

Environmental Monitoring Advisory Board

DRAFT Minutes – Sep 11-13, 2017
EMAB Boardroom, Yellowknife, NT
Sep 11, 2017

Present:

Charlie Catholique, *Vice-Chair* (Day 2&3 only)
Julian Kanigan, *Secretary-Treasurer*
Gord Macdonald, *Director* (Day 2&3 only)
Adrian D’Hont, *Alternate Director*
Alex Power, *Alternate Director* (Day 3 only)

Lutsel K’e Dene First Nation
Government of the Northwest Territories
Diavik Diamond Mines
North Slave Metis Alliance
Yellowknives Dene First Nation

Absent:

Napoleon Mackenzie, *Chair*
Sean Richardson, *Director*
Arnold Enge, *Director*
Jack Kaniak, *Director*

Yellowknives Dene First Nation
Tlicho Government
North Slave Metis Alliance
Kitikmeot Inuit Association

Staff:

John McCullum, *Executive Director*
(minutes)
Allison Rodvang, *Environmental Specialist*
(minutes)

Environmental Monitoring Advisory Board

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Guests:

Jamie Steele, Lands (Inspector)
David Wells, Diavik Environment (Day 2 only)
Darcy Bourassa, Diavik Environment
Kelly Fischer, ENR Air Quality (Day 2 only)
Tara Bailey, Arcadis Canada (by phone, Day 2 only)
Carol Adly, ERM (by phone, Day 2 only)
Andres Soux, ERM (by phone, Day 2 only)
Jem Morrison, ERM (by phone, Day 2 only)
Marc Wen, ERM (by phone, Day 2 only)
Colleen English, Diavik Environment (Day 3 only)
Bill Slater, SEC (by phone, Day 3 only)
Randy Knapp (by phone, Day 3 only)
Jennifer Kirk, Arcadis (by phone, Day 3 only)
Patty Ewaschuk, WLWB (by phone, Day 3 only)
Anneli Jokela, WLWB (by phone, Day 3 only)
Paul Green, ENR Waters (Day 3 only)
Laura Fletcher, Brodie Consulting (by phone, Day 3 only)
Petr Komers, MSES (by phone, Day 3 only)

Day 1 – site visit to Diavik

Sept 12, 2017: Day 2 morning – Annual General Meeting (see separate notes)
<p>1) Call to Order Meeting called to order at 1:00 pm. Minute of silence Vice-Chair chaired meeting in absence of the Chair</p>
<p>2) Approval of Agenda No changes to agenda</p>
<p>3) Conflict of Interest No conflicts were declared.</p>
<p>4) Approval of Minutes</p> <p>Quorum not present so review of minutes postponed.</p> <p>Review of action items</p> <ul style="list-style-type: none"> • ES looking into use of Facebook page to allow comments from community members to EMAB website • ES requires Outcrop to modify web library to allow uploading of WLWB reports • ED to follow up Board member appointments • ED to follow up with KIA on selecting Alternate Director
Break 15 minutes.
<p>5) Financial Report</p> <p>Secretary-Treasurer presents financial statement. Noted that total budget is lower than previous years. Noted slight change to budget due to Diavik acceptance of request to roll over TK Panel review funds from 2016-17.</p> <p>Discussion</p> <p>Possible TK workshop to assess Panel satisfaction with Diavik responses to recommendations. This can only be done by applying to Diavik for funds under EA 4.8(f)</p> <p>Any left-over funds in budget to support Parties attending AGM can be re-allocated.</p>
Break 15 minutes.
<p>6) Inspector's Report</p> <p>Note: quorum is now present.</p> <p>New Inspector is Jamie Steele, replacing Tracy Covey. He was previously on the Snap Lake file and is still familiarizing himself with the Diavik file.</p> <p>He has done one site visit. He expects to do inspections monthly. He is currently focused on the waste rock and misclassification. He does not expect any imminent danger from this.</p>

Diavik representative noted that they are thinking of adding a new landfill area in the rockpile.

5) Financial Statement (cont.)

Motion: *To approve budget amendment*

Moved: Gord Macdonald

Second: Julian Kanigan

Motion carried.

4) Approval of Minutes (cont.)

