2012 – 2013 Annual Monitoring Report

for Agnico Eagle Mines Ltd.'s Meadowbank Gold Project





Nunavut Impact Review Board
File No. 03MN107
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Report Title:	The Nunavut Impact Review Board's 2012 – 2013 Annual Monitoring Report for the Meadowbank Gold Project (NIRB File No. 03MN107)
Project:	Meadowbank Gold Project
Project Location:	Kivalliq Region, Nunavut
Project Owner:	Agnico Eagle Mines Ltd. PO Box 540 Baker Lake, NU X0C 0A0
Monitoring Officer:	Sophia Granchinho, M.Sc., EP
Monitoring Period:	October 2012 – September 2013
Date Issued:	November 22, 2013
Cover photos:	1) Front end loader bucket 2) Bridge at kilometre 23 3) Outflow into Third Portage Lake 4) Tailings storage facility 4) Baker Lake dock facility

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LIST OF ACRONYMS

AANDC	Aboriginal Affairs and Northern Development Canada
AEM	Agnico Eagle Mines Ltd.
AEMP	Aquatic Effects Management Program
AWPAR	All-weather private access road
CaCl	calcium chloride
CCME	Canadian Council of Ministers of the Environment
CN	Cyanide
CREMP	Core Receiving Environment Monitoring Program
dBA	A-weighted decibels
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EC	Environment Canada
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
GN	Government of Nunavut
GN-DoE	Government of Nunavut, Department of Environment
HC	Health Canada
INAC	Indian and Northern Affairs Canada
KivIA	Kivalliq Inuit Association
km	kilometre
ML	million litre
MW	Monitoring Well
NIRB	Nunavut Impact Review Board
NLCA	Nunavut Land Claims Agreement
NWB	Nunavut Water Board
PEAMP	Post-environmental assessment monitoring program
PM	Particulate Matter
QAQC	Quality Assurance/Quality Control
RPD	Relative percent difference
TC	Transport Canada
TSP	Total suspended particulates

1.0 INTRODUCTION

In December 2006, pursuant to Section 12.5.12 of the Nunavut Land Claims Agreement (NLCA), the Nunavut Impact Review Board (NIRB or Board) issued Project Certificate No. 004 for the Meadowbank Gold Project (the Project), allowing the Project to proceed in accordance with the Terms and Conditions issued therein. The NIRB is responsible for the monitoring of this Project as per Sections 12.7.1 and 12.7.2 of the NLCA, and the Project Certificate [004].

This report provides findings that resulted from the Board's monitoring program for this Project from October 2012 to September 2013.

1.1. PROJECT HISTORY AND CURRENT STATUS

In early 2007, Agnico Eagle Mines Ltd. – Meadowbank Division (AEM or the Proponent) acquired Cumberland Resources Ltd.'s assets which included the Meadowbank Gold Mine. Construction of an access road from the hamlet of Baker Lake to the Meadowbank mine site was completed in 2008 and the road opened to mine-related transportation in March 2008. The Meadowbank Gold Mine entered the operations phase of the project in February 2010, and is currently entering its fourth year of operations. By the end of 2012, the Meadowbank mine had reportedly produced 366,030 ounces of gold, an increase from 2011 in which the mine had reportedly produced 270,801 ounces of gold.

The Type A Water Licence (2AM-MEA0815) required for the Project was issued by the Nunavut Water Board (NWB) in June of 2008. This licence was amended in May 2010 to allow for an expansion to the Baker Lake fuel tank farm facility which included 2 additional 10 ML fuel tanks to a combined total of six 10 ML fuel tanks.

An expansion to the Meadowbank airstrip was screened by the NIRB in September 2010 with the NIRB having issued a 12.4.4(a) recommendation to the then-Minister of Indian and Northern Affairs Canada (INAC, now Aboriginal Affairs and Northern Development Canada or AANDC) indicating that the proposed project could proceed subject to additional project specific terms and conditions, and that additionally the NIRB would expand its Part 7 NLCA monitoring program for the Meadowbank Project to apply to the airstrip expansion (NIRB File No. 10XN039). On January 27, 2013 AEM submitted an application to the NWB to allow for the expanded airstrip. The request indicated a revision to the original 2010 request (NIRB File No. 10XN039) which substantially reduced the impact to Third Portage Lake and included construction of the expansion during the winter season. On April 4, 2013 NWB approved the proposed modification and the Monitoring Officer was informed during the September 2013 site visit that the airstrip expansion had been completed in April 2013.

Following a request by the Hamlet of Baker Lake and the Proponent in 2008, in November 2009 the NIRB formally amended the Meadowbank Gold Mine Project Certificate [No. 004] pursuant to NLCA 12.8.2 to include a modified Condition 32 and an approval by the Board to change the name of the holder of the Project Certificate [No. 004] from Cumberland Resources Ltd. to Agnico-Eagle Mines Ltd (NIRB, 2009).

On July 14, 2011 the NIRB issued *Appendix D – Meadowbank Monitoring Program* to AEM in accordance with the Meadowbank Project Certificate [004] (NIRB, 2011). The Meadowbank monitoring program includes responsibilities for AEM, the NIRB, and several authorizing agencies and government departments.

During the 2012 year, AEM started pit operations of the Bay Goose pit; completed the construction of the Vault road; commenced initial stripping and quarry construction near the Vault pit; installed thermistors in the waste rock storage facility and tailings pond to measure freeze back; completed the construction of the Central Dike to an elevation of 115 metres; and completed dewatering activities related to the Central Dike.

AEM applied for an amendment to its Type A Water Licence (No. 2AM-MEA0815) with the NWB on April 23, 2013 to increase the amount of freshwater drawdown and use from the Third Portage Lake from the originally permitted amount to a total of 1,870,000 cubic metres per year (m^3/year) in 2013; and to 1,150,000 m^3/year for each year thereafter until 2018. The NIRB considered two alternatives under the NLCA to determine the impact assessment requirements applicable to AEM's amendment application and following the receipt of comments from interested parties, issued correspondence on October 1, 2013 indicating that it had determined no further assessment was required. This request is further discussed in Section 2.2.4.

In July 2013 AEM also applied for amendments to its existing *Fisheries Act* Authorizations No. NU-03-0190 – All Weather Private Access Road (AWPAR) and No. NU-03-0191.3 with Fisheries and Oceans Canada (DFO). AEM requested an amendment to the monitoring frequency and a reduction to the amount of the existing letters of credit from $25.675 Million to $8.6 Million. This request for amendment is further discussed in Section 2.2.4.

1.2. PROJECT COMPONENTS

The Meadowbank Gold Project as operated by AEM consists of an open pit gold mine located approximately 70 kilometres (km) north of the hamlet of Baker Lake on Inuit-owned surface lands. In addition to mining infrastructure and activities, ancillary Project infrastructure is located approximately 2 km east of the hamlet of Baker Lake and consists of barge unloading facilities, a laydown storage and marshalling area, a 60 million litre (ML) fuel tank farm, associated interconnecting roads and a 110 km all weather private access road (access road) from the hamlet of Baker Lake to the Meadowbank mine site. Supplies are shipped from locations within Canada via sealift to Baker Lake where they are offloaded at AEM's marshalling area and transported to the Meadowbank site via truck haul along the 110 km access road.

The original Project proponent and owner, Cumberland Resources Inc., estimated in 2006 that the Meadowbank project comprised of a total proven and probable gold reserves of 2.7 million ounces (NIRB, 2006). The current Project owner, AEM, indicated in its December 2011 Reserves and Resources Report that Meadowbank has proven and probable gold reserves of 2.2 million ounces; lower than the initial value predicted (AEM, 2011). Further, in February 2012, AEM issued a press release announcing that its Meadowbank ore reserves had been reduced as a result of it being unable to economically mine the lower grade ore which has also resulted in a

mine life that is reduced by approximately 3 years from initial estimates (AEM, 2012). AEM provided a revised mine plan to the Kivalliq Inuit Association (KivIA) in 2012 and predicted that its Meadowbank operations were scheduled to be completed by 2018 instead of 2020 (AEM, 2012).

2.0 MONITORING ACTIVITIES

2.1. REPORTING REQUIREMENTS

2.1.1. General Reporting Requirements

During the 2012 – 2013 monitoring period, the Proponent demonstrated a general compliance with reporting requirements imposed through commitments resulting from the NIRB's Review of the Project, including those contained in related reports, plans, and the NIRB's Project Certificate. The Proponent has provided the following items as required by the terms and conditions contained within the Meadowbank Project Certificate [No. 004] for the current monitoring period of October 2012 through September 2013:

- AEM's 2012 Annual Report to the NWB, NIRB, DFO, AANDC and KivIA which included:
- Revised *Fisheries Act* Authorization for Second Portage and Third Portage (NU-03-0191.3)
- Revised *Fisheries Act* Authorization for Vault Lake (NU-03-0191.4)
- Revised Landfarm Design and Management Plan, version 2 (2012)
- Groundwater Monitoring Plan, version 3 (2012)
- 2012 Groundwater monitoring and water quality Report, Meadowbank Mine, Nunavut
- Emergency Response Plan, version 4 (2012)
- Hazardous Materials Management Plan, version 2 (2012)
- Oil Handling Facility Oil Pollution Emergency Plan, version 1 (2012)
- Spill Contingency Plan, version 3 (2012)
- Wildlife Protection and Response Plan, version 2 (2012)
- Incinerator Waste Management Plan, version 4 (2012)
- Operation and Maintenance Manual, version 3 (2013)
- Core Receiving Environment Monitoring Program (CREMP), Design Document, version 2 (2012)
- Aquatic Effects Management Program (AEMP), version 2 (2012)
- All Weather Private Access Road, 2012 Water Quality Management Report

The following reports have not been forwarded to the NIRB and remain outstanding:

- Updated Access and Air Traffic Management Plan (last version provided in 2005) – no updated version for mine site access and/or air traffic provided since 2005
- Groundwater Plan (to be submitted August/September 2013)

2.1.2. Annual Report as per Project Certificate [No. 004] Appendix D

Appendix D of the Project Certificate is designed to provide direction to the Proponent, the NIRB's Monitoring Officer, government departments and authorizing agencies with regard to the monitoring program established for the project pursuant to Section 12.7 of the NLCA. Appendix D also outlines the Proponent's responsibilities to establish a monitoring program, the requirement of NIRB's Monitoring Officer to support the production and interpretation of various monitoring reports, and also outlines the NIRB's requirements of various authorizing agencies in reporting compliance monitoring activities. As outlined in Appendix D, the Proponent is required to submit an annual report that provides an updated status of Project operations, an overview of the site and its operation during the reporting period, as well as a discussion of the observations made as a result of, or illustrated through, the monitoring program (NIRB, 2011).

