113:25	prudent	102:13
184:20	194:2	118:5	147:4	104:17
187:12	227:1	120:11	public 30:6	125:10
232:8	271:17	121:7	211:6,12	
234:7	protect	122:4	212:11	
	64:14	123:20	published	
		132:14		

quantified	111:1,5	6 248:25	18 172:1	229:14
119:8	112:2	249:7	176:17,19	238:1,11
124:22	113:11	252:1,12	178:17,20,	quote 267:1
quantify	116:10,12,	253:20,25	25	
69:19	17 118:24	254:1	183:2,4,10	<hr/>
138:11	126:11,12,	255:9,10	185:12	R
quantifying	23 127:10	256:9,11	187:5	Rachelle 5:2
69:13	131:21	257:19	190:17	raging 65:25
95:13	132:2,11	260:9,21,2	198:2,4,5,	66:8 80:1
104:21	137:1	3	13 206:7	railings
quantitative	139:7,15,2	261:2,4,9	210:5,9,12	38:9
99:5 100:9	1 141:2	263:13	213:5	rain 104:7
113:3	147:12	266:2	215:12	135:19
quantitative	151:25	267:14,18	217:3,15	273:19,23
ly 54:10	153:14,18,	273:2	218:25	rainfall
67:5	19 154:13	275:17	230:8,9,19	65:24,25
quantities	155:1	questioning	235:4,5	100:21
93:8 99:6	157:21	101:23	236:9,11,1	107:3,7
quantity	158:1	126:10	3,14	raise 69:4
87:18	163:6	222:11	243:6,9,13	82:4
que 71:7	172:20	225:12	255:8	227:1,2
ques 170:1	173:2	questions	260:24	raised 39:21
236:17	178:2	11:12	272:24	219:5
question	179:9	12:3,5,7,1	273:11	Ram 242:2,10
13:16,19	183:16,19,	4,17 15:15	274:8,10,1	random 78:9
14:2,5	21,25	39:21	7	range 68:13
18:22	184:3,11,1	42:21	275:15,18	91:25
41:18,20	2,18	44:24	queue 153:11	98:24
45:1	188:22	48:16 51:2	quick	101:10
46:16,22	194:25	53:1 55:16	82:7,17	122:18,23
48:11	196:17	59:3,10,19	234:8	162:17,18
53:18	197:5,10,1	,22 62:2,8	quicker	213:14
55:19,23	1	76:14	87:14	252:23
60:11,20	198:18,20	80:19	quickly	261:19
63:12	199:18	81:12,25	14:17	264:8,19
67:25 69:3	201:18,23	82:3,7	191:13	ranges 93:8
70:2,5	202:23	84:12 92:7	quite 55:23	ranging
75:18	207:18	93:4	62:10	195:6
77:8,12,16	208:6	95:1,2	75:14	Ransom 3:20
79:7 81:11	209:7,8,12	98:3 103:9	78:13,14	rare 29:21
82:17	,13,14,15	116:5	90:5 96:17	30:4
86:18 88:6	210:10	127:2	105:4	rate 140:22
89:17,21	217:2	128:7	117:5,13	157:5
92:4 95:14	219:5,6	129:4,6	151:16	rather 40:10
96:19	222:10	131:10	172:22	49:5 64:11
97:10,22	223:7	138:5	195:13	65:15,19
101:7	224:17	149:11,15,	199:22	70:19,21
102:13	228:13,15	17,20	204:10	81:7
104:11	230:14	150:6	205:17	
109:6,11,2	232:2,24	154:16,19	214:10	
4 110:23	236:18	156:23	217:9	
	239:25	162:2	219:19	
	240:2	165:1,7	225:16	
	241:14	171:13,14,		
	243:8,15,1			

111:20,22	ready 51:25	115:6	7 214:11	214:8
125:3	81:17	116:6	216:1,2	receptors
132:5	150:22	117:19	236:20	33:12
184:1	247:1	127:3	238:14,22	recessing
220:1	265:10	128:10	240:13	81:20
221:4	real 32:7	129:18	247:2	148:21
255:20	136:24	133:22	254:6,7,8,	213:1
264:5	166:6	139:1	22 256:18	reclaimed
rationale	realign	140:4,5	263:6	84:19
104:25	66:21	142:4	reappearing	reclamation
112:25	145:7	143:11	89:8	15:5
173:1	266:15	144:20	reason 23:20	84:17,19
248:5	realigned	149:4,12	76:21	222:25
rationales	68:18	151:12	111:21	recognition
172:21	69:17,18	152:4	132:5	43:4 45:9
re 37:17	85:25	155:11	153:1	54:19
139:20	87:24 88:2	157:23	158:1	recognitions
rea 40:1	109:1	162:3	162:23	54:20
reach 18:12	145:9	165:2	192:17	recognizance
75:11,21	239:19	167:11,14	214:19	261:22
78:12	264:10,12,	236:21	237:23	recognize
108:15	23,24	239:19	266:25	11:16
151:20,23	265:4	264:4,20	reasonable	25:14
152:3	266:3,13	270:25	11:21	56:9,18
162:25	realigning	realignments	104:19	63:24
166:9	67:6 135:1	92:11	239:12	79:12
reached	163:21	133:20	reasoning	166:8
106:3	realignment	139:1	56:25	221:14
react 189:12	7:12 10:17	143:7,13,1	reasons	226:16
reaction	26:7,8,15	6 240:1	240:1,18	239:18
186:14	59:1,13	265:15	248:19,21	275:12
reactivate	60:12,21,2	272:1	reassessed	recognized
117:19	2	realize	54:1	125:20
144:7	61:5,19,25	148:14	rec 25:14	180:19
145:17	62:3 64:5	realized	recall	218:10
146:21	68:9 74:21	97:20	116:17	recognizing
153:22	76:1	really 12:10	receive	79:10
reactivated	77:23,24	21:11	21:19	recollect
89:11	78:5,11	36:19 66:1	189:20	63:21
118:8	82:24	74:12,16	received	recollection
reactivating	83:10	104:3	176:22	20:12
74:12,17	84:19	108:12	recent 15:12	recommendati
readily	86:15	112:10	26:3 78:20	on 188:16
140:14	92:7,12	134:23,25	79:12	recommendati
reading	93:19,22	135:5,7	86:21	ons 191:22
10:24	98:3,13	152:4	119:2	267:18,20,
readjustment	102:5	153:1	207:25	22 269:19
108:7	104:18	156:25	216:11,18	270:2
	105:11,21	164:10	recently	
	108:8	166:20	16:17,22	
	109:16	174:9		
	111:8,10,1	206:16		
	2,14,17	207:8,12,1		

