

Meeting Notes Prepared by:

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Date of Meeting	March 16-17, 2010	Project Number	60119505
Project Name	Gunnar Mine Rehabilitation Project		
Location	Stony Rapids, Saskatchewan		
Regarding	Gunnar Mine Rehabilitation Options Workshop		
Attendees	A detailed list of the attendees is contained in Appendix A		
Distribution	See Participants List (attached as Appendix A)		

PLEASE NOTE: If this report does not agree with your records of the meeting, or if there are any omissions, please advise, otherwise we will assume the contents to be correct.

A workshop was held in Stony Rapids to review the potential rehabilitation options for the Gunnar Mine Site and to obtain feedback on those options. The workshop was carried out through the use of a series of PowerPoint presentations and facilitated break-out sessions.

The materials shown or distributed during the meeting are attached as follows:

- Items distributed at workshop: Meeting Agenda, which also provides the objectives of the meeting; Glossary of Terms; Questions for Discussion of End-Points; and two site maps (Appendix B).
- PowerPoint presentation delivered by SRC/AECOM (Appendix C)
- Poster maps (not attached)
 - Gamma radiation
 - Surface and groundwater flow
 - Langley and Back Bay tailings
 - Surface water quality
 - Northern Pike tissue contamination concentration
 - Watersheds hydraulic features
 - VEC Options Display
- PowerPoint presentation delivered by CNSC (Appendix D)

Plenary Session

The following questions (Q) and answers (A), and discussion items (D) were recorded during the plenary portion of the workshop (Day 1 and 2). Additional notes were recorded during the break-out sessions, and these notes can be found starting on page 11 below.

ID	Name	Question/Discussion Item
March 16, 2010 (Day One of Workshop)		
Gunnar Mine History and Site Conditions: Presentation by J. Muldoon (SRC) and D. Bright (AECOM)		
D1	Kiza Francis, CNSC	Noted that the legend on the gamma radiation map (slide 21 and poster map) is incorrect. The units were listed as “m” (millisieverts), and should be “μ” (microsieverts). <i>This correction has been made.</i>
Q1	Gabriel Stenne, Camsell Portage	A recent presentation (Fond du Lac, November 2009) from Dennis Lawson seemed much “scarier” that what is being presented today. What do we make of this?
A1	Doug Bright, AECOM	Gamma levels at the Gunnar site are relatively low, but they are high enough that something needs to be done. The 1 uSv/hr and 2.5 uSv/hr criteria constrains how long one can be on site. However, unlike some other abandoned mine sites, there are few non-radioactive chemicals of concern (e.g. arsenic, selenium). The most important drivers at Gunnar are uranium and radium 226
Q2	Russell Powder, MN-S, Uranium City	Russell noted that he works in a uranium mine, and that he is exposed to elevated levels of radiation through his occupation. He asked, “How are the thresholds and maximum exposure levels determined? Shouldn’t my “baseline” level be considered?”
A2	Doug Bright, AECOM, and Kiza Francis, CNSC	The occupational exposure level is 50 times higher than the general population. It is difficult to set a standard for exposure at the Gunnar Mine Site that would take into account all the varying levels of baseline/background exposure that individuals may be subject to. Nonetheless, CNSC ensures that both workers and the general public are adequately protected when setting acceptable exposure levels. An important part of the decisions involves setting the acceptable exposure level “as low as reasonably achievable” (ALARA). For the general public, 1 mSv/yr is about the same or less than a Canadian would typically get from other sources of natural and other radiation in the Canadian environment (background exposures)
Q3	George Bihun, SK Ministry of Environment (MOE)	What is the cumulative effect – is this being taken into account?
A3	Doug Bright, AECOM	Yes, we need to consider what people are already exposed to
Q4	Warren Kelly, Northern Mines Monitoring Secretariat (NMMS)	Is there a fish advisory on Langley Bay?
A4	George Bihun, SK MOE	Yes, I think so.
Q5	Dennis Lawson, Independent	Tailings were not neutralized at the site, they were released as acid-like slurry into Lake Athabasca. Did the SRC or AECOM take core samples from the Lake to determine gamma levels in sediments?

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March 16, 2010 (Day One of Workshop)		
A5	Doug Bright, AECOM	True, finer materials did flow into Langley Bay/Lake Athabasca. As pointed out, this would have been facilitated by the very liquid nature of the non-neutralized tailings. We have sampled sediment. We were challenged, though in getting sediment samples from the area of Lake Athabasca near the mouth of Langley Bay, since this is a bedrock shelf that is mostly scoured free of sediments. There are elevated radionuclides in the sediments within Langley Bay. Within the upland tailings deposits themselves, and in the Langley Bay tailings deposit, the radiation levels vary down the discharge path since finer materials settled farther away from the tailings discharge. However, the differences in gamma levels are minor. Gunnar Main and Gunnar Central show lower gamma levels at approximately 4.5 uSv/hr and higher levels at Langley Bay at about 5.5 uSv/hr on average.
D2	Dennis Lawson, Independent	Whitefish have been shown to have radiation doses of concern, so the focus should be on whitefish; jackfish are not as much of a concern.
Q6	Glenn Groskopf, Environment Canada (EC)	Do we have a detailed inventory of the chemicals onsite?
A6	Joe Muldoon, SRC	Yes, we do. There are only isolated quantities of chemicals onsite and they will be properly cleaned up (including sulphur piles).
Q7	Glenn Groskopf, EC	Do we know the pH of the water?
A7	Doug Bright, AECOM	Yes, most groundwater and surface water to Langley Bay and Zeemel Bay are 6.5-8 (neutral). The wetter tailings/wetland areas on the Site are acidic (~4.5), but when the runoff enters the Bay it is neutral.
Q8	Glenn Groskopf, EC	Will the remnants of the fish processing operation be cleaned up as well?
A8	Joe Muldoon, SRC	Yes, will be cleaned up. Noted that the fish in the pit may have been introduced by the fish processing operation.
Q9	Russell Powder, MN-S Uranium City	Why are selenium levels low or none at the Site, like at other mining sites like Lorado and Rabbit Lake?
A9	Doug Bright, AECOM	This is simply the nature of the Gunnar ore. It does not have significant levels of elements like selenium, barium, and arsenic (which is a good thing).
D3	Dennis Lawson, Independent	PCBs were cleaned up in the 1960s, so not a concern today. (Noted by Mark Simpson, SRC, that only PCBs onsite today are small quantities in light ballasts)
D4	Gabriel Stenne, Camsell Portage	<i>In response to a question from B. Parker (AECOM) Gabriel expanded on how the fish processing area was used in the past: Gabriel worked at the Fish Processing Operation at the former Gunnar Site in the mid 1970s (for 7-8 years). He provided a description of the operation. Involved approximately 100-150 workers. Used nets in Lake Athabasca to catch fish, which were taken into the fish processing plant. Fish guts were dumped into the pit. Entire families lived at the Site while working in the Fish Processing Facility, children had the run of the place, playing all over the site. Noted the occasionally "flaming sulphur".</i>
D5	George Bihun, SKMOE	The fish plant was originally located southeast of the Gunnar site. When the mine closed the operations were moved to the Gunnar site (sometime in the 1970s) after the mine stopped operating.
Q10	Dennis Lawson, Independent	Disagrees with the southern groundwater flow direction "arrows" on the Surface Water and Groundwater Flow Figure.

