AMENDED EIS/EA REPORT
CHAPTER 7: PUBLIC CONSULTATION AND ABORIGINAL ENGAGEMENT
VERSION 3

APPENDIX 7.IV

Record of Communications – Government

January 2018
Project No. 1656263
Hammond Reef Gold Project

Government Consultation Log

Date	Type	Purpose
1/13/2011	Face-to-Face	Discussion with regulators regarding feasibility of using Hogarth Pit as a tailings disposal site.
1/13/2011	Face-to-Face	The objective of the meeting was to provide an overview of the Hammond Reef Project and receive initial comments from Government Review Team.
2/8/2011	Face-to-Face	Presentations given by CEAA and MOE providing an overview of regulatory requirements for the Hammond Reef environmental assessment.
4/18/2011	Face-to-Face	Presentation of aquatic baseline data collected to date and overview of planned activities for 2011.
4/27/2011	Face-to-Face	The meeting objective was to present the revised Project Description and Osisko's proposed strategy to meet the requirements of the environmental assessment.
6/3/2011	E-mail	Guidelines issued by CEAA detailing information required to be included in Environmental Impact Statement.
6/9/2011	Mail	Government review of 2010 summary report and 2011 work plan.
6/16/2011	Mail	Osisko voluntarily proposed to enter into an agreement with the MOE to complete an individual EA for the entire project under the provincial EA requirements.
7/22/2011	Mail	Guidelines issued by CEAA detailing information required to be included in Environmental Impact Statement.

7/27/2011	Face-to-Face	The meeting objective was to identify opportunities to coordinate EA processes and clarify regulatory schedule.
8/16/2011	Face-to-Face	A Hammond Reef site tour with 10 provincial and federal regulators with 3 helicopter tours of the Site. The tour was extremely well received by the participants.
8/19/2011	E-mail	Draft TOR Provided to MOE
9/14/2011	Face-to-Face	An aquatic biology meeting involved discussing the following items: wetlands, habitat accounting and baseline data collection gaps. The meeting was followed by a helicoptor tour.
10/6/2011	Face-to-Face	Process Meeting with CEAA and MOE
9/10/2011	E-mail	A formal Notice of Commencement of Terms of Reference was posted on Osisko's website and placed as an advertisement in local newspapers. Emails were also sent to key stakeholders. The notice included an invitation to OHRG's exhibit at the local trade show on September 10, 2011.

10/20/2011	Workshop	TOR Workshop - Government
11/23/2011	Face-to-Face	Meeting with MOE to confirm Osisko's approach to finalizing and submitting Terms of Reference for the Hammond Reef Gold Project. Meeting concluded that a final ToR report will be submitted by Osisko to MOE in approximately 1 month.
1/31/2012	Face-to-Face	Meeting to discuss integration of consultation activities between CEA Agency and provincial ToR.
2/15/2012	Face-to-Face	Meeting with CEAA/MOE/MNDM to debrief on the Hammond Reef Project, focusing on public and Aboriginal Consultation activities. Discussion items included update on Project and aboriginal consultation, closure planning and a review of notes and action items.
2/29/2012	Face-to-Face	Meeting with CEAA/MOE/MNDM/DFO/MNR to discuss compensation opportunities and how baselines are going to be determined based on those potential opportunities.
3/2/2012	Face-to-Face	Meeting with CEAA, MOE and MNDM to debrief on the Hammond Reef Project, focussing on public and Aboriginal Consultation activities. Discussion items included the Traditional Use Study, a Métis Update, the Elder's Forum, the Terms of Reference, the DFO Habitat Accounting Meeting and the Seine River and baseline studies.

3/14/2012	Face-to-Face	Meeting with CEAA/MOE/MNDM to debrief on the Hammond Reef Project, focusing on public and Aboriginal Consultation activities. Discussion items included the Traditional Use Study, the Ontario Coalition of Aboriginal People and the Wabigoon Lake Ojibway Nation.
3/28/2012	Face-to-Face	Meeting with CEAA, MOE, and MNDM to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included the record of consultation, aboriginal engagement plan, confidential emails, MNO, Couchiching First Nation, Traditional Use Study, OCAP, habitat accounting and the upcoming Elder's forum.
4/12/2012	Face-to-Face	The purpose of the meeting was to debrief on the Hammond Reef Project, focusing on public and Aboriginal Consultation activities. Discussion items included concerns regarding OCAP, the traditional use study, MNO, baseline reports and an MNR data request
4/13/2012	Face-to-Face	The purpose of the meeting was to debrief on the Hammond Reef Project and discuss major challenges including tailings management areas, location of waste rock piles and responses to requests of additional information from CEAA and government regulators.
4/26/2012	E-mail	Various questions relating to the ToR from MOE / EAB. Responses to the questions were provided.
5/1/2012	Face-to-Face	Meeting with CEAA, MOE, MNDM and MNR to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included the Provincial EA, Baseline Reports, consultation updates, Project details, the Record of Consultation and discussing the frequency of these meetings.
5/16/2012	Face-to-Face	Meeting with CEAA, MNDM and MOE to discuss and outline an approach to the government review of baseline results

5/18/2012	Face-to-Face	The purpose of the meeting was to debrief on the Hammond Reef Project, focusing on public and Aboriginal Consultation activities. Discussion items included an aboriginal consultation update, CEAA consultation update and a proposed baseline results meeting.
5/18/2012	Face-to-Face	Meeting to present and discuss the revised project layout and baseline data, for the proposed Hammond Reef Gold Mine Project, with the government review team.
6/4/2012	Face-to-Face	Meeting to present and discuss the revised project layout and baseline results for the OHRG Project with the government review team. Agenda for this meeting included discussing Aquatic Baseline data.
6/4/2012	Face-to-Face	Meeting to present and discuss the revised project layout and baseline results for the OHRG Project with the government review team. Agenda for this meeting included discussing Aquatic Baseline data.
7/6/2012	Face-to-Face	Meeting with CEAA, MOE, MNDM and MNR to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included discussing the Responsibility Table, the Aboriginal Consultation Issues Tracking and Consultation Log, and an update on the Traditional Use Study and Aboriginal consultation activities.
7/24/2012	Face-to-Face	Meeting with CEAA, MOE, MNDM, MNR and Golder to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included the Aboriginal Consultation Log requirements, EA work plan/schedule, CEAA 2012, the current standing with OCAP, MNDM Mining 101 workshop and an update on consultation activities since the last meeting.

7/30/2012	Face-to-Face	Meeting with the Atikokan Town Council to present baseline study results, updated Project alternatives and Project layout, and address questions raised in the last meeting.
8/1/2012	E-mail	Meeting with Mayor Brown and Atikokan Town Councilors /Staff to discuss the status of the town's plan for a new landfill.
8/14/2012	Face-to-Face	Meeting with CEAA, MOE, MNDM and MNR to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included Osisko's current standing with OCAP, the proposed OHRG camp site, concerns by Camp Quetico about the Project and an update on consultation activities since the last meeting.
8/14/2012	Face-to-Face	Meeting with the federal and provincial government review teams to present and discuss the revised Project Layout and baseline Archaeology data for the proposed Hammond Reef Gold Mine. The goal was to identify any data gaps that needed to be addressed during the 2012 field season in order to fulfill the federal EIS guidelines and the Provincial Terms of Reference.
9/19/2012	Face-to-Face	The Town of Ignace contacted Osisko and requested a meeting to learn more about the Hammond Reef Gold Project. Osisko met with the Town of Ignace to provide a Project overview presentation and answer questions from the Town of Ignace.
10/12/2012	Face-to-Face	Meeting with CEAA, MOE, MNDM and EC to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included Operations Camp Alternative, Camp Quetico, the Aboriginal Consultation Log, the Great Earth Law, the TUS approach and findings, the MNDM Aboriginal Orientation and Training Program, Closure Planning and an update on consultation activities since the last meeting.

10/22/2012	Face-to-Face	Meeting with DFO, CEAA, MOE, MNDM and MNR to present and discuss the revised Habitat Accounting Methodology. Agenda included finalizing the Fish Habitat Accounting Methodology for the OHRG project and discussing the status of changes to Fisheries Act and Fish Compensation Opportunities.
10/31/2012	Face-to-Face	Meeting with DFO and CEAA to present an overview of the work completed and next steps on the Osisko Hammond Reef Gold Project. Agenda included presenting an overview of the meetings with DFO/MNR to date, the baseline aquatic biology information, the Fish Habitat Accounting Methodology for the OHRG project and a discussion on Fish Compensation Opportunities.
11/2/2012	Face-to-Face	Meeting with CEAA, MOE, and MNDM to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included the Notice of Project Status (Notification of Closure), Operations Camp Alternative, Camp Quetico, a Consultation Update, the Great Earth Law, Aboriginal Consultation Log,Meetings with Regulators, the EA/EIS Draft Table of Contents and an update on consultation activities since the last meeting.
11/20/2012	Phone Call	Meeting to have preliminary discussions with the OHRG Government Review Team regarding water quality findings for the OHRG Project.
12/6/2012	Face-to-Face	Meeting with CEAA, MOE, and MNDM to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included Response to MOE on Additional Alternatives, EA/EIS Draft Table of Contents, a Consultation Update, the Aboriginal Consultation Log and an update on consultation activities since the last meeting.
1/8/2013	Face-to-Face	Meeting with CEAA, MNR, and MNDM to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included Response from MOE on Additional Alternatives, the Aboriginal Consultation Log, a Consultation Update, Osisko's Proposed EIS/EA Project Schedule, the Government Review Team (GRT) - EIS/EA Results Presentations, Assistance from CEAA with identifying new DFO contacts and an update on consultation activities since the last meeting.
1/29/2013	Face-to-Face	Meeting with CEAA, MOE, and MNDM to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included Upcoming Aboriginal Consultation, the Draft EIS/EA Report Review, the EA Project Schedule, Comments from MNR, Comments on Great Earth Law, Distribution of EIS/EA Report, Notifications and an update on consultation activities since the last meeting.

2/19/2013	Face-to-Face	Meting with the Government Review Team to present an overview of the DRAFT EIS/EA report for the proposed Hammond Reef Gold Mine Project.
2/20/2013	Face-to-Face	Meeting with the Atikokan Town Council to provide an overview of the DRAFT EIS/EA report, present the Aquatics overview, and discuss options of on-site and off-site compensation
2/22/2013	Face-to-Face	The purpose of the meeting was to present the details of the OHRG DRAFT EIS/EA Report.
3/1/2013	Letter	Letter from MOE to acknowledge receipt of the Draft EIS/EA Report for the Hammond Reef Gold Project.
3/19/2013	Phone Call	Meeting with the Government Review Team to discuss fish compensation.
4/16/2013	Face-to-Face	The purpose of the meeting was to discuss and prioritize on-site and off-site offset projects for the OHRG project.
4/18/2013	Face-to-Face	Meeting with CEAA, MOE, and MNDM to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included the Next Steps on Draft EIS/EA Report Review, the Update on Aboriginal Consultation & Public Consultation and an update on consultation activities since the last meeting.
4/21/2013	Letter	Thank you letters in response to comments on the draft EIS/EA for the Osisko Hammond Reef projects.

5/9/2013	Face-to-Face	Follow-up meeting on the workshop on April 16 2013 in which MNR/DFO indicated that they liked the concepts that were presented but felt that there may be better locations. A number of Upper Marmion Lake littoral zone projects (aka Pike spawning habitat) as well as the pit lake restoration option were presented.
5/15/2013	Face-to-Face	Meeting with CEAA, MOE, and MNDM to debrief on the Hammond Reef Project focusing on public and Aboriginal Consultation activities. Discussion items included the Finalization of EIS/EA Report Review, Comments on Draft EIS/EA Report, an Update on Aboriginal & Public Consultation and an update on consultation activities since the last meeting.
5/21/2013	Face-to-Face	Meeting with the Atikokan Town Council to present an update on the comments received on the DRAFT EIS/EA report and our approach to responding to the comments.
5/27/2013	Phone Call	Meeting to discuss the Habitat Offset Plan and predicted habitat losses as a result of the construction and operation of the Osisko mine.
6/3/2013	Face-to-Face	Meeting with the Government Review Team to discuss Site Specific Water Quality Objectives
6/20/2013	Face-to-Face	The objective of the meeting was to provide the new DFO contacts an overview of the OHRG project, specifically with respect to the Aquatic Biology component.
7/2/2013	Face-to-Face	Meeting with Government Review Team to present a summary of the water quality predictions and responses to water quality information requests.
7/15/2013	Face-to-Face	Meeting to debrief on the Hammond Reef Project, focusing on the finalization of the Draft EIS/EA Report as well as public and Aboriginal Consultation activities.
7/23/2013	Face-to-Face	Meeting to discuss and clarify the required revisions to the Osisko Hammond Reef Gold Project (OHRG) mine waste alternatives assessment to meet the requirements of Environment Canada. Osisko presented a summary of the mine waste alternatives assessment completed for OHRG, a summary of the comments received from the federal and provincial agencies, and the results of a review of examples provided by Environment Canada.

7/29/2013	Phone Call	Teleconference to discuss the proposed closure measures, closure alternatives analysis, and responses to the closure related information requests (IRs) from the DRAFT EIS/EA report with MNDM in order to develop a path forward for the continued development of the certified closure plan (CCP) for the Hammond Reef Gold Project.
8/21/2013	Face-to-Face	Meeting to provide responses to the comments received from the Ministry of Natural Resources on the Draft EIS/EA Report and to get feedback on the responses.
10/10/2013	Face-to-Face	Meeting to discuss the comments received from Environment Canada on Osisko's Hammond Reef Draft Environmental Impact Statement/Environmental Assessment Report.
10/10/2013	Face-to-Face	Meeting to discuss the comments received from regulators regarding groundwater management plans presented in Osisko's Hammond Reef Draft Environmental Impact Statement/Environmental Assessment Report.
10/15/2013	Face-to-Face	Meeting to discuss environmental and social management planning wth the Government Review Team. Discussion items included summary of comments received, human health and country foods, EIS guidelines and terms of teference, physical environment, biological environment, social environment, monitoring schedule and monitoring reporting.
10/17/2013	Face-to-Face	Meeting to share the results of the bat studies carried out at the Osisko Hammond Reef Gold project site and to discuss planned mitigation measures for inclusion in EIS/EA Report.

