TECHNICAL MEMORANDUM

DATE May 21, 2010 **PROJECT No.** 10-1428-0004/2000

TO Mr. Stephane Robert **DOC No.** 1054 Ver. 0
Agnico-Eagle Mines Limited Meadowbank Division

FROM Paolo Chiaramello and Dan Walker **EMAIL** Dan_Walker2@golder.com

APPLICATION FOR AIRSTRIP EXPANSION (FILE NUMBER 10XN039) – ADDITIONAL INFORMATION, MEADOWBANK GOLD PROJECT, NUNAVUT

1.0 INTRODUCTION

The Meadowbank Gold Project (Meadowbank, the Project), operated by Agnico-Eagle Mines Limited – Meadowbank Division (AEM), is located approximately 70 km north of the Hamlet of Baker Lake, Nunavut (see Figure 1). Meadowbank is an open pit gold mine that is currently in the construction/operation phase (see Figure 2). Meadowbank operates under the authorizations listed in the following table.

Table 1: List of Authorizations

Permit / License	Type	End of Term	Approved Operations	Notes
NUNAVUT IMPACT REVIEW BOARD (NIRB)				
NIRB-004	Project Certificate	Closure	Approval for the Meadowbank Project to proceed subject to its Terms & Conditions	Certificate from NIRB authorizing the Project to move from the environmental assessment into the permitting phase provided the attached conditions are met. The Project Certificate contains a number of conditions that must be met to ensure that the mine meets it environmental assessment predictions.
NUNAVUT WATER BOARD (NWB)				
2AM-MEA0815	Water License	31-May-15	700,000 m^3 annually - Milling, mining and associated activities at the Meadowbank Project site.	Type A Water License covering construction, operation and closure of the Meadowbank Mine including the fuel tank farm and marshalling area in Baker Lake and the All weather private access road. The Type A water License incorporates the following two Type B Water Licenses: 8BC MEA0709 and 8BC TEH0809.

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Permit / License	Type	End of Term	Approved Operations	Notes
KIVALLIQ INUIT ASSOCIATION (KIA)				
KVPL08D280	Production Lease; Amendment 1	Closure	Construction, operation and closure of the mine on Inuit Owned Land - Land Use Lease	Production Land Use Lease covering all land use on Inuit Owned Land at the Meadowbank Site for the purposes of constructing, operating and closing the mine.
Mine Water Compensation	Agreement	Closure	Compensation for water consumption at Meadowbank site and any changes in water quality, quantity or flow due to project activities	Water Compensation Agreement with the KIA under Article 20 of the Nunavut Land Claim Agreement - covers all water use and diversion at the mine site.
Road Water Compensation	Agreement; Amendment 1	Closure	Compensation where development and operation of AWPAR has substantial effect on water quality, quantity or flow	Water Compensation Agreement with the KIA under Article 20 of the Nunavut Land Claim Agreement - covers all water diversions along the AWPAR on Inuit Owned Lands.
KVRW06F04	Right of Way AWPAR; Amendment 1	31-Dec-21	Right of Way for All Weather Private Access Road	
KVCA06Q11	Quarry Permit AWPAR	1-Feb-22	Quarrying for All Weather Private Access Road; 254,546 m^3 of material	Quarry permit for quarries on Inuit Owned Lands along the AWPAR. Royalty Payment of $1.50 per cubic meter.
INDIAN & NORTHERN AFFAIRS CANADA (INAC)				
66A/8-71-2	Land Lease	31-Dec-21	All Weather Private Access Road construction, operation, maintenance and reclamation	Land Use Lease for AWPAR sections on Crown Lands.
66A/8-72-2	Land Lease	31-Dec-16	Quarrying - All Weather Private Access Road	Quarry Permit for quarries along the AWPAR that are on crown lands - Royalty due of $1.50 per cubic meter taken.
GOVERNMENT OF NUNAVUT (GN)				
LUP-06-603-001	Land Use Permit	6-Jul-08	AWPAR - Road Construction	We are currently negotiating a comprehensive land lease with the GN Department of Community and Government Services to replace these land use permits for all Meadowbank facilities on Hamlet Land (Commissioner's Land) - application is in progress, including marshalling area, fuel tank farm and AWPAR sections on Hamlet Land.
QP-06-603-001	Quarry Permit	6-Jul-08	AWPAR Quarry 1 - Authorization to take 85,388 m3 of quarried bedrock - granite	
603-0-LUP-07-001	Land Use Permit	4-Aug-08	Marshalling Area	

Permit / License	Type	End of Term	Approved Operations	Notes
FISHERIES & OCEANS CANADA (DFO) and ENVIRONMENT CANADA				
NU-03-0190	HADD Authorization - AWPAR; Amendments 1 and 2	31-Dec-08	R02 habitat compensation	Fish habitat alteration and destruction permit for the stream crossings along the AWPAR.
NU-08-0013	HADD Authorization - Western Channel	13-Jun-08	Western Channel temporary crossing	Fish habitat alteration and destruction permit for the temporary crossing of the Western Channel between Second and Third Portage Lakes.
NU-03-0191	HADD Authorization - Mine Site	31-Dec-15	mine	Fish habitat alteration and destruction permit for the TIA, dikes and pits at the mine.
MMER Schedule 2	TIA	Permanent	Allows for the Tailings impoundment to be constructed in the NE arm of Second Portage Lake	

AEM is proposing to expand the existing Meadowbank airstrip by increasing the length and width of the airstrip to accommodate a Boeing 737 jet. On February 4, 2010, AEM submitted a project proposal to the Nunavut Impact Review Board (NIRB) requesting that the board conduct a screening of the project proposal to determine whether or not an amendment to Project Certificate No.004 may be required.

In a letter dated April 29, 2010, the NIRB indicated that the proposed expansion of the Meadowbank airstrip requires screening in accordance with Part 4, Article 12 of the Nunavut Land Claims Agreement (NLCA); however the February 4, 2010 project proposal did not contain sufficient information to permit proper screening. Specifically, the NIRB requested that AEM provide the following information:

- NIRB Project Specific Information Requirements Part 2 Form; and
- Documentation explaining how AEM intends to address commitments previously made by Cumberland Resources Ltd. in the Final Environmental Impact Statement (FEIS), other project related documents and during the Final Hearing; how the proposed airstrip expansion will affect impact predictions made in the initial project application; and a preliminary prediction of impacts the proposed expansion may have on the ecosystemic and socio-economic environments.

This Technical memorandum provides additional information on the airstrip expansion project to satisfy the request made by the NIRB. A concordance table is provided in Appendix A to summarize the information presented herein in relation to the information requirements listed in the NIRB Project Specific Information Requirements (PSIR) Part 2 Form.

2.0 PROJECT DESCRIPTION

2.1 Existing Airstrip

The Meadowbank project site is accessible via overland travel on the All Weather Private Access Road (AWPAR) between Baker Lake and the mine site, and also via chartered aircraft to the Meadowbank airstrip The Meadowbank airstrip was commissioned for use in January 2009. Since that time, the airstrip has been used to transport personnel to Meadowbank at a frequency of 6 return charter flights per week, which originate from Montréal, Yellowknife and the Kivalliq region. Air freight such as food and cargo is transported to the site from Thompson at a frequency of 4 return charter flights per week. Thus, a total of 10 flights per week are transporting people and freight to the site. The current airstrip is located entirely overland, immediately north of plant site on the peninsula that separates the Second Portage Lake and Third Portage Lake (see Figure 2). The size of the existing airstrip is 1494.8 m x 45 m, which can accommodate a Hercules aircraft.

2.2 Proposed Airstrip Expansion

AEM is proposing to expand the size of the airstrip to accommodate a Boeing 737 jet. The proposed expansion would bring the current airstrip to a total length of 2103 m x 60 m, of which approximately 412 m will be located within the high water mark of Third Portage Lake (*i.e.,* in-lake). The extension of the airstrip will cross and subsequently deactivate the current access road which runs around the north end of the strip connecting the AWPAR to the Plant Site and Camp. An alternate access is proposed to be established via the Tailings Road, which will connect from the south end of the airstrip. Figure 3 provides a plan of the proposed airstrip expansion and the alternate access road.

The construction of the proposed airstrip expansion is scheduled for the third quarter of 2010 after all necessary amendments or modifications to the NIRB Project Certificate have been received. No in-water works would commence until a DFO HADD authorization has been issued and any necessary amendments and/or modifications to the NWB Water License have been completed.

Since the proposed airstrip expansion is part of the Meadowbank project, facilities (*i.e.,* camp), workforces, equipment and materials available at the mine site will be used to satisfy the requirements for the construction of airstrip expansion.

The Meadowbank camp is a permanent facility that can accommodate approximately 340 persons. The camp is located immediately west of the airstrip (see Figure 2). Details of the camp site are provided in the FEIS and in the Type A Water License Application (Meadowbank Mining Corporation (MMC), 2007a).

The construction of the airstrip expansion will involve mostly earthwork activities. Therefore, construction equipment commonly used for other Meadowbank project construction activities, including the dewatering dikes in Second Portage and Third Portage lakes, are proposed to be used for the construction of the airstrip expansion. This equipment will be serviced by the facilities located on site in the proximity of the camp.

Material generated as part of the mining activities of the Meadowbank project will be used for the construction of the airstrip expansion. The material required to construct the airstrip expansion is estimated as follows:

- Total rock: 875,000 m^3;
- ¾ inch minus material: 8,000 m^3; and
- 6 inch minus material: 24,000 m^3.

Approximately 700,000 m^3 of this material will be placed in the water for the in-lake portion of the expansion. An additional 70,000 m^3 will be required to build the diverted section of the all weather road. Non-acid generating rock material will be used. Best available construction and monitoring procedures will be employed to minimize any impacts to the natural waterbodies. Run-off from the extended length of airstrip on land will be directed through drainage ditches toward the Attenuation and Reclaim Ponds during the life of the project as outlined in the Meadowbank Project Updated Water Management Plan (AEM, 2009b).

2.3 Project Justification

An expanded airstrip and the ability to use larger aircraft will ultimately reduce the number of charter flights per week (10 to 4) and the number of hours per flight, while increasing the capacity to transport personnel and essential cargo to site. The expanded airstrip will also offer an improved safety measure for greater accessibility and evacuation potential to and from the Meadowbank site.

3.0 REVIEW OF IMPACT PREDICTIONS

During the permitting process of the Meadowbank project, a Final Environmental Impact Statement (FEIS) (Cumberland, 2005a), including required supporting documents, (*i.e.,* baseline studies, impact assessments and management plans) was completed to determine the potential effects that the various activities of the project would have on the identified Valued Ecosystem Components (VECs) and Valuable Social and Economic Components (VSECs). Prediction of the potential impacts and impact mitigation strategies were outlined in the FEIS and supporting documents. The assessment of the potential effects generated by the airstrip, and the prediction of the related impacts, were included in the FEIS and supporting documents.

