



**KEARNEY GRAPHITE MINE
POWER SUPPLY**
ENVIRONMENTAL SCREENING
REPORT

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Executive Summary

The Kearney Graphite Mine (the Mine) is located south of Graphite Lake in the Town of Kearney, Ontario, formerly part of Butt Township. The Mine is located approximately 12 kilometres (km) north of the town centre of Kearney and 1.5 km west of Algonquin Provincial Park. The 445 hectare (ha) Mine site includes an open pit mine, milling and associated buildings and equipment, a waste rock disposal area, and a tailings area with associated water management facilities.

This Mine previously operated during the period from 1989 to 1994, and has been in a state of Temporary Suspension since then. Ontario Graphite Limited (Ontario Graphite) proposes to re-start production at the Mine within the next two years and operate the Mine for six to seven years. Although there is currently some infrastructure located at the Mine from the operational period of the Mine, there is currently no source of electricity. The purpose of this Environmental Screening Report (ESR) is to assess the potential environmental impacts that may result from the construction, operation and decommissioning of the proposed installation of four 1.24 MW diesel generators (with a total nameplate capacity of 4.96 MW) to power operations at the Mine (the Power Supply Project). The following report addresses the provincial Environmental Screening Process, following Ontario Regulation 116/01 made under the *Environmental Assessment Act (EAA)*, and in accordance with the “*Guide to Environmental Assessment Requirements for Electricity Projects*” (MOE 2011).

During normal mill operation, three of the four generators will be in operation, providing a maximum of 3.72 MW of power, with the fourth on standby. Mill operations are expected to operate 24 hours per day, seven days per week. During normal operation, the majority (17,600 kg/hour) of the hot exhaust gases from the three generators will be ducted to the Mill building, mixed with ambient process air at a rate of 4,400 kg/hour, and used in the graphite dryer. Emissions from the dryer are ultimately vented to the atmosphere through an exhaust stack on the Mill Building. The remainder of the generator exhaust will be emitted through separate stacks for each generator on the Generator Building.

During Mill down time, the Mill processes will not be in operation, and only one of the generators will be operated to provide general power for lighting and heating the various buildings as required. In this operating scenario, all the generator exhaust is emitted through the dedicated exhaust stack for that generator.

The re-activation and operation of the Mine will positively contribute to the local economy. It is anticipated that the Mine will provide employment for approximately 70 employees for the next six to seven years.

Although the operation of the diesel generators will emit NO₂, CO, PM, and SO₂, all parameters are anticipated to be within the limits of the MOE's air quality criteria and no adverse effects on the local air quality were predicted with the implementation of the Power Supply Project.

The results of the acoustical modeling demonstrated that emissions derived from simultaneous operation of the diesel generators can meet the MOE guidelines at all identified points of reception provided that recommended mitigation measures are implemented. At the nearest point to the Mine in Algonquin Provincial Park and at the nearest First Nations reserve (Dokis First Nation), the predicted noise levels due to normal generator operations are expected to be inaudible, relative to normal background noise levels.

There may be minimal disturbance to game resources from noise associated with the operation of the diesel generators. If species are able to adapt easily to human-modified habitats, generally they do not seem to be adversely affected by noise. Since the Mine has been operational in the past, it is anticipated that there will be no significant negative effects to game species associated with the operation of the diesel generators.

Waste materials, such as used oil, filters, and used coolants, will be generated during regular maintenance of the diesel generators. These waste materials can be properly disposed of by private waste material collection contractors and no negative environmental impacts are anticipated.

While the possibility of an accidental spill could negatively impact the local environment, precautionary measures can be implemented to reduce the likelihood of any potential contamination from accidental spills. Accidental spills are not anticipated to have any negative effects.

Overall, the potential negative environment effects of the Power Supply Project are not anticipated to be significant based on a balanced assessment against all of the screening criteria and the results and conclusion of the Environmental Screening. The potential positive impacts associated with the re-activation and operation of the Mine, for which the diesel generators are required, are anticipated to help balance the potential negative impacts that might occur as a result of the Power Supply Project.

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1.0 Introduction

The Kearney Graphite Mine (the Mine) is located south of Graphite Lake in the Town of Kearney, Ontario, formerly part of Butt Township. The Mine is located approximately 12 kilometres (km) north of the town centre of Kearney and 1.5 km west of Algonquin Provincial Park. The 445 hectare (ha) Mine site includes an open pit mine, milling with associated buildings and equipment, a waste rock disposal area, and a tailings area with associated water management facilities.

The Mine's infrastructure was constructed beginning in 1988. This Mine previously operated during the period from 1989 to 1994, and has been in a state of Temporary Suspension since then. It has had several ownership changes until the current firm, Ontario Graphite Limited (Ontario Graphite), acquired in the Mine in 2006. Ontario Graphite proposes to re-start production at the Mine within the next two years and operate the Mine for six to seven years.

As it did in past, the re-activated Mine will produce flake graphite, a valuable mineral product used in refractory materials, powder metallurgy, flame retardants, catalysts, and battery anodes and in brake pads, fuel cells, and advanced composites.

While is currently some infrastructure located at the Mine from the operational period of the Mine, there is currently no source of electricity. The purpose of this Environmental Screening Report (ESR) is to assess the potential environmental impacts that may result from the construction, operation and decommissioning of the proposed installation of four 1.24 MW diesel generators (with a total nameplate capacity of 4.96 MW) to power operations at the Mine (the Power Supply Project). The following report is divided into ten sections to address the provincial Environmental Screening Process, following Ontario Regulation 116/01 made under the *Environmental Assessment Act (EAA)*, and in accordance with the "*Guide to Environmental Assessment Requirements for Electricity Projects*" (MOE 2011).

Section 1: Provides an introduction to the Power Supply Project.

Section 2: Provides background to the Power Supply Project, including the purpose of the Power Supply Project, its description, its location, and all other relevant project information.

Section 3: Outlines the regulatory requirements needed to implement the Power Supply Project.

Section 4: Presents an overview of the "Alternatives To" considered for the Power Supply Project.

Section 5: Discussed the "Alternative Methods" considered for the Power Supply Project.

Section 6: Details the study process and the public consultation activities for the Power Supply Project.

Section 7: Details the existing conditions of the biophysical and the socio-economic environments.

Section 8: Outlines potential effects this Power Supply Project may cause to the biophysical and socio-economic environment, and provides detailed mitigation measures.

Section 9: Assesses the overall positive and/or negative effects associated with this Power Supply Project.

Section 10: Provides a summary of the mitigation, impact management and monitoring commitments associated with this Power Supply Project.

Supporting materials are found in the appendices.

2.0 Background Information

The Mine is located within the municipal limits of the Town of Kearney, Ontario, formerly part of Butt Township. The Mine is approximately 12 km north of the town centre of Kearney and 1.5 km west of Algonquin Provincial Park (see Figure A-1 in Appendix A). For a general site plan depicting the Mine's infrastructure, refer to Figure A-2 in Appendix A.

Prior to its development as a mine the site was a forested area, although a sawmill was once located at or near the current Mill Building location in the late 19th century. Commercial forestry operations were carried out on the site for many years and this activity is still occurring periodically. At present, the area west above the middle of the Tailings Area is being logged by a licensed forestry firm, Westwind Forest Stewardship Inc.

Graphite was identified in the area as early as 1879 and exploration continued into the 1979 – 1988 period. The Mine's infrastructure was constructed beginning in 1988. Since June of 1994, the Mine has been in a state of Temporary Suspension with most of the mining equipment and some of the Mill equipment (e.g., the semi-autogenous grinding mill and the generators) removed from the area. The Kearney Graphite Mine currently includes the following main facilities:

- an open pit mine;
- a concentrator mill and associated equipment and buildings;
- a cut-off trench and associated liming and pumping equipment;
- a raw ore pile and conveyors/crushers;
- a tailings disposal facility;
- a permeable filter structure damming the Tailings Area;
- a tailings impoundment beside the Tailings Dam;
- a polishing pond below the Tailings Dam;
- liming and Reclaim Water pumping equipment at the Polishing Pond;
- a waste rock disposal facility; and,
- associated roads and other infrastructure.

The leased Crown land that comprises the 445 ha Kearney Graphite Mine consists of 22 contiguous parcels of land, namely lots 808727, 808728, 830731, 831527, 831526, 808729, 808730, 884615, 884616, 884619, 884620, 884621, 884622, 884623, 884675, 884676, 831520, 831519, 831525, 1017210, 1017211, and 1017212. The mineral rights have been purchased on this Crown land.

2.1 PURPOSE OF THE PROJECT

This Power Supply Project is being completed in order for the Mine to have a reliable power supply. Although the Mine was operational in the past, components necessary to supply power for mining operations were removed in 1994 when the Mine entered into a State of Temporary

Suspension. Four 1.24 MW diesel generators are proposed to be installed at the Generator Building (12 m x 21 m fold-away type building) located east of the Mill Building to provide power to the facility process equipment, and for general heating/lighting of the various site buildings (see Figure A-2 in Appendix A for the location of the Generator Building). The maximum theoretical power output of the four generators will be 4.96 MW. During normal mill operation, a maximum of three generators will be in operation and one will be on standby. There are no other power sources (e.g., electricity, natural gas, etc.) currently available in the vicinity of the Mine.

2.2 TECHNOLOGY

The proposed model of generator is the Cummins 1500DQGAB (or equivalent) generator. Three generators, rated at 1.24 MW each, are anticipated to run for 24-hours per day, with a fourth generator on stand-by. The majority of the exhaust gases from the generators (17,600 kg/hour, or approximately 70% of the mass flow rate) will be used for drying the graphite with the balance being emitted from individual generator exhaust stacks. It was assumed that three individual exhaust stacks 9.0 m above the roof of the Generator Building will be used to exhaust the portion of the generator exhaust that is not used in the graphite drying process. The Generator Building is an existing building on the Mine site. No additional infrastructure will be required to house the diesel generators.

During Mill down time, the Mill processes will not be in operation, and only one of the generators will be operated to provide general power for lighting and heating the various buildings as required. In this operating scenario, all the generator exhaust is emitted through the dedicated exhaust stack for that generator.

Diesel, fuel oil, and rolling stock tanks will be located around the Mine. Table 2-1 lists the types of storage tank, their sizes, and their proposed locations. All diesel and fuel oil tanks will be installed according to the *Technical Standards and Safety Authority (TSSA) Act* and including the *Ontario Liquid Fuels Handling Code*. Most of the tanks will be located in a lined, bermed area that will be designed in accordance with all TSSA and other federal and provincial requirements.

Ontario Graphite is currently formulating its operational policies and procedures manual. One of the topics will be a Spill Prevention, Containment and Control Plan (the Plan). The Plan will cover spill prevention techniques, proven and acceptable containment and control methods, as well as reporting requirements. All employees will be trained in this area and appropriate reporting numbers posted throughout the mill and quarry should a spill occur (however the emphasis will be on prevention). Yearly refresher training will be provided to all employees.

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Table 2-1 Fuel Storage Tanks: Type, Size, and Location

Fuel	Type	Size	Location
Fuel Oil	Permanent	3 X 10,000L	Day Storage
Diesel	Permanent	45,000 L	Outside of Mill Building
Diesel	Permanent	45,000 L	Outside of Mill Building
Diesel	Rolling Stock	22,000 L	N/A
Diesel	Rolling Stock	33,000 L	N/A
Diesel	Rolling Stock	4,500 L	N/A
Diesel	Rolling Stock	4,500 L	N/A
Diesel	Fuel Service Truck	18,000 L	N/A
Diesel	Fuel Service Truck	18,000 L	N/A

3.0 Regulatory Requirements

A number of other regulatory requirements are being pursued in the context of the broader development and operation of the Kearney Graphite Mine. Only the approvals and permits required for the installation and use of the diesel generators are noted in the following sections.

3.1 MUNICIPAL

The Mine site is within the Town of Kearney. The Town of Kearney's Official Plan (2006b) designates the area in the vicinity of the Mine as Rural and specifically identifies the Mine as a Mine Site. Mineral aggregate operations are noted as a permitted use within areas designated as Rural. Site Plan Control is required for industrial uses (such as pits and quarries) where the proposed building exceeds 186 square metres.

Installation of the four 1.24 MW diesel generators will not involve a change in land use, nor will it involve the construction of a new building. Therefore, no municipal approvals will be required for the Power Supply Project.

3.2 PROVINCIAL

3.2.1 Environmental Screening Process

Stantec conducted an Environmental Screening for this Power Supply Project under Ontario Regulation 116/01 Electricity Projects and in accordance with the Ontario Environmental Screening Process for electricity projects, detailed in the Ministry of the Environment's "*Guide to Environmental Assessment Requirements for Electricity Projects*" (January 2011) (the "Guide"). According to the Guide, each electricity project is categorized into one of three categories:

- Category A – No EAA requirements.
- Category B – Environmental Screening Process.
- Category C – Individual EA.

The process provides for the protection of Ontario's environment by ensuring that the full environmental implications of new electricity projects are reviewed in a manner that is consistent with the potential environmental effects of the project. Based on the type and nameplate capacity of generator proposed for the Kearney Graphite Mine (i.e., oil fuelled with a nameplate capacity from 1 to <5 MW), the Power Supply Project would be classified as a Category B Project and subject to the Environmental Screening Process. This process includes the description of the proposed Power Supply Project, a characterization of the biophysical and socio-economic environment, an assessment of the potential adverse net impacts of Power Supply Project activities and consultation with regulatory agencies, regional staff, municipalities,

environmental groups, non-governmental organizations, Aboriginal communities, and community members.

3.2.2 Closure Plan

Under Ontario's *Mining Act* in order to open a new mine or re-activate a suspended one, it is necessary to present a Closure Plan to the Ontario Ministry of Northern Development and Mines (MNDM) showing how the Mine will be shut down at the end of mining operations. Such a Closure Plan was prepared and filed with the MNDM in December 2011. On February 13, 2012, the Director of Mine Rehabilitation, MNDM notified Ontario Graphite that the Closure Plan was deemed filed.

3.2.3 Environmental Compliance Approval (Air and Noise)

Under Section 9 of the Ontario *Environmental Protection Act* (EPA), all facilities that discharge contaminants to the atmosphere are required to have an Environmental Compliance Approval (ECA) for all subject sources. In addition, if triggered by the Ministry of the Environment (MOE) noise screening process, compliance with provincial noise limits would need to be demonstrated through an Acoustic Assessment (AA) report. The AA would require acoustical modelling of on-site sources to predict worst-case sound levels at nearby identified receptors (including local cabins and any vacant areas zoned for residential usage). An ECA (Air and Noise) will be completed as part of the overall approvals process for the Mine. The ECA will consider the diesel generators as proposed in this ESR.

3.3 FEDERAL

No federal approvals are required for installation and operation of the diesel generators. In addition, there are no known triggers for the *Canadian Environmental Assessment Act* in relation to this Power Supply Project.

4.0 Alternatives to the Undertaking

The following sections describe the alternative potential sources of power that could be used at the Kearney Graphite Mine and the methodology used to determine the preferred alternative.

4.1.1 Methodology

As stated in the Purpose of the Power Supply Project (Section 2.1), the objective is to provide a reliable power supply to operate the Kearney Graphite Mine. Alternatives considered during the course of this study included:

- do nothing;
- installation of diesel generators;
- natural gas;
- connection to the provincial grid; and,
- renewable sources of energy.

An informal assessment process was undertaken to evaluate the feasibility of each of the “Alternatives To” under consideration. As described in the MOE’s *Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario* (October 2009), the “Alternatives To” were assessed based on the following:

- *Do they provide a viable solution to the problem or opportunity to be addressed?*
- *Are they proven technologies (at the scale required)?*
- *Are they technically feasible (at the scale required)?*
- *Are they consistent with other relevant planning objectives, policies and decisions?*
- *Are they consistent with government priorities?*
- *Could they affect any sensitive environmental features?*
- *Are they practical, financially realistic and economically viable?*
- *Are they within the ability of the proponent to implement?*
- *Can they be implemented within the defined study area?*
- *Are they appropriate to the proponent doing the study?*
- *Are they able to meet the purpose of the Environmental Assessment Act?*

Further details regarding each of the “Alternatives To” considered are provided in the following section. The outcome of the assessment process is summarized in Section 4.3.

4.2 “ALTERNATIVES TO” CONSIDERED

Five alternatives were considered during this study, including Do Nothing, Installation of Diesel Generators, Natural Gas, Connection to the Provincial Grid and Renewable Sources of Energy.

4.2.1 Do Nothing

In order to become operational once again, the Mine requires a consistent and reliable source of power, which the Do Nothing alternative will not provide. Currently, the Mine generates electricity from two small diesel generators now operating periodically on the Mine site (one located in the Mill and the other at the Polishing Pond). These diesel generators cannot provide sufficient power for mining operations. The Kearney Graphite Mine could not operate under the Do Nothing alternative.

4.2.2 Installation of Diesel Generators

Diesel generators were used at the Mine when it was operational from 1989 to 1994. The diesel generators are able to provide the power requirements necessary for mining operations. It is estimated that the Mine would require four 1.24 MW generators; during normal mill operation, three of the four generators will be in operation, providing a maximum of 3.72 MW of power, with the fourth on standby.