Government Group	Key Issues Raised
Ministry of Natural Resources, Ministry of Northern Development and Mines, Ministry of the Environment	Environmental Assessment, Tailings Management, Closure, Water Quality, Water Use, Wildlife
Ministry of Northern Development and Mines, Canadian Environmental Assessment Agency, Department of Fisheries and Oceans Canada, Environment Canada, Ministry of Northern Development and Mines, Ministry of Natural Resources, Department of Fisheries and Oceans Canada	Closure, Project Location, Water Quality, Water Use, Wildlife, Geochemistry, Aboriginal Consultation , Tailings Management
Canadian Environmental Assessment Agency, Major Project Management Office, Ministry of Natural Resources, Ministry of the Environment, Ministry of Northern Development and Mines	Environmental Assessment, Project Schedule, Public Participation, Aboriginal Consultation , Tailings Management
Canadian Environmental Assessment Agency, Department of Fisheries and Oceans Canada, Ministry of Natural Resources, Ministry of the Environment	Environmental Assessment, Fish Habitat, Fish
Canadian Environmental Assessment Agency, Department of Fisheries and Oceans Canada, Ministry of Natural Resources, Ministry of the Environment	Environmental Assessment
Ministry of Northern Development and Mines	Aboriginal Consultation
Environment Canada	Wildlife Habitat, Wildlife
Ministry of the Environment	Environmental Assessment
Canadian Environmental Assessment Agency	Environmental Assessment

Canadian Environmental Assessment Agency, Ministry of the Environment	Environmental Assessment, Project Schedule, Public Participation, Aboriginal Consultation
Canadian Environmental Assessment Agency, Department of Fisheries and Oceans Canada, Environment Canada, Ministry of Natural Resources, Ministry of the Environment, Transport Canada	Project Details
Ministry of the Environment	Terms of Reference, Environmental Assessment
Canadian Environmental Assessment Agency, Department of Fisheries and Oceans Canada, Ministry of Natural Resources	Project Location, Fish Habitat, Fish
Ministry of the Environment, Canadian Environmental Assessment Agency	Aboriginal Consultation, Environmental Assessment
Canadian Environmental Assessment Agency, City of Thunder Bay, Ministry of Aboriginal Affairs, Ministry of Energy, Ministry of Infrastructure, Ministry of Municipal Affairs and Housing, Ministry of Natural Resources, Ministry of Northern Development and Mines, Ministry of the Environment, Ministry of Tourism and Culture, Ministry of Transportation, Northwest Catholic District School Board, Ontario Parks - Quetico Provincial Park, Ontario Provincial Police, Rainy River District School Board, Rainy River District Social Services Administration Board,	Terms of Reference, Environmental Assessment

Canadian Environmental Assessment Agency, City of Thunder Bay, Ministry of Aboriginal Affairs, Ministry of Energy, Ministry of Infrastructure, Ministry of Municipal Affairs and Housing, Ministry of Natural Resources, Ministry of Northern Development and Mines, Ministry of the Environment, Ministry of Tourism and Culture, Ministry of Transportation, Northwest Catholic District School Board, Ontario Parks - Quetico Provincial Park, Ontario Provincial Police, Rainy River District School Board, Rainy River District Social Services Administration Board, Town of Fort Frances, Town of Atikokan,	Environmental Assessment
Ministry of the Environment	Terms of Reference, Environmental Assessment
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation, Closure
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation, Closure
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Department of Fisheries and Oceans Canada	Aboriginal Consultation, Closure
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation, Traditional Knowledge and Practices, Environmental Assessment

Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation, Traditional Knowledge and Practices, Environmental Assessment
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Environmental Assessment, Project Description, Traditional Knowledge and Practices, Aboriginal Consultation
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Ministry of Natural Resources, Department of Fisheries and Oceans Canada	Environmental Assessment, Tailings Management
Ministry of the Environment	Environmental Assessment
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Environmental Assessment, Project Description, Aboriginal Consultation
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Environmental Assessment

Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Environment Canada, Ministry of Natural Resources,Transport Canada, Department of Fisheries and Oceans Canada, Health Canada, Natural Resources Canada	Environmental Assessment
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Ministry of Natural Resources, Department of Fisheries and Oceans Canada	Project Description, Water Use
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Ministry of Natural Resources, Department of Fisheries and Oceans Canada	Environmental Assessment
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Environmental Assessment, Aboriginal Consultation
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Ministry of Natural Resources	Environmental Assessment, Aboriginal Consultation

Town of Atikokan	Construction, Closure, Environmental Assessment, Project Description, Water Quality, Geochemistry, Economics and Employment, Municipal Infrastructure and Services, Terms of Reference
Town of Atikokan	
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Ministry of Natural Resources	Environmental Assessment, Project Description, Aboriginal Consultation , Project Design
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Ministry of Natural Resources, Ministry of Tourism and Culture	Environmental Assessment, Project Description, Wildlife, Roads and Traffic, Archaeology, Traditional Knowledge and Practices, Aboriginal Consultation , Project Design
Town of Ignace	Environmental Assessment, Project Description, Municipal Infrastructure and Services, Tailings Management, Education and Training
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Environment Canada	Closure, Environmental Assessment, Project Description, Traditional Knowledge and Practices, Aboriginal and Treaty Rights, Aboriginal Consultation

Canadian Environmental Assessment Agency, Department of Fisheries and Oceans Canada	Environmental Assessment, Fish, Fish Habitat
Canadian Environmental Assessment Agency, Department of Fisheries and Oceans Canada	Environmental Assessment
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Environmental Assessment, Aboriginal and Treaty Rights, Aboriginal Consultation
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Environment Canada, Natural Resources Canada	Water Quality, Environmental Assessment
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation, Community Consultation, Environmental Assessment, Project Alternatives
Canadian Environmental Assessment Agency, Ministry of Natural Resources, Ministry of Northern Development and Mines	Aboriginal Consultation, Community Consultation, Environmental Assessment, Project Alternatives, Project Schedule
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal and Treaty Rights, Aboriginal Consultation, Community Consultation, Environmental Assessment, Project Schedule

Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Ministry of Natural Resources, Natural Resources Canada, Transport Canada, Department of Fisheries and Oceans Canada, Environment Canada, Health Canada	Aquatic Health, Closure, Environmental Assessment, Hydrogeology, Hydrology, Project Alternatives, Site Geology, Terrestrial Biology, Water Quality
Town of Atikokan	Aboriginal Consultation, Community Consultation, Environmental Assessment, Project Alternatives, Aquatic Health
Department of Fisheries and Oceans Canada, Ministry of Natural Resources	Aboriginal Consultation, Community Consultation, Environmental Assessment, Project Alternatives, Aquatic Health
Ministry of the Environment	Environmental Assessment
Department of Fisheries and Oceans Canada, Ministry of Natural Resources	Community Consultation, Closure, Fish, Fish Habitat, Project Support
Department of Fisheries and Oceans Canada, Ministry of Natural Resources, Canadian Environmental Assessment Agency	Environmental Assessment, Environmental Assessment Methods, Fish, Fish Habitat, Water Quality
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation, Community Consultation, Environmental Assessment
City of Thunder Bay, Northwestern Ontario Municipal Association, Town of Atikokan, Town of Fort Frances, Town of Ignace, Township of O'Connor,	Aboriginal Consultation, Community Consultation, Environmental Assessment, Project Support

Department of Fisheries and Oceans Canada, Ministry of Natural Resources	Fish, Fish Habitat
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation, Community Consultation, Environmental Assessment
Town of Atikokan, Atikokan Progress	Environmental Assessment
Department of Fisheries and Oceans Canada, Ministry of Natural Resources	Fish, Fish Habitat, Wildlife Habitat
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines, Environment Canada	Water Quality
Department of Fisheries and Oceans Canada	Aquatic Health, Environmental Assessment, Fish, Fish Habitat, Project Alternatives
Canadian Environmental Assessment Agency, Ministry of the Environment, Environment Canada	Water Quality, Environmental Assessment
Canadian Environmental Assessment Agency, Ministry of the Environment, Ministry of Northern Development and Mines	Aboriginal Consultation, Community Consultation, Environmental Assessment
Canadian Environmental Assessment Agency, Environment Canada	Aboriginal Consultation, Community Consultation, Project Alternatives, Tailings Management, Tailings Pipeline

Ministry of Northern Development and Mines	Aboriginal Consultation, Environmental Assessment, Closure, Post Closure
Ministry of Natural Resources, Ministry of the Environment	Aboriginal and Treaty Rights, Aquatic Health, Closure, Cyanide, Environmental Assessment, Environmental Assessment Methods, Fish, Hunting and Fishing, Hydrology, Mitta Lake, Municipal Infrastructure and Services, Project Alternatives, Project Description, Project Location, Project Schedule, Roads and Traffic, Socio-Economics, Stormwater Management, Tailings Management, Tailings Pipeline, Terrestrial Biology, Tourism, Water Quality, Wildlife, Wildlife Habitat, Workers Camp
Ministry of the Environment, Canadian Environmental Assessment Agency, Ministry of Northern Development and Mines, Environment Canada	Environmental Assessment, Project Alternatives, Roads and Traffic, Air Quality, Atmospheric, Water Quality, Aboriginal Consultation, Terrestrial Biology, Aquatic Health, Closure
Ministry of the Environment, Canadian Environmental Assessment Agency, Ministry of Northern Development and Mines, Ministry of Natural Resources, Natural Resources Canada	Groundwater, Water Quality, Environmental Assessment
Ministry of the Environment, Canadian Environmental Assessment Agency, Ministry of Northern Development and Mines, Ministry of Natural Resources, Department of Fisheries and Oceans Canada, Environment Canada	Environmental Assessment, Socio-Economics, Human Health, Aboriginal Consultation, Community Consultation, Air Quality, Atmospheric, Noise, Water Quality, Tailings Management, Fish Habitat, Aquatic Health, Terrestrial Biology, Wildlife Habitat
Ministry of the Environment, Ministry of Natural Resources, Environment Canada	Environmental Assessment, Terrestrial Biology, Wildlife Habitat, Environmental Permitting, Community Consultation

Document
2011-01-13 Presentation to MNR and MOE
2011-01-13 DFO, 2011-01-13 MNR, CEAA and Environment Canada
2011-02-08 Minutes of Meeting with CEAA and Provincial RegulatorsSP-RJ-AD
2011-04-13 DFO
2011-04-27 Hammond Reef Minutes from meeting with CEAA and Prov Reg
2011-06-03 Environment Canada, MOE, MNR, CEAA, MNDMF Terrestrial Bird Data
2011-06-09 Environment Canada comments on Terrestrial Workplan
2011-06-11 Voluntary Commitment to Individual EA
2011-07-22 EIS Guidelines from CEAA

2011-07-27 EA Schedule Discussion
2011-08-16 Mine Site Visit
2011-09-14 Meeting Minutes
2011-10-06 CEAA and MOE
Notice-The Chronicle journal, Notice-The Atikokan Progress, Notice-The Fort Frances Times, Notice-Web, 2011-10-11 Drapack to OPP - Notice of Commencement of ToR, 2011-10-11 Drapack to RRDSSB Donna retired - Notice of Commencement of ToR, 2011-10-26 Notices to MMAH

2011-10-06 Oct 20 Workshop Invitation 2011-10-20 Government Workshop
2011-11-23 TOR Meeting
2012-01-31 Consulation Plan CEAA, MOE, MNDM
2012-02-15 Consultation Update Meeting CEAA_MOE_MNDM
2012-02-29 Fish Compensation Workshop
2012-03-02 Consultation Update Meeting CEAA_MOE_MNDM

2012-03-14 Consultation Update Meeting CEAA_MOE_MNDM
2012-03-28 Consultation Update Meeting CEAA_MOE_MNDM
2012-04-12 Consultation Update Meeting CEAA
2012-04-13 Meeting Minutes
2012-04-26 Errata Letter to Agatha Garcia-Wright
2012-05-01 Consultation Update Meeting CEAA MNDM MOE
2012-05-16 Baseline Results Meeting Approach CEAA MNDMAL

2012-05-18 Consultation Update Meeting CEAA MNDM MOEAL
2012-05-31 and 06-01 Baseline Data Meeting Notes, 1 -Welcome and Project Layout May 29 2012
2012-05-31 and 06-01 Baseline Data Meeting Notes, 2 - Geochemistry - Baseline OHRG 31May2012
2012-05-31 and 06-01 Baseline Data Meeting Notes, 3 - Hydrogeology baseline presentation 29May2012
2012-05-31 and 06-01 Baseline Data Meeting Notes, 4 - Water and Sed Quality - Baseline OHRG 31May2012
2012-05-31 and 06-01 Baseline Data Meeting Notes, 5 - Hydrology Baseline Study Presentation 29May2012

2012-05-31 and 06-01 Baseline Data Meeting Notes, 6 - Atmospheric and Acoustic Baseline Presentation 29May2012
2012-05-31 and 06-01 Baseline Data Meeting Notes, 7 - Terrestrial Biology Baseline Presentation 30May2012
2012-06-04 Aquatic Baseline Regulator Consultation, 8 - Aquatic Biology Baseline Presentations 04June2012
2012-06-12 Consultation Update Meeting CEAA MNDM MOE
2012-07-06 Consultation Update Meeting CEAA MNDM MOEAL
2012-08-14 Consultation Update Meeting CEAA MNDM MOE MNR

2012-08-14 Baseline Data Meeting Notes Archaeology, 2012-08-14 Cultural Heritage
2012-10-12 Consultation Update Meeting CEAA MNDM MOE MNR
2012-10-22 Fish Compensation Workshop Presentation
2012-10-31 Meeting Notes and Presentation
2012-11-2 Consultation Update Meeting CEAA MOE MNDM
2012-11-20 Mine Waste Alternatives Assessment MMER Sched 2 T…
2012-11-20 SSQWO Teleconference with GRT

2012-12-6 Consultation Update Meeting CEAA MOE MNDM with comments from AL
2013-01-08 Consultation Update Meeting CEAA MOE MNDM
2013-01-29 Consultation Update Meeting CEAA MOE MNDM
2013-02-19 - GRT- EA Overview Meeting, 2013-02-19 Government Update Presentation
2013-02-22 - RSC - EA Overivew Notes and Presentation
2013-03-01 Acknowledgement letter Mar 1 2013 re draft EA
2013-03-19 Fish Compensation DiscussionTeleconference with GRT
2013-04-16 No Net Loss Planning

2013-04-18 Consultation Update Meeting CEAA MOE MNDM combined
2013-05-09 Fish Compensation Meeting with MNR DFO
2013-05-15 Consultation Update Meeting CEAA MOE MNDM
2013-05-27 Fish Compensation DiscussionTeleconference with MNR DFO
2013-06-03 Participant List SSWQO Meeting, 2013-06-03 MOE and EC SSWQO
2013-06-20 DFO Burlington, 2013-06-20 OHRG Aquatic Biology Overview with DFO Burlington
2013-07-02 DRAFT Agenda - Site Specific Water Quality Discussion, 2013-07-02 OHRG Water Quality Meeting Minutes
2013-07-15 Consultation Update Meeting CEAA MOE MNDM
2013-07-23 OHRG Mine Waste Alternatives Meeting Minutes

13-1118-0010_OHRG Certified Closure Plan and Closure IRs Teleconference Record_29Jul2013
MNR Meeting_Aug 21 2013_AA
2013-10-10 Environment Canada Comments - Meeting Notes
2013-10-10 Groundwater Coments - Meeting Notes
2013-10-15 Monitoring Comments - Government Update Presentation
2013-10-17 Bat Studies Meeting

1 – EA Process and Consultation Update Meetings

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING NOTES
GOVERNMENT WORKSHOP
OCTOBER 20, 2011 – 1:00 PM – 4:00 PM
ATIKOKAN MAIN STREET OFFICE

Attendees:

MNDMF:	Mark O'Brien
MNR:	Twila Smitsnuk, Amy Godwin, Jeff Bonnema
Rainy River District School Board:	Mike Lewis (Chair), Heather Campbell (Director of Education)
Atikokan Hospital:	Kim Cross (Finance), Wayne Smith (Patient Care)
Atikokan Recreation:	Nicole Halasz
Wabigoon Lake First Nation:	Bill Perenteau, Tyson Gardner
Osisko Hammond Reef:	Alexandra Drapack, Anne Charland
Golder Associates:	Cathryn Moffett, Peter Brown, Agni Papageorgiou

Purpose:

Osisko hosted a workshop at the Main Street Office to facilitate a focussed discussion regarding the Draft Terms of Reference. The goal was to clarify existing questions about the Project and receive feedback about how stakeholders feel the Project may affect them.

Welcome and Introductions (AD)
We are here today to talk about the Terms of Reference, hear your concerns and answer your questions. We don't have all the answer yet, we are still in the feasibility stage, meaning that many design details have not been finalized.

Large Group Brainstorming: What are your expectations for today?

- Provide information about MNR
- How will Osisko impact hospital operations?
- Help start planning for future needs
- Assist discussion and clarify regulations
- What does the project mean for recreation?
- Hear everyone's concerns
- Understand more about the Project description
- Identify opportunities for students

Video Presentation

- It's good to see the viewscape from the lake, a vantage point that is important to many local people.

Project Description (AD)

- General Project overview and explanation of mineral processing

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Break Out Groups: Do you have any remaining questions about the Project?

Project Support
Positives outweigh the negatives

Environmental Assessment
When is the permit to take water going to be approved?

Project Design
Where is the pit, why does it have to be there?
Are there existing power lines?
How much bush is getting cut for the road and power lines? Compared to now how will it look?
Energy options
Are the criteria for alternative evaluations listed in order of priority?

Accidents and Malfunctions
What is the plan for spills or accidents?
Emergency response plans
Fire response
Flood plans
How advanced will the first aid teams be?

Post-closure
What is the plan for the Town after Hammond Reef?

Water Use
Where will water be taken from and discharged?
What will be done with water from Mitta Lake?
Will water levels be affected? Need to share water balance.
What is the water budget and how will it impact power generation?

Water Quality
What is in the discharge? What will the temperature be?

Noise
Noise levels of the mine site

Population Change
Transient community
More snow machiners
Population growth

Public Safety
Crime increase

Roads and Traffic
Will roads be public or private?
Will access be restricted?
Access for recreational users

What does it mean for increase traffic to highway 622?
Are upgrades planned to highway 622?
Will Premier road be used?
What will access be like from North?

Education and Training
What are Osisko's objectives in terms of local employment?
Is there a training plan?
What level of education will be required for Project staff?

