
AMENDED EIS/EA REPORT EXECUTIVE SUMMARY VERSION 3



VERSION 3 UPDATE SUMMARY

Report Structure

This document is Version 3 of the Environmental Impact Statement/Environmental Assessment (EIS/EA) Report for the Hammond Reef Gold Project. This document is an amended version of the EIS/EA as it contains the entire Version 2 EIS/EA Report supplemented by summary text (in italics) to inform the reader of clarifications, supplemental supporting information and minor changes that were submitted in responses to comments received from the joint federal and provincial review team and from the public and Aboriginal stakeholders. All references to the Version 3 EIS/EA within this document shall be considered as references to the Version 3 Amended EIS/EA. All responses to information requests and supplemental documentation provided between submission of the Version 2 EIS/EA Report in 2014 and this Version 3 EIS/EA Report have been compiled and are provided in the Addendum to the Version 3 EIS/EA Report.

A summary of key clarifications, supplemental supporting information and minor changes (where required) is provided in italics at the beginning of each chapter of the Version 3 EIS/EA Report. References are also provided periodically through the chapters of the report to identify points of clarification, or to direct the reader to the most recent information available, within the documentation of the subject matter.

Executive Summary Update

Information request categories that have been responded to include additional documentation on approach to addressing Terms of Reference. Key points of clarification have been added in italics for each section of the introduction. Section 1.2 has been updated to reflect the change in ownership from Osisko Mining Corporation to Canadian Malartic Corporation, and the corresponding change in corporate contacts and responsibility.

Project Schedule

CMC is optimistic that the economic environment will support the development of the Project in the near future. A revised version of Figure 1-4 with an updated project schedule is provided in Chapter 1 and the response to EAB8-NEW. The updated schedule is dependent on economic considerations, such as the price of gold, and on the timing of EIS/EA approval. CMC understands that permitting requires time and plans to initiate the permitting phase of the project after EIS/EA approval such that the Project can be constructed when the economic environment improves.

Summary of Sequence of EIS/EA Documentation

For convenience and clarification, the following presents a chronology of work completed and documents submitted in support of the EIS/EA.

- *Baseline study work (2010 through 2013)*
 - *Physical baseline*
 - *Public information sessions*
 - *Aboriginal consultation and approval through signed letters and MOUs*
- *Terms of Reference (ToR) submission, and receipt of approval (2012)*
- *Submission of Draft (Version 1) EIS/EA (February 2013)*

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- Approximately 700 comments and information requests (IRs) received in response to Draft EIS/EA (2013)
- Submission of the Final EIS/EA (Version 2) in response to comments and IRs received on the Draft EIS/EA (January 2014)
- Approximately 320 comments and IRs received in response to Version 2 EIS/EA (2014-2017). CMC worked with the government review team continually during this period to ensure responses to comments were satisfactory to the government.
- Submission of this Amended Final EIS/EA (Version 3) (January 2018).

INTRODUCTION

This Environmental Impact Statement/Environmental Assessment Report (EIS/EA Report) has been prepared for the proposed Hammond Reef Gold Project (Project) with the objective of meeting provincial requirements for an Individual Environmental Assessment, and federal requirements for a Comprehensive Environmental Assessment. The following Executive Summary provides an overview of the EIS/EA Report, including key figures and tables of the Report.

The EIS/EA Report meets both provincial and federal requirements provided in the Project's Terms of Reference (ToR) approved by the Ontario Minister of the Environment (July 2012) (Appendix 1.I), and with the Environmental Impact Statement Guidelines (EIS Guidelines) issued for the Project by the Canadian Environmental Assessment Agency (CEA Agency) (December 2011) (Appendix 1.II).

Project Location

The location of the Project is shown on Figure ES-1. The Project is located within the Thunder Bay Mining District in Northwestern Ontario, approximately 170 km west of Thunder Bay and 23 km northeast of the Town of Atikokan. Thunder Bay is the closest major transportation hub. Atikokan is located immediately north of the Trans-Canada Highway.

Project Coordinates

Version 3 Update: The longitudinal coordinate for the Project Site contained a typographical error. This has been corrected in this Section 1.1.1 of the Version 3 Amended EIS/EA.

The location of the Project Site (centred on the open pits) is:

- | | |
|------------------------------------|---|
| ■ UTM Coordinates (UTM NAD83 15N): | ■ Latitude and longitude: |
| ■ Easting: 612648.06. | ■ Latitude: 48° 56' 11.799" North. |
| ■ Northing: 5421549.37. | ■ Longitude: 97° 27' 42.5124" West.
91° 27' 42.5124" West |

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Project Site Address

The legal description of the Project Site is:

Rainy River District
Sawbill Bay Township

The Project ~~Site address~~ and contact information is:

Canadian Malartic Corporation
2140 St Mathieu St.
Montreal, QC H3H 2J4
Phone: 819-757-2225 ext. 2297

~~Osisko Hammond Reef Gold Ltd.~~
~~101 Goodwin Avenue~~
~~Box 2020~~
~~Atikokan, Ontario~~
~~Telephone: 807-597-4484~~
~~Facsimile: 807-597-2254~~

The Proponent

Given that Canadian Malartic Corporation (CMC) is the current owner of Hammond Reef Gold Limited (OHRG), for the purposes of this EIS/EA, “Osisko”, “OHRG”, and “CMC” all refer to Canadian Malartic Corporation, the current owner and proponent of the Project. Additional corporate information related to CMC is provide below. Superseded previous information is denoted in strikethrough font.

The proponent for the project is Canadian Malartic Corporation (CMC), a joint venture partnership of Yamana Gold Ltd. and Agnico Eagle Ltd.

CMC’s corporate contact information is:

Canadian Malartic Corporation
Pascal Lavoie, Director of Environment and Sustainable Development
100, chemin du Lac Mourier,
Malartic, Québec, J0Y 1Z0
E-mail: plavoie@agnicoeagle.com
Website: www.canadianmalartic.com

The primary contact for the EIS/EA Report:

Canadian Malartic Corporation
Ms. Sandra Pouliot, Environment Project Leader
100, chemin du Lac Mourier,
Malartic, Québec, J0Y 1Z0
Telephone: 819.757.2225 ext. 2297
E-mail: spouliot@canadianmalartic.com

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The proponent for the Project is Hammond Reef Gold Ltd. (OHRG). OHRG is a subsidiary of Osisko Mining Corporation (Osisko) and is 100% owned by Osisko. There are no co-proponents for the Project. Osisko is the Project sponsor, through OHRG.

Osisko's corporate contact information is:

Osisko Mining Corporation

Ruben Wallin, Vice President, Environment and Sustainable Development
1100 av. des Canadiens de Montreal
Bureau 300, C.P. 211
Montréal, Québec, H3B 2S2
Telephone: 514-735-7134
Facsimile: 514-933-3290
E-mail: rwallin@osisko.com
Website: www.osisko.com

The primary OHRG contact for the EIS/EA Report is:

Osisko Hammond Reef Gold Ltd.

Alexandra Drapack, Director of Sustainable Development
155 University Avenue
Suite 1440
Toronto, Ontario, M5H 3B7
Telephone: 416-363-8653 extension 110
E-mail: adrapack@osisko.com

Canadian Malartic Corporation – Osisko Mining Corporation

Version 3 Update: In June 2014, Yamana Gold Inc. and Agnico Eagle Mines Limited formed a partnership to acquire all issued and outstanding common shares of Osisko. This acquisition included the Canadian Malartic Mine, the Kirkland Lake Gold Project and the Hammond Reef Gold Project.

The Canadian Malartic Corporation (CMC) was formed as the successor of Osisko Mining Corporation. All agreements and commitments made by Osisko have been transferred to the CMC, who is now the owner of the Hammond Reef Gold Project.

CMC's priority is to ensure the safety of our employees, while respecting the environment and adopting world-class best practices. We will continue to work with the communities in which we operate, contribute to their social development, and engage in transparent and respectful dialogue. We will ensure the professional development of the Partnership's team by building upon Osisko's foundations for success. We will create business opportunities, not only within the Partnership but also as part of activities carried out by Agnico Eagle and Yamana in Canada and abroad. The Partnership will enhance and create value for all stakeholders by optimizing the Canadian Malartic mine and by realizing the growth potential at our projects.

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~~Osisko Mining Corporation is a mining company based in Montreal, Quebec. The Company is focused on acquiring, exploring, developing and mining gold properties, with the aim of becoming a leading mid-tier gold producer. Its flagship project is the Canadian Malartic gold mine located in the Abitibi mining district of Quebec. Because the Hammond Reef Gold Project has many similarities to the Canadian Malartic Mine, much of the design and planning for the Hammond Reef Gold Project has drawn on the successful planning and implementation of the Canadian Malartic Mine.~~

~~Osisko has completed its construction of the Canadian Malartic gold mine in the heart of the Abitibi mining district. The first gold bar was poured on April 13, 2011, and commercial production began in May 2011. The Canadian Malartic deposit currently represents one of the biggest gold reserves in production in Canada with Proven and Probable Reserves of 10.1 million ounces of gold (February 2013), and is still growing through ongoing drilling on adjacent mineralized zones.~~

Summary of Work in Response Comments

Version 3 Update: The summary of work undertaken as a result of comments received on the Version 2 EIS/EA Report includes:

■ **Environmental Monitoring**

- Re-instatement of the baseline hydrometric monitoring program at the recommendation of the MOECC.

■ **Groundwater Modelling of the TMF**

- Detailed assessment of TMF seepage discharge, including additional baseline data collection, baseline model development and calibration, predictive simulations for the operations, closure and post-closure phases, and sensitivity analysis (see response to T(3)-08 in Part A of the Addendum to the Version 3 EIS/EA – see Table A-1).

■ **Water Quality**

- Provision of clarification related to sulphate discharge, methyl mercury generation, and wild rice harvesting based on recently published research and guidance documents (see supplemental document provided in Part D of the Addendum to the Version 3 EIS/EA)..
- Review of potential impacts to receiving water bodies due to seepage discharge from the TMF (see response to T(3)-08 in Part A of the Addendum to the Version 3 EIS/EA – see Table A-1).
- Review of potential impacts to receiving water bodies, due to the unlikely event of a breach of the TMF Reclaim Pond dam (see response to T(3)-09 in Part A of the Addendum to the Version 3 EIS/EA – see Table A-1).

■ **Air Quality**

- Development of a new emissions and dispersion modelling scenario, at the request of the government review team, using less conservative model inputs and assumptions and updated evaluation of potential human health and ecological risks (see response to T(3)-01 in Part A of the Addendum to the Version 3 EIS/EA – see Table A-1).

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■ **Fishing and Hunting**

- *Review of the potential impact of increased fishing and hunting pressure and possible mitigations are provided in the supplemental document: “Assessment of Potential Impacts to Fishing and Hunting Pressure and Opportunities – Hammond Reef Gold Project” in Part D of the Addendum to the Version 3 EIS/EA*

■ **Cultural Heritage**

- *A detailed Heritage Impact Assessment (HIA) was completed at the request of the Ontario Ministry of Tourism, Culture and Sport (see Part D of the Addendum to the Version 3 EIS/EA). The HIA recommended mitigation in the form of photographic documentation of heritage resources that may be disturbed by the Project. This was completed and is provided in an appendix to the HIA.*

■ **Alternatives Assessment TSD, Chapter 2 and Chapter 4**

- *Update of the Alternative Assessment TSD, Chapter 2 and Chapter 4 to clarify that methods used to evaluate and select preferred alternatives considered all project phases as required by the ToR and EIS Guidelines.*
- *Provision of supplemental documents: (1) Comprehensive Alternatives Assessment Tables for the Construction, Operations and Closure Phases, and (2) Supplemental Assessment of Access Road and Transmission Line Routing Alternatives, at the request of the MNR (see Parts 3 and 4 of the Version 3 Alternatives Assessment TSD).*

■ **Supplemental Clarification of Effects Assessment (Chapter 6)**

- *Annotation of Chapter 6 to clarify and demonstrate that the assessment process considered all project phases as required by the ToR and EIS Guidelines.*

■ **Annotation of EIS/EA Text and Provision of Compiled Documentation**

- *In response to concerns raised by the MOECC, the Version 2 EIS/EA has been annotated for clarity (with narrative regarding assessment method and rationale provided for each project phase) and readability. This annotated Version 3 EIS/EA includes references imbedded through the text to inform the reader of supplemental information contained in responses to comments and IRs, and to direct the reader to the most recent information available, within the documentation of the subject matter. All responses to comments and IRs and supporting supplemental documentation have been compiled into a single Addendum that is provided within in a single electronic file structure for ease of reference.*

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Some additional work has been undertaken based on the comments received from Aboriginal groups, the public and the government review team on the Draft (**Version 1**), and **Version 2** EIS/EA Report. This work includes new and ongoing field studies, new design and modelling calculations, desktop studies, publication of new reports and revisions to existing reports. The summary of work undertaken as a result of the comments received on the Draft (**Version 1**) EIS/EA report includes:

■ Environmental Field Studies

- Bat surveys
- Water quality sampling
- Water level and flows collection
- Climate data collection

■ Environmental Monitoring Plan

- Revised to clearly meet guidelines
- Expanded to include more detail and commitments

■ Water Quality Modelling

- Additional definition of mixing zone
- Conceptual design of effluent diffuser

■ Mine Waste Alternatives

- Alternatives TSD revised substantially to reflect the requirements of the regulatory agencies

■ Closure Planning

- Provided a draft of the Certified Closure Plan to Ministry of Northern Development and Mines (MNDM) for review and feedback
- Revisions to pit filling predictions
- A memorandum summarizing Closure Alternatives
- Ongoing discussions about reclamation details

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Report Versions

A (*Version 1*) Draft version of this EIS/EA Report was published for public comment on February 15, 2013. OHRG received approximately 700 comments from Aboriginal groups, the public and the Government Review Team. The comments were considered, discussed and incorporated into a **Version 2 EIS/EA Report as appropriate**.

Version 3 Update: A *Version 2, Final EIS/EA Report* was published for regulatory and public comment in January 2014. CMC received approximately 320 comments on the *Version 2* report from Aboriginal groups, the public and the Government Review Team. The comments were considered, discussed and incorporated into this *Version 3 EIS/EA Report as appropriate*.

This Version 3 EIS/EA report is considered the Final submission of the EIS/EA documentation for the Project.

ENVIRONMENTAL ASSESSMENT METHODS

Version 3 Update: *Further information regarding the methods used in the EIS/EA and the overall compliance of the EIS/EA Report with the ToR and EIS Guidelines is provided in the response to EAB-3 and EAB-4 (see Addendum Part B; Table B-1). Additional clarifying text has been added throughout Chapter 2 to explain and demonstrate how the project phases were considered and incorporated into the assessment of impacts.*

The environmental assessment was undertaken to meet the requirements detailed in the provincial and federal guidelines. The overall assessment approach is described below.

An initial Project was scoped and a Project Site was defined, within which development activities are planned to take place. Initial study areas were defined for each EA component based on the geographic range over which potential effects of the Project are anticipated to occur.

Baseline studies were conducted within the defined study areas. Studies are focussed on potential interactions with mine development activities. These studies provide an understanding of the existing environment, and provide the baseline conditions against which potential effects of the Project are assessed.

Alternative means for carrying out the Project were described and evaluated through an alternatives assessment.

A Project Description was developed that describes the activities to be undertaken during each Project phase. Project phases include construction, operations, closure and post-closure. The activities to be undertaken in each phase are described in Chapter 5, Table 5-1.

Likely effects of the Project on the environment were assessed for those components where there is a direct or indirect linkage between Project activities and an environmental or social component. The effects assessment followed a stepwise methodology:

- Screening of Project activities with the potential to have interactions with Valued Ecosystem Components (VECs) of the physical, biological or socio-economic environment.
- Prediction (i.e., identification and description) of likely effects of the Project.

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- Identification of suitable mitigation measures to reduce or eliminate the identified adverse effects.
- Assessment of whether adverse effects are likely after mitigation (i.e., residual effects).
- Determination of the significance of residual effects. If there is uncertainty of whether an effect remains after mitigation, the effect is forwarded for determination of significance.

Consultation with Aboriginal communities, government regulators and Project stakeholders is ongoing throughout the environmental assessment.

Preliminary or conceptual environmental and social management plans were developed to enhance benefits to local communities and minimize potential effects.

Selection of Valued Ecosystem Components

The potential effects of the Project are considered with respect to specific criteria and indicators that can be used to measure changes to attributes of the environment. These include both ecological and socio-economic attributes, and are referred to as Valued Ecosystem Components and Valued Social Components respectively. These are collectively referred to as Valued Ecosystem Components (VECs).

The VECs provide structure and focus for the environmental assessment. A VEC can be an individual component of the environment (e.g., a species), or a collection of components that represent one aspect of the environment (e.g., a wetland ecosystem). VECs for the Project were selected through an issues scoping exercise that identified the particular components of the environment for which there is public, Aboriginal, regulatory or scientific concern.

VECs are characterized using indicators; where indicators are the attributes of the VEC that might be affected by the Project. Each indicator requires specific measures that can be quantified and assessed.

Table ES-1 provides a list of the VECs and VSCs selected for the Project. As noted, the table also includes a summary of the rationale for selection of each VEC/VSC and the indicators which were used to measure and predict potential effects of the Project on the identified VEC/VSCs.