recommended 193:22	58:19	42:18	Reinecke 1:13 2:11	236:2,18
reconnaissance ce 268:3,9	reference 38:10	58:24	14:9,10	238:23
reconvene 81:24	69:22	60:11	16:8,11,21	243:9
record 24:14	83:7,10	70:17	17:24,25	254:24
30:6 44:15	122:11	82:23 83:4	18:3,4	269:24
116:4,11	186:2	84:7 88:6	19:7,8	272:24
120:17	187:20	90:5 98:17	22:4,5,15,	relates 60:20
121:3,18	260:1	107:9	16 24:1	149:18
123:10	referenced 123:6	122:3	29:11	171:19
197:10	referencing 43:8	136:19,23	33:18,23,2	179:1
211:6	referred 71:15	172:7,14	4 34:5	195:1
212:11	230:2	173:12	35:25 36:1	201:23
215:13	referring 63:19	187:13	37:1,6,16	207:6
230:3	71:11	232:25	38:3 133:3	210:6
246:20	91:7,17	248:10	136:15,16	232:2
248:5	92:21 97:5	261:12	182:1	relation 15:12 26:3
270:1	103:11	regardless 23:13 67:4	200:2	195:4
recorded 26:22	refine 268:5	121:14	245:19,20	206:10
70:24 71:1	reflect 25:21	264:23	246:6	relationship 195:8,13
246:22	32:16	regards 35:7,8	248:3	relative 49:21
recovery 245:13	53:22	138:20	257:18	237:14
red 204:3	reflects 79:23	139:24	269:21	relatively 65:21
205:2	reframe 154:24	193:12	270:6	67:22
207:5	refresh 264:16	261:5,6	Reineke 248:4	79:23 84:1
redeposited 88:21	regard 7:6	regime 50:7	reiterate 76:16	108:9
90:19	26:7 48:19	84:2 144:2	155:14	214:23
reduce 43:3	49:13	156:6	156:8	215:10
68:22	50:11	231:1	Rej 3:23	228:1
88:14,15	125:3	region 65:23	rel 93:19	237:1
199:7	172:14	242:22	relate 12:8	241:17
257:14	244:14,15	244:24	202:3	244:25
269:1	regarding 13:16	regional 153:17	related 18:10 27:8	249:23
reduced 162:10	15:17	195:19	48:16 62:8	relay 16:9
reduction 68:24 72:5	18:17,23	213:13,18	68:2 80:6	relevant 189:4
85:18,20	24:22	214:15	82:1 84:12	211:3
redundant 40:12	27:6,15,23	216:20	92:4 129:5	212:16
reestablish 154:6	30:17 36:5	236:19	138:5	222:7
ref 79:23	38:21	regions 251:24	148:15	252:19
refer 39:3	39:22	256:11	149:11,17	261:18
	41:19,24	registries 211:12	150:6	reliability 138:21
		registry 30:5	171:18	139:23
		275:2,5	172:1	relocate 154:5
		regular 103:25	183:17	relocated
			198:15,17	
			209:8	
			225:12	
			228:9	
			230:8	

166:1	191:12	58:11	253:14	215:12
relocation	replicate	69:14	reshaped	response
142:18	142:24	71:17 97:8	75:2	41:25
remain	160:2	132:23	reside 87:13	47:24
159:23	replied	159:6,11,1	residual	51:25
remaining	82:25	2 161:22	221:5	69:4,24
40:4 91:11	reply 272:5	186:7	resistant	77:18
remember	repopulate	187:12	105:3	104:11
15:21	87:14	194:21	resolve	132:5
38:25 39:3	report 17:5	218:8	15:23	172:16,23
109:23	18:17 30:5	259:1	173:19	177:14
130:24	39:25 94:4	requested	resolved	185:21
131:4	100:13	119:6	25:17	189:12
209:10	119:25	121:4	185:22	203:2
remind 72:16	151:10	189:21	186:6	269:4
reminder	153:13	requesting	resource	272:13,15
136:18	155:17	71:13	38:15	responses
155:2	172:10	188:9	resources	60:23
remote	192:3	189:3	5:3 15:14	176:23
166:24	193:23	require	26:5,10,14	responsive
removal 24:5	215:11	14:15,17	261:15	104:7
115:25	230:1	48:8 65:9	respect	restoration
190:24	252:7	required	34:15	187:13
191:10	261:8	30:1 44:16	36:13	222:12
222:11	263:20,25	53:12	37:20	restore 8:17
remove 64:7	267:16,17	62:24	71:17	74:13
137:16	269:16,20	185:10	106:5	234:23
164:1	270:2	219:1	168:9	restoring
removed 37:9	271:6	233:14	239:17	34:16,20
85:14,17	273:3,7,25	250:17	250:25	36:14
removing	275:2	251:16,21	258:12	37:21
49:3 85:23	reported	256:17	260:4	187:10
repaired	19:22	258:8	Respectfully	188:25
181:19	261:24	268:14	120:25	restricted
repeat	262:2	requirement	respectively	260:8
139:21	reporting	159:2	228:5	result 50:24
200:3	25:4	174:11	respond	64:3 76:18
repeated	reports	256:25	50:22 81:4	109:8,15
111:1	25:6,8,17	258:1,6	99:2	111:18
179:9	212:16	requirements	131:12	128:17
repetitive	214:7,21	7:18 18:9	159:2,8	166:3
111:13	represent	112:21	160:5	176:4
replace	7:24 156:4	114:3	196:8	180:17
147:4	159:18	134:8	245:22	210:20
replacement	160:21	161:24	270:22	211:19
143:3	representati	250:9	responded	resulted
replanted	on 211:23	requires	28:4 50:24	139:17
	representati	108:20	responding	resulting
	ve 41:5	254:14		105:3
	request	res 89:18		133:23
		reserve 68:7		

results	236:12	riparians	199:24,25	181:16
215:18	243:4	222:22	200:11	182:12,23
217:22	247:21	riprap 74:22	204:8	192:4,8,19
resume 87:15	266:9	75:6,9	206:11	193:2,6,9,
88:12	272:11	177:4	269:8	12 199:23
resuming	274:20	178:10	272:9	201:25
81:21	reviewed	risk 29:21	road 1:6 8:4	203:3,6,15
88:19	161:7	30:13 31:4	9:5 12:3,6	,18 205:3
148:22	267:25	50:14 64:8	23:1	208:14
213:2	reviewers	65:16	27:12,13	219:6,7,18
resuspended	165:20	66:4,12,24	28:1 29:17	220:19
89:19	reviewing	67:6,23	30:10 31:2	221:6,23
retroga	54:5 177:1	77:5	32:24,25	222:3,5,8
238:17	revisit	180:16	33:7 34:23	223:1,3
retrogressiv	148:13	181:5,6	38:8,11	224:8
e 238:18	272:23	192:20	39:22	227:9,12,1
return 7:17	revisited	193:17	40:8,9,17	4,21,24
114:2	43:5 52:16	194:15	41:5,8,24,	231:13
197:22	202:14	202:12	25	237:24
199:5	revisiting	208:23	42:2,10,11	238:2,5
233:3,18	43:2	224:3	,13,15,16,	239:5,8,17
234:11	rewording	234:8	18,21,25	,18
returned	20:23	248:20	43:8,19,21	240:2,3,5,
85:6,10	Ri 199:24	261:12	44:13,24	8,14
returns	Rick 2:19	263:23,24	45:8	241:8,22
69:21	4:2 17:14	264:9	51:3,6,7	242:16
revegetate	22:18,19	266:4	55:16,20,2	243:19
191:13	23:5 46:22	267:3,7	5 56:10	244:23
review 1:4	47:7 48:12	268:13,14	58:3	245:3,18
12:1 30:4	82:5,16,22	269:1	64:12,14,1	246:1,12
31:24	84:4	270:17	8,21	247:9
39:19	172:3,4	Riskope 5:12	66:2,3,5,1	252:20
62:17 70:4	173:21	risks	5,16	253:2,9
86:8 87:23	174:24	66:14,19,2	67:9,11	255:18
123:3	175:15,24	5 67:8,13	72:3,8	256:16
124:1,6	176:7	163:20	91:8,15	258:19
132:11	177:5	179:19	92:15	261:9,10,1
136:4	219:5	192:3,7	95:22	1,19,23
141:22	243:14	193:7,14	96:6,10,14	262:2,9,16
168:23	245:23	208:18	119:9	,22
169:21	246:23	264:2	130:1	263:1,2,3
171:15	248:9	265:2	133:9	264:1,7
183:2,4	riparian	risky 181:21	158:7,10	265:2,16,2
190:11	8:8,11,17	river	162:13,16,	0
191:18,21	80:6	42:1,3,5,7	23	267:6,8,12
209:21	185:25	,12 63:14	163:13,14	,23,25
211:8	186:9,17,1	78:18	164:2	268:23,24
212:20	9 187:2,14	83:24	167:21	269:10
228:11	190:6,21,2	86:3,4	171:22,23	270:19
235:10	4 222:12	162:24	172:8,12,1	271:1,2,7,
	234:23	172:25	5 173:6	9,16,19,23
		191:24	174:1,4,17	,25
			176:1,5	272:2,8
			180:9	273:15,24
				274:5