Housing and Property Values
Will Project workers live in camp or in local housing?
Housing and Town infrastructure

Recreation Uses
Effects on recreational users
Groomed trails for snowmobile
Wood on trails (Hard Tack)

Public Participation
Who was invited to the Tuesday meeting? Was the snowmobile club included?

Break Out Groups: Do you have any ideas for the Project design?

Environmental Assessment
- Project design and environmental permitting must go hand in hand
- Show tailings options that won't be used so people understand the process

Public Participation
- Provide information on mining
- Bring a tailings sample so people can visualize it

Accidents and Malfunctions
- Hazmat upgrades required

Population Change
- Community must know project timeline and influx of population

Municipal Infrastructure
- Consideration and awareness of social effects
- Long-term planning for social effects, e.g. Community impact agreement

Education and Training
- Osisko should work with Confederation College and Lakehead University
- What type of training facilities will there be?

Employment and Economics
- Awareness of jobs and services available/needed

Visual Resources
- Aesthetics for paddlers, can there be a buffer to the water?

Fish and Fish Habitat
- Walleye spawning in Lynxhead Bay – discharge point should avoid that area and move up into Sawbill

EA Process (AD)
- Brief explanation of federal and provincial processes
- Formal public comment period is finished for EIS Guidelines
- Explanation of Terms of Reference document and request for input
- Formal public comment period will be complete October 24, 2011
- Osisko will continue to seek feedback

Large Group Brainstorming: How would you like to be involved in the EA?
- How is Osisko deciding on stakeholders?
- Include recreational users (snowmobile club)
- Good job communicating so far
- Youth should be included – grade 11 and 12 students from Fort Frances and Atikokan
- Weekly newspaper column is important
- Seniors should be involved

Potential Effects (AD)
- We break the project into its components to help better understand interactions with the environment
- We have developed a list of potential effects, but we also want to hear from you

Break Out Groups: What do you think the potential impacts of the Project might be?
Note: missing “wildlife” in potential effects section

Traditional Knowledge and Practices
- Loss of land for traditional use

Aboriginal and Treaty Rights
- Cumulative impacts to Treaty 3 area
- Hunting and fishing rights for Treaty 3 signatories
- Potential effects may arise later, awareness of changing issues needed
- IBAs signed at beginning before EA completed

Post-Closure
- Post-closure effects
- Closure better than Steep Rock

Wildlife Habitat
- Effects on migration corridors

Recreational Uses
- Increased demands on recreation
- Marmion Lake (bass classic) – noise and aesthetics

Hunting and Fishing
- Access for hunting and fishing, hiking, etc.

Education and Training
- Require training and hiring of more staff
- Education and school system

Municipal infrastructure
- Very old infrastructure – increased taxes?
- Sewage treatment
- Drinking water
- Garbage and landfill
- Pressure on government and services
- Availability of more stuff (restaurants, teams, etc.)
- Increased tax base

Health Care
- Emergency room will be busy
- Need for obstetrics
- Health care

Housing
- New subdivisions or apartments

Public Safety
- Safety in the community – policing

Community character
- Family lifestyle vs. “Fort Mac”

Water Quality
- Downstream impacts from discharge

Population Change
- “Younging” of town
- Stop out migration - reason to stay

Environmental Impact Analysis (AD)
We evaluate potential effects by choosing Valued Ecosystem Components as measurable indicators

Wherever possible we will avoid or mitigate negative effects
Predicted changes to Valued Ecosystem Components are evaluated against specific criteria and indicators

Individual Reflection: What important things do you think could be affected by the Project?

- It is difficult for a community to plan for potential impacts where there is still uncertainty about actual mining
- Osisko will have to deal with community scepticism about development projects. Since 1979 only OPG has actually developed other projects

Fish and Fish Habitat

- Fish in Marmion Lake (will there be quantifiable contamination)
- Fish in Mitta Lake – will they be successful in new home
- Negative impact on Marmion watershed
- Fish in Marmion and Mitta Lake
- Fish and fish habitat
- Walleye spawning in Lynxhead Bay
- Fish spawning areas of Marmion lake/fish habitat
- Downstream aquatic ecosystems, wild rice areas
- Wetlands

Water Quality and Quantity

- Watershed of the area (balancing)
- Water quality due to discharge – downstream impacts
- Water quality of lakes and streams
- Impacts from resulting pit lakes and their potential outflow
- Water quality at the site area and downstream (erosion, pollution)

Municipal infrastructure

- Social, economic change, new people, infrastructure demands, taxation issues
- Increased demand on programming
- High cost to residents that remain after mine closure because of increased/improved facilities
- Town infrastructure – roads, water, sewage treatment
- Impact on Community infrastructure – medical clinic/hospital/water supply

Population Change

- Availability of social services due to increased population
- May increase utilization of resources – more people seeking access
- Numbers and dates when people will arrive – future planning

Housing and Property Values

- Housing – is there a need for 2014? What happens after 2028?

Wildlife and wildlife habitat

- Wildlife in immediate vicinity due to noise, deforestation and mining

- wildlife – red fox (increase in population if waste management issues)
- bears – habitat, but travelling bears could be attracted to waste
- Think beyond bald eagles
- Deer and skunks – there were no skunks and very little deer when the mines were operating
- Further wildlife/ecosystem/foodchain
- Fur bearers and habitat
- Wildlife and habitat
- Wildlife populations/distribution (moose, deer, bear) and hunting/fishing opportunities
- Large mammals – moose/deer/bear
- Species at Risk (endangered/threatened) and habitat
- Bald eagles nesting nearby on Marmion Lake
- Whip-poor-wills may be in the area
- Endangered species – whip-poor-will, snapping turtles, Canada warblers
- Bald eagles nesting on Marmion
- Trees

Forestry Resources

- Loss of productive forest (# of ha harvest)
- Forests in the area of the mine development – renewal of the harvested area

Aboriginal and treaty rights

- Aboriginal people – will they be included in discussions ongoing basis, will they find training funds to ensure employment opportunities realized.
- Concern if agreements cannot be reached with Aboriginal partners – will this delay Project timelines (i.e. Ring of Fire issues)
- Cultural value is usual considered as: eagle nests, blueberries, wild rice.
- Not as a shared ownership (not stakeholder status) to the land and resources
- Lost land use
- Treaty rights, hunting, loss of access to land

Closure and Post-closure

- Closure planning with the municipality (don't forget that the mine will close)
- Region – i.e. will there be long term positive impacts

Recreational Uses

- Snowmobile trails, recreational activities
- Recreational opportunities – access to the areas for fishing, hunting, trapping, hiking, biking, snowmobiling
- Access to recreation the Raft Lake/Marmion area

Hunting and Fishing

- Trapping, hunting, fishing
- Land access, wildlife habitat, therefore loss of BMA, baitfish, trapping, hunting, viewing
- Trapping/bait fish harvesting

Economics and Employment

Positive economic impacts to town

Public Safety
Public safety, crime, traffic, etc.

Visual Resources
Overall look of the land afterwards (Steep Rock site)

Air quality
Air quality from operations
Air quality from milling process and equipment use

Roads and Traffic
Road closures afterwards

Project Design
Renewable energy (water power sites) downstream – water quantity

Groundwater
Groundwater changes – amount, flow patterns

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MEETING AGENDA
TERMS OF REFERENCE MEETING
NOVEMBER 23, 2011 – 1:30 PM –2:30 PM
MAIN BOARDROOM – OSISKO

Attendees:

Osisko: Alix Drapack, Mark Bowler, Cathryn Moffett
Golder: Steve Parker
MOE EEAB: Michelle Fromme-Marcellin

Meeting Objective:
Confirm Osisko's approach to finalizing and submitting Terms of Reference for the Hammond Reef Gold Project.

	AGENDA ITEM	OWNER
1	**Submission Logistics**	Michelle Fromme-Marcellin
2	**Progress to Date**	Alix Drapack
3	**Alternative Evaluation Requirements**	Michelle Fromme-Marcellin
4	**Approach to Consultation Reporting**	Alix Drapack
5	**Next Steps**	All

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MEETING NOTES
COORDINATION OF CONSULTATION PLANS
JANUARY 31, 2012 – 2:30 PM – 4:00 PM
OSISKO MINING CORPORATION OFFICE

Attendees: Amy Liu - Canadian Environmental Assessment Agency

Michelle Whitmore - Ministry of Environment

Patrick Barnes - Ministry of Northern Development and Mining (phone)

Alexandra Drapack - Mark Bowler, Cathryn Moffett – Osisko Hammond Reef

Meeting Objective: Discuss integration of consultation activities between CEA Agency and provincial ToR

Consultation Activities - Government

CEA Agency meeting with FN this week and next week, the purpose of which is to talk about the CEA Agency's proposed work plans, meet and greet. Patrick Barnes (MNDM) and Joe Tyance (MOE) will attend in person, others will phone in. Planned and completed meetings include:

- Phone meeting with Wabigoon Lake Ojibway Nation completed this week
- Scheduled to attend meeting in Lac La Croix on Thursday
    - Will offer to provide Mining 101 course since LLC has not received it yet
    - Newly elected Chief Norman Jordan is familiar with the Project and has visited Mitta Lake
- Scheduled to attend LDMLFN meeting on February 7th
    - Quentin Snider has expressed his feeling that there is a hierarchy of rights, with First Nations having a higher priority
- Scheduled to attend FFCS meeting in Winnipeg on February 8th

Mitaanjigamiing recently paid for the CEA Agency to come to their community and deliver a CEAA overview and EA Screening course

The CEA Agency is seeking assistance in procedural aspects of consultation including:

- Providing information to Aboriginal communities about the Project
- Meeting with Aboriginal communities to discuss how they would like to receive information
- Describing the results of the EA Report and potential impacts to Aboriginal and treaty rights
- Maintaining a record of meetings and correspondence with Aboriginal communities

The final analysis of potential impacts to Aboriginal and treaty rights will be conducted by the Crown, based on information provided by Osisko.

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Consultation Activities - Osisko

- Currently in 30 day public review period for proposed Terms of Reference
- Once the 30 days is complete, Osisko will have 7 days to incorporate comments
- The final Minister's Decision will be issued on April 20, 2012
- Currently in Consultation Milestone 2: Submission of Terms of Reference
- Some discussion was had regarding timing of public events and workshops and whether they should be timed more closely to Minister's Decision. Osisko to discuss internally and provide update.
- Osisko is considering hosting the Open House for Milestone 2 in Fort Frances
- Workshops will likely be held with Atikokan Council and Staff and Fort Frances municipal service providers
- Milestone 3 is Commencement of EA Report, which can begin on April 21, assuming the Minister's Decision is to accept the Terms of Reference
- Workshop topics planned throughout the EA process include mitigation measures, VECs, baseline studies and closure planning.

Closure Planning

- Final closure plan will not likely be included in the EA Report
- Draft closure plan will likely be included within EA time frame
- Closure planning is a topic of high interest to Project stakeholders, and will be included in EA consultation

Additional Consultation Milestone

- Since provincial EA review and Comprehensive Study Report (CSR) publication do not occur at the same time an additional public consultation milestone may be required
- Meetings with Aboriginal communities and the public should be scheduled around the publication of the CSR.

Resource Sharing Agreement – Environmental Committee

- Each signatory to the agreement has now also signed a Band Council Resolution
- However, the implementation of the committees does not rest with the sustainability group's responsibility
- CEA Agency is considering formation of Technical Working Groups (TWG) to discuss potential effects and how they may impact aboriginal and treaty right
- Potential participants could include Lac des Mille Lacs First Nation, Lac La Croix FN and Seine River First Nation, but is open to other First Nations
- We should consider the possibility of combining or coordinating the TWG with the Resource Sharing Agreement committees
- TWG are reimbursable through the Aboriginal Funding Envelope

Potential topics for the working groups could include: Fish and fish habitat accounting; wild rice and country foods; hunting and wildlife; water quality; and closure planning.

Elder's Forums

- A reference was made in the ToR stating that the Elder's Forums will be coordinated with milestones
- Clarity may be required – intention was to have Elder's Forums as the appetite requires and logistics allow: likely a total of three forums (including completed forum)
- First Forum was hosted by government agencies, Osisko to host remaining Forums
- Remaining forums will likely include a site visit in the summer and a final event to coincide with submission of Draft EA Report
- Osisko to follow up on Elder's Forum

Ongoing Coordination

Amy to schedule bi-weekly consultation update meetings with the CEA Agency, MOE, MNDM, and Osisko

Draft Agenda and Notes

Project Name:	Hammond Reef Gold Project	**CEAA #:**	004524
Meeting Type:	Bi-weekly Project and Consultation Update Meeting	**Meeting Date:**	April 12, 2012
Meeting Location:	Teleconference/CEAA Office Boardroom Room 301	**Time:**	3:00 pm to 4:00 pm
Participants	Amy Liu- Canadian Environmental Assessment Agency Michelle Whitmore - Ministry of Environment(absent) Patrick Barnes - Ministry of Northern Development and Mining (absent) Alexandra Drapack - Mark Bowler, Cathryn Moffett – Osisko Hammond Reef		

Direct Access Number: 613-960-7516
Conference ID number: 3832666#

Purpose: To debrief on the Hammond Reef Project, focussing on public and Aboriginal Consultation activities

Outcome: To outline action items related to public and Aboriginal Consultation for the Project

Discussion Items	
	Items
1	OCAP
2	Traditional Use Studies
3	Metis
4	Baseline Reports
5	Project Description
6	MNR Data Request

Updates and Decisions

Ontario Coalition of Aboriginal People (OCAP)

- CEA Agency received an email from OCAP stating they were frustrated about lack of funding and that they are opposed to the Project and will "stop the project by any means".
- Osisko will be meeting with OCAP tomorrow (April 13) to present an overview of the Hammond Reef Project and to record their concerns
- Mark O'Brien and/or Patrick Barnes from the provincial government will attend
- CEA Agency has confirmed Osisko's approach (email from Amy Liu dated March 26 2012 and will respond directly to OCAP with respect to their recent email
- Osisko will provide Minutes from the meeting tomorrow and will continue to pass on emails received from OCAP to Amy/Michelle/Pat.

Métis

- Métis Nation of Ontario wrote a formal letter acknowledging the signing of the MoU and stating that they believe their concerns are understood and will be addressed through the implementation of the MoU. The email was included in the revised Terms of Reference.
- Osisko has two Métis meetings scheduled for this Saturday (April 14):
    - Atikokan Métis Community Open House will include Project overview information
    - Consultation Committee Meeting will include discussion of how to implement MoU and begin addressing specific concern
- Osisko will provide Minutes from both meetings and a copy of the presentations to Amy/Michelle/Pat.

Traditional Use Studies

- Osisko is currently developing methodology in consultation with Chiefs
- Chiefs suggested a group interview approach
- Methods/questionnaire will be reviewed by academic expert
- Two meetings – one to provide and explain questionnaire, second to implement questionnaire
- Ongoing meetings with community members and Elders will allow for continual exchange of information, including traditional knowledge
- Métis studies will be conducted separately as per MoU

Baseline Studies

- Osisko has begun to receive baseline information from Golder
- Expect to submit interim reports for review in mid May
- Would like to set up meetings/phone calls with regulators to discuss potential data gaps

Project Details

- Avoid calling changes to the Project a new “Project Description”
- Engineering and planning details about the Project will be included as a chapter in the EIS
- The Project Details are expected to be complete April 30 and will include some changes to the layout
- Osisko plans to present the Project Details to CEAA/MOE in May.

MNR Data Request

- Multiple phone calls and emails to MNR
- Need the data right away to avoid schedule delays
- Request that MOE EAB help coordinate receipt of data

2 – Project Details

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MEETING NOTES
PRESENTATION OF REVISED PROJECT DESCRIPTION AND BASELINE STUDIES
APRIL 18, 2011 – 5:00 PM – 7:30 PM
VALHALLA INN - THUNDER BAY

Attendees:

Lac des Mille Lacs First Nation
Chief White Cloud
Louis Sawdo – LDMLFN Elder
Margaret Savage – LDMLFN Elder
Hannelore Sawdo – Community Member
Quentin Snider – Band Administrator
Laura Sheboman Ewing - Councillor
William G. Rusnak – Ec. Dev. Board
Irma Churchill - Councillor
Clark Chapman -Councillor
Peter Wiltsey – Ec. Dev. Board

Ministry of Northern Development Mines and Forestry
Peter Hinz
Melanie Mathieson

Ministry of Environment
Joseph Tyance

Ministry of Natural Resources
Twila Smitsnuk

Canadian Environmental Assessment Agency
Amy Liu

Osisko Mining Corporation
Alix Drapack (presenter)
Bud Dickson

Golder Associates Ltd.
Cathryn Moffett (note taker)

Meeting Objectives:

- To present the project description, explain the tailings management alternatives and present the baseline study plan for the Hammond Reef project.
- To seek feedback and comments from Aboriginal communities.