EXISTING CONDITIONS

Geology, Geochemistry and Soils

The Project Site is underlain by 2.6-billion to 3 billion-year-old bedrock of the Superior Province of the Canadian Shield in the Marmion Batholith of the Central Wabigoon Subprovince. The Marmion batholith is a diverse assemblage of felsic intrusive rocks, varying from granite to tonalite (quartz diorite) with a gneissic tonalite predominating, and including late stage pegmatite dykes. The Marmion Batholith is transected by a major structural feature, the 1 to 6 km wide Marmion Deformation Corridor (MDC) (also known as Marmion Lake Fault) that trends northeast to southwest through the area. The MDC is variably faulted, sheared and altered, and exhibits a complex braided structure of brecciated and veined granitoid and tonalite rock. This rock mass has been overprinted with a quartz stockwork that hosts gold mineralization.

The bedrock is overlain by a thin discontinuous veneer of overburden including glacial deposits that accumulated in low points on the bedrock surface during the progressive retreat of the ice sheet during the end of the Wisconsin glaciations. These glacial deposits include glacio-lacustrine (near shore beach deposits, ice contact deposits and basin/quiet water deposits) and tills that are overlain by younger fluvial deposits (modern flood plains)

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and organic (peat) deposits. Bedrock, which is situated at or near the ground surface throughout much of the area, controls the topography, shallow groundwater and surface drainage conditions.

Extensive geochemical laboratory testing of 123 samples of waste rock obtained from boreholes drilled in the area of the mine showed that only one sample could be considered as possibly acid generating. The conclusions of the completed analysis show that the waste rock will be non-acid generating with excess neutralization potential primarily resulting from carbonate minerals. The results of the short-term leach testing and kinetic testing support this classification. Samples of potential tailings materials are also classified as non-acid generating with excess neutralization potential.

Short-term and long-term leach test results show that pH may be initially alkaline but is near neutral over the longer term and that concentrations of aluminum, copper, cadmium, iron and zinc have the potential to be slightly elevated in short-term testing relative to comparison criteria with sporadic arsenic, selenium and vanadium concentrations slightly greater than the comparison criteria in waste rock leach testing. Where these sample values are above the comparison criteria, additional water quality evaluation within an overall site-wide context has been conducted as described in the site water quality evaluation.

Gentle topography is characteristic of the area. The granitic rocks of the site are characterized by rounded hills and shallows slopes. Overburden is generally thin and discontinuous. The geology in which the ore deposit is located is characterized by granitic rocks. Geochemical testing has shown that the rock types in and around the proposed open pits are not acid generating, and testing has shown that there is little potential for leaching of metals.

Atmospheric Environment

The Project Site is located in a typical boreal climate region, which is characterized by long, usually very cold winters, and short, cool to mild summers. With no major mountain ranges blocking Arctic air masses, winters are generally very cold. The first snowfall often comes in October and the last snow can come as late as May.

There are no industrial applications within the air quality study area, thus air quality is not impacted by local sources. The Atikokan Generating Station (AGS) was considered however it is located about 15 km southwest of the Project site outside the air quality Local Study Area (LSA). The AGS is also currently undergoing construction to retrofit the former coal plant for burning biofuel. Due to the distance between the AGS and the Project, there will likely be limited interaction between the AGS and the Project activities.

Northern Ontario does not typically have air quality issues because much of the landscape is natural and undisturbed. Field studies were not undertaken to characterize the existing air quality conditions, since available data from Northern Canada stations were used to characterize the existing air quality. Background measurements are not available for all indicator compounds. Further, it is expected that in remote locations such as the study area, background air quality values will be lower than the available measured values and that for indicator compounds such as ammonia the background value will be zero. Therefore, the available air quality data for particulate matter and combustion gases is considered reasonable and is used to describe the existing conditions.

Based on the remote nature of the Project and Points of Reception (PORs), the existing noise conditions have been assumed to be unimpacted by man-made sources and therefore onsite measurements were not required.

Effects of energy released from the Project in the form of air and ground vibrations are most likely to be experienced by those living in close proximity to the Project. As there are currently no blasting operations within the study area, an assessment of background conditions is not necessary for this assessment.

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Hydrology

The Project is located on a peninsula bordered to the east by Lizard Lake, and to the south and west by Upper Marmion Reservoir. Upper Marmion Reservoir is part of the Seine River system, which originates in the Savanne River at Raith, flows east-west for about 250 km and empties into Rainy Lake near Fort Frances and the Canada-U.S. border. The Hammond Reef deposit is located on a peninsula of land extending into the north end of the Upper Marmion Reservoir, one of three managed reservoirs within the Seine River watershed.

A number of small intermittent and permanent streams occur within the areas to be developed as part of the Project (the Project footprint). As well, a small waterbody and a number of small intermittent and permanent watercourses occur in the area where the Tailings Management Facility (TMF) will be constructed. Collectively, the small streams, ponds and lakes that will be eliminated by the Project contribute less than 1% of the flow into Upper Marmion Reservoir.

The Upper Marmion Reservoir is currently managed for flood control and hydro-electric power generation. As part of broad changes to the river systems in the area that began in the 1920's, the Upper Marmion Reservoir was created by damming and flooding the existing Seine River. The original flow of the river was altered such that the system currently drains through a constructed cut (Raft Lake Cut) at the western end of the Reservoir. The water level in Upper Marmion Reservoir is maintained by a dam, the Raft Lake Dam, at the western end of the Raft Lake Cut. From the Raft Lake Dam, the system drains west into Finlayson Lake, where water then flows south through a constructed channel to the Valerie Falls Generating Station.

As a result of both flood control and hydro-electric power generation requirements, the water level in Upper Marmion Reservoir fluctuates up to 2.5–3 m annually as water is drawn down in the spring to provide flood control capacity.

Hydrogeology

Hydrogeological investigations show that groundwater flow from the Project area is outwards towards Upper Marmion Reservoir. However, there appears to be little direct connection such that as the Reservoir is drawn down, groundwater levels at most locations do not change. Groundwater flow appears to also contribute little flow to Upper Marmion Reservoir. The most significant contributor to lake levels in the Project area appears to be upstream flows from the Seine River and surface runoff from the Seine River/Upper Marmion Reservoir watershed. These flows are channelled to the Reservoir through a number of small and mid-sized streams that drain to the Reservoir from outside of the Project area. These water sources are in turn influenced by rainfall and snowmelt.

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Water and Sediment Quality

Water quality data indicate that similar conditions exist throughout the waterbodies and watercourses in the Mine Study Area (MSA), and that the observed water quality is influenced by local geological conditions, and the presence of wetlands that contribute to fluctuations in pH.

Geochemical testing, soils quality data, and groundwater quality data all show that aluminum and iron, as well as some other metals are present in leachate samples from all rock types, in soils at above average concentrations for aluminum, and also present in groundwater samples. All of these are potential sources that can and likely have influenced water quality in Project Site lakes and streams.

The larger lakes within the system receive natural tributary inflows of slightly lower pH waters that are also slightly enriched in aluminum and iron, and in some cases, silver and mercury. The combination of local geologic sources and natural stratification of these lakes determines the fluctuations in aluminum and iron levels in these waterbodies. The lakes show distinct thermal stratification during the summer months that results in a decrease in bottom oxygen levels that in turn drives mobility of the major metals, aluminum, iron and manganese from sediments during periods of low oxygen as a consequence of redox changes in the bottom waters. None of the larger bodies of water, such as Sawbill Bay, Lynxhead Bay and Lizard Lake appear to experience anoxic conditions in the deeper basins. This is likely a combination of two influences: the larger surface area that promotes wind-driven mixing of the water column, and the flow of water through these systems. These lakes also show evidence of oxygen reduction during the winter months when ice cover prevents mixing of the water column.

Conditions in Mitta Lake differ in that oxygen concentrations in the bottom waters of the lake decrease to very low levels both during summer stratification, and in winter under-ice conditions. The small surface area of the lake limits wind-driven mixing of the water column, and as a result this lake is more susceptible to oxygen depletion.

Occasional exceedances of the Canadian Water Quality Guidelines (CWQG) and/or Provincial Water Quality Objectives (PWQO) for mercury were noted in some waterbodies. Since the geochemical testing has indicated that the rock types present do not leach mercury, sources related to atmospheric deposition and release from wetlands are postulated as the reasons for the occasional detection of mercury at concentrations above detection limits. Similarly, there were occasional exceedances of the PWQO for cobalt and cadmium, though these are likely from geological sources. The geochemical testing has shown that both can leach from some of the rock types tested.

Sediment quality in Mitta Lake, Sawbill Bay, Lynxhead Bay, Lizard Lake, as well as upstream in Hawk Bay was characterized by concentrations of arsenic, cadmium, copper, manganese, lead, nickel and zinc that in one or more samples exceeded the Ontario Provincial Sediment Quality Guidelines Lowest Effect Level. None of the metals exceeded the Severe Effect Level, and therefore present minimal risk to aquatic life. Given the similarity in sediment quality between basins, and since (with the exception of Sawbill Bay) there has historically been no development in the up-stream bays within the Upper Marmion Reservoir watershed, the values observed are considered to be natural levels due to the characteristics of the local geology of the region. Concentrations of these metals were similar in all of the larger waterbodies, and no areas of higher concentrations that could be related to specific anthropogenic or natural geologic anomalies were noted. Since similar concentrations occurred in Hawk Bay, upstream of the proposed site in the Seine River, the sediment concentrations likely reflect general sources to the watershed.

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Aquatic Environment

Aquatic habitats in the area of the Project include a range of habitat types and sizes. Lentic (still water) habitats ranged from small wetland ponds to large lakes such as Marmion Reservoir while lotic (moving water) habitats included small intermittent streams and larger permanent streams. No large rivers occur in the MSA. While Marmion Reservoir is part of the Seine River system, in the area of the Project it behaves more like a lake, and is considered as such for the environmental assessment.

Aquatic habitats within the MSA and LSA can be considered as two connected units:

- Small waterbodies and watercourses that occur on the upland areas (i.e., the MSA) in which the Project will be located. The upland area is defined as the area bounded by Lizard Lake to the east, and Upper Marmion Reservoir, comprised of Lynxhead Bay and Sawbill Bay, to the south and west. These typically drain to the larger waterbodies.
- The larger waterbodies of Lizard Lake and as part of broad changes to the river systems reservoir into which the smaller watercourses drain (i.e., the LSA).

The Marmion Reservoir has been identified by the Ministry of Natural Resources as an important walleye sports fishery. Within the Marmion Reservoir, Lynxhead Bay Narrows is a potential walleye spawning area. The Marmion Reservoir also provides habitat for a healthy small mouth bass population.

Headwater drainage systems and associated fish communities that exist within the mine footprint (upstream of the lower reaches in the watercourses) contribute indirectly to the quality and quantity of fish habitat. The associated habitat includes predominantly intermittent streams and small waterbodies (beaver impoundments and some larger ponds), with occasional small lakes and permanent streams. Associated fish communities are predominantly limited to baitfish and other small-bodied fish. Northern Pike were present in two of the larger waterbodies within the footprint of the proposed TMF. Upstream passage of fish from the lower reaches is blocked by natural barriers; however, some downstream movement of fish may occur. Headwater ponds and streams occur in both the northern area of the Project site where the TMF will be located, and in the southern section of the site where the mine and associated infrastructure will be located. In these small headwater ponds and streams fish communities were typically reduced, or in the case of intermittent watercourses and waterbodies were typically absent. In those waterbodies that had fish populations, these typically were comprised of northern redbelly dace, finescale dace and fathead minnows.

The lower reaches of the watercourses within the MSA include permanent streams and small waterbodies (beaver impoundments and larger ponds), with some small lakes that are accessible by fish from Lizard Lake, Sawbill and Lynxhead Bays. Fish communities are more diverse than headwater drainage systems and include a greater diversity of small-bodied fish, and commonly support species such as northern pike, white sucker and yellow perch. Fish passage to and from these features occurs throughout the year, however it may be impeded by the fluctuating water levels in Sawbill and Lynxhead Bays. There is no documented use of these features by walleye and smallmouth bass.

Two small lakes would be eliminated by the Project. At the northern end of the site, within the footprint of the TMF is a small unnamed lake (identified as Area of Potential Impact [API] #2). This lake has a surface area of approximately 122,000 m² (12.2 ha), and a maximum depth of 5 m. The range of species encountered in this lake included adults and juveniles of pumpkinseed, yellow perch, northern pike, white sucker, as well as small-bodied forage fish such as Iowa darter and blacknose shiner. The lake drains via a small stream to another small lake

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(this lake lies outside of the footprint of the Project), that in turn drains to Lizard Lake. Within the small stream draining from the lake, no fish were obtained, though the presence of fish in the small lake indicates that fish likely can pass up this stream on occasion. The second lake, Mitta Lake, lies directly over the gold deposit, and will be eliminated when mining commences. Mitta Lake is a small irregularly shaped lake within the MSA perched on the peninsula on which the Project will be located. Mitta Lake is a small waterbody of 17.1 ha in size. The lake is steeply sided, and consists of three deeper basins, which reach a maximum depth of 16 m. The lake supports populations (both adults and juveniles) of white sucker, brook stickleback, fathead minnow, Iowa darter, mottled sculpin and finescale dace. No sport fish were encountered in the lake during sampling. Mitta Lake is drained by a small stream that flows south to Upper Marmion Reservoir.

Terrestrial Environment

The Project lies within the boreal forest region of Ontario, near the transition zones with the Great-Lakes-St. Lawrence mixed forest region and the prairie grasslands. The forest communities of the area are dominated by black spruce, jack pine, trembling aspen and white birch. The area supports a range of wildlife species typical of the boreal forest. A limited number of species-at-risk have been recorded from this area of Northwestern Ontario, though only the Canada warbler, the common nighthawk, the bald eagle and the snapping turtle were found to occur within the Project area.

The rolling landscape gives way to wetlands varying in morphology, nutrient content and species richness. Fens and bogs are present where there is isolation from groundwater; and swamps and marshes are in closer proximity to groundwater or the shallows of lakes and rivers. The richer wetlands support more species diversity, while some of the poor, acidic wetlands support few species, those of which are specially adapted to restricted nutrients. A variety of species were observed throughout the LSA reflecting this variability of habitat types.

Many traditional use plants such as black spruce, willow (*Salix* spp.), bog cranberry (*Vaccinium vitis-idaea*), Labrador tea (*Ledum groenlandicum*), and blueberry (*Vaccinium myrtilloides*) are common in a number of different ecosite types. However, there are a few traditional use species that are more restricted in their distribution and tend to only be associated with a single ecosite type, though they may be locally abundant within that ecosite type. Wild rice (*Zizania palustris*) has been raised as a species of Aboriginal value but was not observed in the LSA during field surveys conducted in 2012.

A total of 82 bird species were identified during all breeding season field surveys throughout the MSA and LSA. The majority of bird species were detected during morning breeding bird point counts. White-throated sparrow (*Zonotrichia albicollis*), a habitat generalist (Falls and Kopachena 2010), was the most abundant species observed. Additional common species included mixed/deciduous forest species such as red-eyed vireo; coniferous forest species such as Swainson's thrush (*Catharus ustulatus*) and wetland (e.g., bog and fen) species such as yellow-bellied flycatcher (*Empidonax flaviventris*). The species composition and density is typical of a boreal hardwood forest bird community, with a diversity of warblers, thrushes, sparrows and vireos. Species at Risk (SAR) observed during the breeding bird surveys were the Common nighthawk (*Chordeiles minor*) and Canada warbler (*Wilsonia canadensis*). No secretive marsh birds were identified during the Marsh Bird Surveys. However, 11 species were observed including wetland species such as Wilson's snipe, Eastern kingbird (*Tyrannus tyrannus*), and Ring-necked duck (*Aythya collaris*). The only potential Least bittern habitat (e.g., large emergent marshes) was located on Snail Bay in Marmion Reservoir. However, habitat was marginal and no Least bitterns were observed or responded to playback.

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A total of 12 mammal species were observed either during targeted surveys or incidentally during the conduct of other baseline studies completed between 2010 and 2012. Based on range maps and knowledge of current distribution, an additional 35 species of mammals potentially occur in the LSA. Of the observed and potentially occurring mammal species, one is classified as a Species at Risk, Gray fox. However, no Gray foxes were observed in the LSA, nor is suitable habitat available in the LSA for this species. The reptiles and amphibians in the LSA and MSA are generally those considered typical of the boreal forest. There is no indication that the species or habitats at the study site are unique relative to the surrounding area. Snapping turtle is the one reptile SAR that was identified as occurring in the area. During various field surveys, 28 species of dragonfly and butterfly species have been identified in the MSA and LSA. All the species observed are common to the area and there are none designated under provincial or federal legislation.

In January 2013, several species of bats were added to Ontario's Species-at-risk list and were, therefore, considered in the Final EIS/EA Report. Range maps indicate that six species of bats have known home ranges in the area, all of which were recorded during the 2013 bat field surveys at Hammond Reef.

Socio-economic Environment

Version 3 Update: Reference to 'Atikokan Forest Products', should be considered as references to 'Rainy Lake Tribal Resource Management Inc.'

The Project is located 30 km north of the Town of Atikokan (population ~2,800), within the Rainy River District in Northwestern Ontario. The City of Thunder Bay (population ~120,000) is located approximately 170 km east and the Town of Fort Frances (population ~8,000) is located about 150 km to the west.

The Town of Atikokan is a beautiful community, dubbed the Canoe Capital of Canada. The Town is known regionally for its popular fishing tournament, the Atikokan Bass Classic. The Town also has a history of resource development including mining and forestry. In 2011, the Town Council passed a resolution in support of the Hammond Reef Gold Project. The potential influx of workers to the Town of Atikokan could affect housing, services and infrastructure. The Project also represents potential business opportunities for community members.