roads 38:15	142:16	120:9,18,2	102:22	107:13
43:22	143:15	4 121:10	screen 26:9	200:24
141:25	144:24,25	175:21,22	93:20,25	215:15
245:8	145:15	188:21,22	94:13	231:1
256:6	146:13	191:20	119:13	seasonality
268:17	151:3	192:25	Scrimgeour	271:5
Rob 4:13	153:11	202:24	3:7	seasons
Rochelle 5:8	156:13,14	236:4,7	20:11,12	268:11
rock 164:17	157:10,11	239:14	21:2,3	second 46:21
204:10	158:5	258:13	68:3,4	69:25
206:1	165:24,25	263:13,19	69:6,7	82:18
242:11	214:1	264:21	70:9,10	84:14
rocks 88:10	215:8	269:6	71:20,21	87:23
136:12	217:16	270:20	79:8,9	105:1
232:19	218:12	safety 181:3	84:15,16	109:8
242:4	rules 234:14	216:13	85:12,13	132:25
roll 12:19	276:1	219:9	86:1,2	137:1
160:7	run 249:19	222:8	104:13,14	139:15
Romeo 5:22	runaway 38:9	230:23	106:7,8,15	185:23
room 38:20	running	sake 212:9	,16	186:4,19
50:9 64:23	38:12	samples	113:1,2,20	193:9
94:5	60:22	255:3	,21	268:2
116:21	runoff 48:23	sampling	119:1,2	273:16
210:4	49:6 50:5	16:24	124:16,17	Secondly
242:1	215:15	17:2,22	138:7,8	11:13
243:9	222:2	18:20	161:11,12	seconds
260:25	rush 133:5	sand 90:10	183:12,13	160:8
275:13,17,		91:21 92:2	185:13,14	section 9:8
20	<hr/> S <hr/>	139:11	187:9,10	34:25
Rose 2:5	Sachi 2:9	252:9,10	188:5,6	40:10,22
roughly	19:18	254:2	189:6,7,18	41:2,3,5
81:18	21:16	sandy 252:10	,19	67:11
95:21	35:22	satisfactory	scroll 95:20	96:11
193:7	43:16 44:5	37:7	96:4	98:12
route 32:3	49:25	scale 207:12	211:12	101:18
42:12	50:18,19	238:12,15	sculpin	164:14
75:23	57:24	scaling	229:15	174:21
253:2	66:13 67:3	216:20	sculpins	193:13
262:15	81:10	scarp 204:9	107:15	205:18
routed	85:2,3	schedule	se 56:17	217:7
252:20	91:18	58:25	64:15	220:19
routes 158:3	93:16	science	Seale 4:4	227:25
routine	94:23	239:4	search	241:7
135:7	95:15 97:9	scientific	144:21	252:22
Rozeboom	103:8,15	241:22	season 1:6	258:15
10:15,16	105:18	scope 180:8	42:14,16	260:1
53:17	108:25	261:20,24	46:2	261:24
73:21 74:1	111:2,4,5,	scream	233:14,17	263:22
75:3 78:1	16 112:1		234:10	264:6,10,1
	113:12		271:9	3,23,25
	114:24		seasonal	265:4
	119:19			sections 9:5

32:25	119:12	segregated	serve 100:3	short
38:10	168:3	250:6	session 10:4	57:3,17
40:1,7	217:20	segueing	11:10,23	79:23
43:2 56:12	239:24	57:25	19:4	99:19
95:21	seem 47:18	select 46:13	50:21,25	100:6,14
107:20	64:13	selected	81:13	108:9
163:25	65:21 75:5	214:4	132:14	141:6
174:17	78:14	233:4	211:5	shortage
181:17	215:4	234:11	212:9	251:19
217:10	252:12	268:8	SESSIONS 1:8	shortened
219:7	seemed	selection	sets 213:7	77:24
261:22	172:18	232:8,11	setting	shorter
262:1	266:8	self-	236:19	87:24
271:18	seems 11:21	maintainin	settle	short-term
sediment 7:7	66:12	g 111:15	128:25	71:23
49:14	67:21	send 275:4	seven 93:20	215:25
50:12,15	75:22	sense 78:21	94:14	shot 224:18
57:8	78:21	101:5	138:4	showed
62:13,20,2	92:23	133:24	214:16	152:17
3	106:24	134:1	several	241:7
63:1,2,13,	107:17	171:5	12:13 57:1	showing 26:8
15,22 64:1	117:6	210:4	72:14	29:16
66:11	126:9	sensing	101:17	43:20 44:2
74:19	137:5	166:24	107:4	shown 152:4
75:10 79:1	148:1	sensitive	124:18	198:25
88:1,2,6	179:18	32:2,6,19	149:17	204:18
90:3,5,7,9	204:21	33:1,5	171:20	206:10
91:19	205:25	236:5	198:24	227:21
107:9	247:12	243:10	236:1	shows 53:7
108:17	seen 65:22	sensitivity	shadows	76:25
109:13,15	103:12,18	33:12	154:3	151:22
114:12	112:19	separate	shallow	203:2
115:5,24,2	178:10	28:12 66:2	135:21	206:11
5	191:2	73:4 92:24	151:16	207:5
129:20,23	225:15	122:16,22	Shannon 3:17	232:5
130:5,18	240:10	168:24	shape 256:10	shut 222:3
133:23,24	seepage	219:3	share 78:2	shutdown
136:25	229:8	separately	shared	49:1,5
138:10	sees 94:25	23:6	168:17	shutting
140:21,22	126:6	separating	shares 80:2	48:21 50:3
191:4	segment 31:3	67:10	shift 93:24	sic 17:16
204:22	33:7	series	263:2	102:22
226:2	69:17,18	245:11	shifted	sid 225:5
235:14,17	183:5	serious	92:15	sidebar
259:7	269:10	130:10	shoals	14:18
sedimentatio	segments	191:7	140:21,25	211:9
n 222:20	31:4 45:6	shoot 224:3		sides 41:25
259:8	179:5,12			
sediments	180:11			
68:22 99:8	181:6			
131:14	262:21			
seeing 26:15				
101:15				