In April 2013 the NIRB received AEM's *Meadowbank Gold Project 2012 Annual Report* (2012 Annual Report) (AEM, 2013a) and distributed the report to interested parties with a request that they provide comments relating to effects and compliance monitoring as well as other areas of expertise or mandated responsibility. The NIRB received comments from the following parties regarding AEM's 2012 Annual Report:

- Aboriginal Affairs and Northern Development Canada
- Environment Canada
- Fisheries and Oceans Canada

Comments received by parties identified specific areas that may require further attention and/or discussion; these are addressed throughout the remainder of this report and are considered in the recommendations the Board sets forth for subsequent action, attention, or remedial activity by the Proponent.

2.2. COMPLIANCE MONITORING

Compliance monitoring involves an assessment undertaken by regulators and other agencies to establish whether or not a project is being carried out within the legislation, regulations, instruments, commitments and agreements as such are applicable to certain project activities, and further, is a requirement of the NIRB's Appendix D to the Meadowbank Project Certificate [No. 004].

2.2.1. Compliance with the NIRB Screening Decision Reports

2.2.1.1. Screening Decision Report 10XN039

One of the requirements in the Board's Screening Decision Report for NIRB File 10XN039 related to the expansion of the Meadowbank airstrip was for AEM to undertake efforts to communicate its plans to expand the airstrip with the community of Baker Lake. It appears from the review of the 2012 annual report that AEM's community meetings may not have included a discussion with community members on AEM's plans for expansion. The Monitoring Officer was informed during the 2013 site visit that the airstrip expansion occurred in April 2013.

2.2.1.2. Screening Decision Report 11EN010

2.2.2. Compliance with the NIRB Project Certificate

Within its 2012 Annual Report, AEM provided a summary of exploration activities undertaken as permitted by the Board within its screening decision report.

2.2.2.1. Compliance Achievements

a) Condition 33(2)

33(2) Cumberland shall update the Access and Air Traffic Management Plan to: … 2. to facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required, including responding to any concerns regarding the locked gates.

In its 2012 Annual Report, AEM provided a summary of reported road usage and harvesting activities since the construction of the road began in 2007. Total caribou harvest activities within 5 kilometres of the access road appeared to have increased every year up to 2011 followed by a decrease in 2012. AEM's report indicated that road use was important to hunters in the winter season, despite relatively unrestricted access to other areas in the Baker Lake area. Harvesting along the access road in the winter season has increased every year since 2008 with a peak observed in November 2012.

2.2.2.2. AEM Responses to the Board's 2012 Recommendations

The Board made a number of recommendations as a result of its 2011 – 2012 monitoring efforts including the 2012 site visit. The following provides an overview of AEM's responses to the Board's recommendations as outlined in correspondence provided to the NIRB on January 9, 2013.

a) Appendix D and the Annual Report

Following review of the 2011 Annual Report it was noted that AEM did not provide a full discussion and summary on the post-environmental assessment monitoring program (PEAMP) for the Project as required. The Board recommended that AEM provide a full discussion and summary on the PEAMP for the Project in accordance with commitments made within the FEIS, during the Final Hearing, and as required throughout the Project Certificate (including Appendix D). In its response, AEM indicated a need for further clarification from the NIRB on how best to present the data and to summarize the results. AEM also indicated that it had worked closely with regulatory agencies and continually refined and updated monitoring programs to reflect changes to the mine site and to ensure the effectiveness of the monitoring studies to evaluate and predict mine related impacts. In addition, AEM indicated that it would submit a 2012 Aquatic Effects Monitoring Program (AEMP) annual report which would provide a complete summary of the related aquatic monitoring programs to both the NWB and the NIRB and further, that it would propose a reporting structure that summarizes the data in a means that meets the expectations of the NIRB.

b) Terrestrial wildlife impact predictions

The Board requested that AEM provide a full analysis of the predicted impact thresholds against the actual results of surveys conducted in 2011 for raptor nest surveys, mine site ground surveys, hunter harvest surveys, and the caribou radio-collaring program. In its response, AEM provided summary tables that compared the 2011 monitoring data to the impact prediction thresholds for all the requested surveys with the exception of mine site ground surveys. Mine site ground surveys had been conducted as a general surveillance of the mine site to ensure activities were not causing any unpredicted harm to wildlife, to evaluate waste management procedures and evaluate spills. As a result, there were no specific thresholds to be compared to, as that type of survey would be employed for operational due diligence and have not been specified in the original TEMP.

c) Compliance with licences and authorizations

The Board requested that AEM indicate what next steps it would pursue in regards to its on-site water management practices. The Board had requested that this be provided once the results of AEM's investigations regarding the increased use of reclaim water which would decrease requirements of freshwater became available. In its response, AEM indicated that it intended to minimize freshwater use at the Meadowbank site and that it had been investigating and designing methods to reduce freshwater usage. Since the summer of 2012, AEM reported an increase in its recirculation and use of reclaimed water for the SAG mill. AEM applied for an amendment to its Type A Water Licence (No. 2AM-MEA0815) with the NWB in April 2013 in order to allow for an increase in the amount of freshwater drawdown and use from the Third Portage Lake from the originally permitted amount to 1,870,000 m^3/year in 2013; and, to 1,150,000 m^3/year for each year after to 2018.

d) Cyanide levels in water quality results

In 2011, Environment Canada (EC) noted that cyanide (CN) values reported by AEM were above the Canadian Council of Ministers of the Environment (CCME) guidelines for water samples collected in 2010 and suggested that AEM review the source of the high CN values. In its 2011 Annual Report, AEM indicated that CN was detected in old empty sampling bottles that had been stored for an extended period of time (> 8 months) and that further testing was ongoing and the results and interpretation would be provided in the 2012 Annual Report. In 2012, the Board requested that AEM provide a plan of action to ensure future contamination of sampling bottles did not occur. The recommendation included updating site procedures to require the replacement of sampling bottles more frequently in order to avoid CN contamination, and working with the laboratory contracted to determine the source of CN at the mine site.

In its response, AEM indicated that it had updated its procedures and now replaces sample bottles on a monthly basis to ensure that shelf life at the site is minimal. Further, AEM indicated that they had no additional instances of increased levels of CN in its effluent to Third Portage Lake during the 2012 reporting period.

e) Proposed pilot remediation program

In 2012, the Board requested that AEM keep the NIRB informed as to the development of the contaminated soil storage/pilot remediation site and that copies of the revised landfarm management plan or any other related plans be provided to the NIRB. AEM provided a

revised Landfarm Design and Management Plan as part of its response which included a discussion on the pilot remediation site.

f) Groundwater monitoring wells – Condition 8

8. "…At the time samples are taken Cumberland shall also assess the condition of existing groundwater monitoring wells and replace any defective wells. Cumberland shall continue to undertake semi-annual groundwater samples and re-evaluate the groundwater quality after each sample collection…"

The Board recommended in 2012 that AEM provide a plan including an estimated date by which the defective wells would be replaced or re-established in order to establish a robust groundwater quality data monitoring program. The NIRB also requested an updated map showing where the wells would be installed. In its response, AEM indicated that actions would be taken in 2013 to remove the blockage at groundwater well MW11-02 (Second Portage Arm) or to replace the well. No discussion was provided on how or whether other defective wells at Goose and Portage open pits would be repaired or replaced. AEM did indicate that though not all wells continue to be functional, the monitoring conducted to date had been achieving the purpose of the NIRB Condition, which is to evaluate the consequence of pit water quality on the effectiveness of water management and treatment plans.

The Board also recommended that AEM keep the NIRB informed of the status of the re-evaluation of the groundwater well monitoring program in order to monitor ongoing compliance with Condition 8. In its response, AEM provided several methodologies that were being considered to more effectively achieve the purpose of NIRB Condition 8; a target date for the submission of a Groundwater Plan was to be August/September 2013. For 2013, AEM committed to recover operable wells that had previously been blocked (monitoring wells MW11-02 and MW08-03).

In its 2011 Annual Report, AEM indicated that the groundwater chemistry at one of the wells sampled (MW11-01) had higher values of several parameters compared to samples taken from wells in previous years from the same area. In 2012 the Board recommended that AEM conduct further studies to accurately determine the source of contamination in the well, with a focus on determining whether the increased values were related to the movement of groundwater through the formation within the Goose Island Pit. In its response, AEM indicated that the apparent contamination at the well would not be investigated further. AEM suggested that the contamination at this well occurred during installation partly from the well grout (causing the elevated pH) and by brine addition during drilling (causing the high salinity). AEM also indicated that the Goose pit was not yet in operation during the groundwater monitoring program in September 2011 and therefore, the observed contamination of groundwater at this well in 2011 was not likely related to the activities of the mine or groundwater flow from the tailings storage facility. AEM noted that follow-up monitoring could not be conducted as this well was damaged during 2012 site operations and had been subsequently decommissioned.

The Board also recommended that AEM provide a more detailed discussion regarding the mitigation measures to be put into place in order to address the observed higher values

recorded at well MW11-01. AEM indicated in its response that monthly monitoring results of the sump water quality at Goose pit, initiated in June 2012, were low and representative of a mixture of formation water and lake water and not highly saline as compared to water quality observed at MW11-01. AEM indicated that no mitigation measures would be put in place to address the elevated calcium chloride (CaCl) observed at well MW11-01 as it was not anticipated to cause a noticeable increase in salinity concentrations of pit sump waters. Monitoring of sump water quality at Goose pit was proposed to be continued as a substitution for the damaged monitoring well MW11-01.

g) Quality assurance/quality control (QAQC) – Condition 23

23. "For the purposes of monitoring quality assurance and quality control ("QA/QC"), Cumberland shall ensure that water quality monitoring performed at locations within receiving waters that allow for an assimilative capacity assessment of concern to regulators, be carried out by an independent contractor and submitted to an independent accredited lab for analysis,…"

The Board requested that AEM provide a discussion of the exceedances observed for the duplicate samples during the analyses of the 2011 results, as well as an indication as to whether further studies were planned in order to address the results observed for the QA/QC monitoring. In its response to the Board's 2012 recommendation, AEM indicated that given the high number of samples collected in 2011, it was common to have a few relative percent difference (RPD) exceedances as a result of the discrete differences in the original and field duplicate samples. Further, AEM stated that given the variability of these exceedances (occurring with different parameters, on different dates for different sampling programs) and the high number of successful samples, it was apparent that field QA/QC standards were maintained during the sampling in 2011. AEM indicated that its technicians would continue to follow the standard QA/QC procedures submitted in January 2009 and that AEM would also review and update the QA/QC plan in consideration of the NIRB's recommendations.

h) Wildlife Deterrents – Condition 25

25. "Cumberland shall manage and control waste in a manner that reduces or eliminates the attraction to carnivores and/or raptors. Cumberland shall employ legal deterrents to carnivores and/or raptors at all landfill and waste storage areas…"

In 2012, the Board requested that AEM provide information on the type of deterrents it plans to use in the future to deter falcons and ravens at the Meadowbank site and at the Baker Lake bulk fuel storage facility, and to provide discussion as to the effectiveness of such deterrents at these sites and any alternatives that may be considered. In its response, AEM indicated that peregrine falcon activity and nesting had increased along the AWPAR due to the construction of ideal perch and protected nesting sites in the region. For quarry sites not in operation, AEM stated that no deterrent methods would be used. For any peregrine falcon activity or nesting near the mine operations, AEM has developed a Peregrine Falcon Management and Protection Plan and would also consult with a raptor expert to provide site specific protective measures and if needed, deterrence recommendations to ensure falcon protection.