Historically, the local economy centred around two iron ore mines: Steep Rock Iron Mines and Caland Ore. T. Both mines commenced operations in the early-1950s and remained the main local employers for the next three decades. During the peak years of production, the Steep Rock Mine employed more than 700 workers and produced 1.0-1.5 million tonnes of ore annually. For every 100 jobs in the mine, an additional 65 jobs were reportedly generated in the community, resulting in 40,000 person-years of employment (Summary of Woods Gordon Report 1986). Both mines closed in 1979 and the land was deeded back to the Ministry of Natural Resources. The closing of the mines led to a major local economic downturn in the 1980s.

Forestry has traditionally been an important industry in Northwestern Ontario, including Atikokan. In the early 1900s, there were numerous lumber mills in the area around Atikokan. Many lumber companies logged the Quetico area extensively, Atikokan Forest Products operated a mill in the Sapawe Lake area, and Fibratex operated in Atikokan as one of North America's innovative engineered wood producers – manufacturing and designing quality orientated fibreboard panels. Both of these industries closed in 2007. Currently the only forestry-related industry in the Town of Atikokan is engaged in manufacturing fuel pellets.

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The City of Thunder Bay acts as the centre for regional mining activity. Thunder Bay could potentially provide a large amount of goods and services required by the Project and may also have a pool of qualified specialized workers that are not necessarily available locally. The Town of Fort Frances is the main public service and infrastructure hub of the Rainy River District and may also be a source of goods and services for the Project.

The total population of the Regional Study Area (RSA) is 224,034. The Thunder Bay District represents more than half of the RSA population, with the majority of the District's population concentrated in the City of Thunder Bay. The second largest population centre in the RSA is the City of Kenora with 15,348 followed by the Town of Fort Frances (7,952) and the City of Dryden (7,617).

The population of the RSA has decreased comparatively in 2006 and 2001 (235,046 and 234,771 respectively) relative to the population in 1996 (244,117) (StatsCan 2007; StatsCan 2012). This population fluctuation has resulted in an overall decrease of 8.2% since 1996. In 2011, the population of Atikokan was 2,787, representing a 31% decline since 1996 and a 15.4% decline between 2006 to 2011. This decline can be attributed mostly to the downturn of the local economy resulting from the closure of a number of mining and forestry-related employers in the town. Conversely, the population of Ontario has demonstrated a growing trend since 1996, with a population increase of 19.5% over this period.

The economy of Northwestern Ontario has been declining over the past decade. The Gross Domestic Product for Northwestern Ontario declined by 6.7% between 2001 and 2006, while it increased by 3.5% and 13.6% for Northeastern Ontario and the rest of Ontario respectively over the same period of time (Rosehart 2008).

The economy of Northwestern Ontario has traditionally been dominated by a small number of large companies that hire large numbers of workers, which in turn has created service industries dependent on large employers and their employees (Rosehart 2008). Approximately 76% of employment in Northwestern Ontario (excluding Thunder Bay) is in the service sector (Northwest Training and Adjustment Board 2010). The decline of the forestry sector in Ontario in recent years and the subsequent closures of pulp and paper and lumber mills have had a negative effect on the region's economic conditions.

Historically, the Town of Atikokan developed around the mining and forestry industry, and remained heavily dependent on these sectors. With the closing of the community's most recent mines in 1979, major economic downturn followed in the 1980s and the forestry sector became the primary employer in the community. However, with the recent downturn in regional forestry, only one firm, which manufactures fuel pellets, remains active in the Town of Atikokan.

In 2006, the RSA had an experienced labour force of 117,865 (1.8% of the provincial labour force). In 2006, the LSA had an experienced labour force of 1,650. Primary industries of employment are forestry and mining; however many workers are employed outside of Atikokan while their families still reside in Atikokan. Tourism constitutes approximately 15% of Atikokan's employment.

Outdoor recreational tourism operators in the LSA host remote camping, hunting and fishing vacations. These tourism outfitters provide a variety of services including remote fly-in, and drive in wilderness retreats, guided fishing tours, hunting expeditions, and trapper cabins, as well as accommodations. The Atikokan Tourist Bureau tracks Atikokan visitors during peak season (May-September). In 2011, 3,697 tourists visited the Tourist Bureau, 30% of which were only passing by. The most popular reasons for visiting Atikokan were recreation (approximately 20%), followed by fishing, and visiting friends or family (approximately 10% each).

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Aboriginal Interests

The Project is located within the Treaty 3 lands. Treaty 3 is a written agreement between the Saukteaux Tribe of the Ojibway Indians and Her Majesty the Queen of Great Britain and Ireland signed in 1873 (Chiefs of Ontario 2005).

Upon signing, each Chief received a British flag and a treaty medal. Treaty 3 includes an 1875 adhesion (addition to the Treaty) that extends all rights and benefits to the “Half-breeds” (Métis) of Rainy River and Rainy Lake. The Métis were absorbed into the Little Eagle Band and are now part of the Couchiching First Nation (Chiefs of Ontario, 2005).

The Métis assert harvesting and trapping rights throughout most of Ontario. Their hunting and harvesting activities are organized by territories that represent large areas within which the Project is situated.

Each territory has a Captain of the Hunt, designated by the Métis Nation of Ontario (MNO). The Captain of the Hunt has authority over Métis hunts, issues harvesting certificates and gathers information on the number, species and location of animals taken. The RSA includes part of two hunting territories, the Rainy Lake/ Rainy River and the Lake of the Woods/Lac Seul. The LSA includes a small part of the Rainy Lake/Rainy River harvesting territory.

Aboriginal engagement for the Project focussed on nine identified First Nations communities. These nine communities have been identified by the Crown as having an interest in the Project and having triggered the duty to consult on the Project. The Project is located in MNO Region 1. Region 1 includes four Métis communities that may be affected by the Project through employment, business, and education and training opportunities.

The following Aboriginal communities have been identified as having an interest in the Project:

■ **Métis Nation of Ontario:**

- Atikokan Métis Council
- Kenora Métis Council
- Sunset Country Métis Council
- Northwest Métis Nation of Ontario Council

■ **First Nations:**

- Fort Frances Chiefs Secretariat:
 - Couchiching First Nation
 - Lac La Croix First Nation
 - Mitaanjigamiing First Nation
 - Naicatchewenin First Nation
 - Nigigoonsiminikaaning First Nation
 - Rainy River First Nation
 - Seine River First Nation
- Lac des Milles Lacs First Nation
- Wabigoon Lake Ojibway Nation

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The traditional language of the Anishnabe Nation is Ojibway, although English is also a predominant language. Knowledge of their Aboriginal language is still present in close to 40% of the population in many communities within the RSA. The Fort Frances Chiefs Secretariat has been working on an Education Jurisdiction Transfer that will create a separate school board and enable a culturally-focussed curriculum, including an Ojibway immersion program. The Ojibway language continues to be used during prayers, oral history and traditional story telling.

Current unemployment rates reported by the identified First Nations communities are all higher than the unemployment rate for the Province of Ontario. The median income reported by the identified First Nations communities, are all lower than the median income for Northwestern Ontario and the Province of Ontario.

Special sites were identified through two separate Traditional Use Studies carried out with First Nations and Métis people. Special sites were identified for both First Nations and Métis. These sites were identified and locations were provided to allow OHRG to avoid disturbing any sites from land clearing activities or placement of Project infrastructure.

ASSESSMENT OF ALTERNATIVES

Version 3 Update: In response to requests from the GRT, the Version 3 Alternatives Assessment TSD has been updated to include more information on evaluation of alternatives for the camp locations, supplemental assessment information related to access road and transmission line routing and summaries of considerations related to alternatives for all of construction, operations, closure, post-closure phases. Additional narrative is provided in italics within Chapter 4 of the EIS/EA summarizing the alternatives assessment by project phase for key VECs where appropriate.

With the exception of the minor change in location of the accommodation camp and associated water intake/discharge (at the request of the GRT), there are no changes in the selection of any of the preferred alternatives or conclusions of the EIS/EA. Therefore, the information as provided in the Version 3 EIS/EA and Alternatives Assessment TSD is provided as supplemental, supporting information only.

Revisions to the Alternatives Assessment TSD and Chapter 4 of the EIS/EA Report are considered substantial between the draft report published in February 2013 and this final report. Environment Canada requested that OHRG undertake a more detailed mine waste alternatives assessment by including additional sub-accounts and indicators in the multiple accounts analysis. Mine waste includes the TMF and the waste rock stockpiles. Environment Canada and OHRG worked together to develop a detailed list of suggested sub-accounts and indicators for Environment, Economic and Socio-economic accounts based on consultation and other similar projects. OHRG incorporated all these revisions to the report as detailed in Chapter 4

Additional changes to the Alternatives Assessment TSD and Chapter 4, outside of mine waste alternatives, included a stronger link to VECs and an overall revision for consistency and clarity. Some new discussion regarding the on-site workers accommodation alternative was also provided.

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A full range of non-mine waste alternative methods of carrying out the Project were examined and assessed. Alternatives that meet the Project objectives were identified in the ToR and an initial screening process was completed. The alternatives that were deemed reasonable were carried forward for further evaluation and were investigated in greater detail. Comparative summaries of the features of the alternatives, environmental and social impacts, cost requirements, and discussions of the degree to which the alternative fulfills the need identified were used to determine which option is best overall. A summary of the preferred alternative for each Project component is presented in Table ES-2.

A full range of mine waste alternatives have been examined and assessed. Alternatives that met the Project objectives were identified in the ToR and an initial screening process was completed. The alternatives that were deemed reasonable were carried forward for further evaluation and were investigated in greater detail. A multiple accounts analysis including a qualitative/quantitative assessment and value-based decision process was applied to each alternative in accordance with Environment Canada's *Guidelines for the Assessment of Alternatives for Mine Waste Disposal* (Environment Canada 2011), leading to the selection of the best overall option. The preferred mine waste alternatives are "Alternative 3" for the Waste Rock Management Facility (WRMF) – located immediately east of the open pit and mine processing plant and the "Optimized Base Case," for the TMF which is located approximately 9 km northeast of the processing plant.

PROJECT DESCRIPTION

Version 3 Update: The project description as presented in Chapter 5 remains the same with the exception of the minor change in location of the accommodation camp and associated water intake/discharge, and the removal of the fiber optic line and auxiliary power line. The updated camp location is presented in a revised Figure 5-1 (as provided in the response T(3)-10). The fiber optic line and auxiliary power line were determined to be unnecessary through engineering work that was occurring in parallel with the development of the EIS/EA. References to comment responses and supplemental documentation that pertain to the project description are provided within the appropriate section of Version 3, Chapter 5.

The Hammond Reef Gold Project (Project) consists of an open pit gold mine and associated processing and support facilities. The mine will consist of two open pits, a processing facility, a TMF, a WRMF and supporting infrastructure that includes a worker accommodation camp for workers. The mine has a projected operating life of 11 years at an average production rate of approximately 60,000 tonnes of ore per day. The production rate may be improved or increase over time.

The Project represents a major investment of capital into Ontario and Canada's economy. Based on capital costs of OHRG's Canadian Malartic Mine, it is estimated that the total capital cost of the proposed Hammond Reef Gold Project would be \$1.4 billion (\$2012 Canadian). Total output of refined gold is expected to be 369,000 ounces per year.

The Project is expected to support approximately 34,736 Person Years (PYs) of direct, indirect and induced jobs in Canada over its construction and operations phases, a period of 14 years. Total benefits to Atikokan and local First Nation communities would be 3,129 jobs over the construction and operations periods, and \$456.7 million in wages and salaries to construction workers, mine operators and workers in the supply industries.

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Over the 14-year analysis period, the Project is expected to generate \$490.8 million in federal and provincial income tax revenues. During the 11-year operations period the Project would contribute approximately \$3.2 billion to national Gross Domestic Product (GDP).

The Project will be completed through four phases: the construction phase during which the necessary infrastructure will be built; the operations phase during which the mine is developed and the ore is processed; the closure phase during which production ceases and the site is decommissioned; and the post-closure phase during which the Project site is monitored.

The Project was defined through consideration of a number of alternatives for developing specific Project components. Three different alternative locations for the TMF were assessed from which the final location was selected based on environmental and engineering considerations. Similarly, alternative means for waste rock management, ore processing, water management, and other site facilities were considered. The Project as described below represents the selected alternatives for each component based on an assessment of the potential environmental effects of each alternative together with engineering requirements.

The open pits (located immediately adjacent to one another) will be developed in stages. Initially, overburden (consisting mainly of top soils) will be removed and stockpiled for later use in reclaiming the site. The waste rock, (defined as rock that does not contain economically recoverable gold), will be removed by blasting and trucking to the WRMF. Ore will be extracted from the pits by blasting and will be trucked to the processing facility for production of gold doré bars. The tailings will be thickened to remove some of the excess water and will be pumped via an above-ground pipeline to the TMF, to permanently store the tailings. With the exception of the TMF and the worker accommodation camp, all Project support infrastructure will be located close to the open pits.

The TMF will be located approximately 9 km to the northeast of the open pit. The TMF will be constructed of rock and earthen dams that are progressively raised as tailings accumulate in the TMF. The tailings will be pumped as a thickened slurry from the processing plant to the TMF. Excess water in the tailings will be collected in the TMF reclaim pond, and then pumped back to the processing plant for re-use. At the base of the tailings dams, seepage collection ponds will be constructed to collect seepage water to be pumped back into the TMF.

Water is required for the processing operation, and the necessary water for processing plant start-up will be obtained from Upper Marmion Reservoir. Once the processing plant is in operation, process water will be reused to minimize taking of additional water from Upper Marmion Reservoir. The reused water will be stored in the Process Plant Collection Pond (PPCP) until it is needed in the processing plant. In addition, storm water and seepage will be collected from around the WRMF and other facilities and conveyed to the PPCP. Water in the PPCP will be supplemented with reclaimed tailings water. Under this arrangement, requirements for fresh water from the Upper Marmion Reservoir will be minimized.

Excess water will be treated through an effluent treatment plant if required and released to the south end of Sawbill Bay of Upper Marmion Reservoir. Due to Project water needs during years with average or below average precipitation, all water would be reused, and there should be no discharge from the site. During years of above average precipitation, some excess water would be produced, which would be treated, if required and released intermittently to Upper Marmion Reservoir.

In addition to the processing plant, a number of support facilities will be constructed on the site. These include a truck servicing area to maintain the mine vehicles, a fuel storage area and fuelling facilities for the vehicles, firefighting equipment facilities, water storage and treatment facilities, and offices. The mine and support facilities

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will be located close together near the pits. The mine worker accommodation camp will be located approximately 10 km to the north, near the location of the existing exploration camp. Workers will be transported in and out of the worker accommodation camp on a rotational shift basis. It is expected that some workers will move into the area, taking up residence in the Town of Atikokan while workers from more distant locations will likely return to their home communities at the end of their shift rotations.

The existing Hardtack-Sawbill Road that leads north from Highway 622 will be widened and straightened in some places in order to accommodate heavy truck traffic that will bring in construction supplies during the construction phase and mine operating supplies (such as diesel fuel, processing chemicals, and worker accommodation camp supplies) during mine operations. Electrical power will be brought to the site via a transmission line, which follows the same general route as the road alignment for 14.3 km until it crosses over Sawbill Bay.

Upon completion of mining, the mine will be closed as per regulations under the Ontario Mining Act. The buildings will be decommissioned, the TMF will be graded and revegetated, and drainage from the Project infrastructure will be directed to the open pits until such time as water quality indicates that normal runoff flow directions can be restored. The pits will be left to fill naturally, and it is estimated that approximately 218 years after operations cease, the pits will overflow to Upper Marmion Reservoir.

Figure ES-4 provides the general arrangement of the Project Site during the operations phase. Table ES-3 outlines the Project activities for each key Project component by Project phase.

EFFECTS ASSESSMENT

Version 3 Update: In response to comments received regarding the consideration of projects phases in the assessment of impacts, CMC has annotated Chapter 6 of the Version 3 EIS/EA with additional narrative to describe potential impacts for each project phase, where appropriate, following the overall methodology described in the Terms of Reference (ToR), Chapter 2, and in other sections of the EIS/EA Report. Bounding scenario, while still referred to in the text, is used to denote a worst case condition, whereby use of input values associated with the worst case condition, after consideration of all project phases, is applied to each phase, thus resulting in a conservative assessment of potential impacts for each phase and the Project as a whole. Throughout the process, effects have been assessed for each phase of the project as follows:

- *Construction (2.5 years): development of the project and construction in accordance with permits obtained and applicable regulatory requirements*
- *Operation (11 years): following construction initiated with processing of ore*
- *Closure and post-closure (2 years and 10 years): final stages of the project following cessation of ore processing*

The potential impacts of the Project were assessed through an understanding of the Project components, and the ways in which these could interact with the natural environment to produce changes. The changes are then assessed against specific features of the environment, known as VECs to determine the significance of these changes to biological and socio-economic features of the environment.

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Physical and Biological Environment

A summary of the assessment of the significance of the predicted environmental effects for each major project component, and for each project phase, is provided below. As noted above, residual effects are considered for significance assessment only with respect to changes in ecological receptors that could affect the survival of populations. As a result, the summary tables assess changes in physical components (e.g., surface water flows, lake levels, water quality) with respect to the effects of these changes on ecological receptors.