ID	Name	Question/Discussion Item
March 16, 2010 (Day One of Workshop)		
A10	Doug Bright, AECOM	We are not completely certain that this is the exact flow of groundwater (conceptual diagram only); however, the important take-away is that we believe that some subsurface water flows to the south and southeast, towards Zeemel Creek and Zeemel Bay. This interpretation is based on new well information obtained last fall (Sept. – Oct. 2009.)
D6	Russell Powder, MN-S Uranium City	Used to have relatives that lived on the other side of Zeemel Bay
D6a	Doug Bright, AECOM	Believes the cabin is still there, based on observations during the September 2009 site visit.
<p>EA Overview and Project Schedule: Presentation by B. Parker (AECOM)</p> <p>CNSC Process: Presentation by Kiza Francis (CNSC)</p> <ul style="list-style-type: none"> AECOM provided an overview of the EA process and the project schedule as shown in the attached PowerPoint presentation (Appendix C). CNSC prepared a PowerPoint presentation but it was not shown; Kiza (CNSC) provided a verbal overview and indicated that more details can be found in her presentation (included as Appendix D). 		
Q11	Warren Kelly, NMMS	Do you know where the (CNSC) hearings will be? In northern Saskatchewan?
A11	Kiza Francis, CNSC	We are not sure yet – this has not been planned out yet.
A12	Kiza Francis, CNSC	Asked about the review process, CNSC provided an overview of the review period for the EA and licensing processes (see slides in Appendix C and D)
Q13	Russell Powder, MN-S Uranium City	Can CNSC hearings be held in Uranium City?
A13	Kiza Francis, CNSC	Cannot answer that question now, but will follow-up with supervisors in Ottawa.
Q14	Diane McDonald, Prince Alberta Grand Council (PAGC)	What is the CNSC's obligation to Métis and First Nations with respect to consultation?
A14	Kiza Francis, CNSC	If there is a likelihood of impact on traditional territory. Consultation and engagement for the EA will be conducted throughout the EA process; however, this will be lead by the CEA Agency.
D7 and Q15	Diane McDonald, PAGC	<p>Camsell Portage is likely the most impacted area.</p> <p>Will there be consultation with the outfitters?</p> <p>We would like the Agency Representatives (DFO, CNSC, CEA AGENCY, Provincial) to come to Uranium City and explain to the people what their responsibilities are regarding the EA and Licensing processes and what the consultation processes entails.</p>
A15	Kiza Francis, CNSC	<p>CNSC is unsure of the details of consultation with the outfitters. Believe letters were sent to the outfitters by the CEA Agency. The CNSC agreed to follow-up on this question.</p> <p>We (responsible authorities: NRCan and CNSC) are hearing that we need to have additional dialogue and discussion with the impacted communities.</p>

ID	Name	Question/Discussion Item
March 16, 2010 (Day One of Workshop)		
D8	Russell Powder, MN-S Uranium City	The Elders would like the Agency Representatives, especially the CNSC commission members, to come to Uranium City and the Gunnar Site for a tour (before the CNSC licence is issued)
D8a	Kiza Francis, CNSC	Kiza suggested that an option would be send a request to the CNSC about visiting.
D9	Mark Simpson, SRC	There have been CNSC and CEA Agency reps at many of the SRC meetings.
D10	Keith Cunningham, SK Ministry of Energy and Resources (MER)	The CNSC and the CEA Agency sponsored the meeting on the EIS guidelines
Q16	Dennis Lawson, Independent	What is the difference between an EIS and a Comprehensive Study Report (CSR)?
A16	Kiza Francis, CNSC	They are two different documents. The CSR is written by government in response to the EIS document, which is written by the proponent, SRC in this case, as well as all other public comments and reports.
D11	Dean Classen, Uranium City	The discussions being held here today should be held in Uranium City.
Q17		Will the [EA and Licensing] documents be mailed out?
A17		Where a request is being made to review the documents, they will be mailed out.
Q18	Russell Powder, MN-S Uranium City	What is happening with the satellite sites?
A18	Mark Simpson, SRC	Discussion regarding other smaller projects/satellite sites in the CLEANS program: <ul style="list-style-type: none"> • None of the satellite sites are like Gunnar, all much smaller, do not require a license or CEA Agency involvement. • Work has begun on 9 of 36 sites. • Applications are in to begin work at 10 of the other sites. • Meetings are to be held in Uranium City regarding the cleanup. • So far none have been returned to the Crown (which would be the sign that they have been remediated and work is complete). • Some sites are proving to be more complicated than anticipated and are requiring more work to complete cleanup. • There was supposed to be a community meeting in U-City last fall (2009), but this did not occur. [Joe Muldoon then commits to holding a meeting in U-City to inform the people about the CLEANS project].
Q19	Russell Powder, MN-S Uranium City	Why is this meeting being held in Stony Rapids?
A19	Joe Muldoon, SRC	Because we rotate the locations across the region, and because Stony Rapids has the accommodation options to host this meeting. SRC will return to U-City prior to the kick-off of the summer field season for public meetings.
Q20	Gabriel Stenne, Camsell Portage	Will the cleanup work for the satellite sites go out to public bid?
A20	Mark Simpson, SRC	Yes.