sig 99:25	silty 252:10	209:19	slowly 78:23	132:13
sightings	254:2	sits 55:11	slumping	206:20
229:5	similar	sitting	248:11,14	somewhat
sign 15:18	22:25 23:9	212:1	small	68:20
162:8	38:16,17	situation	91:16,22	129:21
211:21	40:9 48:17	89:3	207:11	216:23
247:2	54:25 55:2	102:16,25	214:15	somewhere
signal	56:25	140:9	216:2	97:2
150:23	74:14,19	142:4,10	smaller	144:19,23
significance	86:19	159:21	46:9,11	204:8
34:10	87:20	163:18	47:2 57:13	207:4
101:24	103:13	166:20	92:2,11	sorry 12:6
185:17	139:1,16	173:20	195:17,18	13:23
187:11	140:4,9	224:23	213:22	19:12 26:1
188:17	144:11	225:9	214:10,14,	28:25
236:25	145:8,9	227:4	23	31:13 35:5
237:2	172:23	228:7	Smith 3:9,12	37:24
248:8,10	195:19	situations	smoother	42:16
significant	216:13	87:21	130:25	62:10
52:18	226:2	139:16	smothering	73:24
57:7,8	228:25	221:15	128:18	85:11 92:6
63:8,25	similarly	size 60:20	snow	95:23
65:15,16	51:10	61:1 67:18	273:9,13,2	115:15
70:8,13	143:3	90:10	2	120:18
86:24	Simone 4:23	91:20,22	snuck 196:11	131:22
89:20	simple 56:3	214:25	soak 14:25	133:5
90:20	187:18	231:14	Society 3:18	141:7
99:25	simplest	237:3	soil 250:5	143:5
100:10	86:2	skills 29:24	soils 48:5	159:6,9
128:1	simply	slide 14:8	249:22,25	162:5,14
163:20	122:11	152:16	solution	167:24
174:2,9	123:18	153:12	64:22	199:7,20
175:12,14	155:9	slides	236:24	206:10
190:23	166:23	243:11	Solutions	216:16
199:22	182:6	261:5	191:21	223:13
200:1	186:2	slightly	193:23	248:1
220:24	209:1	26:25	261:8	251:10,12,
228:7	simulation	28:12	263:20,25	13 252:7
239:11	151:22	148:4	271:6	sort 18:24
246:17	single	slimy 107:15	Solutions's	25:24 36:5
262:25	224:21	slope 53:21	192:2	42:5 53:8
263:5	single-	66:17	267:17	62:23
significanttl	thread	142:23	somebody's	70:25
y 53:11	226:4	260:5	181:15	71:12
54:14	site 83:6	264:25	someone	75:11
57:10	96:5	265:22	126:6	79:23 89:3
162:8	191:13	slopes 74:13	sometime	103:19
significanttn	site-by-side	75:5 253:5		129:15
ess 100:8	209:19	slot 198:9		130:11,14
silt 255:21	site-by-site			131:2
256:7				135:13,25
				136:3
				142:11

143:8	21:16	,21	231:16	222:2
144:21	35:22	129:1,5	specifically	271:9
154:12	43:16 44:5	130:6,25	9:4 50:2	springtime
155:10,14,	49:25	133:10	51:15	272:6
15	50:18	138:24	52:4,5	spur 224:5
156:3,4,8,	57:24	139:2,11,2	66:18	227:25
9 160:10	66:13 67:3	5	95:17	square 7:14
162:6	81:10 85:3	140:9,13,2	102:15,16,	60:24
189:3	91:18	1,24 158:4	20 107:6	96:23
190:22	93:16	228:16,18,	113:14	97:15
198:21	94:23	23 229:3	120:19	195:7,10,1
215:18	95:15	speak	167:17	2
216:16	103:8,15	32:8,22	174:15	213:14,15,
225:12	105:18	73:24	176:7	17
244:12	108:25	178:21	185:18	stab 176:14
257:2	111:4,16	speaking	243:22	stability
266:6	112:1	10:18	252:20	78:8
274:13	113:12	148:25	specificatio	stabilizatio
sorts 143:24	114:24	179:4	ns 170:11	n 142:11
276:1	119:19	180:8,24	specificity	177:5
sound 245:24	120:9,18,2	speaks	36:6	stabilize
sounded	4 121:10	178:22	specifics	177:8
26:12	175:22	species	23:8 94:21	stabilized
sounds	188:21,23	29:20	106:9	68:12
194:10	191:20	30:13	244:6	202:9
245:25	192:25	34:11	specify	stabilizing
source	239:14	107:13,16	182:9	232:22
205:10	258:13	231:6	268:25	stable
sources	263:19	specific	speed 157:5	75:5,12
202:2	264:21	16:15	spelled	78:15,21
209:19	270:20	48:10	50:16	79:3,13
243:25	space	69:14	spent 149:13	129:24
260:7,10,1	211:17,19,	71:17,23	spill 31:6	130:4
5	21	72:10,24	33:10,11	133:21
south	spaces 87:13	75:18 77:8	spis 231:6	143:1,3,17
64:18,20	span 231:17	102:13	spoke 232:16	,19 144:13
65:5 66:17	spanned	106:17	spongy 242:5	146:3
67:9,12	200:22	108:4	sporadically	163:9
153:23	spanning	124:21	63:2	208:22
164:10	201:15	125:7	124:18	223:20
221:1	spatial	137:18	spot 164:9	224:1
226:21	113:6	159:1,5,11	178:24	228:1
228:2	spawn 107:21	170:8	241:23	250:9,16
237:24	spawned	172:8,10	spots 75:21	251:1,14,1
260:4	139:3	173:24	spring 48:22	7
263:3	spawning	174:4	90:16	252:13,21
265:21	88:22	182:6	107:18,22	253:3
southern	127:6,14,2	185:3	128:3	254:11
224:1	0,25	187:20		255:5,18
Souza 2:9	128:5,9,17	200:12		258:19
19:18		202:5		
		211:10		
		215:4,6		