Decoys had been installed at the Baker Lake bulk fuel storage facility to deter ravens from continuing to nest, and AEM indicated that it would continue to monitor these sites to discourage nesting. If a nest is observed, AEM has indicated that they would immediately contact the Government of Nunavut, Department of Environment (GN DoE).

i) Spills and clean-up – Condition 26

26. "Cumberland shall ensure that spills, if any, are cleaned up immediately and that the site is kept clean of debris, including wind-blown debris."

The Board requested that AEM provide a monitoring plan for the spill at km 22, requesting specifically, that AEM provide information on what conditions must be met to discontinue monitoring of this area in 2 years. In its response, AEM re-iterated that several plans had been put into place to prevent future spill occurrences along the access road with the main focus being on controlling the speed of all vehicles. The speed limit along the AWPAR was reposted and drivers have been given warnings if speeding along the road. Another of AEM's focuses has been to increase road maintenance and safety procedures, and to provide onsite training of staff of the use of the road. AEM also indicated that there were no spills along the AWPAR during 2012. The NIRB notes from AEM's 2012 Annual Report that a total of 4 environmental spills occurred along the access road in 2012 however all spills were below the threshold which requires their being reported to the Government of Nunavut (GN) spill hotline.

For the spill near km 22/23, AEM indicated that clean-up of the spill residues had been completed in the fall of 2012. Approximately 550,000 litres of water was treated at the site in 2012. AEM also indicated that the maritime barriers would remain in the watercourse throughout the 2013 freshet as a precaution, and that monitoring would be conducted in 2013 and 2014. Remedial measures would also be undertaken by AEM if hydrocarbon levels are detected in the water samples taken. No discussion was provided by AEM on what conditions must be met to discontinue monitoring of this area.

In 2012, the Board also requested that AEM develop and put into place an action plan designed to prevent wind-blown debris from the waste piles and/or to establish additional on-site waste management practices. The Board also requested that AEM report on the effectiveness of this waste management action plan in its annual reporting to the NIRB. AEM indicated that its staff are expected to use their best efforts to prevent windblown debris by ensuring that any bulk waste not going to the incinerator is bagged and that all organic waste is stored in closed top bins. Annual clean-up of the site is conducted after freshet and field crews pick up wind-blown materials when encountered.

j) All weather private access road – Condition 32(items e through g)

32(e) "Prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.

32(f) Place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of road limited to

authorized, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.

32(g) Record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one (1) year after the road is opened and annually thereafter; and

32(h) Report all accidents or other safety incidents on the road, to the GN, KivIA, and the Hamlet immediately, and to NIRB annually."

In 2012, the Board noted that AEM's 2011 Annual Report did not include information regarding Condition 32(e), 32(f) or 32(g) and that it appeared that the report provided results based on the *original* Condition 32 issued December 2006 by the NIRB. The Board reminded AEM that its annual reports were expected to speak to the *amended* Condition 32 that was issued by the NIRB on November 20, 2009. Further, the Board recommended that AEM provide information on the compliance status to Condition 32(e) and 32(f) for the 2011 year and that it provide records of consultation with the community of Baker Lake in 2011 as to the private nature of the access road and the non-mine access that is allowed for traditional Inuit activities. In its response to the Board's 2012 recommendations, AEM indicated that they conduct quarterly meetings with the Baker Lake Community Liaison Committee and that an annual meeting was held with the community of Baker Lake in October 2011. Meeting minutes were provided in the response.

Furthermore, the Board recommended that AEM provide information on the authorized non-mine use of the road as required under Condition 32(g). The Board requested that AEM provide an assessment of the environmental and socio-economic impacts of the access road as spoken to in Condition 33 *[…2. to facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required,...]*. In its response, AEM indicated that they had implemented the use of electronic records to prevent future loss of hardcopy records (most of the 2011 records were lost in a fire). In addition, AEM noted that there were no accidents up to that date involving mine related truck traffic and locals using ATV's. AEM also provided information and a comparison of the usage of the road as related to harvesting activities. It was noted that although increases in the number of caribou harvested within 5 km of the AWPAR have been recorded each consecutive year since the AWPAR construction, the total harvests per participant within the 5 km of the AWPAR have increased only marginally. AEM also noted that the road appeared to be important to hunters in the winter season.

k) <u>Monitoring of country foods – Condition 67</u>

67. "Cumberland shall develop and implement a program to monitor contaminant levels in country foods in consultation with HC…"

In 2012, the Board recommended that AEM notify the NIRB of any plans for follow-up studies that may be conducted as a result of the preliminary quantitative risk assessment (PQRA) report recommendations, specifically for chromium exposure to caribou and chromium concentration in lichen at both reference and mine site locations. In its response, AEM indicated that it would complete another wildlife screening level risk assessment (WSLRA) in 2014 and during this re-evaluation and analysis, the chromium levels at

reference and mine-site stations would be re-assessed and if necessary, additional samples may be collected to evaluate chromium speciation.

l) Dust and air monitoring – Condition 71

71. "Cumberland shall, in consultation with EC, install and fund an atmospheric monitoring station to focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported annually to NIRB."

The Board recommended that air monitoring stations be kept in place until more data is collected. However, if more suitable locations for dust monitoring were identified, the Board requested that AEM provide a description of the new location for the atmospheric monitoring station, including an updated map. Further, the Board requested that AEM provide a discussion and rationale as to why two out of the four stations monitored exceeded the maximum allowable concentrations of total fixed dust fall during the months of November/December at a time when the mine roads would usually be expected to be covered with snow.

In its response, AEM indicated that the location of the stations were determined in consultation with EC in July 2011. However, Station #4 was installed prior to the construction of the Vault road which, after realignment, placed the station within approximately 10 feet of the road. The station was re-positioned by AEM to 100 metres east of the road to be indicative of the original intended location (approximately 100 metres from the road). The other stations were not changed from the initial location as agreed upon with EC. In regards to the two stations exceeding the maximum allowable concentrations, AEM indicated that during the November and December months, construction of the Vault road was ongoing and that was the explanation for these stations having been affected.

m) On-site incinerators – Condition 72

72. On-site incinerators shall comply with Canadian Council of Ministers of Environment and Canada-Wide Standards for dioxins and furan emissions, and Canada-wide Standards for mercury emissions, and Cumberland shall conduct annual stack testing to demonstrate that the on-site incinerators are operating in compliance with these standards. The results of stack testing shall be contained in an annual monitoring report submitted to GN, EC and NIRB's Monitoring Officer.

In 2012, the Board requested that AEM provide the information requested by EC regarding incinerator combustion operations, and that any corrective measures employed be identified and described in future annual reports. AEM, in its response, indicated that there were some initial operational problems during the use of the incinerator in the first 1.5 years of incinerator operation. AEM also indicated that since that time they had committed to proper personnel training and operations of the unit. Furthermore, AEM indicated that results from 2012 stack testing showed that emissions were below EC's criteria for dioxins, furans and mercury, illustrating that the unit temperatures were maintained to ensure complete combustion of wastes. The NIRB notes however, that in reviewing the available 2012 Incinerator Daily Report Logbook, the incinerator temperature in the secondary chamber were below the recommended 1000 ºC temperature on several occasions (see Section 2.2.2.4 for further discussion).

n) Suppression of surface dust – Condition 74

74. "Cumberland shall employ environmentally protective techniques to suppress any surface dust."

This condition has been included as a recommendation by the Board in each of its annually issued recommendations to the Proponent since 2008. In 2013, it was noted by the Monitoring Officer during the site visit that no dust suppressant techniques were being applied to the access road from Baker Lake (gatehouse) to the Meadowbank site but that AEM did use CaCl and water as a dust suppressant at the mine site itself. The same issue was noted during the 2011 and 2012 site visits. In the Board's 2012 recommendations to the Proponent, it was requested that dust control for the access road be addressed by the Proponent. Further, the Board recommended that AEM provide a plan which details the future dust monitoring studies that would be conducted along the access road including a discussion of potential adaptive management strategies that may result from these studies.

In its response to the Board's recommendations, AEM indicated that it had implemented a road dust control program at the mine site that focuses on road safety by controlling dust and protecting the environment and public health. The focus of dust control was at the mine site and the road between the mine site and the Meadowbank exploration camp as these have the highest volume of road traffic. AEM indicated that it also provided CaCl to the hamlet of Baker Lake to be applied to the section of road between AEM's barge landing area and the Baker Lake Gatehouse in response to the increased traffic during the sealift period. However, AEM has indicated that to treat the full length of the Meadowbank AWPAR it would require an approximate amount of 2.8 million litres of CaCl. Given the large volume of material required, AEM expressed concern that it could cause adverse environmental impacts and noted that there is no guarantee that the two applications would be adequate. AEM had indicated that it was not willing to introduce this amount of CaCl into the local environment until it better understands the potential environmental effects of using CaCl and until it can confirm that the dust currently generated along the AWPAR is causing harm. AEM also indicated that monitoring studies to date have not identified dust deposition as a potential concern to the terrestrial or aquatic environments.

AEM indicated that it would continue to monitor air quality around the site and has proposed a study to evaluate dustfall at selected locations along Vault Pit road, along the road to the exploration camp and along additional sections of the AWPAR. A study design was also presented by AEM.

It was noted during discussions held as part of the 2013 site visit that dust control trial studies were conducted in the summer of 2013 (see Appendix I for further details) and that AEM is awaiting the results from the studies to determine the best options to deal with the dust created at the mine site and along the access road.

2.2.2.3. Authorizing Agency Responses to the Board's 2012 Recommendations

a) Monitoring of country foods – Condition 67

67. "Cumberland shall develop and implement a program to monitor contaminant levels in country foods in consultation with HC…"

In 2012, the Board invited Health Canada to provide comments on the WSLRA and the PQRA reports prepared by AEM in order to meet the requirements of Condition 67; and to indicate whether or not further information may be required with respect to the monitoring program. In its response, Health Canada indicated that it was unable to provide comments on the WSLRA report as it did not possess the relevant expertise in the areas of modeling emissions and deposition, environmental transport, fate and/or contaminant uptake by plants or wildlife (country foods) and suggested that another department may have the expertise necessary to review the WSLRA. With respect to the PQRA report, Health Canada indicated that it would require additional information to provide comments on the human health assessment that was completed by AEM. The request for additional information was forwarded to AEM and in turn AEM responded and provided the information requested by Health Canada. At the writing of this report, Health Canada has not provided a response and/or comments in regards to the additional information provided by AEM.

