

MINES AGNICO-EAGLE LTD.

AKASABA WEST PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT
ASSESSMENT (ESIA)

SUMMARY

REF.: N° 1203-REP-001A

AUGUST 2015



AGNICO EAGLE



AKASABA Y EST PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

Summary

Mines Agnico-Eagle Ltd.

Project N°: 141-14776-00
Date: August 2015

Summary of Environmental and Social Impact Assessment study
submitted to the Canadian Environmental Assessment Agency
(reference #: 005528)

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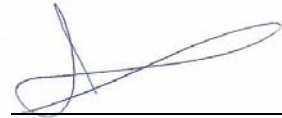
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APPENDIX

APPENDIX A	MITIGATION MEASURES
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Reference to be cited:

WSP 2015. *Akasaba Y est Project. Environmental and Social Impact Assessment Study (ESIA). Summary.* Document prepared for Agnico Eagle Mines Ltd. 68 pages and appendix.

1 INTRODUCTION AND CONTEXT OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

In Canada, in the province of Québec, Agnico Eagle Mines (AEM) wishes to commence operation of a open-pit mine within the City of Val-d'Or, the Akasaba Y est project, to extract copper and gold ore. The project is some 15 kilometres east of Val-d'Or's urban core. The ore which will be extracted at the mine will be treated at the existing facilities at AEM's Goldex mine in Val-d'Or. The sulphide concentrate produced will be treated at AEM's existing LaRonde mine facilities, in the municipality of Preissac. As well as maximizing the use of the Goldex mine concentrator, the Akasaba Y est project will contribute to the rehabilitation of the Manitou site (see Map 1). The mine's planned lifespan is around seven years.

The Akasaba Y est project is subject to the environmental impact assessment and review procedure under Québec's Environment Quality Act (L.R.Q., c. Q 2; EQA) and its Regulation respecting the environmental impact assessment and review (R.R.Q., c. Q 2, r. 23; art. 2, alinéa p). The project is also subject to the Canadian Environmental Assessment Act (L.R.C., 2012, ch. 19, art. 52; CEAA).

The environmental and social impact assessment contains all the knowledge and analysis elements needed to fulfill the directive from Québec's Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC) and the Canadian Environmental Assessment Agency's (CEAA) guidelines, and thus the requirements of the EQA and the CEAA.

Established in Canada since 1957, AEM is an international mining company. To date, the company operates seven mines in Québec, Nunavut, Finland and Mexico. Further, AEM recently acquired the Osisko mine (now operated under the name Canadian Malartic) in a 50% partnership with Yamana Gold Inc.

For the Akasaba Y est project, all estimated direct and indirect jobs total around 85 people during the construction period and around 100 during the operational period. Finally, it is important to note that the Akasaba Y est project aims to consolidate the activities at the Goldex mine plant, which currently employs 37 people full time. The start of production at the Akasaba Y est project will add four additional posts to this plant, for a total of 41 permanent jobs.

The coordinates for AEM and its representative, Mr. Alain Cossette, Project Lead, are as follows:

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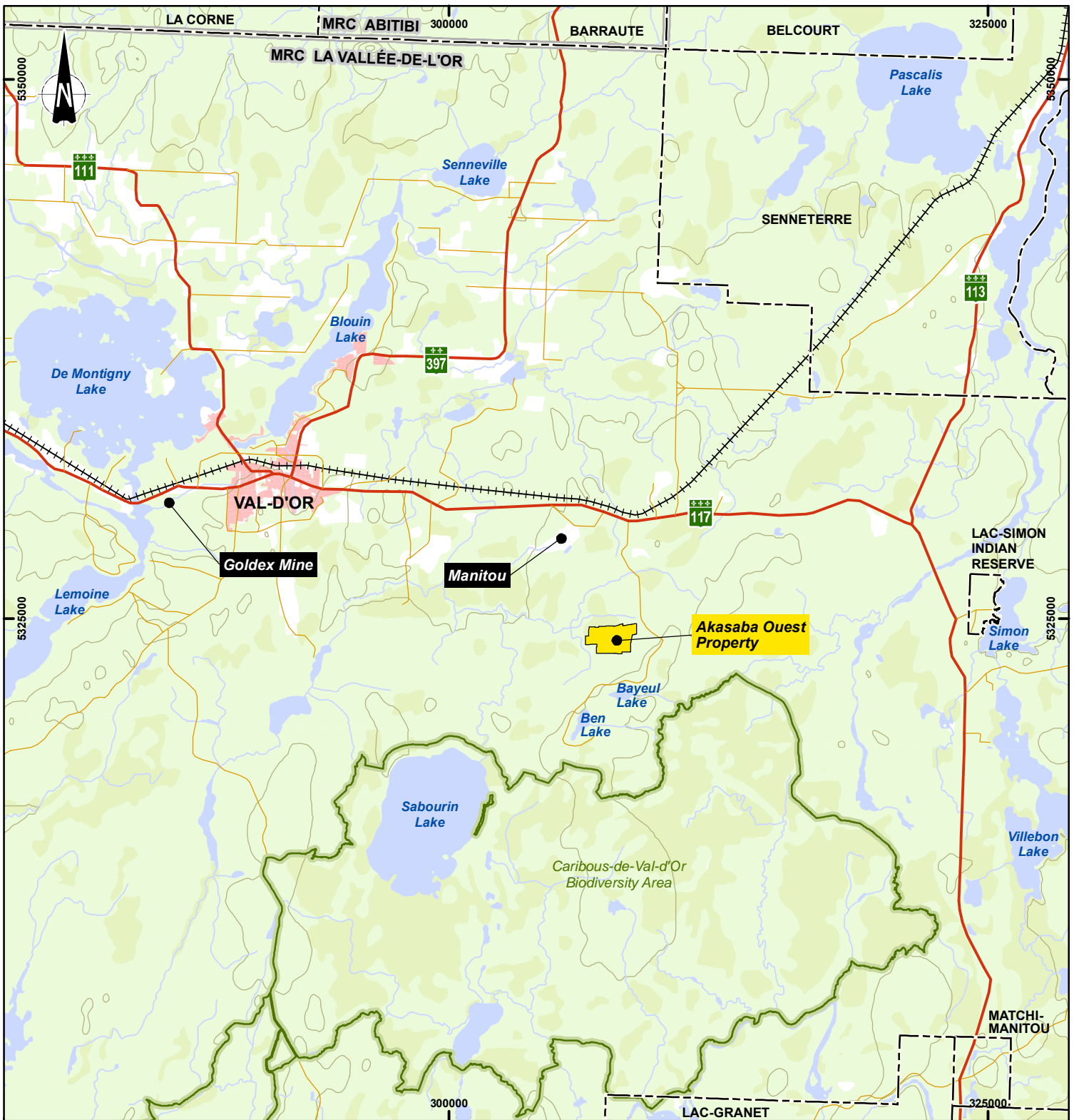
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



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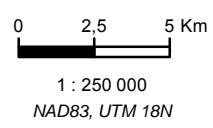
www.agnicoeagle.com

Quebec Business Number (NEQ):

1145570769




-  Main Road
-  Secondary Road
-  Railroad
-  Municipal Limits
-  MRC Limits
-  Caribou-de-Val-d'Or Biodiversity Area
-  Akasaba Ouest Mining Titles



Sources :
 Map : RNCan, BNDT 250 K, feuillets 31M, 31N, 32C et 32D
 Municipal Limits : SDA20K, 2010-01
 Biodiversity Area : GESTIM, MRN (2014-03-15)

Preparation: J. Marcoux
 Drawing: V. Venne
 Approval: J. Marcoux




**ENVIRONMENTAL AND SOCIAL
IMPACT ASSESSMENT -
SUMMARY**

Akasaba Ouest Project,
Val-d'Or, Qc

Map 1

Akasaba Ouest Project Location

August 31st, 2015 141-14776-02-100


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2 PROJECT OVERVIEW

2.1 GENERAL DESCRIPTION OF THE PROJECT

As shown on Map 1, the Akasaba Y est project is located within the limits of the City of Val-d'Or, as are the Goldex mine complex and the Manitou site where the project's tailings will be sent as are the current tailings from the Goldex concentrator for the rehabilitation of this tailings management facility.

The Akasaba Y est project is entirely located on Crown land (provincial) and no federal land is affected by the project. The project will comprise 15 contiguous claims, all held by AEM and totalling 244 ha.

It was in 1944 that gold was first discovered in the Akasaba Y est deposit. At that time, levels were not high enough to make production economically viable given the price of gold. Despite this, between 1944 and 2001, there was sporadic exploration work conducted and the claims changed hands numerous times. It would be some ten years later, in 2011, that Alexandria Minerals would develop the Akasaba Y est deposit during drilling work leading to a first calculation of the mineral resources. In January 2014, AEM acquired the site and began a drilling campaign to delineate the indicated resource which would be used to develop the technical studies.

The Akasaba Y est project consists in the operation of an open-pit mine to extract gold and copper ore. The ore extracted from the mine will be crushed on site then treated at the existing Goldex facilities, while the sulphide concentrate produced will be treated at the existing LaRonde facilities, respectively located around 5 and 60 km from downtown Val- d'Or. After the initial on-site crushing, the ore will be transported by truck to the Goldex site, where it will be mixed and treated in the same way as the ore currently produced at this site. The Akasaba Y est ore will allow utilization of the Goldex plant's unused processing capacity. The Goldex and LaRonde plants already have the required authorizations.

The activities planned for the Akasaba Y est site include overburden stripping, rock drilling and blasting, crushing, ore and waste rock loading and transport using a conventional method with mining trucks and loaders. The on-site activities also include the storage of overburden, low-grade ore and waste rock in separate piles, the primary crushing of ore, water and waste management as well as the site's restoration once production has ceased.

The project includes three distinct phases:

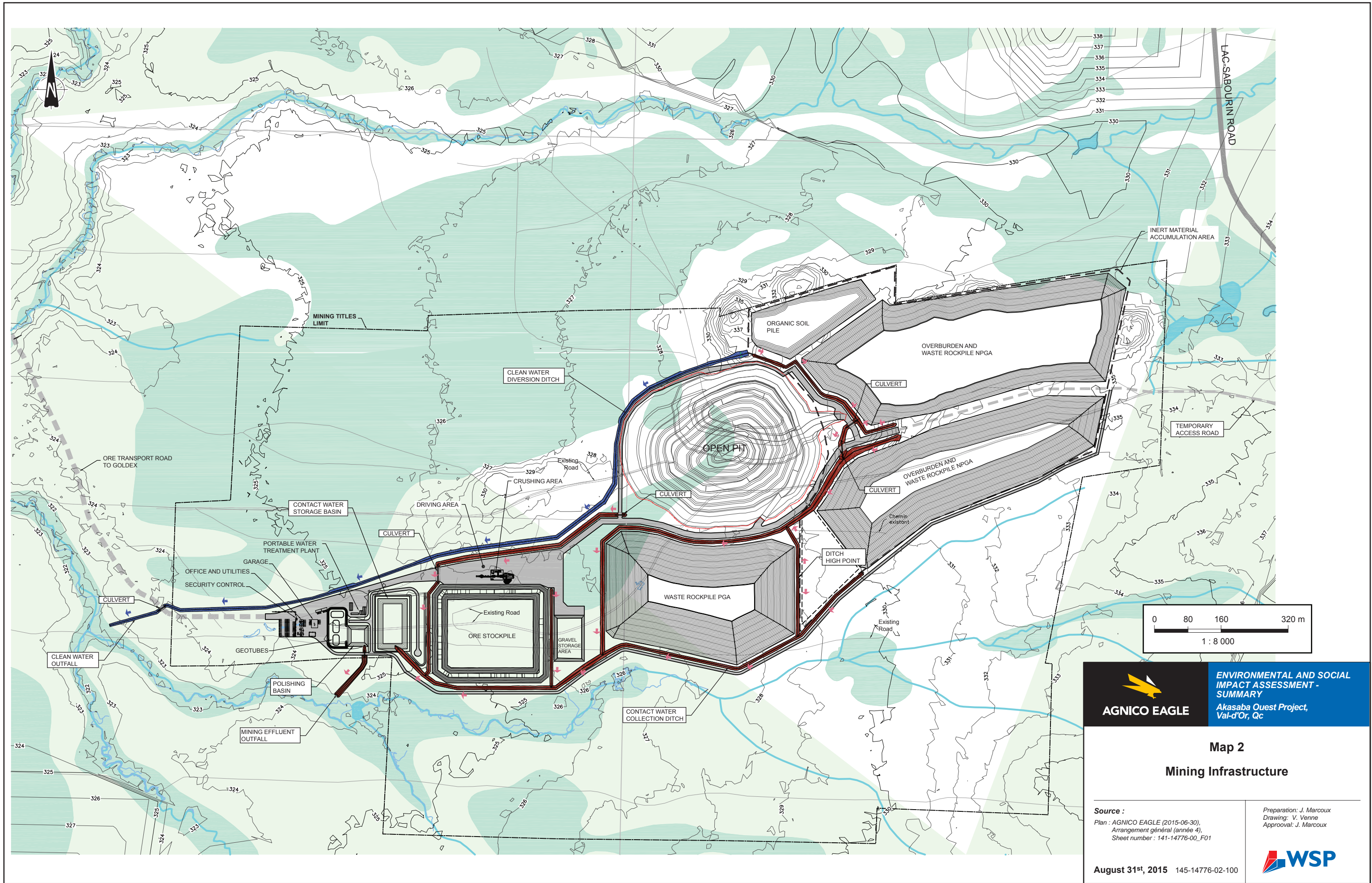
- The construction and site preparation phase, lasting one year.
- The operational phase which includes the mining of the pit over four years, followed by a two-year period during which the low-grade ore stored on site will be transported to the Goldex plant.
- The site closure phase, in accordance with best practices and applicable regulations. This phase will mainly take place during the two-year stored ore transport period.

The Akasaba Y est project's main components are as follows (see Map 2):

- An open-pit mine, from which around 15 Mt of ore, waste rock and overburden will be extracted. The pit will be approximately 470 m long by 385 m wide and will have a maximum depth of around 165 m.
- A crushing station developed to the south-west of the pit. Crushing will take place under a dome for dust emission control purposes. The facility will include a conveyor which will transport the ore to the loading area from which road trucks will transport it to the Goldex mine treatment plant.

- A low-grade ore storage area (maximum capacity of around 0.93 Mm³) will be used to feed the Goldex plant for around two years after mining of the pit has ceased.
- At the Goldex mine treatment plant, a portion of the existing ore storage area will be reserved for stockpiling the Akasaba Y est ore.
- A no acid-generation potential (NAGP) waste rock pile and an inorganic overburden pile able to contain approximately 1.8 Mm³ of material each.
- A potentially acid-generating (PAG) waste rock pile able to contain around 2.1 Mm³ of material.
- A small pile able to accumulate around 0.25 Mm³ of organic overburden for operational needs as well as the mine site's final restoration.
- Water management facilities which will gather and treat all contact waters.
- A storage area for crushed stone (gravel) which will be used for road maintenance and as filling material for blasting holes.
- The use of the existing capacity at the Goldex and LaRonde plants for the respective processing of the Akasaba Y est ore and the concentrate produced at Goldex.
- Administrative buildings, worker areas, diesel storage tanks, a portable crusher which will produce granular material and a mechanical workshop.
- A nearly 7-km-long ore transport road connecting the Akasaba Y est site to the existing Manitou access road. Road trucks will use the latter to transport ore to the Goldex plant.
- A temporary access road (construction period), some 0.6 km long, connecting the mine site with Chemin du Lac-Sabourin, which personnel and contractors will use during the construction period.

The project will not require any new mill tailings storage areas. The Akasaba Y est ore mill tailings generated by their treatment at the Goldex plant will be disposed of the same way as those currently produced by this plant. They will partly be used for the continuing restoration of the Manitou site, as part of the Manitou-Goldex project which began in 2006, as well as for backfilling at the Goldex underground mine.



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**ENVIRONMENTAL AND SOCIAL
IMPACT ASSESSMENT -
SUMMARY**

Akasaba Ouest Project,
Val-d'Or, Qc


Map 2

Mining Infrastructure

Source :
Plan : AGNICO EAGLE (2015-06-30),
Arrangement général (année 4),
Sheet number : 141-14776-00_F01

Preparation: J. Marcoux
Drawing: V. Venne
Approval: J. Marcoux

August 31st, 2015 145-14776-02-100



2.2 ORE EXTRACTION

The ore and waste rock extraction rate at the Akasaba Y est mine will depend on several factors including the mining cycle, the total ore processing capacity at the Goldex concentrator, as well as the supply capacity from the Goldex mine deposit. As previously mentioned, the average rocky material extraction rate will be around 10,000 t/d, with a maximum of around 14,000 t/d over a four-year period

The ore stored at the Akasaba Y est mine will then be fragmented at a crushing station set up to the south-west of the pit. All crushed ore produced at the Akasaba Y est site will be sent by road truck to the Goldex site. The transport rate will vary between 2,000 and 4,000 t/d, which could exceptionally exceed 4,000 t/d depending on the supply needs at the Goldex plant.

The mining plan provides for an annual extraction rate for all materials of around 3.65 Mt/yr and aims to supply the Goldex plant with ore at a rate of just over 1 Mt/yr, starting in Year 2.

The mining of the pit includes three phases, namely the stripping of the overburden, the mining of the overburden/rock interface and the mining of the ore and waste rock.

The ore extraction rate shall be higher than what is sent to the plant, thus allowing for part of the ore to be stockpiled. Primarily the lower-grade ore will be kept in a storage area at the Akasaba Y est site, then will be processed at Goldex once mining at the pit has been completed, around the end of Year 4.

The rock (ore and waste rock) will be mined using a drill to drill holes into which explosives will be placed. These explosives will be made up of a mix of ammonium nitrate, an emulsifier and surfactant. Given the pit's short lifespan, an explosives supplier will be charged with managing the explosives, loading the mine holes and conducting the blasting operations, transporting and delivering to the mine holes the necessary explosives and accessories from its existing facilities. Crushed ore and waste rock will be loaded using hydraulic shovels and wheel loaders. These materials will be transported by truck.