The airstrip as proposed in the FEIS and supporting documents was to be approximately 1,500-1,650 m long x 30.5-50 m wide to accommodate large aircrafts. Approximately 380 m of the airstrip was proposed to protrude into Third Portage Lake. Ultimately however, the existing airstrip was constructed to the current length without extending into the Third Portage Lake by utilizing the space available on the eastern limit of the peninsula between the Second Portage Lake and the Third Portage Lake (see Figure 2).

The following sections provide a discussion of the extent to which the proposed airstrip expansion will affect the FEIS impact predictions on the VECs and VSECs, along with a preliminary prediction of the potential additional impacts generated by the airstrip expansion project, if any.

The potential effects and the prediction of impacts generated by the proposed airstrip expansion, along with the proposed mitigation strategies, are also summarized in the Environmental Assessment Impact Matrices provided in Appendix B.

3.1 Air Quality

The generation of dust and emissions was identified as the potential effect generated by the airstrip and air traffic on air quality in the FEIS and Air Quality Impact Assessment (Cumberland, 2005b). Overburden stripping, excavation and other construction activities, along with frequent activity by aircrafts, were recognized as potentially generating dust and emissions. Mitigation activities such as maintaining vehicles in good operating condition, minimizing the number of trips (take-offs and landings), and the application of dust suppression techniques were proposed minimize potential impacts to air quality. At closure the airstrip was proposed to be decommissioned and covered to provide for erosion and dust control (Cumberland, 2005e).

The potential effects to air quality listed in the FEIS are also expected for the proposed airstrip expansion. However, the ability of a larger airstrip to service a larger aircraft will serve to further minimize the number of trips into Meadowbank, resulting in a reduction in the potential the dust and emissions generation.

The air quality mitigation activities described above for the current airstrip are also proposed for the airstrip expansion. As a result, the proposed airstrip expansion is not considered to significantly alter the predictions made in the FEIS or the Air Quality Impact Assessment regarding air quality, and may potentially result in reduction in the generation of dust and emissions as a result of the reduced number of flights.

3.2 Fish and Fish Habitat

The FEIS and Aquatic Ecosystem and Fish Habitat Impact Assessment (Cumberland, 2005c) identified terrain disturbance, introduction of particulates to lakes due to in-lake construction and during rain events, aerial dispersion of particulates, local habitat disturbance, introduction of dust from runoff from the airstrip, smothering of fish eggs, impaired feeding efficiency by fish, and toxicity due to metals introduction as potential effects generated by the airstrip and air traffic on fish and fish habitat. Dust suppression techniques, Best Management Practices (BMPs) for in-lake constructions and perimeter ditches were proposed as mitigation strategies to reduce the potential effects of the airstrip and air traffic on fish and fish habitat. At Closure/Post-closure, the airstrip was proposed to be decommissioned and the land restored with no expected effects on fish.

The proposed airstrip expansion will result in greater in-lake footprint than was presented in the FEIS (see Section 4.0 below). Nevertheless, the proposed expansion is expected to have similar potential effects on fish and fish habitat as described in the FEIS, and the FEIS fish and fish habitat mitigation strategies are also proposed for the airstrip expansion. As such, the proposed airstrip expansion is not considered to significantly alter the predictions made in the FEIS or the Aquatic Ecosystem and Fish Habitat Impact Assessment regarding fish and fish habitat.

3.3 Noise

Intermittent noise from air traffic and negligible noise associated with maintenance of the air strip were identified in the FEIS and the Noise Impact Assessment (Cumberland, 2005d) as potential effects generated by the airstrip and air traffic. The proposed mitigation strategies consisted of minimizing the number of flights (take-off and landings), avoiding excessive engine operation on high rotation, following clearly defined flight corridors, maintaining a maximum altitude, and maintaining a no wildlife harassment policy.

Similar potential noise effects are expected to be generated by the proposed airstrip expansion project. However, the extended airstrip will serve to accommodate larger aircraft resulting in a reduction of the number of scheduled flights. As above, the same noise mitigation strategies are proposed for the proposed airstrip expansion project.

As a result, the proposed airstrip expansion is not considered to significantly alter the predictions made in the FEIS or the Noise Impact Assessment regarding noise, and may potentially reduce the intermittent high noise level generated from air traffic during the operation phase.

3.4 Physical Environment

Three VECs were considered as part of the physical environment in the FEIS and Physical Environment Impact Assessment (Cumberland, 2005f): surface water quantity, surface water quality and permafrost.

3.4.1 Surface Water Quantity

In the FEIS and the Physical Environment Impact Assessment (Cumberland, 2005f), airstrip construction activities were considered to have potential effects on surface drainage patterns, displacement of volume in Third Portage Lake, and negligible alteration of circulation patterns in Third Portage Lake due to the approximately 380 m of airstrip proposed to be protruding into the lake. These effects, if left unmitigated, were considered not to be significant; however, mitigation strategies such as maintaining adequate drainage patterns were proposed.

The existing airstrip is proposed to be extended approximately 412 m into the Third Portage Lake. In comparison to the airstrip assessed in the FEIS and supporting documents, the proposed expansion will increase the portion of airstrip located within Third Portage Lake by approximately 32 m. Therefore the proposed airstrip expansion is not expected to significantly affect the impact predictions made in the FEIS and supporting documents regarding lake water volume displacement and alteration to circulation patterns. In addition, the proposed airstrip expansion is not expected to significantly affect the prediction of the impacts on the surface drainage patterns as most of the proposed expansion will be located in Third Portage Lake. Nevertheless, mitigation strategies such as maintaining adequate drainage patterns are also proposed for the airstrip expansion.

3.4.2 Surface Water Quality

Airstrip construction activities were also considered in the FEIS and the Physical Environment Impact Assessment (Cumberland, 2005f) to have potential effects on water quality due to sedimentation and dusting. Construction activities were considered amenable to mitigation by using dust suppression strategies and using Best Management Practices (BMPs) for sediment control.

During operation, the potential effects identified included fuel spills, dust from air traffic, metal loading, acidity, introduction of nitrogen species in runoff and seepage from the construction materials. The mitigation strategies for operations included the use BMPs for the storage and handling of fuel on site, the preparation of a spill contingency plan (AEM, 2009a), the use dust suppression strategies, and the collection of run-off from air-strip within drainage ditches and directing it to existing water management facilities on site (*i.e.,* the Reclaim and/or Attenuation ponds).

Continued leaching of metals and acidity from active layer rock were identified as potential effects during Closure/Post-Closure. These potential effects were considered to be amenable to mitigation by the selection of appropriate construction materials, and monitoring of water quality as outlined in the Water Quality and Flow Monitoring Plan (AEM, 2008).

Similar potential surface water quality effects are expected for the airstrip expansion, and the same mitigation strategies described in the FEIS are proposed to be applied. In comparison to the current airstrip, the proposed airstrip expansion may results in additional water quality effects due to the placement of rock in Third Portage Lake during construction (see Section 4.0 below). As such, the following additional mitigation strategies are also being proposed to reduce potential water quality effects:

- Selection of appropriate material to minimize potential effects on lake water quality;
- Minimizing to the extent practical, the amount of fines and overburden materials within the construction materials;
- Use of properly sized blast charges and type of explosives when sourcing the construction materials to minimize the excess nitrogen and blasting residues;
- Construction of the in-lake portion during the winter period (*i.e.,* ice cover to assist in TSS control); and
- Revise the Total Suspended solid (TSS) management plan to include the airstrip expansion activities.

These mitigation strategies are currently in use for other in-lake construction activities at the Meadowbank project, including dewatering dike construction.

As a result the airstrip expansion is expected to not significantly alter the impact predictions made in the FEIS and supporting documents regarding surface water quality.

3.4.3 Permafrost

The potential effects generated by the construction of the airstrip and related drainage ditches were identified in the FEIS and the Physical Environment Impact Assessment (Cumberland, 2005f) to included loss of permafrost, cooling of remaining permafrost, permafrost aggradation and the potential formation of new active layer in the cut and fill sections (positive effect). Stabilization of permafrost temperatures and active layer thickness (positive effects) were identified as potential effects of the airstrip during operation, and closure/post-closure. Overall, the potential effects on permafrost were considered negligible and no mitigation strategies were proposed.

The proposed expansion is considered to have similar potential effects on permafrost as identified in the FEIS and Physical Environment Impact Assessment, and is not anticipated to alter the predictions made (*i.e.,* considered to be negligible).

3.5 Terrestrial Ecosystem

Seven VECs were considered part of the terrestrial ecosystem in the FEIS: Raptors, other breeding birds, waterfowl, predatory mammals, small mammals, ungulates and vegetation.

3.5.1 Raptors, other Breeding Birds and Waterfowl

The potential effects on raptors, birds and waterfowl generated by the airstrip and air traffic were identified in the FEIS and the Terrestrial Ecosystem Impact Assessment (Cumberland, 2005h) to include the loss and disturbance of foraging habitat, mortality due to collisions with air traffic, reduction of habitat effectiveness in areas close to the airstrip due to noise and activity, habitat degradation due to dust and emissions, and potential for increased contaminant loading in prey. Mitigation strategies including reducing the number of flights, regular surveillance of raptors, birds and waterfowl in the area, and monitoring of contaminant levels in the vegetation adjacent the airstrip were proposed to mitigate the potential effects, and no significant residual impacts were anticipated.

Similar potential effects on raptors, birds and waterfowl are expected from the airstrip expansion, and the same mitigation strategies are proposed. The potential for the larger airstrip to accommodate larger aircraft will result in less frequent trips during the operation phase, resulting in a reduction in the potential for collisions, noise and dust generation, and contaminants in nearby vegetation. As a result, the proposed airstrip expansion is not expected to significantly alter the impact predictions made in the FEIS and supporting documents regarding raptors, birds and waterfowl.

3.5.2 Mammals and Ungulates

The potential effects of the airstrip and air traffic on mammals and ungulates were identified in the FEIS and the Terrestrial Ecosystem Impact Assessment (Cumberland, 2005h) to include loss of habitat for predatory mammals, loss of foraging habitat for ungulates, mortality due to vehicle/mammal or ungulate collisions, reduction of habitat effectiveness in nearby areas due to noise and activity, habitat degradation due to exhaust and dust, and contaminant loading in prey. A positive effect was identified in the potential for an increase in living opportunities for small mammals on the airstrip edges and the rock fill areas. Mitigation strategies such as a reduction in the number of flights, monitoring of mammals in the vicinity of the airstrip, and dust suppression were proposed to reduce the potential effects. No significant residual impacts on mammals and ungulates were anticipated.

