

Meeting Notes

Dominion Diamond Ekati Mine

Jay Project Management Plans

Yellowknife, NT

June 26, 2015 9:00am to 2:00pm – Tungsten Room, Yellowknife

Participants

In Attendance: Richard Bargery(DDEC), Claudine Lee (DDEC), Nick Ballantyne (DDEC), Eric Denholm (EDenholm Consulting), Kristine Mason (Golder), Shin Shiga (NSMA), Kate Witherly (GNWT), Michael Birlea (Tlicho Government), James Rabesca (Tlicho Government), Chuck Hubert (MVEIRB), Kate Mansfield (MVEIRB), Sachi De Souza (MVEIRB), Simon Toogood (MVEIRB), Margaret Kralt (Dillon), Andrea Cleland (Dillon), Kevin O'Reilly (IEMA), Tim Byers (IEMA), Emery Paquin (IEMA), Melissa Pink (GNWT), Rick Walbourne (ENR), Paul Green (ENR), Aileen Stevens (ENR), Matt Seaboyer (ENR), Marc d'Entremont (DKFN), Peter Unger (LKDFN), Brian Sanderson (LKDFN), Berna Martin (YKDFN), Morris Martin(YKDFN), Fred Sangris (YKDFN), Patrick Simon (DKFN), Lloyd Cardinal (FRMC), Dean Cluff (ENR), Sarah-Lacey McMillan (EC), Johanne Black (YKDFN), Kelly Fischer (GNWT), Shelby Skinner (GNWT), Mary Black (YKDFN)

By Phone: Anne Gunn (MVEIRB), Bill Ross (IEMA), Megan Tobin (EC), Tannis Bolt (KIA), Steve Strawson (Golder)

Opening and Welcoming (Facilitator)

The Jay Project Conceptual Management Plan workshop began at 9:00 am; the Facilitator, Margaret Kralt with Dillon Consulting (Dillon), opened the meeting by introducing herself and inviting participants to introduce themselves and state the organization they represented.

Rick Bargery of Dominion Diamond Ekati Corporation (DDEC) provided an overview of the purpose of the workshop, stating that DDEC presented the conceptual management plans for discussion. The process for preparing and reviewing with affected parties, the Conceptual Management Plans for the Jay Project came out of the Jay Project Environmental Assessment technical sessions. Four conceptual plans for the Jay Project will be discussed today:

- Air Quality and Emissions Monitoring and Management Plan
- Aquatics Effects Monitoring Program
- Wastewater and Processed Kimberlite Management Plan
- Waste Rock and Ore Storage Management Plan

The feedback DDEC is looking for each of these Plans are broad high level feedback on where DDEC is going with the Jay Project. More detailed comments on each of the Plans are best shared during the regulatory process.

Chuck Hubert of the Mackenzie Valley Environmental Impact Review Board (MVEIRB) noted that what is important to the MVEIRB is the monitoring and content. Not so much what the plans are called. The Board is aware parties were not able to provide comments on these Plans during the second round of information request phase. Some of these Plans are addressed through ongoing public review during the regulatory phase as part of the Water Licence. Other Plans do not receive the same level of public engagement because they are not tied to a regulatory instrument. The Board may consider some type of

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public engagement or review for these plans that are not attached to a licence or permit during the EA phase to benefit parties. .

Air Quality and Emission Monitoring and Management Plan (AQEMMP) – Presentation Overview

Claudine Lee of DDEC gave a presentation highlighting the purpose and key elements of the Air Quality and Emission Monitoring and Management Plan (AQEMMP). The current Air Quality Management Plan (AQMP) for the Ekati Mine monitors the air quality as it relates to the existing facilities. It includes monitoring for nitrogen oxides (NO_x) sulphur dioxide (SO₂), particulate matter including suspended and deposited fractions, snow and lichen sampling. The current AQMP will be expanded spatially to include monitoring the effects of the Jay Project. Purpose and key elements of plan (DDEC) include:

- The Conceptual AQEMMP report was issued June 1, 2015;
- Feedback from the Jay technical sessions – DDEC was asked to include threshold triggers so this has been included into the AQEMMP. This is a draft and we are looking for high level comments. This isn't finalized this is a draft so we can incorporate the feedback we get from this workshop;
- Three levels/thresholds have been proposed;
- Key questions addressing are the DAR predications, AQEMMP thresholds, comparisons to the NWT Air Quality Standards and assessment of spatial and temporal trends;
- The monitoring locations need to be established; a finalized plan will come out later in the regulatory process. This is different from the other plans as the regulatory process is not as well established.