2.3 ORE CRUSHING AND TREATMENT

The ore stored at the Akasaba Y est site will then be fragmented at a crushing station installed under a dome to the south-west of the pit. The ore will be crushed here before being loaded into trucks then sent to the Goldex plant.

All ore extracted at the Akasaba Y est mine will first be processed at the Goldex plant. The ore will pass through the plant's various circuits, including a first crushing step (semi-autogenous mill and ball mill), followed by gravimetric gold recovery and flotation of sulphide concentrate containing gold and copper. The gravimetric concentrate will be transformed at the Goldex plant, whereas the sulphide concentrate will be processed at the LaRonde plant.

2.4 TAILINGS MANAGEMENT

Part of the tailings generated by the Akasaba Y est ore and processed at Goldex will be sent to the Manitou site's tailings management facility, and part will be backfilled into the underground workings of the Goldex mine. These two tailings disposal methods are already covered by a certificate of authorization. The Manitou site is a former tailings management facility orphaned in 2003, whose rehabilitation is the subject of a joint project between AEM and Québec's Ministère de l'Énergie et des Ressources naturelles (Manitou-Goldex project).

Like the Goldex mine tailings which are currently sent to the Manitou site, the Akasaba Y est tailings show acid-neutralizing capacity and will be used for the rehabilitation of this tailings management facility.

There is therefore no need for any new storage infrastructure for the tailings generated by the processing of ore extracted from the Akasaba Y est mine.

2.5 MINE RESTORATION

The overburden pile combined with the waste rock will be progressively restored so as to stabilize its slopes, including by seeding appropriate plant species.

2.6 PROJECT SCHEDULE

The Akasaba Y est project's stages and schedule are summarized in Table 1.

Table 1: Project Schedule

Activity	Year
Assessment of resources (NI 43-101) ¹	2015
Test bench for the milling process	2014-2015
Environmental and social impact assessment	2014-2015
Feasibility study	2014-2015
Permit requests	2015-2016
Construction	2017-2018
Mining of the pit	2017-2021
Ore transport and treatment	2018-2023
Site restoration	2022-2023
Site closure	2023
Site monitoring	2023-2033

1. National Instrument 43-101 - Standards of Disclosure for Mineral Projects.

2.7 PROJECT COSTS

The Akasaba Y est project will require an initial investment (capital costs) and incur costs throughout the project totalling nearly \$51 M, and the mining site operating costs will total nearly \$96 M, as well as concentrate transportation, processing and refining costs which will total over \$69 M. The total operating costs for the project as a whole are around \$165 M. The total salaries paid are estimated at around \$63 M, including nearly \$53 M for mining operations workers, and around \$10 M for ore processing workers.

3 OTHER PROJECT SCENARIOS

The following aspects of the Akasaba Y est project were studied with the aim of analyzing different scenarios for fulfilling the objectives of an economically-viable project, while optimizing the environmental, social and technical aspects:

- Deposit mining methods: possible ore extraction solutions;
- Material storage sites: locations of the various waste rock piles, unconsolidated deposit piles (overburden and organic soil) and ore storage areas;
- Ore transport: options for transporting the ore to the Goldex mine concentrator;
- Location of the mechanical maintenance garage and administrative office;
- Methods for containing the potentially acid-generating waste rock.

It's important to specify that since the project does not encroach onto fish habitat, AEM is not required to produce an alternatives analysis in accordance with the Guidelines for the Assessment of Alternatives for Mine Waste Disposal produced by Environment Canada.

3.1 DEPOSIT MINING METHOD

The Akasaba Y est deposit's mineralized zone extends from the surface to a depth of around 200 metres. Given that the highest grade portion is located in the upper part, open-pit mining has been chosen for its extraction. Using the underground mine method for this project would sharply increase the capital and operational costs, giving in an unfavourable economic value. Further, underground mining would require that a significant volume of resources be left in place in the form of crown pillars. Thus, the underground of the Akasaba Y est deposit would not be economically viable.

As for the location of the pit, it is set by the position of the deposit. Its currently defined limits were set through the three-dimensional (3D) modelling of the resource and the mine design. This design incorporates economic, geomechanical and operational parameters.

The limits of the pit have been established with the goal of minimizing waste rock extraction, whose quantities will influence the pit's ultimate dimensions.

3.2 MATERIALS STORAGE SITES

The comparative analysis of the location alternatives for the stockpiling of unconsolidated deposits and waste rock during the operational phase took into account mainly the estimated footprint needed for waste rock and ore stockpiling, disturbance to the natural terrain and watercourse or wetlands encroachment.

The analysis considered one operational scenario, that is a mining infrastructure arrangement based on a gold price of \$1,300 an ounce (Scenario A). The \$1,600/ounce scenario (Scenario B) presented in the project notice to the MDDELCC and in the project description to the CEAA was excluded as more in-depth economic analysis showed that it was less profitable under current market conditions.

The chosen scenario considered three accumulation and piling scenarios for the waste rock and unconsolidated deposits as well as storage areas for the ore which will be sent to the Goldex mine concentrator. Their locations were chosen according to numerous technical, environmental and economic

criteria. The locations of other components (main entrance, offices, etc.) were set as the project progressed.

There are no significant differences in the waste rock, unconsolidated deposit and ore management parameters, other than that certain alternatives show less significant encroachment in the bog or that there is a larger buffer area from the bankfull edge of the watercourse to the south of the site.

Of the three alternatives studied for the location of the mining infrastructure, the advantage of the alternative selected for the project is that the placement of the piles and storage area avoids any encroachment into the large wooded bog to the north-west of the pit and minimizes the environmental footprint, while meeting the project's technical requirements. Further, it provides an over 60 m protection distance between the accumulation areas and the watercourse to the south of the projected mining infrastructure. Thus, the storage of the Akasaba Y est project's mining material will not require its inclusion in Appendix 2 of the *Metal Mining Effluent Regulations* (MMER) for fish-bearing watercourses. The selected alternative was improved upon throughout the study.

3.3 ORE TRANSPORT

Two scenarios were considered for transporting ore from the pit to the Goldex mine concentrator. They are as follows:

- Route 117 Scenario: transport of ore from the Akasaba Y est mine using Chemin du Lac-Sabourin to Route 117, then travelling towards Val-d'Or to the Goldex mine plant (estimated cost of \$438 k).
- Manitou Scenario: transport of ore from the Akasaba Y est mine to the Goldex mine plant, via a new transport road (around 7 km) built specifically for the Akasaba Y est mine. This will cross the forest sector from the western limit of the Akasaba Y est site, diagonally eastward towards Chemin Manitou, then from there the existing Goldex mine road will be used (estimated cost of \$2.7 M).

To better understand the each option's potential issues, numerous meetings were held with the Ministère des transports du Québec (MTQ), the City of Val-d'Or as well as the sector's lakeside residents. It emerged from the stakeholder discussions that using Route 117 would generate more constraints and nuisances than using Chemin Manitou, as this scenario would obligatorily involve passing by Chemin du Lac-Sabourin, a road used by permanent and seasonal lakeside residents and other users of Lakes Ben, Bayeul and Sabourin. Some expressed concern regarding sharing the section of road, from the Akasaba West site to the intersection of Route 117, with heavy machinery. There was mainly a sense of insecurity, due to wear and tear on the roadway, to the dust generated by the vehicular traffic and the increased risk of accidents which could be caused by increased traffic on Chemin du Lac-Sabourin. Further, work will be required, such as the straightening of a few curves, the widening of the right-of-way in certain spots and other work at the intersection of Route 117 and Chemin du Lac-Sabourin.

The Manitou scenario is looked upon much more favourably by stakeholders, despite the loss of vegetation through the clearing of the 7-km long alignment's right-of-way. Indeed, in this scenario, all mine-related traffic, including worker transportation, will be diverted to Chemin Manitou.

Despite having an estimated cost six times higher than the Route 117 scenario, the Manitou scenario is the best option for transporting the Akasaba West ore to the Goldex mine, especially in terms of social acceptability within the communities of interest (quality of life). AEM will also use this new road for worker traffic once its construction has been completed. However, the Chemin du Lac-Sabourin entrance will be used at the very beginning of the construction work as well as during operations in case of emergency only.

3.4 CHOOSING THE LOCATIONS OF OTHER INFRASTRUCTURE

The main components of the Akasaba West project relate to the extraction and handling of first overburden, then rocky material including ore and waste rock. Ore will be processed at the Goldex mine and tailings will be managed at the Manitou site as well as being used as underground backfill. Operational facilities mainly include a garage dedicated to maintenance of mining equipment, a small administrative building, a parking lot and a guard post.

Two scenarios for the establishment of the previously-described facilities were studied with regard to the route taken by employees during the mine's operations. For the reasons described in the previous section, traffic will be concentrated on the new road which will connect Akasaba West and Chemin Manitou (existing roadway). In this case, guard house, the administrative buildings, the parking lot and the garage will be grouped together in the western end of the mine site, near the ore transport road which will also be used by employees to access the mine site.

3.5 METHOD FOR CONTAINING POTENTIALLY ACID-GENERATING WASTE ROCK

3.5.1 RESTORATION CONCEPTS STUDIED

The analysis used to choose the PAG waste rock containment method is taken from the Akasaba West project's conceptual restoration plan.

The three restoration concepts studied for the PAG waste rock pile are presented hereinafter.

CONCEPT 1: BACKFILLING AND FLOODING OF THE PAG WASTE ROCK IN THE PIT

This first concept involves the backfilling of the Akasaba West pit with all PAG waste rock and allowing it to flood. This concept is recognized as one of the most effective methods for preventing sulphide oxidation, thus reducing acid generation and preventing metal leaching. This scenario involves moving 2.07 Mm³ of PAG waste rock into the pit. The total space available in the pit is evaluated at 5.53 Mm³ until an elevation of 330 m (natural level of the surface). The pit could thus contain all the PAG waste rock but would not be completely backfilled.

The concept's effectiveness in preventing sulphide oxidation relies on the PAG rock remaining submerged at all times. According to the hydrogeological study conducted at the Akasaba West site, the piezometric elevation around the projected pit is around 328 m. According to the sector's hydrogeological context, it is estimated that it will take 16 years for water in the pit to reach an elevation of 327.5 m. Allowing for a freeboard of 3 m to take into account possible fluctuations in the backfilled pit's water levels, a maximum elevation of 325 m (allowing storage of 5.12 Mm³ of rock) was set for the disposal of PAG waste rock to make sure they are submerged at all times. It appears that following the return of the water balance in the pit, the rock faces will remain 2.5 m under the water's surface.

The pit backfill and flooding concept requires additional hydrogeological and geochemical studies to determine the potential groundwater contamination risk, in the event that the water quality in the pit were affected by the oxidation of certain rock faces during the operational or post-restoration stages.

The costs of backfilling PAG waste rock into the Akasaba West pit are estimated at \$13.25 M.

CONCEPT 2: REPROFILING OF THE PILE, MULTILAYER COVERING AND SEEDING

This second concept aims to soften the PAG waste rock pile slopes (3H : 1V) along with a multilayer covering to limit sulphide oxidation and metal leaching.

This type of cover generally consists of a support layer made up of sand or gravel, on which a low permeability layer is placed. This low permeability layer, often made up of silt, till or tailings, limits oxygen infiltration due to its high water content and limits water infiltration due to its low hydraulic conductivity. To promote lateral rather than vertical drainage of precipitation and to prevent the low permeability layer from drying out, a drainage layer made up of sand and gravel is placed over the latter. Finally, a layer favourable to plant establishment is placed on the surface.

The installation of a multilayer covering requires long-term surveillance of the covering's integrity. Further, given the high number of materials used, this type of cover's performance can be affected by any default in terms of material placement and construction processes. It is thus essential to ensure there is an adequate quality assurance program in place.

The costs of installing a multilayer covering on the PAG waste rock pile are estimated at \$3,85 M.

This concept requires studies to establish the provenance of the construction materials. In fact, the physical properties of the envisaged covering materials (overburden located on the Akasaba West site, Goldex tailings, materials from an esker) must be determined.

CONCEPT 3: REPROFILING OF THE PILE, COVERING WITH A GEOMEMBRANE AND SEEDING

This third concept calls for the reprofiling of the PAG waste rock pile slopes to 3H : 1V and the installation of a polyethylene membrane aimed at creating a waterproof barrier.

The polyethylene membrane constitutes an effective waterproofing method with a surface drainage system limiting hydrostatic pressure on the installation. This covering method is recognized and generally used for covering hazardous materials or high-risk tailings. The membrane's objective is to isolate the PAG waste rock from the environment and to limit water infiltration in the pile, thus preventing sulphide oxidation and metal leaching.

The costs estimation for the installation of a geomembrane on the PAG waste rock pile is \$4.09 M.

3.5.2 COMPARATIVE ANALYSIS OF RESTORATION SCENARIOS

The objectives of the restoration concepts are to minimize the discharge of contaminants into the environment, reduce sulphur oxidation by minimizing waste rock contact with air and water, reduce the dissolution of oxidation products and to reduce leachate transport by diverting water likely to infiltrate and migrate through the waste rock.

Further, three other factors were considered for meeting the restoration objectives, that is the method's effectiveness in minimizing risks to the environment, the cost and post-restoration maintenance and monitoring measures.

The comparative analysis suggests that the optimal restoration scenario for managing the PAG waste rock at the Akasaba West site is Concept 2, that is multilayer covering. This concept is the most effective and has lower environmental risks. This concept is very well-documented in the literature and there are numerous case studies available for use as a basis for design and construction purposes.

4 PUBLIC CONSULTATIONS

Social acceptability and environmental protection are of primary importance to AEM who is committed to properly informing and consulting with the communities affected (stakeholders) by its Akasaba Y est project as well as pursuing its community relations commitments as part of the project.

The stakeholder consultation and engagement plan put in place as part of the project's development includes information and consultation aspects, as well as collaboration aspects as described hereinafter.

The following sections present the process conducted among non-native stakeholders as well as the results obtained. The process conducted among Aboriginals and the results are for their part summarized in Chapter 5 of the present document.

4.1 PROCESS OBJECTIVES

The objectives of AEM's stakeholder consultation and engagement process are:

- to complete the land uses and list of land users;
- to identify the concerns and possible mitigation measures so they can be taken into account during project design;
- to minimize the project's impacts on land users;
- to maximize the benefits for the community;
- to favour the dissemination of clear, easy to understand and transparent information.

4.2 INFORMATION TO STAKEHOLDERS EARLY IN THE PROJECT

The purpose of informing stakeholders early in the project was:

- to identify the project's key issues and concerns as well as possible mitigation measures so they can be taken into account during project design;
- to validate and complete the list of stakeholders.

Various means were used to inform stakeholders early on in the project, namely:

- January 2014: AEM announcement to employees informing them that the company had acquired the Akasaba Y est mining titles.
- January 31, 2014: letter to residents of the Lakes Bayeul and Ben sectors informing them of exploratory drilling work on the Akasaba Y est property acquired at the beginning of the year by AEM from Alexandria Minerals Corporation.
- February 20, 2014: meeting presenting the project to representatives from the City of Val-d'Or and the Vallée-de-l'Or RCM (Regional County Municipality).
- May 30, 2014: letter sent to same residents informing them that specialists would be conducting various inventories on the site (hydrology, fauna, flora, etc.) in the next few weeks; these were so that AEM could complete the environmental characterization.
- October 29, 2014: notice in the regional weekly "Citoyen Vallée-de-l'Or/Harricana" informing the population regarding the same subject as well as the establishment of a public participation process to

promote the project's harmonious integration in the community and the existence of the website on the project's development.

4.3 PRECONSULTATION

Preconsultation interviews were conducted by AEM in June and July 2014 with key stakeholders from the project's host environment, namely ministries, organizations, local residents and Aboriginal communities.

The objectives of the preconsultation were to:

- Identify the key stakeholders' main concerns;
- gather information regarding how the stakeholders wish to be informed and consulted (local residents and interest groups).

During the preconsultation period, AEM announced that there would be various information and consultation activities taking place in 2014 and 2015 to add to the list of concerns. It was mentioned that the population would be informed through local newspapers and the project's website. There were also plans for direct communication with local residents and land users in the sector.

The population was encouraged to contact AEM to inform them via email, telephone and regular mail of their interest in participating in the consultation activities.

This information guided the establishment of the consultation process and also highlighted a certain number of concerns. These concerns were used to adapt the project and are part of the studies conducted to make it the most acceptable possible for all stakeholders.

In June, July and August 2014, a series of meetings were held with key stakeholders from the host environment. These interviews mainly served to:

- gather concerns or expectations regarding the project;
- identify the issues to be taken into consideration as well as elements which will help the project to better integrate into the environment;
- ask the stakeholders about their opinion regarding the consultation process and identify other stakeholders which could eventually be interested by the project.

These interviews were conducted with the following organizations or stakeholders:

- Vallée-de-l'Or RCM (June 17, 2014);
- City of Val-d'Or (June 17 and August 25, 2014);
- Association des riverains du lac Sabourin, Lake Ben residents and Lake Bayeul residents (June 3 to July 28, 2014);
- Association des chasseurs et pêcheurs de Val-d'Or (June 18, 2014);
- Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT) (June 11 and 19, 2014);
- Action boréale de l'Abitibi-Témiscamingue (ABAT) (June 17, 2014);
- Ministère des Forêts, de la Faune et des Parcs (February 14, May 22 and June 19, 2014);
- Ministère des Transports (June 16, 2014).

4.4 STAKEHOLDER CONSULTATION AND ENGAGEMENT

The objectives of the process are as follows:

- establish ongoing dialogue between citizens, interest groups, local actors and AEM representatives;
- provide an organized framework for expressing the concerns and expectations to be considered when planning the project's different phases;
- plan a varied program of activities to reach all stakeholders and provide input for the production of the impact assessment and its validation before submission;
- systematically document all exchanges, for purposes of feedback, process review and communication with decision-making bodies.

4.4.1 INFORMATION PROCESS SPECIFICS

Starting in the fall of 2014, numerous mechanism or means were used to inform stakeholders on the project. They are described in the following sections.