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March 16, 2010 (Day One of Workshop)		
D12a	Russell Powder, MN-S Uranium City	The focus needs to be on the impacted community – Uranium City.
D12b	Marco Theriault, Fond du Lac	Disagrees with this statement. We all share the water and live in the same watershed. We all are impacted and we all want to be involved. [<i>Marco is from Fond du Lac</i>].
D12c	Kiza Francis, CNSC	The CNSC casts a wide net to consider impacted communities. We will not exclude any community until our studies determine they are outside of the impact area.
D12d	Mark Simpson, SRC	It is also an issue of scope. The satellite sites are small and do not have an impact outside of their immediate surrounding area. CLEANS program contains Gunnar, the biggest project, Lorado, the second biggest, and then 36 other smaller satellite sites that are scattered across the region.

ID	Name	Question/Discussion Item
March 17, 2010 (Day Two of Workshop)		
Recap of Day One by J. Shute (Facilitator)		
<ul style="list-style-type: none"> Plenary and break-out session results were summarized 		
D13	Dennis Lawson, Independent	Noted that monitoring must be focused on the right environmental features, and should utilize the principles of adaptive monitoring.
Presentation on List of VECs by B. Parker and D. Bright (AECOM)		
<ul style="list-style-type: none"> B. Parker reviewed the list of VECs presented on the poster maps including background and current rationale. The list of VECs originated from the Project-specific/EIS Guidelines. B. Parker and D. Bright facilitated a plenary feedback session on the VECs and answered questions. 		
D14	Gabriel Stenne, Camsell Portage	Snowshoe hares are not in this area, only rabbits. The hares should be removed from the VEC list. There are also several kinds of whitefish.
D15	Diane McDonald, PAGC	I do not believe there are barren-land caribou in this area, only woodland caribou.
Q21	Gabriel Stenne, Camsell Portage	Why is walleye not listed as a VEC?
A21	Doug Bright, AECOM	Walleye are migratory species and are in the area for only about two weeks, which is why they are not included on the VEC list. AECOM did catch some forage fish (e.g., stickleback) – not all the species caught/sampled are listed here.
D16a	Dennis Lawson, Independent	Radionuclides move up the foodchain but they do not bio-magnify up. Highest radionuclide concentrations are in the low trophic level species. Therefore, we should be testing and monitoring water and sediment and the first-level trophic species. In Langley Bay, whitefish are the key species to monitor and analyze as they ingest tailings; northern pike are transitory. Need to get rid of the tailings in Langley Bay to protect the whitefish.
D16b	Doug Bright, AECOM	We are collecting and analyzing all the VEC species, not just fish, because people may be using other species, as well as other VECs can be indicators of ecosystem/environmental health. Whitefish might very well be a good indicator species, but other species/VECs are important as well.
Q22	Diane McDonald, PAGC	What about critical habitat (e.g., spawning areas) for the VEC species? Also, we need to ask the local people what they are harvesting and using.

ID	Name	Question/Discussion Item
March 17, 2010 (Day Two of Workshop)		
A22	Brad Parker, AECOM	We agree, and this list will be taken to surrounding communities for further feedback. One of the purposes of the Traditional Knowledge (TK) / Traditional Land Use (TLU) study will be to document what local people are harvesting and using.
D17a	Warren Kelly, NMMS	Mentioned a 1987 paper (by Don Waite) should be considered in AECOM's literature search
D17b	Doug Bright	We have a copy of and have read both of Don's research papers on the Gunnar Mine. Both are really good sources of information, and one of the two in particular describes an estimate of the amount of radionuclides that enter the water column above contaminated sediments in Langley Bay in comparison with the amount in surface water that flows down the tailings discharge path. The sediment "flux" estimates may not be accurate, however, since measures were taken in only two locations, using techniques that can lead to artefacts.
D17c	Dennis Lawson, Independent	Responded to Warren that this paper was the best at the time. Dennis indicated he is not arguing against the VECs, but we also need to monitor from a scientific perspective, For example lower trophic levels like spiders, algae, and the benthic community will have the highest doses.
Q23	Warren Kelly, NMMS	One of the results from the Beaverlodge Workshop (Cameco) was to conduct a gap analysis of the site.
A23	Brad Parker, AECOM	AECOM completed a gap analysis at the beginning of the project; however, there is always more information that can be looked at and appreciate the comment.
Q24a	George Bihun, MOE	What is the purpose of the VECs? We should be focusing on human health. So study the fish that people actually eat. Keep it simple and study indicator species – is there a fish that will tell you about the rest (i.e., indicators)?
Q24b	Dean Classen, Uranium City	We also need to protect the ecosystem
A24	Brad Parker and Doug Bright, AECOM	BP: The purpose of the EA is not to conduct "scientific" research; need to know enough such that we can inform the rehabilitation options analysis. The intent of the studies for the EA is not to know everything about everything. BP: The list of VECs was assembled by the federal and provincial authorities through the preparation of the Project-specific (EIS) Guidelines. SRC and AECOM are consulting on this list. DB: There are two goals of the Project, 1. Reduce risks to human health, and 2. Reduce risks to the environment. BP: Consider eagles – they are important species, but we do not eat them.
D18a	Diane McDonald, PAGC	Noted that we need to understand what people eat and the monitoring required.
D19b	Dean Classen, Uranium City	Ideally, we need this information in layman's terms, such as "it would be safe to eat X number of this species of fish."
D19c	Kuni Albert, Albert & Associates (A&A)	Kuni noted that it is a concern that (A&A/AECOM) have not been able to collect TK/TLU information yet. It is important to know what to measure from the perspective of the local communities. The TK/TLU program is an important component of the EA.
Q25	Gabriel Stenne, Camsell Portage	There have never been trout living permanently around Gunnar. Whitefish in Langley Bay should be the focus species.
A25	Doug Bright, AECOM	Whitefish is a priority species and may drive what is needed from an ecological perspective. However, we also collected Lake Trout when they were in the area as part of spawning migrations, and collected tissues samples to help provide assurances to people that the trout are not affected by the mine.