2.2.2.4. Conditions Requiring Attention

The NIRB notes that AEM is not in full compliance with the following Terms and Conditions of the Meadowbank Project Certificate [No. 004]. These items are discussed further in the Memo and Recommendations provided under separate cover to the Board for its consideration.

a) Acid rock drainage/metal leaching – Condition 15

15 "Cumberland shall within two (2) years of commencing operations re-evaluate the characterization of mine waste materials, including the Vault area, for acid generating potential, metal leaching and non metal constituents to confirm FEIS predictions, and re-evaluate rock disposal practices by conducting systematic sampling of the waste rock and tailings in order to incorporate preventive and control measures into the Waste Management Plan to enhance tailing management during operations and closure. The results of the re-evaluations shall be provided to the NWB and NIRB's Monitoring Officer."

In the 2012 annual report AEM provided a description of how blast holes were sampled and analyzed for the percentages of sulphur and carbon. However, there was no discussion provided on how the numbers compare with predictions made in the FEIS. Further, no discussion was provided on the re-evaluation of rock disposal practices, the results from systemic sampling of the waste rock and tailings and how tailings management has been enhanced. It is noted that an updated mine waste rock and tailings management plan was submitted with the 2012 annual report.

b) On-site incinerators – Condition 72

72. On-site incinerators shall comply with Canadian Council of Ministers of Environment and Canada-Wide Standards for dioxins and furan emissions, and Canada-wide Standards for mercury emissions, and Cumberland shall conduct annual stack testing to demonstrate that the on-site incinerators are operating in compliance with these standards. The results of stack testing shall be contained in an annual monitoring report submitted to GN, EC and NIRB's Monitoring Officer.

AEM indicated that the Daily Report Logbook entries for the incinerator operation were only available for the months of March, May, June and December with the remaining daily logbook entries being misplaced for the other months. In the review of the available 2012 Incinerator Daily Report Logbook, the NIRB notes that the incinerator temperature in the secondary chamber was below the recommended 1000 ºC temperature on several occasions. It is noted that there were 17 burn cycles where the secondary chamber was less than 1000 ºC, 9 burn cycles where the secondary chamber was less than 900 ºC and 1 burn cycle where the secondary chamber was less than 600 ºC. It was previously noted by EC[1] that the incinerator temperatures in the secondary chamber should be above 1000 ºC to ensure complete combustion and to minimize the formation and release of contaminants.

Incinerator stack testing was completed in 2012 and the results indicate that AEM had been operating below the CCME Canada Wide Standards for Dioxins and Furans.

c) Suppression of surface dust – Condition 74

74. "Cumberland shall employ environmentally protective techniques to suppress any surface dust."

As noted previously and within the NIRB's 2013 Site Visit Report (Appendix I), to date, dust suppression techniques have not been applied to manage dust along the access road. However, AEM has indicated that it intends to determine the best options to deal with the dust created along the access road, should it be shown to cause an effect.

d) Spill at Baker Lake Marshalling Area – Condition 37 & 82 and Commitments 34, 35 & 38

Conditions:

37. Cumberland will contract only Transport Canada certified shippers to carry cargo for the Project, and will require shippers transporting cargo through Chesterfield Inlet to carry the most up-to-date emergency response/spill handling equipment as recommended and accepted by the Government of Canada with the crew trained to deploy the equipment, including practice drills deploying spill equipment in remote locations within the Inlet.

82. Cumberland shall monitor the ingress/egress of ship cargo at Baker Lake and report any accidents or spills immediately to the regulatory agencies as required by law and to NIRB's Monitoring Officer annually.

Commitments:

34. The shipping company will have spill equipment on board with crew trained to deploy the equipment.

35. The Coast Guard will be notified as soon as a spill has occurred and, if required, will provide further spill support.

[1] Environment Canada letter to Nunavut Impact Review Board, Re: *Comments related to Agnico-Eagle Mine Ltd's Meadowbank Gold Project 2010 Annual Report*, November 2, 2011.

38. Cumberland will request that the shipping company contracted to carry fuel for the project carry out practice drills deploying their spill equipment in various locations within the inlet.

On August 9, 2012 an accidental spill of approximately 200 litres of diesel fuel occurred in Baker Lake at AEM's marshalling facility. The fuel spill occurred during discharge operations by the barge vessel (MT Dorsch) at the Baker Lake mine site marine manifold. Based upon the 2012 annual report received from AEM, the marine hose had been scuffed or rubbed worn on a rock, causing a puncture in the hose which led to a fuel leak. The crew of the vessel immediately started the clean-up of the area with assistance from AEM employees. AEM used additional material from the Canadian Coast Guard sea-can located in Baker Lake in order to clean up the spill as the ship did not contain sufficient material to complete the clean-up. The spill was reported to authorities including AANDC, EC, Transport Canada (TC) and the GN Spill Line. The Monitoring Officer was informed of this spill by the GN-Department of Environment on August 9, 2012.

On August 11, 2012 AEM held a community meeting to discuss the spill, to discuss AEM's clean-up response and the next steps that would follow after the spill. AEM indicated that it would be working with the shipping company (Woodward) to determine what might be done to prevent future spills and that it would be setting up some additional spill response kits near the shore in order to prepare for any potential future spills. During the 2012 and 2013 site visits, the Monitoring Officer noted that there were two environmental emergency sea-cans at the Baker Lake laydown facility; one contained booms and absorbent pads while the other contained a boat and supplies for the boat.

On August 14, 2012 the NIRB contacted TC requesting information on the spill, including the legislation that would apply and the follow-up required by AEM or Woodward. In October 2012, TC's Marine Safety department confirmed that it was still investigating the incident for possible contraventions of the *Canada Shipping Act, 2001*. TC further indicated that both the vessel and the Oil Handling Facility (owned by AEM) were responsible for the clean-up of the spill. No further information has been provided by TC with regards to the investigation and/or outcome from the incident.

In AEM's 2012 Annual Report, it indicated that samples were collected by AEM staff at 3 locations within Baker Lake near the area of the spill as well as in the vicinity of the Baker Lake Water Supply intake. The results showed no exceedences of CCME drinking water criteria or traces of any substance associated with diesel fuel.

2.2.3. Compliance Monitoring by Authorizing Agencies

On April 30, 2013 the NIRB requested that authorizing agencies with a mandate or jurisdictional responsibility for the Meadowbank project provide comments and information with respect to compliance monitoring for the 2012 – 2013 reporting period as required in Part D of Appendix D of the Meadowbank Project Certificate (NIRB, 2011). Specifically, comments were requested regarding the following:

a) How the authorizing agency has incorporated the terms and conditions from the Project Certificate into their permits, certificates, licences or other government approvals, where applicable;
b) A summary of any inspections conducted during the 2012 reporting period, and the results of these inspections; and
c) A summary of AEM's compliance status with regard to authorizations that have been issued for the Project.

The following is a *summary* of the comments received from parties regarding compliance monitoring.

2.2.3.1. Aboriginal Affairs and Northern Development Canada (AANDC)

AANDC's Water Resource Officers conducted two inspections in 2012 for compliance with the Type A Water Licence as issued by the NWB (Licence No. 2AM-MEA0815). AANDC noted the following issues after the site inspections:

March 2012

- Exceedance of total allowable water usage limit of 700,000 m^3 per year as stipulated in the water licence.
- Use of quarry pits #5 and #22 for contaminated soil.

July 2012

- Use of quarry pit #22 for contaminated soil.

AANDC noted that conditions 8 to 30 and conditions 78 to 80 of the NIRB's project certificate had been incorporated into the Type A Water Licence. AANDC also noted that the Proponent had not clearly illustrated how the requirements of conditions 22 and 23 were met in its 2012 Annual Report and requested further clarification from AEM. Regarding Condition 80, AANDC noted that AEM committed to updating the mine closure plan using revised life of mine calculations, as well as liability estimates which give consideration to the updates of Portage waste rock facility reclamation work.

2.2.3.2. Fisheries and Oceans Canada (DFO)

A site visit was conducted by DFO in August 2012 with no compliance issues having been reported as observed by the DFO officer at the AEM site.

2.2.4. Compliance with Instruments

2.2.4.1. Nunavut Water Board Licence

As indicated earlier in this report, AEM applied for an amendment to its Type A Water Licence (No. 2AM-MEA0815) with the NWB to increase the amount of freshwater drawdown and use from the Third Portage Lake from the originally permitted amount to 1,870,000 m^3/year in 2013 and to 1,150,000 m^3/year for each year thereafter until 2018. The NIRB received correspondence from the NWB on July 15, 2013 acknowledging AEM's amendment application and requesting that the NIRB confirm whether any screening, reconsideration or review of the proposed amendment would be required. The NIRB released correspondence on

August 6, 2013 indicating that the NIRB would consider two avenues under the NLCA (Sections 12.4.3 and 12.8.2) to determine the impact assessment requirements applicable to AEM's amendment application. The NIRB invited interested parties and agencies with jurisdictional authority and/or licences and approvals associated with the Meadowbank Gold Project to provide their comments to the Board with respect to AEM's proposed Water Licence amendment application on or before August 20, 2013.

The NIRB received comments from EC and AANDC, and a request for clarification from DFO. Both AANDC and EC were of the opinion that the increase in water withdrawals from Third Portage Lake would not necessarily constitute a change in scope from the activity that was originally reviewed by the NIRB in 2006. Further, the increase in water usage would be adequately captured under Condition #47 of the Project Certificate [004] which requires the Proponent to take an adaptive approach to managing water flow in Third Portage Lake, including verification of the maintenance of water levels. Both AANDC and EC indicated that environmental consideration associated with the amendment request would be adequately addressed through the water licence amendment process.

On October 1, 2013 the NIRB issued correspondence indicating that the application to amend the NWB Type A Water Licence would not change the general scope of the Meadowbank Gold Project as previously reviewed by the Board, and that therefore, the amendment application was exempt from the requirement for screening pursuant to Section 12.4.3 of the NLCA and the amendment activities therein would remain subject to the terms and conditions of the NIRB Project Certificate [004].