LETTERS TO AKASABA Y EST SITE NEIGHBOURS

In October 2014, AEM sent a letter to the stakeholders identified during the preconsultation with the goal of updating them regarding the project's progress since the meetings held the previous summer and to tell them that they would be receiving a newsletter on the project. They were also told about additional drilling work which would be conducted in November to provide additional missing information. Also, they were informed regarding the beginning of the prefeasibility study's preliminary engineering work and that this phase would be completed by December 2014. AEM would then make a decision regarding the next project analysis step, that is the feasibility study to be conducted from January to the summer of 2015.

Further, the stakeholders were informed of the submission of the project notice to the MDDELCC and the project description to the CEEA. They were finally told that they would be contacted once more in the next few weeks so they can be consulted in further detail on the project and that AEM had set up a website on the project.

Following this mailing, neighbours of the Akasaba Y est site were sent letters of invitation for direct interviews. The first project newsletter was included with this letter as well as a map of the study area.

NEWSLETTERS

Akasaba Y est project newsletters should be published three times a year so as to inform the targeted population regarding the project's progress as well as information and consultation activities.

The first newsletter, published on October 27, 2014, aimed at residents in the Lakes Bayeul, Ben and Sabourin areas and those living in the Colombière sector, provided an update regarding the work and the public participation process. It also mentioned that discussion groups and telephone interviews would be conducted with residents, that public forums (thematic workshops) would be held during the winter of 2015 and that afterwards there would be open houses aimed at all stakeholders.

During the summer of 2015, a second newsletter will be distributed to residents and stakeholders who took part in the thematic workshops and activities. This newsletter will summarize these activities and announce the next steps AEM is committed to carrying out.

WEBSITE

AEM's website went online (<http://www.akasabaouest.com/>) in the fall of 2014. It is updated each time an important step in the project is achieved.

EMAIL

The newsletters contain a dedicated email address for community relations that the population can use: akasabaouest@agnicoeagle.com.

4.4.2 CONSULTATION PROCESS SPECIFICS

4.4.2.1 DISCUSSION GROUPS

Discussion groups took place on November 18, 19 and 20, 2014 with residents of sectors near the project.

AEM's objective was:

- to present the project to the 123 shoreline landowners in the Akasaba Y est project's study area;
- to allow the project team to understand the expectations and concerns;
- to improve its knowledge of the study area and identify the elements to be analyzed in the impact assessment.

There were numerous AEM representatives from the Akasaba Y est project team and from the Goldex mine on site to present the project, answer questions and gather the expectations and concerns expressed by the participants. In all, 74 people took part in the four discussion groups distributed as follows:

- November 18, 2014: 22 participants for 12 properties;
- November 19, 2014: 22 participants for 12 properties;
- November 20, 2014: 11 participants for 8 properties;
- November 20, 2014: 19 participants for 9 properties.

Owners from 33% of the targeted properties (41 of 123) took part.

4.4.2.2 TELEPHONE INTERVIEWS

In addition to the discussion groups, telephone interviews were conducted with residents and other stakeholders in December 2014 and January 2015. Over fifty calls were made. This allowed 22 people to be contacted, including 1 resident from the Colombière sector, 4 residents at Lake Bayeul, 8 residents at Lake Ben and 9 residents at Lake Sabourin.

In short:

- the majority of owners had received the information, but all weren't really aware of the project details (location, scope of the project and schedule were unknown);
- the majority were satisfied with the method used to communicate with them (in writing) and wished to continue to receive information in this way;
- the majority did not know there was a website;

- many are interested in taking part in the next consultation activities, except for those who live outside the region or who are in favour of the project or who do not feel concerned;
- in general, the people appreciated being contacted by telephone to talk to them about the project.

Half of the Colombière and Lakes Ben, Bayeul and Sabourin sector owners were contacted through the discussion groups and interviews.

At the end of the fall of 2014, telephone interviews were also conducted with 13 MERN temporary shelter (hunting camp) leaseholders located near the Akasaba Y est site. The purpose of these telephone interviews was to share clear and transparent information with these stakeholders, as well as gather their concerns and expectations regarding the project. Of the 13 temporary shelter leaseholders, 8 were contacted by telephone.

In all, three registered traplines are affected by the project, one of which is unassigned. The two trapline holders were interviewed.

4.4.2.3 MEETINGS WITH INTEREST GROUPS

On November 11 2014, the project was presented to the Abitibi-Témiscamingue region's Table de gestion intégrée des ressources et du territoire (GIRT). This meeting was an opportunity to gather the participants' concerns and requests. Some ten organizations were represented.

In February 2015, meetings were held with land use groups. The objective in meeting these groups was:

- to present the project to the stakeholders which had not yet been met with;
- to provide them with the opportunity to ask questions which would be answered during future thematic workshops;
- to present to them the subsequent project stages.

The targeted groups of stakeholders were:

- hunting and fishing representatives:
 - Association chasse et pêche de Val-d'Or;
 - Regroupement des locataires en terres publiques (RLTP);
 - Association des trappeurs du Nord-Ouest de Senneterre et de Val-d'Or;
- snowmobile and ATV representatives:
 - Club Quad Vallée-de-l'Or et Abitibi (meeting held on March 3, 2015);
 - Club motoneige Val-d'Or;
- representatives of environmental organizations which had not yet been met with:
 - Coalition pour que le Québec ait meilleure mine (QMM);
 - Société des eaux souterraines de l'Abitibi-Témiscamingue (SESAT) (meeting held on February 23, 2015);
 - Organisme de bassin versant Abitibi-Jamésie;
- representative from the MFFP involved in the Val-d'Or woodland caribou protection project (meeting held on February 16, 2015);

- representative from the Société de loisirs ornithologiques de l'Abitibi-Témiscamingue (SLOAT).

Many of these organizations declined the meeting request as they did not feel they were very concerned by the project or because there were other organizations covering the same areas of interest or concern as them.

4.4.2.4 THEMATIC WORKSHOPS

On February 19, 2015, the stakeholders (150) were invited by AEM to take part in various thematic workshops. AEM's objectives for these thematic workshops were as follows:

- Present certain subjects covered by the ESIA which raised questions or concerns during the previous consultation steps.
- Continue to improve its knowledge of the Akasaba Y est project study area.
- Discuss certain mitigation and monitoring measures under consideration.
- Identify the concerns which have not yet been stated at this stage of the studies.

These participants would allow participants to:

- Get answers to their questions.
- Obtain more information on the project impacts of concern to them.
- Share their project-related concerns and expectations.

Invitation letters were sent to these stakeholders:

- landowners in the Colombière and Lakes Ben, Bayeul and Sabourin sectors;
- temporary shelter (hunting camp) leaseholders affected by the project;
- registered trapline holders affected by the project;
- representatives of interest groups from different sectors (environment, planning and land use, ministries, etc.).

The two regional MDDELCC representatives were also informed of these workshops and invited to attend.

In all, three evening thematic workshops were held, with the following themes:

- Workshop N° 1: wildlife and vegetation; human environment (March 11, 2015).
- Workshop N° 2: ambient noise and vibrations; air quality (March 25, 2015).
- Workshop N° 3: groundwater; surface water and hydrographic network (April 14, 2015)

PowerPoint presentations were given to the persons present at these workshops. The presentations were followed by a period of exchanges with the experts who made the presentations as well as with the AEM representatives present.

These presentations are available on line at this address: <http://www.akasabaouest.com/resumeduprojet/Docs/Pages/default.aspx> along with highlights of each of the aforementioned workshops. It should be noted that feedback forms were made available to the participants (some thirty per workshop) as part of the workshops.

4.4.2.5 PUBLIC OPEN HOUSES

AEM is planning an “open house” evening in September 2015 to inform the public regarding the project’s progress (see Section 4.6.1 for more details).

4.5 RAISED ISSUES AND CONCERNS

The following issues and concerns were raised by residents and interest group representatives who took part in the aforementioned preconsultation and consultation activities which took place between June 2014 and April 2015 (interviews, discussion groups, targeted meetings and thematic workshops):

- the impact of worker and truck traffic on safety on Chemin du Lac-Sabourin;
- the impact and carrying of noise from the mining operations (blasting, crushing, machinery);
- the impact of vibrations generated by blasting;
- dust propagation associated with the mine operations and traffic on Chemin du Lac-Sabourin;
- the impact of dust deposited by the wind on fauna and flora;
- fears of water table and groundwater contamination;
- the project’s impact on drinking water sources, resident wells, Lakes Bayeul and Ben and the watercourses near the project;
- the impact of the new ore transport road and the woodland caribou project;
- the loss of forest and wetlands;
- the impact on hunting activities;
- the management of the site’s closure and revegetation of the site;
- the visual impact of the mine site;
- the impact of the project on property values;
- the possibility of the future enlargement of the pit.

At the various stages of the consultation process, AEM has, when possible, provided answers to the questions and concerns raised. The thematic workshops notably allowed AEM have its team of experts answer the issues and concerns expressed in previous consultation activities. AEM also modified some aspects of the project to take into account stakeholder concerns. For example, in response to resident concerns regarding safety on Chemin du Lac-Sabourin due to mine-related traffic, AEM modified the project to limit its use to the construction period only. AEM has also committed itself to take into account the concerns and issues raised during the project’s future stages of development.

Table 2 presents the summary of stakeholder concerns and expectations by issue type (traffic, noise, vibrations, etc.), AEM’s answers and commitments regarding these concerns and requests, and the activities during which these concerns and requests were expressed.

4.6 CONTINUATION OF THE STAKEHOLDER CONSULTATION AND ENGAGEMENT PROCESS

4.6.1 OPEN HOUSES

Public open houses will be held with the population of Val-d'Or to present the results of the impact assessment.

To allow for more personal exchanges with residents, "pre-open houses" are planned with them prior to the public activity.

During this evening planned for September 2015, eight information booths will be set up, each with its own theme. Each booth will have the expert that took part in the project's ESIA as well as a AEM representative. The booth themes will be:

- Project description
- Human environment
- Wildlife, vegetation and surface water
- Air quality
- Ambient noise and vibrations
- Groundwater
- Ore treatment
- Closure

The public will be invited to this event through radio and newspaper ads as well as via social media. A specific invitation letter will be sent to residents near project site.

4.6.2 MONITORING COMMITTEES

In accordance with the *Act to Amend the Mining Act*, AEM is planning on setting up monitoring committees.

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K Yst Project

Issue or Concern	Public	Answer	Mentions
TRAFFIC			
Impact of worker and truck traffic on the condition and safety of Chemin du Lac-Sabourin, including the Route 117 intersection	Residents of Lakes Ben, Bayeul and Sabourin City of Val-d'Or La Vallée-de-l'Or RCM Environmental groups (CREAT)	AEM will work with the City of Val-d'Or to ensure the roadway's safety and good condition during the Akasaba Y est mine construction period. A worker and trucker sensitization program will be established and signage promoting safe driving will be installed. To limit the impact on residents, AEM will only use Chemin du Lac-Sabourin during the first year of the construction of the mining facilities, the time it takes to complete the segment of the ore transport road between the Akasaba Y est mine and the Manitou site. Only this new road will be used for ore transportation during the operational phase. As the construction of the new ore transport road is an integral part of the project, the authorizations needed for this will be obtained at the same time as the rest of the project. Its construction will begin along with the rest of the work at the mine site.	Presentation Workshop 1: Human Environment Q&A-Workshop 1: Human Environment General Presentation Workshop 3 Q&A-Workshop 2: Air Quality
NOISE			
Nuisances due to noise of operations (blasting, crushing, machinery)	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Land users	AEM is committed to installing the crusher inside a shelter so as to minimize the noise and dust generated by crushing. The site will be developed so as to minimize noise as much as possible, for example by positioning the piles so they can act as sound walls. Noise surveys will be conducted before and during construction, mainly near the Lakes Bayeul and Ben residences. There will also be regular acoustic monitoring during both the construction and operational phases, per the monitoring program which will be established before the beginning of the work. The AEM/Goldex community relations contacts will be available to address residents' concerns and to follow up on specific matters, when necessary.	Q&A-Workshop 2: Ambient Noise and Vibrations Presentation Workshop 2: Ambient Noise and Vibrations Q&A-Workshop 2: Air Quality
Impact of wind on the carrying of noise generated by the mine	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Land users	The noise modelling shows that even with the wind carrying noise towards the residences, the noise generated by the mine's operations will be below the applicable standards. However, AEM is committed to limiting the nighttime use of bulldozers when windy so as to minimize the impact of the noise for the closest residents. Bulldozers will only work on the piles during the daytime.	Presentation Workshop 2: Ambient Noise and Vibrations

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K est Project (cont.)

Issue or Concern	Public	Answer	Mentions
Impact of eventual cutting of timber on the propagation of noise from the mine	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Land users	The noise modelling did not take into account the presence of vegetation. Thus, any forest clearing would not affect the noise levels as modelled, which are below the applicable standards.	Q&A-Workshop 2: Ambient Noise and Vibrations
VIBRATIONS			
Impact of vibrations on dwellings related to operations (potential damage to foundations)	Residents of Lakes Ben and Bayeul	The modelling showed that the vibrations which will be felt by the closest residences are well below the applicable standards for comfort and potential damage to dwellings. AEM will put in place a program to monitor vibrations, air overpressure and projections, and develop procedures which will define the practices and methods which will provide the maximum protection to citizens and structures. The foundations of the Lake Bayeul residences closest to the site will be inspected. They will be the subject of a prior inspection by a qualified person so as to document their current state.	Q&A-Workshop 2: Ambient Noise and Vibrations Presentation Workshop 2: Ambient Noise and Vibrations November 19, 2014 discussion group
Impact of vibrations generated by blasting on Chemin du Lac-Sabourin traffic	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Land users	The modelling indicates that the vibration levels will be very low on Chemin du Lac-Sabourin and that there is no anticipated impact on local traffic.	Q&A-Workshop 2: Ambient Noise and Vibrations
AIR QUALITY			
Dispersal of dust related to mine site operations	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Land users City of Val-d'Or Environmental groups (CREAT)	To limit the dispersion of dust generated by trucks on the mine site, as well as on the ore transport road, AEM will water road surfaces, and if necessary use dust suppressants. Further, the speed of mining vehicles will be limited to 40 km/h on the mining site. All drilling rigs will be equipped with dust collectors.	Q&A-Workshop 2: Air Quality

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K est Project (cont.)

Issue or Concern	Public	Answer	Mentions
Dispersal of dust related to traffic on Chemin du Lac-Sabourin	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin La Vallée-de-l'Or RCM City of Val-d'Or Environmental groups (CREAT)	AEM will hold discussions with the City of Val-d'Or, who is responsible for its maintenance, to increase as needed the frequency of spraying of Chemin du Lac-Sabourin during the construction period.	Q&A-Workshop 2: Air Quality Q&A-Workshop 1: Fauna and Flora
Dispersal of toxic dust during blasting	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Interest groups Land users	The only chemical products which will be used for the mine operations are explosives which are destroyed upon detonation. AEM is expected to favour the use of emulsion-type explosives.	Q&A-Workshop 1: Fauna and Flora
Impacts of the deposition of windswept dust, on fauna and flora, most notably on small fruit gathering	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Land users	Modelling shows that the project complies with the applicable air quality standards and that there should not be a significant accumulation of dust on fauna and flora. To ensure this, it is planned to monitor dust deposition. Mitigation measures could be applied as needed. A project monitoring committee will be formed and the results of the environmental monitoring conducted by AEM will be made available to this committee.	Q&A-Workshop 2: Air Quality Q&A-Workshop 3: Surface Waters
LAND VALUES			
Impact of the project on property values	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin	According to recent data for the Abitibi-Témiscamingue region (Chambre immobilière de l'Abitibi-Témiscamingue), residences located over 2 km from a mine have not seen any devaluation. It was also noted that the mine will only operate for a very short amount of time.	Presentation Workshop 1: Human Environment

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K Yst Project (cont.)

Issue or Concern	Public	Answer	Mentions
GROUNDWATER AND SURFACE WATERS			
Contamination of the water table and of groundwater by the mine's operations	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Land users Environmental groups (CREAT)	A monitoring program will be established to verify groundwater quality near the mining site. A network of observation wells will be established during the operational phase as well as during the site restoration phase.	Q&A-Workshop 3: Surface Waters Presentation Workshop 3: Groundwater
Contamination of the water table during snow melt resulting from the deposition of dust generated by the operations	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin Land users Environmental groups (CREAT)	The results of the air dispersion modelling show that the mine activities are not likely to generate air quality issues beyond the mine site's 300-m footprint. The deposition of dust around the mine site will nonetheless be monitored so as to reassure the population regarding the magnitude and extent of particle dispersion in the air and the possible impacts on the environment. For this monitoring, dustfall will be determined using dust jars, installed in areas subject to dominant winds near the mine site and others around Lake Bayeul. The collected particles will be analyzed. The results will be submitted to experts from the relevant government authorities. If necessary, corrective measures will be implemented to reduce the dispersal of dust.	General Presentation Workshop 3
Possibility of the drawdown of Lakes Bayeul and Ben (drying up of the lakes)	Residents of Lakes Ben, Bayeul and Sabourin Environmental groups (CREAT)	Lakes Bayeul, Ben and Sabourin are located outside the area affected by the lowering of the water table. The impact of operations on the water table will remain confined to within the limits of the Akasaba Y est mining titles, that is around the pit.	November 19, 2014 discussion group

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K est Project (cont.)