Similar potential effects on mammals and ungulates are expected from the proposed airstrip expansion, and the same mitigation strategies are proposed. Once again, the potential for the larger airstrip to accommodate a larger aircraft will result in less frequent trips during the operation phase, resulting in a reduction of the potential for collisions, noise and dust generation, and contaminants in nearby vegetation. As a result, the proposed airstrip expansion is not expected to significantly alter the impact predictions made in the FEIS and supporting documents regarding mammals and ungulates.

3.5.3 Vegetation

The loss of vegetation and vegetation degradation were identified in the FEIS and the Terrestrial Ecosystem Impact Assessment (Cumberland, 2005h) as potential effects generated by the airstrip and air traffic due to dust and an increase in contaminants. Mitigation strategies such as reduction in the number of flights and dust control measures were proposed to reduce the potential effects, and no significant residual impacts on vegetation were anticipated.

Similar potential effects on vegetation are expected from the proposed airstrip expansion, and the same mitigation strategies are proposed. Also, the reduction in the number of flights during the operation phase is anticipated to result in a reduction in the potential contaminant release onto the surrounding vegetation. Restoration of vegetation along the airstrip edges and monitoring of contaminant levels in the vegetation are proposed as additional mitigation strategies to mitigate the potential effects on vegetation. As such, the proposed airstrip expansion is not expected to significantly alter the vegetation impact predictions made in the FEIS and supporting documents.

3.6 Socioeconomics and Archaeology

The FEIS and the Socioeconomic and Archaeology Impact Assessment (Cumberland, 2005i) determined the potential effects of the overall project on different VSECs such as, employment, training and business opportunities, traditional ways of life, individual and community wellness, infrastructure and social services, and sites of heritage significance. Socioeconomic impacts were considered less related to specific components of the project than to the overall project itself, in its location, scale, and operational procedures. However, it was identified that some of the project infrastructure, such as the airstrip, may result in positive effects on the local communities that may be interested in retaining and managing infrastructure post-closure as a means to facilitate increased tourism activity in the region.

The proposed airstrip expansion in not expected to alter the predictions made in the FEIS and in the Socioeconomic Impact assessment relating to socioeconomics and archaeology.

3.7 Cumulative Effects

The FEIS and the Cumulative Effects Impact Assessment (Cumberland, 2005j) also examined the potential for residual effects associated with the Meadowbank project combined with the residual effects of other projects and activities (*i.e.,* mineral exploration, mines and mining projects, municipal areas, recreational use, traditional use) to result in cumulative effects to the biophysical environment (VECs) and the human environment (VSECs).

The Meadowbank project was considered not to have a significant cumulative effect on the biophysical environment and was considered to have a net positive cumulative effect on the human environment with respect to employment, training, business opportunities, infrastructure and social services. The cumulative effects on individual and community wellness were more complex and were predicated on how the individual and community responded to the project and associated activities. The cumulative effects on heritage sites was considered to be negative (*i.e.,* unavoidable loss of some sites and/or artefacts) but of low magnitude.

The proposed airstrip expansion is not expected to alter the predictions made in the FEIS and in the Cumulative Effects Impact Assessment regarding cumulative effects.

4.0 MANAGEMENT STRATEGIES FOR MITIGATION OF IMPACTS

As identified above, the proposed airstrip expansion has the following additional potential effects to those described in the FEIS and supporting documents:

- Loss of additional fish habitat; and
- Water quality impacts.

4.1.1 Loss of Habitat

The FEIS supporting document No-Net Loss of Habitat (NNL) (Cumberland, 2005k) determined the net loss of fish habitat for an airstrip extending approximately 380 m into Third Portage Lake. The in-lake portion of the airstrip footprint was expected to occupy primarily low value habitat, but create a sufficient amount of additional high value habitat on the exterior of the airstrip footprint to result in a net overall gain in habitat units.

The proposed airstrip expansion corresponds to an increase of approximately 5% in the estimated in-lake footprint; the entirety of which is located in low value habitat. As described in the NNL, high quality habitat would be expected to be created on the exterior of the airstrip expansion. The detailed assessment of the additional loss of low value habitat and net habitat gain/loss related to the proposed airstrip expansion will be addressed by AEM in consultation with DFO to determine suitable construction methods and compensation measures under HADD authorization. Fisheries baseline data collection in this area of Third Portage Lake has been ongoing.

4.1.2 Water Quality Impacts

Management strategies to mitigate the potential effects of in-lake construction (*i.e.,* increased TSS and metal loading) were established for the East and Bay-Goose dewatering dikes in consultation with relevant regulatory authorities and stakeholders. The construction techniques for the proposed airstrip expansion will use the same mitigation strategies to minimize the potential effects associated with this type of construction.

The Aquatic Effects Management Program (or Core Receiving Environment Monitoring Plan, CREMP) (Cumberland, 2005l) developed a monitoring program (including water quality monitoring of run-off from the airstrip) for potential stressors to the VECs within the mine footprint area. This included routine monitoring of total suspended solids and metals. The proposed airstrip expansion is not expected to require an update to this plan with respect to management and monitoring of potential aquatic effects.

4.2 Project Certificate

The potential impacts to the VECs by the proposed airstrip expansion is expected to be managed and mitigated using the operational procedures that are already in place and, with exception of expending the airstrip into Third Portage Lake, are not anticipated to significantly affect commitments made within the Project Certificate.

5.0 CLOSURE

The proposed airstrip expansion for the Meadowbank project would bring the current airstrip dimensions from 1494.8 m x 45 m to 2103 m x 60 m, and would extend approximately 412 m into Third Portage Lake. The extended airstrip would be able to accommodate a Boeing 737 which would reduce the number of flights from 10 to 4 per week. The reduction in number of flights will result in positive effects in terms of a reduction in the number of dusting events, reduction of noise from air traffic, and a potential reduction of the stressor on terrestrial biota due to air quality and noise impacts.

The proposed airstrip expansion is not anticipated to significantly affect the FEIS predictions made for permafrost impacts, socioeconomic and archaeological impacts and cumulative effects. However, it will have the following additional potential effects: loss of additional habitat and water quality impact. The loss of habitat will be addressed by AEM in consultation with DFO to determine suitable construction methods and compensation measures under a HADD authorization. The potential effects on water quality (TSS, acidity and metal loading) will be mitigated and managed by employing construction techniques used for the in-lake construction of dikes at the site.

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED AND SEALED

Dan Walker, Ph.D., P.Eng. (BC, NWT/NU)
Associate, Project Manager

ORIGINAL SIGNED

Paolo Chiaramello, B.Sc. (Eng.)
Water Resources Specialist

DRW/PC/rs

Attachments: Figures 1 to 3
Appendix A: Concordance Table
Appendix B: Environmental Assessment Impact Matrices

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REFERENCES

AEM, 2009a. Spill Contingency Plan

AEM, 2009b. Meadowbank Gold Project Updated Water Management Plan.

AEM, 2009c. Emergency Response Plan

AEM, 2008. Water Quality and Flow Monitoring Plan

Meadowbank Mining Corporation (MMC), 2007a. Type A Water License Application

Meadowbank Mining Corporation (MMC), 2007b. Hazardous Waste Management Plan

Cumberland, 2005a. Final Environmental Impact Statement

Cumberland, 2005b. Air Quality Impact Assessment

Cumberland, 2005c. Aquatic Ecosystem and Fish Habitat Impact Assessment

Cumberland, 2005d. Noise Impact Assessment

Cumberland, 2005e. Closure and Reclamation Plan

Cumberland, 2005f. Physical Environment Impact Assessment

Cumberland, 2005g. Mine Water and Waste Management Plan

Cumberland, 2005h. Terrestrial Ecosystem Impact Assessment

Cumberland, 2005i. Socioeconomic and Archaeology Impact Assessment

Cumberland, 2005j. Cumulative Effects Impact Assessment

Cumberland, 2005k. No-Net Loss of Habitat (NNL)

Cumberland, 2005l. Aquatic Effects Management Program

Cumberland, 2005m. Air and Noise Management

Cumberland, 2005n. Human Resources Management

PROJECT

AEM

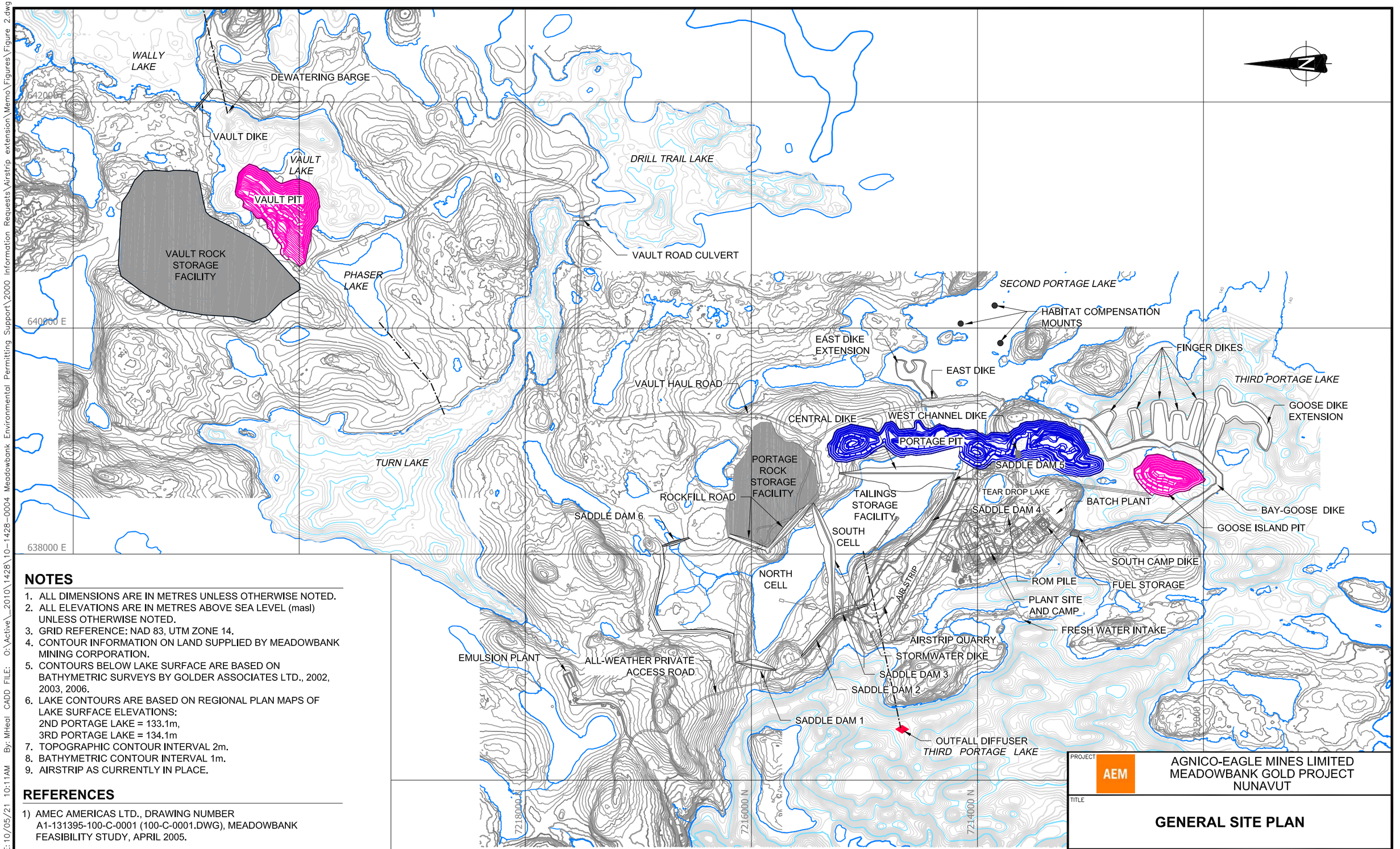
AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