Discussion:

Kevin O'Reilly: This draft conceptual Plan is a very good start, the Agency really appreciate the effort that is being put into identifying the thresholds. It is the same approach and structure that you are taking with the aquatic management plan. If DDEC could lift some of those concepts and put it into the wildlife side of things it would be very helpful.

There is a map that is within the draft Plan (Map 2.1-1). The title of the map is existing or proposed monitoring stations but I could not find any proposed stations.

Claudine Lee: In the document DDEC addresses adding dust fall monitoring stations along the Jay road and additional stations to the east of the Jay Project. Currently DDEC has not put any in but have blocked off areas where we think we might put some. On the map we have put the current stations so that people can visualize where new stations may fit. No additional locations have been confirmed.

Kevin O'Reilly: When I look at this map the idea was to try and get a better understanding of what happens with dust and where it fall and how will it affect the plants. When the air quality monitoring system was developed and put together the real focus was on the main camp area and the waste rock piles located at the site. Now that the focus of the mining operation is really going to shift towards the Jay Project, how is the company going to deal with the shift? Is there going to be more than just the one location that is correlated with lichen and dust sampling stations? Is there going to be any effort to cover the other side of Lac du Sauvage?

Claudine Lee: This document is a draft and DDEC is looking for comments like that. Nothing has been decided and this will be taken into consideration when assessing where to put the stations.

Kevin O'Reilly: The company is not limited to the one station that is in the text, you are open to having more stations?

Claudine Lee: Yes DDEC is still looking at the potential for multiple stations and how they will fit into the plan.

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Emery Paquin: What are DDEC's other engagement plans subsequent to this workshop?

Claudine Lee: This is the first step. Once DDEC gets the Plans to a place where everyone agrees to the content, then DDEC will move to more engagement, and it will probably be paired with other things that are part of the Jay Project. DDEC has had specific air quality meetings in the past, so there are lots of different ways of engagement moving forward.

Aileen Stevens: Will these comments be adopted at the same time as the Mine Site Plan?

Claudine Lee: DDEC has just completed a three (3) year review of the AQMP and will be setting their own schedule to match the Jay Project. DDEC had asked for some comments back at the beginning of June; there has been some discussion about having a special meeting about the AQMP. An updated AQMMP will be provided that aligns with what is being prepared for the Jay Project. However this is a separate process.

Aileen Stevens: In the end there is going to be one (1) Air Quality Plan for the entire mine?

Claudine Lee: Until the Jay Project has been approved the next updates to the AQMP will only include the existing mine (and the addition of the Lynx Project). When/if the Jay Project comes on board there will be one overall air quality management plan for the Ekati Mine.

Aileen Stevens: Matt (from ENR) and I propose more details in the Plan. This could be discussed at a separate technical meeting with ENR? ENR would like to look at the reporting timeframe the new adaptive management and the triggers and some new additional items with the monitoring.

Matt Seaboyer: The reporting timeframes, what we have seen so far is a comprehensive review every three (3) years, the monitoring plan that is when you would assess the air quality? With other mines it is an annual review, we would be more comfortable with a summary report annually. Every three years we would like to see a more comprehensive review.

Claudine Lee: There would be a review of the data annually and then every three years a larger trends analysis, similar to the aquatic program. DDEC is willing to meet with ENR separately to discuss some of these specific details in greater detail.

Aileen Stevens: It is important to note what is consuming the fuel; we were thinking an inventory of your fuel consumption vehicles and machinery. This will help keep a better track of your air emissions during production.

Claudine Lee: Yes, DDEC will take that suggestion and see how that will fit.

Aileen Stevens: I think we would like to discuss some of the ways the triggers are written at this point.

Claudine Lee: Yes, this can be discussed at a later meeting.