Further discussion of potential effects to the physical and biological environment, as well as planned mitigation measures to minimize those potential effects are also described by component below.

Potential Effects to the Physical Environment

Geology, Geochemistry and Soils

No adverse effects to geology, geochemistry or soils are predicted to occur from the Project. Geochemical testing was conducted to confirm whether the waste rock and tailings deposits could be potentially acid generating and metal leaching. The conclusions of the completed analysis show that the waste rock will be non-acid generating with excess neutralization potential primarily resulting from carbonate minerals. The results of the short-term leach testing and kinetic testing support this classification.

Relative to comparison criteria, waste rock and tailings samples leachate concentrations were slightly elevated for aluminum with sporadic concentrations of other metals such as arsenic, copper cadmium, iron, selenium, vanadium and zinc slightly greater than the comparison criteria. Where these sample values are above the comparison criteria, additional water quality evaluation within an overall site wide context has been conducted as described in the site water quality evaluation. Cyanide was considered separately as part of the water quality analyses as it is introduced as a result of processing.

Construction of the Project will result in vegetation removal which will expose the soil and increase the risk of erosion. Project activities will also include the potential for spills, leaks and seepage of substances, which could alter the chemistry of soils and reduce soil capability.

Soil erosion may influence slope stability and water quality, spills may degrade soil quality, and the direct loss of soil and alteration of terrain may have implications with respect to wildlife use of the LSA and with respect to the use of the area as a timber resource.

Further assessment of the effects of the Project on soils and terrain was considered as an indirect effect to wildlife under the terrestrial biology assessment and land use under the socio-economic assessment.

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Atmospheric Environment

Version 3 Update: Substantial effort has been undertaken to provide additional details and clarification regarding air quality at the request of the government review team as described in Chapter 6 and in associated IR responses. Much of this work is typically completed at the permitting level of assessment, and is beyond what is typically required for an EIS/EA. The work completed since the submission of the Version 2 EIS/EA supports the previous conclusions and determination of significance as identified and indicated in the Version 2 EIS/EA and is provided in this Version 3 document for information and clarification purposes.

The potential effects of the Project to the atmospheric environment focused on air quality, noise, light and vibration.

Forty PORs were originally identified in the air quality and noise assessment. Twenty of these PORs (POR 5-19, POR 34, POR 36-38 and POR 40) were identified in the Ontario Ministry of Natural Resources (MNR) mapping data as designated campsites. These locations are simply suggested areas within Crown Land that could be used for camping by the public. No amenities or services are provided and no payment is required to camp there, just as is the case with all Crown Land. OHRG does not have the ability to restrict access to Crown Land, and these identified PORs are not considered specific sites that are required to be included in air and noise modeling predictions.

Based on this, the number of PORs considered in the air quality and noise assessment has been reduced from 40 to 20. The PORs considered in the revised air quality and noise evaluation are the Town of Atikokan, local tourism establishments, trapper's cabins and cottages. Of the 20 possible campsites that were originally considered in the air quality and noise assessment, three locations were identified as having potentially high noise levels and six were identified as potentially exceeding particulate matter guidelines. OHRG plans to post signs at crown land locations in the vicinity of the Project site that, in the past, may have been known to be used for camping to indicate the potential for campers to become annoyed by noise levels. A further assessment on health effects due to the potential increase in particulate matter is presented in the Human Health Risk Assessment TSD. Human health risks are not considered to be increased significantly by the Project.

Air dispersion modelling was carried out for the Ontario compliance assessment using defined emission rates to determine the point of impingement concentrations along the Project property boundary and receptors. Ambient concentrations resulting from Mine Site emissions were predicted at selected groups of receptors and at other locations of interest in order to provide a better understanding of the potential effects of the Project. In addition, discrete human health locations within the LSA were identified for assessment under the Human Health Risk Assessment.

The results of air modelling show that the Project can operate in compliance with s.20 of Ontario Regulation 419/05 for the Operations Phase in the peak production year as defined by the worst-case operating conditions. This is considered to be a conservative assessment since not all scenarios comprising worst-case conditions are likely to be active at any given time. The effects of air emissions on human health are assessed in the human health risk assessment.

A noise assessment was carried for 20 potentially sensitive PORs which were identified within the vicinity of the Project. These PORs included tourist establishments, cottages and cabins within the LSA. The modelling results predicted that noise levels associated with the Project would comply with Ontario Ministry of the Environment (MOE) noise guidelines.

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Fish habitat is sensitive to vibration, particularly active spawning beds and nurseries. Vibration during blasting and excavation of open pits could cause blast-induced water overpressure level changes at the shoreline, potentially effecting sensitive fish species during critical life stages.

It is not possible to realistically assess potential effects on fish without site-specific data on peak particle velocity (PPV) values since this depends to a great extent on the nature of the rock, and the transmissivity. Therefore, operational blasting monitoring to assess the intensity of blast vibrations at the receptor locations will be required. During the initial stages of pit development, blast intensities will be monitored and site-specific PPV will be calculated in order to more accurately predict potential vibration intensities in adjacent aquatic habitats.

The lighting on the Project Site will be positioned in a manner as to not directly illuminate the surrounding areas or the sky. During the detailed engineering for the Project, options will be selected to avoid or reduce negative effects and will be considered for incorporation into the Project's design. As a result, it is expected that the Project will have limited effects through light trespass and sky glow.

Water Quantity and Quality

Version 3 Update: The supplemental documentation provided in this Version 3 EIS/EA regarding water quantity and quality supports the conclusions and determination of significance as identified in the Version 2 EIS/EA, and is considered supporting documentation provided for information and clarification purposes.

Hydrology – Information related to contingency measures for low flow and water level conditions in Marmion Reservoir are provided in the supporting document: “Contingency Measures to Eliminate Water Taking from Marmion Reservoir during Low Water Level and Outflow Periods at Raft Lake Dam – Hammond Reef Gold Project” (see Part D of the Addendum to the Version 3 EIS/EA) and in several IR responses as indicted throughout Chapter 6.

Hydrogeology – Clarification with respect to groundwater level monitoring, pit infilling at closure and modelling are provided in IR responses as indicated in Section 6.1.3.2 and the Addendum. In response to requests from the federal government, seepage capture and baseline hydrogeology of the TMF was modelled in detail, with substantial effort, the details and results of which are provided in the response to T(3)-08 and in the supplemental document: “Federal Information Request T(3)-08 – Compiled Response Documents and Relevant Communications” provided in Part D of the Addendum to the Version 3 EIS/EA. The work completed to date supports the conclusions of the Version 2 EIS/EA and indicates that mitigation as proposed is sufficient and feasible.

Water Quality – Clarification and discussion regarding model inputs, water quality predictions related to tailings water quality, model sensitivity, copper, cyanide, and sulphate influence on methylmercury are provided in associated IR responses and supplemental documentation in Addendum Part D as indicated in Section 6.1.3.3.

The potential effects of the Project to water quantity and quality focused on hydrology, water and sediment quality and hydrogeology.

The Project could affect hydrology through changes to streamflows, lake water levels and navigability of water courses and waterbodies during all four phases of the Project.

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The greatest changes to streamflows as a result of Project activities during the Operations phase are expected to occur in MSA watercourses as a result of changes to their tributary drainage areas. Of the 29 watersheds evaluated, five will be unaffected.

The expected changes in flows in local scale watercourses include a reduction in flows in Lumby Creek of approximately 7% to 8%. Changes to the outflows from the Marmion Reservoir and flows in the Seine River downstream of the Raft Lake Dam may occur due to the Project. Total net reduction in annual mean inflows to the Reservoir is estimated to be 0.190 m³/s in an average year. Changes in monthly mean outflows from Upper Marmion Reservoir are expected to be in the range of -3.10% to -0.21% based on single-year lake water balance modelling.

Changes to water levels will occur in two lakes, and the Upper Marmion Reservoir. Water levels in Unnamed Lake 5 located to the east of the TMF are expected to be in the range of -2.1 cm to 0.0 cm during the Operations phase. Changes in water levels in Lizard Lake are expected to be in the range of -2.7 cm to 0.0 cm. Changes in water levels in the Upper Marmion Reservoir due to Project activities are expected to be in the range of -9.0 cm to -0.4 cm based on single-year water balance modelling. In an average year, the predicted maximum reduction in water levels of the Upper Marmion Reservoir is 8.1 cm.

The Project could result in changes to water quality in site, local and regional scale watercourses in all four phases of the Project. The water quality assessment considers the operations phase to be the worst-case scenario and the focus is on this phase. The presence of a flooded open pit also will also have an influence on water quality and, thus, a post-closure assessment was also completed. The water quality models were developed based on the physiography of the area, project description, geochemical test results, process test results and baseline monitoring data and were used to predict and evaluate potential water quality influences from the site and impacts in the receiving waters. For lakebed sediment quality the potential Total Suspended Solids (TSS) discharge from the site and air deposition was considered at the end of mine life.

All parameters are below Municipal/Industrial Strategy for Abatement (MISA) levels and Metal Mining Effluent Regulation (MMER) discharge guidelines at the point of discharge to the Upper Marmion Reservoir (the diffuser ports). Site Specific Water Quality Objectives for cyanide and copper are predicted to be reached within distances of 29 m and 18 m, respectively, from the diffuser ports. Following initial mixing, (i.e. within 100 m of the diffuser ports), all predicted concentrations during average site discharge conditions during operations are lower than the CWQG, PWQO and MISA criteria. In general, the predicted results after initial mixing are the same as or marginally greater than baseline concentrations. The sulphate concentrations in the water column during average conditions are predicted to increase marginally from 1.6 mg/L as measured in the baseline studies to 1.8 mg/L.

The Project could result in changes to groundwater levels. No groundwater users were identified in the vicinity of the Project that could potentially be affected by changes in groundwater levels from Project activities. The cone of depression from pit dewatering extends about 700 m from the pit perimeter and underlies a portion of the WRMF and overburden stockpiles. Within the area of the cone of depression, groundwater levels could potentially result in a reduction or even elimination of flows in some local streams should there be a significant connection to the deeper bedrock flow system, however most groundwater flow occurs in more permeable sediments above the bedrock, thus there is potential for development of a perched water table, or flow above the de-watered bedrock. Also within this area, seepage losses from the stockpiles could result in flow increases in some local streams. A seepage collection system is included as an in-design mitigation measure.

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Mitigation Measures for the Physical Environment

Geology, Geochemistry and Soils

Mitigation for potential effects to terrain and soils will include minimizing the amount and extent of surface disturbance at any one time. Soil quality changes will also be minimized through implementation of standard practices for erosion protection during construction and operation and the development and implementation of an Erosion Management Plan and Spill Management Plan. A geochemical monitoring plan will also be developed as further outlined in Chapter 8 Environmental Monitoring.

Existing pre-construction topography, elevations and drainage patterns have been documented and will be used to inform reclamation planning. Throughout all project phases, site drainage will be managed to ensure that runoff does not cause erosion, flooding or contamination in downstream areas. The water management system will include collection of runoff and seepage from the WRMF and TMF which will be captured and directed to the PPCP.

An Erosion Management Plan will be developed prior to construction and implemented throughout all phases of the Project. The Plan will include topsoil salvage procedures, soil stabilization measures such as the construction of temporary berms, and a progressive rehabilitation plan. Changes to terrain will be further mitigated by the development of a reclamation plan that will be prepared to meet regulatory requirements. Topsoil and overburden will be stockpiled, protected against erosion and used in reclamation of sites where possible. Waste rock and tailings will be stored appropriately to minimize erosion.

A Spill Management Plan will be developed to mitigate the potential effects of spills. The Spill Management Plan is further outlined in Chapter 8. A standard spill response procedure and protocol will be developed and roles and responsibilities will be communicated through the environment department and management teams. Worker training on spill response protocols will be implemented and a spill response database will be maintained.

Atmospheric Environment

With appropriate mitigation measures in place, the Project will operate in compliance with all applicable air, noise and vibration regulations and guidelines.

In estimating the air emissions associated with the Project certain mitigation measures were considered to be integral to the design and implementation of the works and activities. These mitigation measures, which are considered to be typical and consistent with best practices, were incorporated into the emission estimates, and therefore were incorporated in the effects predictions. These included implementation of appropriate management practices to control fugitive particulate emissions from haul roads, management of exhaust emissions from non-road vehicles through regular and routine maintenance of vehicles, and use of enclosures at the Ore Processing Facility to reduce fugitive emissions.

The noise assessment of the Project included tourism establishments, communities and trapper cabins as the twenty (20) PORs. Noise levels were deemed to be potentially high at one tourism establishment. OHRG has an agreement in place with the owner of the tourism establishment to restrict access during the Construction and Operations phases of the project. Three potential camping areas within the Crown Land surrounding the Project site were also identified as having potentially high noise levels. OHRG plans to post signs at crown land locations in the vicinity of the Project site that, in the past, may have been known to be used for camping to indicate the potential for campers to become annoyed by noise levels.

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An adaptive management approach is the proposed mitigation for blasting activities, especially as excavation approaches the pit perimeter. This approach will include on-site measurements of ground and air vibration as well as overpressure to develop actual separation distances needed between environmental receptors in order to meet regulations. The mitigation of vibration effects on sensitive fish habitats could include increasing the distances between environmental receptors, or reducing the weight of explosive charge detonated per delay period. The actual location of the pit perimeter (and therefore between environmental receptors) will be determined during the detailed design stage of the Project.

Water Quantity and Quality

Mitigation that has been included in the water quality predictions include in-design mitigation measures, ongoing monitoring and data collection, development and implementation of management plans, contingency plan of treatment as needed and ongoing consultation and discussion with other local water users.

The Project will be designed to an appropriate factor of safety relating to slope stability. Interception wells will be used to maintain pit wall pressure if necessary. The design of facility and flow patterns of the water management system will be optimized for the local environment.

A Spill Management Plan will be implemented which will include preventative measures and methods for appropriate reporting and clean-up of any spills that occur. An Erosion Management Plan will be developed to identify ongoing measures to be put in place during construction activities to limit TSS discharge. Additionally, water will be collected and stored if necessary until it can be appropriately treated and discharged.

An Effluent Treatment Plant will be included as a contingency measure. A treatment facility for suspended solids, nutrient loading or metals would be operated if necessary. Treatment for suspended solids may be required as a contingency measure if the water within the reclaim pond and PPCP do not naturally allow for solids to settle. Nutrient loading will be mitigated through the implementation of management controls such as explosives management, or use of phosphate-free soaps or solvents. Treatment for metals is not anticipated to be required.

The Project design will include a Water Management System. The water collection system will operate through the use of seepage collection ponds, ditches and active pumping. Water management will be implemented throughout the Project life cycle to capture runoff and seepage. At closure and post closure, pumping will cease and direct drainage from Project Site will be re-establish natural drainage patterns to lakes and reservoirs.

Discussion with water users and members of the Seine River Watershed Management Plan will be ongoing throughout the Project. Water quality, climate and hydrology data will be collected and used to inform Project design and management. Precipitation records will be used for design and flow management.

Water quality, hydrology and hydrogeology monitoring programs will be implemented as further detailed in Chapter 8, Environmental Management.

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Potential Effects to the Biological Environment

Version 3 Update: 'No Net Loss Plan' (NNLP) refers to 'Offsetting Plan' under the current Fisheries Act.

Potential effects to the terrestrial environment were evaluated through identified VECs including wetlands, forest cover and wildlife species. Specific attention was given to Species at Risk. Consideration was also given to those physical components that have been identified as having potential changes and how these physical changes would affect terrestrial biology VECs.

Potential effects to the terrestrial environment could result mainly through the physical loss and fragmentation of terrestrial habitat, including birds' nests. Other physical changes include alteration of flows and drainage patterns described by the hydrology component that can affect wildlife habitat or habitat suitability. Changes to surface water and groundwater quality based on the discharge of treated effluent, runoff from WRMF and other mine facilities may also affect vegetation, soils, sediments and wildlife habitat.

Some terrestrial biology effects could occur due to water use and Project emissions to water and air. Changes to water levels in Marmion Reservoir due to planned water taking from Upper Marmion Reservoir for process and potable water supply could affect vegetation in wetlands and wildlife habitat. Air emissions and dust deposition can cause changes to the chemical and physical properties of surface water, soils and vegetation, which in turn affect wildlife health.

Activities during operations which have the potential to effect the biological environment include introduction of invasive plant species which could out-compete native vegetation and accidental spills on the mine site or along the access road can affect soils and vegetation. Sensory disturbance during construction and operations including noise, vibrations and proximity to humans can also cause the disturbance and displacement of wildlife. The Project will also result in improved access to the area which could affect wildlife population sizes through increased hunting activities.

Species at risk identified in the Project area include birds, reptiles and mammals. Canada warbler was observed to nest in the Project Site. The preferred habitat of the Canada warbler that would be affected by the Project was estimated as 11% of the habitat in the Project Site. As a result, some individuals may be displaced to adjacent habitats. The reptile SAR that has been identified as occurring in the area is the snapping turtle. Snapping turtles were considered to be unaffected by a change in water level in Lizard Lake of less than 3 cm. Range maps indicate that six species of bats have known home ranges in the area, all of which were recorded during the 2013 bat field surveys. Loss of habitat for maternity roosting and hibernation is considered moderate.

Potential effects to the aquatic environment were evaluated through identified VECs including headwaters, lower reaches, receiving water bodies and identified fish species. Consideration was also given to those physical components that have been identified as having potential changes and how these physical changes would affect aquatic biology VECs.