Issue or Concern	Public	Answer	Mentions
Impact on drinking water sources and residents' wells	Residents of Lakes Ben, Bayeul and Sabourin Interest groups	<p>A monitoring program will be established to verify the quality of groundwater near the mine site. A network of monitoring wells will be established during the operational phase as well as during the site restoration phase.</p> <p>Further, AEM will proceed with the inventory and characterization of the closest wells so as to reassure the population regarding the condition of the wells before any mining activity.</p> <p>The inventory will include, in addition to water sampling, an interview with the owner, an inspection of the water abstraction facilities, the measuring of water levels and a buildup test.</p> <p>The analysis results will be compared to the baseline conditions. In the event of the confirmed increase of certain contaminants which could compromise groundwater quality and which is attributable to the Akasaba K est mine site's mining activities, AEM will identify the cause of the contamination and will implement the appropriate corrective action or mitigation measures.</p> <p>AEM pledges to provide a copy of the well water quality assessment results to the relevant owners. In the event that the mine activities have a proven impact on private wells (water quality and flow), AEM shall proceed with corrective work at its own expense.</p> <p>As there are no wells within the zone affected by the lowering of the water table, there is no risk that the mine's operations will lead to a lowering of well levels for residents bordering the lakes.</p>	<p>Presentation Workshop 3: Groundwater</p> <p>Q&A-Workshop 3: Groundwater</p> <p>November 19, 2014 discussion group</p> <p>Presentation Workshop 3: Surface Waters</p>
Impacts of dust on the contamination of lakes	Residents of Lakes Ben, Bayeul and Sabourin Interest groups Land users	<p>The risk of the lakes being contaminated by the spread of dust generated by the mine's operations is very low given that the lakes are located 2+ km from the piles. Modelling did not show any exceedances of dust standards at Lakes Bayeul and Ben. Compliance with the air quality criteria established by the MDDELCC ensures a safe environment for human health and for the environment.</p> <p>The deposition of dust around the mine site will nonetheless be monitored so as to reassure the population regarding the magnitude and extent of particle dispersion in the air and the possible impacts on the environment.</p> <p>For this monitoring, dustfall will be determined using dust jars, installed in areas subject to dominant winds near the mine site and others around Lake Bayeul. The collected particles will be analyzed. The results will be submitted to experts from the relevant government authorities. If necessary, corrective measures will be implemented to reduce the dispersal of dust.</p>	<p>Presentation Workshop 2: Air Quality</p> <p>Q&A-Workshop 2: Air Quality</p> <p>Q&A-Workshop 3: Surface Waters</p> <p>Presentation Surface Waters</p> <p>General Presentation Workshop 3</p>

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K Yst Project (cont.)

Issue or Concern	Public	Answer	Mentions
Long-term impacts on Lakes Ben and Bayeul, as well as on watercourses near the mine	Residents of Lakes Ben, Bayeul and Sabourin Interest groups	AEM will monitor water quality in Lakes Bayeul and Ben even if they are not in the same watershed as the mine site. Water quality in these lakes will be assessed before the beginning of mining operations to establish a basis for comparison, enabling the assessment of whether the project has had an impact on water quality in the lakes. The runoff water from the mine site will be monitored post-closure. The impact assessment study will document the project's impact on the increase and/or decrease in the flow of watercourses in the area surrounding the mine. The project is not expected to have an impact on sources which feed Lakes Ben and Bayeul as they are higher than the mine site's elevation. Further, Lakes Ben and Bayeul are within a different watershed than that of the project.	Presentation Workshop 3: Surface Waters
FAUNA, FLORA AND LAND USE			
Impact of noise from the mine on fauna (game displacement)	Land users Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin MERN Environmental groups (CREAT, ABAT)	The various species of birds could be affected in different ways depending on the distance separating them from the mine site, the importance birdsong is to mating and defending a nesting territory, and the various species' sensitivity to noise. The vast majority of the wildlife species will move to areas surrounding the mine site, where there are similar habitats. Seasonal movements are only expected in the event of a winter concentration area within the mine site's footprint. Certain species sensitive to the presence of humans may be scared away from the site. Otherwise, the impact on wildlife movements will be negligible. Lake Sabourin fish will not be affected by the mining effluent as this waterbody is hydraulically upstream from the mine site.	Q&A-Workshop 1: Fauna and Flora Presentation Workshop 1: Fauna and Flora
Impact of the new ore transport road and the project on woodland caribou	Land users MERN	The potential impact is very low and would only be felt where there is an increase in the woodland caribou population and a northward extension of their range. The sector mainly used by the Val-d'Or woodland caribou population is to the south of the Akasaba Y est mine site, whereas the mine will be located at least 5 km from the northern fringe of the Caribous-de-Val-d'Or Biodiversity Area. The greatest threat to the caribou population is the rate of disturbance of its forest habitat, which is already at over 70 %. AEM is in contact with representatives from the MFFP.	Q&A-Workshop 1: Fauna and Flora Presentation Workshop 1: Fauna and Flora

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K est Project (cont.)

Issue or Concern	Public	Answer	Mentions
Loss of forest and wetlands	Environmental groups (CREAT) Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin La Vallée-de-l'Or RCM Association Chasse et pêche de Val-d'Or	The Akasaba K est project sector has already been extensively cleared and is mainly characterized by bogs. After the site's restoration, forests will return in certain spots. Wetland losses shall be compensated for by a project authorized by the MDDELCC. A variety of projects can be implemented. There will be further discussions in this regard with the MDDELCC.	Q&A-Workshop 1: Fauna and Flora Presentation Workshop 1: Fauna and Flora November 18, 2014 discussion group
Impact on hunting activities	Land users (temporary shelter leaseholders) La Vallée-de-l'Or RCM Association Chasse et pêche de Val-d'Or	Agreements will be negotiated with temporary shelter leaseholders affected by the project.	Presentation Workshop 1: Human Environment
Fate of the ore transport road and control of access to the mine site	Land users (temporary shelter leaseholders)	It is not expected that the ore transport road will be dismantled after the closure of the mine site as the MERN appears to want to maintain roads within public land. The access road between the mine site and Chemin du Lac-Sabourin will however be closed.	Q&A-Workshop 3: Surface Waters

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K YghProject (cont.)

Issue or Concern	Public	Answer	Mentions
CLOSURE/RESTORATION			
Management of the site's closure and revegetation of the site	Interest groups Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin	The preferred closure scenario involves the natural flooding of the pit. Upon the mine site's closure, the waste rock piles on site will be revegetated. The mining effluent water quality will be monitored after the site's closure. Other pit restoration options will be looked at by AEM, most notably to promote the return of wildlife. A financial guarantee scheme for the restoration of mining sites has been in force since the summer of 2013. This scheme requires that 50 % of the financial guarantee be deposited upon breaking ground and 25 % be deposited per year for the next two years. According to the new <i>Mining Act</i> , the financial guarantee for site restoration now follows projects.	Q&A-Workshop 3: Groundwater Q&A-Workshop 2: Air Quality Q&A-Workshop 3: Surface Waters November 20, 2014 discussion group
Possibility that the piles will cause long-term contamination of groundwater (storage and covering of waste rock)	Environmental groups (CREAT, SESAT, ABAT) Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin	AEM plans on covering over the accumulation areas with waste rock so as to prevent the leaching of metals or other forms of contamination. It is planned to install a multilayer covering made up of different materials. Once the pit has flooded, groundwater will flow as per its natural flow direction and will spread westward (not affecting private wells or Lake Bayeul). Infiltration water will be captured by ditches, then treated before being discharged.	Presentation Workshop 3: Groundwater Q&A-Workshop 3: Groundwater
HUMAN ENVIRONMENT			
Visibility of piles from Chemin du Lac-Sabourin (height)	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin	The modelling of the mine site's impact on the landscape indicates that there will not be any changes to the visual field. Numerous visual simulations conducted at different spots along Chemin du Lac-Sabourin show that given the topography and the forest cover, the piles will not be visible from Chemin du Lac-Sabourin.	Presentation Workshop 1: Human Environment
Safety measures for around the pit	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin	To secure the premises, once mining has ceased, the waste rock will be used to form a safety berm along the edge of the pit to limit access.	Q&A-November 18, 2014 discussion groups
Impact of future forest clearing on the visibility of the mining facilities	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin	AEM does not have any control on the planning of forest operations in the sector of the project.	Q&A-Workshop 1: Human Environment

Table 2: Stakeholder Issues, Concerns and Expectations and Consideration by AEM in the Akasaba K est Project (cont.)

Issue or Concern	Public	Answer	Mentions
OTHER			
Possibility of the future enlargement of the pit	Residents of the Colombière sector and of Lakes Ben, Bayeul and Sabourin	The current mineral deposit is closed depth. It is therefore unlikely that the pit will be enlarged unless another deposit is found.	Q&A-November 18, 2014 discussion group
Q&A:	Mentioned during question and answer periods during the discussion groups and in the workshops (Workshop 1 on March 11; Workshop 2 on March 25; Workshop 3 on April 14, 2015).		
N/A:	Not applicable.		

5 ABORIGINAL PARTICIPATION

The Nation Anishnabe du Lac-Simon's Algonquin reserve is located some 15 km east of the Akasaba Y est project site. For its part, the Anicinape community of Kitcisakik is located some 70 km south of the project. The Akasaba Y est project site is on land traditionally frequented by the Algonquin communities of Kitcisakik and Lac-Simon.

5.1 PROCESS OBJECTIVES

The objectives of the Aboriginal community information and consultation process are the same as those AEM wishes to fulfill with other stakeholders and which were presented in Section 4.1 of the present summary. Here is a list:

- complete the land uses and list of land users;
- identify the concerns and possible mitigation measures so they can be taken into account in the project design stage;
- minimize the project's impacts on land users;
- maximize the benefits for the community;
- favour the dissemination of clear, easy to understand and transparent information.

5.2 INFORMATION FOR ABORIGINAL COMMUNITIES EARLY IN THE PROJECT

Emails and letters were exchanged early on in the project with the community of Lac-Simon between July 5, 2013 and April 9, 2014. On April 11, 2014, AEM presented its project to community representatives.

At this stage, the community of Kitcisakik had not yet been contacted by AEM due to the distance separating it from the project. During the April 11, 2014 meeting with the community of Lac-Simon dealing most notably with land use in the project study area, AEM representatives mentioned their intention of contacting the community of Kitcisakik following the recent identification, 3 km south of the project, of a trapline associated with the réserve à castor du Grand Lac Victoria and possibly frequented by users from Kitcisakik. Lac-Simon representatives then indicated to AEM that it would be preferable to wait to contact Kitcisakik representatives given that there were some internal political difficulties within the community at that time. That is why AEM attempted to contact them in writing two months later, that is in mid-June 2014. Thus, AEM contacted the Kitcisakik's Chief and Band Council or community representatives numerous times (12) by email and telephone between June 11, 2014 and March 16, 2015, to among other things plan a meeting with the Council and eventually hold a public meeting to inform the community regarding the project. On March 23, 2015, AEM presented its project to community representatives, including the Director of the Natural Resources Service. There was also a brief meeting with the Chief on May 15, 2015 to discuss the organization of an eventual public information session in the community. Since May 2015, AEM's communications with Kitcisakik have mainly involved the Band Council Chief.

5.3 MEETINGS WITH ABORIGINAL COMMUNITIES

5.3.1 LAC-SIMON

AEM met with representatives of the community of Lac-Simon three times in 2014 and twice in 2015, with a public meeting for members of the community being held on May 14, 2015 (see Table 3).

Moreover, there were numerous emails, telephone calls and letters exchanged between AEM, the Chief and Band Council members as well as with different community stakeholders from July 2013 to May 2015.

Table 3: Information and Consultation Meetings with the community of Lac-Simon in 2014 and 2015

Date	Method	Participants	Subject
April 11, 2014	Meeting	Community Chief, General Manager, two councillors and Director of the community's Natural Resources Service	Presentation of the company, its values, its activities in the region and the Akasaba Y est project
July 2, 2014	Meeting	Community General Manager	Future methods of communication and update on the progress of the Akasaba Y est project
December 4, 2014	Meeting	The community's General Manager and legal counsel	Collaboration agreement project and update on the progress of the Akasaba Y est project
April 9, 2015	Meeting	Representatives of the community's Natural Resources Service	Update on the progress of the project Information on land and resources use by members of the community Concerns regarding the project Announcement regarding next steps
May 4, 2015	Meeting and site visit	Four people from the community and representative of the community's Natural Resources Service	Group interview to validate the project presentation Visit of the Goldex mine, the pipeline and the Manitou site
May 14, 2015	Public information session	Members of the community	Presentation of the project and discussion with some ten people on land use

It should be noted that during the April 9, 2015 meeting, an AEM representative invited the participants to Workshop 3 held on April 14, 2015, which considered the groundwater and surface waters discussed in Chapter 4 of the present summary. During this same April 9 meeting, the community representatives suggested that the project presentation shown be revised and validated by a small group made up of members of the community of Lac-Simon, which was done during the following meeting on May 4. The April 9 meeting also served to set the date and terms of the public information session with the community, as being the best way of informing the population of Lac-Simon on the project.

The purpose of the May 14, 2015 information session was to present the project as well as the expected environmental impacts, as well as to hear the community's concerns regarding these impacts. The other objectives included getting to know the families that frequent the project sector and to understand what potential impacts the project could have on them.

At the information session, the coordinator of the Lac-Simon Natural Resources Service's mines sector began with a preamble explaining to the audience that meetings had been held between AEM and the general management of the community of Lac-Simon from April to December 2014, most notably for purposes of mutual introduction and to inform the community about the Akasaba Y est project. He also

mentioned that another meeting took place on April 9, 2015 between AEM and representatives of Lac-Simon's Natural Resources Service to discuss among other things the methods for properly informing the community of Lac-Simon regarding the project. He finally noted that a preparation meeting prior to the current information session had taken place on May 4, 2015.

AEM then gave a presentation which covered, among other things, the following aspects: AEM the company, its values and vision as well as its mine sites in operation. Also presented were examples of mine sites restored by AEM. The running of Val-d'Or's Goldex mine was explained, as well as the mitigation measures put in place during its design. AEM presented the Akasaba Y est project, the completed and planned environmental studies, future steps and the projected schedule. A preliminary map of the human environment components was presented, as well as one showing the mining claims. The pit project was explained in detail and compared to similar projects.

In all, five members of the community were present at the beginning of the presentation. Six other members came and went during the information session. Questions were answered as they were asked during the presentation. Maps illustrating the project study area and some of its human environment components were displayed.

Some thirty people took part in the meal provided by AEM following this session. There were exchanges with the mining sector coordinator, with another representative of the community's Natural Resources Service and a few land users.

Lac-Simon stakeholders expressed the concerns and questions regarding the following aspects during the April 9 and May 14, 2015 meetings:

- The possible disposal of waste rock in the pit.
- The pit's presence itself which could likely disturb the community.
- The reuse of waste rock.
- The fear that waste rock could be acid generating.
- The covering (planting over) of the waste rock.
- The mine site's visual impact.
- The impact on wildlife, including moose and birds who could spread any potential contamination throughout their home ranges.
- The impact of the new ore transport road on the caribou-moose-predator dynamic.
- Blasting and the impact of blasting and the noise on moose and caribou.
- The noise and dust generated by traffic on the ore transport road, but also the transport of dust generated by mine operations.
- The rehabilitation of the Manitou site.
- The quality of the mine waters discharged into the environment.
- Vibrations.

The Lac-Simon Natural Resources Service representatives mentioned that the fact that the project's receiving environment has already been disturbed makes it more acceptable to them. Moreover, the community elders have a poor view of the mining industry. The industry's current adoption of better environmental and social practices, for instance site rehabilitation such as Manitou, will need to be demonstrated. Some also mentioned not having any specific water-related concerns as the sector is

considered to be already affected, most notably around the Bourlamaque River. Further, it is assumed that regulations will ensure that AEM will conduct the necessary environmental monitoring.

Following the May 14, 2015 public meeting, AEM is waiting for confirmation from Lac-Simon representatives so they can meet with community land users who frequent the project study area.

5.3.2 KITCISAKIK

A meeting with community representatives took place on March 23, 2015, to present the Akasaba Y est project and to better know the community of Kitcisakik (see Table 4). The Chief and the Band Council members were not present. Note that meeting participants mentioned that it was the first time a mining company had consulted them and they appreciated the process. Copies of the fauna, flora and human environment workshop presentations discussed in Chapter 4 of the present Summary as well as the meeting presentations were distributed during this meeting.

On May 15, 2015, AEM representatives met with the Chief of the community prior to the eventual public meeting and to obtain the authorization to consult with land users. It was then noted that the Chief was not at all aware of the previous discussions with the Natural Resources Service, nor of the Akasaba Y est project. It was therefore agreed that the project would be presented to the Chief and Band Council to then plan a public meeting. To date, no meeting date has been set. Therefore, the public meeting could not be held before the submission of the impact assessment. The meeting with land users has similarly not taken place either. These steps are included in the future activities, as are the project-related open houses.

Table 4: Information and Consultation Meetings with the community of Kitcisakik in 2015

Date	Method	Participants	Details
March 23, 2015	Meeting	Director of the Natural Resources Service, consultant on the dossier, political consultant and mapping expert	Presentation of the Akasaba Y est project
May 15, 2015	Meeting	Community Chief	Presentation of the Akasaba Y est project and discussion on the meeting to be held with land users

5.4 CONTINUATION OF THE ABORIGINAL COMMUNITY CONSULTATION AND ENGAGEMENT PROCESS

5.4.1 PUBLIC INFORMATION AND CONSULTATION SESSION AT KITCISAKIK

Like the public session which was held at Lac-Simon in May 2015, AEM and community representatives will plan a public information and consultation session to be held with the community of Kitcisakik. A meeting will be held with Band Council members beforehand to present the Akasaba Y est project to them.

5.4.2 INTERVIEWS WITH LAND USERS

AEM intends to meet with members of Lac-Simon and Kitcisakik families who use the land in the Akasaba Y est project sector. The purpose of these meetings, in the form of semi-directed interviews, was to:

- document the recent, current and future land use in and around the study area;
- gather traditional ecological knowledge about the fauna and flora;

→ gather project-related concerns and comments.

5.4.3 OPEN HOUSES

After the submission of the ESIA, AEM plans on holding an open house event at Lac-Simon and another at Kitcisakik. The dates of these open houses will be set with representatives from the two communities.

5.4.4 MONITORING COMMITTEES

In accordance with the *Act to Amend the Mining Act*, AEM is planning on setting up Monitoring Committees.

6 DESCRIPTION OF THE RECEIVING ENVIRONMENT AND ASSESSMENT OF THE ENVIRONMENTAL EFFECTS

To assess the biophysical and human impacts of the Akasaba Y est mining project, two study areas were considered, a limited study area and an extended study area. The limited study area (see Map 3) includes the future mine site infrastructure. This study area encompasses most of the biophysical impacts. The extended study area (see Map 4) encompasses the main human environment components likely to be affected by the project, most notably the City of Val-d'Or, Lakes Ben, Bayeul and Sabourin, the existing road network around the project and the Algonquin reserve of Lac-Simon. It also shows the ore transport road between Akasaba Y est and the Manitou site, as well as the existing Goldex plant.