MEADOWBANK PROJECT LOCATION

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 10-1428-0004			PHASE No.	2000
DESIGN	PC	21MAY10	SCALE AS SHOWN	REV. –
CADD	MSH	21MAY10	**FIGURE 1**	
CHECK	PC	21MAY10		
REVIEW	DRW	21MAY10		



NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL ELEVATIONS ARE IN METRES ABOVE SEA LEVEL (masl) UNLESS OTHERWISE NOTED.
3. GRID REFERENCE: NAD 83, UTM ZONE 14.
4. CONTOUR INFORMATION ON LAND SUPPLIED BY MEADOWBANK MINING CORPORATION.
5. CONTOURS BELOW LAKE SURFACE ARE BASED ON BATHYMETRIC SURVEYS BY GOLDER ASSOCIATES LTD., 2002, 2003, 2006.
6. LAKE CONTOURS ARE BASED ON REGIONAL PLAN MAPS OF LAKE SURFACE ELEVATIONS:
   2ND PORTAGE LAKE = 133.1m,
   3RD PORTAGE LAKE = 134.1m
7. TOPOGRAPHIC CONTOUR INTERVAL 2m.
8. BATHYMETRIC CONTOUR INTERVAL 1m.
9. AIRSTRIP AS CURRENTLY IN PLACE.

REFERENCES

1) AMEC AMERICAS LTD., DRAWING NUMBER A1-131395-100-C-0001 (100-C-0001.DWG), MEADOWBANK FEASIBILITY STUDY, APRIL 2005.

PROJECT: AEM

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

GENERAL SITE PLAN

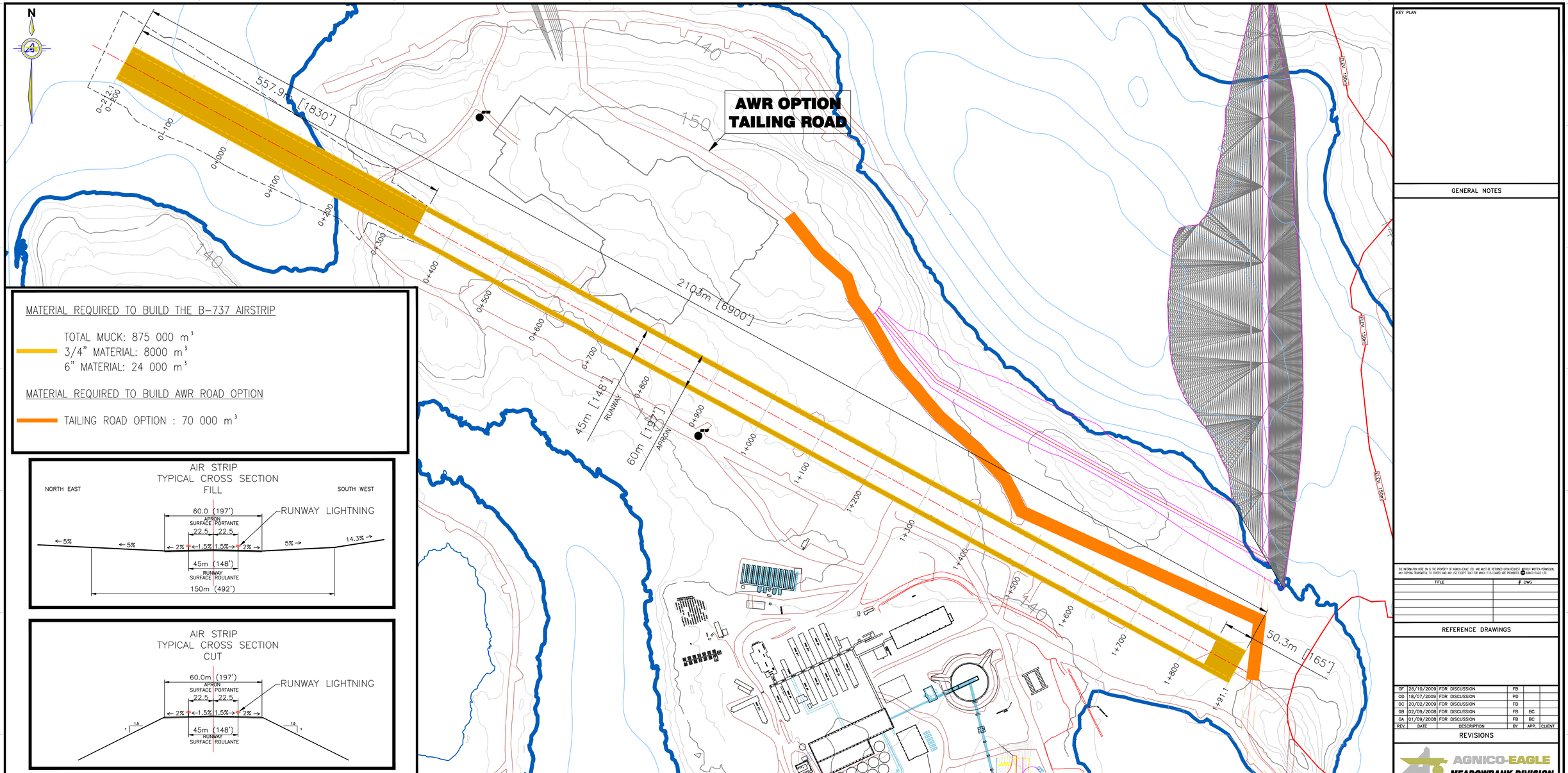
Golder Associates
Greater Vancouver Office, BC

PROJECT No. 10-1428-0004			PHASE No.		2000
DESIGN	PC	21MAY10	SCALE	AS SHOWN	REV. –
CADD	MSH	21MAY10			
CHECK	PC	21MAY10			
REVIEW	DRW	21MAY10			

FIGURE 2

DRAWING NO. 620-G-0001

FORMAT ARCHD-LANDSCAPE



MATERIAL REQUIRED TO BUILD THE B-737 AIRSTRIP

TOTAL MUCK: 875 000 m³
3/4" MATERIAL: 8000 m³
6" MATERIAL: 24 000 m³

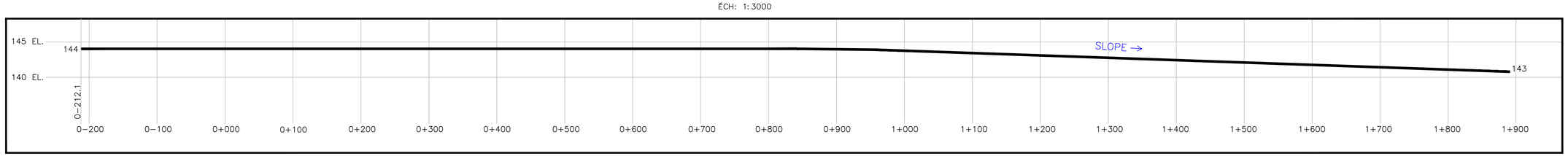
MATERIAL REQUIRED TO BUILD AWR ROAD OPTION

TAILING ROAD OPTION : 70 000 m³

AIR STRIP
TYPICAL CROSS SECTION
FILL

AIR STRIP
TYPICAL CROSS SECTION
CUT

PLAN VIEW – AIRPORT DESIGN
ÉCH: 1:3000



LONGITUDINAL VIEW
ÉCH: NA

KEY PLAN

GENERAL NOTES

TITLE	# DWG

REFERENCE DRAWINGS

REV.	DATE	DESCRIPTION	BY	APP.	CLIENT
0F	26/10/2009	FOR DISCUSSION	FB		
0D	18/07/2009	FOR DISCUSSION	PD		
0C	20/02/2009	FOR DISCUSSION	FB		
0B	02/09/2008	FOR DISCUSSION	FB	BC	
0A	01/09/2008	FOR DISCUSSION	FB	BC	

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION

AIRPORT DESIGN FOR BOEING 737
AND AWR ROAD OPTION

DRAWN BY	F.BLANCHETTE	DATE 31/08/2008
CHECKED BY	J.BÉLANGER	31/08/2008
APPROVED BY		
SCALE	N.T.S.	DATE 31/08/2008
DRAWING NO.	620-G-0001	
PROJECT NO.	REVISION 0F	SHEET 1 / 1

U:\DRAWINGS\INFRASTRUCTURE\Airstrip\Acad-Drawings\B-737\620-G-0001-0F.dwg, 27 Oct 2009