During construction, the main effect of the Project on the aquatic environment will be habitat loss. A summary of habitat losses is provided in the aquatic biology effects assessment and includes 0.8 ha of Sawbill Bay, 4 ha of inlet streams, 0.5 ha of baitfish ponds in the lower reaches, 1.8 ha of headwater streams, 30 ha of lakes and 3.7 ha of baitfish and northern pike ponds in the headwaters. There are also 14 stream crossings or crossing upgrades on the proposed access road that will result in the loss of habitat within the footprint of the culvert/bridge structure.

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All of these habitat losses will be offset by compensation projects outlined in the No Net Loss Plan (NNLP) prepared for the project, and as a result, there will be no residual effects from these losses.

In addition to habitat loss, construction activities have the potential to cause mortality of fish present in these water bodies, thus a fish rescue plan will be developed and implemented as part of the construction phase of the Project.

During operations, there are a number of potential effects to the aquatic environment. Water withdrawal and water discharge, vibrations from blasting, groundwater flow and dust creation all interact with the aquatic environment.

Water withdrawal from Sawbill Bay will result in a reduction in water levels ranging from -9.0 cm to -0.4 cm in Upper Marmion Reservoir, which can be accommodated within the current operating regime of the reservoir. As a result, there are no significant effects. The discharge of mine waste water from the PPCP will be intermittent and is predicted to meet water quality guidelines and objectives (PWQOs or CWQGs) or site-specific water quality objectives. Therefore, there is no predicted effect on aquatic life and this impact is considered to be negligible. Sewage discharge to Sawbill Creek from the worker accommodation camp upstream of Sawbill Bay will meet MOE regulatory requirements, and, therefore, there will be no impact on the receiving waterbodies or VECs.

Operational blasting of the east and west pits will be monitored for vibration effects to fish and fish habitat. A mitigation management program will be implemented to ensure that Fisheries and Oceans Canada (DFO) guidelines are met, and, therefore, there will be no impact on fish life cycle stages.

As the open pits are excavated, there is potential for lake water to enter the pits through rock fissures. A Mine water collection system will be in place to ensure that water levels in Upper Marmion Reservoir are maintained. As a result, there will be no impact on water levels in Upper Marmion Reservoir. There is potential for groundwater from the Project Site to migrate to Sawbill Bay and Lizard Lake. Water balance predictions under worst case conditions are not predicted to result in adverse effects to these receivers.

There is potential for atmospheric deposition of contaminants from mining activities; however, predictive modeling studies carried out in the Atmospheric TSD have concluded that the effects of atmospheric deposition of dust and contaminants on aquatic life will be negligible.

During Project closure groundwater flow, and dust creation will continue to interact with the aquatic environment. As the open pits begin to fill, there is potential for lake water to enter the pits through rock fissures. During the closure phase, the Mine water inflow will be monitored. It is estimated that in about 218 years, the open pits will overflow into Sawbill Bay at which time any inflows to the pit would be balanced by pit overflows to Upper Marmion Reservoir. There is no anticipated effect on Upper Marmion Reservoir water levels.

During the closure phase, the seepage collection system will remain in place to ensure that contaminated seepage does not migrate to receivers until such a time as monitoring shows that the seepage is acceptable for direct release. Although there may be some atmospheric deposition during closure there is no expected atmospheric contamination of aquatic habitats during closure activities.

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Mitigation for the Biological Environment

Version 3 Update: Although listed below as a fish habitat offsetting measure, fish rescue and salvage is a considered to be a mitigation measure rather than an offsetting measure. Fish rescue is not an offsetting measure and no habitat credit for fish rescue has been considered in the Project offsetting calculations.

Mitigation measures were developed for the terrestrial and aquatic environment. These mitigation measures are closely linked to the Environmental Monitoring Plan and Objectives outlined in Chapter 8 of the EIS/EA Report. Mitigation measures for the biological environment are focussed on potential residual effects and consider both indirect physical effects and direct biological effects.

Mitigation measures for potential effects to the terrestrial environment will include in design measures, planning and management measures, compensation projects, training and education measures, and monitoring strategies.

The Project design and layout of the mine footprint and linear corridor was created to limit the amount of vegetation that is disturbed. Some of the disturbed overburden and topsoil will be stockpiled as a potential seed source. This measure will increase re-vegetation success of temporary work spaces. Limiting the use of all-terrain vehicles on trails and maintaining major transportation routes will also reduce habitat disturbance.

Clearing of vegetation shall take place outside of the nesting bird season (May 15th-July 30th), where possible. If clearing must take place within this period, a biologist will undertake a nest search to determine if there are any active nests in the habitat being cleared. If a nest is observed a protected buffer is placed around the nest until the bird and its young have left the nest.

The Processing Plant will be designed with emission controls, as will the construction and operations equipment. Operating procedures will be developed to reduce dust generation and emissions. Noise will be mitigated by housing stationary equipment in buildings and incorporating baffles and/or noise suppressors on equipment.

Hazardous materials and fuel will be stored according to regulatory requirements to protect the environment and the workers and demarked areas will be established for the storage and handling of hazardous wastes.

Water taking for the processing and make-up water will be minimized by reusing the on-site water supply for multiple undertakings. Runoff from the Project site and processing facility will be captured and diverted to the PPCP for re-use. Sewage will be treated prior to discharge.

The water management system will be designed to have enough capacity to store both operating flow and storm events. Installation of culverts will minimize alteration of flows and drainage patterns along linear corridor. Creation of wetlands as described in the No Net Loss Plan will attenuate flows.

Development and implementation of management plans will include an Invasive Species Management Plan, an Emergency spill management program, Dust management plan and the implementation of a strict “no hunting, harvesting, trapping or fishing” policy for workers while at the onsite worker accommodation camp.

Loss of bat habitat for maternity roosting and hibernation is considered moderate and will be offset by the creation or enhancement of other habitats for bats. The details of the compensation plan have yet to be determined, however preliminary concepts include the installation of bat condos and boxes as well as the improvement of other mine adits for use a hibernation sites.

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Workforce training and education measures are also important mitigation measures. Enforcing speed limits on access roads and mine road, proper cleaning and maintenance of equipment and Species at Risk worker education are all important measures to reduce potential effects to the terrestrial environment.

Mitigation measures for potential effects to the aquatic environment include the development of a No Net Loss Plan, water quality modelling and effluent diffuser design, the implementation of a water management system and ongoing monitoring of the aquatic environment.

The following is a summary of the fish habitat compensation projects identified as part of No Net Loss Plan:

- Fish salvage and rescue operations: during the construction phase.
- Stream restoration works at 15 culvert crossings
- Stocking of four fishless headwater lakes/ponds.
- Constructing berms to create three new headwater ponds.
- Creating northern pike spawning habitat adjacent to the mouth of Sawbill Creek

The loss of fish communities in Lizard Lake and Upper Marmion Reservoir includes loss of indirect fish habitat and genetic diversity. Loss of indirect fish habitat will be offset by projects included in the No Net Loss Plan. Effects to genetic diversity will be mitigated through fish salvage protocols during which the majority of impacted fish will be released in other waterbodies in the area, including Lizard Lake, API #8 and Upper Marmion Reservoir. In addition, fish salvaged from these operations will be used to stock a number of fishless lakes as part of the NNLP. As a result, this residual effect is considered to be negligible.

The mixing zone at the effluent discharge point was modelled for water quality predictions and mixing potential. This analysis included preliminary diffuser design work, and concluded the mixing zone will be small. The Project design will include locating the diffuser in an area of low fish use. As a result, the potential for exposure of fish to this area will be low and the concentration/duration of effect will be very low. As a result, there will be no effect of this discharge on fish populations in Upper Marmion Reservoir. No effects are expected on smallmouth bass, northern pike, walleye or baitfish populations in Upper Marmion Reservoir.

During Mine operations, closure and post-closure, there is potential for “piping” of surface water in Upper Marmion Reservoir to move via cracks and fissures in the bedrock into the open pits. Once the pits are full and overflow into Upper Marmion Reservoir, there will be a small net increase in flow into Marmion Reservoir. As a result, there is no impact on Upper Marmion Reservoir water levels and the effect on VECs is considered negligible.

During the operations phase, a Mine water collection and pumping system will ensure that there is no impact on Upper Marmion Reservoir water levels. Once the Mine is closed and the Mine water intake from Sawbill Bay is decommissioned, this inflow of water to the pits can easily be accommodated within the current operating regime for Upper Marmion Reservoir.

An Environmental monitoring program to assess the performance of fish compensation measures will also be undertaken, as further detailed in Chapter 8 Environmental Monitoring Plan.

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Social Environment

Version 3 Update: Clarification regarding potential impact to the outdoor tourism and recreation industry and mitigation measures are provided in IR responses as referenced in Chapter 6. A supplemental assessment of the potential impact of increased fishing and hunting pressures and possible mitigations are provided in the supplemental document: “Assessment of Potential Impacts to Fishing and Hunting Pressure and Opportunities – Hammond Reef Gold Project” in Part D of the Addendum to the Version 3 EIS/EA. Potential impacts to traplines and mitigation agreements are further explained in the response to T(3)-02 (see Addendum Part A; Table A-1).

Social environment included an assessment of socio-economics, Aboriginal interests, Cultural heritage and Human health. The socio-economic assessment and Human health risk assessment both identified the potential for residual effects as described below.

Socio-economics

The socio-economic impact assessment of the Project has yielded detailed results that are presented in the Socio-Economic TSD.

The overall effect of the Project is summarized in Table ES-7.

The Project will have a positive economic effect through jobs and increased government revenues during the construction and operations phase. On an annual basis, the operations phase will involve a project workforce of 550 people and over the 11 year operations phase, the estimated direct, indirect and indirect employment is 25,179 FTE or person-years, 13,002 of which will come from Ontario.

The tax revenues from the Project are a positive effect and they represent a major contribution of approximately \$340 million to federal and provincial revenues over the 11-year operations phase. The Project’s municipal tax contribution to the Town of Atikokan will be indirect through the potential construction of new housing, new local businesses and an increased population.

The effect on population and demographics is expected to be small during **construction and moderate during operations**. Overall, population increase is expected to contribute to the net benefits of the Project. An increase in the number of Atikokan residents (workers and their families) should serve to reverse the current population decline in the LSA.

The existing public services and infrastructure in the LSA, including the Town’s plans for a new waste management facility, are capable of accommodating the small additional demand from the Project and increased population as a result of the construction phase. Accordingly, no adverse effects are anticipated on this VEC.

Overall, the effect of the Project on housing and worker accommodation is positive. The Project is anticipated to result in an increase in the demand and cost of housing in the LSA which should contribute to the stabilization of the local housing market.

The Project is anticipated to result in an increase in traffic, resulting in a Category “C” level of service on Highway 11B, and an increased volume-to-capacity ratio. The increase still provides for service levels well within acceptable ranges and the Project should not result in unacceptable traffic congestion.

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The Project could result in effects to hunting because of loss of habitat. The magnitude of the effect is low because the amount of land removed is less than 5% of the wildlife management unit. The frequency and reversibility are both high since the effect occurs continuously and is reversible; therefore, the overall assessment of significance of this effect is assessed as low.

Outdoor tourism and recreation could be affected by the Project because of changes in perception caused by effects to the visual landscape. This is a permanent change that will be mitigated through ongoing consultation with tourism operators and OHRG's commitment to invest in advertising to promote the local industry.

Aboriginal Interests

Effects on Aboriginal Community Characteristics are anticipated to be positive namely those effects on Employment, Business Activity, and Training and Education. The Project will contribute to the economic opportunities and development of Aboriginal communities.

Effects on Aboriginal Heritage and Resources through Project-related disturbance of archaeological sites or restricted access or disturbance of cultural or spiritual sites were identified as being unlikely to occur. The Project will not result in any physical disturbance of any known sites. As part of the Cultural Heritage studies for the environmental assessment, Stage 1 and 2 archaeological assessments were conducted on the area likely to be affected by Project physical activities. No Aboriginal archaeological sites or artefacts were found.

Effects on Traditional Use of Land and Resources, specifically loss of fishing opportunities, hunting opportunities and plant harvesting opportunities were assessed as being negligible because any effects would be limited to the Aboriginal Interests LSA and would not measurably reduce the overall land use opportunities provided within the RSA. Effects on the consumption of country foods was determined to be unlikely since neither their source nor safety would be affected. The removal of land base within traplines in the Aboriginal Interests LSA will be mitigated through agreements with the trapline holders.

Physical and Cultural Heritage Resources

No significant archaeological sites and artifacts were found, with the exception of two late 19th century to mid-20th century mine sites, which are likely to be affected by the Project. Two historic mining operations reside within the footprint of the proposed development, the Hammond Gold Reef Mine, located on the northern limit of the Mitta Lake Peninsula, and the Sawbill Mine, located north of the east end of the proposed East Pit. In both cases, cultural remains exist that illustrate the location of the abandoned mining operations.

Potential effects on the two former mine sites described above are limited to the LSA since both sites lie outside of the mine footprint. While potential effects include the destruction, alteration, disturbance, exposure or isolation of attributes or features of these sites, they are unlikely to be affected by mining activities.

As both of these sites date well into the 20th century, the information potential related to archaeological studies is considered to be low and no further archaeological assessment was conducted.

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Human Health Risk Assessment

No Contaminants of Potential Concern (COPCs) were identified following the conservative screening process. Therefore, no adverse health effects are expected as a result of changes in soil and water concentrations.

There are no residual effects from the acute inhalation assessment based on comparison of chemical-specific predicted maximum 1-hour air concentrations from all receptor locations against the lowest available health-based screening thresholds.

The chronic inhalation assessment considered anticipated exposure times for each receptor as well as receptor-specific parameters such as inhalation rate and body weight. All of the HQs were well below MOE target levels, indicating negligible health effects.

In the particulate matter assessment, concentrations of PM_{2.5} were below guidelines, indicating negligible adverse health effects from PM_{2.5}. Annual concentrations of PM₁₀ were also below guidelines and not expected to cause adverse health effects.

Concentrations of Diesel Particulate Matter (DPM) exceeded the screening threshold for carcinogenic effects; therefore, DPM was evaluated following the chronic inhalation assessment method. The calculated levels were less than the target cancer risk of 1×10^{-6} for all receptors except for one trapper cabin, which was 1.6×10^{-6} . These predictions assume that the trapper spends 105 days per year, 8 hours a day for 15.5 years at the trapper cabin. It was also assumed that the maximum annual DPM concentration modelled for the Project exists for the entire life of the Project. These conservative assumptions contribute to potentially overestimating the cancer risk. The magnitude of this risk is considered low.

In the noise assessment, measures prescribed by Health Canada for assessing exposure to noise and potential human health effects were utilized. At receptor locations surrounding the Project, noise levels are within the ranges reported for increased risk of hypertension and sleep disturbance. The magnitude of effect for noise is considered to be low based on comparison to Health Canada targets and considering that predicted levels are in the lower end of ranges for hypertension effects.

Mitigation for the Social Environment

Version 3 Update: Reference to 'Atikokan Forest Products', should be considered as references to 'Rainy Lake Tribal Resource Management Inc.'. Reference to 'Abitibi Consolidated', should be considered as references to 'Resolute Forest Products.'

The Town of Atikokan is currently planning to construct a new waste management facility and is undergoing the permitting process for this facility. OHRG is committed to working with the Town of Atikokan to support the licensing, construction and operation of this new landfill site. The new site will be designed to accommodate any construction-related waste from the Project.

Mitigation is required for the adverse effects on outdoor tourism and recreation resources that have been directly affected by the restriction of site access/removal of land as part of the construction of the Project.

Because there may be some perception of negative effects on outdoor tourism and recreation due to construction of a mine project in the area, and associated effects on visual aesthetics, OHRG has begun to take steps to reinforce the positive outdoor tourism and recreational reputation of the LSA. As outlined in Chapter 7,

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Public Consultation, communications with Tourist Operators has been ongoing including a workshop that discussed concerns. As a result of this workshop, OHRG has committed to providing support for advertising efforts to promote the local tourism industry. OHRG also plans ongoing sponsorships of community events such as the Atikokan Bass Classic.

Effects to hunting were determined to be a potential residual adverse effect of the Project. In order to mitigate any increase in hunting pressures that could occur as a result of the Project OHRG will implement a firearms policy to restrict hunting for workers while staying at the worker accommodation camp. OHRG will also administer a bi-annual hunting and fishing questionnaire to its workforce in cooperation with MNR.

Mitigation is required for the adverse effects on trapline areas, bait fish blocks and bear management areas that will be directly affected by the restriction of site access/removal of land as part of the construction of the Project. The approach to mitigation is compensation and/or relocation based on negotiation with the land user. Mitigation for adverse effects on trapping, bait fishing and bear hunting will involve negotiated agreements and benefits upon approval of the EA and a decision to construct. Agreements are currently in place with the adjacent tourism operator, overlapping trap line holder, bait fish block holder. Satisfactory completion of negotiations and execution of agreements fully mitigate this effect.

Mitigation to forestry will involve discussions facilitated by MNR between OHRG and Atikokan Forest Products and Abitibi Consolidated to negotiate compensation, as required. Satisfactory completion of these negotiations should mitigate any adverse effects of the Project on timber harvest land base.

During the closure phase, OHRG will help communities transition into the loss of Project-related employment and opportunities for businesses to provide goods and services to the Project. Similar programs have been in place for changes in workforce when the exploration phase came to a close and included employee transition planning, training and placement support to assist employees in finding other employment in the community or elsewhere in the resource extraction sector.