4.2.3 Natural Gas

Natural gas generation would provide the level of energy production required to carry out mining operations. The nearest natural gas line is in Burk’s Falls, approximately 45 km from Mine. Based on the environmental effects associated with constructing a new pipeline to the Mine, as well as the cost and time associated with pipeline construction, this option is not feasible.

4.2.4 Connection to the Provincial Grid

Connection to the provincial grid would provide the necessary power requirements for mine operations. The nearest high voltage line with the necessary power requirements is approximately 30 km away (Emsdale). Given the distance from the Mine to the nearest interconnection point, the environmental disturbance of installing a transmission line would be significant and the time required for installation would be prohibitive to the re-activation of the Mine.

4.2.5 Renewable Sources of Energy

A number of alternative sources of energy generation are available such as solar, wind, water and biomass. However, the Mine requires a consistent and reliable source of power. Solar, wind and biomass generation could not reliably deliver this magnitude of electricity. The installation of a hydroelectric power supply (i.e., water) would be prohibitive, both in cost, feasibility and potential environmental effects.

4.3 SUMMARY OF “ALTERNATIVES TO”

The following table (Table 4-1) provides a summary of the assessment taken to identify the preferred “Alternative To”. Based on the informal assessment process, diesel generators were selected as the preferred alternative as the installation of the generators would satisfy the majority of the considerations described in Section 4.1.1.

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Alternatives to the Undertaking

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Table 4-1 Results of the Assessment of "Alternatives To"

	Do Nothing	Installation of Diesel Generators	Natural Gas	Connection to the Provincial Grid	Renewable Sources of Energy				
					Solar	Wind	Biomass	Water	
Do they provide a viable solution to the problem or opportunity to be addressed?	x	✓	x	x	x	x	x	x	✓ Yes
Are they proven technologies (at the scale required)?	x	✓	✓	✓	✓	✓	x	x	
Are they technically feasible (at the scale required)?	x	✓	✓	✓	x	x	x	x	x No
Are they consistent with other relevant planning objectives, policies and decisions?	x	✓	✓	✓	✓	✓	✓	✓	
Are they consistent with government priorities?	x	x	x	✓	✓	✓	✓	✓	
Could they affect any sensitive environmental features?	x	✓	✓	✓	✓	✓	✓	✓	
Are they practical, financially realistic and economically viable?	✓	✓	x	x	x	x	x	x	
Are they within the ability of the proponent to implement?	✓	✓	x	x	x	x	x	x	
Can they be implemented within the defined study area?	✓	✓	x	x	✓	✓	✓	✓	
Are they appropriate to the proponent doing the study?	x	✓	x	x	x	x	x	x	
Are they able to meet the purpose of the <i>Environmental Assessment Act</i> ?	✓	✓	✓	✓	✓	✓	✓	✓	

5.0 Alternative Methods to the Undertaking

Two alternative methods can be considered for the preferred “Alternative Method” – alternative designs for the diesel generators and siting alternatives.

5.1 METHODOLOGY

As with the assessment of “Alternatives To” in Section 4.0, the “Alternative Methods” were assessed based on the considerations outlined in the MOE’s “*Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario*” (October 2009), including:

- *Do they provide a viable solution to the problem or opportunity to be addressed?*
- *Are they proven technologies (at the scale required)?*
- *Are they technically feasible (at the scale required)?*
- *Are they consistent with other relevant planning objectives, policies and decisions?*
- *Are they consistent with government priorities?*
- *Could they affect any sensitive environmental features?*
- *Are they practical, financially realistic and economically viable?*
- *Are they within the ability of the proponent to implement?*
- *Can they be implemented within the defined study area?*
- *Are they appropriate to the proponent doing the study?*
- *Are they able to meet the purpose of the Environmental Assessment Act?*

5.2 ALTERNATIVE DESIGNS

Diesel generators are available in a number of different specifications. For the purposes of this Power Supply Project, the diesel generators must be able to sufficiently power the Mine operations. The selection of the type and model of generator will be based on the ability of the generator to meet operating requirements, however at this time it is anticipated that the Cummins 1500DQGAB generator will satisfy the power requirements of the Mine. Therefore, there are no design alternatives to be considered.

5.3 SITING ALTERNATIVES

The Kearney Graphite Mine is a brownfield site, having been developed in 1989. Placement of the diesel generators would, in part, be determined by the locating of existing facilities. Other factors which will be considered during the placement of the diesel generators include:

- Significant and/or sensitive environmental features;
- Placement of the diesel generators within the existing footprint of the Mine;
- Location of equipment requiring power; and,
- Positioning of other facilities within the Mine footprint.

At this time, it is anticipated the four 1.24 MW diesel generators will be installed at the Generator Building located east of the Mill Building. This location satisfies the above noted factors.

5.4 SUMMARY OF ALTERNATIVE METHODS

An assessment of the “Alternative Methods” using the considerations outlined by the MOE’s “Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario” (October 2009) was not undertaken as there were only two “Alternative Methods” for consideration. The Alternatives Methods were limited to design and siting alternatives as described above. The diesel generators will be manufactured according to applicable regulations and will be sited within the footprint of the existing Mine, specifically within the Generator Building. Therefore, with limited alternatives available, no further assessment of “Alternative Methods” is required.

6.0 STUDY PROCESS

6.1 STUDY METHODOLOGY

The applicable process for the development of electricity facilities in Ontario is Ontario Regulation 116/01, the Electricity Projects Regulation approved under the *Environmental Assessment Act*. The Environmental Assessment (EA) process outlined in the Electricity Projects Regulation is referred to as the Environmental Screening Process.

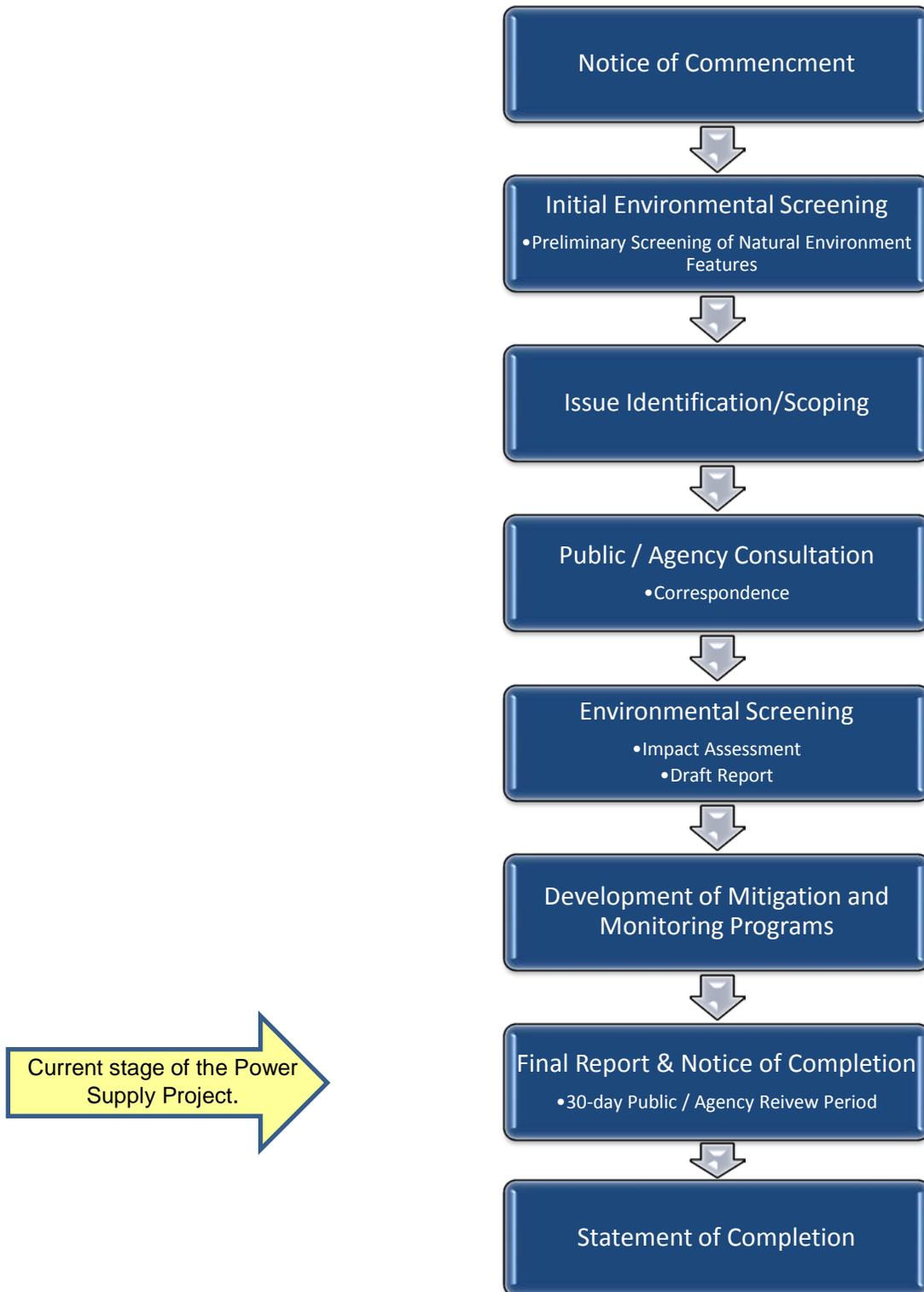
The Environmental Screening Process describes the required review process, and sets out requirements for public and agency consultation, documenting the results of the screening process and opportunities for public and agency review of reports.

Figure 6-1 illustrates the key elements of the Environmental Screening and subsequent Environmental Review process.

6.2 SCREENING CRITERIA CHECKLIST

Projects that are subject to the MOE's Guide must commence with an environmental screening. As part of the Environmental Screening Process, every proponent must apply screening criteria, found in Schedule C of the MOE Guide, to the project in order to identify the potential for any negative impacts on the environment. The screening criteria are presented on the checklist with the option of a "Yes" or "No" response. At this stage, mitigation measures are not considered in addressing the potential for a negative environmental impact. If the potential for a negative environmental impact exists, it must be identified and addressed, even if it is likely to be mitigated. The reason for identifying all potentially negative impacts is to ensure that mitigation plans are open to discussion and review. Detailed assessment of a potentially negative impact may determine that there is no actual impact, in which case no mitigation is required. The screening criteria checklist is included in Table 8-1. Based on the results of the completion of the Screening Checklist, Ontario Graphite determined it was appropriate to proceed with an Environmental Screening for the proposed Power Supply Project.

Figure 6-1 Environmental Screening and Review Process



6.3 PROJECT SCOPE

The “environment” includes land, water and air, all organic and inorganic matter, living organisms and the interacting natural systems. An “environmental effect” involves direct changes in the environment caused by a project, including changes to features such as health and socio-economic conditions, physical and cultural heritage, Aboriginal land use, or things of historical or archaeological significance.

The EA methodology for the proposed Power Supply Project has been developed to address the Environmental Screening Process requirements and will include the following:

- A project description describing the *what, where, how, when* and *why* of the proposed Power Supply Project (Section 2.2);
- A description of the existing environment describing the physical, agricultural and biological features, including environmentally sensitive areas and sensitive habitats (Section 7.0);
- A description of the socio-economic conditions describing land uses, official plan information, businesses, agriculture, contamination, heritage resources and other relevant socio-economic features (Section 7.0); and,
- An assessment of potential effects including an impact assessment and mitigation recommendations for both environmental and socio-economic features (Section 8.0).

6.4 PUBLIC CONSULTATION

Public consultation is an integral part of the environmental planning process and plays a key role in addressing potential public concerns identified in the early stages of the study through a variety of consultation mechanism including: project notification, letters, and advertisements. Additionally, public consultation is a requirement under the MOE’s “*Guide to Environmental Assessment Requirements for Electricity Projects*” (January 2011).

The intent of this section is to provide an overview of the consultation opportunities, to date, in undertaking this Environmental Screening.

6.4.1 Opportunities for Comment and Review

The following information and opportunities to comment on the development of the Environmental Screening were offered:

- Newspaper publication and mail-out of the Notice of Project Commencement; and,
- Newspaper publication and mail-out of Notice of Completion and availability of the Environmental Screening Report.

Additionally, contact information for both a Stantec and Ontario Graphite representative was included on the Notice of Commencement and Notice of Completion to allow additional opportunities for comment and questions from the public.

All communications with stakeholders and agencies were documented and recorded. All relevant information regarding each communication was tracked, such as name, date, contact information, agency affiliation, type of communication and issues and concerns raised.

The following sections provide details on the opportunities provided for the public, Aboriginal communities and stakeholders to comment on the Power Supply Project.

6.4.1.1 Notice of Commencement

Public notices were developed and issued through a variety of methods in order to reach both direct and indirect stakeholders that were identified, including Aboriginal communities and other interested parties, to notify the appropriate parties of the Power Supply Project initiation as well as to seek data input into the Environmental Screening.

The Notice of Commencement was placed in three local weekly newspapers that serve the Town of Kearney and surrounding communities as identified in Table 6-1. A copy of the Notice of Commencement is presented in Appendix B1.

Table 6-1 Advertisements Placed for the Notice of Commencement

Newspaper	Target Area	Date Notice Issued
Huntsville Forester	Huntsville Area (Port Sydney to Dorset)	September 28, 2011
Almaguin News	Novar (town north of Huntsville) to North Bay	September 29, 2011
Weekender	Huntsville, Gravenhurst, and Orillia	September 30, 2011

Sixty (60) notices with accompanying cover letters were sent by email and/or mail to regulatory agencies, regional staff, politicians, local municipalities, local environmental groups, and non-profit organizations on September 29, 2011 (see Appendices B2 and B3 for the complete agency and stakeholder list and the cover letter which accompanied the Notice).

An unaddressed admail mail-out of 455 Notice of Commencement flyers was sent out on September 27, 2011 to all residents and businesses in the POA 1M0 postal code which includes Kearney and the surrounding rural areas.

In addition, six (6) individual letters and notices were couriered to the following Aboriginal communities on September 29, 2011:

- Shawanaga First Nation
- Magnetawan First Nation

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- Henvey Inlet First Nation
- Dokis First Nation
- Wasauksing First Nation (Parry Island)
- Métis Nation of Ontario

Copies of the letters sent to the Aboriginal communities can be found in Appendix B3. Letters were couriered to the Chief and Council of each First Nation and copied to the appropriate Land and Resources contact. The President of the Métis Nation of Ontario was also sent the letter and Notice and a copy was provided to the appropriate Land and Resources contacts, via courier.

A list of the key agencies, stakeholders and Aboriginal communities that were contacted are as follows in Table 6-2.

Table 6-2 Key Agencies, Organizations and Aboriginal Communities Contacted

Federal Government	
• Aboriginal Affairs and Northern Development Canada	• Canadian Environmental Assessment Agency
• Environment Canada	• Fisheries and Oceans Canada
• Transport Canada	• Member of Parliament
Provincial Government	
• Ministry of Northern Development and Mines	• Ministry of the Environment
• Ministry of Natural Resources	• Ministry of Aboriginal Affairs
• Ministry of Tourism and Culture	• Ministry of Energy and Infrastructure
• Ministry of Transportation	• Member of Provincial Parliament
• Ontario Parks	
Local Government	
• Town of Kearney	
Stakeholders	
• Algonquin Ecowatch	• Mining Watch Canada
• Kearney Watershed Environmental Foundation	• Federation of Ontario Cottagers Association
• Ontario Mining Association	• Wildlands League
• Grass Lake/Long Lake Cottagers Association	• Sand Lake Area Property Owners Association
• Magnetawan River Watershed Association	• Cecebe Waterways Association
Aboriginal Communities	
• Dokis First Nation	• Magnetawan First Nation
• Henvey Inlet First Nation	• Shawanaga First Nation
• Wasauksing First Nation	• Métis Nation of Ontario

6.4.1.2 Summary of Agency Correspondence

Agencies replied via electronic mail or by letter. A summary of their written comments is provided in Table 6-3. A more detailed account of consultation activities, comments, and responses are included the Consultation Summary Tracking Table in Appendix B4. A copy of correspondence received is also included in Appendix B5.