Stacey 2:7	started	17:24,25	267:1	147:11
staff 2:2	209:9	18:3,4	stopping	154:11
31:17	starting	19:7,8	227:6	159:4
121:16	29:14	22:4,5,15,	storing	168:3
123:4	94:24	16 24:1,2	115:2	182:2
124:6	117:21	29:11,12	story 234:13	200:3
132:11	149:21	33:18,23,2	straightforw	212:23
171:15	237:16	4 34:5,6	ard 67:23	234:19
271:23	starts 89:4	35:25 36:1	strategy	245:20
staff's	90:15	37:1,2,6,1	48:25	248:4
121:20	state 65:20	6,17 38:3	Stratos	257:19
236:12	100:13	133:3,5	2:10,11	269:22
stage 19:17	197:11	136:15,16	10:5,22	270:7
21:11	251:9	182:1,2	13:15	stream 60:20
40:12,13,1	stated 44:11	200:2,3	14:10	65:22
4 53:20	53:21	234:18	16:11	68:10,14,1
54:10	93:22	245:19,20	17:25 18:5	7,18,19,23
203:24	statement	246:6	19:8 20:23	70:6 74:5
205:20	69:5 83:4	248:3,4	22:1,5,16	78:19
233:10	100:15	257:18,19	23:25 24:2	79:14
250:24	states 98:18	269:21,22	29:12	84:18
stages	stations	270:6,7	33:24 34:6	87:14
200:22	195:6,16,1	stem 67:18	36:1	96:15
201:2,4	9	206:17,20	37:2,17	102:21
standard	213:13,18	207:24	39:14	104:17
43:13 52:2	214:3,10,1	220:24	42:21	138:17
216:12	5	step 105:20	44:15	145:6,8,9
246:1	215:14,16	218:21	49:19	157:9
standards	217:20	Stepping	51:2,18	158:6
43:7 186:3	statistics	64:10	52:25	177:5
187:20	17:7	stick 272:4	55:16	183:16
standing	stay 74:22	stock 147:25	58:17	204:11
24:6,7	100:25	Stoddart 3:3	67:25	streams
91:14	137:11	31:12,13	70:23	90:24
137:23	150:5,15	32:13,14	73:10	103:14
stands 254:8	223:18	35:3,4	77:11 80:9	138:15
start	staying	36:8,9	81:24	stream's
10:5,10	78:23	37:10,11	83:18	85:24
48:22	stays 75:19	134:4,5,20	84:24	strength
59:18	Steedman 3:4	194:12,13	93:3,12	221:21
95:24	steep 164:9	198:6,10,1	96:19 99:1	stress
107:22	steeper	4 249:8,11	101:21	105:5,12
120:1	38:11	261:3,4	106:14,20	stresses
172:2	Stefan 1:13	262:6,7,13	113:9	105:3
213:5	2:11	,14,19,20	115:11	stressor
223:14	14:1,7,9,1	263:16	116:17	104:21
236:4,7,8,	0	265:12,13	117:1	stretch 40:4
9,13	16:8,10,21	266:11,15,	122:9	64:19
243:12		18 267:4,5	127:9	67:16 88:3
255:10		270:14,15	129:3	110:10
261:2		stop 95:12	133:5	164:18
			136:17	

stru 72:4	submit 122:6	236:11,12	Sundog 10:17	suppression
structural	submitted	suggestion	12:12	13:17
45:20 48:4	23:22	59:9 68:15	52:10 58:4	sure 11:5,24
248:7	60:25	104:23	59:12	12:2,11,15
structurally	232:5	149:2	60:11,21	14:5,9
143:19	subsequent	suggestions	61:5 62:2	15:23
248:20	31:8 204:4	34:17	67:16	31:14
structure	subsidiary	36:15	82:1,11	35:12,20
48:6 201:7	225:5	suggests	84:6,12,18	48:7
221:19,23	substantial	74:5	85:6 86:15	54:4,8,24
233:13	54:6	215:20	87:25 89:7	63:20
242:10	112:17	221:21	92:7	67:19
structures	199:1	suitability	98:3,12	72:24 77:4
49:4 53:5	substantiall	140:13	99:10,12	100:6
185:20	y 67:13	250:18	100:13	108:16,17,
191:23	substrate	252:2	101:11	21 112:1
193:10,16,	138:22	255:5	102:4,6,11	113:11
21 199:6	139:24	suitable	,17,25	126:5,17
201:7	success	21:13	103:18	127:11
222:12	34:20	122:5	106:6	132:9,24
242:9	successful	169:17	107:16	136:13,14
269:7	112:18	252:13	109:16	156:2
structure's	138:25	254:3	111:8	160:12
199:10	140:4	258:3	116:6	169:20
struggling	sufficient	suite 267:17	127:3,6	175:19
181:20	33:8	summaries	128:10	183:3
224:17	108:19	212:11	135:1	196:5
studied	145:23,24	summarize	142:3	197:4
242:2	159:19	89:25	144:4	203:4,14
studies 83:6	244:14	211:16,17,	145:10,18,	205:10
242:24	sufficiently	18	20 147:9	218:18
250:2	223:19	summarized	149:5,11,1	226:3
stuff 75:10	suggest 73:1	61:3 96:24	9 162:3	229:17
78:24	102:24	summary 7:13	165:1,23	232:20
110:15	105:2,5	96:22	166:14	233:20
211:4	108:6	97:14	167:11	237:23
subject	112:19	212:15	171:14	241:21
204:1	126:7,15	summer 47:17	172:5	245:18
subjects	205:6	101:15	192:20	246:25
210:18	266:25	107:2,6,22	220:18	248:10,18
submerged	276:2	110:7,9	224:25	255:16
9:6 174:18	suggested	234:10	263:3	261:15
submission	26:6 27:10	268:10	264:5	263:16
94:4	133:4	Summerfield	265:18	271:24
119:25	238:5	3:21 12:25	super	surface
submissions	suggesting	13:7,12,20	217:10,18	184:24
63:23	71:14	19:1	superior	217:23
123:6	123:16	22:11,12	204:12	239:22
	212:14	97:23,24	supporting	243:24
			123:9	surfaces
			suppose	38:13
			218:10	surplus
			241:5	251:17

surprised	46:15,20	161:21	7,19	177:1
78:13	47:6	164:25	272:20	183:14,15
surprising	48:9,14	165:6,12,1	274:11	209:23
76:18,20	49:18	6 168:2,11	275:9,23	234:8
surrogate	51:1,17,24	169:25	swept 140:23	252:7
40:8	52:24	171:9	swimming	tailor 15:5
surround	55:15	176:13	161:6	tailout
231:5	56:22	177:25	sync 43:15	127:16
surrounding	58:16	178:15,23	synonyms	taking 101:9
144:5	59:8,17	179:24	32:5	173:18
surveillance	60:5,9,16	183:1,9	synopsis	236:9
17:17	61:14 62:1	185:8	186:2	tal 237:6
survey	67:24	186:11	187:19	talk 16:6
213:13	69:2,23	187:4,22	system 78:3	23:7 89:16
survivabilit	70:22 71:6	188:3,14	79:12	95:7
y 77:5	73:9,16,23	189:11,23	90:23 91:1	122:12,18
survival	77:10 79:5	190:10,16	99:18	132:17
105:7	80:8	191:15	100:19,21,	185:19
survive	81:3,9,15,	194:7,20,2	25 101:5	237:7
233:20	23 83:17	4	104:5	250:2
survived	84:10,23	196:3,6,14	105:2,9,15	talked 47:10
108:1	89:22 92:3	197:9,15,2	107:12,14,	55:4
susceptibili	93:2,11	3	15,19	155:10
ty 241:5	95:6 96:18	198:8,12,1	108:2,11	172:22
susceptible	97:4,7,19	6 199:16	110:12	186:16
57:4 181:2	98:1,25	201:17	112:11,16	212:7
204:22	101:20	202:19	130:5,18	talking
237:13	104:9	206:6	136:2	48:3,17
242:6	106:13,19	208:4	138:1	78:12
suspect	110:21	209:6	144:16	91:20,21,2
153:24	111:2	210:1	147:22,23	2 93:13
184:1,2	113:8	212:22	148:7	101:25
suspended	115:10	213:4	155:21,22	102:15
128:15	116:2,16,2	217:1	173:15	108:4,12
133:23	5 118:3,23	218:24	229:17,19	113:13
235:13,17	122:8	220:7,12	systems	122:22
Sweazey 1:12	124:14	223:6	65:25	123:12
2:10	126:4	228:8		125:11,12
10:3,19	127:1,8	230:7,13	ta 252:6	129:14
13:14,23	128:6	231:24	table 6:1	134:18
19:11	129:2	234:18	7:10,14	137:5,16,1
20:9,22	131:8,23	235:3,9,23	16:14 33:4	7 142:3
21:7,25	132:6,10,2	236:10	36:3	170:8
23:16,24	0 133:25	243:3	61:3,6,16,	198:7
39:13	138:2	246:18	22 93:7	200:19
41:14	139:5	247:18,25	95:20	218:23
42:20	145:2	248:24	96:22	220:8,9
44:14,23	147:10,15	249:9,12	97:5,9,14	222:11
	148:9,24	251:8,11	126:15	259:11
	150:9,13,1	253:18	176:22	266:7
	6,21	255:6		talks 62:21
	154:10,23	260:20		
	156:22	263:12,18		
	159:3	265:8		
	160:9,23	266:5,12,1		