In this chapter, the baseline condition of the main components of the physical, biological and human environments studied are described. This description is followed by an assessment of the anticipated environmental effects. A synthesis of the project's potential impacts is presented in Table 5 at the end of this chapter. The mitigation measures referenced in this table appear in Appendix A.

This chapter also discusses the effects in case of accidents, failures and natural events, as well as cumulative effects.

6.1 PHYSICAL ENVIRONMENT

6.1.1 BASELINE CONDITION

CLIMATE AND PHYSIOGRAPHY

The Abitibi-Témiscamingue region is influenced by a cold and moderately humid continental climate. The distance from the large expanses of temperate water and the area's geographical position creates a very variable climate, with significant annual and daily temperature variations as well as frequent and irregular precipitation.

The study area is located in the Canadian Shield physiographic region characterized, in the Akasaba Y est project sector, by a relatively flat relief dissected by small hills formed by rocky outcrops and interspersed with wetlands. The soil elevation varies from 326 to 335 m in the limited study area, with an average westward slope of around 0.5 %.

GEOLOGY AND GEOMORPHOLOGY

The Val-d'Or region is located in the geological Superior Province which extends throughout the Abitibi-Témiscamingue territory. In Québec, this province includes six sub-provinces, including the Pontiac and Abitibi sub-provinces (recognized for their numerous copper, gold, zinc, nickel and silver deposits).

The limited study area is crossed by the Cadillac Fault which constitutes the southern limit of Abitibi's large volcanic furrows.

Gold mineralization is found in all types of rock. Sulphides, mainly pyrrhotite, with less pyrite and chalcopyrite, make up between 5 and 50 % of the gold-bearing zones.

In the limited study area, the surface deposits are mainly glaciolacustrine in origin, whose thickness varies between 1 and 23 m before reaching the bedrock. They are made up of thick till (≥ 1 m), fine glaciolacustrine deposits (silt and sand), organic matter and rare rocky outcrops. An esker appears in the south-east part of the limited study area, along a north-east/south-west axis. It consists of sand and gravel between 5 and 25 m thick.

HYDROGEOLOGY

In terms of groundwater flow, the piezometric surface generally conforms to the topographic surface, that is a westerly flow. The groundwater recharges at the high points, where there tends to be thin or no fine glaciolacustrine sediment, while groundwater emerges in the low points occupied by the hydrographic network.

The Akasaba Y est mine site is characterized by the presence of four hydrostratigraphic units making up the bedrock, glacial till, glaciolacustrine sediment, as well as the surface organic matter. The till and bedrock units' groundwater belong to the MDDELCC's Class II, as it can be used for domestic or industrial purposes.

Around two kilometres south-east of the Akasaba Y est mining property, there is an aquifer located in the fluvio-glacial sediment made up of sand and gravel, known as the Sabourin esker. This aquifer is used as a common source of water for isolated residents around Lake Bayeul.

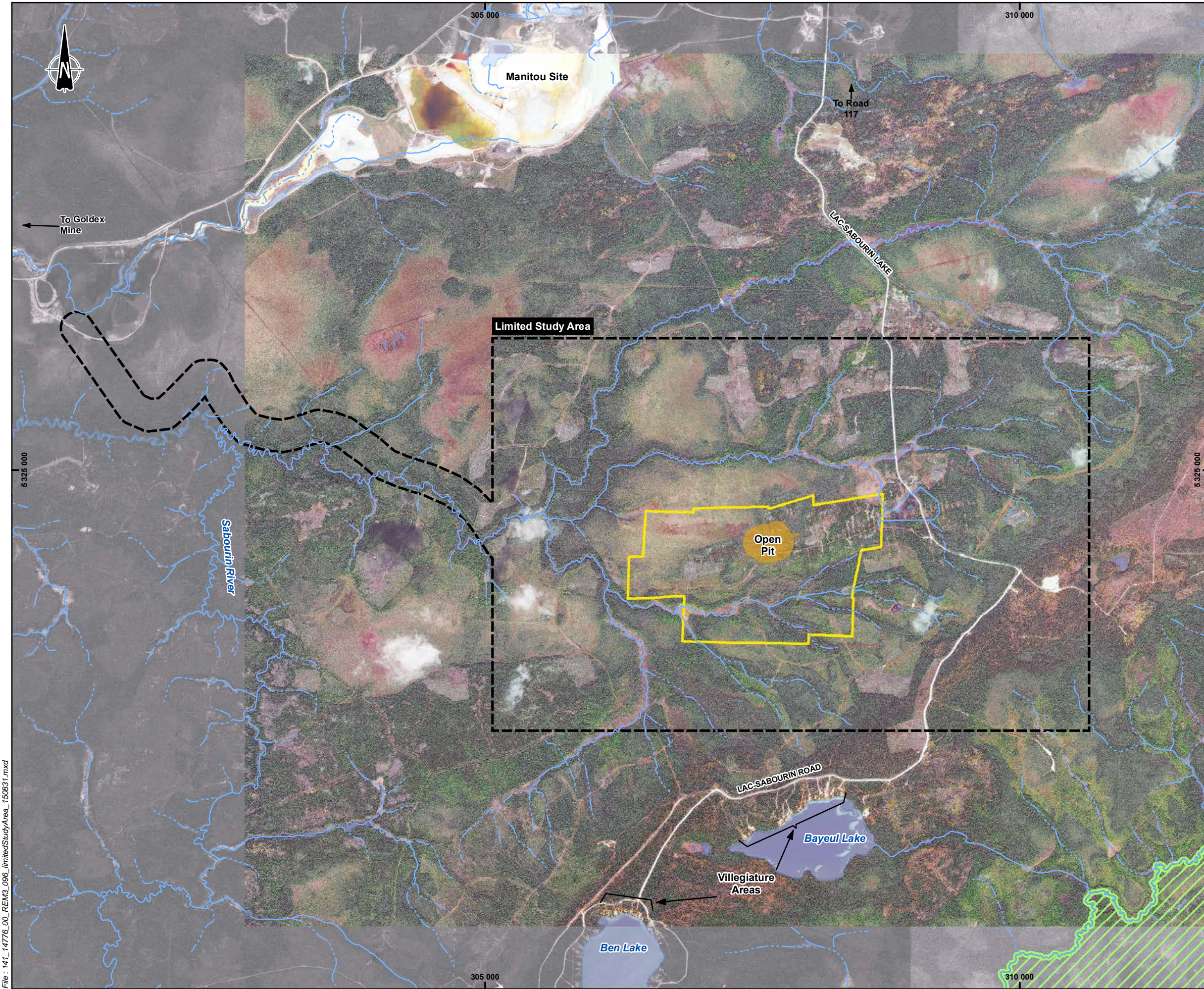
The sampled groundwater is generally bicarbonate-calcic, with a generally alkaline pH and an average concentration of dissolved solids. The resurgence criterion in the surface water, for its part, is exceeded in certain spots for arsenic, copper, mercury and sulphides. Finally, groundwater quality is affected by a few exceedances in the potability criterion, most notably for arsenic concentrations.

HYDROGRAPHY AND HYDROLOGY

The limited study area's hydrographic network drains towards the Sabourin River, whose 170-km² watershed is not that far downstream from the Akasaba Y est project's mining effluent discharge point. The Sabourin River then flows into the Bourlamaque River, before flowing northward towards Lakes Blouin and Malartic. The water finally flows towards the Harricana River, which flows towards James Bay.

Three watercourses are located near the projected mining infrastructure, all small tributaries at the head of the Sabourin River's watershed. The project is not expected to encroach upon any of these watercourses.

The mean monthly flow of the watercourse receiving the mining effluent (watercourse N° 3) is some 20 to 120 l/s.



Study Area

Hydrographie

- Lake
- Stream
- Intermittent Creek

Protected Areas

- Caribous-de-Val-d'Or Biodiversity Area

Akasaba West Project

- Open Pit
- Mining Titles Limit

0 300 600 1 200 m

1 : 35 000

Projection : NAD83, UTM 18N

AGNICO EAGLE

**ENVIRONMENTAL AND SOCIAL
IMPACT ASSESSMENT -
SUMMARY**

Akasaba West Project,
Val-d'Or, Qc

Map 3

Limited Study Area

Sources :

Satellite image : DigitalGlobe, Worldview-2, 2013-10-05

Map : ESRI World topographic Map

Hydrography : MRN BDTQ 20K, 32C04-102 sheet

Municipal Limits : SDA20K, 2010-01

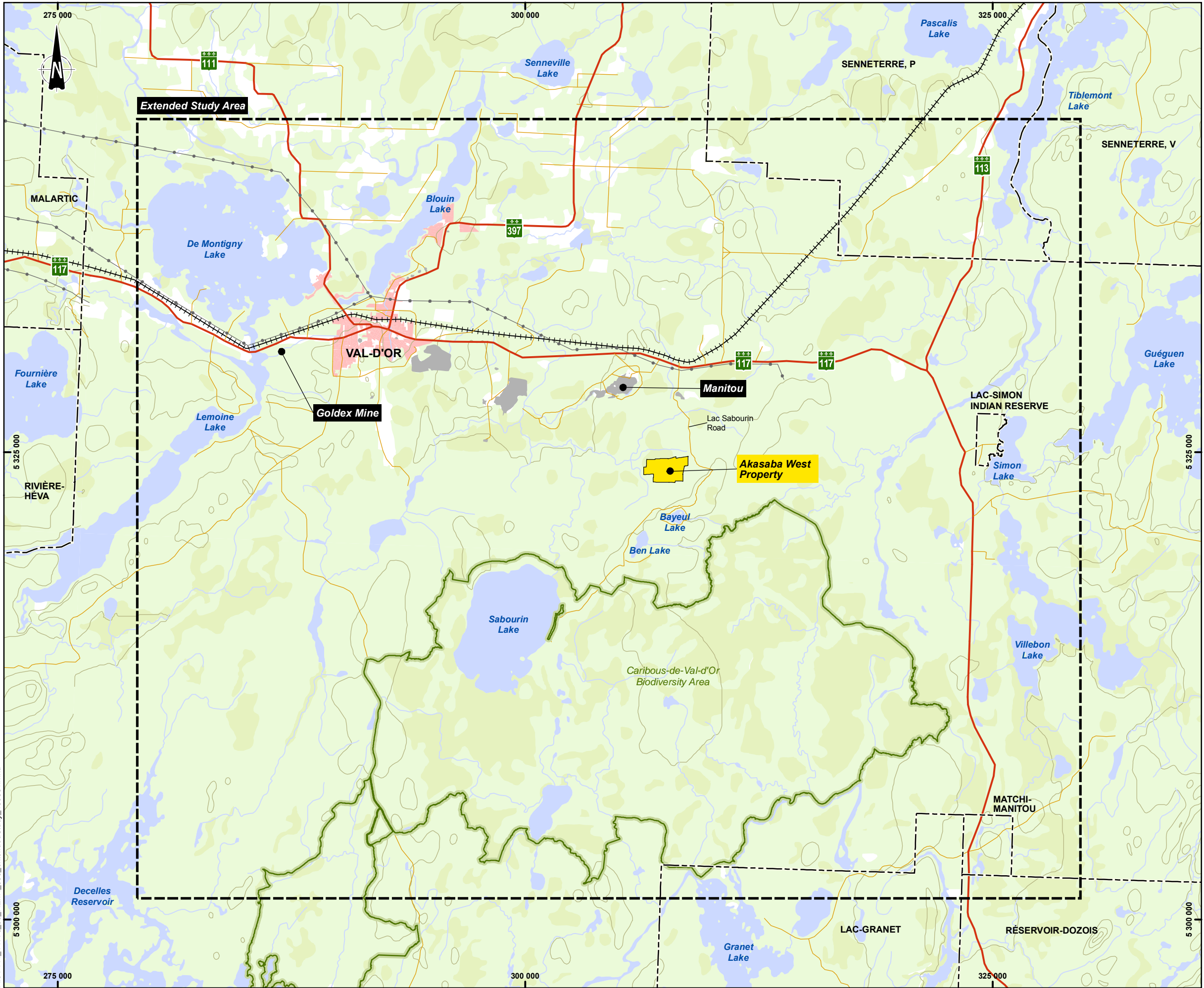
Biodiversity Area : GESTIM, MRN (2014-03-15)

Project : Agnico Eagle (2014-08-25), file ACAD-1202-000-210-001_RA_OPT B1 AK_B_UTM18.dwg

Preparation: J. Marcoux
Drawing: V. Venne
Approval: J. Marcoux

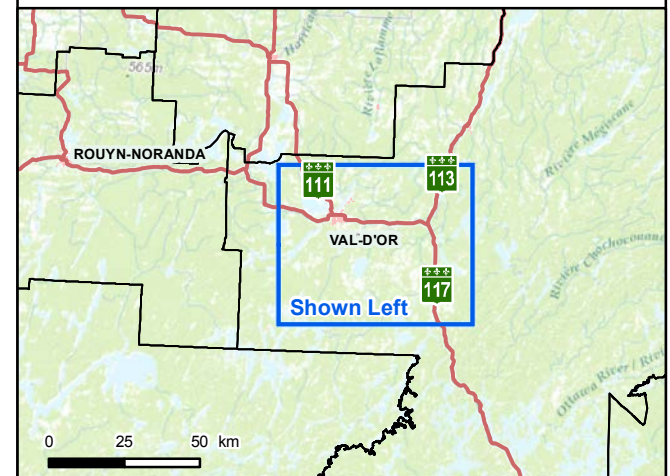
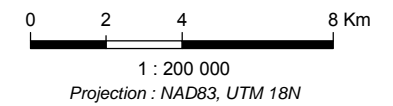
August 31st, 2015 141-14776-02-100

File : 141_14776_00_REIM3_096_limitedStudyArea_150831.mxd



- Municipal Limits
- Study Area
- Mining Area / Industrial Depot
- Transport**
- Main Road
- Secondary Road
- Railroad
- Electric Transmission Line
- Protected Area**
- Caribous-de-Val-d'Or Biodiversity Area

- Akasaba West Project**
- Mining Titles Limit



AGNICO EAGLE

**ENVIRONMENTAL AND SOCIAL
IMPACT ASSESSMENT -
SUMMARY**

Akasaba West Project,
Val-d'Or, Qc

Map 4
Extended Study Area

Sources :
 Maps : - ESRI World topographic Map
 - BNDT 250K, sheets 31M, 31N, 32C and 32D
 - CanMap 2011
 Municipal Limits : SDA20K, 2010-01
 Biodiversity Area : GESTIM, MRN (2014-03-15)
 Projet : Agnico Eagle (2014-07-22), fichier ACAD-1202-
 000-210-001_RA_OPT A1 AK_A_UTM18.dwg

Preparation: J. Marcoux
 Drawing: V. Venne
 Approval: J. Marcoux

WSP

August 31st, 2015 141-14776-02-100

SURFACE WATER AND SEDIMENT QUALITY

Water quality across all streams sampled in the limited study area is relatively similar. Surface water is acidic, with a pH varying between 4.77 and 5.55. This acidity is due to the presence of numerous bogs within the watersheds through which the watercourses flow. Only iron and aluminium were measured at concentrations greater than the applicable quality criteria.

In terms of sediment quality, it varies from one watercourse to another, but nonetheless showing similar measured values. The majority of the metal, metalloid, trace element and heavy element concentrations are near or below the detection limits used. Only arsenic in one of the samples exceeds the quality criteria.

AIR QUALITY

The closest plants to the Akasaba West mine site are over 12 km away. Due to the project's location, air quality in the sector is thus considered to be very good. Thus, the MDDELCC's initial concentrations were used for contaminant dispersal modelling purposes.

AMBIENT NOISE

The noise measurements taken in the extended study area indicate very calm noise levels, the greatest generators of noise being fauna and flora. At the weekend, the instrument's electronic floor was even reached (below 20 dBA).

The Akasaba West project's noise limits are based on the Note d'instructions 98-01 which allows up to 45 dBA of noise during the daytime and 40 dBA at night near secondary residences.

6.1.2 ANTICIPATED EFFECTS

The project's anticipated effects on the physical environment are summarized in Table 5. The assessed impacts on each of the physical environment components, after application of the mitigation measures, are deemed minor except for the impact on surface water and aquatic sediment quality during the closure phase. The greater impact on this element is mainly due to the uncertainty related to the requirement to treat the mining effluent over a more or less long period after the end of operations. For this reason, the impact is deemed to be of long duration, and its importance medium despite its low intensity.

The low importance of the impacts on nearly all the physical environment components is due to the nature of the project (small deposit, no concentrator or tailings management facility, etc.), its location (encroaching only one sub-watershed), to the geochemical properties of the rock in place (low acid-generation and metal-leaching potential) and the nature of the soils (nearly impermeable layer limiting runoff water infiltration into the groundwater).

6.2 BIOLOGICAL ENVIRONMENT

6.2.1 BASELINE CONDITION

VEGETATION AND WETLANDS

Abitibi's forests occupy the southern portion of the boreal zone in the balsam fir-white birch domain. The project site is located in an area dominated by conifers, both in the terrestrial and wetland vegetation groups typical of the region. Despite the presence of a few butons, the territory is generally flat and

ombrotrophic shrubby or treed bogs dominate the landscape. Logging has relatively recently taken place in some of the terrestrial and wetland groupings depending on the sector.

In the limited study area, the criteria assessment according to a recognized method reveals that the vast majority of the inventoried plant groupings (91.7 %) have a medium or high ecological value.

Moreover, during the floristic inventories, despite extensive searching of higher-potential sectors, no special-status (rare) plant species were found.

TERRESTRIAL FAUNA

Several mammal species typically found in boreal forests can be found in the limited study area, including the black bear and moose, and others which are at the northern limit of their range such as the white-tailed deer.

Two of the species that are potentially present in the project's study areas have special status, namely the woodland caribou and the southern bog lemming. However, the latter species was not captured during the field inventories.

The woodland caribou has been designated as vulnerable in Québec under the *Act respecting threatened or vulnerable species* (ATVS) and is designated as threatened in Canada under the *Species at Risk Act* (SARA). To the south of the mine site is the Val-d'Or woodland caribou population which today only has about twenty individuals. The sectors deemed essential to maintaining this population were identified and included in a 434-km² biodiversity reserve specifically created for their protection in 2009 and is the subject of a conservation plan. It is located around five kilometres to the south of the project site.