Table 6-3 Summary of Agency Comments

Agency	Comments
Department of Fisheries and Oceans	<ul style="list-style-type: none"> • Do not foresee any impacts to fish or fish habitat.
Aboriginal Affairs and Northern Development Canada	<ul style="list-style-type: none"> • The Department will respond to your request.
Ministry of the Environment	<ul style="list-style-type: none"> • At this early stage in the screening process, we are obviously unable to offer detailed and specific comments. The ministry is generally interested in potential for leakage and spills arising from the storage (and use) of fuels and related maintenance materials. We expect this subject to be appropriately considered and addressed from the perspectives of minimization of the potential for leaks and spills and, where material reaches the natural environment via leaks or spills, mitigation (e.g. containment), clean-up and remediation/restoration where necessary.
Ministry of Aboriginal Affairs	<ul style="list-style-type: none"> • We acknowledge that you have been in contact with the following Aboriginal communities/organizations: <ul style="list-style-type: none"> ○ Henvey Inlet First Nation ○ Magnetawan First Nation ○ Shawanaga First Nation ○ Wausauksing First Nation ○ Dokis First Nation ○ Métis Nation of Ontario • With respect to your project, and based on the brief materials you have provided, we can advise that the project appears to be located in an area where First Nations may have existing or asserted rights or claims in MAA's land claims process or litigation, that could be impacted by your project. Contact information is below: <ul style="list-style-type: none"> ○ Chippewas of Georgina Island ○ Beausoleil First Nation (Christina Island) ○ Chippewas of Rama • For your information, MAA is aware of Métis communities that have asserted rights near your project. Contact information is below: <ul style="list-style-type: none"> ○ Moon River Métis Council • Please copy any correspondence to Moon River Métis Council to the Métis Nation of Ontario. Contact information is below: <ul style="list-style-type: none"> ○ Métis Nation of Ontario Head Office • For your information, MAA notes that the following First Nations may be interested in your project given the proximity of their reserve lands to the area of the proposed project or because of your project's potential environmental impacts: <ul style="list-style-type: none"> ○ Wahta Mohawks (Mohawks of Gibson) ○ Algonquins Consultation Office

6.4.1.3 Summary of Stakeholder Correspondence

Public consultation is an integral part of the environmental planning process and plays a key role in identifying potential concerns in early stages of the study. As previously indicated, multiple opportunities for comment on the Power Supply Project were provided as part of this Environmental Screening. These opportunities included notices in local newspapers, letters sent to adjacent property owners, and an unaddressed airmail mail-out to all residents and businesses in the P0A 1M0 postal code. A summary of comments received from stakeholders is provided in Table 6-4. A more detailed account of consultation activities, comments, and responses are including the Consultation Summary Tracking Table in Appendix B4. A copy of correspondence received is included in Appendix B6.

Table 6-4 Summary of Stakeholder Comments

Commenter	Comments
Local Member of Government	<ul style="list-style-type: none"> • Add to the mailing list • Request the Town of Kearney to publish the questions you receive and your answers on the Town website. • In the past misinformation has been an issue.
Environmental Association	<ul style="list-style-type: none"> • Updated contact information.
Resident	<ul style="list-style-type: none"> • We were so pleased to hear that the graphite mine is soon to be opened and know it will bring a big boom to the economy in our area. • I understand it is to employ quite a number of people and figure there will be more families moving into the area.
Resident	<ul style="list-style-type: none"> • Add to mailing list.
Local Member of Government	<ul style="list-style-type: none"> • Support for the Project.
Resident	<ul style="list-style-type: none"> • Questions regarding operation of the diesel generators and the Mine.

6.4.1.4 Summary of Aboriginal Community Correspondence

To date, no correspondence from Aboriginal communities has been received regarding the Power Supply Project.

6.4.1.5 Notice of Completion and Public Review

This EA has assessed the impact of the proposed installation of four diesel generators on the biophysical and socio-economic environment during its construction, operation and decommissioning phases. The screening has examined, among other issues, the potential for effects from noise, air quality, and social and economic effects. Public and government agency inputs were considered as part of this assessment.

The Notice of Completion was placed in three local weekly newspapers that serve the Town of Kearney and surrounding communities as identified in Table 6-5. A copy of the Notice of Completion is presented in Appendix B7.

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Table 6-5 Advertisements Placed for the Notice of Completion

Newspaper	Target Area	Date Notice Issued
Huntsville Forester	Huntsville Area (Port Sydney to Dorset)	March 14, 2012
Almaguin News	Novar (town north of Huntsville) to North Bay	March 15, 2012
Weekender	Huntsville, Gravenhurst, and Orillia	March 16, 2012

Seventy-eight (78) notices with accompanying cover letters were sent by email and/or mail to regulatory agencies, regional staff, politicians, local municipalities, local environmental groups, and non-profit organizations on March 9, 2012 (see Appendices B8 and B9 for the complete agency and stakeholder list and the cover letter which accompanied the Notice). One hardcopy of the ESR was couriered with the Notice of Completion to the representative of the MOE responsible for review of the document on March 12, 2012 (see Appendix B9 for the cover letter).

An unaddressed admail mail-out of 456 flyers was sent on March 9, 2012 to all residents and businesses in the POA 1M0 postal code which includes Kearney and the surrounding rural areas.

In addition, six (6) individual letters (Appendix B9) and notices were couriered to the following Aboriginal communities on March 9, 2012:

- Shawanaga First Nation
- Magnetawan First Nation
- Henvey Inlet First Nation
- Dokis First Nation
- Wasauksing First Nation (Parry Island)
- Métis Nation of Ontario

Letters were couriered to the Chief and Council of each First Nation and copied to the appropriate Land and Resources contact. The President of the Métis Nation of Ontario was also sent the letter and Notice and a copy was provided to the appropriate Land and Resources contacts, via courier.

A list of the key agencies, stakeholders and Aboriginal communities that were contacted are as noted above in Table 6-2.

Copies of the Environmental Screening Report have been made available at the Kearney and Area Public Library, Town of Kearney, and on-line at:
<http://www.ontariographite.com/s/researchreports.asp>.

7.0 Existing Conditions of the Biophysical and Socio-Economic Environment

This section provides a description of the existing natural, physical and socio-economic features for the area surrounding the Mine. Information in this section is derived from information provided by stakeholders, previous studies, and readily available databases.

7.1 PROJECT LOCATION

The Mine is located south of Graphite Lake in the Town of Kearney, Ontario, formerly part of Butt Township. The Mine is located approximately 12 km north of the town centre of Kearney and 1.5 km west of Algonquin Provincial Park. The leased Crown land that comprises the 445 ha Kearney Graphite Mine consists of 22 contiguous parcels of land, namely lots 808727, 808728, 830731, 831527, 831526, 808729, 808730, 884615, 884616, 884619, 884620, 884621, 884622, 884623, 884675, 884676, 831520, 831519, 831525, 1017210, 1017211, and 1017212. The mineral rights have been purchased on this Crown land.

7.2 PHYSICAL ENVIRONMENT

Existing conditions for climate, air quality, noise, physiography, geology, hydrology, soils and mineral and aggregate resources are discussed in the following sections.

7.2.1 Climate

The closest Meteorological Service of Canada station to the Mine with historical climatologic data is the Huntsville station (identification number 6113663). Climate normals are available from an Environment Canada database from 1971 – 2000. The mean daily temperature during this period was 5.5 °C for the year, 19.4 °C for July, and -10.2 °C for January (Environment Canada, 2011). A summary of the daily average, daily maximum and daily minimum temperatures on a monthly basis over the period of 1971-2000 is presented in Table 7-1. The mean annual total precipitation at Huntsville was 1031.9 mm, with an average of 285.6 mm falling as snow (Environment Canada, 2011). A summary of the monthly average rainfall, snowfall, total precipitation and average snow depth on a monthly basis over the period of 1971-2000 is presented in Table 7-1.

For comparison, during the same period, Toronto received a mean total of 835.9 mm of precipitation, while Ottawa received a mean total of 943.5 mm of precipitation (Environment Canada, 2004). On average, annual total precipitation falling in the Huntsville area is greater than that which falls elsewhere in Southern Ontario. The four closest metrological stations to the Site are Huntsville, Dorset, Utterson Ontario Hydro, and Bark Lake.

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Table 7-1 Summary of Average Temperature Data for the Area

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
Daily Average (°C)	-10.2	-8.6	-3.2	4.6	11.9	17.0	19.4	18.5	13.8	7.6	0.9	-6.0	5.5
Daily Maximum (°C)	-4.8	-2.7	2.6	10.3	18.0	22.7	25.0	23.7	18.7	12.0	4.4	-1.9	10.7
Daily Minimum (°C)	-15.6	-14.4	-8.9	-1.1	5.7	11.1	13.8	13.2	8.8	3.1	-2.7	-10.2	0.2

Table 7-2 Summary of Average Precipitation Data for the Area

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
Rainfall (mm)	18.8	12.4	35.0	54.7	79.3	82.1	84.2	89.0	105.1	94.7	69.8	21.2	746.2
Snowfall (cm)	83.3	54.5	34.4	8.5	0.6	0.0	0.0	0.0	0.0	3.1	29.4	71.9	285.6
Precipitation (mm)	102.1	66.9	69.5	63.2	79.9	82.1	84.2	89.0	105.1	97.8	99.7	93.1	1031.9

7.2.2 Air Quality

The MOE's Air Quality Index (AQI) is an indicator of air quality, based on hourly pollutant measurements of some or all of the six most common air pollutants: sulphur dioxide (SO₂), ozone (O₃), nitrogen dioxide (NO₂), total reduced sulphur compounds, carbon monoxide (CO) and fine particulate matter.

There is currently no air quality monitoring station in Kearney. The closest monitoring station is located in Dorset, approximately 55 km from the Mine. The AQI for Dorset in 2010 indicates that the air quality ranges from very good to moderate. For those days with moderate air quality, the contaminant of concern was O₃ levels.

3.2.2.1 Contaminants of Concern

Nitrogen oxides (NO_x) are produced in most combustion processes, and are almost entirely made up of nitric oxide (NO) and nitrogen dioxide (NO₂). NO₂ is an orange to reddish gas that is corrosive and irritating. Most NO₂ in the atmosphere is formed by the oxidation of NO, which is emitted directly by combustion processes, particularly those at high temperature and pressure, such as gas turbines. NO is a colorless gas with no direct effects on health or vegetation at ambient levels. NO₂ is the regulated form of NO_x. Gas turbines are potential sources of NO_x. The levels of NO and NO₂, and the ratio of the two gases, together with the presence of hydrocarbons and sunlight are the most important factors in the formation of ground-level ozone. Further oxidation and combination with water in the atmosphere forms what is known as “acid rain”.

Sulphur Dioxide

Sulphur dioxide (SO₂) is a colourless gas with a distinctive pungent odour. It is produced in combustion processes by the oxidation of sulphur in the fuel. The presence of SO₂ can, at high enough concentrations, cause damage to vegetation and health effects to animals through the respiratory system. The SO₂ can also be further oxidized and combines with water to form the sulphuric acid component of “acid rain.”

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odourless gas that is produced by the incomplete combustion of fuel sources. Carbon monoxide is toxic to humans and reduces the ability of the cardiovascular system to circulate oxygen to the rest of the body.

Particulate Matter

Total suspended particulate matter (TSP) is a measure of the suspended particles in the atmosphere. Generally, this means particles with an aerodynamic diameter of less than 44 µm. TSP is produced by mechanical processes, such as the abrasion of vehicle tires on unpaved roads, and by combustion processes. Most particulate matter formed by combustion is either mineral ash from the fuel, or hydrocarbons formed by incomplete combustion.

7.2.2.1 Contaminants of Concern from Diesel Generators

Following the requirements of the Ontario Regulation 419/05, worst case emissions from the proposed generator operations were modelled and compared to ½ hour Point of Impingement (POI) criteria using the model in the Appendix to Ontario Regulation 346 (see Appendix C). It was assumed for the worst-case emission scenario that the generators were operating simultaneously at their individual maximum rates of production as per the two scenarios described in the section above. The averaging time for this operating condition was a half-hour.

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The significant contaminants emitted from the generators are products from diesel fuel combustion including NO_x, SO₂, particulate matter (PM) and CO. These are identified in Table 7-3. See Section 8.5.1 for an assessment of the potential effects to air associated with the diesel generators.

Table 7-3 Sources and Contaminant Identification Table

Source Information			Expected Contaminants	Included in Modeling?	Rationale
Source ID	Description	General Location		Significant (Yes/No)	
GEN1 GEN2 GEN3 GEN4	Four 1.24 MW Diesel Generators. During the worst-case Normal Mill Operation Scenario, three generators will be in operation. A portion of the exhaust gases are ducted to the Mill Building. During the Mill Down Time Scenario, only one generator will be in operation and exhaust gases are emitted from its dedicated stack on the generator building. Emissions at the Generator Building are exhausted through separate stacks for each generator.	Generator Building at Mill Site	NO ₂ , CO, PM, SO ₂	Yes	N/A
MILL	Exhaust gases are ducted from the Generator Building to Mill Building and exhausted through the Mill Building Dryer Stack.	Mill Building	NO ₂ , CO, PM, SO ₂	Normal Operation - Yes Mill Down Time - No	Exhaust gases are ducted to Mill Building and exhausted through the Mill Building dryer stack during Normal Mill Operation. During the Mill Down Time, there are no emissions from the dryer stack as exhaust gases will not be ducted to the Mill Building.

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7.2.3 Noise

Based on analysis of satellite imagery and zoning information, the acoustical environment around the Mine was designated as Class 3: an acoustical environment that is dominated by natural sounds having little or no road traffic. This description accurately reflects the Mine location, not including the presence of the Mine and related activities. Therefore, the MOE’s exclusionary limits were applied as outlined in NPC-232, “*Sound Level Limits for Stationary Source in Class 3 Areas (Rural)*.”

The MOE Class 3 guidelines outlined in NPC-232 require that the one-hour equivalent sound level ($L_{eq}(1)$) in A-weighted decibels (dBA) from stationary sources cannot exceed the lowest background sound levels at a noise-sensitive location. This is applicable where the background sound level is caused by sources other than those under assessment, such as road and plane traffic, sounds of nature, and other noise-compliant industries. This requirement is based on the premise that source-generated noise is noticeable and considered annoying when it exceeds the ambient environmental noise climate.

The applicable performance limits used to assess compliance in the acoustic assessment are presented in Table 7-4.

Table 7-4 Sound Level Limits for the Class 3 Areas- Kearney Graphite Mine

Time of Day	NPC-232 Class 3 Exclusionary Limit (dBA)	Applicable Performance Limit (dBA)
Day-time (07:00h – 19:00h)	45	45
Evening (19:00h – 23:00h)	40	40
Night-time (23:00h – 07:00h)		

The Mine will be operational for up to 24 hours per day, so the limiting condition will be performance associated with night-time operation. The predicted noise impacts at the Points of Reception (PORs) during the predictable worst-case operations of the Mine cannot exceed 40 dBA. See Section 8.5.2 for an assessment of the potential effects from noise associated with the diesel generators.

7.2.4 Physiography, Surficial Geology, and Soils

The Mine is located within the Precambrian Uplands physiographic region and is defined by moderate to steeply sloping hills, incised valleys, low wetland areas, and numerous small ponds and lakes. The highest elevations occur in the eastern and south eastern portions of the Mine and are 510 to 525 masl. The lowest topographic elevations within the active portions of the Mine occur in the south western corner and are 400 masl. Valley to ridge crest elevations range from 5 to 35 m, with hill slopes ranging from 10 to 40% (MNDM Claim Map, 2008).

The average estimated slope for the upper portions of the Little North Magnetawan River watershed is 2%, while a steeper slope is observed in the upper portions of the Magnetawan River watershed at 5%. In general the Mine is covered by a thin discontinuous layer (<10 cm to 2 m thick) of unconsolidated glacial material, consisting primarily of stoney and sandy tills. The soils are classified as podsols and brown podzolics and are considered to be infertile, well drained, and prone to leaching (MacLaren, 1988).

7.2.5 Geology

Regional and Site specific geology are discussed in this section.

7.2.5.1 Regional Geology

The Mine lies within the Central Gneiss Belt (CGB) of the Grenville Province. The Grenville Province extends from Lake Huron, to the west, through Quebec and Labrador, to the east, and south into New York State. The Grenville Province in Ontario has been sub-divided into two general lithologic zones and two structural zones. These are the CGB, the Central Metasedimentary Belt (CMB), the Grenville Tectonic Zone and the CMB Tectonic Zone, respectively.

7.2.5.2 Site Geology

The Mine lies within the domain of the CGB. This particular domain lies within the lower thrust sheet of the CGB. Structural trends within this domain swing from east-northeast to southwest as they encounter the southern termination of the Powassan Batholith. Pelitic gneisses, which host the graphitic horizons, have been traced west of Highway 11 through Algonquin Provincial Park.

High grade metamorphosed quartz-feldspar-biotite-garnet gneisses are the primary rock types in the vicinity of the graphite horizons. The lithologic unit trends tend to strike north at 20° and dip to the east at 30° to 60°.

In the McGuire West portion of the Mine, where the Open Pit is located, the graphite horizon outcrops over a width of up to 200 m and extends over a strike length of 400 m from Minnow Lake to McGuire Lake. Exploration has indicated that there are two distinct graphite horizons separated vertically by a unit differing in composition from the hanging wall and footwall gneisses. The graphitic mineralization is open along strike in both directions. Garnet-hornblend-quartz feldspathic gneiss occurs on the Site as lenses up to 100 m long by 30 m wide. Graphite occurs in sporadic minor amounts.

The main lithology hosting the graphite mineralization is graphite-quartz-feldspar schist. The predominant minerals are quartz, feldspar with lesser amounts of biotite and sulphides. Within this unit are discrete bands of feldspar-graphite-quartz schist (AGRA, 1994).