Tate 3:5	233:2,4,5, 7,13	248:8	251:14	186:10,21
Taylor 2:16	234:9,12	249:15	255:16	187:21
241:24	ten 14:11	250:6,9,18 ,19,24	257:21	189:7,22,2 4 190:2
TBD 53:7	59:20	253:7	tha 141:2	191:15,18
team 253:7	148:17,18	254:9	thank 10:20	194:7,10
tease	183:16	255:2,5	13:11,24	196:7,14
122:15,16	221:16	256:21,25	16:9 17:23	197:25
tech 10:16	tend 100:17	257:3	19:8 22:16	202:24
50:21,24	246:15	260:8	23:15,25	207:15
53:18	tends 273:12	263:7	24:17	212:21,25
73:22 74:2	ter 199:8	267:16	29:6,7	222:9
75:4 78:2	term 72:1	272:12	33:17,25	230:8,15
83:22	termed 74:3	terr 238:19	34:6	231:22
142:17	terms 8:4	terrain	39:12,14	236:16
143:16	10:21,22	163:9,10	41:12	244:16
147:25	11:21 31:6	207:4	42:19,20	247:19
151:10	36:18	236:5	44:7 47:19	248:1,25
214:2	55:20,25	237:12	48:9,13	249:12
218:13	57:1 59:18	238:20,22	51:1 52:25	272:10,19
237:23	69:13	239:16	59:9 60:9	275:4
239:2	79:24	243:10	62:2 69:23	276:4
240:7	80:3,16	245:18	70:14	thanks 13:13
241:14	85:8 91:7	249:17	71:6,21	25:9,20
244:21	102:7,10	256:8	73:16,24	26:21 28:9
246:11	106:25	271:14	79:5 81:2	35:23
251:14	109:24	Territories	82:16 83:8	36:25
255:16	119:9	191:1	84:8 97:19	37:2,17
257:22	120:22	test 154:18	104:9	53:2 61:10
technical	123:5	246:19	105:17	70:3 71:19
1:8 10:4	124:3,8,21 ,25 126:20	Testing	113:7	72:19
11:10	134:1,6,8	151:3	115:13	73:8,15
25:6,17	138:16	Tetcela	116:3,24	76:9
124:6	156:18	199:24	118:22	84:5,10
132:13	163:19	200:11	129:3	87:22
167:20	173:3	Tetra 10:16	134:2,5	92:16
169:11,16	181:11	53:18	136:15	93:10 98:9
170:19	182:13,24	73:22 74:2	138:3,17	116:15
182:9	183:20	75:4 78:2	139:3	118:13,25
211:5	188:15	83:21	148:19	120:8
212:8	189:13	142:17	150:17,24	131:7
Ted 4:11	194:1	143:16	156:24	140:25
temperatures	195:20	147:25	157:20	143:4
45:10	198:22	151:10	158:19	144:17
temporarily	199:8	214:2	160:12	154:11
154:4	202:12	218:13	162:1	155:7
temporary	208:18	237:22	164:24	161:10
7:18 45:25	228:1	239:1	168:3	168:1
49:4 114:4	236:19	240:6	171:10	169:19
171:24	237:16	241:13	173:9	172:3
232:25	238:21	244:20	174:5	173:21
		246:10	176:13	174:24
			178:16	177:14
			182:20	178:14,22
			183:1,23	

196:17	4 118:8	245:25	47:24	207:5
210:16	122:24,25	246:1,20	90:13,16	209:22
212:23	123:7,13,1	247:5	91:10	211:7,9,16
215:2	5 124:24	253:9	190:23	,17,20
216:8,10	125:2,4,11	257:5	209:20,24	214:19,23
218:6	129:22,24	258:23	there's	215:8,9
225:11	130:14,17	262:18	26:25 36:4	219:15
229:24,25	131:2,6	263:4,17	43:4,19	224:21
230:6	132:1,9,18	264:5,14,2	45:9 48:20	225:1,2
263:17	135:5	5	50:14 52:7	226:23,24
that'll	136:3	265:11,25	53:5,6	228:12,16
133:20	137:24	267:11,13	54:18	232:10
225:7	141:14	269:15,16	57:21	236:23
246:5	143:19	274:12	62:16 64:1	238:1,11
that's	144:18	thaw 48:22	72:13	241:2,25
10:8,12,17	146:25	236:5	74:23	242:20
12:8 13:20	149:14	250:9,16	78:6,7,8,2	244:5
14:18	151:15	251:1,14,1	4 90:10,11	245:8
17:2,18,19	152:5	7 252:13	93:18	247:6
19:24	155:8	254:11	96:22	254:6
21:20	156:2,6,10	255:5,18,2	100:20,22	255:23
23:20	,18,21	0 256:3	108:18	258:22
25:11,18	157:6	thaw-stable	110:12	259:14
26:19	158:13	258:20,22	112:8,12	263:6
32:8,9,12	162:22	259:3,13	117:6	265:14
33:8	164:11,13,	themselves	120:21	266:13
36:2,9	17 165:22	253:15	121:12	thermal 50:7
38:19 44:3	167:1,2,22	thereafter	125:2	82:23
47:14	,25	184:4	126:9,11,1	255:24
48:13 49:8	170:23,24	thereby	2 133:21	thermistor
52:9,15	172:25	257:25	135:20,24	245:11
53:10	176:1	there'd	137:22	they'd 25:3
61:1,7,16,	181:14	155:12	138:13	252:12
18 63:14	182:14,17,	208:23	145:23,24	they'll
65:5	18 184:3	therefore	146:19,21	51:11 73:2
66:8,10	185:9	28:2	147:11	they're
68:12	188:6,22	42:7,13	150:5	10:24 19:5
71:10,12	189:17	85:16,19	151:24,25	22:20
76:17,20	191:16	105:3	152:4	36:20,22
81:6 82:15	204:1,5,23	107:10	153:1,14	47:15
83:24 85:8	205:2,19	114:18	155:7,24	78:11
89:5,7	207:9	125:7	156:7	79:17
91:17 92:2	208:13,22	167:3	158:13,22	80:16,21
93:20,25	214:11,18	180:10	164:10,21	94:3
96:24	215:3,19	181:3	166:6	103:13
97:8,11	216:9,16,1	189:4	168:25	105:6,15
101:3	7,23	202:11	169:15	117:9
103:5	219:17	226:9	175:1,12	119:17
104:22,25	224:14,23	227:17	177:5	121:20
105:11,14,	226:25	254:3	188:11	198:3
15 107:10	227:14	there'll	193:17	202:10
109:15	232:22		195:21	228:19
115:12	239:12,16		205:17,25	229:16,21
117:8,15,2	240:11		206:1	
	242:17			