Anne Gunn: Map 1.7 - I would like to see Diavik Diamond Mine's sampling sites for lichen and snow dust included. The attention that originally focused on Ekati's main site, with the Jay Project beginning there will be a change in the lichen and dust spread. I would like to see the Diavik data included on the map and the analysis and the interpretation included with that completed for the Misery and Jay Roads.

Claudine Lee: Thank-you for the comments, DDEC will take this suggestion and see if they can include the Diavik sampling sites on the map.

Anne Gunn: On page 1-7 of the Plan, the fifth (5th) objective is only to provide the data of dust deposition. Why is it only to provide dust and data and not analysis and precipitation and why does it not include the thresholds?

Claudine Lee: The analysis and evaluation of air quality are completed in other programs, such as the Aquatics monitoring program.

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Anne Gunn: I would suggest that it should include providing data for the aquatic and terrestrial systems.

Anne Gunn: The sections on mitigation it is not always clear. Please provide clarification to make it clear which size of particles are being considered for mitigation.

Claudine Lee: Thank-you, DDEC will review this section and make it more clear.

Anne Gunn: Why is the truck size and tire size mentioned?

Claudine Lee: The truck with the larger wheels will produce less dust as they make fewer trips and the EPA formula indicates that doubling the weight of the truck and fewer kilometers will result in less than double the emissions.

Chuck Hubert: The meeting with ENR to go into more detail on the Plan, what is the timeline?

Claudine Lee: After July 3rd when the second round of Information Requests are submitted, but DDEC is ready to meet when ENR is ready. Again because we are doing some operational updates, we can talk sometime in July-to be determined.

Chuck Hubert: The MVEIRB supports this type of engagement and would like to request a meeting report from that meeting.

Kevin O'Reilly: The Agency (IEMA) would like to be at that meeting if possible.

Kevin O'Reilly: Knowing what Diavik is doing in terms of its air quality monitoring, now that DDEC is part owner, maybe they can work together more and get more data to get better information. It makes sense for the two mines to be working together to collect information. In looking at the action levels some consideration to the regional context is going to be necessary.

Claudine Lee: As part of the DAR the Diavik's information is included. Access to that is not an issue for us we will work on this.

Mark d'Entremont: I noticed in the Plan it provides three (3) levels of specific triggers, will these be applied to other factors such as dust, lichen and snowfall levels?

Claudine Lee: DDEC is open to talk about this idea. The time frame around that type of sampling being much less frequent does not give you much opportunity on how you might change things, DDEC would be open to talking about novel ideas.

Matt Seaboyer: This is a very good start ENR understands it is difficult collecting all this data. We want to streamline this data and make it done in a timely manner. If an action level is triggered ENR wants to see a timeline for an Action Plan will be submitted (within 90 days).

Claudine Lee: That seems reasonable but depends on the data. DDEC would like to discuss this as well. From what I understand, more clarity in the reporting section is necessary for when ENR would like to see action plans.

Matt Seaboyer: We want to see an Action Plan come out so that adaptive management can be implemented, this will assure ENR that the Plan was effective within the year.

Simon Toogood: Is there any consideration of how the conceptual plan (significant thresholds and such) and the assessment endpoint will tie together? If there are changes to the assessment endpoint?

Claudine Lee: DDEC is working with ENR on this, 24 hour standard, could be more analysis of the data that can address things immediately.

Aileen Stevens: Adaptive management of air quality it would be worth discussing if annually is the best

Claudine Lee: A more in-depth conversation on this is required. However the assessment endpoint will not be changing.

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Matt Seaboyer: We have been thinking about the same thing, how do the aerosol levels compare to the aquatic sampling and the lichen sampling? These comparisons are important. At what point on the 24 hour standard? Perhaps looking at the data more often than every year-maybe there could be an action that can get action more immediately.

Aileen Stevens: As part of the monitoring program it is important it is as robust as there programs, additional monitoring stations, amplify other aspects of contaminants other than dust.

Anne Gunn: On page 1-2 of the document it says that section 6 relates to cumulative effects monitoring program, in fact there is no detail or description of cumulative effects monitoring. Section 6 is actually about engagement. Is there an ENR air quality program that this data will feed into?

Aileen Stevens: That is not something the Air Quality Division is looking into right now, I will inquire with the Cumulative Effects group about this. We are currently developing a regulatory framework, this is something that ENR will take note of.