7.2.6 Surface Water

The two main river systems that the Mine site drainage eventually feeds into are the Magnetawan and Little North Magnetawan Rivers. The Magnetawan and Little North Magnetawan Rivers flow to the southwest and west, respectively, into Georgian Bay. The Little North Magnetawan River Basin drains an area of 149 km² upstream of the gauging station at Pickerel Lake. The Magnetawan River Basin drains an area of 650 km² upstream of the gauging station at Burk's Falls. Drainage conditions within the headwater areas of both the Magnetawan and Little North Magnetawan River Basins consist of irregular rock knob terrain, covered by shallow, discontinuous course till. Due to these physical conditions, there are numerous small ponds, seasonal impoundments, and lakes spread throughout the watershed (AGRA, 1994).

Background water quality data for nearby waterbodies including Graphite Lake, McGuire Lake, Minnow Creek, Minnow Lake, and the Magnetawan River were collected by various agencies in 1986 and 1987 before mining activities began in the area. The average background conditions for selected parameters in the surface waters in the vicinity of the Mine are presented in Table 7-5.

The background concentrations in Table 7-5 are compared to Provincial Water Quality Objectives (PWQOs) for surface water. PWQOs were established by the MOE to protect aquatic life and recreational uses of water. They are numeric objectives for all surface water in the province to establish water quality which is protective of all stages of aquatic life for indefinite exposures. They also consider esthetic and public health concerns for recreational uses of water.

Background concentrations found in Table 7-5 revealed elevated background concentrations of zinc in McGuire Lake and iron in the Magnetawan River. Reduced pH levels were found throughout the region, with the lowest pH found in Minnow Creek.

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Table 7-5 Average Background Concentrations in the Vicinity of the Kearney Graphite Mine before Mining Commenced

Parameter ⁽¹⁾	Units	Provincial Water Quality Objective (PWQO)	Graphite Lake ⁽²⁾		McGuire Lake ⁽³⁾		Minnow Creek ⁽⁴⁾		Minnow Lake ⁽⁵⁾		Magnetawan River ⁽⁶⁾		Average
			Number of Samples	Mean	Number of Samples	Mean	Number of Samples	Mean	Number of Samples	Mean	Number of Samples	Mean	
Alkalinity	mg/L as CaCO ₃	- not less than 25% of background concentration	5	11	1	4	1	4	0	-	2	12	5.25
Aluminum (Al)	µg/L	Interim value for clay free samples: pH 4.5 - 5.5; 15 µg/L; pH 5.5 - 6.5; no greater than 10% above background concentration; pH 6.5 - 9.0; 75 µg/L	8	32	2	36	1	140	1	9	2	230	89.4
Calcium (Ca)	µg/L	N/A	10	2,288	2	4,100	1	4,000	1	2,700	2	4,500	3518
Chloride	mg/L	N/A	10	1.0	2	1.7	1	3.0	1	0.3	2	0.8	1.36
Conductivity	µS/cm	N/A	8	25.6	1	32.5	0	-	3	28.9	0	-	29
Copper (Cu)	µg/L	5 (interim 1 for hardness 0-20 mg/L as CaCO ₃ ; 5 for hardness >20 mg/L as CaCO ₃)	2	20	1	50	1	20	0	-	2	<20	25
Dissolved Inorganic Carbon	mg/L	N/A	4	0.5	1	<1	1	1	0	-	2	2	1
Dissolved Organic Carbon	mg/L	N/A	4	3.2	1	4.4	1	3.6	0	-	2	10.9	5.53
Iron (Fe)	µg/L	300	10	204	2	135	1	400	2	415	2	4,400	1111
Magnesium (Mg)	µg/L	N/A	10	546	2	890	1	700	1	740	2	1,000	775
Manganese (Mn)	µg/L	N/A	10	142	2	17	1	70	1	10	2	260	100
Nitrate	µg/L	N/A	4	14	1	<10	1	10	0	-	2	<10	8.5
pH	unitless	6.5 - 8.5	11	6.0	2	6.4	1	5.5	3	6.0	2	6.2	6.0
Potassium (K)	mg/L	N/A	10	0.4	2	0.4	1	0.1	1	0.6	2	0.4	0.38
Silicate	mg/L	N/A	2	0.3	0	-	0	-	0	-	0	-	0.30
Sodium (Na)	mg/L	N/A	10	0.4	2	0.5	1	0.6	1	0.6	2	1.1	0.64
Sulphate	mg/L	N/A	10	5.2	2	4.3	1	6.0	3	6.8	2	4.5	5.36
Total Kjeldahl Nitrogen	mg/L	N/A	4	0.2	1	0.3	1	0.2	0	-	2	0.7	0.35
Zinc (Zn)	µg/L	30 (20 interim)	2	15	1	140	1	10	0	-	2	<10	42.5

Notes:

(1) Arsenic (As), Cobalt (Co), Copper (Cu), Chromium (Cr), Lead (Pb), Cadmium (Cd), and Nickel (Ni) were below their respective MDLs. Ammonia as N (Nitrogen), Total Phosphorus (TP), Fluoride, and Mercury (Hg) were considered insignificant in the analyses. In some cases the Method Detection Limits (MDLs) were greater than the PWQOs.

(2) Sources: MOE, 1986 (from AGRA, 1994), EnviroClean, 1987 (from AGRA, 1994), MNR, 1987 (from AGRA, 1995), OGS, 1996; Sampling locations include Basin 1 (east) and Basin 2 (middle).

(3) Sources: EnviroClean, 1987 (from AGRA, 1994), MNR 1987 (from N.A.R., 2003).

(4) Sources: EnviroClean, 1987 (from AGRA, 1994); Sampling at mid-point of creek.

(5) Sources: MNR, 1987 (from N.A.R., 2003); Sampling locations: ML1-1, ML1-4, ML1-8.

N/A - Not Available

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Carbon mineralization comprised of crystalline flake graphite is the major resource located in the area of the Mine. The graphite occurs as discrete bands contained in foliation planes in schists adjacent to the hanging wall, and the footwall of the Open Pit. In between these two areas, graphite is generally more disseminated with flakes exhibiting a more random orientation. The graphitic host units are generally softer than the surrounding rock. Between the hanging wall and the foot wall mineralization graphite tends to be finer grained and exhibits a greater degree of intergrowth with the host rock minerals. Mineralogical studies along the graphite strike have shown that 86.8% of the graphite is free of impurities, 12.1% contains 90% to 99% graphite, while the remainder is in particles with less than 90% graphite (AGRA, 1994).

7.3 NATURAL ENVIRONMENT

This section describes natural features including vegetation, terrestrial resources, aquatic resources, forestry, wetlands, and special natural areas located within or adjacent to the Mine.

7.3.1 Terrestrial Plant and Animal Life

The area surrounding the Mine is characterized by vegetation common to the Boreal Forest Region to the north and the Deciduous Region to the south. It is primarily covered by mature Sugar Maple forest although a variety of other species are present as detailed in Table 7-6 (MacLaren, 1988).

Large wildlife species include Moose, Deer, Beaver, Mink, Marten, Fisher, Raccoon, Otter, Muskrat, Wolves, and Black Bear. Small wildlife species include Chipmunk, Red Squirrel, Red-backed Salamander, Green Frog, Common Toad, Snapping Turtle, and Red-tailed Hawk (MacLaren, 1988). Two vulnerable (S3) species, Northern Long-eared Bat and Harpoon Clubtail, and one vulnerable/imperiled (S2S3) species, Clamp-tipped Emerald, have been identified in Butt Township according to the Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC) records.

According to the MNR's Bracebridge District Land Use Guidelines, Algonquin Provincial Park is a moose concentration area and therefore it could be expected that moose would be found within the vicinity of the Mine. The maple forests of the Mine site are not generally good moose habitat, however, the mixed forests along the south half of the Tim Lake Access Road detour provide the shrubs, conifers, and small wetlands which are more favourable moose habitat.

The Forest Management Plan (FMP) for the French/Severn Forest (360) identifies a number of wildlife areas surrounding the Mine. These include Deer Wintering Areas, Raptor Nesting, Moose Aquatic Feeding Areas, Moose Calving Sites, and Forest Research Areas.

Schedule C of the Kearney Official Plan (Town of Kearney, 2006b) maps natural features with Town of Kearney limits. Schedule C of it indicates that a *Deer Winter Habitat Area* exists at the outlet of Graphite Lake and a *Known Significant Wildlife Habitat Area* existing 3 km northwest of

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the Mine's quarry within *the Deer Winter Habitat Area*. Schedule C also indicated that a *Natural Heritage Area* associated with the headwaters of the Tim River is located approximately 1.1 km northeast of the Mine's Quarry.

Based on a review of the MNR NHIC species-at-risk database, the Mine does not fall within 1 km of any Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSI), or Provincially Significant Wetlands (PSWs). Meetings with the MNR have identified the potential presence of the Eastern Hog-Nosed Snake within the area. However a terrestrial investigation conducted by Stantec on September 8 and 9, 2011 for the proposed expansion of the waste rock area, did not find any signs of these snakes and results indicate that the area does not provide optional habitat conditions suitable for the Eastern Hog-Nosed Snake. As noted in Section 2.2 of this ESR, the diesel generators will be placed within an existing Generator Building and no natural areas will be physically disturbed in relation to the installation or operation of the generators.

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Table 7-6 Pre-Development Terrestrial Plant Species

Species Type	Trees	Shrubs	Ground Cover
Most Common Species	<ul style="list-style-type: none"> Sugar Maple Yellow birch (<i>Betula lutea</i>) Beach (<i>Fagus grandifolia</i>) Balsam fir White Spruce Red Maple (<i>Acer rebrum</i>) White Birch 	<ul style="list-style-type: none"> Hobblebush (<i>Viburnum alnifolium</i>) Striped maple (<i>Acer pennsylvanicum</i>) Red elderberry (<i>Sambucus canadensis</i>) 	<ul style="list-style-type: none"> Lady fern (<i>Athyrium filix-femina</i>) Spinulose shield fern (<i>Dryopteris austriaca</i>) Polypody (<i>Polypodium vulgare</i>)
Other Common Species	--	<ul style="list-style-type: none"> Choke cherry (<i>Prunus virginiana</i>) Mountain maple (<i>Acer spicatum</i>) Nannyberry (<i>Viburnum lentago</i>) 	<ul style="list-style-type: none"> Solomon's seal (<i>Smilacina racemosa</i>) 3-leaved false Solomon's seal (<i>Smilacina trifolia</i>) Corn-lily (<i>Clintonia borealis</i>) Wood sorrel (<i>Oxalis Montana</i>) Bunchberry (<i>Cornus canadensis</i>) Club-mosses (<i>Lycopodium obscurum</i>, <i>Lycopodium lucidulum</i>)
Isolated Stands	<ul style="list-style-type: none"> Hemlock (<i>Tsuga canadensis</i>) Cedan (<i>Thuia occidentalis</i>) 	--	--
Occasional Species	<ul style="list-style-type: none"> Red oak (<i>Quercus rubra</i>) Elm (<i>Ulmus americana</i>) Black cherry (<i>Prunus serotina</i>) White Pine (<i>Pinus strobes</i>) 	--	--

7.3.2 Aquatic Resources

Graphite Lake is a coldwater lake and was stocked with Lake Trout and Brook Trout between 1953 and 1975. A fish assessment by the MNR in 1969 found Lake Trout, Brook Trout, White Suckers, Brook Sticklebacks, and Creek Chub in the lake, and found that oxygen levels were good from a fisheries perspective. A study by the MOE in September 1986, collected Brook Trout, Creek Chub, White Sucker, Burbot, and Redbelly Dace from Graphite Lake (MNR, 1969/1977/1986).

In July 1987, the MNR conducted another fish survey which found Brook Trout, White Suckers, Lake Chub, Creek Chub, and Northern Redbelly Dace in all basins of Graphite Lake, while Lake Trout were captured only the middle basin of the lake. Burbot, Brown Bullheads, and Golden Shiner were also found in Graphite Lake. The MNR also noted a potential spawning site for Brook Trout at the eastern end of the lake, and potential spawning sites for Lake Trout in the two most easterly basins (MNR, 1987a).

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During the 1987 fish survey, oxygen levels in Graphite Lake were found to be generally favourable for Trout, except for the 8 – 9 m depth range, which had oxygen levels below 5 mg/L (MNR, 1987a). Also, results from a macrobenthic survey conducted by MacLaren (1988) suggested relatively good water quality conditions.

The MNR found that high summer temperatures in Graphite Lake limited the potential for Lake Trout. However, the MNR proposed that Graphite Lake should be managed as a Brook Trout habitat given the self-reproducing population in the lake (MNR, 1987a).

There is no record that McGuire Lake was stocked with fish. In 1977, the MNR found Brook Trout during a lake survey although a second fish survey conducted in June 1986 did not find any (MNR, 1969/1977/1986). During the July 1987 MNR fish survey Brook Trout, White Suckers, Brown Bullheads, Lake Chub, Northern Redbelly Dace, and Creek Chub were collected. The MNR also found that the waters of McGuire Lake were not suitable for Brook Trout during the summer, when oxygen levels below 4 m were less than 5 mg/L (MNR, 1987b).

Minnow Lake was privately stocked with Brook Trout in the late 1960s by the Sand Lake Fishing Club however none were observed during the July 1987 MNR fish survey indicating that the lake has a limited capacity to sustain Brook Trout. The MNR suggested that seasonable oxygen depletion may be a contributing factor (MNR, 1987c). MNR fish surveys undertaken in 1977, June 1986 and July 1987 found White Suckers, Lake Chub, Creek Chub, and Northern Redbelly Dace (MNR, 1969/1977/1986). The MNR considered Minnow Creek to be naturally reproducing Brook Trout water, although it found no evidence of the fish in the creek during the June 1986 or July 1987 surveys (MNR, 1987c).

Graphite Lake drains into the Little North Magnetawan River, which then merges with the North Magnetawan River and flows into Pickerel Lake. The Little North Magnetawan River has a Brook Trout fishery and Pickerel Lake has a locally important Walleye fishery. The spawning area for the Walleye is located on the North Magnetawan River (AGRA, 1994).

Fisheries Assessments were carried out by the MNR for Graphite Lake in 1996 and Minnow and McGuire Lakes in 1997, following the same methodology as the 1987 MNR fish surveys. The locations of the fishery assessments performed since 1994 are shown in Figure 4-3. For most fish species in Graphite Lake, the number of fish observed was found to have decreased from 1987 to 1996, including numbers for Lake Chub, Creek Chub, Minnows (Northern Redbelly Dace), Common White Suckers, and Brook Trout (MNR, 1996). No Lake Chub were captured in the areas closest to the Mill Yard and in Minnow Creek, although in 1987 these areas were primary locations for Lake Chub. Similarly, Creek Chub and Minnows also were absent or rare in these areas. The MNR attributed the decline of Lake Chub and Creek Chub to decreased water quality in Minnow Creek since these species rely on small feeder streams for their spawning areas (MNR, 1996).

Brook Trout numbers appeared to be decreasing throughout Graphite Lake since the earlier 1987 fish survey period (MNR, 1996). The MNR attributed the decline in Brook Trout to

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impacted groundwater discharge from Minnow Creek and from the Mill Yard to Graphite Lake as it is known that Brook Trout spawn in areas of groundwater discharge. It was speculated by the MNR that the low pH values found in Minnow Creek at the time may have negatively impacted the Brook Trout spawning areas (MNR, 1996).

The MNR found that the number of Common White Suckers in Minnow Lake had decreased since 1987 (MNR, 1997c). Nevertheless, each of the three suckers captured in 1997 were larger than any of those captured in 1987, while the 80 suckers captured in 1987 were a variety of sizes, indicating successful reproduction was occurring in Minnow Lake in 1987. Based on the lack of smaller fish in 1997, the MNR concluded that the Common White Sucker may not be successfully reproducing in Minnow Lake (MNR, 1997a).

Based on the 1997 fish survey, the MNR found that McGuire Lake contained reproducing populations of Brook Trout, Common White Suckers, Brown Bullhead, Northern Redbelly Dace, Creek Chub, and Burbot. It was also noted that a wide range of sizes of Creek Chub were captured, indicating that these fish are successfully reproducing in McGuire Lake (MNR, 1997b).

In 2001, the MNR conducted another fisheries assessment of Graphite Lake using the same methodology as its 1987, 1996, and August 2000 surveys (MNR, 2001). The assessment found that the catch per unit effort and species diversity were considerably lower than those observed in the 1987 survey, particularly in the areas closest to the Mill Yard and Minnow Creek. Most notably, the catch per unit effort showed the most decline for Brook Trout, Lake Chub, and some Minnows, although some species of Minnows appeared to be rebounding (MNR, 2001).