ID	Name	Question/Discussion Item
March 17, 2010 (Day Two of Workshop)		
D20a	Dennis Lawson, Independent	There needs to be two monitoring programs: <ol style="list-style-type: none"> 1. Scientific monitoring program that will help with establishing reclamation planning, monitoring the options, selecting end points, etc (e.g. ants, spiders, mice). 2. Public/VEC monitoring program of what people are eating/using, in order to address long-term human health concerns. VEC list captures big picture but it does not contain things like ants, mice etc.
D20b	Doug Bright, AECOM	AECOM have mice data, but did not look at things like spiders or ants. For the EA, we collected minimal appropriate information that will allow the project to move forward
D20c	Dennis Lawson, Independent	Need to monitor what will burrow and be on those residual covers
Overview of the Four Major Project Elements: Presentation by B. Parker and Doug Bright (AECOM) <ul style="list-style-type: none"> • The workshop will focus on gaining feedback on four major components (buildings and infrastructure, tailings, pit and waste rock). The smaller elements (e.g., dock, drums, etc.) have not yet been considered in detail, but will be in the EIS 		
Options for Buildings and Structures on the Site: Presentation by Brad Parker (AECOM) <ul style="list-style-type: none"> • This presentation then focused on providing an overview of the buildings and infrastructure. 		
Q26	Glenn Groskopf	Is there an asbestos hazard on the site?
A26a	Doug Bright, AECOM	There should not be an asbestos hazard if proper management techniques are used. There will be a site-specific management program around this. The asbestos on site is mostly non-friable (less risk to humans); in comparison there is limited friable asbestos on site.
A26b	Dennis Lawson, Independent	Friable asbestos should not go in the pit, especially in the water (if the pit is kept flooded).
A26c	Doug Bright, AECOM	Putting the asbestos into water would be an issue and this is not being proposed.
A26d	Keith Cunningham, MER	There are stringent health and safety requirements for asbestos that need to be followed.
A26e	Brad Parker, AECOM	Occupational health and safety is important.
Options for the Tailings: Presentation by Brad Parker and Doug Bright (AECOM)		
Q27	Warren Kelly, NMMS	Will gamma end-point be a regulatory decision?
A27	Brad Parker and Doug Bright, AECOM	<ul style="list-style-type: none"> • Looking for your and others input. • Doug explained that Cluff Lake end-points were set with the objective of remediating radioactive contaminated areas with average gamma exposure rates in excess of 1 $\mu\text{Sv/h}$ (averaged over a 100 m x 100 m surface, or a 10,000 m² surface) or with a maximum spot gamma exposure in excess of 2.5 $\mu\text{Sv/h}$. • It is up to the CNSC will make a final determination on this based on regulatory requirements and consultation
Q28	Dean Classen, Uranium City	Regarding the 30 cm to 1 m thickness, is this to bring the gamma radiation levels down?
A28	Doug Bright, AECOM	30 cm is the minimum to get the levels to 1 uSv/hr (average) – the thickness will also need to take into consideration engineering and erosion control needs, especially durability of the cover against longer term erosion and wasting.

ID	Name	Question/Discussion Item
March 17, 2010 (Day Two of Workshop)		
Q29	Diane McDonald, PAGC	Current mining has more till (thickness) than what SRC/AECOM are proposing
A29	Doug Bright, AECOM	The 30 cm to 1 m thickness is a minimum and is what would be needed for gamma control; may need more material for erosion control.
Q30	Dennis Lawson, Independent	The gamma criteria (1 uSv/h average and 2.5 uSv/h maximum) are the same as Beaverlodge, but the cover depth is shallower than at Beaverlodge (45 cm). Why?
A30	Doug Bright and Brad Parker, AECOM	DB: The cover depth of 30 cm is only a minimum. Actual depth would be more. BP: We are also constrained by a lack of available cover material at the site; this may mean bringing in additional material or creating borrow or quarry sources.
D21a	Dennis Lawson, Independent	Beaverlodge has some areas where a thin layer of tailings is covered with vegetation – this was deemed acceptable for gamma cover in some areas
D21b	Brad Parker, AECOM	We will think about that for the Gunnar site –several areas at Gunnar with vegetation growing on tailings.
D22a	Dean Classen, Uranium City	Beaverlodge used a layer of fine sands then coarse sands as cover – this would not be an option at Gunnar because of the lack of this material at the Gunnar site
D22b	Brad Parker and Doug Bright, AECOM	This can be done, but it will cost money. It will be a challenge.
Q31	Warren Kelly, NMMS	What about the Senes risk report – the group should know
A31	Doug Bright, AECOM	Senes conducted high level risk assessment studies at the Gunnar site; AECOM will take this work a step further in the EIS. In particular, we are addressing some of the uncertainties in the earlier risk assessment (for example, movement of radionuclides into plants or fish) by collecting information that can be used to replace assumed values. The Senes report did not predict human health risks from the site, but this was based on a set of assumptions about how low a person might be on the site.
Options for Waste Rock and Open Pit: Presentation by Brad Parker and Doug Bright (AECOM) <ul style="list-style-type: none"> Options were presented for waste rock and open pit element of the project There were no questions following this presentation – break-out sessions began immediately after the presentation 		
Closing Comments from Workshop Participants		
D23	Dennis Lawson and other workshop participants	The pit should be filled with tailings, covered with the waste rock, and “walk away.” Dennis also indicated that his impression was that the overall conclusion being made in the room regarding the options was to ‘do nothing’. Several other workshop participants disagreed.
D24	Gabriel Stenne, Camsell Portage	Need to let people in the communities know what is happening so they can get prepared for jobs and training
D25	Dean Classen, Uranium City	SRC must be proactive with the community to get the work done. Dean mentioned he was happy with the workshop and the options discussion.
D26	Diane McDonald, PAGC	Diane indicated that she read the guidelines and concluded that capacity building of local communities is an important aspect of the project. At the end of the options discussion is the dollar figure.
Q32	George Bihun, MOE	Is there anything else we need to be doing to protect people before the work commences on the project?
A32	Dean Classen, Uranium City	Yes – post more warning signs/advisories in areas such as Zeemel Bay and Langley Bay (e.g., “do not eat fish”)