Anne Gunn: I ask that your discussions by ENR be provided to the public registry.

Aileen Stevens: When these air quality assessments are undertaken ENR consider the regional impact into the modeling. If you are speaking specific to dust it is taken into consideration the distance the dust settles from the mine. The very nature of the modeling is a regional component.

Anne Gunn: (Repeats previous statement) On page 1-2 it says that Section 6 relates to cumulative monitoring program, in fact there is no detail or description. Section six is actually on the engagement.

Claudine Lee: That was a reference to a section that actually does not exist so we can fix that.

Matt Seaboyer: Within the incineration management plan, what are you planning to update the incineration management plan? ENR would like to see that updated.

Claudine Lee: The update is currently being done.

Matt Seaboyer: The Land and Water Boards do not regulate stack testing, ENR would like to see this before the intervention.

Claudine Lee: Question – please clarify what ENR is looking for before the intervention?

Matt Seaboyer: Reporting time frames for adaptive management and stack testing.

Claudine Lee: In the Jay Project Technical Sessions DDEC stated they would commit to stack testing every three (3) years.

Kate Mansfield: In table 1.1-1 there is a commitment made by DDEC to incorporate this into other management plans, could DDEC offer some examples of how this program would be incorporated to the other management plans?

Claudine Lee: An example is the aquatic program. The results from the AQEMMP will be included in the Operational Management Plans, how DDEC manage our roads, vehicles, speed limits. On the emissions side it will be considered by the Green House Gas committee that is looking at fuel usage and optimization of fuel efficiency.

Kevin O'Reilly: Additional weight on the road bed from the land trains, is that going to create finer grains of gravel, will this eventually lead to more dust?

Claudine Lee: DDEC will write something up and respond to these questions regarding truck size and tires in reference to the dust.

Aquatic Effects Monitoring Plan – Overview Presentation

Claudine Lee of DDEC gave a presentation on the conceptual Aquatic Effects Monitoring Plan for the Jay

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Project. The presentation provided an overview of the purpose and key elements of the Plan. The existing AEMP for the Ekati Mine is focused on the current aquatic receiving environment, and includes components such as hydrology, water and sediment quality, plankton, benthic invertebrates, and fish health. The existing AEMP will be expanded to include monitoring effects of the Jay Project. Key highlights of the presentation include:

- DDEC is focused on the current aquatic receiving environment;
- AEMP will be expanded to include the Jay project at a time when that would be required in the water licence aspect of the project;
- design plan is in the first stages of the draft
- proposed study design-looked at the predicted ZOI, DDEC has identified monitoring areas
- Map-areas that have been identified for monitoring locations

Discussion:

Tim Byers: A reference lake, could you provide to IEMA your short list of what those lakes might be?

Claudine Lee: DDEC has not begun any of that work yet on identifying reference lakes because the Plan is still in the conceptual planning stages.

Kevin O'Reilly: On page 8.5, reference to what to take into account, DDEC might want to think about Daring Lake. The GNWT has a water quality monitoring station on it already, it is in the same eco-region and system as the Jay Project.

Claudine Lee: Thank-you for the suggestion, DDEC will look at this and consider it.

Tim Byers: Table 8.4-1 for Counts Lake, I am confused why DDEC would put no for the plankton when it is already a requirement for your water licence?

Claudine: DDEC will consider this.

Tim Byers: I am wondering if DDEC can continue to use Count as a reference lake for the Ekati Mine, as to maintain natural conditions and consider evaluating the existing conditions in relation to development on the surrounding lakes?

Claudine Lee: DDEC will look at Counts and evaluate.

Rick Walbourne: DDEC indicates that they will be doing AEMP re-evaluation on a three (3) year cycle? Is your plan to coordinate that with your current cycle?

Claudine Lee: There will be annual monitoring components and three year components. The three (3) year re-evaluation DDEC will try to coincide it with what is happening right now at the rest of the Ekati site.

Rick Walbourne: Is the sampling being completed at the same time as the AEMP of the larger project?

Claudine Lee: Those details DDEC would be figured out later. However there will be an effort to try to coordinate all efforts in the same period.

Rick Walbourne: Will that cause any issues regarding timing with the Jay Project and data collection?

Claudine Lee: DDEC would make it work while still following all of the guidelines and requirements.