Most recently, fish community sampling was completed by Stantec Consulting Ltd. between September 6 and 9, 2011 within the proposed Waste Rock Area (WRA) expansion. Ten minnow traps were placed around the shoreline of Pond #299, and five minnow traps were used in Marsh 1 (see Figure A-3, Appendix A for sampling points). Although gill nets were used during the 1988 fish community investigations, they were not used during this 2011 study due to a lack of suitable habitat for larger fish species. Minnow traps were also placed in Marsh 1 to determine presence of fish in downstream habitats and to identify the boundaries of direct fish habitat. Minnow traps were placed in the vicinity of in-water or overhead cover (i.e., deep pools, dense vegetation, large woody debris), baited using dry cat food and left in place for 24 hours.

Fish community investigations were not conducted in the tributaries due to a lack of sufficient water depth and fish access to the channel (i.e., areas of sub-surface flow).

Fish community investigations conducted in 2011 did not capture any fish in Pond #299. Creek Chub and Northern Redbelly Dace were captured in Marsh 1; these species are known to occur in other water bodies within the Site. Creek Chub are tolerant to a wide variety of habitats and are known to inhabit ponds and other slow moving habitats. Northern Redbelly Dace prefer to inhabit slow moving watercourses, and well vegetated ponds and are tolerant to a wide variety of habitat conditions (Holm et al 2009). The presence of these species is consistent with habitat provided by the beaver ponds and tributaries flowing downstream of the WRA expansion.

Fish habitat mapping was conducted by Stantec aquatic biologists between September 6 and September 9, 2011. The tributary was assessed from the bottom of the WRA downstream to the South Pond. Habitat (pools, runs, riffles and flats) and substrate material found along the watercourse, along with additional habitat features such as in-water or riparian vegetation cover and undercut banks, were mapped and percentages recorded. Evidence of groundwater seepage and notes on any potential migratory obstructions, limiting critical habitat (such as spawning habitat) and surrounding land use were documented.

Reaches 1 and 2 (see Figure A-3 in Appendix A) appear to be permanently flowing however, barriers located within the channel do not allow access for fish from downstream habitats. Based upon habitat conditions described in a previous 1988 report, Reach 1 was originally assessed as an intermittent watercourse. It is assumed that Reach 2 would also have been intermittent due to the presence of the Pond #299 beaver dam and a lack of sufficient flow for water to exit the pond during the low flow period. As a result, fish movement upstream into Pond #299 would have been limited during periods of flow due to the combination of sub-surface flow and the beaver dam. As a result of habitat conditions, Reach 2 likely provided flow to Marsh 1 during periods of high flow.

As indicated above, conditions observed in Reach 1 and Reach 2 suggest that flow is now permanent (wetland vegetation communities within the riparian zone, lack of leaves in the channel) from the WRA downstream. This is likely the result of seepage through the WR pile. However, the beaver dams and sub-surface flow are functioning as barriers to fish movement, and as a result, fish are not able to access the habitat provided by these reaches. As a result, Reach 1, Pond #299 and Reach 2 are functioning as indirect fish habitat providing flow and nutrients to downstream habitats.

7.3.3 Wetlands

There are no MNR evaluated wetlands in the vicinity of the Mine. There are various wetland complexes throughout the region.

7.3.4 Special Natural Areas

The western boundary of Algonquin Provincial Park is located approximately 1.5 km from the Mine. Algonquin Provincial Park is 772,300 ha in size and contains more than 1,000 vascular plant species and greater than 200 vertebrates that breed within the Park's boundaries.

An Enhanced Management Area (EMA), Algonquin Provincial Park Headwaters - Parry Sound, is also located near the Mine. This EMA was created to protect the headwaters of Algonquin Provincial Park. The EMA also contains high value timber resources and recreational landscapes. A Special Fisheries Management Area, designated due to the numerous small coldwater lakes within the area, is also located near the Mine.

7.4 SOCIO-ECONOMIC ENVIRONMENT

The following sections discuss the existing socio-economic conditions in Kearney, the nearest community, including population and demographics, employment, existing agriculture and land uses, existing manufacturing and industry, and recreation and tourism.

7.4.1 Population and Demographics

The Town of Kearney was founded in 1908 and was later amalgamated with the geographic townships of Proudfoot, Bethune and portions of Butt and McCraney on December 1, 1979 (Town of Kearney, 2006a). The Town covers approximately 531.31 km² of land and has an overall population density of 1.6 people per square kilometre. According to the 2011 Census, the Town of Kearney had a permanent population of 841 people. This population grew 5.4% from the 2006 population of 798 (Statistics Canada, 2012). It is estimated that the population of the Town of Kearney increases to approximately 4,000 during the summer months (Town of Kearney, 2006a).

The 2006 census indicates that the total experienced labour force aged 15 and over is 350. The sales and service, and management sectors made up the first and second largest employment sector, 31% and 16% respectively (Statistics Canada, 2006). In 2006, the unemployment rate for the Region was 11.3% (Southcott, 2008), higher than the Provincial average of 6.8%. This was a significant increase since 2001 when the unemployment rate was 5.3% for the Town of Kearney (Southcott, 2003) with an unemployment rate of 6.1% for the Province (Southcott, 2003).

Once operational, the Mine will provide direct employment for about 70 people, indirect opportunities for about three times as many, and tax revenues for the Town of Kearney.

7.4.2 Land Use

The Mine site is located within the Town of Kearney, but is situated on Crown Land. Section 3.1 describes the Town of Kearney Official Plan land use designations. The land in the vicinity of the Mine is designated as Rural, with the actual Mine is specifically identified as Mine Site on Schedule A of the Official Plan (2006b). As noted in Section 3.1, mineral aggregate operations are a permitted use within areas designated as Rural.

The Crown Land Use Policy Atlas (CLUPA) and Bracebridge District Land Use Guidelines (MNR, 1983) establish permitted uses for areas of Crown Land. The Mine site is located within an area designated as a General Use Area, in an area named G362 - Multiple Resource Management (MNR, 2006a). Aggregate extraction is a permitted use in G362.

As indicated in the CLUPA, an overlay area entitled G362/ARA – Algonquin Review Area also coincides with the Mine (MNR, 2006b). G362/ARA is comprised of the Crown Land surrounding Algonquin Provincial Park that is to be managed in a manner that is consistent with the direction given within the Algonquin Park Management Plan. Development proposals within G362/ARA

are assessed to determine if the natural, cultural, and recreational values of Algonquin Provincial Park will be impacted by the Power Supply Project. As no land dispositions are required for the Mine and the Mine is an existing use, aggregate extraction is an acceptable use.

Other land use designations near the Mine as illustrated in the CLUPA include E67n-1 (Algonquin Provincial Park Headwaters – Parry Sound) and E66w (Joly-Paxton). The purpose of E67n-1 is to protect the headwaters of Algonquin Provincial Park, although the area is also managed for the provision of backcountry recreation and tourism operations. E66w contains a Special Fisheries Management Area due to the numerous small coldwater lakes within the area. Portions of both E67n-1 and E66w are within the Algonquin Review Area and Winter Deer Ranges.

Commercial forestry operations were carried out in the vicinity of the Mine for many years and this activity is still occurring periodically. At present, the area west above the middle of the Tailings Area is being logged by a licensed forestry firm, Westwind Forest Stewardship Inc. The FMP for the French/Severn Forest (360) provides direction for the management of this forest for a ten year period, beginning April 1, 2009 and ending March 31, 2019. Forest types in the vicinity of the Mine include Tolerant Hardwood, Intolerant Hardwoods, and White Pine. Various management operations have been identified for the various forests including Shelterwood, Selection, and Clear Cut. The FMP identifies a portion of the forests surrounding the Mine as a preferred area for operations in years one to five.

7.4.3 Agricultural Capability and Use

The Canada Land Inventory classes for agriculture were created to distinguish between lands with differing capabilities of soil to sustain agriculture, and are based on soil survey data. Soils in the area surrounding the Mine are categorized as Class 7 Soils which are defined as having no capability for use as crop land or permanent pasture (Soil Research Institute, 1975).

7.4.4 Recreation and Tourism

Fish Management Zone (FMZ) 15 encompasses a large swath of land, extending from Georgian Bay to the Ottawa River, north of Algonquin Provincial Park and south to the Bobcaygeon area. The Mine is located within this FMZ. Fish species with open seasons include Walleye, Sauger, Largemouth and Smallmouth Bass, Northern Pike, Muskellunge, Yellow Perch, Crappie, Sunfish, Brook Trout, Brown Trout, Rainbow Trout, Lake Trout, Splake, Pacific Salmon, Atlantic Salmon, Lake Whitefish, Lake Sturgeon, Channel Catfish. Graphite Lake is identified as a fish sanctuary and therefore fishing is not permitted (MNR, 2010). Six Bait Fish Harvest Areas are located within 5 km of the Mine (PS0090, PS0093, PS0120, PS0123, PS0124, and AP0001).

The Mine is situated within Wildlife Management Zone (WMU) 50. During specified time periods, this WMU permits hunting of moose, deer, bear, and small game (MNR, 2011). Three Bear Management Areas (BMA) are located within 5 km of the Mine, including BR-50-004, BR-

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50-007, and BR-50-002. BMAs are areas of Crown Land that are designated to a particular tourist operator to provide hunting opportunities to non-resident clients. There are also five trapline areas within 5 km of the Mine and these are BR025, BR026, BR027, BR030, and BR031.

Two small hunting cabins are located on the Mine property. The hunting cabins are no longer used; one having been removed but the other structure still exists and is being used as a temporary Mine office.

The western boundary of Algonquin Provincial Park is located 1.5 kilometers east of the Mine site. The Park is 772,300 ha in size and received 830,899 visitors in 2010 (Ontario Parks, 2011). Park infrastructure is generally centered on the Highway 60 corridor with several other smaller access points on the boundary of the Park. The Park's Tim River Access Point (#2) is the nearest access point to the Mine. Recreationalists access this entrance to the Park via Forestry Tower Road, which is also used for mining activities. Inside of the Algonquin Provincial Park boundary and within 5 km of the Mine there are several designated camping sites. The access point for Tim River and a multi-use trail extend just beyond Algonquin Provincial Park's boundary.

A snowmobile trail (Trunk Trail D) is located approximately 5 km from the Mine site.

A tree tapping area has also been identified within 5 km of the Mine.

7.4.5 Public Institutions and Facilities

There are no public institutions or facilities located within the 5 km of the Mine.

7.4.6 Waste Disposal Sites

The Town of Kearney operates two transfer stations, one located at 149 King William Street and the other at 147 Kallio Road. The closest transfer station to the Mine, 147 Kallio Road, is located approximately 14 km from the Mine site. There is one closed landfill site within Kearney. It is located in Part 1 of Concession 10 and operated under Certificate of Approval A520101. During operations, this landfill site accepted municipal/domestic waste.

7.5 HERITAGE AND ARCHAEOLOGICAL RESOURCES

As described in Section 2.0, the Kearney Graphite Mine was operational from 1990 to 1994. The diesel generators will be placed in a location that was previously disturbed for mining operations. As this will be a brownfield development in a highly disturbed area, the potential for intact archaeological resources of significance to be located within the project limits is very low as the entire surface area has been altered. Further, as no new additional land will be required for the proposal installation of diesel generators, there will be no interaction with potential

archaeological resources. Therefore, a Stage 1 Archaeology assessment was not completed for the Power Supply Project component.

7.6 TRADITIONAL LAND USE

The Kearney Graphite Mine site is located within the traditional areas of the following Aboriginal communities: Henvey Inlet First Nation, Dokis First Nation, Magnetawan First Nation, Shawanaga First Nation, Wasauksing First Nation, and the Métis Nation of Ontario. As part of a larger process of developing the Closure Plan for the Kearney Graphite Mine in accordance with Ontario Regulation 240/00 (as amended), promulgated under Part VII of the *Ontario Mining Act*, Ontario Graphite and Stantec have previously contacted the above noted Aboriginal communities to determine the potential effects the re-activation of the Kearney Graphite Mine may have on their traditional uses. Discussions are ongoing, however potential impacts due to the installation of the diesel generators is not anticipated to negatively affect Aboriginal communities' use of the area for traditional practices.

8.0 Environmental Assessment and Mitigation

The following section outlines the potential effects of the proposed Power Supply Project to the environment during the construction, operational and decommissioning periods. Additionally, recommended mitigation measures are presented that would manage potential effects.

8.1 SCOPE OF THE PROJECT AND ITS ASSESSMENT

The proposed physical activities of the proposed Power Supply Project would consist of the following:

- delivery of equipment and materials including diesel generators;
- installation of the diesel generators in the existing Generator Building;
- connection of diesel generators to Mine equipment;
- operation and maintenance of the Power Supply Project; and,
- decommissioning of the diesel generators.

8.2 ISSUE SCOPING

The issues scoping used for this Power Supply Project is designed to satisfy the intent of the MOE. For this purpose, the Screening Criteria Checklist as described in Section 6.2, was used as a tool to assist with scoping potential environmental issues and concerns. The proposed Power Supply Project is intended to address the requirements of the Ontario Environmental Screening Process outlined in the *Guide to Environmental Assessment Requirements for Electricity Projects* (MOE 2011). The Screening Criteria Checklist was completed as a first step in this process. The process for completing the checklist is described in Section 6.2 and the completed checklist is presented in Table 8-1. The screening criteria are presented on the checklist with the option of a "Yes" or "No" response. At this stage, mitigation measures are not considered in addressing the potential for a negative environmental impact. If the potential for a negative environmental impact exists, it must be identified and addressed, even if it is likely to be mitigated.

The criteria identified in the Screening Criteria Checklist were confirmed through a review of potential interactions with key project activities and the following issue scoping activities:

- Consultation with interested federal, provincial and municipal agencies as well as landowners and community groups;
- Site visit and field investigations;
- Review of available background data;
- Review of regulatory issues and guidelines; and,
- Professional judgement.

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Table 8-1 Screening Criteria Checklist

Will the project....

Criterion	Yes	No	Additional Information
1. Surface and Ground Water			
1.1 Have negative effects on surface water quality, quantities or flow?		X	No surface water interaction.
1.2 Have negative effects on ground water quality, quantity or movement?		X	No ground water interaction.
1.3 Cause significant sedimentation, soil erosion or shoreline or riverbank erosion on or off site?		X	No work will be undertaken in proximity to water bodies.
1.4 Cause potential negative effects on surface or ground water from accidental spills or releases to the environment?	X		Potential for accidental spills. See Section 8.4.
2. Land			
2.1 Have negative effects on residential, commercial or institutional land uses within 500 metres of the site?		X	There are no residential, commercial or institutional land uses within 500 m of the proposed location for the diesel generators.
2.2 Be inconsistent with the Provincial Policy Statement, provincial land use or resource management plans?		X	The Provincial Policy Statement allows for the extraction of mineral aggregates. As part of the mining process, the diesel generators are required to provide power.
2.3 Be inconsistent with municipal land use policies, plans and zoning by-laws?		X	The Town of Kearney Official Plan designates the Mine area as Rural, which allows for extractive uses. A zone is not applied to the Mine area in the Town of Kearney Zoning By-law.
2.4 Use hazard lands or unstable lands subject to erosion?		X	The diesel generators will be placed within the current footprint of the Mine. The lands are no considered hazards lands or unstable.
2.5 Have potential negative effects related to the remediation of contaminated land?		X	The diesel generators will be placed within the footprint of the Mine site. The Mine site has not been identified as contaminated land.
3. Air and Noise			
3.1 Have negative effects on air quality due to emission of nitrogen dioxide, sulphur dioxide, suspended particulates, or other pollutants?	X		See Section 8.5.1 for a discussion on potential impacts.
3.2 Cause negative effects from the emission of greenhouse gases (CO ₂ , methane)?	X		See Section 8.5.1 for a discussion on potential impacts.
3.3 Cause negative effects from the emission of dust or odour?		X	The diesel generators will not cause dust or odour impacts.
3.4 Cause negative effects from the emission of noise?	X		See Section 8.5.2 for a discussion on potential impacts.
4. Natural Environment			
4.1 Cause negative effects on rare, threatened or endangered species of flora or fauna or their habitat?		X	The diesel generators will be placed within an existing building and will not cause negative effects on rare, threatened or endangered species of

Table 8-1 Screening Criteria Checklist

Will the project....