FILE NO. .DWG

APPENDIX A
Concordance Table

APPENDIX A
Concordance Table

General Project Information Requirements		
Project Coordinates and Maps		
1	Project Coordinates	7214000 N, 638000 E; FIGURE 1
2	Map of project (Regional Context)	FIGURE 1
3	Map of camp site and camp facilities	FIGURE 2
4	Map of the Project Site (Local Environment)	FIGURE 3
Project General Information		
5	Discuss the need and purpose of the proposed project.	Section 2.3
6	Discuss project alternatives and alternative methods of carrying out the project including the no-go alternative. Provide justification for the chosen options.	The only alternative was to build a new airstrip at 5 km from the site. This option was considered cost prohibitive.
7	Provide a schedule for all project activities.	Section 2.2
8	List the acts, regulations and guidelines that apply to project activities.	Section 1.0
9	List the approvals, permits and licenses required to conduct the project.	Section 1.0
DFO Operational Statement (OS) Conformity		
10	Indicate whether any of the Department of Fisheries and Oceans (DFO) Operational Statement (OS) activities apply to the project proposal.	N/A; Project requires DFO Authorization
11	If any of the DFO's OS apply to the project proposal, does the Proponent agree to meet the conditions and incorporate the measures to protect fish and fish habitat as outlined in the applicable OS? If yes, provide a signed statement of confirmation.	N/A; Project requires DFO Authorization

General Project Information Requirements		
Transportation		
12	Describe how the project site will be accessed and how supplies will be brought to site. Provide a map showing access route(s).	Section 2.2
13	If a previous airstrip is being used, provide a description of the type of airstrip (ice-strip/all-weather), including its location. Describe dust management procedures (if applicable) and provide a map showing location of airstrip.	Section 2.1; Air Quality and Noise Management (Cumberland, 2005m)
14	If an airstrip is being constructed, provide the following information: a. Discuss design considerations for permafrost b. Discuss construction techniques c. Describe the construction materials, type and sources, and the acid rock drainage (ARD) and metal leaching (ML) characteristics (if rock material is required for airstrip bed). d. Describe dust management procedures. e. Provide a map showing location of proposed airstrip.	Section 2.2; Section 3.4.3; Air Quality and Noise Management (Cumberland, 2005m)
15	Describe flight altitudes, frequency of flights and anticipated flight routes.	Section 2.1; Section 2.2
Camp Site		
16	Describe all existing and proposed camp structures and infrastructure.	N/A
17	Describe the type of camp: a. Mobile b. Temporary c. Seasonal d. Permanent e. Other	N/A
18	Describe the maximum number of personnel expected on site, including the timing for those personnel involved with the project.	N/A

General Project Information Requirements		
Equipment		
19	Provide a list of equipment required for the project and discuss the uses for the equipment.	Will be the mine equipment actually on site.
20	If possible provide digital photos of equipment.	n/a
Water		
21	Describe the location of water source(s), water intake methods, all methods employed to prevent fish entrapment. Provide a map showing the water intake locations.	Figure 2; Aquatic Effects Management Program (Cumberland ,2005l)
22	Describe the estimated rate of water consumption (m^3/day).	n/a
23	Describe how waste water will be managed. If relevant, provide detail regarding location of sumps, including capacity of sumps and monitoring.	n/a
24	If applicable, discuss how surface water and underground water will be managed and monitored.	Section 3.4.1; Section 3.4.2; Aquatic Effects Management Program (Cumberland, 2005l)
Waste Water (grey water, sewage, other)		
25	Describe the quantities, treatment, storage, transportation, and disposal methods for the following (where relevant): - Sewage - Camp grey water - Combustible solid waste - Non-combustible solid waste, including bulky items/scrap metal - Hazardous waste or oil - Contaminated soils/snow - Empty barrels/ fuel drums - Any other waste produced	Mine Waste & Water Management (Cumberland, 2005g)

General Project Information Requirements		
26	If the project proposal includes a landfill or landfarm, indicate the locations on a map, provide the conceptual design parameters, and discuss waste management and contact-water management procedures.	n/a
Fuel		
27	Describe the types of fuel, quantities (number of containers, type of containers and capacity of containers), method of storage and containment. Indicate the location on a map where fuel is to be stored, and method of transportation of fuel to project site.	Section 2.2; Hazardous Materials Management Plan (MMC, 2007b); Spill Contingency Plan (AEM, 2009a); Emergency Response Plan (AEM, 2009c)
28	Describe any secondary containment measures to be employed, including the types of material or system used. If not secondary containment is to be employed, please provide justification.	Section 2.2; Hazardous Materials Management Plan (MMC, 2007b); Spill Contingency Plan (AEM, 2009a); Emergency Response Plan (AEM, 2009c)
29	Describe the method of fuel transfer and the method of refueling.	Section 2.2; Hazardous Materials Management Plan (MMC, 2007b); Spill Contingency Plan (AEM, 2009a); Emergency Response Plan (AEM, 2009c)
30	Describe spill control measures in place.	Spill Contingency Plan (AEM, 2009a)
Chemicals and Hazardous Materials		
31	Describe the types, quantities (number of containers, the type of container and capacity of containers), method of storage and containment. Indicate the location on a map where material is to be stored, and method of transportation of materials to project site.	Section 2.2; Hazardous Materials Management Plan (MMC, 2007b); Spill Contingency Plan (AEM, 2009a); Emergency Response Plan (AEM, 2009c)
32	Describe any secondary containment measures to be employed, including the type of material or system used.	Section 2.2; Hazardous Materials Management Plan (MMC, 2007b); Spill Contingency Plan (AEM, 2009a); Emergency Response Plan (AEM, 2009c)
33	Describe the method of chemical transfer.	Section 2.2; Hazardous Materials Management Plan (MMC, 2007b); Spill Contingency Plan (AEM, 2009a); Emergency Response Plan (AEM, 2009c)

General Project Information Requirements		
34	Describe spill control measures in place.	Spill Contingency Plan (AEM, 2009a)
Workforce and Human Resource/Socio-Economic Impacts		
35	Discuss opportunities for training and employment of local Inuit beneficiaries.	Will be made by AEM with the actual mine crew
36	Discuss workforce mobilization and schedule, including the duration of work and rotation length, and the transportation of workers to site.	Will be made by AEM with the actual mine crew
37	Discuss, where relevant, and specific hiring policies for Inuit beneficiaries.	Socioeconomic & Archaeology Impact Assessment (Cumberland 2005i); Human Resources Management (Cumberland, 2005n)
Public Involvement/Traditional Knowledge		
38	Indicate which communities, groups, or organizations would be affected by this project proposal.	Socioeconomic & Archaeology Impact Assessment (Cumberland, 2005i)
39	Describe any consultation with interested Parties which has occurred regarding the development of the project proposal.	Consultation was done with the Community Liaison Committee and with the hamlet of Baker Lake.
40	Provide a summary of public involvement measures, a summary of concerns expressed, and strategies employed to address any concerns.	Consultation was done with the Community Liaison Committee and with the hamlet of Baker Lake and no concern was raised.
41	Describe how traditional knowledge was obtained, and how it has been integrated into the project.	Socioeconomic & Archaeology Impact Assessment (Cumberland 2005i)
42	Discuss future consultation plans.	n/a

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APPENDIX B

Environmental Assessment Impact Matrices

Definitions regarding magnitude, spatial extent, frequency, duration, and timing of impacts have been assessed for project-related activities as applied specifically to individual VECs listed in the tables of this Appendix. These criteria are defined below:

Magnitude – is a measure of the intensity or severity of the effect of a mine-related activity relative to a change from background conditions. Magnitude is somewhat subjective and takes into consideration such factors as ecological relevance, degree of change from baseline conditions, certainty of occurrence, and ecological resilience. The certainty with which the magnitude of an effect can be quantified has a strong influence on whether magnitude is ranked as high, medium, or low.

Spatial Extent – is a measure of the geographic boundary of effects and has been divided into LSA (local) and RSA (Regional) areas.

Frequency – is a measure of how frequently effects will be felt by the VEC using standard measures (*e.g.,* weeks, months, years).

Duration – is the length of time in weeks, months or years that an effect is expected to persist. The endpoint is recovery or return to baseline of the ecological component and is linked to reversibility and ecological resilience (*i.e.,* the likelihood of the potential for recovery from an effect), providing an indication of when/if the impact will diminish.

Timing – indicates whether the impact overlaps with a sensitive period of a VEC.

Air Quality Impact Matrices:

Table B.1: Air Quality Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Generation of dust and gases from overburden stripping, excavation and other construction related activities resulting in poor air quality and contamination of aquatic and terrestrial habitats.	High	Local	Continuous	Long	All Year	Yes	Apply water spray during summer or use other dust suppressants when necessary; use fuel efficient machinery with emissions controls; see Air Quality and Noise Management Plan.	Lower concentration of particulate and gaseous pollutants.	No	Certain	Maintain vehicles in good operating condition; see Air Quality and Noise Management Plan.
	Generation of dust and emissions from activity by aircraft.	High	Local	Continuous	Long	All Year	Yes	Minimize number of take-offs and landings; avoid excessive engine operation on high rotation; see Air Quality and Noise Management, and Access and Air Traffic Management Plan.	Lower concentration of particulate and gaseous pollutants.	No	Certain	Monitor scheduling to ensure number of trips are minimized; monitor dust fallout by static collectors (method ASTM D1739); see Air Quality and Noise Management Plan, and Access and Air Traffic Management Plan.

Table B.2: Air Quality Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Generation of dust and gases from airstrip expansion and maintenance activities resulting in poor air quality and contamination of aquatic and terrestrial habitats.	Medium	Local	Continuous	Long	All Year	No	Apply water spray during summer or use other dust suppressants when necessary; use fuel efficient machinery with emissions controls; see Air Quality and Noise Management Plan.	Lower concentration of particulate matter and gaseous pollutants.	No	Certain	Maintain vehicles in good operating condition; see Air Quality and Noise Management Plan.
	Generation of dust and emissions from activity by aircraft.	Medium	Local	Continuous	Long	All Year	No	Minimize number of take-offs and landings; avoid excessive engine operation on high rotation; see Air Quality and Noise Management Plan, and Access and Air Traffic Management Plan.	Lower concentration of particulate matter and gaseous pollutants.	No	Certain	Monitor scheduling to ensure number of trips are minimized; monitor dust fallout by static collectors (method ASTM D1739); see Air Quality and Noise Management Plan and Access and Air Traffic Management Plan.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.3: Air Quality Impact Matrix – Closure and Post-Closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion	Generation of dust during re-grading and re-contouring of embankment.	Low	Local	Discontinue after abandonment	Short	Summer	No	Apply dust suppressants; control vehicles movement.	Lower dust concentration; improved visibility.	No	Moderate	Supervise the operation.