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Meeting Notes:

Smudge and Opening Prayer (Elder Margaret Savage)

Introductions (Bud Dickson)

Q – Please email draft notes of meeting to Quentin Snider (band manager) so he can review and pass onto others.

Project Presentation
Presentation Overview

- Project description
- Baseline studies
- Next steps
- Consultation

Project Description

- Revised project description submitted to agencies April 8 2011
- Changes to tailings management locations, waste rock locations, addressing regulator questions
- Included baseline study summaries, water balance information
- Major Project components (site layout)
- Tailings management evaluation
- Tailings options that have been disqualified, ie Hogarth Pit and Lizard Lake

Baseline study plans

- Hydrology, water quality, biology, bathymetry

Next Steps

- Aboriginal field monitors
- Finalize Ontario EA process
- Further design

Consultation

- Mining 101 facilitated by Learning Together
- Public meeting in June
- Citizens committee
- Formal Consultation Plan

Questions and Answers
Q – How would you compensate for fish habitat loss? What kind of compensation do you mean? Stocking? Creating habitat?
A – The specifics have not been determined, but I know that it will likely include creating fish habitat elsewhere in the region. Fish compensation will be discussed with DFO and MNR at a later date. The regulators don't just seek money as compensation, they would likely ask Osisko to fund a fish habitat

project in the area. We are assembling a list of possible projects that would create fish habitat in the area.

Q – How many litres per day is 82,000 m^3?
A - 82 million litres. It will not be all fresh water, a lot will be recycled. We think the fresh water requirements will be approximately 3,200 m^3/day but we will be completing a water balance as part of our feasibility study. For reference, the Town of Atikokan uses 2,500 m^3/day.

Q – (Joseph Tyance – MOE): Is there an appetite when you undertake baseline studies to incorporate Aboriginal Traditional Knowledge studies?
A – Right now our plans do not include TK, but we are willing to consider it if it is something that you would be interested in.

Q – This site is accessed by Hardtack or Sawbill road. Aren't there too many hills and curves in the road?
A – Upgrades to the access road are part of the project. The Project Description included a couple of possible alignments including Hardtack/Sawbill and the Raft Lake Road. Either option will require upgrades to the road before it can be used for construction of the mine site and for on-going mine operations.

Q – I want to share a history lesson with you: on a number of occasions we have run into problems with people in the government not knowing who LDMLFN is. Hammond Reef is in our backyard and we are the closest FN community to the project. We certainly want to see it move forward, but we have a lot of concerns.

Q – Osisko should include LDMLFN in the first slide. You reference the location of the project relative to the Town of Atikokan. We would also like you to include that it is 27 km from LDMLFN. It should be mentioned that LDMLFN is the nearest FN community and the Project is within our traditional territory.

Q – We monitor what's going on in the area of the Hammond Reef Project on a daily basis. There are a lot of companies drilling around the area. Do you see Osisko taking these guys over and making the Hammond Reef project bigger?
A – Our Project Description considers the current resource with a 14 year mine life. That is what we are defining as our scope for the permit. Osisko always actively looks for good projects and mines continue on-going exploration during mine operations. There is always the hope that the project might grow.
Q- Right now the project area is outlined on the map, but in my mind it makes sense that Osisko will buy up the land and make the project bigger. Will that slow down the whole project? Or is there room for expansion?
A – We are looking for a permit to what we are planning right now. We will always be looking for more resources. If there are significant changes to the Project, over the life of the project, it is possible we might have to amend the permit at a later date to reflect the increase in scope. We are eager to move into the construction and operating phase of the mine. Exploration costs a lot of money. Until we are operating at Hammond Reef, we will not be making any money at Hammond Reef.

Q – What are you going to do with the water that is drained from Mitta Lake?
A – I don't know right now. That will be evaluated during the feasibility stage.

Q – Can you explain more about tailings? Do they go through treatment first?
A – They don't go through treatment. The cyanide is destroyed before it leaves the process facility (mill) in the cyanide destruction circuit. Osisko hasn't decided whether we will be using conventional tailings, thickened tailings or paste tailings. Osisko plans to recycle as much of the water as possible. Any water that will be discharged as effluent will be treated to meet regulations prior to discharge.

Q – Are the tailings harmful to the environment?
A – Part of our baseline study includes analysis of the tailings that will be produced when the mine is operating. The good news is that the geochemistry shows that the rocks will not be acid generating. We also plan to collect and re-use the water seepage from the tailings impoundment area as process water. We hope to continually re-vegetate the waste rock piles and tailings during mine operations..

Q – Do we have a conceptual idea of what Mitta Lake will look like when the mine is done?
A – That will be part of the closure planning but has not been completed yet.

Q – Learning Together and First Nations field monitors (summer students) are both a wonderful idea. According to the RSA there are committees to be set up. We have named people to the committees, and given the names to Osisko. These people who are sitting on the committees should be the ones who go to the Learning Together training. It would be nice to see a job description for the field monitors from Osisko. We are building a skills inventory for our community, so we can match the job description with the skills we have.

Q – Right now the project is economically feasible, but what's the price-threshold before it's not economic? It would be nice to know what the magic mark is. I think we've heard the number $800, is that right?
A – Gold is $1,400 an ounce right now, you are right that it can go up and down a lot. That is why we use a lower price to evaluate the economics of the project. The cut-off grade is 0.3 g/tonne - anything lower than that is not considered economic to mine.

Q – What about mercury? It is naturally occurring and might get released.
A – Our studies include mercury evaluations. It will be included as a potential effect and evaluated in the EA. We have also done baseline fish tissue samples for mercury to get a better understanding of the levels before the project begins.

Q – Please send Quentin a copy of the presentation. We might have more comments once we have looked it over again. (Complete)

Q - Chief and band manager of LDMLFN would love to be there for the grand opening of Malarctic.

Additional Comments (Chief White Cloud)
Quentin is the watch dog for our First Nation. We were a forgotten First Nation and that's why our band manager has mentioned it. We don't think there is any hidden agenda. It is our viewpoint that Osisko is a respectable organization, with honest people that we have been working with and we have no problems dealing with them. Some other players we may have a problem with, but not Osisko.

We don't expect Osisko to be our saviour, but we have hope that if the Project goes forward we will be able to work together with Osisko and mine construction companies to rebuild our Community. And return to our homeland.



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Closing (Elder Margaret Savage)
This was an informative, enjoyable and very good meeting.

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A Fresh Outlook on Mining

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HAMMOND **REEF**

April 2011

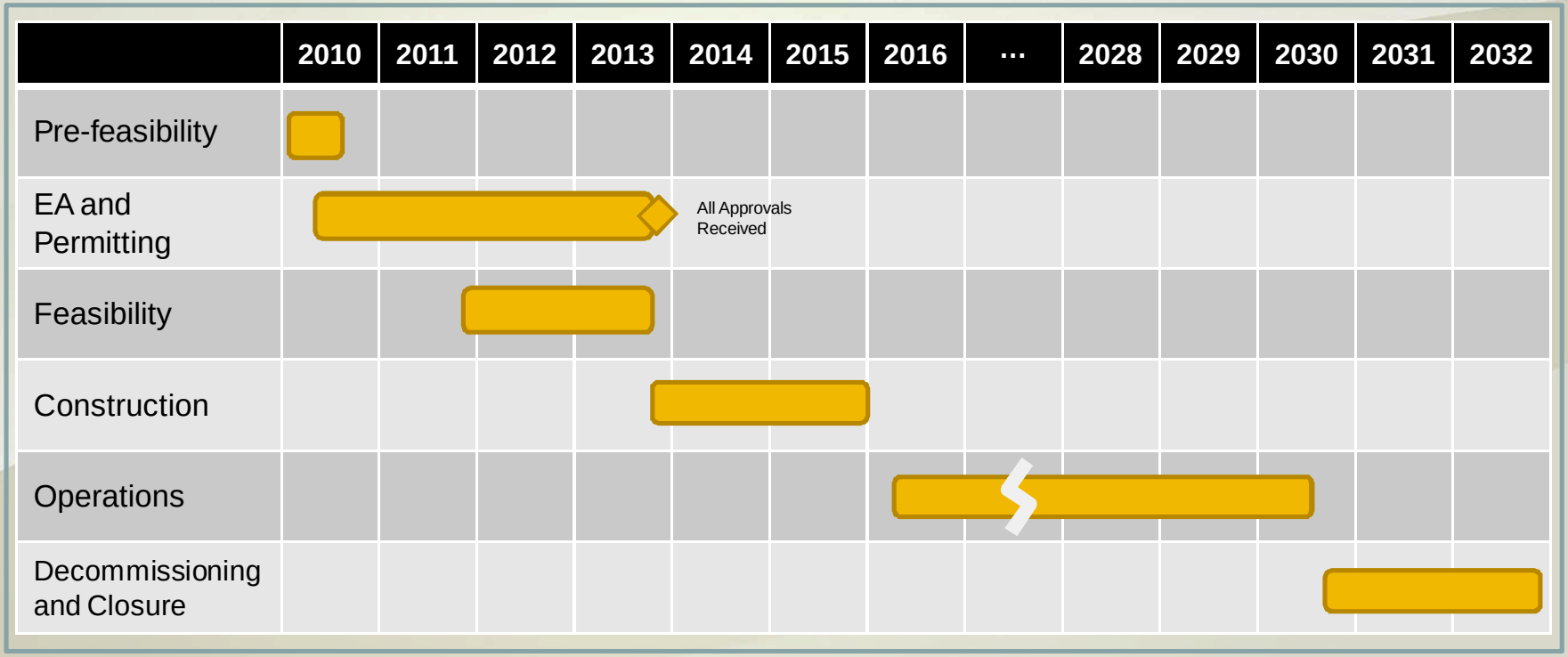
Introduction

- Osisko Hammond Reef Gold Limited is currently in the pre-feasibility stage of developing the Hammond Reef deposit.
- The Project has an inferred resource that is economically viable but exploration is continuing.
- For mining projects, the Project Description typically evolves over time.
- Due to the time required for conducting the Environmental Assessment (EA), the process begins during the pre-feasibility stage. This means that not all project components have been finalized.
- We are presenting a draft Project Description that will be finalized for the Impact Assessment.
- We have developed a draft that we believe is sufficient to identify the issues and develop the Scoping Document that guides the development of the EA.

Project Overview

- Located approximately 30 km north of the Town of Atikokan.
- Inferred resource is 6.7M oz of gold, based on an inferred resource of 259.4M tonnes of ore at an average grade of 0.8 gm/tonne at a cut-off of 0.3 gm/tonne.
- Mine life is projected to be 14 years at a projected throughput of 50,000 tonnes/day based on the inferred resource.
- Construction is scheduled to begin in 2013, with completion in late 2015.
- The mine is scheduled to begin production in early 2016.
- Closure is expected to require 2 years for completion of site decommissioning.