Criterion	Yes	No	Additional Information
			flora or fauna or their habitat.
4.2 Cause negative effects on protected natural areas such as ANSIs, ESAs or other significant natural areas?	X		There is a potential that noise emissions from the diesel generators may impact visitors to Algonquin Provincial Park. Refer to Section 8.6.
4.3 Cause negative effects on wetlands?		X	The generators will not be located near wetlands.
4.4 Have negative effects on wildlife habitat, populations, corridors or movement?		X	The diesel generators will be located within the existing footprint of the Mine. No new areas will be disturbed and no negative effects to wildlife habitat, populations, corridors or movement are anticipated.
4.5 Have negative effects on fish or their habitat, spawning, movement or environmental conditions (e.g., water temperature, turbidity, etc.)?		X	The generators will be placed on land and will not have contact with the aquatic environment. Therefore the Project will not negatively affect fish or their habitat, spawning, movement, or environmental conditions.
4.6 Have negative effects on migratory birds, including effects on their habitat or staging areas?		X	The diesel generators will be located within the existing footprint of the Mine. No new areas will be disturbed and no negative effects to migratory birds are anticipated.
4.7 Have negative effects on locally important or valued ecosystems or vegetation?		X	The diesel generators will be located within the existing footprint of the Mine; no negative effects are anticipated.
5. Resources			
5.1 Result in inefficient (below 40%) use of a non-renewable resource (efficiency is defined as the ratio of output energy to input energy, where output energy includes electricity produced plus useful heat captured)?		X	Fuel consumption of each diesel generator is 97.8 gal/hr at full prime.
5.2 Have negative effects on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands?		X	The Mine site is located on Class 7 lands according to the Canada Land Inventory.
5.3 Have negative effects on existing agricultural production?		X	The site was operational as a Mine from 1990-1994. It is a brownfield site and there is no existing agricultural production.
5.4 Have negative effects on the availability of mineral, aggregate or petroleum resources?		X	The diesel generators will be used to provide power to a mining operation.
5.5 Have negative effects on the availability of forest resources?		X	The diesel generators will be located in a brownfield site and will not impact the availability of forest resources.

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Table 8-1 Screening Criteria Checklist

Will the project....

Criterion	Yes	No	Additional Information
5.6 Have negative effects on game and fishery resources, including negative effects caused by creating access to previously inaccessible areas?	X		The noise created by the diesel generators may have negative effects on game resources in the area. Refer to Section 8.7
6. Socio-economic			
6.1 Have negative effects on neighbourhood or community character?		X	The Mine is located 12 km from the Town of Kearney, the nearest community. No negative effects on neighbourhood or community character are anticipated.
6.2 Have negative effects on local businesses, institutions or public facilities?		X	No negative effects are anticipated. There may be a small indirect positive effect.
6.3 Have negative effects on recreation, cottaging or tourism?	X		There is a potential for negative effects from noise on recreation, cottaging or tourism. Refer to Section 8.8.
6.4 Have negative effects related to increases in the demands on community services and infrastructure?		X	No negative effects are anticipated. The diesel generators do not require a significant workforce for installation or decommissioning. Mine employees will operate the generators.
6.5 Have negative effects on the economic base of a municipality or community?		X	No negative effects are anticipated. The diesel generators will provide an energy source for operating the Mine. Operation of the Mine will provide direct employment for about 70 people, indirect opportunities for about three times as many, and tax revenues for the Town of Kearney.
6.6 Have negative effects on local employment and labour supply?		X	No negative effects are anticipated. The diesel generators will provide an energy source for operating the Mine. Approximately 70 direct jobs will be created with the operation of the Mine. The intent is for most of these positions to be filled by local people.
6.7 Have negative effects related to traffic?		X	No negative effects are anticipated. The diesel generators will be delivered and removed by truck. The potential increase in traffic will be negligible.
6.8 Cause public concerns related to public health and safety?	X		Air emissions from the diesel generators have the potential to cause public concerns related to public health and safety. Refer to Section 8.8.

Table 8-1 Screening Criteria Checklist

Will the project....

Criterion	Yes	No	Additional Information
7. Heritage and Culture			
7.1 Have negative effects on heritage buildings, structures or sites, archaeological resources, or cultural heritage landscapes?		X	The Mine was operational in the past and the area in which the generators will be placed is highly disturbed. No negative effects on heritage buildings, structures or sites, archaeological resources, or cultural heritage landscapes are anticipated.
7.2 Have negative effects on scenic or aesthetically pleasing landscapes or views?		X	The installation of the diesel generators will not affect the overall landscapes or views as the generators will be placed within the existing Mine.
8.0 Aboriginal			
8.1 Cause negative effects on First Nations or other Aboriginal communities?	X		Game resources in the vicinity of the diesel generators may be impacted by noise. Refer to Section 8.9.
9. Other			
9.1 Result in the creation of waste materials requiring disposal?	X		Regular maintenance of the diesel generators will create waste materials (e.g., used oil, filters, etc). Refer to Section 8.10.
9.2 Cause any other negative environmental effects not covered by the criteria outlined above?		X	No other impacts are anticipated.

8.3 ENVIRONMENTAL ASSESSMENT

An assessment has been undertaken for those environmental effects that were not screened out through the Screening Criteria Checklist (Table 8-1) (i.e., as indicated by a “Yes” response in the Screening Criteria Checklist).

8.3.1 Spatial and Temporal Boundaries

The physical scope of the assessment has been determined based on reasonable expectations regarding the zone of influence exerted by the proposed Power Supply Project on the various environmental and socio-economic features of area. This zone of influence varies, with some features only being affected by activities at the Mine and others being affected on a more regional scale. Impacts affecting only the immediate site and adjacent lands are considered to be limited in physical extent, in contrast to impacts affecting the regional area.

Temporally, the assessment includes activities occurring during the construction period and to the operation phase of the proposed Power Supply Project, which is expected to span approximately six to seven years. Decommissioning will occur after the reasonable operating life of the Mine.

8.3.2 Potential Effects

Throughout the effects assessment, decisions on whether impacts are significant or not are based on the predicted duration, magnitude and physical extent of the impact, and also on its reversibility. A significant adverse environmental impact is defined as a permanent change in the quality or condition of a criterion that is spatially and temporally extensive and of unacceptable magnitude or nature.

The following sections describe the potential interactions between proposed Power Supply Project activities and the criteria identified in the Screening Criteria Checklist (Table 8-1). The potential effects for the criteria in Table 8-1 on which the Power Supply Project may have an impact (i.e., indicated by a “yes” response in the Screening Criteria Checklist) are described for construction, operation, and decommissioning of the Power Supply Project, and recommended mitigation is presented that would manage these potential effects. Potential effects will be summarized through a discussion of the advantages and disadvantages of the Power Supply Project in Section 9.0 of this Report.

8.4 SURFACE AND GROUND WATER

The following sections outline the potential interaction between the diesel generators and surface and ground water. As there are no potential negative effects anticipated for surface water quality, quantities or flow; groundwater quality, quantity or movement; or sedimentation, soil erosion or shoreline or riverbank erosion, only the potential negative effects from accidental spills or releases to the environment are discussed below.

8.4.1 Potential Effects

8.4.1.1 Construction

There are no anticipated impacts to surface and ground water from the installation of the diesel generators. The diesel generators will be installed within the existing Generator Building.

8.4.1.2 Operation

Once operational, there is a potential negative effect on surface or ground water from accidental spills or releases to the environment from materials such as fuel, lubricating oils and other fluids associated with generator maintenance.

Diesel storage tanks will be located outside of the Mill Building. Storage tank specifications are provided in Table 2-1. All diesel tanks will be installed according to the TSSA and the Ontario

Liquid Fuels Handling Code. Most of the tanks will be located in a lined, bermed area that will be designed in accordance with all TSSA and other federal and provincial requirements.

8.4.1.3 Decommissioning

No negative effects to surface or ground water are anticipated during the decommissioning stage. The diesel generators will be removed from the Mine site in accordance with the Kearney Graphite Mine Closure Plan.

8.4.2 Mitigation Measures

8.4.2.1 Construction

No potential effects are anticipated and therefore no mitigation measures are required.

8.4.2.2 Operation

Ontario Graphite is currently formulating its operational policies and procedures manual. One of the topics will be a Spill Prevention, Containment and Control Plan. The Plan will cover spill prevention techniques, proven and acceptable containment and control methods, as well as reporting requirements. All employees will be trained in this area and appropriate reporting numbers posted throughout the mill and quarry should a spill occur (however the emphasis will be on prevention). Yearly refresher training will be provided to all employees.

In terms of accidental spills or releases to the environment, standard containment facilities and emergency response materials would be maintained on-site as required. Refuelling, maintenance, and other potentially contaminating activities would occur in designated areas, and as per s.13 of the *Environmental Protection Act*, all spills that could potentially have an adverse environmental effect, are outside the normal course of events, or are in excess of the prescribed regulatory levels would be reported to the MOE's Spills Action Centre. Monitoring would be required following the unlikely event of contamination from an accidental spill or leak. Contaminated soils would be removed and replaced as appropriate.

8.4.2.3 Decommissioning

No potential effects are anticipated and therefore no mitigation measures are required.

8.4.3 Net Effects

With the application of the mitigation measure outlined above, no net effects to surface and ground water from accidental spills are anticipated.

8.5 AIR AND NOISE

The following sections outline the potential interaction between the diesel generators and air and noise. Potential net effects are described for construction, operation, and decommissioning of the Power Supply Project, and suggested mitigation is presented. For further details regarding the methodology used to determine potential impacts to air and from noise refer to Appendices C and D, respectively. As indicated in the Screening Criteria Checklist, negative effects from the emission of dust or odour are not anticipated and therefore will not be discussed further.

8.5.1 Air

8.5.1.1 Emission Rates

The significant contaminants emitted to the atmosphere from the generators are NO_x, SO₂, PM and CO. Emissions were calculated based on a worst-case half-hour period with all generators running at full load (i.e. full load re-rated at 1.24 MW). Emissions from the generators were based on emissions data from the manufacturer's specifications. The assumptions and methodologies used are expected to result in conservative emission rates for the contaminants of concern.

The maximum half-hour emission rates for the contaminants of concern emitted from the facility-wide air emission sources were calculated in accordance with the requirements of the MOE ESDM Procedure Document.

The source summaries for the two operating scenarios, normal operations scenario and mill down time scenarios, are presented in Table 8-2 and Table 8-3. Further details are provided in Appendix C.

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Table 8-2 Source Summary Table – Normal Operation Scenario

Source ID	Description	Source Data ^a						Emission Data ^a						
		Flow rate (m ³ /s)	Stack Exit Gas Temp (°C)	Diameter (m)	Height above grade (m)	Height above roof (m)	Stack Coord	Contaminant	CAS #	Emission Rate (g/s)	Averaging Period (hour)	Data Quality	Estimation Technique	% of Overall Emission
GEN1	1240 KW Diesel Generators	4.5	446.1	0.91	17.2	9.0	48836, 5065743	NO ₂	10102-44-0	0.91	1/2	Average	EF	10.4%
								CO	7446-09-5	0.08	1/2	Average	EF	10.4%
								PM	<<PM>>	4.70E-03	1/2	Average	EF	10.4%
								SO ₂	7446-09-5	1.72E-02	1/2	Average	EF	10.4%
GEN2	1240 KW Diesel Generators	4.5	446.1	0.91	17.2	9.0	48840, 5065743	NO ₂	10102-44-0	0.91	1/2	Average	EF	10.4%
								CO	7446-09-5	0.08	1/2	Average	EF	10.4%
								PM	<<PM>>	4.70E-03	1/2	Average	EF	10.4%
								SO ₂	7446-09-5	1.72E-02	1/2	Average	EF	10.4%
GEN3	1240 KW Diesel Generators	4.5	446.1	0.91	17.2	9.0	48844, 5065743	NO ₂	10102-44-0	0.91	1/2	Average	EF	10.4%
								CO	7446-09-5	0.08	1/2	Average	EF	10.4%
								PM	<<PM>>	4.70E-03	1/2	Average	EF	10.4%
								SO ₂	7446-09-5	1.72E-02	1/2	Average	EF	10.4%
MILL	Exhaust gases piped to Mill Building for Dryer and exhausted from Mill Building	7.8	150	N/A	N/A	N/A	N/A	NO ₂	10102-44-0	4.4	1/2	Average	EF	68.8%
								CO	7446-09-5	0.4	1/2	Average	EF	68.8%
								PM	<<PM>>	0.02	1/2	Average	EF	68.8%
								SO ₂	7446-09-5	0.08	1/2	Average	EF	68.8%

Notes:

During normal mill operation, it was assumed that GEN1, GEN2, GEN3 are in operation, and GEN4 is on standby.

a. Source data and emissions data for generators are based on manufacturer's specifications. Mill Building is modelled as a virtual source.

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Table 8-3 Source Summary Table – Mill Down Time Scenario

Source ID	Description	Source Data ^a						Emission Data ^a						
		Flow rate (m ³ /s)	Stack Exit Gas Temp (°C)	Diameter (m)	Height above grade (m)	Height above roof (m)	Stack Coord	Contami-nant	CAS #	Emission Rate (g/s)	Averag-ing Period (hour)	Data Quality	Estimation Technique	% of Overall Emission
GEN1	1240 KW Diesel Generators	4.5	446.1	0.91	17.2	9.0	48836, 5065743	NO ₂	10102-44-0	2.9	1/2	Average	EF	100%
								CO	7446-09-5	0.24	1/2	Average	EF	100%
								PM	<<PM>>	0.02	1/2	Average	EF	100%
								SO ₂	7446-09-5	0.06	1/2	Average	EF	100%

Notes:

During mill down time operation, it was assumed that GEN1 is in operation, and GEN2, GEN3, and GEN4 are on standby. Exhaust gases are not ducted to the Mill Building, therefore there are no emissions from the Mill Building dryer stack.

a. Source data and emissions data for generators are based on manufacturer's specifications.

8.5.1.2 Dispersion Modelling

The MOE Appendix to Ontario Regulation 346 air dispersion model was used to predict the estimated maximum off-site half-hour average ground level concentrations (GLC) as required by the Ontario Regulation 419/05. In the Regulation 346 dispersion model, an air emission source may be modelled as a point or virtual source, depending on the source and building configurations. The point source algorithm models the source as a stack, with buoyancy and momentum fluxes. The virtual source algorithm assumes that adjacent or attached buildings will significantly influence the dispersion of contaminants, and models the source as having the dimensions of the adjacent or attached building. The virtual source routine accounts for the initial dispersion of air contaminants as a result of the turbulence and wake created by the building.

Table 8-4 presents the input source data into the Ontario Regulation 346 model for the virtual and point sources considered for the modelling scenario. Further details are provided in Appendix C.

Table 8-4 Point Source and Virtual Source Input Data

Source Type	Description	Dimensions			Source Orientation	Source Coordinates		
		Length	Width	Height	degrees	X (m)	Y (m)	
		(m)	(m)	(m)				
Virtual Source (VS)	Normal Operation							
	MILL - Mill Building	60	81	24.9	0	648794	5065727	
	Mill Down Time Operation							
	MILL - Mill Building	Not in operation						
Source Type	Description	Height above roof	Height above ground	Exit velocity	Stack Diameter	Stack Exit Gas Temp.	Source Coordinates	
		(m)	(m)	(m/s)	(m)	(°C)	X (m)	Y (m)
Point Source (PS)	Normal Operation							
	GEN1 - Generator 1 Stack	9.0	17.2	45.8	0.2	446.1	648836	5065744
	GEN2 - Generator 2 Stack	9.0	17.2	45.8	0.2	446.1	648840	5065744
	GEN3 - Generator 3 Stack	9.0	17.2	45.8	0.2	446.1	648844	5065744
	GEN4 - Generator 4 Stacks	Not in operation						

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Table 8-4 Point Source and Virtual Source Input Data

Source Type	Description	Dimensions			Source Orientation	Source Coordinates		
		Length	Width	Height	degrees	X (m)	Y (m)	
		(m)	(m)	(m)				
	Mill Down Time Operation							
	GEN1 - Generator 1 Stack	9.0	17.2	45.8	0.2	446.1	648836	5065744
	GEN2, GEN3, GEN4	Not in operation						

8.5.1.3 Potential Effects

8.5.1.3.1 Construction

Construction activities include the installation of the diesel generators. The construction activities are short-term and emissions will be generated from tail pipe emissions, including greenhouse gas emissions, from the vehicles used to transport the diesel generators to the Mine.

8.5.1.3.2 Operation

Table 8-5 summarizes the maximum model predictions for the contaminants of concern (maximum half-hour POI concentrations) for two scenarios, normal operations and Mill down time. The relevant MOE criteria and the percentage of the criteria are also presented in the Emission Summary Table (Table 8-5). Table 8-6 presents the maximum predicted concentrations at the nearest point in Algonquin Provincial Park, and at the two nearest First Nations communities (the Shawanaga First Nation and the Dokis First Nation) to the Mine. Algonquin Provincial Park is located approximately 1.5 km from the Mine, and the two First Nations are located more than 50 km to the southwest and northwest.

The maximum off-property ground level concentrations (GLC) for the significant contaminants for both scenarios were predicted to be below their respective MOE POI limits. The maximum off-property GLC occurs to the north, northeast and northwest of the mill area along the north property line. Levels of GLCs are predicted to decrease with increased distances from the Mine.

At the nearest locations to the Mine in Algonquin Provincial Park, the Shawanaga First Nation and the Dokis First Nation, the maximum predicted concentrations were at most 9% (for NOx) and less than 1% (for the other contaminants) of the relevant air quality criteria during normal

mill operation, and at the most 5% (for NO_x) and less than 1% (for the other contaminants) during mill down time operation.

Based on a comparison of the dispersion model predictions to the relevant MOE air quality criteria, no adverse effects on local air quality were predicted due to operation of the Power Supply Project.

8.5.1.3.3 Decommissioning

Potential effects from decommissioning would be similar to those for construction as vehicles would be used to transport the diesel generators from the Mine.