Rick Walborne: On Slide 7, is there sediment quality and benthic invertebrate sampling to be conducted?

Claudine Lee: There are annual components for sediment quality and benthic invertebrate, hydrology water quality, plankton, of water quality analysis as well there would be plus seasonality components to hydrology, water quality, and plankton etc.

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Rick Walbourne: What is the status of any large body fish studies? Have you already made decisions on the exclusive use of small bodied fish?

Claudine Lee: DDEC would prefer to move forward with the three year small bodied fish study.

Megan Tobin: Could you clarify why DDEC is not doing large bodied fish study?

Claudine Lee: Small bodied fish are better for identifying what it is actually happening with the aquatic system. There is a higher mortality component for sampling large fish so DDEC would save the large bodied fish studies for if any thing was to show up.

Emery Paquin : The transects that are identified in the conceptual plan, do you have any information as to how DDEC intends to identify specific sampling location along those different transects?

Claudine Lee: There would be an engagement with in the community groups. We have the areas where locations would potentially go however that is as far as the work has gone.

Emery Paquin: There have been fish spawning shoals identified in the area. It would be good if these spawning areas of fish be considered when the company is choosing sampling locations

Claudine Lee: Thank-you DDEC will consider this.

Kate Mansfield: How will the two study designs (Jay Project and the Current Mine Operations) be combined into one (1) AEMP?

Claudine Lee: The methodologies for each will be considered in the same way, however at the site specific level they may look different, as the existing AEMP is looking at interconnected lakes and streams and Lac du Sauvage is a large lake system. But how DDEC will meet the objectives of both will be in one (1) document.

Kevin O'Reilly: As I understand Diavik has these stations and transects at their site, there might be some lessons learned from how they planned their sampling sites. Another consideration in locating the sampling sites might be currents, perhaps in the next version of the plan might have a list of what sort of considerations are going to go into the placement of sampling sites. In regards to large bodied fish sampling, Lac du Sauvage is a large lake, DDEC might want to think about what that sampling frequency would be as it is a much larger lake than the smaller lakes that are sampled using three or six year interval.

Claudine Lee: DDEC will consider.

Paul Green: Which small bodied species are you proposing to use?

Claudine Lee: That is still to be determined.

Kevin O'Reilly: I noticed from the presentation and the conceptual plan, there is hydrology monitoring at the outlet of Lac de Gras .When is it time to start doing regional water quality monitoring outlet? It may be possible to partner with Diavik and government.

Claudine Lee: That is a bigger more comprehensive question.

Tim Byer: Do you know the wave heights in Lac du Sauvage? It seems from your reports that the swells of the waves would have to be between 2-6 m deep to have wave action to remove any dust off of the shoals. Would you not have to have a wave height of 2-6 metres to remove dust?

Kristine Mason: When dust lands on the surface of a lake, it does not go directly from where it is in the air to the bottom of the lake. It doesn't immediately settle on the shoal, it will move around the lake based on wind and waves, and likely settle in the depositional area in the middle of the lake.

Tim Byer: Why would dust deposition not be an issue for spawning beds?

Claudine Lee: Thank-you DDEC will look into this.

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Tim Byers: Page 6.2 “following closure plankton will return the original...” How will this be accomplished?
Claudine Lee: That would be part of the assessment throughout the life of Jay Project. It is not possible to comment on this now.

Tim Byers: “Due to the increase food base there may be....” Does this mean an increase in food for all fish species and all fish classes?

Kristine Mason: This section of the AEMP is a summary of the DAR. But an increase in nutrients from the operational discharge could lead to an increase in plankton and benthic invertebrates, providing an increased food base for fish.

Tim Byers: 7-1 “change in algal species could increase the proportion of inedible algae” given that statement, I am wondering if the company can tell us what it sees as possible consequence by increasing the proportion of inedible algae?

Rick Bargery: DDEC are not really prepared for that sort of detail in the document today. The intention of this workshop is to make sure the conceptual plans are on the right Track for the Jay Project.

Claudine Lee: The value I am taking away from that is these are questions you want us to be able to answer and therefore design the management plan to collect the appropriate information through monitoring programs?