Correct spelling of Kyla Gray's name.

Motion: *To approve June 15-16, 2017 Meeting Minutes as amended*

Moved: Gord Macdonald

Second: Julian Kanigan

Motion carried.

7) EAQMP Review

David Wells presents EAQMP report.

- No TSP data for 2016 from station on 154 dike
- One exceedance
- Annual average is about 10 $\mu\text{g}/\text{m}^3$

Discussion

- Source of 60 $\mu\text{g}/\text{m}^3$ annual limit? These are human health standards
- Effects on caribou? These are monitored through dustfall rates on lichen. There is no risk from ingestion at current levels
- Problems with TSP monitors? Yes, there is more downtime than uptime. Possibly due to northern conditions, especially cold
- Question about what this monitoring is achieving – consider re-visiting objectives
- Main sources of dust? Construction and blasting, when they are occurring; road dust in summer
- GNWT staff noted there is not much research on the effects of dust and was not sure what levels the new regulations will require. It is useful to track change over time and spatial extent of effects.
- What requirements have been set for the Ekati Jay Project? Kelly Fischer will get back to us with information

Tara Bailey presents Arcadis review of EAQMP

- Findings are similar from year to year; same problems with TSP monitoring program
- Calibration continues to be a problem; some readings are below 0, which is not possible
- Location of TSP monitors needs to be re-assessed
- Operation and maintenance procedures are a problem; notable that one monitor was offline for a year
- No explanation for exceedance or explanation of investigation procedure

Discussion

- Only one exceedance; why investigate?
 - There should be a basic investigation procedure outlined eg. Check weather data for day of exceedance

Tara continued with review of dustfall monitoring

- SOP was provided but did not include a QA/QC procedure

- Doesn't follow standard methodology
- Trends over time and distance don't make sense; further sites have higher results than closer
- Monthly samples in summer would help evaluate dust control methods

Discussion

- The program calls for quarterly monitoring; the review shouldn't criticize the results when they follow the plan; recommendations should be directed at the program, not the annual report
- Diavik noted that they tested results of monthly collection vs. quarterly and found no difference; Arcadis will note this

Arcadis recommendations

- Better QA/QC
- Review sampling locations
- Improve assessment/handling of data

Discussion

- Shouldn't change location of TSP monitors based on one report – there is value in continuity.
 - Issues have been raised regarding location in every annual report review.
- Noted that Diavik will undertake an assessment of the program by late fall
- It would be helpful if Arcadis report specified areas of the program for re-assessment

Action Item: ENR (Kelly Fischer) will provide any air quality requirements set for the Jay Project

Action Item: Arcadis report to identify which recommendations should be included in a re-assessment of the EAQMP.

Meeting adjourned at 4:30 p.m.

Sept 13, 2017: Meeting re-convened at 9:30 a.m.

- **ICRP Version 4**

Introductions

Gord Macdonald presents closure plan

- Emphasis on changes since previous presentations
- Includes answers to questions submitted by consultants

Pits:

- flood by piping water over dyke; only breach when water quality (WQ) meets requirements
- Enhancing meromixis: allow bottom of pit to fill with groundwater before adding Lac de Gras water
- No scope for pit stability work yet
- Aerial application of chemicals would be by boat using a spray bar, not by plane
- Significant risk would be defined by a risk assessment if WQ not adequate

Discussion (pits)

- How long will pit water be monitored? Until 2032
- Effect on fish? Try to enhance fishery with man-made shoals etc
- Consultation with communities? Has been done. There will also be an annual update
- For the proposal to place fine PK in pits, would that be only new PK, or include PK already in PKC? Could be both. Fine PK should enhance meromixis
 - Evidence? Solids consolidate after placement
 - Depth of chemocline? Doesn't remember – can vary
- Why put the PK in the pits? Safer, long-term plan which would allow it to not be left on the surface.