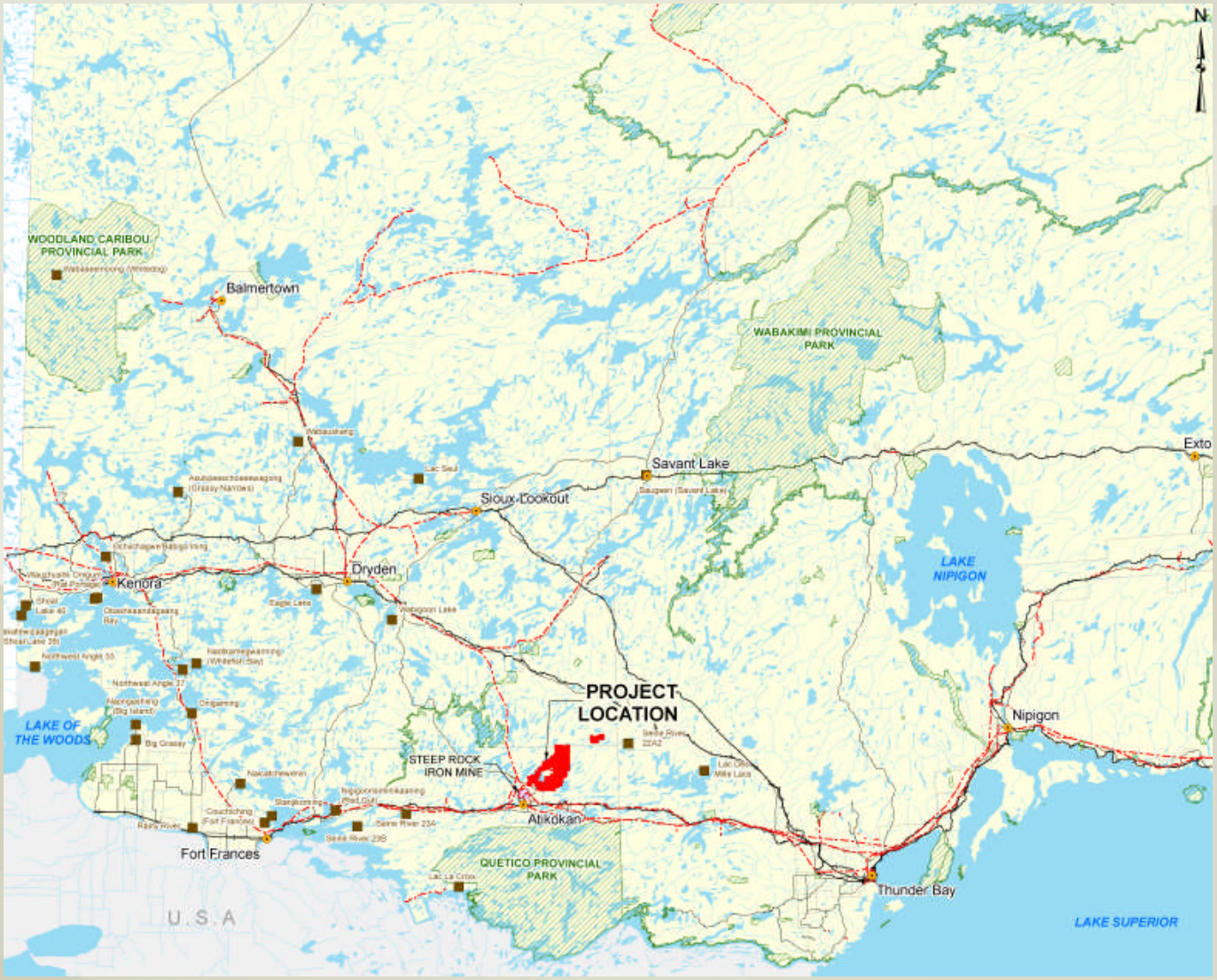
Project Schedule



Project Location



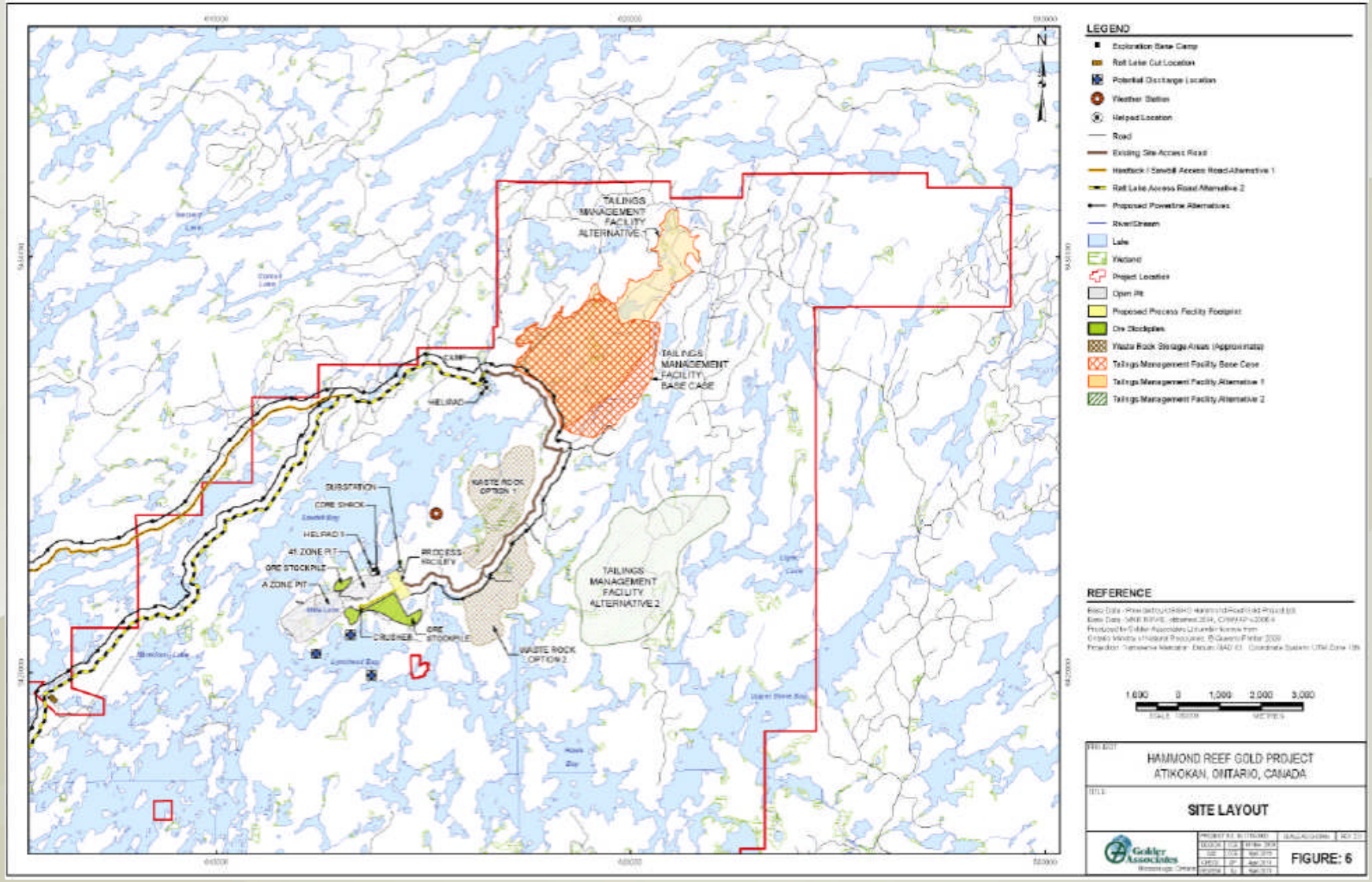
Regional Setting



Project Overview

- Mining will be through open pit methods, developing two pits: the A-Zone and the 41-Zone pits. The development of the pits will require the draining of a small lake (Mitta Lake) perched on the peninsula.
- Waste rock that is not used for on-site construction will be placed in a waste rock pile close to the pits (2 options being considered).
- Additional infrastructure includes a processing plant, an explosives plant, warehouses, workshops, offices and maintenance facilities.
- Tailings deposition in one of 3 on-site tailings management facilities.

Site Plan


TAILINGS MANAGEMENT FACILITY ALTERNATIVE 1
TAILINGS MANAGEMENT FACILITY BASE CASE
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 2
CAMP
HELIPAD
SUBSTATION
CORE SHACK
HELIPAD 1
41 ZONE PIT
ORE STOCKPILE
A ZONE PIT
PROCESS FACILITY
CRUSHER
ORE STOCKPILE
WASTE ROCK OPTION 1
WASTE ROCK OPTION 2
N
LEGEND
Exploration Base Camp
Rail Lake Cut Location
Potential Discharge Location
Weather Station
Helipad Location
Road
Existing Site Access Road
Hawkeye / Sewell Access Road Alternative 1
Rail Lake Access Road Alternative 2
Proposed Powerline Alternatives
River/Stream
Lake
Wetland
Project Location
Open Pit
Proposed Process Facility Footprint
Ore Stockpiles
Waste Rock Storage Areas (Approximate)
Tailings Management Facility Base Case
Tailings Management Facility Alternative 1
Tailings Management Facility Alternative 2
REFERENCE
1,000 0 1,000 2,000 3,000
HAMMOND REEF GOLD PROJECT
ATIKOKAN, ONTARIO, CANADA
SITE LAYOUT
Golder Associates
FIGURE: 6

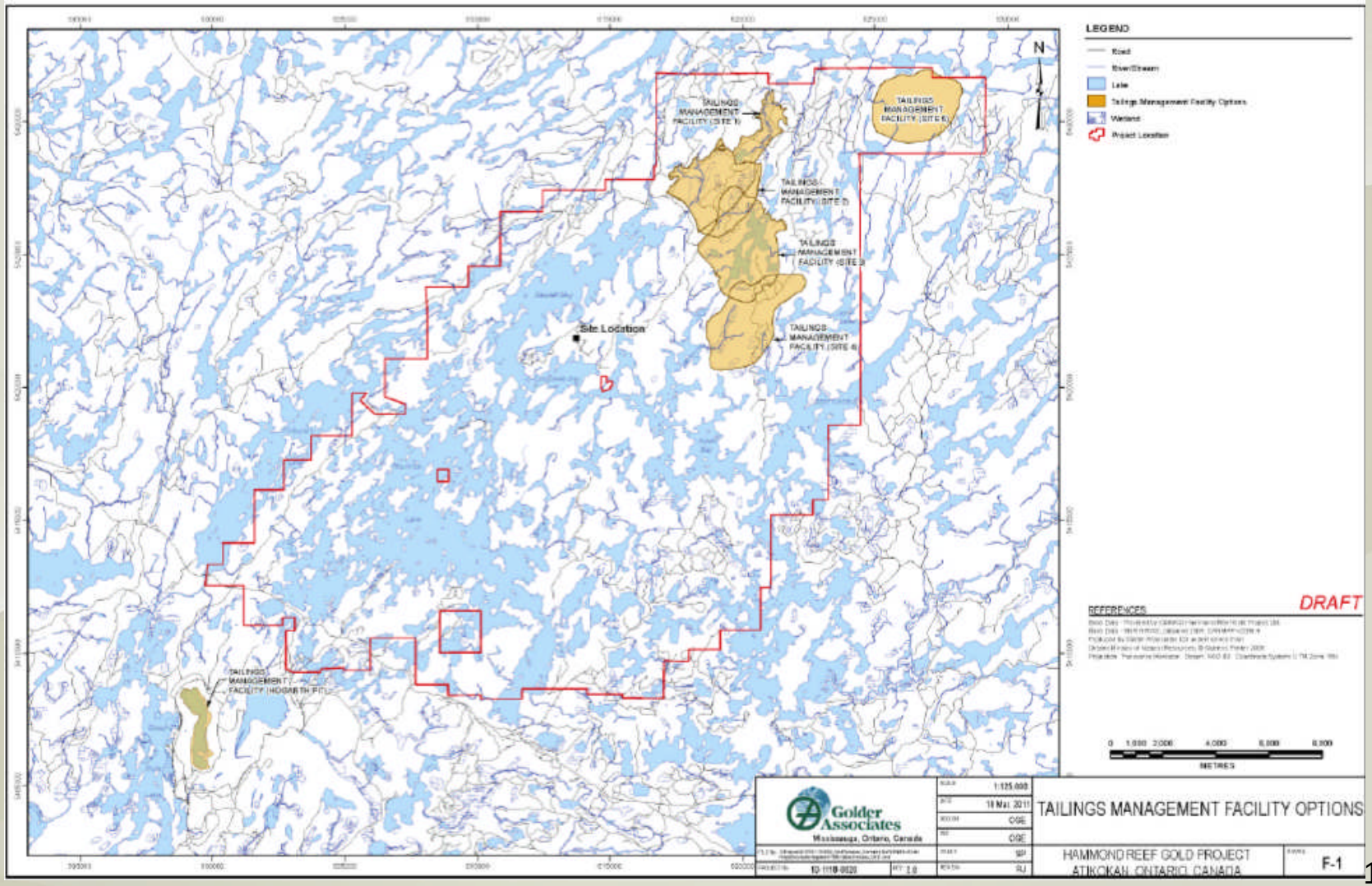
Mine Development

- Two open pits will be developed: the A-Zone to a depth of approximately 345 m, and the 41-Zone to a depth of approximately 225 m. The pits will be accessed by ramps.
- Development of the pits requires the draining of Mitta Lake, and removal and stockpiling of soils and sediments for future use in reclamation.
- The waste rock will be disposed of in a waste rock management area approximately 1 km northeast of the pits until mining of the 41-Zone pit has been completed. Subsequently, the 41-Zone pit will be used for disposal of waste rock from the A-Zone pit.
- Ore will be stockpiled in two stockpiles close to the processing plant.
- The processing plant is designed for an ore throughput of 50,000 tonnes/day and will include crushing, grinding, flotation, cyanide leaching (carbon-in-pulp), electrowinning and final refining using furnaces. A cyanide destruction circuit is included in the plant design.

Tailings Management Facility Evaluation

- Evaluated 6 options: 5 on-site and 1 off-site (Hogarth Pit).
- Considered:
  - Environmental Impacts
  - Permitting requirements
  - Liabilities (long and short-term)
  - Stakeholder input
  - Operability
  - Constructability
  - Cost

Tailings Management Options

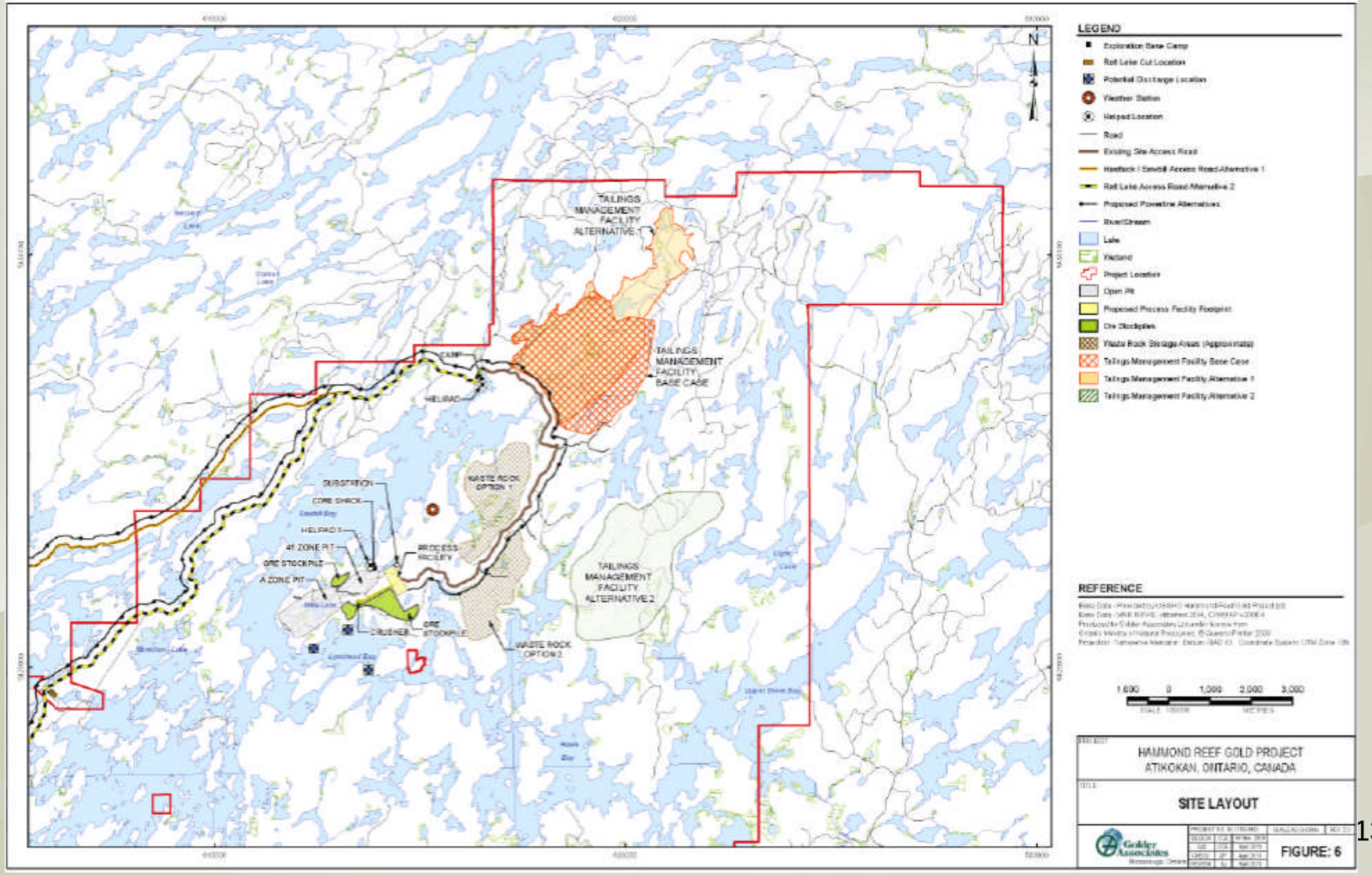


Tailings Management Options included in PD.

- Tailings Management Facilities #1 (Alternative #1), #2 (Base Case) and #4 (Alternative #2).

- Final Tailings Management Facility will:
  - Avoid (where possible) impacts to fish-bearing waterways.
  - Mitigate negative impacts to fish and fish habitat.
  - Where harm cannot be mitigated, compensate for negative impacts on fish habitat.
  - Timely permitting (try to avoid requirement for scheduling of fish-bearing waterbodies under the MMER).
  - Does not sterilize ore.

Major Project Components



Tailings Management Options excluded from PD.

- Tailings Management Facilities #3 (Lizard Lake), #5 (North East) and #6 (Hogarth Pit).
- Lizard Lake was deemed unacceptable by Osisko due to negative impact to environment.
- TMF #5 is too far away.

Tailings Management Options excluded from PD.

- Hogarth Pit:
  - Long-term liabilities (too many unknowns).
  - Short-term liabilities (secured access, unknown connections to adjacent water bodies/ unknown existing infrastructure, scheduling difficulties)
  - Operability (length of pipeline, climate).
  - The “Hogarth Pit” project vs. the Hammond Reef Gold project.

Water Management

- Ore processing will require approximately 82,000 m^3/day of process water. This is the volume of water discharge in the tailings slurry at 37% solids content.
- The water balance has not been completed for the Project.
- Water will be reclaimed from the tailings management area. As much water as possible will be reused in the circuit.
- There is a need for fresh water for gland water, reagent make-up, and potable water . This water will be sourced from Marmion Lake (depending on ability to meet needs of other water users).
- The amount of this water is anticipated to be less than 3,200 m^3/day.
- Osisko's goal will be to minimize the amount of freshwater required.

Closure and Rehabilitation

- A certified Closure Plan will be developed as required under the *Ontario Mining Act*, including financial assurance.
- A conceptual closure plan will be developed for the EA, that will be refined during the operations phase as monitoring data become available.
- The Closure Plan will be developed to include:
  - Decommissioning of the mine and related facilities;
  - Rehabilitation of disturbed land through establishment of a vegetative cover (some areas will be progressively rehabilitated during operations).
  - Drainage plans to manage site runoff.
  - Monitoring plans will be developed as part of the Closure Plan.
- However, on-going exploration may extend the life of the mine.

Environmental Assessment

- Based on the understanding of the project, key environmental and socio-economic issues have been anticipated in order to commence baseline studies in a timely manner and ensure that the data collected is of sufficient quality and quantity.
- Key issues include:
  - Aboriginal and public engagement;
  - Socio-economic impacts on Aboriginal and non-Aboriginal communities;
  - Water quality and quantity concerns, recognizing the importance of Marmion Lake as a traditional use resource as well as a recreational resource;
  - Atmospheric environment;
  - Aquatic and terrestrial environment, recognizing that fish and wildlife in the area are an important resources for Aboriginal and non-Aboriginal communities, and contribute to the local economy.

Baseline Studies

- For the physical and biological components, the baseline study design has considered those areas that could be affected by the project. These include the direct footprint of the mine and associated infrastructure, and any offsite areas affected by infrastructure, such as the transmission line or access road.
- The study design has also included those areas that could be affected by any releases from the site.
- Components initiated are:
  - Water quantity (hydrology)
  - Water quality and geochemistry
  - Aquatic and terrestrial biology
  - Aboriginal and Public engagement
  - Socio-economic baseline.

Proposed Baseline Studies

- Baseline Study summaries are included in revised PD.
- 2011 Field Program:
  - Hydrology
  - Water Quality
  - Terrestrial Biology
  - Aquatic Biology (meeting Apr. 13)
  - Bathymetry (?)