266:6	threaten	125:19	105:9	traditional
they've 83:5	158:10	147:12,14,	tomorrow	27:8,17
85:24	throughout	16	11:23 19:4	28:13
191:2	89:1	154:13,24	22:14	143:16
193:12	124:4,18	155:6	39:15,16,1	traffic
thicker	142:1	156:17	7 132:15	180:25
258:1	271:9	159:8,10	149:24	181:1
third 52:18	throw 246:11	161:24	150:1	271:8
268:12	thrown	162:4,5	189:25	272:7
thirdly	154:13	163:23	192:6	train 180:14
109:9	thumb 234:15	164:24	275:17,20,	189:3
thirty 94:13	thumbs 22:2	171:14	24	198:22
205:8	33:25	195:2,3	tool 141:3,8	223:15,18
265:24	thus 180:25	196:5,16,2	top 51:13	225:6
266:8	tie 156:9	3	139:12	transcribed
thirty-eight	189:3	198:19,21	topic 68:2	38:25
164:8,15	tied 125:7	199:17,19	71:25	211:5
thirty-five	274:12	200:8	129:6	transcript
94:16	tie-in	201:9	211:14	6:10 39:3
227:23	113:15	202:22,24,	topics	73:3
245:6	Tielesh 4:23	25 203:20	72:16,22	transcriptio
265:24	tight 11:18	204:16	73:6	n 10:25
thirty-one	tighter	210:11	168:14	transparency
162:13	38:12	213:9,10	topography	212:10
thirty-seven	tiles	215:2	219:21	transpired
93:19	140:22,23	216:8	torrents	212:2
thirty-six	till 249:25	217:1,4	66:1,8	transport
94:16	252:10	218:6	total 78:9	57:9 62:13
164:14	timeframe	223:6,12	87:5	63:22
208:22	11:22,25	224:7	totalling	75:11 88:2
Thom 4:13	109:17	225:11	93:1	138:10
thoughtful	112:21	226:1	totally 78:9	226:10
132:5	tired 275:10	227:5	117:10	transports
thoughts	titled	235:12	266:15	63:1
117:1	183:14	Toby's 77:19	273:8	trapezoidal-
139:6	Toby 2:13	10:22	totals 96:23	type 75:2
168:4	51:3,4	12:19	touched	156:3
194:21	53:2 54:2	13:16,22	232:3	tree 226:23
244:15	56:23,24	39:16	244:2	trends
thousand	62:7 63:17	55:11 72:9	tow 226:11	215:18
195:8	64:9 65:3	80:16	towards	tributaries
thread 48:16	66:6 74:20	84:25	213:6	128:2
147:13	76:8	124:10	218:21	183:23
226:4,9	112:4,15	128:12	track	228:23,25
274:18	113:13	158:13	72:23,24	tributary
threat	114:8	275:18,19	tradeoff	52:11
221:23	118:4,24	276:5	256:6	67:16 78:7
222:4		toe 252:23		152:11
		264:7,25		158:16
		tolerate		

164:20	TSS 9:3	twenty-three	217:11	20:4,25
183:22	98:17,20,2	52:9	unconstrained	22:8,24
206:20	3 99:9,21	twice 67:14	d 86:5	23:12
219:16	100:7,14,1	type 9:10	underestimated	31:25 35:7
220:18	6,17,23	35:12	e 213:24	47:9 54:3
224:22	101:10,11	127:19	underestimated	80:21
228:3	102:5,13,1	142:8	ed 196:2	83:12 98:6
Tricia 4:20	4,15,23	144:19	217:13	105:20
tried 253:2	103:2	244:8	underlying	115:20
trigger	104:17	247:8,15	256:3	116:20
143:23	105:4,5,21	types 127:16	underneath	121:6
trouble	106:3	141:25	78:16	125:6
108:23	108:15	143:7	understand	127:24
212:19	111:5,17	274:10	9:4 27:21	132:23
233:19	115:5,20	typical	32:11	134:24
trout	128:11,24	268:15	43:23	139:10
228:16,22,	133:10	typically	53:18 56:7	141:22
24	134:7	43:9 63:1	77:2 86:13	149:4
229:2,3,5,	172:22,25	143:20	91:24 97:8	161:2
15,18	173:6,14	217:17,23	102:4	170:18
truthed	174:14		113:5	171:3
116:15	175:11,18,		114:9	178:12
255:1	23		119:15,17	185:1
truthing	176:5,8,10	ultimately	134:8	191:11
80:24	248:14	55:5	147:11	203:11
try 25:16	Tuk 16:25	182:15	149:7	206:17
48:1 66:9	turbid 91:3	unacceptable	158:24	209:18
76:2,3	104:2	129:22	169:7	212:2
77:7 78:10	turbidity	130:7	174:15	221:3
82:6	105:13,21,	uncertain	175:11,24	228:12
197:22	24 107:1	25:25	176:4	237:11
199:20	135:20,22	uncertainties	177:11	240:18
212:24	turbulence	138:12	180:14,24	254:21
214:19	217:19	uncertainty	181:20	259:23
224:5	turn 13:25	250:15	193:1	267:5
trying 28:5	14:7 65:25	254:23,24	207:9,14,1	270:21
64:18 66:2	77:19 99:1	255:3	7 212:5	understands
102:3,8	101:21	258:23,25	227:13	94:25
108:6	150:25	unchanged	237:23	understood
110:25	210:13	166:5	240:15	59:2
169:7	213:8	unchecked	241:8	undertaken
175:2	243:7	64:2	251:7	21:12
181:8,10	turns 147:2	unclear	253:6	114:18
237:10	275:3	271:18	254:13	192:1
239:5	tweak 156:15	uncomfortable	255:17	268:15
242:22	twelve 198:9	e 132:3	259:22	269:12
254:12,21	twenty 52:12	uncommon	265:2,20	undertaking
256:19	81:2	195:14	269:18	14:1,3,20
Tsetso 3:6	216:17	213:19	273:25	15:1,10,16
103:23	231:18		understanding	,21
			19:14	16:12,23
				17:4,8,15,
				20