Megan Tobin: There are not very many small bodied species or high numbers being found in Lac du Sauvage, can you speak to how this affects the small bodied fish monitoring program?

Kristine Mason: It is recognized that this can be a challenge. We will need to determine if there is an adequate amount of small bodied fish and what species will be used.

Mark d’Entremont: What methods are being proposed for the small bodied fish collection?

Kristine Mason: It will depend on the fish in the water, but electrofishing will likely be the method.

Tanis Bolt: If there are not any small bodied fish would there be a move to large bodied fish species sampling?

Kristine Mason: That would be something that would need to be determined.

Kate Mansfield: Looking at the map of the AEMP, can DDEC confirm that the sub basin Be diversion channel will be monitored as part of the AEMP?

Kristine Mason: At this point DDEC has included this in the AEMP monitoring. It is also expected that DFO will expect some sort of monitoring as part of the Fisheries Act Authorization for the Project. It will be determined where this will be included.

Kate Mansfield: Can DDEC confirm that both FPK and sewage will be put in Panda and Koala Pits?

Eric Denholm: Treated sewage effluent would go to the pits (not sewage exactly). Currently sewage goes to the LLCF and is eventually discharged to receiving environment. New system would be that it would go to pits, have long residence time there and already has immeasurable effect in the receiving environment so there is no expectation that it would affect WQ in pits or downstream either.

Wastewater and Processed Kimberlite Management Plan – Overview Presentation

Eric Denholm consultant to DDEC gave a presentation on the Wastewater and Processed Kimberlite Management Plan (WPKMP) including management of minewater, management of sewage, management of processed kimberlite and closure and reclamation.

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Discussion:

Sarah-Lacey McMillan: Can DDEC provide clarification, will the water be pumped using the same pipe that will pump dewatering discharge for Misery and Jay pits? If so, is there enough time?

Eric Denholm: There will be different pipes to carry minewater from Jay Pit to Misery Pit and to carry effluent water from Misery pit to Lac du Sauvage. The effluent discharge pipeline will be in place from the initial dewatering curing construction which is complete before effluent discharge is required.

Kate Mansfield: I was hoping to confirm that once the Panda/Koala pits are closed, they will also have any overflow channel for discharge?

Eric Denholm: Yes, that is the current arrangement.

Bill Ross: One of the issues that has been raised, is water quality in various pits. Adaptive management actions in the DAR, will they work to be adopted as needed?

Eric Denholm: Thanks for the reminder. Yes they will appear in the plan.

Bill Ross: The high level reason for concern is simply if we go back in time that the monitoring of the previous pits have had no results presented, we have not received any results yet we are continuing to use it for the future. The Agency is interested in the potential mitigation measures are being used if there is seepage.

Sachi De Souza: The FPK going into the Panda/Koala pits, the recycled water cannot be accessed from the pits. I understand that the Long Lake Containment Facility (LLCF) is needed as a water source for processing, can you direct me to how much water is annually captured, what is the capacity of the LLCF to meet the future needs?

Eric Denholm: During Jay Project, recycle water for the processed plant will continue to be pumped from the LLCF. It is possible that at the end of the Jay Project, recycle water could be pumped from the Panda/Koala pits. There is more than enough water present in the LLCF to account for this. There is abundant recharge in the LLCF. The closure plan does not anticipate flooding of Fox pit until late in the mine life and the reason for that is potentially there may be mining capabilities there. Therefore there is no conflict between recycle water needs from the LLCF and needs for flooding Fox Pit from the LLCF.

Sachi De Souza : The water quality modelling for Misery and Jay at closure has been done and presented in the DAR. The modelling shows Misery and Jay will both result in meromixes. Has the modelling been done for Panda and Koala with FPK deposition.

Eric Denholm: Beartooth is receiving FPK but at closure, Beartooth is not intended on being a meromictic lake. Similar to Beartooth, Panda and Koala will both have a 30 m freshwater cap placed above the FPK. Panda and Koala are not anticipated to be meromictic either.

Sachi De Souza: The water quality predictions are now changing from what was originally designed for closure. Was this incorporated into the DAR?

Eric Denholm: There was that prediction and it is incorporated to the water quality monitoring. Information on the water quality predictions for Panda and Koala are within Appendix 8F3 of the DAR – the Slipper Lake component of the Lac de Gras model.