The Aboriginal Interests effects assessment did not identify any adverse effects of the Project that could not be mitigated or compensated on any of the selected VECs. The following sections discuss a number of preliminary plans that seek to enhance the positive benefits and/or ensure that implementation of the Project will occur in harmony with Aboriginal Interests to the extent possible. These initial plans will serve to enhance the continuing relationship between OHRG and the Aboriginal communities.

OHRG plans to continue its practice of informing Aboriginal communities about the nature and timing of the skills required for site workers. Existing Aboriginal workers will be encouraged to share their working experiences within their own communities, thereby helping to overcome some of the barriers to Aboriginal participation in the wage economy. OHRG will make the workplace a welcoming environment to Aboriginal people by providing cultural sensitivity training to all members of the Project workforce.

Although no Aboriginal heritage sites or artefacts are identified with the area likely to be affected by the Project physical activities, there remains the low possibility that a heritage site or artefacts could be encountered during excavation or earth moving activities. Accordingly, a protocol will be established between OHRG, the First Nations and Métis regarding actions to be taken in the event, however unlikely, a heritage site and/or artefacts are discovered during the construction phase.

Because Aboriginal people will likely continue to occupy the land after mine closure, and because of their continued stewardship of the land, they will be included in remediation and closure planning for the Project Site.

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Additional consideration of benefits to the public and Aboriginal communities is detailed in Chapter 8, Social Management Planning. This plan includes the use of structured committees for two-way information sharing and the ongoing inclusion of Aboriginal communities and public stakeholders in the Project planning process.

Two historic mine sites were identified within the Project area. Given the available historical literature in the form of government mining reports and the presence of remains such as mine shafts, adits, dams and tramways, the Ministry of Tourism and Culture recommended that a Cultural Heritage Evaluation Report be undertaken for the two historic mining operations. Mitigation for potential human health effects includes private agreements that are in place with local land users for temporary restriction of land access during the Project phases.

Cumulative Impacts

The approach to assessing potential cumulative effects uses the results of the impact assessment to assess the potential effects of the Project on the same physical, biological and socio-economic factors in consideration with the effects of other past, existing and reasonably foreseeable projects and activities in the same geographic region as the Project. Appropriate past, existing and proposed projects and activities that could potentially interact with the project were selected for inclusion in the assessment in consideration of the following:

- The predicted effects of the Project;
- The spatial and temporal extent of the predicted effects;
- The location, timing, size and nature of other projects and their potential effects; and,
- The availability of existing data and knowledge of the projects and their potential effects.

Identified projects or activities considered in the cumulative effects assessment include:

- The former Steeprock Iron Mine site near Atikokan;
- Existing hydro-electric facilities on the Seine River system downstream of the Raft Lake Dam, the closest of which being the Valerie Falls Generating Station;
- Ontario Power Generation's Atikokan Generating Station near Atikokan;
- Planned wood processing facilities, including the Resolute Forest Products Sawmill near Atikokan and the Rentech Wood Pellet Production Facility in Atikokan (formerly known as the Atikokan Renewable Fuels Mill);
- The former Atiko-Sapawe Gold Mine near Atikokan;
- Rainy River Resources proposed Rainy River Gold Project near Fort Frances, Ontario;
- Bending Lake Iron Group proposed Josephine Cone Iron Mine project near Ignace, Ontario; and,
- Treasury Metals proposed Goliath Gold Project near Dryden, Ontario.

The predicted effects of the Project were then considered against each other project or activity to determine if there is potential for interaction. If a potential for interaction is identified, an assessment of potential cumulative effects was performed.

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The predicted environmental impacts from the Project components are confined to the mine footprint and immediately adjacent areas of the LSA. Within the area of impact, the changes in the environmental components are minor and none of these are predicted to adversely affect local plant or animal populations beyond the MSA, nor adversely affect surface or groundwater quality beyond the MSA.

Since the predicted effects are being managed and mitigated such that only local changes will occur that will have no predicted significant impact on the environmental components, the cumulative effects assessment is conducted as a limited scope assessment. The lack of physical or biological effects from the Project beyond the immediate area of the mine development precludes far-reaching environmental effects that could interact with other projects, and reduces the need for a detailed assessment of cumulative effects against the VECs considered in the EA.

Accidents and Malfunctions

Version 3 Update: An assessment of potential impacts to Upper Marmion Reservoir and Lizard Lake, due to the unlikely event of a breach of the TMF Reclaim Pond dam is provided in response to T(3)-09 in Part A of the Addendum to the Version 3 EIS/EA – see Table A-1.

The assessment considered a number of potential health and safety, accident and contingency scenarios that require planning and preparation in the event that they occur during the operating phase including:

- Road accident on main access road resulting in a spill.
- Fuel tank rupture on Mine Site.
- Hazardous material spill
- Tailings pipeline rupture.
- Spill of tailings water from TMF reclaim pond.
- TMF tailings dam failure.
- Flyrock from blasting
- Medical emergency
- Pit slope failure or water inflow to pit
- Fires (on site and forest fire)
- Floods and Droughts
- Explosion

Emergency preparedness planning will be undertaken and training in emergency response will be provided for key site staff during construction, operations and closure. The assessment concluded that planning, training, in-design mitigation measures, monitoring measures and response measures implemented at the Project site would minimize the environmental effects of potential accidents.

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PUBLIC CONSULTATION AND ABORIGINAL ENGAGEMENT

The following six regulatory milestones and associated information sharing were carried out with the public, non-governmental organizations (NGOs), government (local, provincial and federal) and Aboriginal communities. The first three milestones were documented in the Record of Consultation published as part of the ToR.

- 1) Project Description
- 2) Commencement of Terms of Reference
- 3) Submission of Terms of Reference
- 4) Commencement of the EA Report
- 5) Submission of the EA Report
- 6) Review of Decommissioning Plans (ongoing)

Government

Version 3 Update: The government submitted 322 comments and information requests on the Final (Version 2) EIS/EA Report (113 Federal and 209 Provincial). Prior to submission of this Final (Version 3) EIS/EA document CMC worked continuously with the government review team to resolve all federal and provincial comments. All comments, IR responses, and supplemental documentation between 2014 and 2017 have been compiled and are provided in the Version 3 EIS/EA Addendum. In addition to the responses, electronic tables for the Federal and Provincial IR responses (filterable by topic) have been included as part of the electronic addendum submission.

All work completed since the submission of the Version 2 EIS/EA supports the previous conclusions and determination of significance as identified and indicated in the Version 2 EIS/EA and is provided in this Version 3 document for information and clarification purposes.

Provincial and federal government agencies have been working together to provide a streamlined consultation process where possible. Key contacts for the environmental assessment from provincial and federal governments have been identified as Ministry of Northern Development Mines, Ministry of Environment – Environmental Assessment and Approvals Branch and the Canadian Environmental Assessment Agency. Regular meetings took place with the lead agencies and they were kept informed of consultation with others, particularly with a focus on Crown Oversight of Aboriginal consultation.

The identified Government Review Team (GRT) was proactively engaged in the Project and invited to comment on OHRG's approach throughout the environmental assessment process. The GRT was provided the Project description overview and baseline studies results prior to report publications. A Draft (*Version 1*) EIS/EA Report was published and presentations of the EIS/EA results were delivered to the GRT. Discussions took place on clarification of details, description of assumptions and justification of approach.

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The GRT provided over 700 comments on the Draft EIS/EA Report. These comments were reviewed, responses were prepared and presentations were provided to the GRT with draft responses to comments. Additional discussion took place on recommended report revisions and requests for new work. Formal responses to comments on the Draft (*Version 1*) EIS/EA Report were compiled and are issued as part of the Final (*Version 2*) EIS/EA Report.

Some additional work has been undertaken based on the comments received. This work includes new and ongoing field studies, new design and modelling calculations, desktop studies, publication of new reports and revisions to existing reports.

A summary of key concerns from the Government Review Team and corresponding report revisions undertaken is provided below. These concerns and revisions are further detailed in Chapter 7.

Ministry of Natural Resources (MNR)

On April 4, 2013 approximately 290 comments on the Draft EIS/EA Report were received from Ministry of Natural Resources (MNR). Several meetings and discussions took place on areas of concern or where draft responses were deemed to need further clarification. Several revisions to the EIS/EA Report were recommended by MNR, as provided in the detailed meeting notes.

Water Quality

On April 4, 2013, approximately 55 comments regarding water quality were received on the Draft EIS/EA Report which were mainly focussed on clarification of baseline data, the need for site specific water quality objectives and requests for new mixing model work to clarify the extent of the effluent mixing zone. Comments from the GRT also recommended that the on-site worker accommodation camp discharge location be moved downstream of the intake location. This recommendation has been acted upon and the revised location is presented in Chapter 5 of the Final EIS/EA Report.

Several comments were received from the Ontario Ministry of Environment regarding effluent mixing in Marmion Reservoir. In response, a conceptual effluent diffuser design and preliminary mixing zone assessment was completed for the full range of anticipated discharge rates (as predicted in the Site Water Quality TSD) to estimate the potential extent and anticipated effluent concentration gradients within the near-field mixing zone at the mine effluent discharge location. The results of this assessment, including a figure showing the concentration gradients and extent of the mixing zone are provided in the Supplemental Information Package attached to Version 2 of the Lake Water Quality TSD.

Aquatic Biology

A series of meetings/workshops were held with the GRT to discuss a number of issues specifically related to Aquatic Biology including collection of baseline data, development of fish habitat accounting methodology, discussions regarding federal and provincial regulatory requirements and preliminary discussions regarding compensation for loss of fishing opportunities. OHRG worked with the government review team to finalize a Fish Habitat Accounting methodology for use in the No Net Loss Plan included in the Aquatic Biology TSD Supplemental Information Package.

The following summarizes the key changes:

- The potential for development of aquatic habitat within the flooded pits at closure is evaluated;
- Additional detail is provided on fishless lakes that are proposed to be stocked;

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- Additional detail is provided on watercourse crossings and associated compensation projects; and,
- Additional detail is provided on the fish salvage and rescue plan.

Closure Planning

OHRG has maintained open communication with the GRT throughout the environmental assessment process. Communications will be ongoing throughout the Project phases and the completion of the environmental assessment. One key outstanding government consultation requirement is ongoing discussions with MNDM to ensure the Certified Closure Plan for the Project meets all requirements and expectations. On November 2012, MNDM provided a letter to OHRG stating they had received a Notice of Project Status for the Hammond Reef Project. In this letter the Director of Mine Rehabilitation stated that a Closure Plan must be submitted for the Project prior to mine construction, but that the Closure Plan would not be accepted as filed until the completion of the provincial and federal environmental assessment processes.

Public

Version 3 Update: The public stakeholders submitted 9 IRs and comments following submission of the Version 2 Final EIS/EA (EIS/EA Version 3, Addendum Part C). Comments were provided by the hydropower producing company Brookfield Renewable Power (Brookfield). Since the receipt of these comments, CMC, in consultation with the hydro power producers (Brookfield and H2O Power), has proposed contingency water taking strategies and is working with the two power producers to develop a water taking agreement regarding use of the resource for the public good which will protect the interests of all parties.

OHRG has used a variety of methods to engage with the public including publication of Community News Briefs, Community Open Houses, meetings and presentations. Draft and Final Reports have been circulated and responses have been provided to comments from public stakeholders. Throughout communications and consultation events OHRG has received many questions about Project design details. Many members of the public have stated their support for the Project and their interest in employment with OHRG. Concerns about potential effects to the environment and in particular the aquatic environment have also been raised by public stakeholders.

The public consultation log provided in Appendix 7.III provides details of written issues or concerns received from the public, OHRG's response to the issue or concern, and whether follow up action is required to resolve the issue.

OHRG has provided immediate detailed responses to many questions received from the public. Public comments were considered during the preparation and revision of the EIS/EA Report. Fishing is an important recreational activity and is also the source of income for local tourism operators. Two of the public stakeholders who submitted written comments on the Draft EIS/EA Report listed potential effects to fish as their key concern. The Atikokan Sportsmen's Club and the Ontario Federation of Anglers and Hunters both requested further sampling of fish tissue and benthic invertebrates in the area would be warranted.

Notwithstanding the fact that the fish tissue sampling undertaken for the EA was sufficient for EA purposes, OHRG has committed to providing capacity support to Seine River First Nation to collect additional fish tissue and benthic samples in the spring of 2014 in conjunction with an environmental study being undertaken with their community. Data collected will be shared with Seine River First Nation, Ontario Federation of Anglers and Hunters and the Sportsmen's Club.

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The Marmion Reservoir is a regulated water body that is subject to the Seine River Watershed Management Plan. The Plan includes target outflow rates at specified dams and target water elevation levels at certain times of year. The hydrology assessment has concluded that the Hammond Reef Gold Project can operate within these target rates. Ongoing discussion with existing water users is required to allow for cooperation and understanding of each other's seasonal water needs.

Overlapping land users were engaged and mutually beneficial agreements were reached with the identified bait fish block and bear management area license holder, trapline holders and adjacent tourist operator. Land use agreements include restriction of access as required for safety during identified Project phases. All agreements are contingent on the Project moving forward.

In addition to the tourism industry's concern about aquatic health, the changes to the visual landscape and the potential effects to the tourism industry was a key concern. A local monitoring committee, the Atikokan/OHRG Committee, will be established to allow for communication and information sharing between OHRG and the local public population. The details of the planned committee structure and potential meeting topics are provided in Chapter 8 under Social Management Planning.

Aboriginal Engagement

Version 3 Update: *The Aboriginal stakeholders submitted 22 IRs and comments following submission of the Version 2 Final EIS/EA (EIS/EA Version 3, Addendum Part C). CMC has responded to and/or acknowledged all requests and comments and continues to consult with Aboriginal communities as summarized in Chapter 7.*

Since the submission of the Version 2 EIS/EA, CMC has received letters in support of the Project from the Metis Nation of Ontario and six (6) First Nation Communities – Lac La Croix FN, Seine River FN, Lac Des Mille Lacs FN, Rainy River FN, Nigigoonsiminikaaning FN and Naicatchewenin FN.

The Project is located within Treaty 3 lands, the traditional territory of the Anishinaabe people. OHRG has developed a relationship with the local First Nations people through ongoing information sharing and the signing of a Resource Sharing Agreement. The First Nations communities with an interest in the Project include the seven member nations of the Fort Frances Chiefs Secretariat, the Lac de Mille Lacs First Nation and the Wabigoon Ojibway Nation. The closest First Nations community is located approximately 40 km away from the Project site.

The Project is also located within an area recognized by the Métis Nation of Ontario as the Treaty 3/Lake of the Woods/Lac Seul/Rainy River/Rainy Lake traditional harvesting territories. In March 2012, OHRG signed a Memorandum of Understanding with the Métis Nation of Ontario, including four identified Métis community councils (Kenora, Sunset Country, Northwest and Atikokan). The agreement allowed for the formation of a Métis consultation committee for the Project. As of November 2012, the deliverables identified in the agreement were fulfilled and committee members agreed that adequate consultation on the Project had taken place. OHRG is actively planning ongoing communications and partnerships with the Métis Nation of Ontario.

All three key Aboriginal groups have provided letters to government stating that OHRG has provided clear and ongoing communications throughout the Project planning process. OHRG has used a variety of methods to engage with interested Aboriginal groups including publication Community Visits, Presentations to Chiefs, Elder Forums, Committee Meetings and Community Feasts. Draft and Final Reports have been circulated and responses have been provided to comments from Aboriginal groups.

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Summary of Aboriginal Concerns

Throughout communications and engagement events, OHRG heard many concerns about potential long-term effects of the Project on the environment. Although the focus of these comments is often expressed through the importance of the whole and interconnected environment, environmental concerns are largely related to potential effects to water quality, ricing areas and the health of fish, and animals that live near the Project Site.

Environmental concerns raised by Aboriginal communities have been addressed in a fulsome way in the EIS/EA Report and associated TSDs. Specific concerns have also been and will continue to be addressed in plain language presentations provided to Aboriginal communities.

Many comments have also been received with regards to Project closure, environmental monitoring and OHRG's ability to assure the Project Site will not be abandoned as has occurred in past mining projects within the region. OHRG has included Aboriginal communities in the closure planning process through a series of presentations and ongoing information sharing. The long-term monitoring plan for the Project will include direct participation of Aboriginal communities, as described further in Chapter 8 of the EIS/EA Report.

A summary of environmental concerns from First Nations communities and OHRG's response to the concerns provided below. OHRG will continue to engage with Aboriginal communities, with a focus on specific identified issues. Appendix 7.V provides a detailed record of communications and a comment response table which clearly outlines each comment, when it was received, and Osisko's response to addressing the comment.

Water Quality

Concerned with release of sulphate at above ambient levels into Marmion Lake.

While CWQGs and PWQOs are not available for sulphate, the State of Minnesota has developed a water quality guideline of 10 mg/L specifically for protection of wild rice (MPCA website 2013). The water quality predictions under the different Project phases described in Section 6.1.3.5 show that worst case concentrations of sulphate are predicted to reach 3.7 mg/L at the Raft Lake Dam during the operations phase. Predicted concentrations under average operating conditions and in post-closure are the same as under baseline conditions (<2 mg/L). The predicted concentrations are well below the guideline developed by Minnesota and as a result there is no identified potential effect on wild rice downstream in the Seine River. Since the other water quality parameters as predicted at the Raft Lake Dam are similar to background levels, there is no predicted effect on wild rice or other aquatic vegetation in the Seine River from operation of the mine.