FISH

The inventories conducted in watercourse 1 and 2, upstream from Chemin du Lac-Sabourin, uniquely enabled the capture of brook stickleback. However, during the November 18, 2014 consultation evening aimed at gathering the concerns of Lakes Sabourin, Bayeul and Ben residents, it was mentioned that many years ago, brook trout had been captured in the area's streams, but, still according to the residents, this species had since disappeared. The absence of this fish species could be due to the lack of suitable habitat available. Indeed, due to a generally flat topography and the presence of a layer of low-permeable unconsolidated deposits, the watercourses flow under a channel or basin facies on a base of very fine material, generally made up of organic matter, mud and silt. These conditions, combined with the numerous bogs in the watersheds and which explain the water's low pH, are not favourable to brook trout. The results of the inventories (no brook trout captured) show that any use of these watercourses by this species is marginal at best, and it would be very surprising if a viable population of this species were present. Thus, the fish habitats directly affected by the project are considered to be of low quality.

REPTILES AND AMPHIBIANS

The field inventories identified two species of snake (common garter snake and red-bellied snake), five anuran species (American toad, mink frog, bullfrog, spring peeper and green frog) and two species of salamanders (red-backed salamander and blue-spotted salamander). No specimens of turtles or any indications of their presence were found during the various inventory activities carried out in the limited study area in 2014.

Moreover, no species at risk were seen during the herpetofauna inventory, nor seen in passing during the other inventory activities conducted in the limited study area. There have indeed been recent mentions of

wood turtles and Blanding's turtles in Abitibi, but the project will not affect any open water body deep enough for these turtles (e.g., for hibernation).

AVIFAUNA

The avifauna inventory identified 75 bird species, all possible, probable or confirmed nesters. It is highly likely that other species of ducks, shorebirds (e.g., seagulls) and birds of prey (diurnal and nocturnal) frequent the study area without nesting there.

Three of the species identified are of special status. The common nighthawk and the olive-sided flycatcher are likely to be designated as threatened or vulnerable in Québec and threatened in Canada. The bald eagle is designated as vulnerable in Québec but not threatened in Canada.

Even if no bat inventory was conducted, it is possible or probable that six species are present, namely the little brown bat, the big brown bat, the northern long-eared bat, the hoary bat, the eastern red bat and the silver-haired bat. The latter three are likely to be designated as threatened or vulnerable in Québec.

6.2.2 ANTICIPATED EFFECTS

The main anticipated impact on biological components is related to the project's footprint, around 117 ha (1.2 km²), which will encroach upon natural environments, forests (53 ha) or wetlands (64 ha), and will thus generate equivalent habitat losses for terrestrial fauna, for reptiles and amphibians, for birds and for chiropters. For the Val-d'Or woodland caribou, the project will increase the rate of disturbance of its habitat in the defined buffer area surrounding the biodiversity reserve (protection zone 1A) by 0.17 %. This additional disturbance will occur in a sector that is not currently used by the Val-d'Or caribou population.

The project's anticipated effects on the biological environment are summarized in Table 5. The assessed impacts on each of the biological environment components, after application of the mitigation measures, are deemed minor except for the impact on terrestrial vegetation and wetlands during the construction phase which is considered to be of medium importance. The presence of high ecological value terrestrial and wetland environments within the project's footprint is what leads us to this assessment. It is however important to note that wetland losses will be compensated by the establishment of a compensation program to be approved by the MDDELCC.

6.3 HUMAN ENVIRONMENT

6.3.1 BASELINE CONDITION

ADMINISTRATIVE FRAMEWORK AND POPULATION

The extended study area is located in the Abitibi-Témiscamingue administrative region and is entirely within the Vallée-de-l'Or RCM. It falls mainly within the territory of the City of Val-d'Or and, to a lesser extent, the territories of Senneterre (City and Parish) to the north-east, the unorganized territories of Réservoir Dozois, Lac-Granet and Matchi-Manitou to the south-east, and the Algonquin reserve of Lac-Simon to the east. The Algonquin community of Kitcisakik is to the south of the extended study area.

The limited study area is made up entirely of public land.

Responsibility for land development and management is shared among four main agents, namely the Ministère de l'Énergie et des Ressources naturelles (MERN), the Ministère de la Faune, de la Forêt et des

Parcs (MFFP), the Vallée-de-l'Or RCM and the City of Val-d'Or. These are responsible for planning, managing and controlling the territory and the exploitation of its resources.

The Abitibi-Témiscamingue administrative region had 146,683 inhabitants in 2011, 1.9 % of the total population of Québec. The Vallée-de-l'Or RCM encompassed nearly a third (29.5 %) of the administrative region's population (43,283 inhabitants). With 32,160 people in 2011, Val-d'Or is the main agglomeration in the extended study area and the RCM, with nearly three-quarters (74.3 %) of its population. In 2011, the population reached respectively 1,395 and 365 inhabitants in the Aboriginal communities of Lac-Simon and Kitcisakik.

LAND USE BY NON-ABORIGINALS

RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL AND PUBLIC USES

The extended study area has four urban areas within the City of Val-d'Or where there is a high of land use density. There are four sectors near the limited study area with concentrations of permanent and seasonal residences, namely the Colombière, Lake Bayeul, Lake Ben and Lake Sabourin sectors.

The Colombière sector, to the north of the limited study area, at the intersection of Chemin du Lac-Sabourin and Route 117, has 11 residences, 10 of which are permanent. This sector constitutes a low-density residential agglomeration. The Lake Bayeul sector has 18 properties, seven of which are permanent and 11 cottages or secondary residences. For its part, the area surrounding Lake Ben has 20 permanent residences, 38 secondary residences or cottages and six plots without any buildings. Finally, the Lake Sabourin sector is characterized by the absence of permanent residences. There are 49 properties, 36 of which are secondary residences or cottages.

The City of Val-d'Or is the Vallée-de-l'Or RCM's administrative centre, and is home to numerous government and para-government services. It is also the main centre for commercial and private services within the RCM. Commercial and administrative activities, as well as institutions, are mainly located in the downtown core as well as the western sector of the city. Its reach extends beyond the administrative limits, extending regionally and to northern communities.

Moreover, the extended study area includes Val-d'Or's industrial spaces. Over a hundred industrial and commercial companies are established here, the majority of which are related to forestry and mining.

RECREATION, LEISURE AND TOURISM

The extended study area is crossed by the provincial Trans-Québec snowmobile trail N° 83 which runs to the north of the limited study area. Three regional trails are also found within the extended study area, which is also crossed by two Trans-Québec ATV trails as well as by numerous local trails.

The territory is also intensively frequented by sport hunters. The extended study area encompasses, on its public land, over 200 recreational leases issued by the MERN for temporary shelters, two of which are found within the limited study area.

HUNTING, FISHING AND TRAPPING

The presence of temporary shelters on public land is a good indicator of its use for hunting. As previously mentioned, there are over 200 within the extended study area. Hunting statistics indicate that between 2009 and 2013, 222 moose and 160 black bears were killed within that area.

There is no fishing on Lakes Bayeul and Ben. Rather, fishing is focused on Lake Sabourin, sought mainly for walleye fishing. Fishing takes place both in the summer and winter.

Moreover, the extended study area touches upon numerous traplines. Four neighbour the limited study area, including three who are partly within the area. One of these does not currently have a designated holder. The main species trapped are the muskrat and beaver. The southern portion of the extended study area overlaps the Grand-Lac-Victoria beaver reserve where Aboriginals hold exclusive trapping rights. The traplines are associated with users from the Algonquin communities of Lac-Simon and Kitcisakik. These traplines are located outside of the limited study area.

ARCHAEOLOGICAL HERITAGE

The archaeological potential study conducted in the limited study area concluded that the absence of major watercourses and water bodies makes human occupation of this area less likely. The generally swampy terrain, while good for certain animal species, is not very favourable to human occupation. Thus, the limited study area only has areas of limited archaeological potential located on the banks of the multiple watercourses passing through. The rest of the limited study area is of no archaeological interest.

ABORIGINAL PRESENCE

The Akasaba West project site is on land traditionally frequented by the Algonquin communities of Kitcisakik and Lac-Simon, before the beginning of Abitibi's colonisation and the founding of the City of Val-d'Or. These two communities share contiguous traditional land and are very closely related, being from the same group that split in two during the first quarter of the 20th century. Indeed, until around the 1920s, the two Algonquin communities made up a single political entity. It was at this time that some members of the community decided to move closer to their hunting grounds which were nearer to the current Lac-Simon reserve. The two communities thus remain closely related.

The Algonquin community of Lac-Simon (Nation Anishnabe du Lac-Simon) is established on land forming a reserve, namely the Lac-Simon Indian Reserve. This is located at the eastern end of the extended study area, on the western shores of Lake Simon, where it extends over 326 hectares. The reserve was formed in 1962 at the location of an old gathering place.

The Algonquin community of Kitcisakik (les Anicinapek de Kitcisakik) are some 45 km to the south of the extended study area's southern edge, in the northern part of the La Vérendrye Wildlife Reserve. The territory inhabited by the community constitutes an Aboriginal establishment totalling 12 ha. The community frequents two main places, namely the "village du Dozois", accessible via a branch of Route 117, around 90 km south of Val-d'Or, and the Grand-Lac-Victoria ancestral site which borders the mouth of Grand lac Victoria, source lake of the Ottawa River. This is where the community previously lived during the summer season, at the location of a former trading post. The current "village du Dozois", located on the edge of the reservoir of the same name, near the Bourque dam, was built in the 1940s. This is where the community slowly became settled. It is also here that the community's current infrastructure and equipment is concentrated.

HISTORY OF LAND OCCUPANCY

The Algonquins designate themselves a being *Anicinabek*, *Anicinapek* ou *Anishnabeg*, term which means "real men". Dix Algonquin communities form this nation, nine of which are located in Québec and one in Ontario.

Ethnographic and historic research has shown that the ancestral land of the community of Kitcisakik, and thus of the community of Lac-Simon as well, has become considerably smaller since the middle of the

19th century. The Anicinabek's ancestral land was gradually occupied, during the colonisation of Abitibi-Témiscamingue, by logging and mining, by changes to the hydrographic network, the development of roads and railways and the creation of dams. All of these events reduced the areas available and needed for pursuing their traditional way of life. Industrial forestry which took off during the 1950s continued to fragment the Anicinabek's traditional land.

In the 1920s, the family hunting grounds of people from the Grand-Lac-Victoria band (which included at the time both communities) formed a vast ensemble which bordered those of the Waswanipi Cree to the north, those of the Attikamekw to the east, the Lakes Dumoine and Barrière bands to the south, and those of the Abitibi band to the west. The space occupied by the Grand-Lac-Victoria band included hunting grounds which are today associated with the community of Lac-Simon. According to observers of the day, the 1920s-1930s were a time of stress for the Anicinabek which were feeling the effects of the presence of non-Aboriginals as well as the forest and mining industries. This led among other things to competition with white trappers, as well as a Spanish flu epidemic. An analysis of archives from this time shows that the population of Grand-Lac-Victoria was reduced by a third.

In 1928, Aboriginals were granted hunting and trapping rights by provincial authorities over a vast territory around Grand lac Victoria which would later become the Grand-Lac-Victoria beaver reserve. When this territory was created, the Algonquin were given exclusive trapping rights, but this legislation was never truly enforced, due to a lack of means and political will. During the 1940s, the imposition of the trapline system within the Grand-Lac-Victoria beaver reserve again contributed to restricting land occupation to clearly defined sectors. Under this program, Aboriginal participants were conferred the supervision of beavers within a trapline. The fur animal management programs were maintained for a few years, and it's not really known when they were stopped in Kitcisakik or Lac-Simon.

Research established links between the ancestral land and the current occupation of the community of Kitcisakik's territory. Some 6,000 km² of land has been identified and mapped, identifying the occupants of most of the traplines as well as their family and community affiliations. The research focused essentially on hunting grounds recognized by members of the community of Kitcisakik.

We can assume with relative certainty that in the same way as the people of Kitcisakik, due to the previously-mentioned events, members of the community of Lac-Simon have generally over the years limited their traditional activities within an area closer to their place of residence, that is around the current reserve. More in-depth study would however be necessary to determine their occupation of the territory with greater historical clarity since the 1920s-1930s.

CURRENT LAND USE

AEM and WSP undertook to meet with members of the communities of Lac-Simon and Kitcisakik likely to frequent the territory within the extended study area for their traditional activities (see Chapter 5 of the present summary). Various meetings have taken place up until now with Lac-Simon representatives. A meeting took place with representatives of the community's Natural Resources Service in April 2015. A public information session was then organized in May for members of the community. The consultation process with both communities is ongoing and the present land use description is based on information collected during the previously described meetings. The data gathered will be refined and added to during interviews to be conducted by AEM and WSP with land users from the communities of Lac-Simon and Kitcisakik.

During these meetings, it was mentioned that the Akasaba West project's extended study area was frequented by users from Lac-Simon, as well as by members of the community of Kitcisakik. However, the information obtained indicates that these activities are concentrated to the south of the project's extended study area as well as in its northern part, mainly to the north of Route 117.

The Conseil des Anishinabe de Lac-Simon considers trapline N° 36, stretching from the northern part of Grand-Lac-Victoria beaver reserve to south of the limited study area, as a collective space which can be frequented by many members of the community, and not just the designated managers. These land “managers” are generally identified and named by the Conseil as part of consultation processes related to various projects. With regards to trapline N° 36, it has been divided into three different sectors. The managers have a monopoly on fur animal trapping. A main trapline manager has been identified, who has a temporary shelter south of Lake Sabourin.

According to the testimony gathered, the traditional activity practiced the closest to the project's limited study area is moose hunting to the west, north-east and south of said area, most notably in the Caribou-de-Val-d'Or Biodiversity Area. Moose hunting take place mainly in winter, to provide meat for the community. Moreover, in recent years, the community of Lac-Simon has made efforts to reduce the predation of woodland caribou within the study area (e.g., trapping predators, increased hunting of moose to reduce pressure on the habitat), at the request of the MFFP who is working to protect this small herd.

Partridge hunting within the study area is limited to opportunistic hunting only. Geese are hunted at Lake Herbin and around the Lac-Simon reserve. There is little fishing within the extended study area. However, there is regular fishing at Lake Granet further to the south. There is winter fishing at Lakes Simon, Villebon and Guéguen, among others. Sturgeon is frequently fished in Lake Crémazie.

It was mentioned that small fruits are gathered around Lake Sabourin, in sectors where there has been logging. Wild rice is cultivated north of the project's limited study area. A project by the community to characterize the territory for wintergreen, chanterelle and cranberry gathering is ongoing. Medicinal plants are sometimes gathered near Lake Granet, outside the extended study area.

There is a snowmobile trail leading to Lake Sabourin and Louvicourt, with another located in the eastern section of the Caribou-de-Val-d'Or Biodiversity Area and another to the north of Route 117. Old portages were used between Lake Blouin and Lake Sabourin (Bourlamaque and Sabourin rivers). Lakes Crémazie and Granet were used to access Grand lac Victoria. An old map showing trails and portages was provided during one of the meetings.

Valued sites include birth places and burial grounds bordering Lake Endormi, to the west and east of Louvicourt. There may also be burial grounds around Lake Sabourin. It has previously been mentioned that the village of Lac-Simon was previously located on the eastern side of the lake. The community has a project to develop a cultural transmission site at this location. According to the information obtained, the community of Lac-Simon is currently conducting an inventory of the natural resources in the territory adjacent to Route 117 (west of Lake Villebon), Route 113 and the Lac-Simon reserve.

LAND CLAIMS

The Algonquin communities of Lac-Simon and Kitcisakik are members of the Algonquin Anishinabeg Nation Tribal Council (AANTC) with five other nations: Kitigan Zibi, Abitibiwinni, Kipawa and Winneway, in Québec, and Wahgoshig, in Ontario. However, this council does not include all Algonquin nations. There are four others that are not members, namely Timiskaming, Wolf Lake, Lac-Rapide and Pikwakanagan (Golden Lake). Consequently, the question of ancestral rights is dealt with by several authorities.

The AANTC's fundamental priorities are protecting and advancing issues related to ancestral rights, and providing assistance and services to member communities. In general, the AANTC considers that the Algonquin people have occupied the Ottawa River watershed, including Abitibi and Témiscamingue, since time immemorial. Thus, Algonquin rights and title extend to the land on either side of the Ottawa River.

In December 2011, an article in the Abitibi newspaper *La Frontière* stated the AANTC's intention of claiming rights over a 650,000-km² territory, the Algonquin's goal being to obtain royalties over a designated territory so as to develop better health and social services for the population. The targeted territory covers a good part of Québec and extends to around Timmins and Sault-Sainte-Marie in Ontario. As of October 2014, the Aboriginal Affairs and Northern Development Canada (AANDC) Comprehensive Land Claim and Self-Government Negotiation Tables' register did not list any ongoing claims from the AANTC.

However, the status report on the AANDC's specific claims notes numerous specific claims filed by the Kitigan Zibi (Maniwaki) nation, member of the AANTC. There are no mentions of ongoing specific claims for the communities of Kitchisakik and Lac-Simon.

Finally, at the provincial level, let us mention that an agreement in principle on consultation and accommodation between the Government of Québec, the Conseil de la Première Nation Abitibiwinni and the Conseil Anishinabe de Lac-Simon was signed in 2012. This agreement aims to establish a framework for concluding an agreement on consultation and accommodation regarding mining projects within a territory yet to be determined. However, there has been no progress in the process since then.

6.3.2 ANTICIPATED EFFECTS

The project's anticipated effects on the human environment are summarized in Table 5. The assessed impacts on each of the human environment components, after application of the mitigation measures, are deemed minor except for the impact on quality of life during the operational phase which is considered to be of medium importance.

It is anticipated that the quality of life of residents, vacationers and other Aboriginal and non-Aboriginal will be affected. While ambient noise models for the operational phase show that noise levels anticipated at the dwellings closest to the pit are below the MDDELCC regulatory limits, there could be occasional disturbances on days with atmospheric conditions favourable to noise propagation. Moreover, air quality as well as vibration and air overpressure models show that the project will not impact the dwellings closest to the future mine site. There could however be worry and stress provoked by the dust emissions as well as vibrations and air pressures generated by blasting.