Chuck Hubert: Bear tooth will no longer be used as a test for a meromictic lake because it will be filled with FPK with a 30 m freshwater cap. Will Lynx or other pits be used as a test for a stratified pit lake? How many pits are available to test for meromictic conditions? How soon will parties understand the success of pit stratification at the Ekati Mine?

Eric Denholm: Currently Panda and Koala pits have a high likelihood for meromixis at closure because of

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the connection to the deep groundwater regime. None of the other pits are expected to be meromictic. However, FPK deposition into Panda/Koala pits for the Jay Project will greatly reduce the likelihood for meromixis. There are no expected examples of pit lake meromixis at the Ekati Mine that could serve as examples for the current assessment of the Jay Project. Dominion Diamond provided northern examples of stratified pit lakes in its IR responses.

Waste and Rock Ore Storage Management Plan – Overview Presentation

Eric Denholm, consultant to DDEC gave a presentation on the Waste and Rock Ore Storage Management Plan (WROMP). The purpose of the plan includes, the site descriptions, geochemical characterization, ground temperature, seepage quality, waste rock and ore storage management, verification, monitoring and report.

Discussion:

Peter Unger: My question is on section 7, it directs to the Ekati waste rock ore storage management plan “if problems arrive we will deal with them as they come”, can you think of problems will arise, do you have specific adaptive management practices that you will be presenting later on?

Eric Denholm: I think that some of the information requests identify this. DDEC has some solutions to different situations, some of the most likely responses that have been used in the past. DDEC can take that on board for future revisions of the Plan.

Peter Unger: LKDFN sees long-term what would like to see description of what happens after the operation is done.

Bill Ross: Metasediment placement into the Jay WRSA (codeposition with granite) is different than Misery WRSA (metasediment layers). Why?

Eric Denholm: Yes it is a variant on the approach used at Misery. DDEC looked to a couple of things, there are some things at the Jay Project that are a little different. There is a much greater proportion of granite rock at the Jay Project site. On an overall basis the net neutralization potential of the Jay WRSA will remain above the conservative screening level of 2. The Jay WRSA provides the same 5 m thick encapsulating cover of granite.

Bill Ross: On slide 13 you show a rock pile elevation of 80 metres but the DAR was less. Which is the right value?

Eric Denholm: This will have to be doubled check to confirm the right number.

Kevin O'Reilly: In the other management plans we saw action levels and triggers; we don't see anything like this in this plan. If you start to detect problems with the seepage it will be too late and it will already be seeping in to Lac du Sauvage. It is co-disposal approach for the Jay Project which is new and it is less than 100 m from a major water body, there is nothing in the plan about thermal monitoring. We know that thermal monitoring has become an issue at your other waste rock piles. Why is there nothing in here about thermal monitoring? If you intend to put it in that would be really helpful. If the only threshold or warning system is seeps, to wait for something to show up in a seep it is too late.

Eric Denholm: Thermal monitoring is planned but at this stage DDEC does not know exactly what it will look like. In terms of early warning there is also the sampling of the waste rock at the pit benches. For every 1,000 tonnes being mined there is sampling being done. For all these things we have a pretty high confidence on what the sulphur and others metals content is because of the long-term site specific geochemical database.

Kevin O'Reilly: I guess what I was getting at, if you have a problem with seeping, if you have acidic seepage and metals leaking out, there is something going on. How do you test if the caps are working? If

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you have a three (3) year reporting cycle for the results? Three (3) years may be too long. In the next version will we see more about thermal monitoring or triggers and thresholds?

Eric Denholm: In reference to the three (3) year report it is a larger interpretive report though there is annual testing and reporting every year. Thermal monitoring, ground temperature cables, that will be part of the monitoring regime.

Kevin O'Reilly: I couldn't see anything in plan about contingency if encapsulation doesn't work? Will there be a section in here for contingency?

Eric Denholm: Yes there is a section and we can take feedback. At some point you might cross over, it might not be appropriate in this operational management plan and the work might be done as planning for the Closure and Reclamation Plan.

Sachi De Souza: Can we get some clarity on where permafrost aggregation is necessary and will it be happening?

Eric Denholm: The presence of permafrost is not essential in the pile but we certainly anticipate that the Jay WRSA will freeze into permafrost.