ID	Name	Question/Discussion Item
March 17, 2010 (Day Two of Workshop)		
Q33	Warren Kelly, NMMS	Can we close/secure the site? There is no security, and no one should be going there, including the outfitters
A33a	Keith Cunningham, MER	The outfitters have been warned. They should not be going there.
A33b	Dean Classen, Uranium City	The only way to really stop people from going on site would be to tear down the buildings.
D27	Brad Parker, AECOM	Noted that there is an avenue for talking the buildings down sooner (before the EA is complete). Joe noted that he did not want to comment on this further - this is not the SRC's role
<p>Meeting wrap-up by Joe Muldoon (SRC)</p> <ul style="list-style-type: none"> • Joe Muldoon thanked the workshop participants • This is one step in the process. The SRC will conduct another round of consultation in the communities in early to mid May. • The TK piece will begin shortly; it is an important component of the EIA • SRC plans to visit U-City to talk about the satellite sites cleanup in the next 6-8 weeks. • By the fall, the draft EIS will be ready and including the preferred option – this will then begin another round of consultations. • The EIS will be submitted to government agencies by the end of 2010, followed by more consultations in early 2011. • Unlikely that we'll find a “perfect” solution that will make everybody happy – this is not an easy process and it will be limited in some ways by dollars. Public safety and environmental risk are the top priorities and will dictate. The do nothing option is not on. • This is a “good news” project – we’re cleaning up the environment. • Targeting summer 2012 for beginning of physical work, but possibly 2013. • SRC knows that benefits locally as much as possible. • The assessment for Lorado is coming up and SRC is hoping to catch this up to the Gunnar schedule. 		

Breakout Group Sessions

Five facilitated break-out sessions were held over the two-day workshop (see attached Agenda, Appendix B). The facilitators for the break-out sessions included the following AECOM representatives: Jeremy Shute, Glenda Fratton, Doug Bright, and Brad Parker. Each break-out session was preceded by delivery of a PowerPoint presentation to the workshop participants to provide context and background information on the break-out session questions and topics described below.

On **Day 1**, the break-out session focused on the following four questions to obtain feedback on the desired end-points for the rehabilitation of the former Gunnar Mine Site:

1. What should the site look like after the closure plan is complete?
2. How do you think the site should be used after closure is complete?
3. What words and ideas should direct the study team in their design of closure options?
4. How should cost of an option be considered in defining a preferred closure plan?

The **Day 2** break-out sessions were designed to obtain feedback on the rehabilitation options for the four major project elements:

1. Buildings and Infrastructure
2. Tailings
3. Waste Rock
4. Flooded Open Pit

The following notes were transcribed from flip-chart notes recorded during the break-out sessions.

March 16, 2010 (Day One of Workshop)	
Question 1. What should the site look like after the closure plan is complete?	
Group 1 (Facilitated by J. Shute)	<ul style="list-style-type: none"> • Should look like surrounding area • Revegetated • Could be revegetated naturally, but need to provide soil base • Options for restoring Mudford Lake should be addressed in process • Put tailings in pit • Make aesthetically similar to surrounding area (x2)* • Make aquatic environment similar to surroundings • Recontour waste rock piles • Work on changing site should not remobilize contaminants (Fond du Lac community is concerned with this). Make sure problems are contained onsite. • Stabilize wind-blown area of Gunnar Main • Stabilize water erosion of Langley Bay tailings • Reduce or eliminate long term maintenance • Clean up Langley Bay last • Do you make it appealing for camping? • Big questions about pit – is it fish habitat? Should that be maintained? Should fish be removed? Fish aren't fit for human consumption out of pit
Group 2 (Facilitated by G. Fratton)	<ul style="list-style-type: none"> • Remove airstrip • Doesn't matter what it looks like, as long as the environment is cleaned up. • Remove everything that is unnatural – Bury, hide, get rid of it • Allow for vegetation to take hold naturally – may need to rough or scarify to encourage growth (x2)* • Allow site to "clean itself up" • No fences (x3)* • If eating fish from bay, what is ok? What is the limit? e.g., once a month? • Local community should have a say on what site will look like (x2)* • Consider safety first and then aesthetics, for example, steep slopes • Waste rock piles – safety issue at the edge (Elders have mentioned this point)
Group 3	<i>This following includes comments for Question 2 above and Question 3: How Should the</i>

March 16, 2010 (Day One of Workshop)	
(Facilitated by D. Bright)	<p><i>Site Be Used After Closure is Complete</i></p> <ul style="list-style-type: none"> • Loss of airstrip would make it more expensive for outfitters • Taking away airstrip will remove site as historical attraction • Should continue to be able to trap (Delbert [has traplines on/near the Gunnar site]) • Should be a memorial (x2)* • Some visits from people from Camsell [Portage] • Not anticipating a big site use increase compared to recent years • Take the buildings down (x2)* • Will never get back to being entirely natural, so must be a balance • Continuing tourism and trapping • Berry picking – used to pick there, but not that good lately • Hunting, if caribou returned • Don't want fish advisories! Clean-up should lead to "clean", should be able to eat fish • Should clarify fish advisory • Routine and long-term monitoring • Kill the fish in the pit – fish in the pit shouldn't be a detriment to remedial options • Use for outfitters should not be permitted because of safety concerns • Lodges took over fish resources, therefore little incentive to use site once infrastructure is gone • Should be able to travel through area (x2)* • Runway is a big decision • Don't want to disturb what is there to get new borrow source • Improving trends over realistic time periods (objective for site remediation) • Beaverlodge case looked at trying to control loadings (miscalculated, and had to go back and redo. "Do right the first time")
Group 4 (Facilitated by B. Parker)	<ul style="list-style-type: none"> • Put waste rock in pit • Clean up the tailings • Minimal restriction to general site • Back to natural state • Put tailings in pit • Don't want anything buried – no "cover up" • Use old marina for landing • No wind-blown tailings, no radionuclides blown away • What to do with airstrip? Move airstrip? Safety [keep airstrip for emergency use] • Be able to fish and not worry about contamination in fish around mine site. • Sediments to be clean up, tailings and waste rock.
Question 2. How do you think the site should be used after closure is complete?	
Group 1 (Facilitated by J. Shute)	<ul style="list-style-type: none"> • Traditional land use • Tourism with a self-guided museum • No signs warning people (so should be clean enough that don't need warnings) • Unrestricted camping for six weeks at a time • Don't allow heavy equipment or machinery that might dig things up, like ATVs on the site after cleanup • Limit amount of areas that have access control • Can radon be trapped in a tent? • Some sections should be more usable – but engineer some areas where don't want people to be, e.g., put lots of rocks where don't want people camping • Decommission for unrestricted traditional use, ecological use, recreational use, ecotourism • Expectations from lodges to use airstrip, road, and docking area • Need to talk to lodge owners during process • ~ 600 people per year are coming to or through site – so it's an economic development opportunity • Maintain airstrip or part of it • Economic decision about finding new fill verses recovering fill from airstrip
Group 2 (Facilitated by	<ul style="list-style-type: none"> • Want to be able to use all summer (June to October) without limitations • 200 yards from shoreline is most important for camping and traditional purposes (x2)*