2011 Field Program

- Hydrology :
  - Water levels, flow, drogue studies (measure current).
- Water Quality:
  - Water samples.
- Terrestrial Biology:
  - Terrestrial (plant and animal habitat mapping)
- Aquatic Biology:
  - Electro-fishing, netting, aquatic habitat mapping.
- Bathymetry (if necessary).
  - Depth to bottom (like fish finders).
  - “Underwater topography”

Next Steps

- Finalize 2011 field program
  - Include Aboriginal Field Monitors
- Finalize Ontario EA Process
  - Meet (Apr. 27) with Provincial Regulators to discuss ON EA process
  - Finalize strategy for Ontario EA
  - Initiate Provincial process(es)
- Work with federal/provincial regulators to coordinate processes.
- Begin Feasibility Design
- Consultation (on-going)

Consultation

Based on feedback from previous consultation:

- "Mining 101"
  - Aboriginals – training with "Learning Together"
  - Public – Open house (May)
    - Stations (Exploration, Mining, Processing, Environment etc.).
- Citizens Committee
- On-going meetings
- Formal consultation plan
- Continual dialogue with stakeholders


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efficiency.ca
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The focus of the training course will be on explaining the purpose of the mining cycle and its phases, the primary participants during each stage, the relevant acts and regulations, and the general regulatory and legal implications during each stage. Our goal is to bring the mining cycle alive for participants, to make it relevant and useful for them, by developing these broad lessons:
Environmental and Social Impacts: typical impacts on people and the environment that a community may experience during each phase of the mining cycle; ideas for monitoring, mitigation strategies, community input processes.
Community Employment and Other Economic Opportunities: identifying the diverse economic and business opportunities that may be available to Aboriginal communities as a result of mining activity.
Capacity Building: ways that Aboriginal communities can build capacity (knowledge, skills, opportunity) to help improve socio-economic realities in communities.
Community Experiences: examples of strategies and success stories of Aboriginal communities dealing with the challenges of mineral resource development; includes examples of Aboriginal-industry leading practices.
Although Aboriginal employment and participation in mining have reached unprecedented levels, there are still many opportunities to be realized by Aboriginal communities. Our course was designed specifically to help Aboriginal communities better understand the mining cycle and to identify the many opportunities that mining can bring to communities.

Conclusion

- We are interested in your feedback on our project.
  - Can we clarify any areas of the description?
  - What are your concerns?

Thank you!

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING NOTES
PRESENTATION OF REVISED PROJECT DESCRIPTION AND BASELINE STUDIES
APRIL 19, 2011 – 10:30-12:00 NOON
HOTEL RENDEZ-VOUS – FORT FRANCES

Attendees:

Mitaanjigamiing First Nation
Janice Henderson
Ed Morrison
Pamela Johnson
Paul Henderson

Couchiching First Nation
Dan Mainville

Rainy River First Nation
Dorothy Medicine
Jim Leonard

Naicatchewenin First Nation
Donald Smith
Charles (Wes) Smith
Wayne Smith

Nigigoonsiminikaaning First Nation
Will Windigo

Fort Frances Chiefs Secretariat
Tammy Ryll

Ministry of Natural Resources
Twila Smitsnuk

Osisko Mining Corporation
Alix Drapack (presenter)
Anne Charland
Bud Dickson

Golder Associates Ltd.
Cathryn Moffett (note taker)

Meeting Objectives:

- To present the revised project description, explain the tailings management alternatives and present the baseline study plan for the Hammond Reef project.
- To seek feedback and comments from Aboriginal communities.

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

Opening Prayer (Elder Dorothy Medicine)

Introductions (Bud Dickson)

Project Presentation (Alix Drapack)
Presentation Overview

- Differences in project description since last presentation
- Baseline studies
- Next steps

Project Description

- Revised project description submitted to agencies April 8 2011
- Changes to tailings management locations, waste rock locations, addressing regulator questions
- Included baseline study summaries, water balance information
- Major Project components (site layout)

Q – What's the total area of the project? A – The map scale is about 1.5 miles by 6 miles. The total length of the property is about 30km. We can get back to you about the total project footprint. Follow-up: The total Hammond Reef Project footprint is 1,385 ha including the open pits, waste rock storage and other stockpiles.

- Tailings management evaluation
- Tailings options that have been disqualified, ie Hogarth Pit and Lizard Lake

Baseline study plans

- Hydrology, water quality, biology, bathymetry

Next Steps

- Aboriginal field monitors
- Finalize Ontario EA process
- Further design

Consultation

- Mining 101 facilitated by Learning Together
- Public meeting in June
- Citizens committee
- Formal Consultation Plan

Question and Answers
Q –Can we get copies of the presentation?
A – Yes, we will send out a copy along with the draft meeting notes.

Q – How many students is Osisko planning to hire for field work?
A – We plan to hire one student for the summer field work.

Q – The province intends to hire Aboriginal summer students (5 rangers), maybe you could work with them?
A – We intend to hire an Aboriginal summer student specifically for the Hammond Reef project. We are interested in the student learning about the project and presenting first hand knowledge back to the communities on what he/she observed about the Hammond Reef project.

Q – Does the student need a driver's license?
A – No. The student will stay at the camp and will accompany the Golder field staff at all times and will not be alone in the field. The Golder field staff will be licensed to operate any motor vehicles required in the field. We won't be reducing the amount of technical experts on the field crew, the student would be job shadowing and could take on more or less active partcipation as they feel comfortable. The summer student will need health and safety training provided by both Osisko and Golder Associates.

Q – Would it be a college or university student?
A – We will rely on you, the 7 communities, to recommend someone. It could be someone who is already interested in an environmental career, or someone who is good at public speaking and can share what they have seen. It's really up to the 7 communities to decide who would suit the role best.

Q – The two day information sessions with Learning Together are a good idea. When would you be doing this? It should be soon.
A – As soon as possible. We just met with them in early April and they said they are available immediately. As quickly as you are available, is as soon as they will come. I will work with Tammy Ryll later this week to begin setting up the schedule.

Q from Osisko – How flexible are the communities on dates? Would May 1st work?
A – Yes, that sounds like a good time frame.

Q – In relation to Hogarth Pit, who is responsible for it now?
A from Twila Smitsnuk (MNR)– The Ontario government is responsible for Hogarth Pit. We are still moving forward with our plan to ensure the site is properly managed.
A from Osisko: Osisko did start collecting background information on the fisheries in Hogarth Pit and have shared our report with the DFO. Osisko has also shared our bathymetry study of Hogarth Pit with DFO and MNR.
A from Twila Smitsnuk(MNR): MNR has been sharing data with Osisko as well both about Hogarth Pit and about the region in general.

Q – How do the tailings get from the plant to the tailings site? A – The tailings travel by pipeline. We are still looking at different options of how the tailings will be managed, for example they may be thickened or paste tailings. Thicker tailings allow for easier re-vegetation and take up less area.

Q – What would stop you from draining Mita Lake?
A – The project will not go forward without draining Mita Lake. The Hammond Reef orebody is located underneath Mitta Lake and if we are not allowed to drain the lake, the project will not proceed.

Q – Is it a possibility that you won't be allowed to drain Mita Lake? A – We hope not.

Q- Are there fish in Mitta Lake?
A: We know that the lake has forage fish (suckers, minnows), but is not used for recreational fishing (no walleye). Because the lake will be drained, the project will include fish compensation as per DFO's requirements. DFO prefers habitat compensation not as cash payment but instead through projects that increase fish habitat in the region. We are developing a list of possible projects (ie a fish bridge where currently there is a barrier preventing fish to pass).

Q – When will you know more about the habitat and what is in that lake?
A – We know quite a bit about it already. The "catch information" for Mitta Lake collected by Golder in 2010 is included in Appendix G-5 of our Project Description. There was also a report completed by TBT Engineering (Thunder Bay) in 2009 which has additional info on Mitta Lake and is included in Appendix D. We had a meeting with DFO and MNR on April 13 and they will look at what we have done and what our work plan for 2011 is. They will let us know if there are any potential data gaps. By the end of this season, I expect we will have a very good idea of what is in the lake.

Q – Is that a part of the baseline study? Do you know when the information will become available?
A – Yes. The information collected to date and planned for this year will be part of the baseline studies. Golder will be collecting information into the fall of this year. Some of the samples take longer to analyze (ie fish tissue samples) and the analysis of the data and report writing takes time. Golder will likely have draft baseline study reports done by mid 2012.

Q – How is that lake fed? Is it fed by runoff from rain? A – I'm not sure but I can get you that information.
Q – What is the water clarity like? There is a possibility that the lake could be spring-fed. You would be dealing with groundwater then.
A – I need to get back to you regarding water clarity in Mitta Lake. We will be doing a lot of studies on the groundwater (hydrogeology) and the hydrology. Water management at the site and the water balance will become a major focus in the next year as design continues.

Q – In regards to consultation, who developed your formal consultation plan?
A – We have not completed the formal plan yet, that is part of our next steps. We still need to clarify our approach to the Ontario environmental assessment process. Then we plan to draft our consultation plan.

Q – My concern is that there are different timelines in place. A lot of the timelines take the eleventh hour approach which makes problems for us to provide feedback. Are you planning to include First Nations input into the plan? A – Yes, we would like to work together. Our consultation is in the beginning stage: information on the project. There are two main goals of Aboriginal engagement: bettering the project through input from Aboriginal groups during the design stage and meeting regulatory requirements for Aboriginal engagement so that we can get the permit.

Q – The government requirements are not adequate and the timelines are unreasonable. It would be important for you to engage in this process right away instead of waiting for a year from now. A – I'm hoping to move forward with a drafting the formal consultation plan within the next month or two.

Q – Is it Osisko's plan to make it a collective process, - where you don't just tell us how it's going to happen but also ask us how consultation works best?

A – Yes, we fully agree that this is a collaborative process. We are interested in continuing constructive, transparent and ongoing relationships with you.

Q (asked after the presentation) – Does the terrestrial baseline study include medicinal plants? A – I'm not sure, I can check on that. We would need to know from you what plants are important and what plants have medicinal value.

Additional Comments:
Twila Smitsnuk (MNR) – The provincial and federal government are trying to coordinate the consultation for this and other projects in the area.. We are planning a meeting in June so that we can develop a communication protocol with Aboriginal groups. You will get an invitation to attend the meeting from Peter Hinz soon. The meeting will also talk about the process of environmental assessment.

Closing Thanks (Elder Dorothy Medicine)

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HAMMOND **REEF**

April 2011

Presentation Overview

- Revised Project Description.
- Tailings Management Facility Evaluation.
- Proposed Baseline Studies / 2011 Field Program
- Next Steps
- Consultation

Revised Project Description

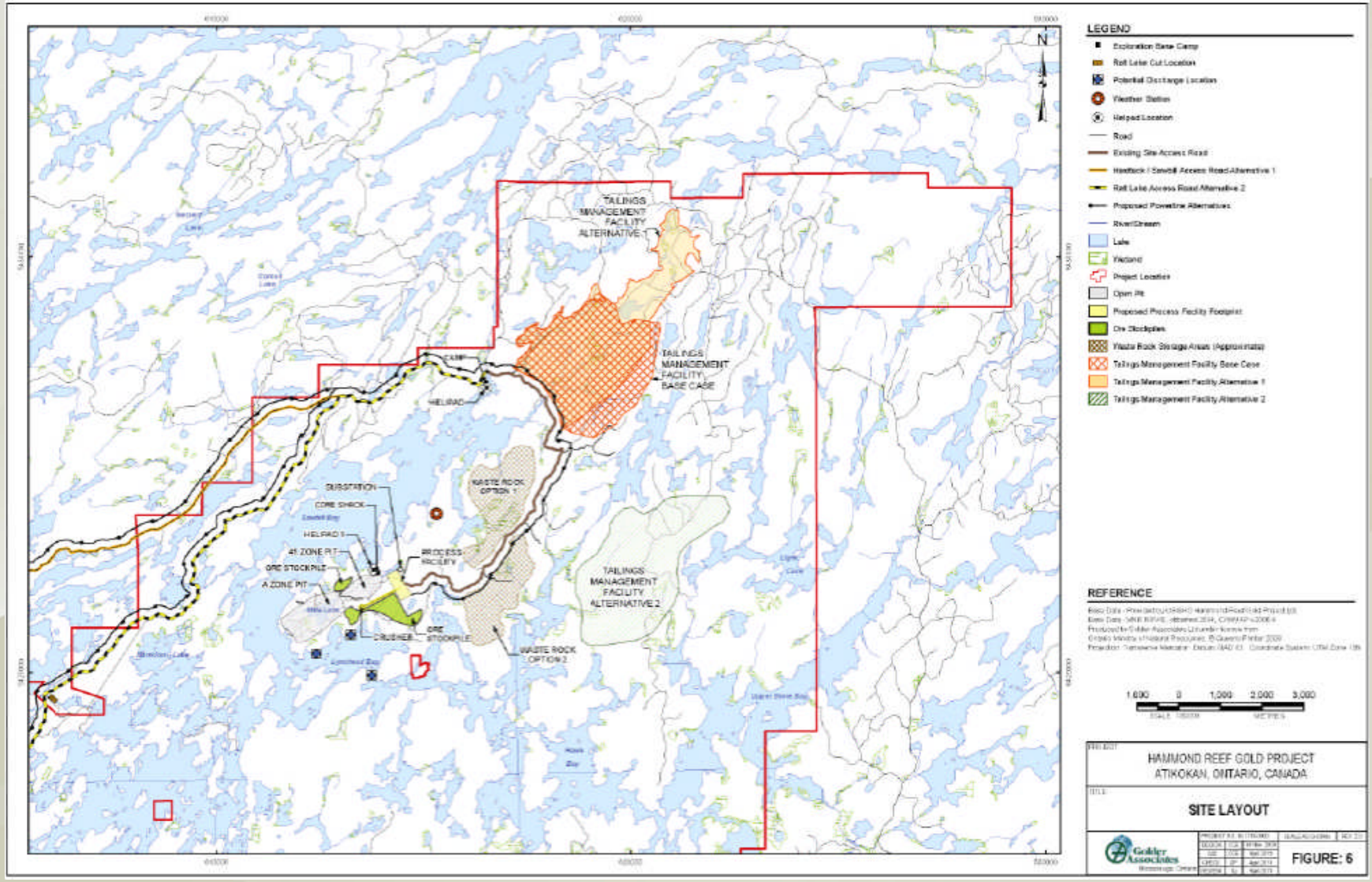
- Submitted REVISED Project Description to CEAA and MPMO on Friday, April 8 2011.

- Major changes:
  - Tailings Management Facilities.
  - Location of Waste Rock piles.
  - Responses to requests for Additional Information from CEAA and the Provincial regulators.

Revised Project Description

- Inclusion of:
  - Baseline Study Summaries;
  - Water Balance Preliminary Studies;
  - Tailings Management Facility Matrix; and
  - Aerial Photos of selected Project Components.