Aquatic Fish Habitat Impact Matrices:

Table B.4: Fish Habitat Impact Matrix – Construction

Project Component	Potential Physical and Ecological Effect	Assessment of Unmitigated Effects				Significance of Unmitigated Effects	Assessment of Residual Effects				Monitoring/ Management
		Magnitude	Spatial Extent	Duration	Frequency and Timing		Proposed Mitigation	Residual Effect / Influence of Mitigation	Significance of Residual Effect	Certainty of Prediction	
Airstrip Expansion and Air Traffic	Terrain disturbance, introduction of particulates to lakes due to in-lake construction and during rain events, aerial dispersion of particulates, local habitat disturbance, dust during aircraft take-off and landing. Smothering of benthos and fish spawning habitat, impaired feeding efficiency by fish; toxicity due to metals introductions.	L	L	S	F	NO	Employ in-lake construction techniques similar to dike construction. Dust suppressants applied to airstrip. Other dust control measures for aerial emissions. Perimeter ditches for all contact water to direct runoff to Reclaim or Attenuation pond.	Collection of contact water and diversion by ditches to attenuation pond to eliminate exposure pathway. Mitigation will reduce magnitude, extent, and duration of effects. Negligible residual ecological effects.	NO	High	Targeted monitoring during airstrip construction will be implemented if necessary. See Core Receiving Environment Monitoring Plan.

Table B.5: Fish Habitat Impact Matrix – Operation

Project Component	Potential Physical and Ecological Effect	Assessment of Unmitigated Effects				Significance of Unmitigated Effects	Assessment of Residual Effects				Monitoring/ Management
		Magnitude	Spatial Extent	Duration	Frequency and Timing		Proposed Mitigation	Residual Effect /Influence of Mitigation	Significance of Residual Effect	Certainty of Prediction	
Airstrip Expansion and Air Traffic	Terrain disturbance, introduction of particulates to lakes due to in-lake construction and during rain events, aerial dispersion of particulates, local habitat disturbance, road dust. Potential increase in sedimentation and impairment of benthic habitat.	L	L	L	F	NO	Operation activities in and around waterways will be avoided. No direct contact of vehicles in lakes. Dust suppressants applied to roads. Other dust control measures for aerial emissions. Perimeter ditches to direct runoff to Reclaim or Attenuation pond.	Negligible ecological effects on fish. Mitigation will eliminate pathways of contamination, reducing magnitude, extent, and duration of impacts.	NO	High	Water quality monitoring adjacent to mine site will be conducted routinely at a variety of locations. Targeted monitoring during construction will be implemented when necessary. See Core Receiving Environment Monitoring Plan.

Table B.6: Fish Habitat Impact Matrix – Closure and Post-closure

Project Component	Activity/ Ecological Effect	Assessment of Unmitigated Effects				Significance of Unmitigated Effects	Assessment of Residual Effects				Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Proposed Mitigation	Influence of Activity/ Residual Effect	Significance of Residual Effects	Certainty of Prediction	
		Magnitude	Spatial Extent	Duration	Frequency and Timing						
Airstrip Expansion and Air Traffic	Airstrip will be decommissioned; land will be restored.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Fish Impact Matrices:

Table B.7: Fish Impact Matrix – Construction

Project Component	Potential Physical and Ecological Effect	Assessment of Unmitigated Effects					Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries		Significance of Unmitigated Effects		Residual Effect / Influence of Mitigation	Significance of Residual Effects	Certainty of Prediction	
		Magnitude	Spatial Extent	Duration	Frequency and Timing						
Airstrip Expansion and Air Traffic	Terrain disturbance, introduction of particulates to lakes due to in-lake construction and during rain events, aerial dispersion of particulates, local habitat disturbance, introduction of dust from runoff from airstrip. Smothering of fish eggs, impaired feeding efficiency by fish; toxicity due to metals introduction.	L	L	S	F	NO	Employ in-lake construction techniques similar to dike construction. Dust suppressants applied to airstrip. Perimeter ditches to direct contact runoff with roads, waste piles, airstrip, etc to Reclaim or Attenuation pond.	Collection of contact water and diversion by ditches to attenuation pond to eliminate exposure pathway. Mitigation will reduce magnitude, extent, and duration of effects. Negligible residual ecological effects.	NO	High	Water quality monitoring in Portage lakes near to air strip will be conducted routinely. See Core Receiving Environment Monitoring Plan.

Table B.8: Fish Impact Matrix – Operation

Project Component	Potential Physical and Ecological Effect	Assessment of Unmitigated Effects					Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries		Significance of Unmitigated Effects		Residual Effect / Influence of Mitigation	Significance of Residual Effects	Certainty of Prediction	
		Magnitude	Spatial Extent	Duration	Frequency and Timing						
Airstrip Expansion and Air Traffic	Terrain disturbance, introduction of particulates to lakes due to in-lake construction and during rain events, aerial dispersion of particulates, local habitat disturbance, introduction of dust from runoff from airstrip. Potential increase in sedimentation and impairment of benthic habitat.	L	L	M	F	NO	Dust suppressants applied to airstrip. Perimeter ditches to direct contact runoff with roads, waste piles, airstrip, etc. to Reclaim or Attenuation pond.	Negligible ecological effects on fish. Mitigation will eliminate pathways of contamination, reducing magnitude, extent, and duration of impacts.	NO	High	Water quality monitoring of Portage lakes will be conducted routinely. See Core Receiving Environment Monitoring Plan.

Table B.9: Fish Impact Matrix – Closure and Post-closure

Project Component	Potential Physical and Ecological Effect	Assessment of Unmitigated Effects					Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries		Significance of Unmitigated Effects		Influence of Activity/ Residual Effect	Significance of Residual Effects	Certainty of Prediction	
		Magnitude	Spatial Extent	Duration	Frequency and Timing						
Airstrip Expansion and Air Traffic	Airstrip will be decommissioned; land will be restored.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Surface Water Quantity Impact Matrices:

Table B.10: Surface Water Quantity Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Disruption of surface drainage patterns.	Low	Local	Infrequent	Medium	Summer	No	Maintain adequate drainage patterns.	NA	No	Certain	Strip straddles a ridge and drainage disruption minor. Ensure drainage patterns are not disrupted.
	Reclamation of portion of Third Portage Lake for northwest end of runway; small amount of volume displaced.	Low	Local	Continuous	Permanent	All Year	No		NA	No	Certain	Any loss of fish habitat will be compensated for (see NNL plan (2005)).
	Alteration of circulation patterns in Third Portage Lake is expected to be negligible.	Low	Local	Continuous	Permanent	All Year	No		NA	No	Certain	None recommended.

Table B.11: Surface Water Quantity Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Disruption of surface drainage patterns.	Low	Local	Infrequent	Medium	Summer	No	Maintain adequate drainage patterns	NA	No	Certain	Strip straddles a ridge and drainage disruption minor. Ensure drainage patterns are not disrupted.

Table B.12: Surface Water Quantity Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects					Significance of Unmitigated Effects	Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries					Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Upon completing closure activities the airstrip to be decommissioned and surface re-contoured to restore drainage patterns; some ongoing disruption of circulation patterns in Third Portage Lake anticipated.	Low	Local	Continuous	Permanent	All Year	No	Re-contour and restore natural drainage patterns.	NA	No	High	Maintain drainage structures.

Water Quality Impact Matrices:

Table B.13: Water Quality Impact Matrix – Construction

Project Component	Potential Effect	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Management/ Monitoring
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Influence of Mitigation on Effects Assessment	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Sedimentation and dusting from construction (terrestrial and in-lake) affects water quality in Third Portage Lake.	medium	local	Continuous	Short-term	Summer	medium	Employ in-lake construction techniques similar to dike construction. Use of dust suppressants, watering, road preparation and/or other dust control procedures. Use BMP for sediment control in ditches and control of runoff. Implement Spill Contingency Plan and other emergency responses, when required. Minimize disturbed area.	high	low	medium	Monitor conditions. Updated Water Management Plan, Core Receiving Environment Monitoring Plan, Water Quality and Flow Monitoring Plan.
	Increased Total Suspended Solids (TSS) for in-lake Construction.	Medium	Local	Continuous	Short-term	Summer	medium	Construction of in-lake portion during winter to manage TSS.	high	low	medium	Monitor conditions See Core Receiving Environment Monitoring Plan. Use in-lake construction/mitigative techniques (*e.g.,* silt curtains)

Table B.14: Water Quality Impact Matrix – Operation

Project Component	Potential Effect	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Management/ Monitoring
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Influence of Mitigation on Effects Assessment	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Fuel spills to local water bodies.	Medium	Footprint to Local	Rare	Medium to Long term	Year Round	Medium to Low	Best Management Practices and Spill Contingency Plans.	Medium	Low	High	
	Dust from air traffic/ loading and unloading transports metals and nitrogen species to local water bodies.	Low	Footprint/Local	Frequent	Medium-term	Year round	Low	Dust control water will be drawn from the Portage Attenuation Pond within Portage catchment. Dust control water for haul roads outside the Portage catchment areas will be drawn from Phase Lake in an effort to keep contact water within the mining areas.	Medium	Low	High	Air Quality and Noise Monitoring Plan.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A
	Metals, acidity and nitrogen species in runoff and seepage airstrip material are released to local water bodies.	Low	Footprint to Local	Frequent	Medium to Long term	Summer	Low	Runoff collected in ditches and directed to Reclaim or Attenuation pond Selection of appropriate construction rock.	Medium	Low	Medium	Mine site monitoring, and settling pond cleanout.

Table B.15: Water Quality Impact Matrix – Closure and Post-closure

Project Component	Potential Effect	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Management/ Monitoring
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Influence of Mitigation on Effects Assessment	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Continued leaching of metals and acidity from active layer rock.	Medium	Footprint	Frequent	Long-term	Summer	Medium	Selection of appropriate construction rock. Contingency (where monitoring indicates unanticipated metal leaching or acidic drainage) capping with nominal 2 m layer of UM rock.	High	Low	moderate	

Noise Impact Matrices:

Table B.16: Noise Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Management/ Monitoring
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Intermittent noise from air traffic reduces habitat effectiveness adjacent to airstrip and results in behavioural changes in wildlife.	Medium	Regional	Continuous	Long	All Year	Yes	Minimize number of take-offs and landings; avoid excessive engine operation on high rotation follow clearly defined flight corridors; maintain minimum altitude; maintain a no wildlife harassment policy.	Lower noise levels	No	Certain	Control flight paths and altitudes of flights.