NCRP

- Separate plan; avoided discussion in ICRP
- Have started re-sloping; hope to start putting cover on soon
- SCRCP not included; TK Panel going up this weekend
 - Basis for assessment has not changed
 - 10 L/s sampling trigger did not have a rationale; have accepted GNWT proposal for 0.5 L/s trigger based on MMER
 - RECLAIM – caribou trail budget: expect that slopes will be smooth after cover so no need for additional till. If required, Diavik will place till
 - Type III – will try to use this in underground if possible

Discussion (NCRP)

- Geochemical results for A21 rock – expected seepage quality compared to Type I rock? Doing analysis now, with results to WLWB this month; expect as good or better
- Extent of cover? Roughly 80% of pile; all but NW corner which is all Type 1
- SCRCP concept? Similar to NCRP – no cover; rock likely at angle of repose rather than re-sloped with caribou paths added on.
 - Why not addressed in ICRP?
- Will the cover erode? It shouldn't, the plan does not account for this.
- Surprised when SCRCP was not included in the closure plan? Seemed awkward to get approval of the concept before approval of the design, however this is a fair point.

Infrastructure

- Updated building inventory
- Updated re-vegetation information; don't have a procedure yet, but have updated studies

- Focused on flat areas
- Not where hydrocarbons are stored (TK Panel concerned about plant uptake)
- Commitment to performance? Diavik does not want this in case initial effort fails. There is no strong justification for revegetation

North Inlet

- Continuing to study hydrocarbons
- The dam would be breached then immediately filled with rock that would allow water movement through the dam
 - Definition of decommissioned? Will no longer be a water retaining structure
 - Possibility of later sediment survey, in 2031, to allow possible reconnection? This seems reasonable
 - Statement from engineer that dam will no longer be water retaining? Will get this. Breach will be very deep so it won't freeze up in winter – water movement all year
 - Hydrocarbon criteria for water? No, just for land.

PKC

- Updated concept
- Cover beaches with waste rock; possibly move some FPK to pits
- The less FPK in the PKC the better; Diavik could dredge the slimes and place in underground
 - Monitoring frequency for WQ? Every 6 days
 - Effect of ice dams in PKC dams? These are seasonal. They help by trapping seepage; pumps are installed to remove seepage

Discussion (PKC)

- How would FPK be removed from PKC? Cutter dredge to A418 underground. Fill until water level is at pit bottom. Water separates out fairly quickly – this can then be pumped back to the process plant for re-use. Block off A418 from A154
- Size of PKC pond? Not sure yet
- Waste Rock Placement? Use A21 rock; try to do during operations. Depends on whether FPK continues to be discharged to PKC
- Prevention of piping? Use geotextile.
- Replacement of instrumentation? Not included in budget
- Deferral of research tasks? Investigations are ongoing – 2020 is when they stop collecting data and do analysis.
 - Expectation that there would be some predictions now, while still collecting data. Yes, chemistry modelling could be more advanced
- Protection for wet cover? Dry cover would mean less seepage; need to maintain saturation
- Projections on water quality? Depends on pond or no pond
- Chemical issues with porewater? Not like rock, much less.
- How to keep PKC wet, maintain water level? Maintain net inflow, spillway handles excess
 - Effect of climate change? That is the challenge
- Effect of runoff/seepage from rock cover on PKC on WQ? Not factored in except on NCRP. Entire mine is constructed from Type 1 rock.

Other

- Closure plan for test piles? Not sure yet, reluctant to compromise them. Could cover them.
- Deconstruct another test pile? Maybe covered test pile; check back in a year.
- Extent of freezing? Varies – some areas near the dams are largely frozen

Break – 15 minutes

8) ICRP (cont.)

Randy Knapp presents his review

- PKC - Main concern is that the PKC closure design may not be achievable as designed
 - WQ is uncertain
 - Water balance is a concern; any seepage would not allow maintenance of a pond
 - Stability is a question: piping, thawing (with climate change), settlement, long-term maintenance
 - Q from Diavik – any alternatives?
 - Placing material underground could work if well-planned and designed – would want to review plans before any work done
 - Dry cover is best
 - Why is modelling uncertain? This is from AMEC's report; more data is needed to reduce uncertainty
- North Inlet
 - As long as breach is very deep to allow water flow all the time, no problem
 - Shouldn't eliminate objective of re-connecting
- NCRP
 - Suggest moving mis-classified rock to NCRP
 - Diavik accepts this recommendation as long as the Inspector agrees
- Open Pits
 - Only issue is FPK disposal and this shouldn't be a big problem; this is an effective way to dispose of material
- Infrastructure
 - This section now includes a revegetation plan; the plan covers 11% of the site
 - The plan includes decommissioning the runway; consider retaining the runway
- Objectives
 - Did not review these other than proposal to remove objective of re-connecting the NI with Lac de Gras, which would be premature.
- Uncertainties
 - There is potential for up to 3 meters of PK to thaw; more depending on climate change
 - The thermal model has a lot of uncertainty, particularly for seepage and beach stability
- Long-term Issues
 - Many issues can arise after 2032; we don't know who will be responsible for these
 - Ice roads may not be available in the long-term; without them transport to the minesite would be very costly