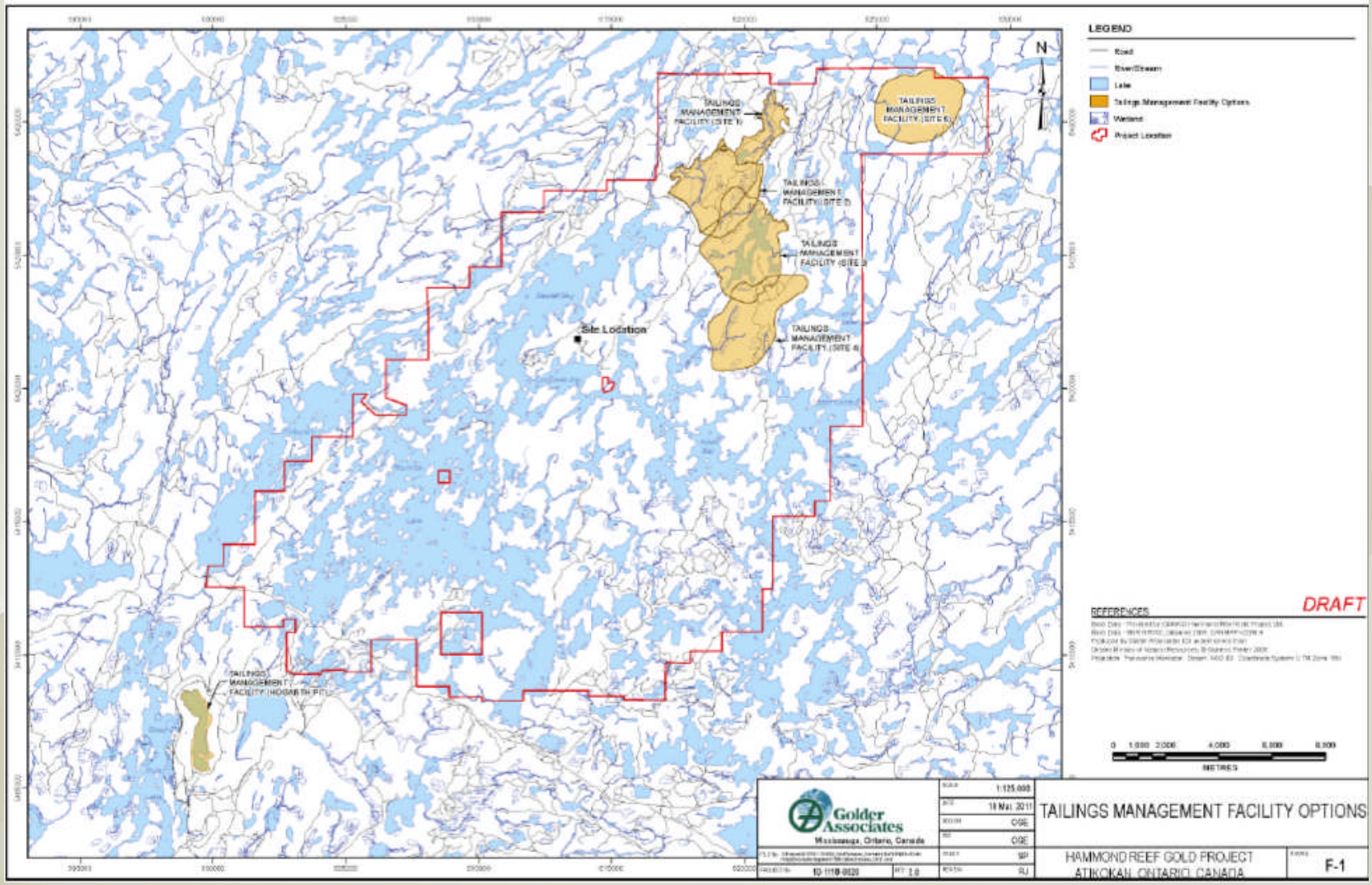
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Tailings Management Facility Evaluation

- Evaluated 6 options – 5 on-site and 1 off-site (Hogarth Pit).
- Considered:
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  - Stakeholder input
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Tailings Management Options

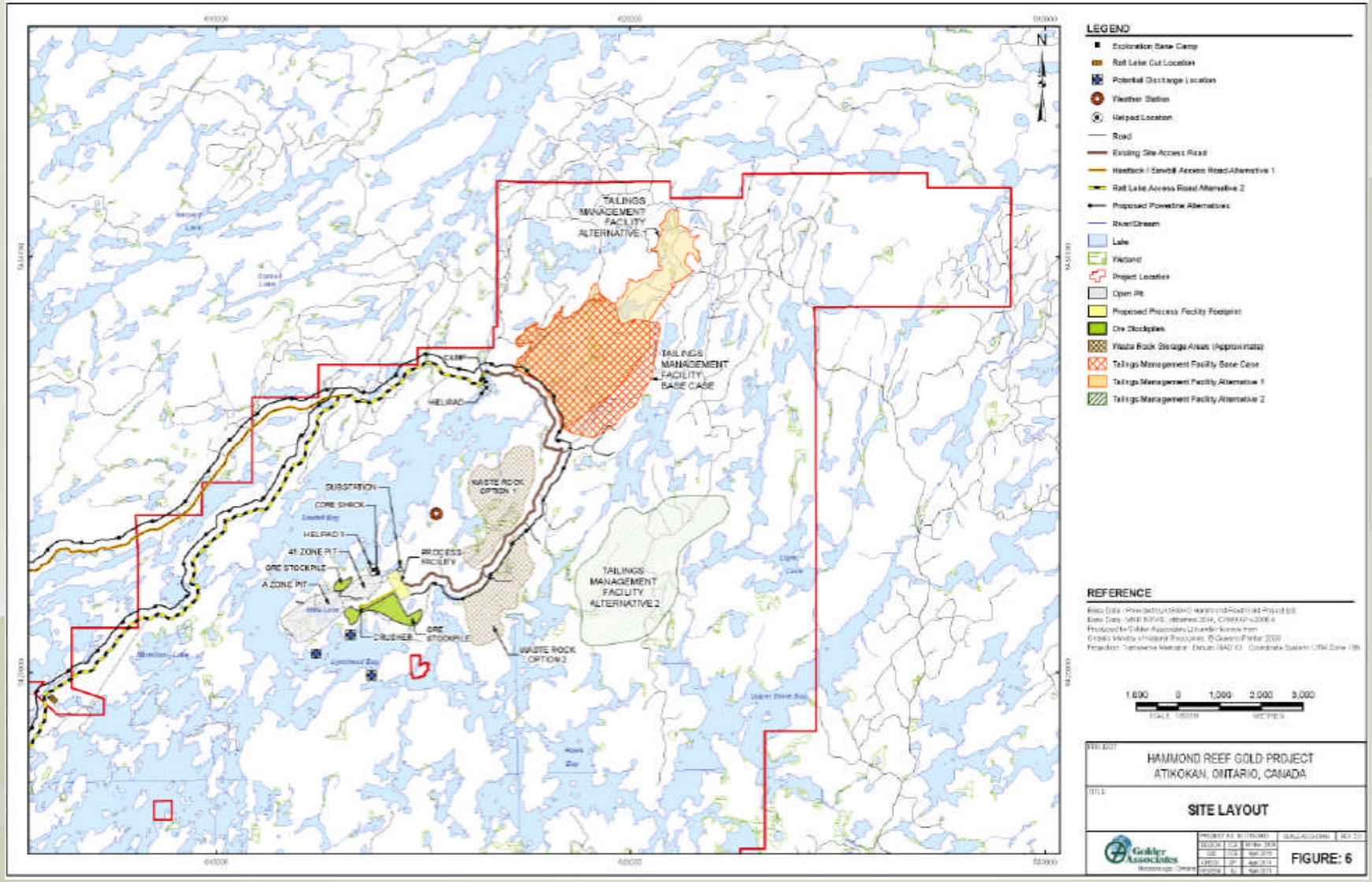


Tailings Management Options included in PD.

- Tailings Management Facilities #1 (Alternative #1), #2 (Base Case) and #4 (Alternative #2).

- Final Decision will consider:
  - Avoid (if possible) fish-bearing waterways.
  - Minimize negative impact to fish habitat.
  - Compensate for negative impacts on fish habitat.
  - Timely permitting (try to avoid requirement for scheduling under the MMER).
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Major Project Components



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- Finalize 2011 field program
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Conclusion

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  - Can we clarify any areas of the description?
  - What are your concerns?

Thank you!

OSISKO

June 16, 2011

Acting Director - Environmental Assessment Approvals Branch
Ministry of the Environment
Environmental Assessment and Approvals Branch
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

DESIGNATION REQUEST FOR AN INDIVIDUAL ENVIRONMENTAL ASSESSMENT FOR THE HAMMOND REEF GOLD MINE PROJECT UNDER THE ONTARIO ENVIRONMENTAL ASSESSMENT ACT

Dear Ms. Garcia-Wright,

Osisko Mining Corporation (Osisko) is proposing the development of the Hammond Reef gold deposit near Atikokan, Ontario into a producing gold mine. The Project consists of the development of an open pit mine, including an ore processing facility, and a tailings management area. Also included is the associated infrastructure at the site, the upgrading of an access road to the site, and the construction of a new electrical transmission line. Options assessments are currently being completed to determine the preferred location for the tailings management area. All facilities will be collocated with the mine.

The proposed development is subject to an environmental assessment (EA) under the *Canadian Environmental Assessment Act* (CEAA) and the CEAA process has been formally initiated through submission of a Project Description that has been accepted by the Canadian Environmental Assessment Agency.

Although there are no specific triggers for mine development projects under the Ontario *Environmental Assessment Act*, we acknowledge that certain components of the project do have specific provincial legislative requirements. These include on-site and off-site project components, development of which will require disposition of Crown lands.

As a result, Osisko is voluntarily proposing to enter into an agreement with the MOE to complete an individual EA for the entire project under the provincial EA requirements. On-going discussions with provincial and federal representatives have noted that coordination of the provincial EA process with the federal CEAA process will streamline the submission and review of the EA It is our understanding that by submitting to a voluntary individual EA we are facilitating a coordinated approach to provincial and federal approval of the Project. This in turn permits Osisko to proceed with obtaining both provincial and federal permits and approvals for development of the Project without additional delay.

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Specifically, the works and activities Osisko proposes to undertake, and that would be addressed in the EA under the Ontario *Environmental Assessment Act* include, but are not limited to:

- the construction and operation of an open pit gold mine and associated material stockpiles, tailings management area;
- the construction and operation of an ore processing facility, including tailings management area, and transfer facilities;
- the construction and operation of support facilities and infrastructure at the mine site, including water supply and treatment, waste management, and storage facilities;
- the construction and operation of ancillary facilities and buildings, such as administrative offices, service buildings, fuel storage, explosives storage, etc.;
- the construction of a new 230 kV transmission line of approximately 30 km in length;
- updgrades to existing roads to allow access to the mine site; and
- the decommissioning, closure and abandonment of the mine and mine-related infrastructure.

It is Osisko's understanding that upon receipt of this designation request, the Ministry will assesses the merits of the request prior to making a recommendation to the Minister. A proposed designating regulation is then posted on the Environmental Registry for a minimum of 30 to 45 days for public consultation.

Please advise if you require any additional information to assist in your determination.

Sincerely,
<signature removed>

for

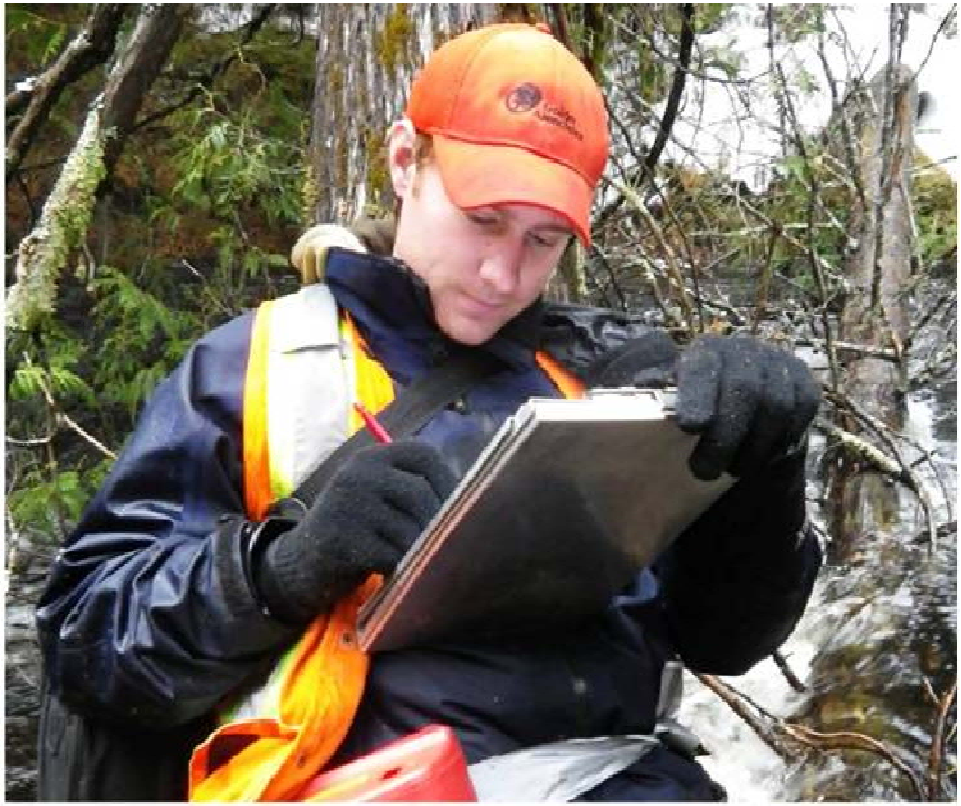
Jean-Sébastien David

Vice-President Sustainable Development

155 University Av., Suite 1440, Toronto, Ont., Canada M5H 3B7
Telephone (416) 363-8653 – Telecopier (416) 363-7579
osisko.com

3 – Baseline Results Meetings

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Golder Associates



HAMMOND REEF

Baseline Study Summary - Hydrogeology

May 2012

Baseline Studies – Characterizing Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- **Groundwater Quality and Quantity (Hydrogeology)**

Biological Components

- Vegetation and Wildlife
- Fish and Fish Habitat

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

Study Objectives

The primary objective of the hydrogeological characterization program is to provide sufficient data for the evaluation of the baseline groundwater flow and quality to assess potential impacts of the proposed site on the local groundwater regime.

Components of this objective include:

- Establishment of groundwater flow paths
- Establish baseline groundwater quality
- Identify key factors that could influence site groundwater quality and or quantity
- Provide input to engineering design, alternatives assessments and other environmental evaluations for the Project

Study Objectives

Specifically, the hydrogeology baseline study will describe and identify, within the defined study areas:

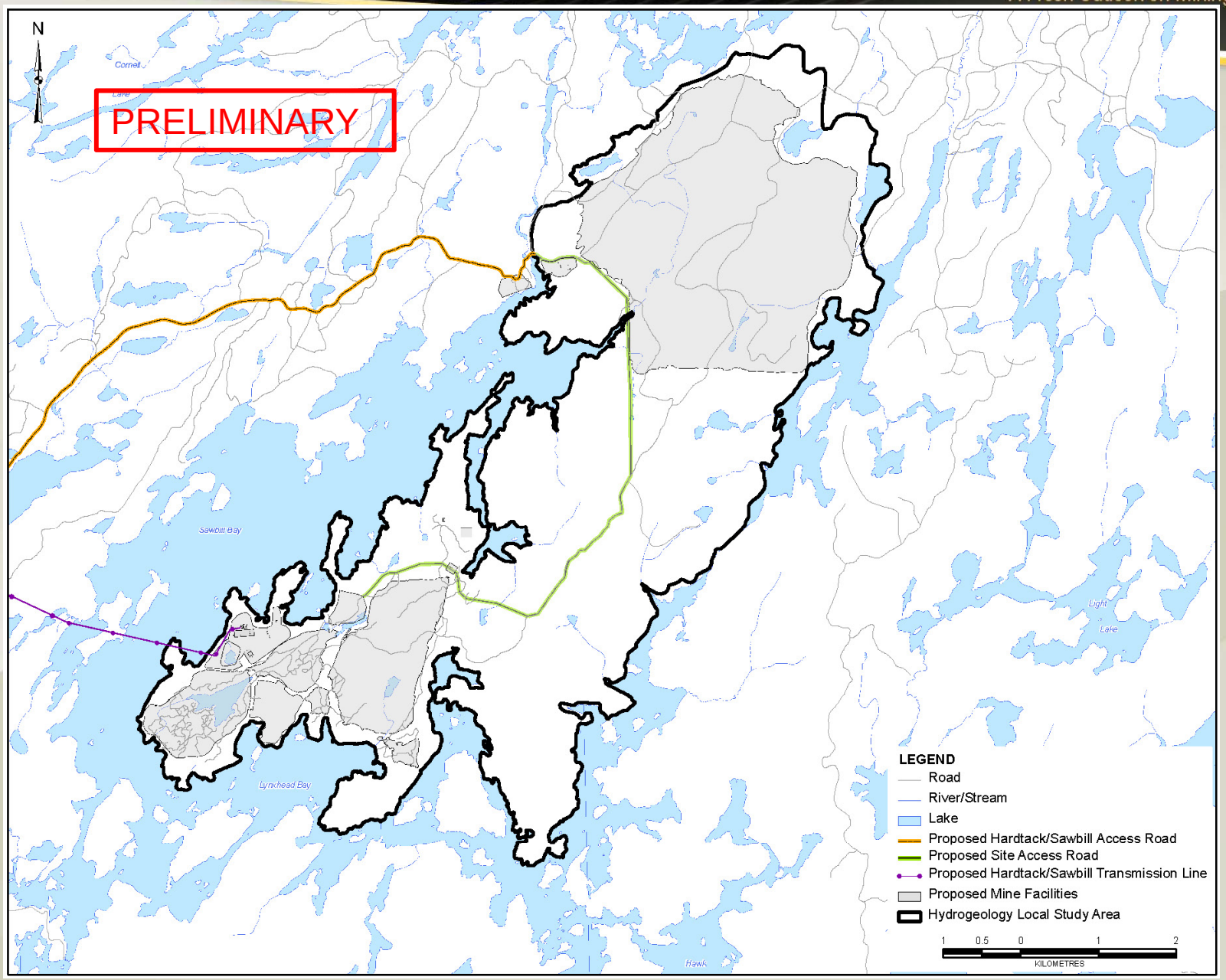
- Physical geography and the geology as it pertains to groundwater flow systems
- Physical properties of aquifers and aquitards
- Regional and local groundwater flow patterns
- Recharge and discharge areas
- Groundwater interaction with surface water
- Potable groundwater supplies, including their current use if applicable
- Baseline groundwater quality

Study Areas

Detailed hydrogeological studies in the **Mine Study Area** were specifically focussed on the following three areas that encompass the Project components:

- Open Pit, Stockpile, Ore Processing Facility and Waste Rock Locations
- Tailings Management Facility Alternative 1
- Tailings Management Facility Alternative 2

Local Study Area: The groundwater flow is expected to discharge into Sawbill Bay, Lynxhead Bay and Marmion Lake, and as such, these water bodies have been chosen as the extent of the LSA .