Table B.17: Noise Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Management/ Monitoring
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Negligible noise levels associated with maintenance of airstrip.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Intermittent noise from air traffic reduces habitat effectiveness adjacent to airstrip and results in behavioural changes in wildlife.	Medium	Regional	Continuous	Long	All Year	Yes	Minimize number of take-offs and landings; avoid excessive engine operation on high rotation follow clearly defined flight corridors; maintain minimum altitude; maintain a no wildlife harassment policy.	Lower level noise	No	Certain	Control flight paths and altitudes of flights.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.18: Noise Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Management/ Monitoring
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Permafrost Impact Matrices:

Table B.19: Permafrost Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	A - Loss of permafrost, cooling of remaining permafrost, and development of a new active layer in cut sections; B - permafrost aggradation, warming of underlying natural permafrost, and formation of new active layer in fill sections – POSITIVE.	negligible	local	infrequent	A – permanent B - medium-term	all year	low	none	N/A	low	certain	None recommended.
Ditches (Roads, Airstrip & Contact Water)	A - Loss of permafrost, warming of remaining permafrost, and development of a new active layer in cut sections; B - where ditches are excavated through bogs, there is potential for deepening of the active layer, warming of permafrost, ground ice degradation and related thaw subsidence, slumping and sediment losses.	loss	A – local B - footprint	infrequent	A – permanent B - permanent	A - all year B - summer	A - low B - high	B only: Where thaw sensitive polygons are crossed, avoid using cut sections for ditches, ensure positive drainage away from fill sections, avoid concentrating runoff waters, or use rock aprons to slow the rate of thaw penetration and stabilize the underlying soils.	none	B only: Low	high	B only - Further assessment of susceptible locations along proposed ditch centrelines is required .

Table B.20: Permafrost Impact Matrix – Operation

Project Component	Potential Effect	Assessment of Unmitigated Effects						Potential Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Influence of Mitigation on Effects Assessment	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Stabilization of permafrost temperatures and active layer thickness.	negligible	local	infrequent	medium-term	all year	low	none	N/A	low	certain	None recommended.
Ditches (Roads, Airstrip & Contact Water)	Stabilization of permafrost temperatures and active layer thickness; stabilization of thaw subsidence and sediment loss in bog areas.	negligible	local	infrequent	permanent	all year	medium	Silt fences as required to manage sediment loss; rock aprons as required to slow the rate of thaw penetration and stabilize the underlying soils.	none	low	moderate	None recommended.

Table B.21: Permafrost Impact Matrix – Closure and Post-closure

Project Component	Potential Effect	Assessment of Unmitigated Effects						Potential Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Influence of Mitigation on Effects Assessment	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Stabilization of permafrost temperatures and active layer thickness – POSITIVE.	negligible	local	infrequent	permanent	all year	low	none	N/A	low	certain	None recommended.
Ditches (Roads, Airstrip & Contact Water)	Stabilization of permafrost temperatures and active layer thickness – POSITIVE.	negligible	local	infrequent	permanent	all year	low	none	N/A	low	certain	None recommended.

Raptors Impact Matrices:

Table B.22: Raptors Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Potential Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Loss and disturbance of terrestrial foraging habitat.	Low	Local	Continuous	Permanent	All Year	No		Minor alteration and loss of foraging habitat.	No	Certain	None specific to raptors recommended (see Vegetation Cover matrices for more habitat-specific recommendations.
	Mortality due to air traffic/bird collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; report all raptors observed in area to pilots.	Due to low densities of raptors in the area and no known active nests, the likelihood of a plane/raptor collisions is considered extremely unlikely.	No	Moderate	Pilots are required to report all raptor/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting raptors; regular monitoring.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent and raptors have not been observed nesting in the vicinity of the airstrip.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting raptors.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident raptors are extremely unlikely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.

Table B.23: Raptors Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated during operations.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to air traffic/bird collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; report all raptors observed in area to pilots.	Due to low densities of raptors in the area and no known active nests, the likelihood of a plane/raptor collisions is considered extremely unlikely.	No	Moderate	Pilots are required to report all raptor/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting raptors.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent and raptors have not been observed nesting in the vicinity of the airstrip.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting raptors.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident raptors are extremely unlikely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.24: Raptors Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to air traffic/bird collisions; risk of this effect will decline substantially after mine closure	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; report all raptors observed in area to pilots.	Due to low densities of raptors in the area and no known active nests, the likelihood of a plane/raptor collision is considered extremely unlikely.	No	Moderate	Pilots are required to report all raptor/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting raptors.
	Reduced habitat effectiveness in adjacent areas due to noise and activity; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent and raptors have not been observed nesting in the vicinity of the airstrip.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting raptors.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident raptors are extremely unlikely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip.

Other Breeding Birds Impact Matrices:

Table B.25: Other Breeding Birds Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries								
		Magnitude	Spatial Extent	Frequency	Duration	Timing	Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
Airstrip Expansion and Air Traffic	Loss and disturbance of terrestrial foraging habitat.	Low	Local	Continuous	Permanent	All Year	No	avoid construction during breeding bird season; identify active nests	Minor alteration and loss of foraging habitat	No	Certain	Identify and monitor active nests of songbirds, shorebirds and ptarmigan in the vicinity of the airstrip; see Vegetation Cover matrices for more habitat-specific recommendations.
	Mortality due to air traffic/bird collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings.	The potential for a plane/bird collision is considered to be low.	No	Moderate	Pilots are required to report all bird/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting songbirds, shorebirds, and ptarmigan.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting songbirds, shorebirds and ptarmigan.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident birds are extremely unlikely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip.

Table B.26: Other Breeding Birds Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated during operations.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to air traffic/bird collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings.	The potential for a plane/bird collision is considered to be low.	No	Moderate	Pilots are required to report all bird/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting songbirds, shorebirds, and ptarmigan.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting songbirds, shorebirds and ptarmigan.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident birds are extremely unlikely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.27: Other Breeding Birds Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to air traffic/bird collisions; risk of this effect will decline substantially after mine closure.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings.	The potential for a plane/bird collision is considered to be low.	No	Moderate	Pilots are required to report all bird/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting songbirds, shorebirds, and ptarmigan.
	Reduced habitat effectiveness in adjacent areas due to noise and activity; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting songbirds, shorebirds and ptarmigan.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident birds are extremely unlikely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.

Predatory Mammals Impact Matrices:

Table B.28: Predatory Mammals Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Loss and avoidance of habitat and associated prey populations; deflection from normal travel routes; energetic costs.	Low	Local	Continuous	Long	All Year	No		Residual effects are expected to be minor.	No	Certain	Monitor predatory mammal movements; revegetate areas disturbed during construction.
	Mortality due to vehicle/predatory mammal collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; monitor predatory mammal occurrence in the vicinity of airstrip; use scare tactics to move predatory mammals away from airstrip and approaches.	Mortality due to collisions is extremely unlikely.	No	Moderate	Pilots required to report all predatory mammal/plane near misses and predatory mammals sighted in the area; maintain a wildlife sighting log book.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Long	All Year	No	Minimize number of take-offs and landings; use defined flight corridors; establish minimum altitude and no harassment policies.	Avoidance of areas adjacent to airstrip are not expected due to the low frequency of flights.	No	Moderate	Monitor predatory mammal distribution and behaviour in Local Study Area.
	Habitat degradation due to dust and exhaust and potential for increased contaminant loading in prey.	Low	Local	Continuous	Long	Summer	No	Minimize number of take-offs and landings; use dust suppressants if necessary.	Any residual effects will be restricted to habitats in close proximity to the airstrip.	No	Moderate	Monitor contaminant levels in vegetation adjacent to airstrip; Screening Level Risk Assessment.

Table B.29: Predatory Mammals Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated during the operation phase.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to vehicle/predatory mammal collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; monitor predatory mammal occurrence in the vicinity of airstrip; use scare tactics to move predatory mammals away from airstrip and approaches.	Mortality due to collisions is extremely unlikely.	No	Moderate	Pilots required to report all predatory mammal/plane near misses and predatory mammals sighted in the area; maintain a wildlife sighting log book.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Long	All Year	No	Minimize number of take-offs and landings; use defined flight corridors; establish minimum altitude and no harassment policies.	Avoidance of areas adjacent to airstrip are not expected due to the low frequency of flights.	No	Moderate	Monitor predatory mammal distribution and behaviour in Local Study Area.
	Habitat degradation due to dust and exhaust and potential for increased contaminant loading in prey.	Low	Local	Continuous	Long	Summer	No	Minimize number of take-offs and landings; use dust suppressants if necessary.	Any residual effects will be restricted to habitats in close proximity to the airstrip.	No	Moderate	Monitor contaminant levels in vegetation adjacent to airstrip; Screening Level Risk Assessment.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.30: Predatory Mammals Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to vehicle/predatory mammal collisions; risk of this effect will decline substantially after mine closure.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; monitor predatory mammal occurrence in the vicinity of airstrip; use scare tactics to move predatory mammals away from airstrip and approaches.	Mortality due to collisions is extremely unlikely.	No	Moderate	Pilots required to report all predatory mammal/plane near misses and predatory mammals sighted in the area; maintain a wildlife sighting log book.
	Reduced habitat effectiveness in adjacent areas due to noise and activity; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Long	All Year	No	Minimize number of take-offs and landings; use defined flight corridors; establish minimum altitude and no harassment policies.	Avoidance of areas adjacent to airstrip are not expected due to the low frequency of flights.	No	Moderate	Monitor predatory mammal distribution and behaviour in Local Study Area.
	Habitat degradation due to dust and exhaust and potential for increased contaminant loading in prey; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Long	Summer	No	Minimize number of take-offs and landings; use dust suppressants if necessary.	Any residual effects will be restricted to habitats in close proximity to the airstrip.	No	Moderate	Monitor contaminant levels in vegetation adjacent to airstrip; Screening Level Risk Assessment.