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G. Fratton)	<ul style="list-style-type: none"> • Cottages should be ok • Airstrip should be removed, used for cover material; no other cover around • Allow vegetation to grow • Talk to Delbert about traplines • May not want to use the land for certain purposes, and may need education campaign to advise community about prohibited uses, e.g., no berry picking or fish out of bay • No permanent structures on site? But none on tailings, waste rock, or drainage areas • Can't block access unless put up a fence, but this is not really an option • Tourist companies and tourist lodges will want compensation if airstrip is removed
Group 3 (Facilitated by D. Bright)	<i>See notes for Question 1 (Group 3) above</i>
Group 4 (Facilitated by B. Parker)	<ul style="list-style-type: none"> • Revegetated with trees and plants • Protect Lake Athabasca • Water and sediment need to be treated • Look at other mine sites as examples • People who reside around mine need to be sampled • What to do about outfitters? • Should Uranium City be brought into project? (was this in regard to the material used for housing that was taken from Gunnar?)
Question 3. What words and ideas should direct the study team in their design of closure options?	
Group 1 (Facilitated by J. Shute)	<ul style="list-style-type: none"> • Sustainability • Public acceptance • Health protection number one • Environmental protection • Adaptive management • Environmental effects monitoring • Monitor after reclamation • Possible follow-up reclamation after monitoring program • Start upstream and work downstream • TEK [Traditional Ecological Knowledge] • Consider expected land use • Source first, plume second • Long term testing and monitoring
Group 2 (Facilitated by G. Fratton)	<ul style="list-style-type: none"> • What are standards around world? • Precedents in Canada? • Keep costs in mind • Be site- specific • Design should last forever • Monitoring immediately after site remediation • Continual monitoring • After specific timeframe, re-evaluate monitoring • Look at trends, steady-state • Educational program to bring to layman's terms – regarding monitoring and reporting to community • Need ongoing community input
Group 3 (Facilitated by D. Bright)	<ul style="list-style-type: none"> • Remove scar of mining operations • Something has to be done with tailings – in the pit, or cover • Easier to relocate Gunnar Main [tailings] than Langley Bay [tailings] • Favour design that doesn't require human intervention – e.g. pit disposal better than cover tailings, which would require inspection and maintenance • Need to deal with gamma – relocate or cover • Open pit, what should look like? Cover the pit
Group 4 (Facilitated by B. Parker)	<ul style="list-style-type: none"> • Verify/follow-up • Safe and stable • Fix what's not working

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	<ul style="list-style-type: none"> • Monitoring • Do it right, it may cost more
Question 4. How should cost of an option be considered in defining a preferred closure plan?	
Group 1 (Facilitated by J. Shute)	<ul style="list-style-type: none"> • Consider cost after all options are on table • Spend money evaluating socially-acceptable options – determine this first (early) • Review options for raising money once preferred options are clear (i.e., if there are financial constraints for preferred option, look at raising money) • Include cost/benefit analysis • What would be cost associated with legal challenge? • Are good short-term employment opportunities and long term monitoring jobs • Main goal is to reduce risk to public and environment – other economic benefits should be considered as secondary • Economic benefits will be a primary consideration in local communities • Consider future economic benefits from site in long-run, i.e., future hunting and fishing and potential other uses of site
Group 2 (Facilitated by G. Fratton)	<ul style="list-style-type: none"> • Need more information to answer this question, one way to do this is to look at other sites/successes • Need to do less study and more work • If design without local community input, will cost more for logistics • Cheapest option would be if could empty pit and not treat water • Second cheapest – buildings in pit and cover tailings • Cost of educating community should go into closure plan • Education is an option if closure plan is prohibitively costly • No education past grade 9 in Uranium City • Impacted community should benefit – Camsell [Portage] and Uranium City – Benefits could include education, training, safety courses, business opportunities, be able to promote small business to grow • Does environmental risk drive cost? Prioritize risk to cost and deal with highest risks first • What about materials already removed from site? Are these being dealt with? Who is responsible for this? Is this part of SRC contract?
Group 3 (Facilitated by D. Bright)	<ul style="list-style-type: none"> • No point in doing clean-up unless meets technical objectives • Clean it up right, but has to be cost-effective • Do we want to be going back and spending money several times in the future? • Cluff Lake is a good example – should this be as good as Cluff? • Decision tree could be built and put everything on table, including minimally meeting objectives • Remedial option workshop for Beaverlodge <ul style="list-style-type: none"> ○ What is missing is best-practices and discussion of precedents – what was done in other case studies? ○ More exposure to other examples that are cost-effective and meet goals • Cluff Lake is modern mine and “standard of the day.” • Gunnar is an orphan site – government should not set a precedent that is lower than their expectations for an operating mine
Group 4 (Facilitated by B. Parker)	<ul style="list-style-type: none"> • Cost is ‘THE’ issue • Put together an environmental fund to ensure clean-up is completed • Capital and follow-up need to be considered • Independent monitoring – need a watch-dog • Could be an evaluation of cost after each phase
Brad’s Group’s Additional Question	<p><i>Why is SRC going ahead with the rehabilitation of the Gunnar site when the work at the other sites has not finished?</i></p> <ul style="list-style-type: none"> • Trust and communication issue • Need more information about other sites, including inspection of other sites