To assist in the prediction of effluent quality, will Osisko be sampling internal (pre effluent) reclaim pond water quality?

On-going sampling of all water discharged from the mine site will be required as part of the Environmental Compliance Approval for effluent release to ensure the effluent is compliant with appropriate standards. The frequency of this sampling will be determined based on the provincial and federal permit requirements. Osisko may conduct additional sampling prior to effluent release to confirm the suitability of the water for use at the process plant.

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Concerned about current levels of both water and sediment adequately describing conditions in Marmion Lake and connecting water bodies.

Additional studies of the existing aquatic environment, including fish tissue, sediment and benthic studies is planned to be undertaken with Seine River First Nation and the Atikokan Sportsmen's Club in Spring 2014.

Groundwater

Concerned that there may be some temporary minor adverse effects due to pond seepage water escaping into the lake waters. Concerned about potential migration of effluent from the planned Tailings Management Facility to Long Hike Lake.

Seepage from the TMF to Lizard Lake during operations will be managed through a seepage collection system that will direct seepage from the TMF back to the TMF. For the purposes of the impact assessment it was assumed that 10% of the seepage may bypass the collection system and will flow to Lizard Lake. Predictions under these conditions resulted in free cyanide concentrations in Lizard Lake of up to 0.006 mg/L. Since the predicted concentration is only slightly above the guideline of 0.005 mg/L and below the SSWQO of 0.01 mg/L, there are no predicted adverse effects due to free cyanide.

Seepage from waste rock and ore stockpiles will be routed via ditching to the PPCP, from where it will be re-used in the processing facility or treated and discharged. As a result, there is no predicted effect on aquatic life.

Fish and Fish Habitat

Concerned with level of mercury in fish.

Mercury is of particular concern in fish tissues, and some walleye currently exceed consumption restrictions for some sensitive groups, such as women of child-bearing age and children under 15 years of age (discussed in Chapter 3). Water quality modeling (Section 6.1.3.5) predicts no change in mercury concentrations in surface water or sediments during operation and into post-closure. Therefore, concentrations of mercury in walleye or other fish species are not predicted to increase as a result of discharges from the site (concentrations in geologic material are currently below detection limits). The slight increases in sulphate levels are also not predicted to result in increases in methyl mercury production. As described in Section 6.1.3, conditions in Sawbill Bay would not favour net methyl mercury production due to oxygenated conditions that appear to persist throughout the water column.

Mercury analyses for benthic invertebrates should also be done as it would provide an assessment of mercury uptake at specific locations.

Notwithstanding the fact that the fish tissue sampling undertaken for the EA was sufficient for EA purposes, OHRG has committed to providing capacity support to Seine River First Nation to collect additional fish tissue and benthic samples in the Spring of 2014 in conjunction with an environmental study being undertaken with their community. Data collected will be shared with Seine River First Nation, Ontario Federation of Anglers and Hunters and the Sportsmen's Club.

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How will Osisko implement the envisioned restricted fishery for camp employees without conflicting with aboriginal treaty rights?

Introduction of a large workforce could exert unsustainable pressure on the local fishery, affecting the sustainability of fish populations. As a result, fishing by camp personnel while on-site will be restricted to help maintain fish stocks. The policy regarding restricted fishing for camp employees will not extend to Aboriginal people, unless they are on shift at the mine site or currently staying at the workers accommodation camp.

Atmospheric Environment

Concerned about impact of possible airborne fugitive dust emissions originating from the Tails Management facility on the environment.

Fugitive dust throughout the project will be managed through the implementation of a comprehensive fugitive dust Best Management Practices Plan (BMPP), which will include practices for managing wind erosion from tailings during Operations and re-vegetation during Closure as described in Section 4.2 of the Conceptual Closure and Rehabilitation Plan TSD. Some typical steps to be included in the BMPP for managing dust generation from the tailings areas are ensuring a minimum moisture content of the tailings to keep the area wet and/or installing wind screens. Wet or moist tailings would have little in the way of dust generation potential. As stated in the Conceptual Closure and Rehabilitation Plan TSD, the closure measures are designed to physically stabilize the tailings surfaces to prevent erosion and dust generation.” The types of closure measures include covering and vegetating these areas, which would eliminate the dust generation.

The combination of the closure plan activities and the implementation of the BMPP, which includes facility engagement and accountability, will ensure that the potential emissions from tailings are an insignificant source. Therefore, they have been excluded from the assessment as a potential source of particulate matter. This is standard practice and follows the guidance in Section 7.4 of the Ontario Ministry of the Environment “*Procedure for Preparing an Emission Summary and Dispersion Modelling Report*” document dated March 2009.

Once the final design of the Osisko project is confirmed, a comprehensive site-specific BMPP, as described in Section 3.3 of the Atmospheric Environment TSD, will be created for the site which will include specific objectives to control fugitive emissions from tailings.

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Métis Nation of Ontario

Version 3 Update: On March 14, 2014 the Metis Nation of Ontario (MNO) submitted a series of comments on the Final EIS/EA Report. The comments have subsequently been withdrawn by the MNO as detailed in the letter provided in the Version 3 EIS/EA, Addendum Part 3 under Aboriginal and Public Comments. On June 11, 2015 CMC and the MNO signed a Shared Interest Agreement with respect to the development and operation of the Hammond Reef Gold Project and the MNO has provided a letter of support for the Project.

On May 24, 2013 OHRG received a letter from the Métis Nation of Ontario requesting notifying OHRG that an MNO Negotiations Team had been appointed and requesting the first negotiations meeting take place. Since receipt of the letter from MNO, ongoing communications have taken place to discuss Shared Interests between MNO and OHRG. These discussions have included two meetings, for which OHRG prepared presentations as provided in Appendix 7.V. The nature of the discussion at these meetings is confidential and therefore some presentation slides have been removed and meeting notes have not been published.

A summary of main points that have been addressed through ongoing discussions include Project and corporate updates, identification of mechanisms that could increase Project benefits to the Métis community, structure of future committees and schedule for future meetings.

OHRG's approach to resolving the concerns listed by the MNO in their April 2012 letter is to arrive at a private and mutual beneficial agreement that addresses all MNO's listed concerns. OHRG plans to work with the Métis Nation of Ontario on an ongoing basis to ensure the communities benefit from the Project. OHRG is committed to optimizing business opportunities for Métis community members, including the Métis in environmental monitoring programs and supporting the Métis Way of Life through ongoing investment in Métis culture.

Cultural Concerns

Throughout consultation, OHRG has heard from Aboriginal communities that Aboriginal culture is important. OHRG has worked with Aboriginal communities to respect customs and provide capacity for traditional ceremonies at the Project site and within the communities.

Throughout the construction and operations phases of the Project, the established Social and Cultural Committee will provide oversight and direction for appropriate ceremonies that should take place during Project meetings. The committee will also promote cross cultural awareness and bring forward suggestions for cultural investment opportunities.

Traditional knowledge has been incorporated into the environmental assessment through the provision of capacity for traditional protocols during the consultation process and the consideration of information provided into the Project design. OHRG has routinely followed advice provided by elders to include drumming and dancing in Project meetings.

Information provided by First Nations and Métis have allowed OHRG to avoid placing infrastructure in areas that are recognized as being special or sacred sites. The effluent treatment plant discharge location and TMF location have both been adjusted to minimize potential impacts to areas with environmental value as identified by Aboriginal communities. OHRG also plans to use traditional knowledge to inform the development of appropriate fish relocation plan for Mitta Lake and other fish-bearing water bodies that will be affected by the Project.

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OHRG recognizes that speaking and hearing the Ojibway language is an important part of Aboriginal culture in the identified Aboriginal communities. OHRG is committed to incorporating Ojibway information materials into its consultation program for the Project. OHRG engaged Ojibway translators for the Elders forums, including traditional use study meetings, and worked with the several individuals from First Nations communities to translate a Project Overview into Ojibway. This Ojibway-language video has been shared with the First Nations in community meetings and workshops.

OHRG will continue to communicate with Aboriginal communities about environmental concerns through the sharing of environmental studies results and assessments. To date, OHRG has provided detailed information to communities, Chiefs and Elders. Throughout the construction and operations phases of the Project, the established Environmental Committee will provide a mechanism for sharing environmental information with First Nations communities.

OHRG is committed to providing economic benefits to Aboriginal communities. Initiatives to maximize the benefits the Project will have on Aboriginal communities include:

- Scholarships.
- Partnerships with local academic institutions.
- On the job training.
- A hire local priority policy.
- Targeted employment, training and business opportunities.

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ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANNING

Revisions to Chapter 8, the Environmental Monitoring portion of the EIS/EA Report, have been substantial to include further details and provide a closer link to government guidelines. The revised Chapter 8 is organized by Physical, Biological and Social environmental components. The Chapter includes a narrative explaining potential effects by component and providing justification for the focus of the proposed monitoring plan. The Chapter includes clear presentation of management and monitoring plans through the use of a Management Planning table and Monitoring Plan table for each physical and biological component considered in the environmental assessment.

The Management Planning table lists the Project interaction and the potential effect to the environment. It includes proposed mitigation measures and clear monitoring objectives. The Management Planning table also includes lists of applicable regulations and guidelines that relate to monitoring objectives. Contingency planning is included in the Management Planning tables in the event that actual effects differ from predicted effects.

The Monitoring Plan tables bring forward the potential effects listed in the Management Planning tables and further define indicators to meet the stated monitoring objective. Monitoring Plan tables also include a description of planned sampling location, sampling method, and estimated frequency and duration of monitoring plan for each physical and biological component. The biological monitoring tables also provide a direct link to the VECs described and assessed in Chapter 6 of the EIS/EA Report.

Chapter 8 of the EIS/EA Report represents the Environmental Management Plan (EMP) for the Hammond Reef Gold Project. The EMP was created to reduce the risks to the environment through consideration of predictions and development of a plan that allows the predictions to be confirmed. The EMP also includes contingency planning should the case arise that that actual effects differ from predicted effects.

Once construction and operations commence, environmental monitoring will be an integral part of evaluating the effectiveness of the EMP.

The objective of the EMP is to ensure that negative impacts on the physical and biological environments are mitigated; benefits that will arise from the development of the Project are enhanced; and compliance with existing legislation and consistency with provincial guidelines and best practice is achieved.

Conceptual plans to monitor the effectiveness of mitigation measures, and verify the predicted changes to the environment have been developed. These include water quantity and quality, groundwater quantity and quality, terrestrial and aquatic biological monitoring plans, and social management plans. Detailed plans will be developed in cooperation with Project stakeholders including government and public, as well as with Aboriginal communities.

Both provincial and federal agencies are anticipated to be included in monitoring plan development and in the provision of ongoing advice for the environmental management plan. It is anticipated that a lead agency will be identified to provide direction and review reports.

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Health and Safety

The Health and Safety management system in place for the OHRG exploration project will be applied directly to the constructions and operations phases of the Project. The management system was developed with the intent of meeting, as a minimum, the legislative requirements within the Occupational Health and Safety Act and Regulations for Mines and Mining Plants. The Internal Responsibility System in place at Hammond Reef includes provisions for the Health and Safety Responsibilities of all levels of management, employees and contractors.

Physical Environment

The air quality and vibration monitoring and follow-up program is designed to be appropriate to the scale of the Project and the effects identified through the environmental assessment process. The program is intended to confirm the methods used to estimate the Project emissions and the effectiveness of in-design mitigation measures, and in doing so, assess if alternative mitigation strategies are required to minimize emissions from the Project and their impacts.

OHRG will prepare a comprehensive water monitoring program that will include groundwater quality, surface water quality, levels and flows along with meteorology and flow metering of all pumped water. With respect to the Hydrology monitoring program, the objectives will be to verify the accuracy of the predicted changes, confirm the assumptions underlying the predicted changes, support the implementation of adaptive management measures and satisfy compliance monitoring requirements included in the Metal Mining Effluent Regulation, Environmental Compliance Approvals and Permits to Take Water issued by the Ontario Ministry of the Environment pursuant to the Ontario Water Resources Act and in Fisheries Act Authorizations issued by Fisheries and Oceans Canada and authorizations issued pursuant to the Navigable Waters Act (if applicable).

Hydrology field studies will consist of flow and water level monitoring in site, local and regional scale watercourses and water bodies identified as potentially being affected by Project activities and at key points in the Project's water management system to confirm and update estimates of water takings, effluent discharges and water recycling. Field monitoring activities for Hydrology will be coordinated with monitoring activities for other disciplines where appropriate, to reduce costs and increase efficiency.

The hydrogeology component of the water monitoring program is designed to allow for long-term monitoring of the effects of Project activities on groundwater levels and groundwater quality within the LSA throughout all stages of the Project. The recommended program will comprise the measurement of groundwater levels (or water pressures) at a number of locations within the Project Site. Data logging pressure transducers will be used to obtain a continuous record of groundwater level fluctuations at select monitoring locations that will be supported by quarterly manual depth to water measurements. Groundwater level/pressure monitors will be located within and adjacent to the open pits and integrated with the program to monitor pit slopes during excavation.

The water quality monitoring program initiated during the baseline studies will be continued through the construction, operations and closure phases. The purpose of the program is to verify predictions made during the impact assessment, evaluate regulatory compliance with the permitting requirements, and provide a basis for effective water quality management on-site. The number of locations monitored will be reduced from the baseline studies to focus on Lizard Lake, Sawbill Bay and Lynxhead Bay, and the watercourses draining from the Project Site (i.e., the MSA). A more focused list of parameters will be monitored quarterly, including metals and ions that the baseline studies and modeling have indicated may increase during construction and operations. This will include TSS, sulphate, chloride and a suite of metals (Inductively Coupled Plasma Mass Spectrometry

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scan), as well as arsenic, selenium and mercury. The sampling program (locations sampled, parameters included and frequency of sampling) may be modified depending on other monitoring requirements that may be identified under any approvals or permits and will be coordinated with hydrogeology and hydrology sampling efforts and locations where possible to ensure there is minimal duplication.

A geochemistry monitoring plan will be developed and implemented by OHRG to confirm the characteristics of the materials mined, placed or otherwise used in construction. The plan will include confirmation samples at a rate that considers the mine schedule, existing geochemical data, and follows appropriate guidance documents such as MEND (2009) or INAP (2012) as required under O.Reg 240/00 under the Mining Act of Ontario. Samples will be analyzed using appropriate test methods for assessment of acid rock drainage/metal leaching potential, to confirm that the samples fall within the range identified, tested and described in the Geochemistry, Geology and Soils TSD.

Biological Environment

OHRG will prepare a comprehensive Terrestrial Ecology monitoring program based on the residual effects predicted in the Terrestrial Ecology assessment. The objectives of the Terrestrial Ecology monitoring program will be to verify the accuracy and predictions of the EIS/EA Report and confirm the effectiveness of mitigation measures, and in doing so, determine if new mitigation strategies are required.

Loss of bat habitat for maternity roosting and hibernation is considered moderate and will be offset by the creation or enhancement of other habitats for bats. The details of the compensation plan have yet to be determined, however preliminary concepts include the installation of bat condos and boxes, as well as the improvement of other mine adits for use as hibernation sites.

An Aquatic Environment monitoring program will be designed and implemented to confirm water quality, flow and water level alteration predictions generated during surface water modelling. If the monitoring program establishes that Project-related effects on the aquatic environment are greater than predicted, fish habitat suitability and utilization studies will be triggered on aquatic features (APIs) and/or specific VECs.

The environmental monitoring program will include an Environment Effects Monitoring (EEM) program to be implemented during operations through to closure, details of which will follow Environment Canada/MOE requirements. The EEM will be developed when the Project becomes subject to the Regulations.

The majority of the monitoring activities will be completed as part of the monitoring of habitat offset projects included in the No Net Loss Plan and/or the Environmental Effects Monitoring Plan.

Emergency Planning

In addressing emergency preparedness and response, the EMP will identify the environmental risks, evaluate the risks and provide risk management measures to minimize negative effects. Some additional aspects that are considered for contingency purposes and planning include medical emergencies, fire safety, pit slope failure, excessive pit inflow, floods and droughts, loss of communication and explosions.

Together the potential accidents, contingency measures and associated environmental risks will form the basis for development of a Risk Management Plan that will be developed for the Project following EA approval. The items listed are not intended to provide a comprehensive listing, but rather provide an example of aspects that will be included in the plan.

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Social Management Planning

The overall objectives of the Social Management Plan are to provide the means for OHRG to work together with the Local and Aboriginal Communities to:

- Understand community needs.
- Clarify community expectations.
- Communicate OHRG's development plans.
- Identify mutually beneficial business opportunities.
- Identify potential independent business opportunities.

The Social Management Plan was developed to address the avoidance of, minimization of, and/or compensation for negative socio-economic effects and the enhancement of positive benefits that could result from the Project.

Three separate committees will be engaged and consulted throughout the ongoing Project planning process: First Nations, Métis and Public (Atikokan/OHRG Committee). The First Nations Resource Sharing Committee has already been formed, and consultation with Métis and the public has also been ongoing throughout the exploration and permitting phase of the Project.

A local monitoring committee will be established which will be modelled after the existing Canadian Malartic Monitoring Committee. The mandate of the Atikokan/OHRG Committee will be to provide a direct link for communications between community members and OHRG. Information about the Project will be shared with the Committee, and Committee members will disseminate this information to the community at large. In turn, community members can approach the Committee with their concerns, and the Committee can share these community concerns with OHRG.