2.2.4.2. *Fisheries Act* Authorization

As described earlier in this report, in July 2013 AEM applied to DFO for amendments to its existing *Fisheries Act* Authorizations No. NU-03-0190 – AWPAR and No. NU-03-0191.3. AEM requested an amendment to the monitoring frequency as required by its *Fisheries Act* Authorization No. NU-03-0190 and a reduction to the existing letters of credit held by the Government of Canada from the currently held $25.675 million to $8.6 million as required by its *Fisheries Act* Authorization No. NU-03-0191.3. The NIRB received additional clarification from AEM regarding the amendments requested on September 6, 2013.

The NIRB released correspondence on September 26, 2013 NIRB would consider two avenues under the NLCA (Sections 12.4.3 and 12.8.2) to determine the impact assessment requirements applicable to AEM's applications to amend its *Fisheries Act* authorizations. The NIRB invited interested parties and agencies with jurisdictional authority and/or licences and approvals associated with the Meadowbank Gold Project to provide their comments to the Board with respect to AEM's proposed amendments to its *Fisheries Act* Authorizations (No. NU-03-0190 – AWPAR and No. NU-03-0191.3) on or before October 10, 2013. The NIRB also requested that DFO provide comments with respect to the requested amendments.

2.2.4.3. Compliance with other licences and authorizations as described in the 2012 Annual Report

AEM noted that inspections were conducted by AANDC, KivIA, EC, DFO, NIRB and GN-DoE. Compliance issues were identified by both AANDC and EC during various inspections. AEM complied with directions issued by these agencies, however, it did not meet certain requirements of the NWB Water Licence (No. 2AM-MEA0815) while moving through the NWB's Water Licence amendment process. In 2010, 2011 and 2012, AEM reported that it had exceeded the total allowable annual water usage limit of 700,000 m^3 as stipulated in the water licence. As indicated in Section 2.2.4.1, AEM applied for an amendment to its water licence with NWB in April 2013. This application is currently under review by the NWB.

AEM noted within its 2012 Annual Report that samples taken in the secondary containment areas of the bulk fuel storage tanks at the Bake Lake marshalling facility contained elevated levels of total oil and grease which exceeded the water quality limit of 5 mg/L as stipulated in the NWB Type A Water Licence (No. 2AM-MEA0815). However, no discussion was provided within the 2012 Annual Report as to why this value exceeded the limit or the steps taken to ensure that this is corrected and that total oil and grease would remain below the limits set by the water licence for Tanks 5 and 6.

2.3. EFFECTS MONITORING

Effects monitoring can be described as an assessment of the measurable change to a particular environmental or socio-economic component, as compared to the potential effects that were predicted to result from a proposed development. In the case of Meadowbank, impact predictions and mitigation measures were outlined and developed throughout the environmental review of the Project, and were recorded and presented through the Proponent's Final Environmental Impact Statement (FEIS) and other related documents.

In addition to requesting comments on compliance monitoring on April 30, 2013 the NIRB requested that authorizing agencies provide comments and information with respect to effects monitoring as follows:

a) Whether the conclusions reached by AEM in the *2012 Annual Report* are valid;
b) Any areas of significance requiring further studies; and,
c) Changes to the monitoring program which may be required.

The following section provides the NIRB's review of the 2012 Annual Report and a *summary* of the comments received from parties.

2.3.1. NIRB's Review of AEM's 2012 Annual Report

Appendix D of the Project Certificate provides an outline of the requirements of what is expected within the Proponent's annual report for the Meadowbank Project. Particularly, the annual report should include a summary of the results from the post-environmental assessment monitoring program (PEAMP), including an analysis of the Project's impact upon the environment with reference to the predictions and environmental and socio-economic indicators

referenced throughout the FEIS and the Final Hearing. AEM provided a summary of the monitoring that was completed in 2012 for the following requirements:

- Aquatic monitoring
- Noise monitoring
- Air quality monitoring
- Wildlife monitoring
- Country food
- Archaeology

As part of its post-environmental assessment program, AEM provided a summary on how the current environmental and socio-economic effects of the Meadowbank mine site compare to the impacts as predicted in the FEIS for the following:

- Aquatic environment
- Terrestrial and wildlife environment
- Noise quality
- Air quality
- Permafrost
- Socio-economics

The following is a summary of the NIRB's review of AEM's 2012 Annual Report:

2.3.1.1. Aquatic Environment

Water quality

AEM noted in its 2012 annual report that the original water quality predictions in the FEIS did not adequately predict actual water quality in the pits. AEM did not provide a discussion on the original predictions nor an analysis of whether these adequately predicted the actual water quality in the pits. Further discussion would be required to determine if the original predictions need to be updated.

Groundwater monitoring program

The groundwater monitoring program was conducted in July 2012 with samples successfully collected at only one monitoring well (MW08-02). AEM indicated that monitoring at the three other wells could not be completed due to several complications; i.e., ice bridge inside the well pipe, damage of a well, and blockage of well. The issue of defective wells at the Meadowbank mine site has been an ongoing issue since the commencement of the groundwater monitoring program in 2008. This may be due to the fragility of the wells and their operating within an arctic environment. During the NIRB's 2013 site visit, AEM indicated to the Monitoring Officer that several methodologies were being considered to address the groundwater monitoring program, including utilizing production wells to more effectively achieve the purpose of NIRB Condition 8. AEM, in its response to the Board's 2012 recommendations, indicated that it planned to submit a Groundwater Plan by August/September 2013 and that this would discuss the different methodologies being considered. To date, this document has not been received by the NIRB.

2.3.1.2. Noise Quality

Noise monitoring occurred at three of the five previously determined monitoring locations around the Meadowbank site. AEM indicated that this was due to both malfunctions and difficulties with software. From the NIRB's review of the 2012 Noise Monitoring Report (AEM, 2013b), it appears that noise levels were higher in 2012 at two stations (R1 and R5) for calculated daytime and night-time values as compared to previous monitoring years. Further, it is noted that three out of the five daytime results and three out of the five night-time results exceeded the calculated permissible sound level (PSL) of 55 A-weighted decibels (dBA) for the site (AEM, 2009). It was noted by AEM that if these sound levels are sustained for an unreasonable amount of time, additional mitigation measures may be recommended.

AEM indicated in its 2012 annual report that since noise level and terrestrial wildlife monitoring have been conducted in a manner that addresses the impacts predicted in the FEIS, these monitoring programs were judged to be effective and the effects of noise identified in the FEIS have not appeared to be occurring as predicted. However, in reading the results from the monitoring data from 2012, several values exceeded the calculated PSL of 55 dBA which may have a potential impact upon the environment, including terrestrial wildlife. This could require further analysis of the significance of noise monitoring data in order to substantiate claims that noise has not had an effect. There was no clear link made between the potential effects of noise on wildlife and how habitat effectiveness has or has not been affected by noise.

2.3.1.3. General

Condition 32: All weather private access road

Through the NIRB's review of AEM's 2012 Annual Report, it was noted that information had been provided with regards to Condition 32(f), 32(g) and 32(h). However, from the records provided, it appears that AEM did not hold a meeting in the hamlet of Baker Lake as per Condition 32(e) for the 2012 year. Further details required by the Board pursuant to Condition 32 are discussed in Section 2.2.2.2.

Condition 40: Gathering of Traditional Knowledge information

Condition 40 requires that AEM report on Traditional Knowledge (TK) gathered annually to both the KivIA and the NIRB. No information was provided in AEM's 2012 Annual Report regarding any additional TK collected from residents of Chesterfield Inlet on marine mammals, cabins, hunting and other local activities in the Inlet.

2.3.2. Effects Monitoring by Authorizing Agencies

2.3.2.1. Aboriginal Affairs and Northern Development Canada

AANDC noted that both its own and AEM's sampling results from the attenuation point were in compliance with applicable regulations. Further, AANDC pointed out that AEM's 2012 summary of results from the CREMP appeared to be consistent with the predictions made in the environmental assessment, notably that the project would have no significant impact to the freshwater environment.

However, AANDC pointed out that in 2012 the pit water quality model showed great differentiation from actual values. This resulted in AANDC having recommended that AEM improve its pit water quality model to better predict water quality.

Socio-economic effects monitoring

AANDC noted that it continues to work collaboratively in partnership with the Kivalliq Socio-Economic Monitoring Committee to monitor, evaluate and report on the socio-economic impacts of the Meadowbank mine in order to satisfy the NIRB's Project Certificate requirements.

2.3.2.2. Environment Canada

EC provided comments and recommendations on AEM's incineration process, air quality monitoring results and groundwater monitoring throughout the 2012-2013 monitoring period.

Incineration

As a result of its review of Appendix E2 within AEM's 2012 Annual Report, EC requested further clarification on the amount of waste that had been incinerated. Specifically, whether the waste had been weighed prior to being loaded into the incinerator, and also, the total mass of waste incinerated annually. EC also requested that AEM clarify how often the burner operation of the incinerator had been below-optimal levels. EC requested that AEM should provide the results of the second stack tests that were conducted to determine compliance with the CCME Canada Wide Standards for Dioxins and Furans. EC also requested clarification on the details of the waste stream used for the stack tests and for clarification as to when in the burn cycle these tests were conducted.

Air quality

EC pointed out within its submission that Appendix G7 of AEM's 2012 Annual Report indicated that particulate matter (PM_{10}) concentrations were consistently larger than total suspended particulates (TSP) concentrations at two monitoring sites. EC further noted that this is not possible in actuality as PM_{10} is a subset of TSP. EC requested that AEM confirm that the monitoring results for these two parameters might have accidently been switched, and also suggested that it follow other provincial standards for PM_{10} considering that the GN does not have a PM_{10} ambient air quality standard.

It was noted by AEM within its 2012 Annual Report that greenhouse gases measured on site had increased by 23% from 2011 to 2012 due to a 28% increase in mine throughput and production. In its submission to the Board, EC requested that AEM clarify whether any other measured emissions had also increased during this time period, and further, requested that AEM include estimates of annual emission rates of all pollutants plus the annual consumption rate of fuel used on site.

Groundwater monitoring

In its submission to the NIRB, EC recommended that AEM develop other approaches to sampling and analysis that would allow AEM to obtain groundwater chemistry and flow data in order to inform the operational water management and provide information for closure.

2.3.2.3. Fisheries and Oceans Canada (DFO)

DFO suggested that AEM continue to adhere to its Guidelines for the Use of Explosives in or Near Canadian Waters (1998) though it acknowledged that the paper by Faulkner *et al.* (2006) listed the following exceptions:

- Measurements could only be obtained for 25% of the blasts;
- All the Lake Trout eggs utilized in this study were either not viable, or contained embryos that were already past the developmental stage most sensitive to physical shock; and
- There is a large margin of error associated with physical handling of the eggs prior to/during placement in the various sites.

2.3.2.4. Agnico Eagle Mines Ltd.'s Response to Comments

AEM provided a response to the comments received from authorizing agencies on July 19, 2013. Of note, AEM confirmed that the values obtained for PM_{10} and TSP were not accidently switched as proposed by EC but was correctly reported. AEM further indicated that it has initiated a full review of the particulate sampling procedures to determine the source of the error.