18:4,6,15, 23 19:9,15,21 20:1,13 21:4,18,21 22:6 23:11 24:3,12 25:2,24 26:10,24 27:2,16,22 28:7,24 29:22 30:3,7,14, 24 31:7,15 32:16 33:17 34:8,13,22 35:5 36:5,11 37:7,18,23 38:5 39:4,8 44:16,19 49:8,10,20 50:20 61:12,16,2 1 70:24 71:2 72:21 73:15 93:10 97:11,13 111:24 112:3 113:10,16, 23,25 115:12 116:4 119:20 120:11,16, 19 121:4,14 122:10 123:8 125:6 132:7,22 134:1 136:19,23 160:5,15 177:12 178:9,14 182:22 185:9 186:13,23 190:4 196:11,19	197:16 234:19,21 239:4,5 270:16 272:21 275:11 undertakings 6:3 7:1 8:1 10:7,24 11:3,6,9,1 4,17,22,25 12:1 14:11 24:21,23 29:13,14 34:7 38:20,22 39:1,6,15 50:23 122:1,16 167:12 190:1 191:17 underway 149:25 undue 64:13 unfortunatel y 214:10 unglaciated 29:18 unintended 64:3 unique 238:1 239:17,21 240:3 unit 242:5 units 159:15 unknown 68:20 145:21 146:25 unless 14:2 100:25 unlikely 83:1,13 84:1 108:20 unspoken 248:1	unstable 79:11 255:20 unsuccessful 143:12 updated 161:8 upfront 130:15 upon 10:1 81:20,21 92:24 98:8 148:21,22 213:1,2 276:7 upper 147:9 152:24 154:1 166:9 upstream 9:7 69:17 72:12 74:24 91:3 94:15 104:24 107:21 152:25 158:7 173:17 174:10,20 175:13 207:22 219:22 223:17 224:5 227:24 235:14 upwelling 242:4,9,11 ,15,17 urgently 188:9 useful 94:5 107:12 181:9 241:6 usually 107:7 utilize 260:15	utilized 117:8 <hr/> V <hr/> valley 1:3 253:1 valleys 216:22 value 248:7 valued 34:11 values 218:19 variability 68:13 166:4 273:13 variable 176:2 variables 230:22 231:1 variation 237:18 variations 241:4 various 73:5 122:1 125:10 212:6 vary 104:3 vast 221:22 vegetated 117:10,13, 20 163:9 202:9 226:23 vegetating 205:9 vegetation 24:14 31:2 32:4,18,20 76:19 78:9,17 80:23 104:6 117:21 125:1 190:21,24	191:3 vegeted 117:12 vehemently 59:12 vehicles 269:2 velo 186:4 velocities 64:12 65:20 143:22 152:23 153:1 162:21 166:4 167:2 velocity 90:25 91:15 173:13 186:5 231:2 verify 184:14 Veronique 4:15 41:16,17 versus 67:6 79:21,25 116:14 152:2,14 173:17 174:10 230:24 234:11 237:24 Vice 83:21 view 79:14 241:6 viewing 80:4 visible 205:6 visual 240:19 Vital 5:23 voiced 106:4
---	--	---	--	--

209:6,14,1	121:9	51:7,11	widths 42:25	192:8,19
5 213:16	137:1	61:9	Wilbert 2:17	193:2,6,9
214:15,18	142:3	71:11,13,1	Wilcockson	205:3
215:14	144:13,14	4 77:11	2:21 59:25	227:8,12,2
218:16,22	153:25	80:25	60:2,3,7	1 234:12
219:22	164:13,17	86:23 87:3	86:8,10,11	239:19
220:3	166:23	108:14	87:1,2	240:2
224:4	172:22	116:14	88:4 92:1	261:8,10
226:25	174:8	122:14	99:3,4,13,	262:16
227:1,3	176:14	140:23	14 100:18	263:1,7
228:6	177:18	146:23	101:12	264:1
232:17	179:20	156:2	104:15	265:16
233:24	184:4	157:2	110:20,24	267:6,8
235:8,24	190:25	175:1,17	111:11	268:10,23
236:11	191:1	177:9	127:11,12	270:19
239:4,5	200:21	181:18	128:13	271:2,7
240:11	204:6	194:14	131:16,17,	wise 58:2
241:19	211:10	195:16,18	20 139:8,9	wish 96:16
242:17	214:7,9	202:3	140:6,7	withdrawal
244:24	218:14	207:9,11	150:11,12,	24:9
245:24	239:3,7,8	213:23	14	Woldrum 4:22
246:3	244:2	220:4	wild 249:2	Wolverine
248:17	253:2	228:19	Wilderness	7:4 43:18
249:1	258:16	231:3	3:18	44:8,21
253:16	260:11,12,	232:9	wildlife	253:1
254:21	16 266:23	233:24	30:18 31:1	wonder 11:19
258:2	274:13	244:3	32:3,18,19	77:11
259:24	whatever	245:25	34:11	101:22
260:2,7,14	35:15	246:8	willing	122:10
265:14,22	108:22	255:18	163:24	154:11,15
266:14	117:12	265:14	164:6	241:2
270:1	117:12	267:18	264:11	wondering
275:10	181:17	269:18	Williston	83:7 101:9
western	224:10	270:17	5:18	111:6
220:18	239:10	273:14	115:14,15	122:14
wests 264:22	whatnot	white 117:13	129:11,12	127:5
wet 225:1	170:19	whole	133:15,16	129:3
we've 11:4	whatsoever	40:10,17	134:15,16,	138:19
20:17	78:8	137:17	22	157:1
21:12 26:8	189:22	138:1	190:18,19	165:21
28:24,25	wh 236:25	223:3	winter 27:12	177:2
40:15	Wheler 2:6	236:6,8	30:10	181:9
44:11	25:9,10,20	who's 59:18	42:6,8,10,	188:1,15
48:16	26:21 28:8	wide 155:18	15,16	219:7
55:10 58:7	29:7	156:1	43:25	270:15
59:1 60:17	71:8,9	200:20	44:9,12,13	274:12
63:25	72:18	widening	45:6,25	woods 246:2
64:17	wherever	43:9,14	46:11	wording
65:22 68:8	164:13	wider 155:22	48:2,19	25:21
72:20 73:4	whether	width 43:3	108:1,13	33:14,19
78:10	19:22	79:16,22	140:2	39:8
103:12	28:11,13			
107:11	30:8 45:3			

122:9,10	257:24	145:5	186:10	
133:4,8,14	worse 256:12	166:13,14	187:2,14	
137:1	worst 256:12	193:25	234:23	
176:15	Wow 149:13	239:22		
186:15	wrapped	257:13		
194:9	28:14	258:15		
246:4	wrapping	264:20		
work 19:23	149:19	Yukon 273:17		
20:23 23:8	275:25			
31:21	write 160:5	<hr/>		
40:12	272:21	Z		
45:23	275:11	zeros		
98:22	writing 25:8	177:2,20		
114:16	written 11:7	Zinc 2:15		
137:25	30:15	9:10 22:25		
142:20	wrong 13:24	23:13		
145:6	56:5	27:4,5,16		
163:21	137:21	28:22		
165:22		47:18		
166:13,14	<hr/>	82:25		
169:16	Y	103:17		
170:18	Yellowknife	121:24		
175:7	1:22	137:2		
180:8	yesterday	141:17		
182:5	12:4 28:15	165:21		
186:14	32:1 39:21	167:13		
194:8	41:20	169:5		
204:10	42:25	171:11		
214:4	188:24	172:9		
215:19	yet 123:19	173:3,23		
218:14	134:24	186:7		
229:12,13	185:2	188:8		
230:1	220:6	193:5		
244:5	yield 211:2	214:5		
256:8,17	you're	216:4		
worked	254:12	219:8		
142:18	you'll 32:2	230:21		
143:7	149:13,21	243:16		
145:5	150:23	244:11		
working	211:13	246:25		
10:6,17	221:3	247:7,12,1		
11:15	258:20	4,22,23		
45:11 95:8	yourself	248:22		
161:24	10:14	257:20		
176:14	169:2	267:19		
215:14	you've 43:21	269:18		
218:17	53:8 59:10	273:3		
works 112:18	105:23	Zinc's		
114:10,23		141:23		
world 144:22		244:15		
256:7		zone 80:7		
worried		87:8		
		zones 8:9,17		