Discussion

- Doesn't GNWT take on liability after closure? This is under discussion, led by Lands
- WLWB has noted long-term liability as a gap and want to work on this with GNWT

Action: Ask GNWT to attend a Board meeting to discuss long-term liability for the Diavik site.

- Closure cost estimate – looks good (noting issue of long-term availability of ice roads)

Bill Slater (Slater Environmental Consulting) presents his review

- Just received updated SSRBCC reports – he has not looked at them
- Aquatic Life Protection – Diavik needs to update the modelling
- Revegetation – this needs further discussion
- Conformance with Design as a criterion
 - Design must incorporate closure objective
 - No guarantee design will achieve desired outcome

- Long-term monitoring
 - Some effects take a long time to develop or reach equilibrium, in particular water quality performance in the PKC or NCRP
- SW9 – landscape features match surroundings; not clear whether Diavik plans to meet this objective. Note that the mine footprint is much less than 1% of Regional Study Area so biodiversity criterion would be met even if Diavik did nothing (also SW5)
- M1 – water quality similar to Lac de Gras; current criteria are risk-based, not aimed at water similar to pre-development conditions
- N1 – reconnection may be possible past 2032; might need a new objective to capture this

Noted that the tables in the review are helpful

Jennifer Kirk (Arcadis Canada) presents her review

- Just received revised SSRBCC reports and has not reviewed them
- Main concerns with NCRP final closure plan with respect to SSRBCC also apply to ICRP version 4
- AEMP benchmarks are appropriate for water quality;
 - 1 km mixing zone, dilution factor, 20% increase over AEMP benchmarks and use of achievable concentrations where AEMP benchmarks are too stringent are all concerns
- Some discrepancies between ICRP closure criteria and NCRP
 - Table 5-7 is different in the ICRP than the NCRP with no explanation

ED noted that scope for Arcadis Canada and to some degree SEC will need to be updated and approved since there is more work to review the revised SSRBCC reports.

EMAB may request for the WLWB to extend review deadline.

LUNCH – 12:15 to 1:15

8) WMP Report – updated comments

Petr Komers presented changes in 2016 WMP review since June 15-16 meeting. ES presented letter to ENR with EMAB recommendations regarding regional wildlife monitoring.

Discussion

- Qualify, or remove, statement that Diavik and Ekati cooperate
- Noted that TK has contributions to make; experienced hunters should discuss these monitoring issues
- Boots on the Ground program noted; YKDFN has plans to do something similar and LKDFN already does some activities like this
 - Suggested that EMAB include a recommendation about funding community based monitoring eg. ENR should support community-based caribou behavioural monitoring to complement company monitoring
- Separate regional vs. site-specific monitoring in letter
- Timing issue – try to include a specific deadline in the recommendations. What was the original “nature and intent” of the objective in relation to when it should be accomplished.

Staff will update letter based on discussion and send to ENR.

Motion: *To approve the WMP letter to ENR as amended and send to ENR.*

Moved: Julian Kanigan

Seconded: Alex Power

Motion carried

Action: Invite Petter Jacobsen to present 2017 Boots on the Ground results at the next meeting.

Break – 15 minutes

9) TK Recommendations

Action Item: ED to follow up with organizations on getting alternates.

ED presented item from kit.

Discussion

TK Panel

Q: Who is the YKDFN TK Panel member?

A: No answer for this now.

Q: Don't understand 1b (assess satisfaction of Diavik's responses at the beginning of each Panel meeting?)