Smalls Mammals Impact Matrices:

Table B.31: Small Mammals Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Loss and disturbance of terrestrial foraging habitat; disruption of movement and dispersal.	Low	Local	Continuous	Permanent	All Year	No		Minor alteration and loss of foraging habitat; some disruption of small mammal movement and dispersal.	No	Certain	None specific to small mammals recommended.
	Mortality due to air traffic/small mammal collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings.	The potential for a plane/small mammal collision is considered to be relatively low.	No	Moderate	Pilots are required to report all small mammal/plane collisions and near misses.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent, therefore noise and activity will be intermittent.	No	High	None specific to small mammals recommended.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey and forage species.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident small mammals are not likely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.
	POSITIVE - Possible increased living opportunities for small mammals (*e.g.,* Arctic ground squirrel) on airstrip edges and rock fill areas.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table B.32: Small Mammals Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated during operations.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to air traffic/small mammal collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings.	The potential for a plane/small mammal collision is considered to be relatively low.	No	Moderate	Pilots are required to report all small mammal/plane collisions and near misses.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent, therefore noise and activity will be intermittent.	No	High	None specific to small mammals recommended.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey and forage species.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident small mammals are not likely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.
	POSITIVE - Possible increased living opportunities for small mammals (*e.g.,* Arctic ground squirrel) on airstrip edges and rock fill areas.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.33: Small Mammals Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries					Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing	Significance of Unmitigated Effects					
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to air traffic/small mammal collisions; risk of this effect will decline substantially after mine closure.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings.	The potential for a plane/small mammal collision is considered to be low.	No	Moderate	Pilots are required to report all small mammal/plane collisions and near misses.
	Reduced habitat effectiveness in adjacent areas due to noise and activity; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent.	No	High	None specific to small mammals recommended
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in prey and forage species; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident small mammals are unlikely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.
	POSITIVE - Possible increased living opportunities for small mammals (*e.g.,* Arctic ground squirrel) on airstrip edges and rock fill areas.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Ungulates Impact Matrices:

Table B.34: Ungulates Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Loss and avoidance of foraging habitat, deflection from normal travel routes, energetic costs.	Low	Local	Continuous	Long	All Year	No		Residual effects are expected to be minor.	No	Certain	Monitor ungulate movements and aggregations; revegetate areas disturbed during construction.
	Mortality due to air traffic/ungulate collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; monitor ungulate occurrence and aggregations in the vicinity of airstrip; use scare tactics to move ungulates off airstrip and approaches.	Mortality due to collisions is extremely unlikely.	No	Moderate	Pilots required to report all ungulate/plane near misses and caribou and muskox sighted in the area; maintain a wildlife sighting log book.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Long	All Year	No	Minimize number of take-offs and landings; use defined flight corridors; establish minimum altitude and no harassment policies.	Avoidance of areas adjacent to airstrip are not expected due to the low frequency of flights.	No	Moderate	Monitor ungulate distribution and behaviour in Local Study Area; daily monitoring.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in forage species.	Low	Local	Continuous	Long	Summer	No	Minimize number of take-offs and landings; use dust suppressants if necessary.	Any residual effects will be restricted to habitats in close proximity to the airstrip.	No	Moderate	Monitor contaminant levels in vegetation adjacent to airstrip; Screening Level Risk Assessment.

Table B.35: Ungulates Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Loss and avoidance of foraging habitat, deflection from normal travel routes, energetic costs.	Low	Local	Continuous	Long	All Year	No		Residual effects are expected to be minor.	No	Certain	Daily monitor ungulate movements and aggregations; revegetate areas disturbed during construction.
	Mortality due to air traffic/ungulate collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; monitor ungulate occurrence and aggregations in the vicinity of airstrip; use scare tactics to move ungulates off airstrip and approaches.	Mortality due to collisions is extremely unlikely.	No	Moderate	Pilots required to report all ungulate/plane near misses and caribou and muskox sighted in the area; maintain a wildlife sighting log book.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Long	All Year	No	Minimize number of take-offs and landings; use defined flight corridors; establish minimum altitude and no harassment policies.	Avoidance of areas adjacent to airstrip are not expected due to the low frequency of flights.	No	Moderate	Monitor ungulate distribution and behaviour in Local Study Area; daily surveys.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in forage species.	Low	Local	Continuous	Long	Summer	No	Minimize number of take-offs and landings; use dust suppressants if necessary.	Any residual effects will be restricted to habitats in close proximity to the airstrip.	No	Moderate	Monitor contaminant levels in vegetation adjacent to airstrip; Screening Level Risk Assessment.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.36: Ungulates Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Habitat loss and disturbance.	Low	Local	Continuous	Permanent	All Year	No	not likely suitable esker habitat due to potential risk to aircraft and wildlife; efforts made to ensure drainage interferes as little as possible with local drainage patterns; determine allowable growth boundaries for recolonizing vegetation; utilize dust dispersion techniques as needed.	Some permanent but localized loss of vegetation cover.	No	Certain	Reclamation activities as outlined in Terrestrial Ecosystem Management Plan and Closure and Reclamation Plan Development Phase (AEM, 2008).
	Dust and emissions may result in potential habitat degradation and increased contaminant levels.	Low	Local	Continuous	Permanent	All Year	No	Maintain airstrip in usable condition; minimize use of runway; confine ground traffic to minimal areas around airstrip.	Low occurrence of impacts from dust and emissions on vegetation adjacent to airstrip.	No	Moderate	Reclamation activities as outlined in Terrestrial Ecosystem Management Plan and Closure and Reclamation Plan Development Phase (AEM, 2008).

Vegetation Impact Matrices:

Table B.37: Vegetation Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Vegetation loss and disturbance.	Low	Local	Continuous	Permanent	All Year	Moderate	Minimize number of flights.	Limited and local habitat degradation.	No	Certain	Revegetation activities along airstrip edges.
	Dust and emissions may result in potential vegetation degradation and increased contaminant levels.	Low	Local	Continuous	Long	Summer	No	Minimize number of air flights; implement dust control measures.	Limited and local habitat degradation.	No	Moderate	Monitor contaminant levels in vegetation adjacent to airstrip roads; Screening Level Risk Assessment.

Table B.38: Vegetation Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No further vegetation loss and disturbance.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Dust and emissions may result in potential vegetation degradation and increased contaminant levels.	Low	Local	Continuous	Long	Summer	No	Minimize number of air flights; implement dust control measures.	Limited and local habitat degradation.	No	Moderate	Monitor contaminant levels in vegetation adjacent to airstrip roads; Screening Level Risk Assessment.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.39: Vegetation Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Potential Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Vegetation loss and disturbance.	Low	Local	Continuous	Permanent	All Year	No	not likely suitable esker habitat due to potential risk to aircraft and wildlife; efforts made to ensure drainage interferes as little as possible with local drainage patterns; determine allowable growth boundaries for recolonizing vegetation; utilize dust dispersion techniques as needed.	Some permanent but localized loss of vegetation cover.	No	Certain	Reclamation activities as outlined in Terrestrial Ecosystem Management Plan and Closure and Reclamation Plan Development Phase (AEM, 2008).
	Dust and emissions may result in potential vegetation degradation and increased contaminant levels.	Low	Local	Continuous	Permanent	All Year	No	Maintain airstrip in usable condition.	Low occurrence of impacts from dust and emissions on vegetation adjacent to airstrip.	No	Moderate	Reclamation activities as outlined in Terrestrial Ecosystem Management Plan and Closure and Reclamation Plan Development Phase (AEM, 2008).

Waterfowl Impact Matrices:

Table B.40: Waterfowl Impact Matrix – Construction

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Loss and disturbance of terrestrial foraging habitat.	Low	Local	Continuous	Permanent	All Year	No		Minor alteration and loss of foraging and roosting habitat.	No	Certain	None specific to waterfowl recommended (see Vegetation Cover matrices for more habitat-specific recommendations.
	Mortality due to air traffic/bird collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; report all waterfowl (*e.g.,* congregations of Canada and snow geese) observed in area to pilots; use aversive techniques to move roosting flocks of geese away from the runway area.	Due to low densities of waterfowl in the area and no known active nests, the likelihood of plane/waterfowl collisions during the breeding seasons is unlikely; potential collisions during the migratory period (particularly in the fall) is somewhat more likely but will be mitigated by using aversive techniques when geese are observed in the area.	No	Moderate	Pilots are required to report all waterfowl/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting or roosting waterfowl.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent and waterfowl have not been observed nesting in the vicinity of the airstrip.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a daily basis for the presence of nesting waterfowl.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in forage species.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Risk Assessment.

Table B.41: Waterfowl Impact Matrix – Operation

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	Loss and disturbance of terrestrial foraging habitat.	Low	Local	Continuous	Permanent	All Year	No		Minor alteration and loss of foraging and roosting habitat.	No	Certain	None specific to waterfowl recommended (see Vegetation Cover matrices for more habitat-specific recommendations.
	Mortality due to air traffic/bird collisions.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; report all waterfowl (*e.g.,* congregations of Canada and snow geese) observed in area to pilots; use aversive techniques to move roosting flocks of geese away from the runway area.	Due to low densities of waterfowl in the area and no known active nests, the likelihood of plane/waterfowl collisions during the breeding seasons is unlikely; potential collisions during the migratory period (particularly in the fall) is somewhat more likely but will be mitigated by using aversive techniques when geese are observed in the area.	No	Moderate	Pilots are required to report all waterfowl/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting or roosting waterfowl.
	Reduced habitat effectiveness in adjacent areas due to noise and activity.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent and waterfowl have not been observed nesting in the vicinity of the airstrip.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting waterfowl.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in forage species.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.
	Reduction in number of flights per week – POSITIVE.		Local	Continuous	Long	All Year	N/A	N/A	N/A	N/A	N/A	N/A

Table B.42: Waterfowl Impact Matrix – Closure and Post-closure

Project Components	Potential Effects	Assessment of Unmitigated Effects						Proposed Mitigation	Assessment of Residual Effects			Monitoring/ Management
		Spatial Boundaries		Temporal Boundaries			Significance of Unmitigated Effects		Residual Effects/ Influence of Mitigation	Significance of Residual Impacts	Probability	
		Magnitude	Spatial Extent	Frequency	Duration	Timing						
Airstrip Expansion and Air Traffic	No additional habitat loss or disturbance anticipated.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mortality due to air traffic/bird collisions; risk of this effect will decline substantially after mine closure.	Low	Local	Infrequent	Short	All Year	No	Minimize number of take-offs and landings; report all waterfowl observed in area to pilots.	Due to low densities of waterfowl in the area and no known active nests, the likelihood of a plane/waterfowl collision is considered extremely unlikely.	No	Moderate	Pilots are required to report all waterfowl/plane collisions and near misses; habitats in the vicinity of the airstrip will be surveyed on a regular basis for the presence of nesting waterfowl.
	Reduced habitat effectiveness in adjacent areas due to noise and activity; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Permanent	All Year	No	Minimize number of take-offs and landings; pilots will be required to observe approach height guidelines.	Air plane arrivals and departures are expected to be infrequent and waterfowl have not been observed nesting in the vicinity of the airstrip.	No	High	Habitats in the vicinity of the airstrip will be surveyed on a daily basis for the presence of nesting waterfowl.
	Potential habitat degradation due to dust and emissions and potential for increased contaminant loading in forage species; risk of this effect will decline substantially after mine closure.	Low	Local	Continuous	Permanent	Summer	No	Minimize number of take-offs and landings.	Low utilization of the airstrip is not expected to result in notable contamination of adjacent habitats, and resident waterfowl are extremely unlikely to have a high percentage of their diet coming from potentially contaminated areas.	No	Moderate	Monitor contaminant levels in vegetation and possible other indicators adjacent to the airstrip; Screening Level Risk Assessment.