8.5.1.4 Mitigation Measures

8.5.1.4.1 Construction

Exhaust from vehicles delivering the diesel generators to the Mine will be minimized by good maintenance of emission control systems.

8.5.1.4.2 Operation

No mitigation measures will be required emission of expected contaminants are anticipated to be within the parameters identified in Ontario Regulation 419/05. The ECA (see Section 3.2.3) will stipulate the emission requirements for the diesel generators.

8.5.1.4.3 Decommissioning

As with the construction phase, exhaust from vehicles removing the diesel generators to the Mine will be minimized by good maintenance of emission control systems.

8.5.1.5 Net Effects

The application of the recommended mitigation measures during construction, operation and decommissioning should limit air emissions to the immediate vicinity of the Mine and limit the magnitude of combustion emissions. As a result, any adverse net effects to air quality from air emissions are anticipated to be negligible.

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Table 8-5 Emission Summary Table – Normal Operation Scenario

Normal Operation Scenario									
Contaminant	CAS No.	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Concentration (ug/m ³)	Averag -ing Period (hours)	MOE POI Limit (ug/m ³)	Limiting Effect	Regulation Schedule # ¹	% of MOE POI Limit (%)
NO ₂	10102-44-0	8.75	Appendix to Reg346	419.1	1 / 2	500	Health	Schedule 2	84%
CO	7446-09-5	0.72		35.3		6000	Health	Schedule 2	<1%
PM	<<PM>>	0.05		2.1		100	Visibility	Schedule 2	2%
SO ₂	7446-09-5	0.17		7.7		830	Health	Schedule 2	<1%
Mill Down Time Scenario									
Contaminant	CAS No.	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Concentration (ug/m ³)	Averag -ing Period (hours)	MOE POI Limit (ug/m ³)	Limiting Effect	Regulation Schedule # ¹	% of MOE POI Limit (%)
NO ₂	10102-44-0	2.92	Appendix to Reg346	74.6	1 / 2	500	Health	Schedule 2	15%
CO	7446-09-5	0.24		6.2		6000	Health	Schedule 2	<1%
PM	<<PM>>	0.02		0.5		100	Visibility	Schedule 2	<1%
SO ₂	7446-09-5	0.06		1.5		830	Health	Schedule 2	<1%

Table 8-6 Emission Summary Table – Special Receptors

Contaminant	CAS No.	Total Facility Emission Rate (g/s)	MOE POI Limit ¹ (ug/m ³)	POI Concentration (ug/m ³)	% of MOE POI Limit (%)	POI Concentration (ug/m ³)	% of MOE POI Limit (%)	POI Concentration (ug/m ³)	% of MOE POI Limit (%)
Normal Operation Scenario									
				Algonquin Park (651585, 5066841)		Shawanaga FN (572378, 5029210)		Dokis FN (574803, 5108903)	
NO ₂	10102-44-0	8.75	500	46.1	9%	0.41	<1%	0.40	<1%
CO	7446-09-5	0.72	6000	3.9	<1%	0.03	<1%	0.03	<1%
PM	<<PM>>	0.05	100	0.2	<1%	0.002	<1%	0.002	<1%
SO ₂	7446-09-5	0.17	830	0.9	<1%	0.01	<1%	0.01	<1%
Mill Down Time Scenario									
				Algonquin Park (651585, 5066841)		Shawanaga FN (572378, 5029210)		Dokis FN (574803, 5108903)	
NO ₂	10102-44-0	2.92	500	22.8	5%	0.2	<1%	0.2	<1%
CO	7446-09-5	0.24	6000	1.9	<1%	0.02	<1%	0.02	<1%
PM	<<PM>>	0.02	100	0.2	<1%	0.001	<1%	0.001	<1%
SO ₂	7446-09-5	0.06	830	0.5	<1%	0.004	<1%	0.004	<1%

8.5.2 Noise

The nearest PORs to the Kearney Graphite Mine are located within 1000 m of the property boundary to the south, east, and northeast in wilderness areas. Three of the receptors are seasonally occupied and have single-storey heights, and one was placed along the property boundary of Algonquin Provincial Park. The nearest First Nations community (Dokis First Nations) was also included in the assessment. The PORs, their descriptions, and the heights considered for the modelling and assessment are summarized in Table 8-7. Further details are provided in Appendix D.

Table 8-7 Nearby Points of Reception to the Kearney Graphite Mine

POR ID	Description	Location	Estimated Receptor Height (m)
POR01	One-storey cabin	Approximately 400 m northeast of the Kearney Mine property boundary	1.5
POR02	One-storey trapping cabin	Located approximately 300 m east of Mill Site	1.5
POR03	One-storey hunting cabin	Approximately 350 m south of the Kearney Mine property boundary	1.5
POR04	Algonquin Park property boundary	Closest point to Kearney Mine (located approximately 1500 m northeast of Kearney Mine property boundary)	1.5
POR05	Dokis First Nations Community	Located approx. 50-km NW of Kearney Mine	1.5

8.5.2.1 Potential Effects

8.5.2.1.1 Construction

During construction of the Power Supply Project, noise would be generated by vehicular traffic associated with the delivery of the diesel generators. The noise at receptors beyond the Mine is expected to be inaudible.

8.5.2.1.2 Operation

The modelling approach for this ESR included determination of the maximum sound power level permissible at each source such that the diesel generators could operate in compliance with MOE guidelines. The maximum overall sound power level at each source was determined using a predictive analysis according to ISO 9613-2 (the CADNA/A model). Preliminary design indicates that each of the four generators will be rated at 1.24 MW, and manufacturer’s sound level data were used. The octave band data were obtained from Cummins for the units recommended to Ontario Graphite (model 1500DQAB or equivalent generators). Based on the

analysis, the maximum permissible sound power level and required level of noise control were estimated, and the results are presented in Table 8-8.

Table 8-8 Acoustic Screening Source Summary Table

Source ID	Source Description	Actual Overall Source PWL (dBA)	Required Maximum Allowable PWL (dBA)	Predicted Attenuation Requirement (dBA)
S01 to S04	Generator Building-Exhaust (each)	138	102	36
S05	Generator Building-Casing (combined)	106	96	10

The analysis indicated that POR02 is the most sensitive receptor and noise mitigation will be required to achieve compliance with the MOE guidelines.

8.5.2.1.3 Decommissioning

As with construction, noise associated with vehicles transporting the diesel generators from the Mine during decommissioning is anticipated to be inaudible.

8.5.2.2 Mitigation Measures

8.5.2.2.1 Construction

No effects are anticipated and therefore no mitigation measures are required.

8.5.2.2.2 Operation

Each of the diesel generator exhaust stacks will require a silencer providing a minimal overall attenuation of 36 dBA, and the Generator Building will require mitigation with sound attenuating material that provides a minimum overall attenuation of 10 dBA. An appropriate silencer should be selected following confirmation of the diesel generator make and model that will be installed. The estimated sound level at each receptor with the recommended noise mitigation measures in place are presented in Table 8-9. The ECA (see Section 3.2.3) will stipulate the noise requirements for the diesel generators.

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Table 8-9 Acoustic Screening Sound Levels at Identified Receptors

Receptor	Performance Limit (L _{eq} , dBA)	Predicted Unmitigated Sound Level (dBA)	Predicted Sound Level with Noise Control (dBA)
POR01	40	56	16
POR02		76	39
POR03		50	<10
POR04		49	<10
POR05 ¹		Negligible	Negligible

Notes:

- (1) Based on the distance to the Dokis First Nations community (located > 50 km from the Mine), the noise level was assessed to be inaudible.

8.5.2.2.3 Decommissioning

No effects are anticipated and therefore no mitigation measures are required.

8.5.2.3 Net Effects

The results of the acoustical modeling demonstrated that emissions derived from simultaneous operation of the diesel generators can meet the MOE guidelines at all identified points of reception provided that recommended mitigation measures are implemented. At the nearest point to the Mine in Algonquin Provincial Park and at the nearest First Nations reserve, the predicted noise levels due to normal generator operations are expected to be inaudible, relative to normal background noise levels.

With appropriate noise mitigation measures in place, no adverse noise net effects are predicted for the Power Supply Project.

8.6 NATURAL ENVIRONMENT

There is the potential for negative effects on a protected natural area, specifically Algonquin Provincial Park. As the Park located approximately 1.5 km from the Mine, a potential negative effect to Park visitors due to noise from the operation of the diesel generators was identified in the Screening Criteria Checklist. For a full assessment of potential effects related to noise, refer to Section 8.5.2. No other potential effects are anticipated for natural environment features as described in the Screening Criteria Checklist (Table 8-1).

8.7 RESOURCES

There is the potential that noise emissions from the diesel generators could impact game resources in the vicinity of the Mine. The Power Supply Project will not create access to

previously inaccessible areas of game and fishery resources. No other impacts to resources are anticipated.

8.7.1 Potential Effects

8.7.1.1 Construction

No potential effects for installation of the diesel generators are anticipated for game resources. Installation of the diesel generators will be short-term and any activities associated with the installation of the diesel generators will be temporary.

8.7.1.2 Operation

Sensory disturbance to game species may occur during the operation of the diesel generators due to noise. A certain level of sensory disturbance to wildlife in the area already exists from activities associated with the Mine. Noise and its effects on wildlife appear to be habitat and species specific. If species are able to adapt easily to human-modified habitats, generally they do not seem to be adversely affected by noise.

8.7.1.3 Decommissioning

No potential effects for decommissioning of the diesel generators are anticipated for game resources. Decommissioning of the diesel generators will be short-term and any activities associated with removal of the diesel generators will be temporary.

8.7.2 Mitigation Measures

8.7.2.1 Construction

No potential effects are anticipated and therefore no mitigation measures are required.

8.7.2.2 Operation

Each of the diesel generator exhaust stacks will require a silencer providing a minimal overall attenuation of 36 dBA, and the Generator Building will require mitigation with sound attenuating material that provides a minimum overall attenuation of 10 dBA. An appropriate silencer should be selected following confirmation of the diesel generator make and model that will be installed. The ECA (see Section 3.2.3) will stipulate the noise requirements for the diesel generators.

8.7.2.3 Decommissioning

No potential effects are anticipated and therefore no mitigation measures are required.

8.7.3 Net Effects

It is likely that resident game species would adapt to any noise associated with the Power Supply Project. No net effects are anticipated.

8.8 SOCIO-ECONOMIC

Two criteria, negative effects on recreation, cottaging or tourism and public concerns related to public health and safety, are identified in the Screening Criteria Checklist (Table 8-1) as potentially being impacted by the Power Supply Project. No other negative effects are anticipated.

Noise has been identified as the potential negative effect to recreation, cottaging or tourism given the proximity to Algonquin Provincial Park. A full assessment of the potential effects from noise is provided in Section 8.5.2.

Potential air emissions from the operation of the diesel generators have the potential to cause public concerns related to public health and safety. A discussion related to air emissions is provided in Section 8.5.1.

8.9 ABORIGINAL

As described in Table 8-1, a potential impact to game resources was identified during the Screening Criteria Checklist process. Although it is not known if Aboriginal communities use the area of the Mine as a resource for game, there is the potential that noise associated with the operation of the diesel generators may negatively affect game resources. A full assessment of the negative effect of noise on game was provided above in Section 8.7. No other negative effects on First Nations or other Aboriginal communities are anticipated.

8.10 OTHER

The following sections outline the waste materials requiring disposal for the construction, operation, and decommissioning diesel generators, and suggested mitigation is presented. No other negative environmental effects are anticipated.

8.10.1 Potential Effects

8.10.1.1 Construction

The diesel generators will be delivered to the Mine via transport truck. The diesel generators will be packaged within wood and steel band crating. The wood and steel band crating materials would be removed from the Mine and disposed of at a licensed facility in accordance with applicable regulations. No potential effects are anticipated.

8.10.1.2 Operation

Waste materials, such as oil, grease, coolant, and filters would be generated during standard operation and maintenance activities. Improper disposal of waste material generated during operations may result in contamination to soil, groundwater, and/or surface water resources on and off the Mine. Used oil would be stored in a designated area of the Mine, and picked up by certified contractor with the appropriate manifests in place.

8.10.1.3 Decommissioning

The diesel generators would have a high resale value due to copper and aluminum content. Concrete from footings could be crushed and recycled as granular fill material. Spent oils could be recovered for recycling through existing oil reprocessing companies.

There would be minimal residual waste for disposal as a result of decommissioning the Power Supply Project. Small amounts of registerable waste materials would be managed in accordance with Ontario Regulation 347 or subsequent applicable legislation. Residual non-hazardous wastes would be disposed at a licensed landfill in operation at the time of decommissioning.

Similar to the operation phase, improper disposal of waste material may result in contamination to soil, groundwater, and/or surface water resources on and off the Mine.

8.10.2 Mitigation Measures

8.10.2.1 Construction

As no potential effects are anticipated during construction, no mitigation measures are required.

8.10.2.2 Operation

All waste materials would be transported off-site by private waste material collection contractors. Liquid wastes (e.g., used oil, grease, coolant, etc.) would be labelled and properly stored in a secure area that would ensure containment of the material in the event of a spill. As per s.13 of the *Environmental Protection Act*, all spills that could potentially have an adverse environmental effect, are outside the normal course of events, or are in excess of the prescribed regulatory levels would be reported to the MOE's Spills Action Centre.

As appropriate, spill kits (e.g. containing absorbent cloths and disposal containers) would be provided on-site during maintenance activities.

8.10.2.3 Decommissioning

Mitigation measures would be the same as those outlined above for operation (Section 8.10.2.2).

8.10.3 Net Effects

With the application of the mitigation measures outlined above, no net effects from waste material disposal would occur on-site during construction, operation and decommissioning. However, as with all wastes, it is possible that disposal would have a minor incremental effect on soil, groundwater, and surface water at the waste disposal site(s) depending on municipal on-site containment practices and quality of the landfill protection mechanisms (e.g. use of geotextiles to contain leachate). It is assumed that licensed waste disposal sites are legally compliant.

9.0 Summary of Mitigation, Impact Management and Monitoring Commitments

A summary of the potential environmental impact management and mitigation commitments, where necessary, is provided below in Table 9-1.

Table 9-1 Summary of Environmental Impact Management, Mitigation Measures and Monitoring Requirements

Criterion	Potential Adverse Effect	Mitigation and Monitoring	Net Effects
Surface and Ground Water			
<ul style="list-style-type: none"> have negative effects on surface water quality, quantities or flow? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on ground water quality, quantity or movement? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> cause significant sedimentation, soil erosion or shoreline or riverbank erosion on or off site? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> cause potential negative effects on surface or ground water from accidental spills or releases to the environment? 	<ul style="list-style-type: none"> Potential for accidental spills during operation. No potential adverse effects anticipated during construction and decommissioning. 	<ul style="list-style-type: none"> Standard containment facilities and emergency response materials would be maintained on-site as required. As per s.13 of the Environmental Protection Act, all spills that could potentially have an adverse environmental effect, are outside the normal course of events, or are in excess of the prescribed regulatory levels would be reported to the MOE's Spills Action Centre. Monitoring would be 	<ul style="list-style-type: none"> With the application of mitigation measures, no net effects are anticipated.

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Criterion	Potential Adverse Effect	Mitigation and Monitoring	Net Effects
		required following the unlikely event of contamination from an accidental spill or leak. <ul style="list-style-type: none"> Contaminated soils would be removed and replaced as appropriate. 	
Land			
<ul style="list-style-type: none"> have negative effects on residential, commercial or institutional land uses within 500 metres of the site? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> be inconsistent with the Provincial Policy Statement, provincial land use or resource management plans? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> be inconsistent with municipal land use policies, plans and zoning by-laws? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> use hazard lands or unstable lands subject to erosion? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have potential negative effects related to the remediation of contaminated land? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
Air and Noise			
<ul style="list-style-type: none"> have negative effects on air quality due to emission of nitrogen dioxide, sulphur dioxide, suspended particulates, or other pollutants? 	<ul style="list-style-type: none"> Emissions from vehicles during construction and decommissioning. Emissions from the diesel generators during operation. 	<ul style="list-style-type: none"> Maintenance of vehicle emission control systems. The maximum off-property GLC for the significant contaminants for both scenarios were predicted to be below their respective MOE POI limits. The ECA will stipulate the emission requirements for 	<ul style="list-style-type: none"> Mitigation measures should limit air emissions to the immediate vicinity of the Mine and limit the magnitude of combustion emissions. Any adverse net effects to air quality from air emissions are anticipated to be negligible.