The First Nations Resource Sharing Committees will provide focussed communications between OHRG and the First Nation communities, and identify ways that the Project can provide ongoing benefits to identified Aboriginal communities. The Métis Consultation Committee has met regularly throughout the Project planning process, and OHRG plans ongoing communications and identification of shared interests to continue through the Committee.

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COMMITMENTS

Version 3 Update: Chapter 9 has been updated to reflect the commitments made by CMC in response to comments and information requests from the government and public and Aboriginal stakeholders. Included are new commitments related to monitoring, mitigation, air quality, hydrology, groundwater and water quality, as well as an indication of which regulatory agency is expected to be informed where applicable.

Commitments are listed by EIS/EA Report Chapter and are directly related to mitigation of potential effects and enhancement of benefits. Many commitments include in-design considerations and the development of management plans. The following management plans will be developed and implemented:

- Health and Safety Management Plans
- Erosion Control Management Plan
- Invasive Species Management Plan
- Waste Management Plan
- Spill Management Plan
- Contingency and Risk Management Plan
- Hazardous Materials Management System
- Emergency Preparedness and Response Plan
- Fish salvage and relocation plan
- Critical Incident Preparedness and Response Plan
- Remediation plan
- Nutrient Management Plan

Numerous new commitments have been made between February 2013 when the Draft EIS/EA Report was published and December 2013 when the Final EIS/EA Report is published. As a result of feedback from consultation with the Aboriginal groups, the public and the government, OHRG is committed to:

- Providing support for advertising for recreation in Atikokan (commitment to Tourism Operators)
- Separating topsoil from overburden during stockpiling when possible
- Preparing information materials regarding closure phase and undertaking consultation on closure
- Enhancing habitat for common nighthawk
- Completing a bi-annual workforce fish questionnaire
- Completing and a fish tissue study with Seine River First Nation
- Adding new water quality sampling locations in deeper basins
- Developing and implementing a Greenhouse Gas Management Plan

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OTHER APPROVALS

Chapter 10 represents a preliminary list of anticipated permits and approvals required to implement the Project and additional details regarding each anticipated permit/approval including the agency with jurisdiction, the applicable Act or Regulation, and the Project activity that will likely trigger the requirement for a permit/approval. The list of permits/approvals presented is not intended to be a comprehensive list of all permits/approvals required, and OHRG will consult with federal, provincial and municipal agencies to refine this list as the Project design is developed.

BENEFITS OF THE PROJECT

The environmental assessment of the Project has been carried out early in the Project planning and enables mitigation to be incorporated into Project design and procedures, thereby limiting likely adverse effects. In addition, the environmental assessment allows the positive effects of the Project to be identified.

The environmental assessment also provided increased scientific knowledge in the area. The baseline studies conducted by OHRG included two to three years of information collection on the physical and biological environment in the local and regional study areas. This information has been published and is publically available. OHRG also contributed to the collection of traditional land use by First Nations and Métis in the area through either capacity funding or direct participation in information collection.

The environmental assessment process contributed to the sustainable development of the region by providing a structured planning process whereby OHRG considered potential environmental effects of the Project and designed mitigation and management strategies to minimize these effects. The consideration and assessment of potential cumulative effects in the region assured that natural resource development is carried out in a sustainable manner.

The environmental assessment provided for Aboriginal consultation, government and public participation in the Project. Consultation for the Project was carried out at key milestones directly linked to the environmental assessment process. Public comments received as part of the EIS/EA consultation process were directly considered throughout the EIS/EA Report finalization process.

Some additional work has been undertaken based on the comments received from Aboriginal groups, the public and the Government Review Team on the Draft EIS/EA Report. This work includes new and ongoing field studies, new design and modelling calculations, desktop studies, publication of new reports and revisions to existing reports. The summary of new work undertaken as a result of comments on the Draft EIS/EA report includes environmental field studies, development of the Environmental Monitoring Plan, additional water quality modelling, further assessment of alternatives and further definition of mine waste alternatives accounts. Closure planning is still underway and is anticipated to be ongoing until the submission of a Certified Closure Plan subsequent to EA Approval.

The active and ongoing participation of Aboriginal groups, the public and the government review team in the project planning process is a significant benefit to Canadians that is provided by the EA Process. OHRG's commitment towards ongoing engagement with Aboriginal communities and the public through information sharing and formation of committees is directly tied to the environmental assessment process.

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The Project provides benefits by creating economic activity within the local Aboriginal communities, the Town of Atikokan and the Rainy River District and by generating tax revenues for federal and provincial governments. The Project will provide short-term employment during the construction phase and is expected to provide long-term employment on an annual basis during the operations phase by employing a project workforce of 550 people. Over the 11 year operations phase, the estimated direct, indirect and indirect employment is 25,179 FTE or person-years, 13,002 of which will come from Ontario.

The benefits of the Project are primarily economic and include employment, economic activity, government revenues and workforce training. The Project is also expected to create a better quality of life for local community members by OHRG involvement in improving education, culture and recreation activities in the community.

The Project is anticipated to provide substantial long-term social benefits through workforce training. This includes the enhancement of existing skills and the opportunities that will be provided to train and develop the skills necessary to gain employment on the Project. Workforce training will occur mainly through on-job and on-site training programs carried out by OHRG as part of daily operations, but will also include focused off-site training for specific jobs and task and community-based training.

The economic benefits of the Project will occur within a challenging economic environment. The economy of Northwestern Ontario has been declining over the past decade. For example, the gross domestic product for Northwestern Ontario declined by 6.7% between 2001 and 2006, in contrast with an increase of 13.6% for the rest of Ontario, respectively, over the same period. This economic environment makes the benefits of the Project even more significant. The Canadian GDP generated by the Project is estimated to be \$291.4 million annually, totaling \$3.205 billion over 11 years.

The Project is anticipated to provide substantial long-term social benefits through workforce training. This includes the enhancement of existing skills and the opportunities that will be provided to train and develop the skills necessary to gain employment on the Project. The development of a skilled workforce will also enhance the population's future employability beyond the Project life.

CONCLUSIONS

Version 3 Update: All work additional work completed at the request of the government or in response to comments and IRs support the conclusions of the previous Version 2 EIS/EA. All previous conclusions remain valid and unchanged.

An assessment of Project alternatives was completed based on a comparison of environmental, socio-economic, economic and technical criteria and indicators together with engineering requirements. Based on this assessment of alternatives for each of the Project components, the set of preferred alternative means of carrying out the Project was chosen.

Key aspects of the Project that were considered with respect to the environmental assessment include, a Mine with two open pits, an Ore Processing Facility which includes a processing plant, a TMF, a WRMF, Linear Infrastructure including an access road and a transmission line, a Water Management System, and supporting infrastructure that includes a worker accommodation camp.

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Physical Effects

The noise assessment of the Project included tourism establishments, communities and trapper cabins as the twenty (20) PORs. Noise levels were deemed to be potentially high at one tourism establishment. OHRG has an agreement in place with the owner of the tourism establishment to restrict access during the Construction and Operations phases of the Project. Three potential camping areas within the Crown Land surrounding the Project site were also identified as having potentially high noise levels. OHRG plans to post signs at crown land locations in the vicinity of the Project site that, in the past, may have been known to be used for camping to indicate the potential for campers to become annoyed by noise levels.

Changes to water levels will occur in two lakes, and the Upper Marmion Reservoir. Water levels in Unnamed Lake 5 located to the east of the TMF are expected to be in the range of -2.1 cm to 0.0 cm during the Operations phase. Changes in water levels in Lizard Lake are expected to be in the range of -2.7 cm to 0.0 cm. Changes in water levels in the Upper Marmion Reservoir due to Project activities are expected to be in the range of -9.0 cm to -0.4 cm based on single-year water balance modelling. In an average year, the predicted maximum reduction in water levels of the Upper Marmion Reservoir is 8.1 cm.

The Project could result in changes to groundwater levels, but is not expected to result in any change to groundwater quality. No groundwater users were identified in the vicinity of the Project that could potentially be affected by changes in groundwater levels from Project activities. The cone of depression from pit dewatering extends about 700 m from the pit perimeter and underlies a portion of the WRMF and overburden stockpiles. Within the area of the cone of depression, groundwater levels could potentially result in a reduction or even elimination of flows in some local streams should there be a significant connection to the deeper bedrock flow system, however most groundwater flow occurs in more permeable sediments above the bedrock, thus there is potential for development of a perched water table, or flow above the de-watered bedrock. Also within this area, seepage losses from the stockpiles could result in flow increases in some local streams.

Biological Effects

Version 3 Update: Although listed below as a fish habitat offsetting measure, fish rescue and salvage is a considered to be a mitigation measure rather than an offsetting measure. Fish rescue is not an offsetting measure and no habitat credit for fish rescue has been considered in the Project offsetting calculations.

'No Net Loss Plan' (NNLP) refers to 'Offsetting Plan' under the current Fisheries Act

The total Project footprint will require clearing of approximately 1205.73 ha of vegetation. The direct loss of wetlands due to the Project footprint is 381.22 ha. This is 21.09% of the wetlands occurring in the Terrestrial Ecology LSA and approximately 0.06% of the wetlands in the Terrestrial Ecology RSA. With implementation of mitigation measures, the residual effect of wetland habitat loss is considered to be of low significance. The direct loss of forest cover due to the Project footprint is 772.15 ha. The overall forest cover loss is approximately 15% of forest available in the Terrestrial Ecology LSA and 0.21% of the forest occurring in the Terrestrial Ecology RSA.

OHRG has identified many mitigation and planning measures to reduce the significance of biological effects. These include development of a Soil Salvage Plan, Invasive Species Management Plan, Waste Management Plan and Conceptual Closure and Rehabilitation Plan. With implementation of the identified mitigation measures, the residual effect of wetlands and forest habitat loss is considered to be of low significance.

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Loss of bat habitat for maternity roosting and hibernation is considered moderate and will be offset by the creation or enhancement of other habitats for bats. The details of the compensation plan have yet to be determined; however, preliminary concepts include the installation of bat condos and boxes as well as the improvement of other mine adits for use as hibernation sites.

The Project will result in a loss of aquatic habitat. Fish habitat losses include 0.8 ha of Sawbill Bay, 4 ha of inlet streams, 0.5 ha of baitfish ponds in the lower reaches, 1.8 ha of headwater streams, 30 ha of lakes and 3.7 ha of baitfish and northern pike ponds in the headwaters. There are also 14 stream crossings or crossing upgrades on the proposed access road that will result in the loss of habitat within the footprint of the culvert/bridge structure. All of these habitat losses will be offset by compensation projects outlined in the NNLP being prepared for the project, and as a result, there will be no residual effects from these losses.

The following is a summary of the fish habitat compensation projects identified as part of No Net Loss Plan:

- Fish salvage and rescue operations: during the construction phase.
- Stream restoration works at 15 culvert crossings
- Stocking of Four fishless headwater lakes/ponds.
- Constructing berms to create three new headwater ponds.
- Creating northern pike spawning habitat adjacent to the mouth of Sawbill Creek

The loss of fish communities in Lizard Lake and Upper Marmion Reservoir includes loss of indirect fish habitat and genetic diversity. Loss of indirect fish habitat will be the No Net Loss Plan. Effects to genetic diversity will be mitigated through fish salvage protocols during which the majority of impacted fish will be released in other waterbodies in the area, including Lizard Lake, API #8 and Upper Marmion Reservoir. In addition, fish salvaged from these operations will be used to stock a number of fishless lakes as part of the NNLP. As a result, this residual effect is considered to be negligible.

Social Effects

The Project could result in effects to hunting because of loss of wildlife habitat. The magnitude of the effect is low because the amount of land removed is less than 5% of the Wildlife Management Unit. The frequency and reversibility are both high since the effect occurs continuously and is reversible; therefore, the overall assessment of significance of this effect is assessed as low.

Outdoor tourism and recreation could be affected by the Project because of changes in perception caused by effects to the visual landscape. This is a permanent change that will be mitigated through ongoing consultation with tourism operators and OHRG's commitment to invest in advertising to promote the local industry.

A Visual Assessment was undertaken and the results were shared with the public and local Tourist Outfitters. Several examples of the visual renderings that were generated are shown below.

The Human Health Risk Assessment showed that concentrations of DPM exceeded the screening threshold for carcinogenic effects; therefore, DPM was evaluated following the chronic inhalation assessment method. The calculated levels were less than the target cancer risk of 1×10^{-6} for all receptors except for one trapper cabin. OHRG has an agreement in place with the trapline holder to restrict access to the cabin during the Construction and Operations phases of the Project as required.

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Mitigation is required for the adverse effects on trapline areas, bait fish blocks and bear management areas that will be directly affected by the restriction of site access/removal of land as part of the construction of the Project. The approach to mitigation is compensation and/or relocation based on negotiation with the land user. Mitigation for adverse effects on trapping, bait fishing and bear hunting will involve negotiated agreements and benefits upon approval of the EA and a decision to construct. Agreements are currently in place with the adjacent tourism operator, overlapping trap line holder, bait fish block holder. Satisfactory completion of negotiations and execution of agreements fully mitigate this effect.

In the noise assessment, measures prescribed by Health Canada for assessing exposure to noise and potential human health effects were utilized. At receptor locations surrounding the Project, noise levels are within the ranges reported for increased risk of hypertension and sleep disturbance. The magnitude of effect for noise is considered to be low based on comparison to Health Canada targets and considering that predicted levels are in the lower end of ranges for hypertension effects.

Socio-economic Benefits

The Project is anticipated to provide substantial socio-economic benefits to Aboriginal people, the local community and the region and has garnered significant community support through ongoing partnerships and information sharing.

The construction phase will involve a project workforce of 1,040 FTE or person-years of direct employment on the Project, 780 of which will come from Ontario. The supplier/service industry will add 4,044 FTE or person-years of direct employment, 2,335 of which will come from Ontario. Using standard industry multipliers for indirect and induced employment, the total employment during the construction phase is estimated to be 9,557 FTE or person years, 4,287 of which will come from Ontario.

On an annual basis, the operations phase will involve a project workforce of 550 FTE or person-years of direct employment on the Project, 440 of which will come from Ontario. The supplier/service industry will add 642 FTE or person-years of direct employment, 428 of which will come from Ontario. Using standard industry multipliers for indirect and induced employment, the total annual employment during the operations phase is estimated to be 2,289 FTE or person years, 1,182 of which will come from Ontario. Over the 11 year operations phase, the estimated direct, indirect and induced employment is 25,179 FTE or person-years, 13,002 of which will come from Ontario.

OHRG is committed to providing economic benefits to Aboriginal communities. Initiatives to maximize the benefits the Project will have on Aboriginal communities include:

- Scholarships.
- Partnerships with local academic institutions.
- On the job training.
- A hire local priority policy.
- Targeted employment, training and business opportunities.

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OHRG aims to promote the utilization of Aboriginal enterprises whenever possible in supplying goods and/or services required during each phase of the project. The criteria used for the evaluation and awarding of all contracts by OHRG include cost competitiveness, continuity of supply, quality of work and timeliness.

OHRG will provide employment opportunities for the Project where possible and commercially reasonable. Members of the surrounding local Aboriginal communities will take priority respecting employment opportunities so long as they meet the requisite skills, education, experience and other job qualifications of a particular position. Employment opportunities, and the corresponding job postings, will be communicated to the local Aboriginal communities in a timely manner.

OHRG provided approximately \$22,050 in direct investments to Aboriginal communities in 2012. A variety of events and organizations were sponsored by OHRG to encourage the promotion of Aboriginal values and way of life. Sponsorships of sports events and community gatherings were also provided. These investments represent opportunities for ongoing cultural support of the identified Aboriginal communities throughout Project operations.

Closing Statement

Version 3 Update: Substantial effort has been undertaken to provide details and clarification in response to information requests by the government review team, public, and Aboriginal stakeholders, in particular relating to the alternatives evaluation and effects assessment. The work completed to date supports the conclusions and determination of significance as identified and indicated in the Version 2 EIS/EA. The overall conclusions remain the same as those presented in the Version 2 EIS/EA document.

CMC has local community and Aboriginal stakeholder support for the Project as evidenced by letters of support for the Project from the Metis Nation of Ontario, six (6) First Nation Communities, the Mayor of Thunder Bay, the Mayor of Atikokan, and the Northwestern Ontario Municipal Association (NOMA).

The project will result in permanent changes to the landscape in the MSA, including a permanent WRMF, TMF and Flooded Pit that will remain in Post-Closure. That considered, based on the findings of the environmental assessment and planned mitigation measures, as documented in this EIS/EA Report, the Hammond Reef Gold Project can be developed such that there is no significant residual impact to the biophysical environment. That is to say, habitat will be compensated for, where necessary, and the lands of the LSA and RSA, excluding the MSA, will be suitable for continued recreational enjoyment with no project related impacts to overall ecological or human health.

Furthermore, it is considered that the Project provides substantial socio-economic benefits to Aboriginal people, the local community and the region and has garnered significant community support through ongoing partnerships and information sharing. The Project represents a major investment of capital into Ontario and Canada's economy. Based on capital costs of OHRG's Canadian Malartic Mine, it is estimated that the total capital cost of the proposed Hammond Reef Gold Project would be \$1.4 billion (\$2012 Canadian). The Project is expected to return \$36.2 million in personal income tax revenues to the province of Ontario over the 30-month construction phase. Federal government income tax revenues during the construction phase are estimated to be another \$115.5 million. Throughout the 11-year operations phase, annual provincial personal taxes paid would be approximately \$12.7 million, while federal taxes would amount to another \$18.1 million, for an annual total of \$30.8 million.