Sachi De Souza: The first few years have a higher proportional of metasediment, would it be advantageous to do some of that thermal monitoring in the first few years? Also how is waste rock going to be placed?

Eric Denholm: There is operational planning there that has not been completed yet to that that level of detail.

Sachi De Souza: There is the concern that has been raised about the exothermic reaction being one of the first indicators there will be seepage. Is there a certain temperature that suggests that there is something potentially going wrong?

Eric Denholm: I don't know that it can be reduced down in that kind of way.

Sachi De Souza: If there is a way to design the cap to be placed progressively, it could be beneficial within the design to include a more intense monitoring program at the beginning to demonstrate if seepage is occurring.

Eric Denholm: The idea is to have a phased monitoring program, having a more intense monitoring program in the first couple of years is not unprecedented and can be considered as part of the future detailed operational planning.

Sachi De Souza: Is there a correlation between waste rock and water temperature at other WRSAs at the Ekati Mine?

Eric Denholm: Not that DDEC is aware of.

Sachi De Souza: There is inconsistency in the plan related to if actual years are used (say 2019 and 2020) or the year of operations is used (Year 1 or 2 of mining). For the plan it would be beneficial for the notations to be consistent.

Eric Denholm: Thank-you that has been noted.

Peter Unger: If we were to assume that there is no freezing in the waste rock column, and it melts completely would this anticipate a toxic and hazardous environment?

Eric Denholm: No we would not expect seepage to be contaminated or toxic.

Peter Unger: I don't like the mindset that we will worry about it when we get there, in reference to the seepage.

Eric Denholm: It will be addressed in the closure and reclamation planning.

Peter Unger: When you are preparing future versions of the document could you include the re-think in the plan?

Eric Denholm: Yes.

Meeting Notes

Peter Unger: Will you have wildlife plans for going up or going down the waste rock etc.?

Eric Denholm: Yes, but we don't know exactly what that would look like yet.

Chuck Hubert: The waste rock storage area as designed with setbacks from the lake, creeks to avoid impacts to fish bearing waters. However, the waste rock storage area encroaches into the caribou movement corridor. Caribou are currently at low population numbers. Caribou populations numbers are expected to increase during the time of the Jay Project. As the caribou population increases, what if greater numbers of caribou move through the area? Are there contingency options to reconfigure the waste rock storage area if the caribou population increases and movement of caribou increases through this corridor to and from the narrows?

Eric Denholm: We will need to consider that before and get back to you.

Sarah-Lacey McMillan: In terms of the 5m granite cap designed for closure, has the placement of the clean granite been taken into account in terms of the size of the granite?

Eric Denholm: There is no design specification for that; it is just granite that has been mined.

Kevin O'Reilly: I don't know what happens with the rock after a couple of years, I am assuming the caribou ramps won't be rock it will be something smoother for the caribou?

Eric Denholm: The surfacing of the caribou ramps themselves is a current topic with the WLWB so they will provide some guidance for caribou ramps on rock piles once the conversation is complete.

Sarah-Lacey McMillan: If there are no design specifications for the cap how do you insure there is no water infiltration and seepage?

Eric Denholm: The objective of the cap is to serve as the active layer, below the cover remains frozen in permafrost. It is not an impermeable barrier.

Kevin O'Reilly: The set back on the Diavik problem with waste rock, do you know how big that is?

Eric Denholm: No DDEC does not know.

Kevin O'Reilly: Has there been any lessons learned for the upsets that has happened with Diavik given that it is close to Lac de Gras? This is something to consider, I would like to chat with someone about this at some point.

Workshop Review and Wrap-up

- After the discussion concluded Margaret Kralt (Dillon) provided a high level overview of the information covered.
- Rick Bargery of DDEC thanked everyone for participating and providing input. He spoke about the format of these workshops, asked people if they appreciated them and noted that the MVEIRB sees them as useful mechanisms for keeping affected parties informed and involved in the Jay Project Environmental Assessment. Rick indicated that DDEC will collect the meeting notes and deliver them back to everyone and make sure that all major points were captured properly. The information will be used in the next version of the Conceptual Management Plans for the Jay Project.
- The workshop ended at 2:07 pm.