2.3.3. Areas Requiring Further Study or Changes to the Monitoring Program

2.3.3.1. Appendix D and the Annual Report

The NIRB notes that AEM's 2012 Annual Report provided an evaluation and comparison of its results from 2012 monitoring programs to the impacts as predicted in the FEIS. The evaluation focused on the VECs that had been identified in the FEIS, including the aquatic environment, the terrestrial and wildlife environment, noise quality, air quality, permafrost and socio-economics. However, the discussion and analyses as presented does not provide a full discussion and summary on the PEAMP for the Project as required by Appendix D. Specifically, the NIRB would expect these analyses to include a reference to baseline data and monitoring results used to support impact predictions and the conclusions of effects analyses, with a discussion of the methodologies employed for both data collection and analysis. Further, the discussion was lacking a determination as to whether or not the project had any environmental and socio-economic impacts during the reporting year in comparison to baseline data, the previous years' monitoring data, and the predictions made in the FEIS. A comparison to predictions and effects conclusions from FEIS and discussion of any exceeded thresholds, adaptive mitigation strategies employed and their effectiveness and an evaluation of any mitigation measures undertaken as well as updates to predictions made also were not included. The NIRB notes that AEM's 2012 Annual Report did provide a detailed discussion on the usage of the access road and the potential impacts to wildlife (caribou harvested) given the increase access along the access road.

2.3.3.2. Harmful Alteration, Disruption or Destruction Crossings along the Access Road

AEM proposed in its 2012 Annual Report that, based on the water quality monitoring results collected during 2012 and in previous years along the harmful alteration, disruption or destruction (HADD) crossings, it would not conduct any surface water chemistry sampling in 2013 unless turbidity were observed at these crossings. The NIRB notes that any changes to monitoring programs related to authorizations would require approval from the relevant authorizing body and possible consideration by the Board.

2.3.3.3. Permafrost

In its 2012 Annual Report, AEM indicated that no monitoring of permafrost aggradation was completed in taliks for Second Portage Lake, Portage Pit and Bay Goose Pit during 2012 in order to verify the predictions made within the FEIS as no instruments were in place to collect data. The NIRB notes that ongoing monitoring of the aggradation of permafrost and stabilization of the active layer is important to determine whether the project is having an effect on permafrost and also, to determine whether a loss of permafrost has occurred.

2.4. OTHER ACTIONABLE ITEMS

The amendment application to the NWB (see Section 2.2.4.1) included a reference to Phaser Lake within AEM's updated Water Management Plan 2012 (AEM, 2013c). Within this plan, AEM makes reference to the extension of Vault Pit into Phaser Lake; noting that this would require a fish out and then dewatering of Phaser Lake, in approximately 2016. Further information regarding the proposed dewatering of Phaser Lake as described within the plan was not provided.

2.5. SITE VISIT

As an integrated part of the NIRB's continuous monitoring program of the Project, the NIRB's Monitoring Officer visited the Meadowbank site on September 13, 2013. The site visit included the Meadowbank site facility (the waste rock facility, landfarm, landfill/pilot remediation site, tailings storage facility, Vault Pit, active mine areas including Portage pits and Bay-Goose basin, the waste and hazardous materials storage area, the incinerator, fuel storage area, air monitoring station and dust monitoring station), the access road and the Baker Lake fuel tank farm and marshalling facilities. The following outlines findings as they relate to the NIRB's 2013 site visit:

> Based on the observations made during this site visit, all facilities which were in operation and/or under construction appeared to be well managed and maintained with adequate environmental protection measures and procedures in place.
>
> As with years past, the Proponent appeared to be in compliance with a majority of the terms and conditions contained within the Meadowbank Project Certificate as applicable to the NIRB's 2013 Site Visit. However, there may be certain situations in which the Proponent

has not yet fully met the requirements of the Meadowbank Project Certificate and which require further consideration and attention.

The pilot remediation program undertaken during the 2012-2013 reporting period appeared to have worked well; the Monitoring Officer was informed that the rate of biodegradation of the contaminated soil containing nutrients (sewage sludge) was faster as compared to contaminated soils with no nutrients added. AEM noted that it would continue to use this method next year for treatment of all of its contaminated soils.

The Monitoring Officer also noted that the silt curtains put in place downstream of the diversion ditch flowing into Third Portage Lake did not appear to be functioning properly as sedimentation was evident around the shoreline and flowing into the lake.

Regarding Condition 8, only one groundwater well appeared to have been operational during the 2013 site visit. The Monitoring Officer acknowledged AEM's indication that further re-evaluation of the groundwater well monitoring program would be conducted and that consideration would be given to potential of using production wells instead of groundwater wells to assess the existing conditions at the mine site.

Condition 25 requires that the Proponent employ legal deterrents to deter carnivores and/or raptors from the Meadowbank site. AEM noted that wildlife had been observed at site including caribou, muskox and foxes, with a few fox dens having been noted in and around the site.

Condition 26 requires that spills be cleaned up immediately and that the site be kept clean of debris. The Monitoring Officer was informed during the 2013 site visit that the clean-up of the spill at kilometre 22 was complete, but that the site would continue to be monitored as part of AEM's ongoing aquatics effects monitoring program. Furthermore, some instances of wind-blown debris scattered around the site were noted.

Condition 27 requires that the Proponent use safe, environmentally protective methods for areas used to store fuel or hazardous materials. The Monitoring Officer noted that the fuel storage facilities appeared to be well contained and properly set up for the re-fuelling of vehicles.

During the site visit it appeared that the Proponent had not fully met the requirements of Condition 74, as dust suppression techniques had not been applied to the access road, though dust suppression techniques were being applied at the Meadowbank site. AEM indicated that it has plans in place to determine the effects of dust on vegetation along the access road from studies conducted in the summer of 2013 and to determine the best options to deal with dust created along the access road.

For a comprehensive review of the NIRB's 2013 site visit and observations, please refer to the NIRB's *2013 Meadowbank Site Visit Report* (Appendix I).

3.0 SUMMARY

The Meadowbank Gold mine began commercial production in March 2010 and is now in its fourth year of production. The Proponent appears to be in compliance with the majority of the terms and conditions contained within the Meadowbank Project Certificate [004], and is generally meeting the objectives of monitoring and mitigation plans and procedures put in place for the Project. However, certain outstanding issues will require the Proponent's attention as discussed throughout this report. These items are addressed in the Board's recommendations provided to the Proponent under separate cover.

Pursuant to NLCA Sections 12.7.2 and 12.7.3, the NIRB will continue to work with AEM and other agencies in order to provide the required evaluation of monitoring efforts, results and compliance as outlined within the Board's project-specific monitoring program and in accordance with the requirements set out in the NIRB Project Certificate [No. 004].

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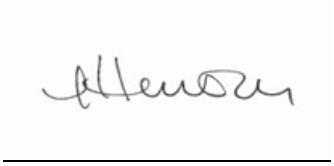
Date: November 1, 2013

Signature: 

Reviewed by: Amanda Hanson
Title: Director, Technical Services

Date: October 30, 2013

Signature: 

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Appendix I:
The NIRB's 2013 Meadowbank Site Visit Report

2013 Site Visit Report

for the NIRB's Monitoring of Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project

Nunavut Impact Review Board
File No. 03MN107
November 2013

Full Report Title:	2013 Site Visit Report for the Nunavut Impact Review Board's Monitoring of Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project (NIRB File No. 03MN107)
Project:	Meadowbank Gold Project
Project Location:	Kivalliq Region, Nunavut
Project Owner:	Agnico Eagle Mines Ltd. PO Box 540 Baker Lake, NU X0C 0A0
Proponent Contact:	Kevin Buck, Environment Superintendent
Telephone:	(819) 759-3555, ext. 6838
Visit conducted by:	Sophia Granchinho, M.Sc., EP Senior Technical Advisor/Monitoring Officer
Telephone:	(866) 233-3033
Site visit dates:	September 13, 2013
Last site visit:	September 12-13, 2012
Photos by:	Sophia Granchinho
Cover photos:	1) View of Meadowbank Mine Site 2) View of Baker Lake Docking Facility

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1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) was established through Articles 10 and 12 of the Nunavut Land Claims Agreement (NLCA) and is responsible for post environmental assessment monitoring of projects in accordance with Part 7 of Article 12 of the NLCA.

This report provides the findings that resulted from the NIRB's site visit of the Meadowbank Gold Project that took place on September 13, 2013 as part of the NIRB's monitoring program.

1.1 Objectives & Purpose of Site Visit

In December 2006, pursuant to Section 12.5.12 of the NLCA, the NIRB issued Project Certificate No. 004 for the Meadowbank Gold Project (the Project), allowing the Project to proceed in accordance with the Terms and Conditions issued therein. In November 2009, the NIRB formally amended the Project Certificate [No. 004] to include an amendment to Condition 32 pursuant to NLCA 12.8.2 and an approval to change the name of the holder of the Project Certificate [No. 004] from Cumberland Resources Ltd. to Agnico-Eagle Mines Ltd. (NIRB, 2009).

The Board is responsible for the monitoring of this Project as per Sections 12.7.1 and 12.7.2 of the NLCA. The objective of the NIRB's site visit was to determine whether, and to what extent, the land or resource use in question is being carried out within the predetermined terms and conditions of the NIRB's Meadowbank Gold Project Certificate [004] (Section 12.7.2(b) of the NLCA).

The observations resulting from this site visit shall, wherever possible, be incorporated into the measurement of the relevant effects of the project (Section 12.7.2(a), provide the information necessary for agencies to enforce terms and conditions of land or resource use approvals (Section 12.7.2(c)), and will further be used to assess the accuracy of the predictions contained in the project impact statements (Section 12.7.2(d)).

1.2 Meadowbank Project Description

The Project involves the construction and operation of an open pit gold mine located in the Kivalliq Region of Nunavut, approximately 70 kilometres (km) north of the hamlet of Baker Lake on Inuit-owned surface lands. The current Project owner, Agnico Eagle Mines Limited (AEM or Proponent), indicated in its December 2011 Reserves and Resources report that Meadowbank had at the time, proven and probable gold reserves of 2.2 million ounces; lower than the initial value predicted (AEM, 2011). In February 2012, AEM announced that its Meadowbank ore reserves had been reduced as a result of it being unable to economically mine the lower grade ore which subsequently, reduced the expected life of the mine by approximately 3 years (AEM, 2012). AEM provided a revised mine plan to the Kivalliq Inuit Association which predicted that its Meadowbank operations are now scheduled to be completed by 2017 instead of 2020 (AEM, 2012).