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Criterion	Potential Adverse Effect	Mitigation and Monitoring	Net Effects
		the diesel generators.	
<ul style="list-style-type: none"> cause negative effects from the emission of greenhouse gases (CO₂, methane)? 	<ul style="list-style-type: none"> Emissions from vehicles during construction and decommissioning. Emissions from the diesel generators during operation. 	<ul style="list-style-type: none"> Maintenance of vehicle emission control systems. The maximum off-property GLC for the significant contaminants for both scenarios were predicted to be below their respective MOE POI limits. The ECA will stipulate the emission requirements for the diesel generators. 	<ul style="list-style-type: none"> Mitigation measures should limit air emissions to the immediate vicinity of the Mine and limit the magnitude of combustion emissions. Any adverse net effects to air quality from air emissions are anticipated to be negligible.
<ul style="list-style-type: none"> cause negative effects from the emission of dust or odour? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> cause negative effects from the emission of noise? 	<ul style="list-style-type: none"> Noise emitted from the diesel generators during operation. No potential adverse effects anticipated during construction and decommissioning. 	<ul style="list-style-type: none"> Each of the generator exhaust stacks will require a silencer providing a minimal overall attenuation of 36 dBA. The Generator Building will require mitigation with sound attenuating material that provides a minimum overall attenuation of 10 dBA. The ECA will stipulate the noise requirements for the diesel generators. 	<ul style="list-style-type: none"> Emissions derived from simultaneous operation of the diesel generators can meet the MOE guidelines at all identified points of reception provided that recommended mitigation measures are implemented. No adverse noise net effects are predicted for the Power Supply Project.
Natural Environment			
<ul style="list-style-type: none"> cause negative effects on rare, threatened or endangered species of flora or fauna or 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.

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Criterion	Potential Adverse Effect	Mitigation and Monitoring	Net Effects
their habitat?			
<ul style="list-style-type: none"> cause negative effects on protected natural areas such as ANSIs, ESAs or other significant natural areas? 	<ul style="list-style-type: none"> Noise impacts to visitors of Algonquin Provincial Park during operation. No potential adverse effects anticipated during construction and decommissioning. 	<ul style="list-style-type: none"> Each of the generator exhaust stacks will require a silencer providing a minimal overall attenuation of 36 dBA. The Generator Building will require mitigation with sound attenuating material that provides a minimum overall attenuation of 10 dBA. The ECA will stipulate the noise requirements for the diesel generators. 	<ul style="list-style-type: none"> At the nearest point to the Mine in Algonquin Provincial Park the predicted noise levels due to normal generator operations are expected to be inaudible, relative to normal background noise levels. No adverse noise net effects are predicted for the Power Supply Project.
<ul style="list-style-type: none"> cause negative effects on wetlands? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on wildlife habitat, populations, corridors or movement? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on fish or their habitat, spawning, movement or environmental conditions (e.g., water temperature, turbidity, etc.)? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on migratory birds, including effects on their habitat or staging areas? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on locally important or valued ecosystems or vegetation? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
Resources			
<ul style="list-style-type: none"> result in inefficient (below 40%) use of a 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.

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Criterion	Potential Adverse Effect	Mitigation and Monitoring	Net Effects
non-renewable resource (efficiency is defined as the ratio of output energy to input energy, where output energy includes electricity produced plus useful heat captured)?			
<ul style="list-style-type: none"> have negative effects on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on existing agricultural production? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on the availability of mineral, aggregate or petroleum resources? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on the availability of forest resources? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on game and fishery resources, including negative effects caused by creating access to previously inaccessible areas? 	<ul style="list-style-type: none"> Sensory disturbance to game species during operation. No potential adverse effects anticipated during construction and decommissioning. 	<ul style="list-style-type: none"> Each of the generator exhaust stacks will require a silencer providing a minimal overall attenuation of 36 dBA. The generator building will require mitigation with sound attenuating material that provides a minimum overall attenuation of 10 dBA. The ECA will stipulate the noise requirements for the diesel generators. 	<ul style="list-style-type: none"> It is likely that resident game species would adapt to any noise associated with the Power Supply Project. No net effects are anticipated.
Socio-Economic			
<ul style="list-style-type: none"> have negative effects on neighbourhood or community character? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.

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Criterion	Potential Adverse Effect	Mitigation and Monitoring	Net Effects
<ul style="list-style-type: none"> have negative effects on local businesses, institutions or public facilities? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on recreation, cottaging or tourism? 	<ul style="list-style-type: none"> Noise impacts to recreation, cottaging or tourism during operation. No potential adverse effects anticipated during construction and decommissioning. 	<ul style="list-style-type: none"> Each of the generator exhaust stacks will require a silencer providing a minimal overall attenuation of 36 dBA. The Generator Building will require mitigation with sound attenuating material that provides a minimum overall attenuation of 10 dBA. The ECA will stipulate the noise requirements for the diesel generators. 	<ul style="list-style-type: none"> Emissions derived from simultaneous operation of the diesel generators can meet the MOE guidelines at all identified points of reception provided that recommended mitigation measures are implemented. No adverse noise net effects are predicted for the Power Supply Project.
<ul style="list-style-type: none"> have negative effects related to increases in the demands on community services and infrastructure? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on the economic base of a municipality or community? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on local employment and labour supply? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects related to traffic? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> cause public concerns related to public health and safety? 	<ul style="list-style-type: none"> Concerns regarding air emissions during operation. No potential adverse effects anticipated during construction and decommissioning. 	<ul style="list-style-type: none"> Maintenance of vehicle emission control systems. The maximum off-property GLC for the significant contaminants for both scenarios were predicted to be below their respective MOE POI limits. The ECA will stipulate the 	<ul style="list-style-type: none"> Mitigation measures should limit air emissions to the immediate vicinity of the Mine and limit the magnitude of combustion emissions. Any adverse net effects to air quality from air emissions are anticipated to be negligible.

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Criterion	Potential Adverse Effect	Mitigation and Monitoring	Net Effects
		emission requirements for the diesel generators.	
Heritage and Culture			
<ul style="list-style-type: none"> have negative effects on heritage buildings, structures or sites, archaeological resources, or cultural heritage landscapes? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
<ul style="list-style-type: none"> have negative effects on scenic or aesthetically pleasing landscapes or views? 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> Not required. 	<ul style="list-style-type: none"> None.
Aboriginal			
<ul style="list-style-type: none"> cause negative effects on First Nations or other Aboriginal communities? 	<ul style="list-style-type: none"> Sensory disturbance to game species during operation. No potential adverse effects anticipated during construction and decommissioning. 	<ul style="list-style-type: none"> Each of the generator exhaust stacks will require a silencer providing a minimal overall attenuation of 36 dBA. The generator building will require mitigation with sound attenuating material that provides a minimum overall attenuation of 10 dBA. The ECA will stipulate the noise requirements for the diesel generators. 	<ul style="list-style-type: none"> It is likely that resident game species would adapt to any noise associated with the Power Supply Project. No net effects are anticipated.
Other			
<ul style="list-style-type: none"> result in the creation of waste materials requiring disposal? 	<ul style="list-style-type: none"> During construction, operation and decommissioning, improper disposal of waste material may result in contamination to soil, groundwater, and/or surface water 	<ul style="list-style-type: none"> All waste materials would be transported off-site by private waste material collection contractors. Liquid wastes would be labelled and properly stored of in a secure area that would ensure containment of the 	<ul style="list-style-type: none"> No net effects from waste material disposal would occur on-site during construction, operation and decommissioning.

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Criterion	Potential Adverse Effect	Mitigation and Monitoring	Net Effects
	resources on and off the Mine.	material in the event of a spill. <ul style="list-style-type: none"> • As per s.13 of the <i>Environmental Protection Act</i>, all spills that could potentially have an adverse environmental effect, are outside the normal course of events, or are in excess of the prescribed regulatory levels would be reported to the MOE's Spills Action Centre. • As appropriate, spill kits (e.g. containing absorbent cloths and disposal containers) would be provided on-site during maintenance activities. 	
<ul style="list-style-type: none"> • cause any other negative environmental effects not covered by the criteria outlined above? 	<ul style="list-style-type: none"> • None. 	<ul style="list-style-type: none"> • Not required. 	<ul style="list-style-type: none"> • None.

10.0 Summary of the Environmental Advantages and Disadvantages of the Project

The proposed installation of four 1.24 MW diesel generators (with a total nameplate capacity of 4.96 MW) is not expected to have significant adverse environmental effects. Appropriate and effective mitigation measures will be undertaken to eliminate or minimize effects associated with the Power Supply Project. The resulting net impacts after implementation of mitigation measures are not anticipated to be significant.

During normal mill operation, three of the four generators will be in operation, providing a maximum of 3.72 MW of power, with the fourth on standby. Mill operations are expected to operate 24 hours per day, 7 days per week. During normal operation, the majority (17,600 kg/hour) of the hot exhaust gases from the three generators will be ducted to the Mill building, mixed with ambient process air at a rate of 4,400 kg/hour, and used in the graphite dryer. Emissions from the dryer are ultimately vented to the atmosphere through an exhaust stack on the Mill Building. The remainder of the generator exhaust will be emitted through separate stacks for each generator on the Generator Building.

During Mill down time, the Mill processes will not be in operation, and only one of the generators will be operated to provide general power for lighting and heating the various buildings as required. In this operating scenario, all the generator exhaust is emitted through the dedicated exhaust stack for that generator.

The re-activation and operation of the Mine will positively contribute to the local economy. It is anticipated that the Mine will provide employment for approximately 70 employees for the next six to seven years.

Although the operation of the diesel generators will emit NO₂, CO, PM, and SO₂, all parameters are anticipated to be within the limits of the MOE's air quality criteria and no adverse effects on the local air quality were predicted due to implementation of the Power Supply Project.

The results of the acoustical modeling demonstrated that emissions derived from simultaneous operation of the diesel generators can meet the MOE guidelines at all identified points of reception provided that recommended mitigation measures are implemented. At the nearest point to the Mine in Algonquin Provincial Park and at the nearest First Nations reserve (Dokis First Nation), the predicted noise levels due to normal generator operations are expected to be inaudible, relative to normal background noise levels.

There may be minimal disturbance to game resources from noise associated with the operation of the diesel generators. If species are able to adapt easily to human-modified habitats, generally they do not seem to be adversely affected by noise. Since the Mine has been operational in the past, it is anticipated that there will be no significant negative effects to game species associated with the operation of the diesel generators.

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Waste materials, such as used oil, filters, and used coolants, will be generated during regular maintenance of the diesel generators. These waste materials can be properly disposed of by private waste material collection contractors and no negative environmental impacts are anticipated.

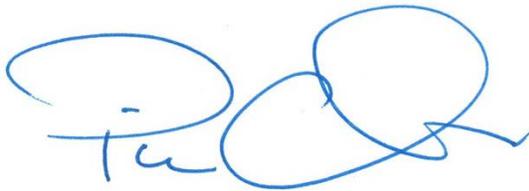
While the possibility of an accidental spill could negatively impact the local environment, precautionary measures can be implemented to reduce the likelihood of any potential contamination from accidental spills. Accidental spills are not anticipated to have any negative effects.

Overall, the potential negative environment effects of the Power Supply Project are not anticipated to be significant based on a balanced assessment against all of the screening criteria and the results and conclusion of the Environmental Screening. The potential positive impacts associated with the re-activation and operation of the Mine, for which the diesel generators are required, are anticipated to help balance the potential negative impacts that might occur as a result of the Power Supply Project.

11.0 Closure

This report has been prepared by Stantec Consulting Ltd. for the sole benefit of Ontario Graphite, and may not be used by any third party without the express written consent of Ontario Graphite and Stantec Consulting Ltd. The data presented in this report are in accordance with Stantec's understanding of the Project as it was presented at the time report preparation.

STANTEC CONSULTING LTD.

A handwritten signature in blue ink, appearing to read 'Piero Amodeo', is written over a horizontal line.

Piero Amodeo

Discipline Leader, Assessment, Permitting and Compliance

12.0 References

AGRA. 1994. Applied Carbon Technology Inc., Mine Closure Plan, Kearney, Ontario. AGRA Earth & Environmental Limited, Report No. TC56004, September, 1994.

Ministry of the Environment (MOE). Appendix to Regulation 346. Available online at: http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/stdprod_082068.pdf.

Environment Canada. 2011. Canadian Climate Normals 1971-2000. Available online at: http://climate.weatheroffice.gc.ca/climate_normals/results_e.html?stnID=4460&prov=&lang=e&dCode=4&dispBack=1&StationName=huntsville&SearchType=Contains&province=ALL&provBut=&month1=0&month2=12. Accessed August 9, 2011.

Holm, E., N. E. Mandrak and M. E. Burrige. 2009. The ROM Field Guide to Freshwater Fishes of Ontario. Royal Ontario Museum: Toronto, Ontario.

MacLaren Plansearch. 1988. Environmental Study Report Proposed Cal Graphite Mine Development, Butt Township. Final Report to Cal Graphite Corporation.

Ministry of Natural Resources (MNR). 1983. Bracebridge District Land Use Guidelines. Available online at: <http://crownlanduseatlas.mnr.gov.on.ca/supportingdocs/Bracebridge.pdf>. Accessed August 9, 2011.

Ministry of Natural Resources (MNR). 1987a. Acid Sensitivity of Lakes in Ontario.

Ministry of Natural Resources (MNR). 1987b. Guide to Eating Ontario Sport Fish.

Ministry of Natural Resources (MNR). 1987c. Minnow Lake, Butt Township – Inventory and Assessment, July 29-30, 1987. G. Deyne and G. Arnett, Bracebridge District.

Ministry of Natural Resources (MNR). 1969, 1977, 1986, 1987. Lake Survey and Fisheries Data for Graphite Lake, Minnow Lake and McGuire Lake.

Ministry of Natural Resources (MNR). 1996. Graphite Lake Fisheries Assessment, 1987 and 1996. Greg A Deyne, Ministry of Natural Resources, Bracebridge Area Office, Parry Sound District, September 27, 1996.

Ministry of Natural Resources (MNR). 2006a. Crown Land Use Policy Atlas Policy Reports. Available online at: www.crownlanduseatlas.mnr.gov.on.ca. Accessed August 9, 2011.

Ministry of Natural Resources (MNR). 2010. Fishing Regulations Summary 2011. Available online at:

http://www.mnr.gov.on.ca/en/Business/LetsFish/Publication/STEL02_163615.html.

Accessed August 11, 2011.

Ministry of Natural Resources (MNR). 2011. Ontario Hunting Regulations Summary 2011-2012. Available online at:

http://www.mnr.gov.on.ca/en/Business/FW/Publication/MNR_E001275P.html. Accessed

August 11, 2011.

Ministry of Natural Resource (MNR) and Westwind Forest Stewardship Inc. 2008. Forest Management Plan (FMP) for the French/Severn Forest (360). Available online at:

<http://www.appefmp.mnr.gov.on.ca/eFMP/viewFmuPlan.do?fmu=360&fid=59006&type=CURRENT&pid=59006&sid=4201&pn=FP&ppyf=2009&pyt=2019&ptyf=2009&ptyt=2014&phase=P1>. Accessed July 12, 2011.

Ministry of Northern Development and Mines (MNDM). 2008. MNDM Claim Map. Accessed online at <http://www.mndm.gov.on.ca/mines/lands/claimap3/>. Site updated August 2008.

Ministry of the Environment (MOE). 1995. Sound Level Limits for Stationary Sources in Class 3 Areas (Rural). Publication NPC-232. Available online at:

http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/std01_079359.pdf.

Ministry of the Environment (MOE). 2009. Code of Practice: Preparing and Reivewing Environmental Assessments in Ontario. Available online at:

http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/std01_079566.pdf. Accessed on August 9, 2011.

Ministry of the Environment (MOE). 2010. Dorset: AQI for 2010. Available online at:

http://www.airqualityontario.com/reports/aqisearch.php?stationid=49010&show_day=0&start_year=2010&submitter=Get+AQI+Readings. Accessed on August 9, 2011.

Ontario Parks. 2011. Park Statistics 2010. Available online at:

http://www.ontarioparks.com/statistics/2010_park_statistics.pdf . Accessed August 12, 2011.

Ontario Regulation 419/05 Air Pollution — Local Air Quality. Available online at: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_050419_e.htm.

Soil Research Institute. 1975. Canada Land Inventory – Soil Capability for Agriculture.

Available online at:

http://sis.agr.gc.ca/cansis/publications/cli/1m/agr/cli_1m_agr_ontario.jpg. Accessed August 15, 2011.

Southcott, Chris. 2003. 2001 Census Research Paper Series #5 – Labour Force Participation Trends in Northern Ontario. Available online at:

<http://www.fnetb.com/English/Reports/report5-eng.pdf>. Accessed August 10, 2011.

Southcott, Chris. 2008. 2006 Census Research Paper Series #5 – Labour Force Participation Trends in Northern Ontario 2001 to 2006. Available online at:

http://www.nswpb.ca/census_analysis_reports/census_labour_force. Accessed August 10, 2011.

Statistics Canada. 2007. Kearney, Ontario (Code3549018) (table). 2006 Community Profiles. 2006 Census. Statistics Canada Catalogue no. 92-591-XWE. Ottawa. Released March 13, 2007. <http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-591/index.cfm?Lang=E>. Accessed August 10, 2011.

Town of Kearney. 2006a. A Little Bit of History. Available online at

<http://www.townofkearney.com/siteengine/activepage.asp?PageID=15>. Access August 10, 2011.

Town of Kearney. 2006b. Town of Kearney Official Plan. Available online at: .Accessed August 8, 2011.