A: Letter is reporting on what the Panel said. Noted that at each meeting the Panel reviews each recommendation from the previous meeting and Diavik's response. This does not include a discussion of how Diavik implemented its responses. Diavik member believes an assessment of Diavik's responses is already being done by the Panel. May have more to do with making sure the recommendations are followed through on and show up in management/monitoring plans?

Action: send a note to Joanne and Natasha for confirmation on the recommendation to assess Panel satisfaction with Diavik's responses.

Q: Any thoughts from Diavik on requesting funds for a workshop?

A: This request would have to go in soon. 4.8(f) is the appropriate avenue, but not sure what the purpose of this recommendation is in particular.

Q: Letter should state why the Panel would like to meet more than once per year.

A: If they don't meet twice per year, head space isn't right. Will put in rationale to maintain continuity and engagement.

Comment: Panel members made these comments; EMAB doesn't have to carry them forward. Diavik will probably say this isn't financially viable.

Comment: Break up recommendation 1b.

Q: Why is there a list of suggestions for Panel meeting topics? Diavik has this already.

A: Panel asked that EMAB bring those items forward to Diavik. Particularly the women's panel on vegetation.

Assessment of Diavik's use of TK in monitoring and management

Q: Why would EMAB intervene on something like this?

A: To ensure TK is being fed into operations and closure planning.

Noted that the TK Panel is the way TK is incorporated into monitoring and management.

Comment: Change wording of "comprehensive overview"

Noted that some of the recommendations may overlap or be redundant.

Diavik rep suggested the letter be more positive and focus on use of TK going forward.

Value in having each report include a TK section explaining if and how TK was included, rather than a separate report.

Q: Shouldn't EMAB look at how the Panel works/evaluate it?

A: How TK is incorporated is a question that many people want answered. Having examples would help answer this question. Can also assess from EMAB's perspective if there is enough TK being used in monitoring at Diavik.

Comment: Communities would like to see something explicit saying how Diavik uses the TK that they collect.

Action Item: ED will redraft letter and send it out for Board member comments.

5) Financial Report (cont.)

Motion: *To destroy EMAB financial records older than 7 years.*

Moved: Gord Macdonald

Seconded: Alex Power

Motion carried.

7) EAQMP Review (cont.)

Motion: *To approve EAQMP review as amended.*

Moved: Julian Kanigan

Second: Adrian D'hont

Motion carried.

12) Board Member Update and Community Concerns (Roundtable)

Adrian D'Hont – NSMA

- Had a good meeting and interesting to hear what is happening on the closure plan and various other plans.
- Try to make sure Arnold is here next time so he can fully participate.
- Doesn't think WRSA should be actively re-vegetated and should be left to naturally re-vegetate.

Julian Kanigan – GNWT

- Will take away the question about long term monitoring of the site
- Getting Petter here for the next meeting
- Site tour was useful

Alex Power – YKDFN

- No concerns to bring up at the moment

Gord Macdonald – Diavik

- Need more people to do the site tour to make it worthwhile on Diavik's part
- Apologies for sporadic attendance

Charlie Catholique – LKDFN

- Land/Environment manager is taking on two jobs (also acting as SAO); hard to keep up with everything
- Update community again on the CRP
- Concerned about the slope on the WRSA at closure, leaving holes that could be unsafe; sees this at Dominion Diamond Mine. This should be monitored after closure.
- Haven't set a date for the community update yet.

10) Diavik Engagement Plan

Rebecca Alty presented to Board. Engagement Plan is being revised based on WLWB comments. Diavik will follow up with the Parties and re-submit the plan.

Discussion:

Q: What happens with issues that come up at community meetings?

A: This would be addressed in the WLWB process. Template for engagement has a column for issues raised but the response doesn't really meet what EMAB was going for. Don't see this as dispute resolution; could just add a different column titled 'outstanding issues'.

Q: Difference between PA and IBA?

A: PA and IBA are same term now.

Q: How many community meetings would Diavik have per year?

A: Depends what is going on at site. Hard to predict frequency of meetings. There is also competition for time.

Next Meeting

Next meeting is tentatively Dec 5-6

Chair asked for minute of silence

Meeting Adjourned at 4:30 pm