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	<ul style="list-style-type: none"> • Communication to community about satellite sites must be improved • First group of satellite sites need to be cleaned up

March 17, 2010 (Day Two of Workshop)	
Buildings and Infrastructure Options Discussion	
Group 1 (Facilitated by J. Shute)	<ul style="list-style-type: none"> • Stop calling the pit a landfill – wrong term and it is confusing • Asbestos is two issues: 1. What can go in the pit, should. 2. Insulation, dealt with through specific disposal system. This may be different for worker health and safety. Demolition different, disposal may be the same. • What can be recycled? • Use what can be reused • If the material can't be reused, explain very clearly why it can't be reused. • Public health has to come first • May be analysis of cost associated with reuse of certain materials • "Cell concept" needs to be well explained – everything will be saturated • Reuse wood on tailings cover – remove nails first • Can we remove asbestos from wood? Is it enough wood to make it worth the effort? • Justify onsite disposal – explain why not shipping materials offsite • Landfills – advantage – save space in pit for the tailings and waste rock • Consider options for disposal that provide best opportunity for ultimately covering sediments in Langley Bay • Evaluate potential use of concrete onsite – for liming, for example • Triage building materials • May need to notify people who have taken asbestos away • Disadvantage of landfills – plumes, leaching, unknown future impacts, what about climate change, any disposals need to look at climate change • Keep identification of what materials go where in landfill • Disadvantage of pit – potential collapse of underground workings, public safety concern
Group 2 (Facilitated by D. Bright)	<ul style="list-style-type: none"> • If want to fill pit, then buildings should go in pit. If don't want to fill pit, then buildings should be landfilled. • Very expensive to remove materials from site • Non-hazardous waste at mines is typically disposed onsite • Any hazardous waste will be removed and properly disposed of (e.g. PCBs) • Landfilling of asbestos is acceptable, if not dusted • What about wood? May have lead paint. Landfilling or covering can solve the problem. • Would it be a modern landfill? Liner? Clay? Leachate collection? • Benefit of pit is that it is very tightly contained...but, what to do with water in pit? • Do we use pit? That is the first decision point. If yes, then use it as a disposal site. • Is there salvage potential of materials? Any steel? • Burning should only be done with clean wood (non-painted) • Landfills create "unnatural" features on the landscape. Filling the pit would help recreate what the site was like prior to mine [development]. • A monument is desired onsite, possibly using something from the site, like a shovel
Group 3 (Facilitated by B. Parker)	<ul style="list-style-type: none"> • Buildings to come down? Yes • Reuse material if practical • Disposal options: <ul style="list-style-type: none"> ○ Engineered landfill ○ Occupational issues ○ Monitoring ○ Engineering – possibly pit ○ Cover materials – must be clean ○ All hazardous materials must be handled properly
Tailings Options Discussion	

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<p>Group 1 (Facilitated by J. Shute)</p>	<ul style="list-style-type: none"> • Fundamental principle – contain onsite • Cleanup, not cover-up • Advantages of moving to pit: <ul style="list-style-type: none"> ○ Remediation onsite ○ Smaller footprint of gamma-producing areas ○ Eliminate groundwater flow system ○ Deal with contamination ○ Containment ○ Return Mudford Lake to terrestrial environment – Lower outlet from Mudford to it remains terrestrial ○ Reclaim Langley Bay <ul style="list-style-type: none"> ▪ Whitefish ingesting sediments is the main issue • Disadvantages of moving to pit: <ul style="list-style-type: none"> ○ May not reduce gamma footprint ○ Still have to cover areas where tailings were located (if thickness is reduced it will lower gamma levels) ○ Not all tailings will fit in pit <ul style="list-style-type: none"> ▪ Prioritize Langley Bay tailings and wind-blow area from Gunnar Main ○ Use underground workings of pit for more volume ○ Manage the water from the pit ○ Disturbance of tailings in Langley Bay may cause more problems for the Bay than if they were left alone ○ May not be able to cover fine tailings with rock even if in pit, as they may rise up to surface (may be able to engineer solution) • Advantages of keeping tailings in place and covering <ul style="list-style-type: none"> ○ Take advantage of what nature has done for 50 years ○ Save the cost of moving tailings ○ Do not run risk of remobilizing contaminants • Disadvantages of keeping tailings in place <ul style="list-style-type: none"> ○ Source of contamination remains ○ Langley Bay tailings are very fine and may be unstable – question about whether they can be stabilized ○ Changing water levels on Lake Athabasca beyond local control – it is an interprovincial system. ○ Want to last a long time ○ Cover with any weight will push water from saturated zone out into Bay ○ Concern of erosion into Bay along shore and from surface water ○ May not be possible to stabilize and stop erosion ○ Uncertainty of stabilization • Another option – install seep dam at mouth of Langley Bay, remove fish and allow Langley Bay to be a large settling pond <ul style="list-style-type: none"> ○ Prevent fish from moving in ○ Maybe move the location of our end-point ○ This option still leaves a problem that will have to be dealt with • Priorities should be wind-blown area and delta – these are the two sources of contaminants to the environment
<p>Group 2 (Facilitated by D. Bright)</p>	<ul style="list-style-type: none"> • Closure criteria is not a hard and fast number (for gamma exposure) • Can we conduct a site-specific human health risk assessment for gamma? The exposure model and closure criteria all depend on how the site is used (i.e., time spent onsite) • The initial decision – do we even need to manage for gamma? This depends on the allowable exposure level. • If do not manage for gamma, would have to fence the site and restrict access indefinitely. This would be highly unpopular. • What about treatment of tailings/pore water? • Must control dust • Preferred option is to cover in a cost-effective manner and revegetate tailings • If move tailings, still need to either cover tailings footprint, or excavate down to level