In addition to the mining infrastructure and activities, ancillary Project infrastructure is located approximately 2 km east of the hamlet of Baker Lake and consists of barge unloading facilities, a

laydown storage and marshalling area, a 60 million litre (ML) fuel tank farm, associated interconnecting roads and a 110 km all-weather private access road (access road) from the hamlet of Baker Lake to the Meadowbank mine site. Supplies are shipped from locations within Canada via sealift to Baker Lake where they are offloaded at AEM's marshalling area and transported to the Meadowbank site via truck haul along the 110 km access road.

1.3 Preparations for the Site Visit

The Monitoring Officer reviewed the following items to prepare for the site visit: Meadowbank Project Certificate [No. 004], 2012 Site Visit Report, AEM's 2012 Annual Report and associated appendices, and follow-up correspondence from the NIRB's 2012 site visit.

2 SITE VISIT

The 2013 site visit was conducted by Sophia Granchinho, NIRB Monitoring Officer. On September 13, 2013 the Monitoring Officer was driven to the Meadowbank mine site from the AEM office in Baker Lake with other AEM staff. Once at the site, the Monitoring Officer was met by Kevin Buck, AEM's Environment Superintendent. Mr. Buck and the Monitoring Officer discussed issues which were related to the 2012 site visit. In the afternoon, Mr. Buck and Martin Therialut led a tour of the site, which included the waste rock facility, landfarm, landfill/pilot remediation site, tailings storage facility, Vault Pit, active mine areas including Portage pits and Bay-Goose basin, the waste and hazardous materials storage area, the incinerator, fuel storage area, air monitoring station and dust monitoring station. At the conclusion of the tour of the mine site, the Monitoring Officer met with Mr. Buck to discuss the site visit and further issues related to environmental compliance. Afterwards, Mr. Tom Thomson drove the Monitoring Officer along with a Golder consultant, Yves Boulianne, to the hamlet of Baker Lake via the access road. Prior to being dropped off at the AEM office, Mr. Tom Thomson and Mr. Yves Boulianne accompanied the Monitoring Officer to the following Baker Lake facilities: diversion channel at Third Portage Lake, quarry 22, quarry 5, bridge at kilometre 22/23, culvert at kilometre 1 and the Baker Lake bulk fuel storage facility/marshalling area.

The site visit provided the Monitoring Officer with a tour of all major project components and further, provided an opportunity for the Monitoring Officer and AEM staff to discuss relevant issues related to the project.

2.1 General Observations

The following are general observations made during the site visit and do not pertain specifically to any particular terms or conditions of the Project Certificate:

a. While travelling along the access road to and from the Meadowbank site and the hamlet of Baker Lake, the Monitoring Officer observed very little wildlife. The only observable wildlife included two caribou, Snow geese (and blue geese) and a Peregrine falcon along the access road. No wildlife was observed at site; however, it was noted by staff that a muskox had been lingering around the Vault Pit area.

b. Mr. Buck mentioned that the pilot remediation program undertaken this year at the Meadowbank site using on-site nutrients (sewage sludge) to initiate biodegradation of

contaminated hydrocarbon soil worked very well and that AEM was planning on using the same technique next year for all hydrocarbon contaminated soils (see Photo 1). This method would be used instead of general landfarming techniques (see Landfarm Plan for further information [AEM, 2013]).

Photo 1: Contaminated soil storage/pilot remediation site

c. AEM indicated that additional grid samples would be taken at both Quarry 5 and Quarry 22 (both sites previously used for storage of contaminated hydrocarbon soil) and confirmed that if samples indicate that no hydrocarbons are present, remediation of both quarries would commence. Photo 2 through Photo 4 show the condition of Quarry 5 from the storage of contaminated soils in 2011 to clean-up in 2013, while Photo 5 and Photo 6 show the condition of Quarry 22 in 2012 and 2013.

Photo 2: Quarry 5 in 2011 containing contaminated soil from fuel spill at kilometre 22 along the access road

Photo 3: Quarry 5 in 2012

Photo 4: Quarry 5 in 2013

Photo 5: Quarry 22 in 2012, serving as a storage area for contaminated soil

Photo 6: Quarry 22 in 2013

d. The Monitoring Officer noted that the environmental emergency sea-cans containing booms, shovels, absorbent pads, and other miscellaneous spill response equipment were located at most bridge crossing (one was not observed at the km 22/23 bridge). Further, two additional environmental emergency sea-cans, one containing spill response equipment and another containing a boat with motor were located at the Baker Lake laydown facility.

e. Active blasting and drilling were ongoing at the North, Central and South Portage pits, with daily geotechnical inspections being undertaken to ensure the safety of all employees and contractors working in the active mine area (see Photo 7).

Photo 7: Portage Pit

f. Development of the Bay-Goose Dike and causeway was completed in 2010 with the instrumentation on the Bay-Goose Dike and the jet grouting program completed in 2011. Mining of the Bay-Goose basin started in May 2012 (Photo 8).

Photo 8: Bay-Goose basin

g. Construction of the Vault Road was completed by the end of 2012 and AEM commenced stripping, quarrying and related construction activities in 2013 (Photo 9). During the site visit, it was noted that dewatering of Vault Lake would commence in late September, once the fish-out program had been completed (see Photo 10). Mining of Vault Pit is planned for 2014.

Photo 9: Vault Lake Quarry site

Photo 10: Site of future Cell B, Vault Lake Pit

h. Inspection of the tailings storage facility did not reveal any apparent rips to the liners that were exposed within Saddle Dam #1 and Saddle Dam #2 (Photo 11).

Photo 11: Tailings storage facility

i. Mr. Buck indicated that the extension of the airstrip was completed in April 2013. This extension was previously screened and approved pursuant to NIRB File No. 10XN039.

j. The Monitoring Officer noted that the water within the diversion ditch constructed around the tailings facility and flowing into Third Portage Lake appeared to be turbid, likely due to the high volume of rainfall over the previous few days (see Photo 12). Further, the silt curtains installed in Third Portage Lake did not appear to be functioning properly as there was evidence of turbid water/sediment along the shoreline of Third Portage Lake and flowing into the lake. The diversion ditch was built to control freshet water from entering the tailings facility (see Photo 13).

Photo 12: Diversion ditch around tailings facility

Photo 13: Turbid water entering Third Portage Lake

k. While travelling along the access road from Meadowbank back to Baker Lake, the Monitoring Officer noted that the culvert crossing at kilometre 1 was damaged and that there was evidence of sediment deposit at the outflow of the culvert into Airport Lake. AEM indicated that it would assist the hamlet of Baker Lake in any work(s) required to upgrade/repair the culvert. AEM indicated that this particular section of the access road is owned by the hamlet and is not leased by AEM (see Photo 14).

Photo 14: Culvert crossing at kilometre 1

2.2 Observations based on NIRB's Project Certificate [004]

Sections 2.2.1 through 2.2.6 relate to those sections of the Meadowbank Project Certificate as indicated, with specific terms and conditions providing a basis for the noted observations.

2.2.1 Water Quality and Waste Management

Condition 8

> *"…At the time samples are taken Cumberland shall also assess the condition of existing groundwater monitoring wells and replace any defective wells. Cumberland shall continue to undertake semi-annual groundwater samples and re-evaluate the groundwater quality after each sample collection…"*

At the time of the site visit, only one groundwater monitoring well appeared to be operational. AEM noted that the last operational groundwater monitoring well of those installed in 2003 became damaged from frost action in 2010. Three of the four defective wells were replaced in 2006 but were again damage by frost action. Two of the wells were again replaced in 2008 with a more robust design. In 2011, two monitoring wells were installed, one on Goose Island to replace one of the 2003 wells and one at the tailings storage facility to replace one of the 2007 wells. Only one of the wells replaced in 2008 was sampled in 2011 as the second well showed blockage and no samples could be taken. Mr. Buck indicated that although groundwater sampling did occur at the operational wells for the 2013 sampling program, well number MW11-02 could not be sampled due to blockage from the previous year. AEM is planning on using

production wells instead of groundwater wells to evaluate the groundwater quality but for the 2013 year, AEM staff indicated that as there was limited water flowing at the selected production wells, no sampling had been conducted for this year.

Condition 25

> *"Cumberland shall manage and control waste in a manner that reduces or eliminates the attraction to carnivores and/or raptors. Cumberland shall employ legal deterrents to carnivores and/or raptors at all landfill and waste storage areas…incorporated into the final Waste Management Plan."*

As per previous site visits, the Monitoring Officer noted in 2013 that AEM continued to segregate and store all domestic, hazardous, and combustible wastes in marked sea-cans prior to these materials being incinerated or shipped to appropriate and approved off-site disposal facilities (Photo 15). AEM indicated that sea-cans filled with waste are backhauled via truck haul to Baker Lake and are then moved via the annual sea lift to southern Canada (Photo 16). AEM has also initiated other recycling programs to reduce the amount of wastes going to the landfill; *e.g*., puncturing aerosol cans which could then be recycled as metal (Photo 17 and Photo 18).

Photo 15: Sea-cans used for waste segregation and storage area

Photo 16: Sea-cans waiting to be backhauled

Photo 17: Landfill at Meadowbank mine site

Photo 18: Waste rock facility

The Meadowbank site dual chamber forced air incinerator remains in service for the combustion of all non-hazardous, combustible materials at the site (Photo 19). AEM staff noted that approximately 1.7 tonnes of domestic garbage is incinerated per day; however, Mr. Buck indicated AEM has plans in place to continually improve waste management by reducing the amount of domestic garbage produced at site. Some examples include completely replacing paper coffee cups with plastic coffee cups, using plastic lunch boxes and trays instead of paper bags, recycling wood products by finding second uses for these at site or by backhauling it to Baker Lake where it may be claimed and used by community members.

Photo 19: Dual chamber forced air incinerator at the Meadowbank site

Mr. Buck indicated that there have not been any issues with wildlife around site and that staff are encouraged to leave wildlife alone. Mr. Buck indicated that caribou and muskox have been around the Vault Lake site and that a few fox dens with pups have also been observed around site. In addition, Mr. Buck indicated that active falcon nests had also been observed within

various quarry sites along the access road with most adult pairs having fledged at least one chick successfully.

Condition 26

> *"Cumberland shall ensure that spills, if any, are cleaned up immediately and that the site is kept clean of debris, including wind-blown debris."*

During the 2012 visit to the Meadowbank site, the Monitoring Officer noted that all areas were kept in an impressively clean state, with no obvious spills. There were a few instances of wind-blown material observed around the Meadowbank site.

Mr. Buck indicated that clean-up of the spill that occurred near kilometre 22 of the access road in October 2010 was complete and the booms previously deployed in the watercourse had been removed in July 2013 (Photo 20). Mr. Buck confirmed that the site would continue to be monitored as part of AEM's aquatic effects monitoring program.