For users practicing activities near the mine, the nuisances caused by noise, dust, vibrations and artificial light emanating from the site will be more pronounced and could even cause certain activity sites to be abandoned.

On the other hand, emanations from mine sites generally cause worry, especially regarding explosion gases, fume from trucks and other excavation equipment, and especially the dust generated. There can also be concerns regarding water management as well as hazardous material and waste management. Indeed, some residents are concerned about their impact on their health and on that of more vulnerable groups, which is likely to cause worry and stress. There could also be some concerns expressed regarding the project's effects on flora and fauna, most notably from members of the Aboriginal communities of Lac-Simon and Kitchisakik. The establishment of a participatory watchfulness process on the project's impacts and nuisances through a citizen monitoring committee, an internal community relations service and an ongoing communication program to inform the population regarding the mine's operations, the management of contaminants, mitigation measures and environmental monitoring will help limit these concerns.

Finally, regarding more specifically Algonquin land users, the projected construction work at the mine site, as well as the operation of the mine, could potentially affect the presence of moose, and thus their winter hunting activities. They will thus need to hunt further south or on the outskirts of the project's limited study area, where the moose will have moved to. This impact is deemed to be of minor importance.

6.4 REVIEW OF ANTICIPATED IMPACTS

The assessment of the Akasaba West mining project has not revealed any major impacts to be generated, from construction until the closure phase. Further, almost all impacts highlighted are of low importance. Indeed, in all, only three environmental and social components will be impacted to a medium degree, namely vegetation during the construction phase, quality of life during the operational phase and finally water and sediment during the closure phase.

No impact is qualified as major or important according to the *Canadian Environmental Assessment Act*.

6.5 EFFECTS IN CASE OF FAILURES, ACCIDENTS AND NATURAL EVENTS

The Akasaba West project's open pit is around 6 km south of Route 117 and a railroad and over 2.5 km north of the closest residences, surrounding Lake Bayeul. These sensitive elements were considered during the analysis of the project's effects in case of failures, accidents or natural events.

6.5.1 EFFECTS IN CASE OF FAILURES OR ACCIDENTS

AEM will advocate reducing the risk of accidents at the source by taking them into account from the design of the project's facilities as well as through the use of technologies that are proven in terms of safety and prevention. These risks will also be reduced through the implementation of prevention and control measures.

As the site will only host ore extraction and mechanical processing activities, the Akasaba West project's main risks of accidents are as follows:

- spills or leaks of petroleum products;
- spills or leaks of chemicals other than petroleum products;
- fire;
- explosion;
- toxic fumes;
- discharge of non-compliant water in the final effluent;
- major accident in the pit;
- failure of a slope or waste rock pile.

The causes of these types of accidents, the preventive and control measures, the consequences of each and the emergency measures which can be applied have been documented.

The emergency response plan (ERP) which will be put in place by AEM will enable a quick and effective reaction to the various emergency situations likely to occur during the various stages of the mine project. A first version of the ERP is presented in the impact assessment, stating its guidelines. Significant adjustments will be made to adapt it to the project realities. Globally, the final ERP will detail the main actions envisaged in case of emergency, the warning mechanisms, the material and physical resources needed as well as the links with the various levels of authority concerned by these situations (municipal, provincial, etc.).

6.5.2 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

There can be certain risks to the project stemming from extreme weather events or external disasters, such as an earthquake, a forest fire or an accident at a third party. As these potential events could cause accidents similar those identified in the previous section, they will not be specifically documented.

Some natural disasters, such as landslides, are not considered in the context of the Akasaba West project as there is little risk of them occurring within the limited study area. Indeed, while there is clay in the soil, the relatively flat relief in this area means there is very little likelihood of a landslide occurring.

Even if the Akasaba West project's infrastructure is not likely to be affected by flooding, given its location at the head of a watershed, the infrastructure regulating water levels and flow was designed to handle a 1 : 100-year flood event, which is considered to be safe. However, during the construction phase, an exceptional flood could affect certain structures before they have been consolidated, which could mean some work would need to be redone and delays in the construction schedule.

Finally, the event most likely to affect the mining infrastructure is probably a forest fire. However, given the quicker land response possible due to the presence of a road network on the mine site, many ignition sources could be put out before developing into large out-of-control fires. Moreover, as ore treatment plant is not at the Akasaba West mine site, a forest fire could temporarily interrupt activity due to smoke bothering the workers, but would not compromise the Goldex plant's activities.

6.6 CUMULATIVE EFFECTS

The valued ecosystem components and social components selected for the analysis of the Akasaba West project's cumulative effects are: woodland caribou, migratory birds and the traditional use of the territory by the Lac-Simon and Kitcisakik Algonquin.

6.6.1 WOODLAND CARIBOU

The project's impacts were assessed in terms of the study area's potential use for caribou. However, current disturbances in the area (forest roads, logging, visitors, fires, etc.) limit this usage potential.

Caribou seem to generally avoid areas less than 4 km from the centre of a mine, with this distance increasing along with the intensity of mining activity, regardless of the season. The assessment of the mine project's cumulative effects on the habitat conditions of the caribou population south of Val-d'Or was conducted assuming an area of influence or disturbance around a 4-km radius from the centre of the mine and 500 m either side of the mine access road. The mine's area of influence thus measures some 47 km².

Woodland caribou habitat conditions are already disturbed in a significant part of this area of influence, around 94 %. The logging and forest roads called for in the integrated operational forest management plan (IOFMP) 2014-2018 will add a projected cumulative effect (newly disturbed area) of some 4 % within the mine project's area of influence. In terms of the Akasaba West project, excluding the surfaces already disturbed and those that will be disturbed by forest activity (IOFMP), the additional expected cumulative disturbance will be 0.84 km², for an increase in the rate of disturbance of 1.8 %.

This project cumulative effect has little effect on the variation on area of protection 1A 2013-2018's rate of disturbance, which will rise by 0.17 %, a non-significant amount taken over the management area of the caribou population south of Val-d'Or (0.00044 %), which corresponds to the area of analysis of the project's cumulative effects on this species.

For example, simulating an area of influence of 500 m bordering the projected roads and logging areas, the areas which will be disturbed by these activities covers nearly 50 % of area of protection 1A and 20 % of the area covered by the management plan. While these areas are already significantly disturbed, the new forest activity will intensify this phenomenon, most notably in terms of habitat fragmentation and disturbance by human activity.

The cumulative effect is deemed to be of very low importance. In short, the present project will not have a significant cumulative effect on woodland caribou. Therefore, no additional mitigation measures are needed, nor is environmental monitoring. Note that AEM has taken part in the woodland caribou preservation program since 2014 and intends on continuing its participation up to the end of the present project.

6.6.2 MIGRATORY BIRDS

The migratory species most likely to be affected by the present project are those which are the most abundant within the Akasaba West project's study area, namely the Nashville warbler, white-throated sparrow, ruby-crowned kinglet, magnolia warbler, alder flycatcher, winter wren and yellow-bellied flycatcher. These are essentially stewardship species, that is species for which a high proportion of its continental range or population is located within a given region.

The Akasaba West project will lead to the loss or modification of an area of land and wetlands measuring around 116 ha, mainly due to clearing. This will lead to a reduction in the breeding populations of passerines, woodpeckers, shorebirds and other species. Regarding the roadways, as well as potential deadly collisions, they can disturb certain species sensitive to the presence of roads (e.g., habitat fragmentation) and the consequences (e.g., vibrations, noise) of their presence in the natural environment.

The three at risk species of migratory birds and the nine priority species within the Québec Bird Conservation Region N° 8 (the Canadian Shield's softwood forests) are among those that will be the least affected by the Akasaba West project, at least for the terrestrial avian species, as there are few breeding couples in the limited study area. However, aquatic species could be somewhat disturbed by the use of the ore transport road, most notably the American bittern and the sora.

The present project should have little effect on migratory bird populations within the territory under consideration. Indeed, past or current actions, events and projects within the cumulative effects study area have had much greater effects on migratory birds than the new facilities planned as part of the Akasaba West project, which will be very small scale.

In terms of future actions, events and projects, only one other mining project besides the Akasaba West project is located within the cumulative effects study area (25 km around the project site), namely Integra Gold Corp.'s Lamaque Sud mining project. This mining project, located near Val-d'Or's urban area, is only at the development stage. There are no large-scale road projects planned by the Québec Ministère des Transports in Abitibi-Témiscamingue, nor any new road infrastructure in the 2015-2017 program. However, there are plans for the creation of an integrated forest park in Val-d'Or. Finally, relatively small areas will be the sight of logging activities, for the most part in areas to the north of the project, or the development of leisure activities in the area immediately surrounding the Akasaba West project area.

Moreover, note that there are habitats of the same types as those affected all around the project site and elsewhere in the cumulative effects area which will allow individuals to find new nesting sites. Further, it is possible that alternative habitats will not be completely saturated by the project-related forced migration.

Thus, the anticipated cumulative effects should be negligible and mainly consist in increased disruptions to couples nesting near the projected facilities and the ore transport road as well as the loss and modification of different habitats in the sector.

The present project's cumulative effect on migratory birds is deemed to be of very low importance. Considering the project's non-significant cumulative effect on migratory birds, no additional mitigation measures beyond those planned for the project's direct and indirect impacts are required, nor any monitoring.

6.6.3 TRADITIONAL ALGONQUIN LAND USE

The Akasaba West project should have a marginal negative effect on Algonquin land use throughout the territory considered for cumulative effects¹ as there has already been a fair amount of disturbance over the years, especially in the Val-d'Or – Senneterre axis. The project should not significantly modify the Anicinabek's current activities within the territory. However, progressive changes to their ancestral land as well as different Supreme Court judgements have led the Anicinabek to assert their ancestral rights to the land more categorically over the last two decades. Thus, while the project's effects are considered marginal in terms of traditional land use, it arrives in a context where the Anicinabek expect to participate in the decision-making process regarding economic and social development within what they consider to be their ancestral land.

Ongoing or future activities and projects could generate a cumulative effect of the project on traditional land use by the Algonquin. Indeed, two types of resource exploitation continue to have and will have an effect on the Lac-Simon and Kitcisakik Anicinabek's ancestral land. On the one hand, forest companies log a significant amount of this territory, and on the other hand there are active mines: near Val-d'Or, the Beaufort (Mines Richemont) and Canadian Malartic (Yamana Gold and Agnico Eagle) mines; north of Lebel-sur-Quévillon, the Langlois mine (Nyrstar Canada Ressources). Moreover, activity on the Anicinabek's ancestral land could dramatically increase as there were over sixty mining exploration projects ongoing on this territory in 2013, as well as planned logging.

However, given its small scale, the Akasaba West project's cumulative effect on Anicinabek traditional land use will be of low importance. Considering the expected non-significant cumulative effect, there is no need to propose any additional mitigation measures beyond those planned for the project's direct and indirect impacts are required, nor any specific monitoring.

¹ Family hunting grounds established in 1928: Ottawa River (former Lake Decelles which became a reservoir at the beginning of the 1940s, and Grand lac Victoria) and the Bell River (from Lake Simon south of Lake Matagami) watersheds.

Table 5: Summary of Potential Impacts

Element Affected	Phase	Impact Source	Impact Declaration	Mitigation Measures	Magnitude of the Impact	Extent of the Impact	Duration of the Impact	Probability of Occurrence	Nature of the Impact	Importance of the Impact
Soils	Construction	Ground preparation. Changes to the surface drainage. Installation and presence of the work site. Installation of temporary and permanent infrastructure. Management of hazardous materials and waste. Equipment use and maintenance.	<ul style="list-style-type: none"> • Soil contamination. • Soil erosion and sediment transport. • Loss of soils usable for other means. 	SOL1 to SOL6	Low	Limited	Short to medium	High	Negative	Minor
	Operational	Mining of the pit. Management of ore, unconsolidated deposits and waste rock. Management of hazardous materials and waste. Presence of permanent infrastructure. Equipment use and maintenance.	<ul style="list-style-type: none"> • Soil contamination. • Soil erosion and sediment transport. 	SOL1 to SOL6, EAU6	Low	Local	Medium	High	Negative	Minor
	Closure	Dismantling of equipment. Final restoration of the site. Transportation and traffic. Equipment use and maintenance. Remains of the site.	<ul style="list-style-type: none"> • Soil contamination. • Soil erosion and sediment transport. 	SOL1, SOL2, SOL3 and SOL6	Low	Local	Short	Medium	Negative	Minor
	Construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydrological Regime	Operational	Mining of the pit. Management of ore, unconsolidated deposits and waste rock. Water management. Presence of permanent infrastructure.	<ul style="list-style-type: none"> • Changes to the hydrological regime. 	N/A	Low	Local	Medium	Medium	Negative	Minor
	Closure	Management of ore, unconsolidated deposits and waste rock. Water management. Remains of the site.	<ul style="list-style-type: none"> • Changes to the hydrological regime. 	N/A	Low	Local	Medium	Medium	Negative	Minor
Groundwater	Construction	Ground preparation. Installation and presence of the work site. Installation of temporary and permanent infrastructure. Management of hazardous materials and waste. Equipment use and maintenance.	<ul style="list-style-type: none"> • Changes to groundwater quality. 	SOL1 to SOL6	Low	Limited	Short	Medium	Negative	Minor
	Operational	Mining of the pit (dewatering). Management of ore, unconsolidated deposits and waste rock. Water management. Management of hazardous materials and waste. Presence of permanent infrastructure. Equipment use and maintenance.	<ul style="list-style-type: none"> • Lowering of the water table. • Changes to groundwater quality. 	SOL 1 to SOL6, EAU6, EAU 13	Low	Local	Medium	High (dewatering)/ Low (water quality)	Negative	Minor
	Closure	Dismantling of equipment. Final restoration of the site. Transportation and traffic. Equipment use and maintenance.	<ul style="list-style-type: none"> • Peripheral piezometric recuperation and flooding of the pit. • Possible changes in groundwater quality. 	SOL 1 to SOL6, EAU12	Low	Local	Medium	Low	Negative	Minor

Table 5: Summary of Potential Impacts (cont.)

Element Affected	Phase	Impact Source	Impact Declaration	Mitigation Measures	Magnitude of the Impact	Extent of the Impact	Duration of the Impact	Probability of Occurrence	Nature of the Impact	Importance of the Impact
Surface Water and Sediments	Construction	Ground preparation. Changes to the surface drainage. Installation and presence of the work site. Installation of temporary and permanent infrastructure. Work in aquatic environments. Management of hazardous materials and waste. Transportation and traffic. Equipment use and maintenance.	<ul style="list-style-type: none"> Physico-chemical changes to surface waters and sediment quality. 	EAU1 to EAU4, Eau 8	Low	Limited	Short	Low (accidental spills)/ medium (increase in turbidity)	Negative	Minor
	Operational	Mining of the pit. Management of ore, unconsolidated deposits and waste rock. Water management. Management of hazardous materials and waste. Presence of permanent infrastructure. Equipment use and maintenance.	<ul style="list-style-type: none"> Physico-chemical changes to surface waters and sediment quality. 	EAU1 to EAU11	Low	Local	Medium	Medium	Negative	Minor
	Closure	Rehabilitation of the pit. Final restoration of the site. Water management on the mine site. Transportation and traffic. Equipment use and maintenance.	<ul style="list-style-type: none"> Physico-chemical changes to surface waters and sediment quality. 	SOL1 to SOL6 and EAU12	Low	Local	Long	Medium	Negative	Medium
Atmosphere	Construction	Installation and presence of the work site. Ground preparation. Installation of temporary and permanent infrastructure. Transportation and traffic. Equipment use and maintenance.	<ul style="list-style-type: none"> Changes to air quality. 	AIR1 and AIR 2	Low	Local	Short	Medium	Negative	Minor
	Operational	Mining of the pit. Management of ore, unconsolidated deposits and waste rock. Transportation and traffic. Equipment use and maintenance.	<ul style="list-style-type: none"> Changes to air quality. 	AIR3 to AIR5	Low	Local	Medium	High	Negative	Minor
	Closure	Dismantling of equipment. Final restoration of the site. Transportation and traffic. Equipment use and maintenance.	<ul style="list-style-type: none"> Changes to air quality. 	AIR1, AIR2 and AIR5	Low	Local	Short	High	Negative	Minor

Table 5: Summary of Potential Impacts (cont.)

Element Affected	Phase	Impact Source	Impact Declaration	Mitigation Measures	Magnitude of the Impact	Extent of the Impact	Duration of the Impact	Probability of Occurrence	Nature of the Impact	Importance of the Impact
Noise and Vibration	Construction	Installation and presence of the work site. Ground preparation. Installation of temporary and permanent infrastructure. Transportation and traffic. Equipment use and maintenance.	<ul style="list-style-type: none"> Changes to ambient noise. 	BRU1 to BRU3	Low	Local	Short	High	Negative	Minor
	Operational	Mining of the pit. Management of ore, unconsolidated deposits and waste rock. Equipment use and maintenance.	<ul style="list-style-type: none"> Changes to ambient noise. Increase in vibrations during blasting. 	BRU1 to BRU4	Low	Local	Medium	High	Negative	Minor
	Closure	Removal of unusable equipment. Revegetation of the site.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Negligible
Terrestrial Vegetation and Wetlands	Construction	Ground preparation. Installation of temporary and permanent infrastructure.	<ul style="list-style-type: none"> Direct and indirect loss of plant groups. Encroachment in wetlands. 	All applicable SOL, EAU measures and also VEG1 to VEG7.	Medium	Local	Long	High	Negative	Medium
	Operational	Management of ore, unconsolidated deposits and waste rock. Water management. Presence of permanent infrastructure.	<ul style="list-style-type: none"> Changes to plant communities. 	All applicable SOL, EAU measures and also VEG1.	Low	Local	Medium	Low	Negative	Minor
	Closure	Final restoration of the site. Remains of the site.	<ul style="list-style-type: none"> Revegetation of the mine site, progressive and natural plant recolonization. 	All applicable SOL, EAU measures and also VEG5.	N/A	N/A	N/A	N/A	Positive	N/A
Ichthyofauna and Fish Habitat	Construction	Work in aquatic environments at the road crossing points.	<ul style="list-style-type: none"> Avoidance of the area surrounding the area of work in aquatic environments. Encroachment in fish habitats. 	All applicable EAU measures, especially EAU2 and also FNQ1	Low	Limited	Short	High	Negative	Minor
	Operational	Mining of the pit. Management of ore, unconsolidated deposits and waste rock. Water management. Management of hazardous materials and waste. Presence of permanent infrastructure. Equipment use and maintenance.	<ul style="list-style-type: none"> Changes to ichthyofauna abundance and distribution. 	All applicable SOL, EAU measures and also EAU6	Low	Local	Medium	Medium	Negative	Minor
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Herpetofauna and Terrestrial Fauna	Construction	Installation and presence of the work site. Ground preparation. Installation of permanent and temporary infrastructure. Work in aquatic environments. Transportation and traffic.	<ul style="list-style-type: none"> Changes to herpetofauna and terrestrial fauna abundance and distribution. 	All applicable SOL, EAU, VEG measures, as well as FNT1 and FNT2	Low	Local	Medium	High	Negative	Minor
	Operational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 5: Summary of Potential Impacts (cont.)