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	<p>of contaminants to ensure complete remediation</p> <ul style="list-style-type: none"> • Covering would reduce gamma exposure, and reduce contaminants moving downstream/to Langley Bay • What about a wet cover option? This would probably be publically unpopular and would likely create a “contaminated wetland.”
Group 3 (Facilitated by B. Parker)	<ul style="list-style-type: none"> • Yes, underground disposal • Pit water must treated • Philip Stenne may have information • No Langley Bay disposal, though another lake is a possibility • Contaminants must be managed to water quality standards • Federal contaminant levels • About the money • Cleanup the water, route waterways around tailings. • Ultimately want revegetated • Clean water into Langley Bay
Waste Rock Options Discussion	
Group 1 (Facilitated by J. Shute)	<ul style="list-style-type: none"> • Waste rock should be left in place • Advantages: <ul style="list-style-type: none"> ○ Allow for revegetation ○ Cheaper ○ Spend savings on finding seepage source ○ Cover “hot spots” only ○ Use clean rock to cover the hot spots ○ Still have access to clean rock in other locations ○ Put sand on pile and will revegetate quickly ○ Restoration approvals may be straight forward ○ May be able to improve effect through layers • Disadvantages: <ul style="list-style-type: none"> ○ Continuous seepage, might not be able to locate source ○ Might not access clean rock from pile ○ Still have slope issue (physical hazard) • If move rock, put dirty rock on an engineered pad • Clean rock then becomes available for use
Group 2 (Facilitated by D. Bright)	<ul style="list-style-type: none"> • Original mine development – road base, airstrip, tank farm pad, are these all clean materials? • Manage in-place or move? If use pit for disposal, need some rock to cap the pit after tailings disposal. Residual contamination in tailings also covered by cleaner waste rock – this is a valuable resource • Recontour waste rock pile to better mimic natural landform • Sort prior to reuse – contingency is to use alternate sources as required for cover materials • Why not excavate to get at source of seep? • Is current risk associated with seep acceptable without major intervention? • If leave waste rock in-place, still need to address steep slopes, garbage, and gamma • Need to consider three potential sources of seepage – recontour the pile with perspective of limiting seepage. • Use stable isotopic methods, etc. • If do not use pit for tailings, would we use for waste rock?
Group 3 (Facilitated by B. Parker)	<ul style="list-style-type: none"> • Waste rock is a resource • If tailings stay in place, try and use rock as cover – but must meet closure criteria • May require further study • Need to separate material • If rock is left in place, need to recontour edges to reduce hazards • What is value of putting waste rock in pit? • May have to consider putting rock in a pit as an alternative in the EA, until proven infeasible

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	<ul style="list-style-type: none"> • May have to set up a “truck scan” for the waste rock • Putting the rock in the pit is a low priority and a waste of time and money
Pit Options Discussion	
Group 1 (Facilitated by J. Shute)	<ul style="list-style-type: none"> • Hinges on what to do with the seepage from the waste rock pile issue • Could we lower water level two metres to determine if head pressure from pit water is causing seepage? <ul style="list-style-type: none"> ○ Better characterize seep water ○ Rainwater or other water from underground workings • If the head pressure is causing the seepage, then pit will have to be filled • We want clean water coming off the site • Fish should be killed before they get into Lake Athabasca – people/kids may fish in pit • Question about contamination – what levels of contamination are “acceptable”? • Seepage question is the driver – figure this out immediately and then return to question of pit • Safety around the edge • Using small area to make this all work – site elements are the options, options are limited in cleanup. Stop problems moving offsite. • Concern of filling pit is aesthetics • If a water cover is left on pit, people won’t walk on it – less of a public risk for collapse • Buildings are the first things that need to be remediated/dealt with <ul style="list-style-type: none"> ○ Public threat reduction. ○ Has to be done with the end criteria in mind – complete plan ○ The end is cleaning up Langley Bay ○ May have to stockpile demolition material until you are sure there is enough space in the pit
Group 2 (Facilitated by D. Bright)	<ul style="list-style-type: none"> • Tailings in pit, cap with clean waste rock • “Safetyizing” – southeast lip • If filled in, what are merits of using waste rock versus tailings?
Group 3 (Facilitated by B. Parker)	<ul style="list-style-type: none"> • Leave pit as-is, with some safety measures • Divert and manage surface water flows • Monitor and advise

* Denotes that the comment was made by more than one person.

Appendix A – Meeting Participants List

Name	Organization
Joe Muldoon	Saskatchewan Research Council (SRC)
Mark Simpson	Saskatchewan Research Council (SRC)
Jess Spies	Saskatchewan Research Council (SRC)
Alexey Klyashtorin	Saskatchewan Research Council (SRC)
Doug Bright	AECOM Canada Ltd. (AECOM)
Brad Parker	AECOM Canada Ltd. (AECOM)
Glenda Fratton	AECOM Canada Ltd. (AECOM)
Maxwell Woods	AECOM Canada Ltd. (AECOM)
Jeremy Shute	AECOM Canada Ltd. (AECOM)
Kuni Albert	Albert & Associates
Kiza Francis	Canadian Nuclear Safety Commission (CNSC)
Lee Casterton	Canadian Nuclear Safety Commission (CNSC)
Glenn Groskopf	Environment Canada
Rick Grabowecky	Health Canada
Charlene Burnett	Health Canada
Warren Kelly	Northern Mines Monitoring Secretariat (Gov of SK)
Gill Gracie	Northern Mines Monitoring Secretariat (Gov of SK)
George Bihun	SK Ministry of Environment
Keith Cunningham	SK Ministry of Energy and Resources
Dennis Lawson	Independent
Doug Racine*	Métis Nation-Saskatchewan (MN-S)
Russell Powder*	MN-S, Uranium City Local
Diane McDonald	Prince Alberta Grand Council (PAGC)
Dean Classen	Uranium City
Gabriel Stenne	Camsell Portage/Fond du Lac
Marco Theriault	Fond du Lac
George Tsannie [†]	Wollaston Lake

* Did not attend Day 2 of the workshop

[†] Did not attend Day 1 of the workshop

Appendix B – Items Distributed at Workshop

- Meeting Agenda, which also provides the objectives of the meeting;
- Glossary of Terms;
- Questions for Discussion of End-Points; and
- Two site maps: Local Overview and Gunnar Mine Site aerial photograph.



Appendix C – PowerPoint Presentation Delivered by SRC/AECOM



Appendix D – PowerPoint Presentation from CNSC