Photo 20: Bridge near kilometre 22

Condition 27

> *"Cumberland shall ensure that the areas used to store fuel or hazardous materials are contained using safe, environmentally protective methods based on practical, best engineering practices."*

During the 2013 site visit, the Monitoring Officer observed that all of AEM's fuel and hazardous materials associated with the Meadowbank project appeared to be stored in a safe and environmentally protective manner (i.e. secondary containment at fuel storage areas and secure containment of hazardous materials; see Photo 21 and Photo 22).

Photo 21: Meadowbank on-site fuel tank farm

Photo 22: Baker Lake bulk fuel storage facility

The fuel transfer stations on site (Photo 23) and at the Baker Lake bulk fuel storage facility (Photo 24) appeared to be well contained and properly set up for the re-fuelling of vehicles. No hydrocarbon odours were noted at either the Meadowbank fuel tank farm or the Baker Lake bulk fuel storage facility. No sheen was observed on the water within the Meadowbank fuel tank farm or the Baker Lake bulk fuel storage facility.

The Monitoring Officer noted that a Jet-A pad had been installed near the Baker Lake bulk fuel storage facility and that it had 20 fuel tanks in place (Photo 25).

Photo 23: Meadowbank on-site fuel transfer station

Photo 24: Baker Lake fuel transfer station (taken in 2012)

Photo 25: Jet-A pad at Baker Lake storage facility

2.2.2 All-Weather Private Access Road (AWPAR)

Amended **Condition 32**

"AEM shall operate the all-weather road as a private access road, and implement all such measures necessary to limit non-mine use of the road to authorized, safe and controlled use by all-terrain vehicles for the purpose of carrying out traditional Inuit activities. The measures AEM shall undertake include, but are not limited to:

a. Maintaining a gate and manned gatehouse at kilometre 5 of the Private Access Road;

b. In consultation with the Hamlet of Baker Lake, the local HTO, and the KivIA, update the All-Weather Private Access Road Management Plan to set out the criteria and processes to authorize and ensure safe and controlled non-mine use of the road by all-terrain vehicles for the purpose of carrying out traditional Inuit activities, and measure to limit all other non-mine use of the road. The updated Plan is to be submitted to the GN, INAC, and KivIA for approval no later than one (1) month after the approval of revised Condition 32;

c. The posting of signs in English and Inuktitut at the gate, each major bridge crossing, and each 10 kilometres of road, stating that unauthorized public use of the road is prohibited;

d. The posting of signs in English and Inuktitut along the road route to identify when entering or leaving crown land;

e. Prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain vehicle for the purpose of carrying out traditional Inuit activities;

f. Place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of the road limited to authorized, safe and controlled use by all-terrain vehicles for the purpose of carrying out traditional Inuit activities;

g. Record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one (1) year after the road is opened and annually thereafter; and

h. Report all accidents or other safety incidents on the road, to the GN, KivIA, and the Hamlet immediately and to NIRB annually."

AEM maintains one gatehouse at kilometre 5 of the access road, and another gatehouse close to the entrance to the mine site and camp at Meadowbank. Both gatehouses are manned by guards who monitor the safety and security of all personnel using the road. All traffic is required to check in (via radio or in person) with the employee at the gatehouse prior to proceeding past either gatehouse along the road (see Photo 26). The AEM employee manning the kilometre 5 gatehouse maintains a daily logbook of all persons travelling the access road for non-mine use. Members of the public travelling along the road are required to sign-off an indication of having read AEM's *All Weather Private Access Road Safety Rules & Procedures for Road Access* policy prior to being granted access to the road.

Photo 26: Gatehouse at kilometre 5, near Baker Lake

As per Condition 32(b), AEM submitted a copy of its updated Transportation Management Plan to the NIRB on May 13, 2010. One of the features of the access road as described within the plan is the placement of refuge stations every 10 kilometres. The Monitoring Officer noted that these refuge stations (emergency sea-cans) were not located on the road and was informed by Mr. Buck in 2012 that the sea-cans were removed because items within the stations were being stolen and that the refuge stations were not serving the original and intended purpose. The signs as required per Condition 32(c) were posted in both English and Inuktitut at the gatehouse (Photo 27), at each major bridge crossing (on the side of the environmental emergency sea-cans) and at every at 10 kilometre intervals along the road.

Photo 27: Signs posted at gatehouse at kilometre 5

2.2.3 Wildlife and Terrestrial

Condition 56

> *"Cumberland shall plan, construct, and operate the mine in such a way that caribou migration paths through the Project, including the narrows west of Helicopter Island are protected. Maps of caribou migration corridors shall be developed in consultation with Elders and local HTOs, including Chesterfield Inlet and placed in site offices and upgraded as new information on corridors becomes available. Information on caribou migration corridors shall be reported to the GN, KivIA and NIRB's Monitoring Officer annually."*

Condition 59

> *"Cumberland shall, in consultation with Elders and the HTOs, design and implement means of deterring caribou from the tailing ponds, such as temporary ribbon placement or Inukshuks, with such designs not to include the use of fencing."*

The Monitoring Officer noted that the updated maps 2012 which outline caribou migration corridors were posted in high traffic areas such as the bulletin board outside the check-in office. AEM indicated that all employees must report to the check-in office upon arrival to site at the commencement of their two-week shift and again upon departure from site and would be able to review the updated caribou migration corridor maps.

As indicated earlier in the report, no wildlife were observed around site during the 2013 site visit except along the access road to the mine site.

2.2.4 Noise

Condition 62

> *"Cumberland shall develop and implement a noise abatement plan…will be developed in consultation with Elders, GN, HC, and EC and include:*

a. The use of sound meters to monitor sound levels in and around the mine site, including workers' on-site living/sleeping quarters and any summer camps adjacent to the site, and in the local study area, with the locations and design of the sound meters selected in consultation with HC and EC. Sound meters are to be set up immediately upon issuance of the Project Certificate for the purpose of obtaining baseline data, and monitoring during and after operations;
b. …
c. Restrictions on blasting and drilling when migrating caribou, or sensitive local carnivores or birds may be affected;
d. …
e. …"

AEM staff indicated that five locations were monitored for noise during the 2013 summer period. AEM staff noted that monitoring indicated that the dominant mine noise sources included activities such as helicopter and other air traffic, the use of construction and operation heavy equipment and blasting. Monitoring stations were removed prior to the site visit due to windy conditions.

2.2.5 Air Quality

Condition 71

"Cumberland shall, in consultation with EC, install and fund an atmospheric monitoring station to focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported annually to NIRB."

The air monitoring stations were installed by the end of October 2011 and monitoring started in November 2011 (see Photo 28). The partisol sampling stations required heated shelter and electricity in order to operate properly, and these were installed in 2012. During the 2013 site visit, Mr. Buck noted that an air monitoring station installed in 2012 near the Vault Lake road had been relocated. The road alignment to Vault Lake was modified from the original design plan which in turn required that the air monitoring station be moved to a location further away from the road.

Photo 28: Air monitoring station

Condition 74

> *"Cumberland shall employ environmentally protective techniques to suppress any surface dust."*

AEM staff indicated that calcium chloride and water are administered on the roads to suppress dust around the Meadowbank site and from the Baker Lake dock facility to the gatehouse. AEM staff also noted that it would be using calcium chloride flakes for 2014 as it is lighter to transport and easier to use. AEM noted that it is currently waiting for the results of studies conducted along the access road in 2013 to determine whether or not the dust from the access road is impacting the vegetation around the area. During the site visit, AEM confirmed that no dust suppressants are currently in use along the access road.

2.2.6 Other

Condition 81

> *"Beginning with mobilization, and for the life of the Project, Cumberland shall provide full 24 hour security, including surveillance cameras and a security office at the Baker Lake storage facility/marshalling area, and take all necessary steps to ensure the safe and secure storage of any hazardous or explosive components within the Hamlet of Baker Lake boundaries."*

During the visit to the Baker Lake bulk fuel storage facility/marshalling area, the Monitoring Officer noted that a security office was located at the shore with AEM employees on site. The Monitoring Officer did note that these areas were kept impressively clean with sea-cans well organized during the 2013 site visit (see Photo 29).

Photo 29: Bake Lake dock and laydown facility

3 FINDINGS AND SUMMARY

Based on the observations made during this site visit, all facilities which are in operation and all sites currently under construction appear to be well managed and maintained with adequate environmental protection measures and procedures in place.

As with years past, the Proponent appears to be in compliance with a majority of the terms and conditions contained within the Meadowbank Project Certificate as applicable to the NIRB's 2013 Site Visit. However, there may be certain situations in which the Proponent has not yet fully met the requirements of the Meadowbank Project Certificate and which require further consideration and attention.

The Monitoring Officer notes that the pilot remediation program undertaken this year at the Meadowbank mine site appeared to have worked well. The Monitoring Officer was informed that the rate of biodegradation of the contaminated soil containing nutrients (sewage sludge) was faster compared to contaminated soils with no nutrients added. AEM indicated that it plans to use this method again next year for the treatment of all of its contaminated soils.

The Monitoring Officer also noted that the silt curtains put in place downstream of the diversion ditch flowing into Third Portage Lake did not appear to be functioning properly as sedimentation was evident around the shoreline and flowing into the lake.

Regarding Condition 8, only one groundwater well appeared to have been operational during the 2013 site visit. AEM indicated that further re-evaluation of the groundwater well monitoring program would be conducted, including an evaluation of the potential use of production wells instead of groundwater wells to assess the existing groundwater conditions.

Condition 25 requires that the Proponent employ legal deterrents to deter carnivores and/or raptors from the Meadowbank site. AEM noted that wildlife had been observed at the site including caribou, muskox and foxes, with a few fox dens around the site as well. .

Condition 26 requires that spills be cleaned up immediately and that the site be kept clean of debris. The Monitoring Officer was informed during the 2013 site visit that the clean-up of the spill at kilometre 22 was complete, but that the site would continue to be monitored as part of AEM's ongoing aquatics effects monitoring program. Some instances of wind-blown debris scattered around the site were noted during the 2013 site visit.

Condition 27 requires that the Proponent use safe, environmentally protective methods at areas used to store fuel or hazardous materials. The Monitoring Officer noted that the fuel storage facilities appeared to be well contained and properly set up for the re-fuelling of vehicles.

The Proponent did not appear to have fully met the requirements of Condition 74, as dust suppression techniques had been applied at the Meadowbank site but were not in use along the access road from Baker Lake to site. AEM did indicate that plans were in place to determine the effects of dust on vegetation along the access road and to determine the best options to deal with the dust created.

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Date: November 1, 2013

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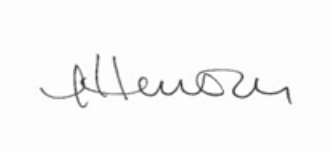
Date: October 29, 2013

Signature: 

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