Element Affected	Phase	Impact Source	Impact Declaration	Mitigation Measures	Magnitude of the Impact	Extent of the Impact	Duration of the Impact	Probability of Occurrence	Nature of the Impact	Importance of the Impact
Herpetofauna and Terrestrial Fauna (cont.)	Closure	Final restoration of the site. Remains of the site.	<ul style="list-style-type: none"> Changes to herpetofauna and terrestrial fauna abundance and distribution. 	All applicable SOL, EAU measures and VEG	N/A	N/A	N/A	N/A	Positive	N/A
Avian Fauna	Construction	Installation and presence of the work site. Ground preparation. Installation of temporary and permanent infrastructure. Work in aquatic environments. Equipment use and maintenance. Transportation and traffic.	<ul style="list-style-type: none"> Changes to avifauna abundance and distribution. 	All applicable SOL, EAU measures, VEG and also FNV1 and FNV2	Low	Local	Medium	High	Negative	Minor
	Operational	Equipment use and maintenance. Transportation and traffic. Identical to the construction phase.	<ul style="list-style-type: none"> Changes to avifauna abundance and distribution. 	Identical to the construction phase	Low	Local	Medium	High	Negative	Minor
	Closure	Rehabilitation of the pit. Final restoration of the site. Remains of the site.	<ul style="list-style-type: none"> Changes to avifauna abundance and distribution. 	All applicable SOL, EAU, BRU, VEG, FNQ and FNT measures	N/A	N/A	N/A	N/A	Positive	N/A
Land Planning and Development	Construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Operational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Land Use – Residential and Vacation Areas	Construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Operational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Land Use – Leisure, Recreational Tourism, Hunting and Trapping	Construction	Installation and presence of the work site. Ground preparation. Installation of temporary and permanent infrastructure. Transportation and traffic.	<ul style="list-style-type: none"> Loss of a leased temporary shelter on public land. Displacement of hunting activities. Encroachment on registered trapping land. 	FNT1, FNT2 and UTL1	Low	Limited	Short	High	Negative	Minor
	Operational	Presence and mining of the pit. Management of ore, unconsolidated deposits and waste rock. Transportation and traffic.	<ul style="list-style-type: none"> Disturbance of hunting and trapping activities. 	FNT1, FNT2 and UTL1	Low	Limited	Short	Medium	Negative	Minor
	Closure	Dismantling of equipment. Rehabilitation of the pit. Final restoration of the site.	<ul style="list-style-type: none"> Reappropriation of the mine site after the mine's closure. 	N/A	N/A	N/A	N/A	N/A	Positive	N/A
Land Use – Forestry	Construction	Installation and presence of the work site. Ground preparation. Installation of temporary and permanent infrastructure.	<ul style="list-style-type: none"> Loss of commercially-exploitable forest area. 	VEG6	Low	Limited	Long	High	Negative	Minor
	Operational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 5: Summary of Potential Impacts (cont.)

Element Affected	Phase	Impact Source	Impact Declaration	Mitigation Measures	Magnitude of the Impact	Extent of the Impact	Duration of the Impact	Probability of Occurrence	Nature of the Impact	Importance of the Impact
Traffic and Safety	Construction	Transportation and traffic.	<ul style="list-style-type: none"> Cohabitation of regular Chemin du Lac-Sabourin user traffic and worker and machinery traffic, and concerns regarding the safety of Colombière sector residents and Chemin du Lac-Sabourin users. 	CIR1 and CIR2	Low	Local	Short	Medium	Negative	Minor
	Operational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Local and Regional Economy	Construction	Purchase of goods, services and materials. Labour.	<ul style="list-style-type: none"> Creation and maintaining jobs and economic spinoffs among local and regional suppliers. 	ECO1 and AUT1	N/A	N/A	N/A	N/A	Positive	N/A
	Operational	Purchase of goods, services and materials. Labour.	<ul style="list-style-type: none"> Creation and maintaining jobs and economic spinoffs among local and regional suppliers. 	ECO1 and AUT1	N/A	N/A	N/A	N/A	Positive	N/A
	Closure	Purchase of goods, services and materials. Labour.	<ul style="list-style-type: none"> Creation and maintaining jobs and economic spinoffs among local and regional suppliers. 	ECO1 and AUT1	N/A	N/A	N/A	N/A	Positive	N/A
Infrastructure	Construction	Transportation and traffic.	<ul style="list-style-type: none"> Possible deterioration of Chemin du Lac-Sabourin. 	CIR1 and CIR2	Low	Limited	Short	Medium	Negative	Minor
	Operational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aboriginal Presence	Construction	Installation and presence of the work site. Ground preparation. Installation of temporary and permanent infrastructure. Transportation and traffic.	<ul style="list-style-type: none"> Potential disturbance of moose hunting activities. 	AUT2 and AUT3	Medium	Limited	Short	High	Negative	Minor
	Operational	Presence and mining of the pit. Management of ore, unconsolidated deposits and waste rock. Presence of mining infrastructure. Transportation and traffic.	<ul style="list-style-type: none"> Potential disturbance of moose hunting activities. 	AUT2 and AUT3	Medium	Limited	Short	High	Negative	Minor
	Closure	Dismantling of equipment. Rehabilitation of the pit. Final restoration of the site.	<ul style="list-style-type: none"> Reappropriation of the mine site after the mine's closure. 	N/A	N/A	N/A	N/A	N/A	Positive	N/A
Archaeological Heritage	Construction	Installation and presence of the work site. Ground preparation. Installation of temporary and permanent infrastructure.	<ul style="list-style-type: none"> Possible disturbance of archaeological remains. 	ARC1	Low	Limited	Long	Low	Negative	Minor
	Operational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 5: Summary of Potential Impacts (cont.)

Element Affected	Phase	Impact Source	Impact Declaration	Mitigation Measures	Magnitude of the Impact	Extent of the Impact	Duration of the Impact	Probability of Occurrence	Nature of the Impact	Importance of the Impact
Quality of Life	Construction	Installation and presence of the work site. Ground preparation. Management of hazardous materials and waste. Transportation and traffic. Equipment use and maintenance.	<ul style="list-style-type: none"> Changes to the quality of life of vacationers and other Aboriginal and non-Aboriginal land users. Concerns regarding the risks of contamination of the environment. 	All applicable SOL, EAU, AIR, BRU and also VIE2 measures	Low	Local	Short	Medium	Negative	Minor
	Operational	Mining of the pit. Management of ore, unconsolidated deposits and waste rock. Water management. Management of hazardous materials and waste. Presence of permanent infrastructure.	<ul style="list-style-type: none"> Changes to the quality of life of vacationers and other Aboriginal and non-Aboriginal land users. Concerns regarding the risks of contamination of the natural environment. 	VIE1 and VIE2 as well as LMI1 to LMI4	Low	Local	Long	Medium	Negative	Medium
	Closure	Final restoration of the site. Presence of remains of the site.	<ul style="list-style-type: none"> Concerns regarding the risks of contamination of the natural environment. 	VIE2	Low	Limited	Medium	Low	Negative	Minor
Landscape	Construction	N/A	N/A	PAY1 to PAY3	N/A	N/A	N/A	N/A	N/A	N/A
	Operational	N/A	N/A	PAY1 to PAY3	N/A	N/A	N/A	N/A	N/A	N/A
	Closure	N/A	N/A	PAY1 to PAY3	N/A	N/A	N/A	N/A	N/A	N/A

7 SURVEILLANCE AND MONITORING PROGRAM

7.1 ENVIRONMENTAL SURVEILLANCE

The environmental surveillance conducted during the project will consist in ensuring AEM fulfills its environment-related commitments and obligations. It will also endeavour to verify the incorporation of proposed mitigation measures into the project as well as ensuring compliance with the laws, regulations and other environmental considerations set forth in the different government permits, as much for the plans and specifications as well as the subcontracts.

One of the surveillance program activities will consist in ensuring that all authorizations and permits needed for the project have been requested and that the certificates of authorization and permits have been issued.

Together with the main contractor for the work, the work site and environment supervisors will organize a work site meeting at the very beginning of the work. The purpose of this meeting will be notably to inform and sensitize the work site personnel regarding the environmental and safety provisions which need to be observed throughout the entire work period as well as the general functioning of the surveillance activities.

During the work, the mitigation measures will need to be rigorously applied. In general, the environmental supervisor will regularly visit work areas to ensure the compliance of the work being carried out. He will also assess the quality and effectiveness of the measures applied and note any non-compliances observed. Appropriate corrective measures will be applied as needed.

The environmental specifications for each work site will be used to ensure the prescribed mitigation measures are applied. Surveillance reports containing on-site observations will also be regularly produced.

7.2 ENVIRONMENTAL MONITORING DURING CONSTRUCTION AND OPERATION

The purpose of the environmental monitoring program planned as part of the Akasaba West project is to follow the evolution of certain sensitive environmental components, for some to comply with federal and provincial requirements. The planned monitoring includes:

- effluent and surface water quality in the receiving environment;
- groundwater quality around the mine site;
- drinking water quality and availability from private wells near the mine;
- dust deposition;
- noise;
- vibrations and air overpressure;
- sentinel fish populations (age, size at age, relative gonad weight, condition, relative liver weight);
- benthic invertebrate communities (total density, richness, diversity, equity, etc.);
- supporting environmental variables and sediment quality (size distribution and total organic carbon content);

- sublethal toxicity testing on targeted biological components.

7.3 POST-CLOSURE MONITORING

The only facilities which will remain on site after restoration are the waste rock and unconsolidated deposit piles, the protective berm around the flooded pit and the permanent ditches channelling water to the pit.

The Akasaba West mine post-closure monitoring program will aim to ensure that the restoration measures are effective. In accordance with Directive 019 on the mining industry, it will include:

- ensuring the integrity of structures;
- agronomic monitoring;
- effluent quality monitoring;
- groundwater quality monitoring.

Appendix A

MITIGATION MEASURES

Mitigation Measures List

Mitigation Measures – Akasaba West Project

Soil	
SOL1	Inspect machinery before first use and regularly afterwards to ensure it is in good working order.
SOL2	Make an emergency petroleum product and hazardous material spill kit easily accessible at all times.
SOL3	To reduce the use of borrow pits during operations, unconsolidated deposits and waste rock from the pit or available on site will be used as granular material.
SOL4	Take precautions to avoid any spillage of explosives when filling drill holes and recover any spilled residual products if necessary.
SOL5	Fuel tanks will be double-walled and will comply with applicable regulations.
SOL6	A spill response procedure as well as an Emergency Response Plan will be developed.
Surface Waters and Groundwater	
EAU1	Machinery parking, fuelling, cleaning and maintenance areas will be located at least 60 m from any watercourse.
EAU2	Maintain a 60-m protective strip between the south margin of the accumulation areas and the unnamed tributary of the Sabourin River.
EAU3	Stabilize or control disturbed locations as the work is completed.
EAU4	Send used oils from the machinery to a designated disposal site.
EAU5	Ditches will be used to surround the PAG waste rock pile and the ore storage area to collect drainage and runoff water to be channeled to a basin.
EAU6	To minimize the erosion of unconsolidated deposit piles during mining operations, slopes will be progressively stabilized by effective means.
EAU7	To minimize the dissolving of nitrate and ammonia in mine water, the use of low-dissolution emulsion explosives will be favoured.
EAU8	SM concentrations will be controlled during the construction period.
EAU 9	Contact water collected on the mining site will be treated as necessary before being discharged into the environment.
EAU10	A sump will be installed in the garage floor and an oil separator will be added to the outlet pipe. Cleaning water will be sent to a septic tank which will be emptied regularly and the water-grease separator will be emptied as necessary.
EAU11	PAG waste rock will be piled so as to limit the development of convection cells by controlling the vertical particle size segregation by using a grab using a method of pouring the bucket with the bulldozer leveling.
EAU 12	Install a multilayer covering on the PAG waste rock pile once mining extraction has ceased in the pit.
EAU13	In the event that the mine's activities have had a proven impact on private wells (water quality and flow), AEM shall proceed with corrective work at its own expense.

Mitigation Measures List (cont.)**Mitigation Measures – Akasaba West Project**

Air Quality	
AIR1	To minimize dust generation during frost-free period work, spray dry roads as necessary.
AIR2	Dust dispersion by trucks on the mining site in operation will be limited by watering road surfaces, and if necessary the use of dust suppressants.
AIR3	Ore will be crushed under a shelter so as to control dust dispersion. Further, the crusher will be equipped with a dust collector or a dust suppression system.
AIR4	Equip all drilling rigs with dust collectors.
AIR5	Limit the speed of mining vehicles to 40 km/h on the mining site.
Ambient Noise and Vibrations	
BRU1	Equip mobile equipment with broadband audible alarms for when backing up.
BRU2	Ensure equipment is properly maintained and that the machinery's mufflers and catalysts are in good condition.
BRU3	Establish a sensitization program for machinery users to avoid slamming, dropping objects from height and to optimize work methods.
BRU4	Bulldozers will only work on the piles during the day.
BRU5	Install a network to monitor ground vibrations and air pressure.
Vegetation	
VEG1	Forbid machinery from travelling outside work areas.
VEG2	During clearing, special attention will be given to protecting vegetation along the edge of work areas. The falling of trees outside the clearing areas and in watercourses will be avoided as much as possible.
VEG3	When possible, reuse wood chippings and debris.
VEG5	For revegetation work, ensure that the seeding mix does not have any invasive alien species. Favour indigenous species appropriate for the hardiness zone.
VEG6	Recover commercial value timber, cut lengthwise and pile in accordance with the timber permit.
VEG7	To prevent the introduction of invasive alien species, ensure the excavators to be used are cleaned before being brought onto the mining site to remove any mud, animals or plant fragments.
Aquatic Fauna	
FNQ1	Prevent the transport of sediment into the aquatic environment by effective means to prevent an increase in turbidity beyond the immediate work area.

Mitigation Measures List (cont.)

Mitigation Measures – Akasaba West Project

Terrestrial Fauna	
FNT1	Before any clearing work is undertaken, award a trapping contract so that the largest possible number of fur animals can be captured, especially less-mobile species such as beavers. Ensure beaver activities are managed throughout the life of the project.
FNT2	Sensitize workers to not feed the animals and to not leave food lying about so as not to attract fur animals near work areas. Sensitization can consist of signs as well as information sessions.
Avian Fauna	
FNV1	Forbid machinery from travelling outside work areas and install signs along the limits of sensitive area buffer zones.
FNV2	Conduct clearing outside of the bird nesting period (from May 15 to August 30). To the extent possible, clearing work will take place in winter. When clearing must take place during the nesting period, AEM is committed to not destroying any nests by first conducting an ornithological inventory.
Land Use	
UTL1	Negotiate agreements with affected temporary shelter leaseholders.
Transportation and Traffic	
CIR1	To minimize nuisances, Chemin du Lac-Sabourin will only be used during construction. Once the new segment of the ore transport road has been completed, this will be used not only for transport ore, but also for employee and merchandise transport.
CIR2	To ensure the harmonious cohabitation of normal Chemin du Lac-Sabourin traffic with worker and machinery traffic, sensitize workers and truckers and install signage promoting safe driving.
Local and Regional Economy	
ECO1	Favour companies with a significant effect on the local and regional economy (local head office, regional workforce, etc.) during the tendering process when competence, quality and price are competitive, thus generating a policy aimed at optimizing the purchase of regional goods and services.
Aboriginal Presence	
AUT1	Put in place mechanisms for the integration of Aboriginal workers.
AUT2	Members of the Aboriginal communities of Lac-Simon and Kitcisakik will be informed of the nature and schedule of the mine's construction, operation and restoration.
AUT3	Mine workers will be sensitized regarding Aboriginal moose hunting activities.
Heritage and Archaeology	
ARC1	If remains of interest were to be discovered during the work, the head of the work will be immediately informed and measures will be taken to protect the site.

Mitigation Measures List (cont.)

Mitigation Measures – Akasaba West Project

Quality of Life	
VIE1	Land users will be informed of the timing of blasting operations. Blasting will only take place during the day, at predefined times.
VIE2	Put in place a participative process regarding the project's impacts and nuisances, including a citizen's monitoring committee, an internal community relations service and an ongoing communications program to provide information regarding mine operations, contaminant management, mitigation measures and environmental monitoring (during the construction, operational and post-closure phases), providing a platform for complaints and to implement adjustments when necessary.
Luminosity	
LMI1	Limit skyward light emissions by using lights that produce discreet, uniform lighting which will meet the true lighting needs and whose luminous flux will be directed towards the surface needing illumination.
LMI2	Use lights which do not emit light beyond 90 degrees.
LMI3	Limit at much as possible the period and duration of nighttime lighting use.
LMI4	Install stationary lights so as to avoid light spillage outside of the areas to be illuminated; give special attention to the direction of portable lights and moveable lighting sources.
Landscape	
PAY1	At the end of the work, redevelop and restore disturbed areas as per the closure plan.
PAY2	To minimize erosion of unconsolidated deposit piles, slopes will be stabilized.
PAY3	Establish a system of directional lighting system at the mining complex to minimize skyward emissions.