N
PRELIMINARY
Sawbill Bay
Lynkhead Bay
Light
Lake
Hawk
LEGEND
Road
River/Stream
Lake
Proposed Hardtack/Sawbill Access Road
Proposed Site Access Road
Proposed Hardtack/Sawbill Transmission Line
Proposed Mine Facilities
Hydrogeology Local Study Area
1 0.5 0 1 2
KILOMETRES

Groundwater Quality Criteria

Baseline groundwater quality samples were submitted for the following analysis:

- **General parameters** - pH, alkalinity, acidity, conductivity, total dissolved solids (TDS), total suspended solids (TSS), total organic carbon (TOC), dissolved organic carbon (DOC)
- **Major ions** – calcium, magnesium, potassium, sodium, sulphate, chloride, fluoride, carbonate (CO_3^-), bicarbonate (CO_3^{2-}) and free cyanide. Hardness was calculated based on major ions
- **Nutrients** – nitrate (NO_3-N), nitrite (NO_2-N), total ammonia (NH_3-N), phosphorus, and ortho-phosphates. Un-ionized ammonia (NH_3) was calculated based on the NH_3-N concentration, and the field pH and temperature
- **Organics** –phenols
- **Metals** –dissolved

Groundwater Flow Criteria

The proposed indicators for hydrogeology for the EA are:

- Flow Direction
- Hydraulic Conductivity
- Advective Transport

Field Programs

Two distinct hydrogeological studies initiated in 2011:

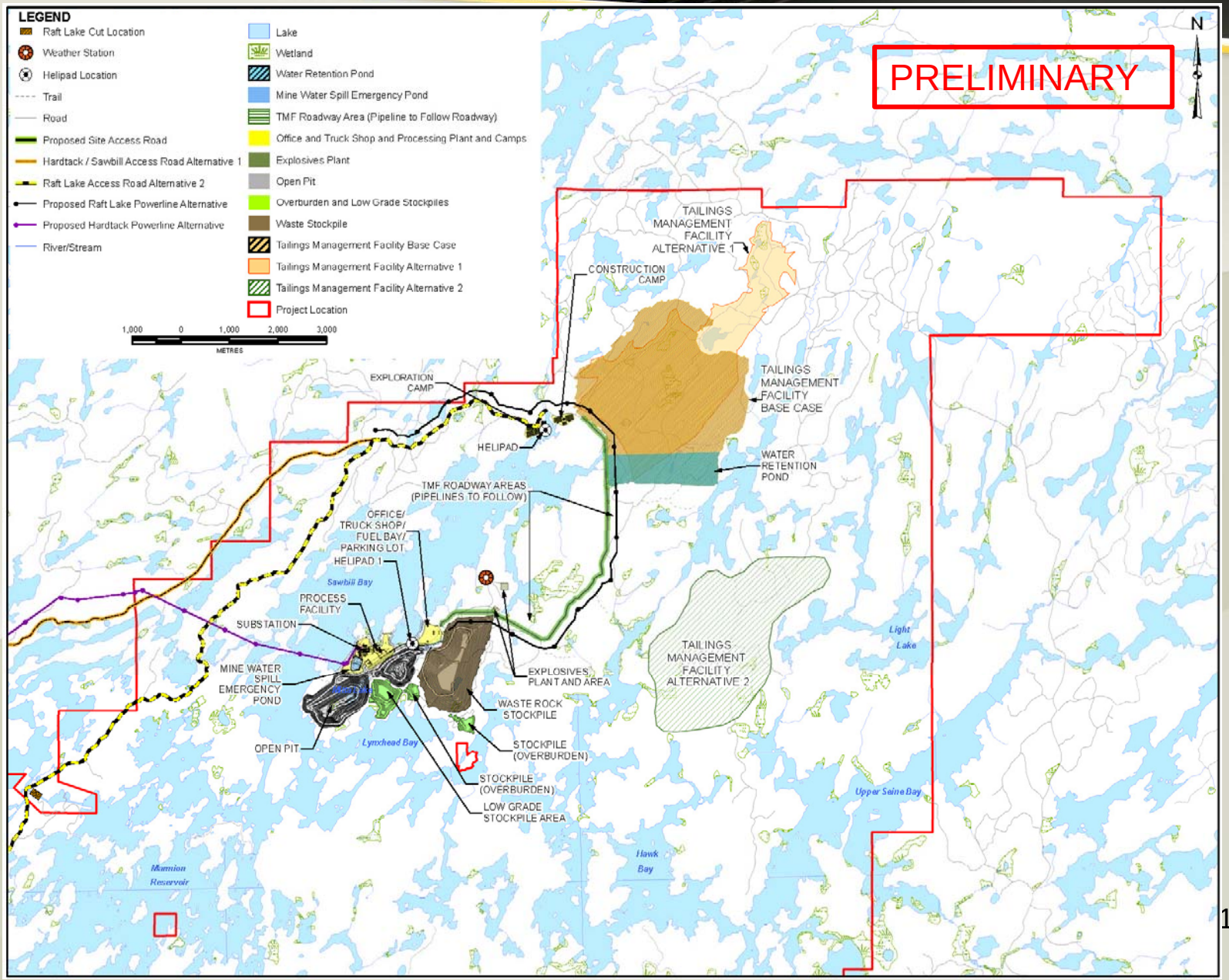
1. **Baseline investigation of shallow groundwater regime** (overburden and shallow bedrock) to assess baseline groundwater conditions in support of the EA and to establish a network of groundwater wells for continuous monitoring of potential impact during construction and the life of the mine.

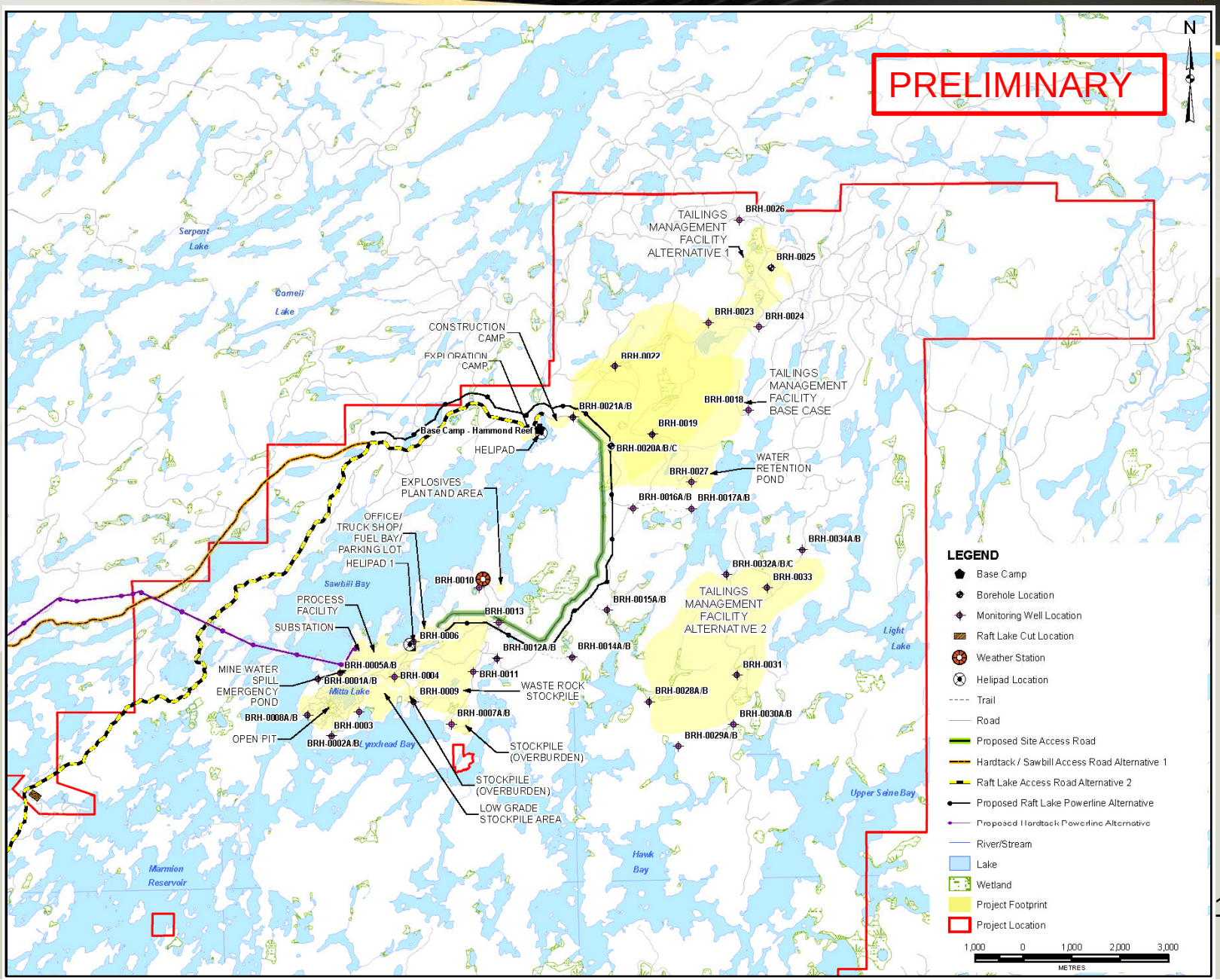
2. **Deep bedrock groundwater investigation** to investigate the permeability of predominant structural features, evaluate deep groundwater quality, estimate groundwater pit inflows and develop conceptual groundwater flow model to estimate groundwater inflow rates.

Fieldwork Completed

Shallow Groundwater Regime

- Drilling and installation of 34 groundwater monitoring wells with screened intervals in overburden and shallow bedrock
- Soil sample collection for overburden stratigraphy and grain size analysis
- Hydraulic conductivity testing of overburden and shallow bedrock
- Installation of automatic data loggers for long-term water level monitoring
- Groundwater level monitoring and water quality sampling completed three times in 2011 (May/June, August and October) and once in 2012 (May)


LEGEND
Raft Lake Cut Location
Weather Station
Helipad Location
Trail
Road
Proposed Site Access Road
Hardtack / Sawbill Access Road Alternative 1
Raft Lake Access Road Alternative 2
Proposed Raft Lake Powerline Alternative
Proposed Hardtack Powerline Alternative
River/Stream
Lake
Wetland
Water Retention Pond
Mine Water Spill Emergency Pond
TMF Roadway Area (Pipeline to Follow Roadway)
Office and Truck Shop and Processing Plant and Camps
Explosives Plant
Open Pit
Overburden and Low Grade Stockpiles
Waste Stockpile
Tailings Management Facility Base Case
Tailings Management Facility Alternative 1
Tailings Management Facility Alternative 2
Project Location
1,000 0 1,000 2,000 3,000
METRES
N
PRELIMINARY
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 1
CONSTRUCTION CAMP
EXPLORATION CAMP
HELIPAD
TAILINGS MANAGEMENT FACILITY BASE CASE
WATER RETENTION POND
TMF ROADWAY AREAS (PIPELINES TO FOLLOW)
OFFICE/ TRUCK SHOP/ FUEL BAY/ PARKING LOT
HELIPAD 1
Sawbill Bay
PROCESS FACILITY
SUBSTATION
MINE WATER SPILL EMERGENCY POND
OPEN PIT
Lynxhead Bay
EXPLOSIVES PLANT AND AREA
WASTE ROCK STOCKPILE
STOCKPILE (OVERBURDEN)
STOCKPILE (OVERBURDEN)
LOW GRADE STOCKPILE AREA
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 2
Light Lake
Upper Seine Bay
Hawk Bay
Mamion Reservoir


PRELIMINARY
N
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 1
TAILINGS MANAGEMENT FACILITY BASE CASE
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 2
CONSTRUCTION CAMP
EXPLORATION CAMP
Base Camp - Hammond Reef
HELIPAD
WATER RETENTION POND
EXPLOSIVES PLANT AND AREA
OFFICE/ TRUCK SHOP/ FUEL BAY/ PARKING LOT
HELIPAD 1
PROCESS FACILITY
SUBSTATION
MINE WATER SPILL EMERGENCY POND
OPEN PIT
WASTE ROCK STOCKPILE
STOCKPILE (OVERBURDEN)
STOCKPILE (OVERBURDEN)
LOW GRADE STOCKPILE AREA
BRH-0026
BRH-0025
BRH-0023
BRH-0024
BRH-0022
BRH-0021A/B
BRH-0018
BRH-0019
BRH-0020A/B/C
BRH-0027
BRH-0016A/B
BRH-0017A/B
BRH-0034A/B
BRH-0032A/B/C
BRH-0033
BRH-0015A/B
BRH-0031
BRH-0028A/B
BRH-0030A/B
BRH-0029A/B
BRH-0010
BRH-0013
BRH-0006
BRH-0012A/B
BRH-0014A/B
BRH-0005A/B
BRH-0001A/B
BRH-0004
BRH-0011
BRH-0009
BRH-0008A/B
BRH-0007A/B
BRH-0003
BRH-0002A/B
Serpent Lake
Comeli Lake
Sawbill Bay
Mitta Lake
Lynxhead Bay
Marmion Reservoir
Hawk Bay
Upper Seine Bay
Light Lake
LEGEND
Base Camp
Borehole Location
Monitoring Well Location
Raft Lake Cut Location
Weather Station
Helipad Location
Trail
Road
Proposed Site Access Road
Hardtack / Sawbill Access Road Alternative 1
Raft Lake Access Road Alternative 2
Proposed Raft Lake Powerline Alternative
Proposed Hardtack Powerline Alternative
River/Stream
Lake
Wetland
Project Footprint
Project Location
1,000 0 1,000 2,000 3,000
METRES

Results – Hydraulic Conductivity

- Open Pits and Mill Footprint
  - Overburden generally thin and discontinuous
  - Where present, overburden consists of organics overlying till
  - Average hydraulic conductivity of the bedrock is 2.4 x 10-7 m/s
- Waste Rock Stockpile
  - Overburden generally thin and discontinuous
  - Localized areas of peat and silty clay overlying sand and gravel overlying till
  - Average hydraulic conductivity of the overburden ranges from 1.8 x 10-5 m/s to 6.6 x 10-7 m/s
  - Average hydraulic conductivity of the bedrock is 1.4 x 10-6 m/s
- TMF Alternative 1
  - Overburden thickness varies from 0 m to 25 m
  - Overburden generally consists of organics (peat), silty sand and till (silt and clay encountered in some boreholes)
  - Average hydraulic conductivity of the overburden ranges from 6.1 x 10-6 m/s to 5.1 x 10-7 m/s
  - Average hydraulic conductivity of the bedrock is 3.4 x 10-6 m/s
- TMF Alternative 2
  - Overburden thickness varies from 3 m to 7 m
  - Overburden generally consists of peat, silt, clay, sand and till overlying bedrock
  - Average hydraulic conductivity of the overburden ranges from 1.4 x 10-5 m/s to 2.5 x 10-6 m/s
  - Average hydraulic conductivity of the bedrock is 4.0 x 10-7 m/s

Results – Flow and Quality

- Groundwater Elevation and Flow
  - Horizontal hydraulic gradients typically follow the local topography
  - Downward vertical gradients were generally observed at higher elevations while upward vertical gradients were generally observed in areas of topographic lows and near water bodies

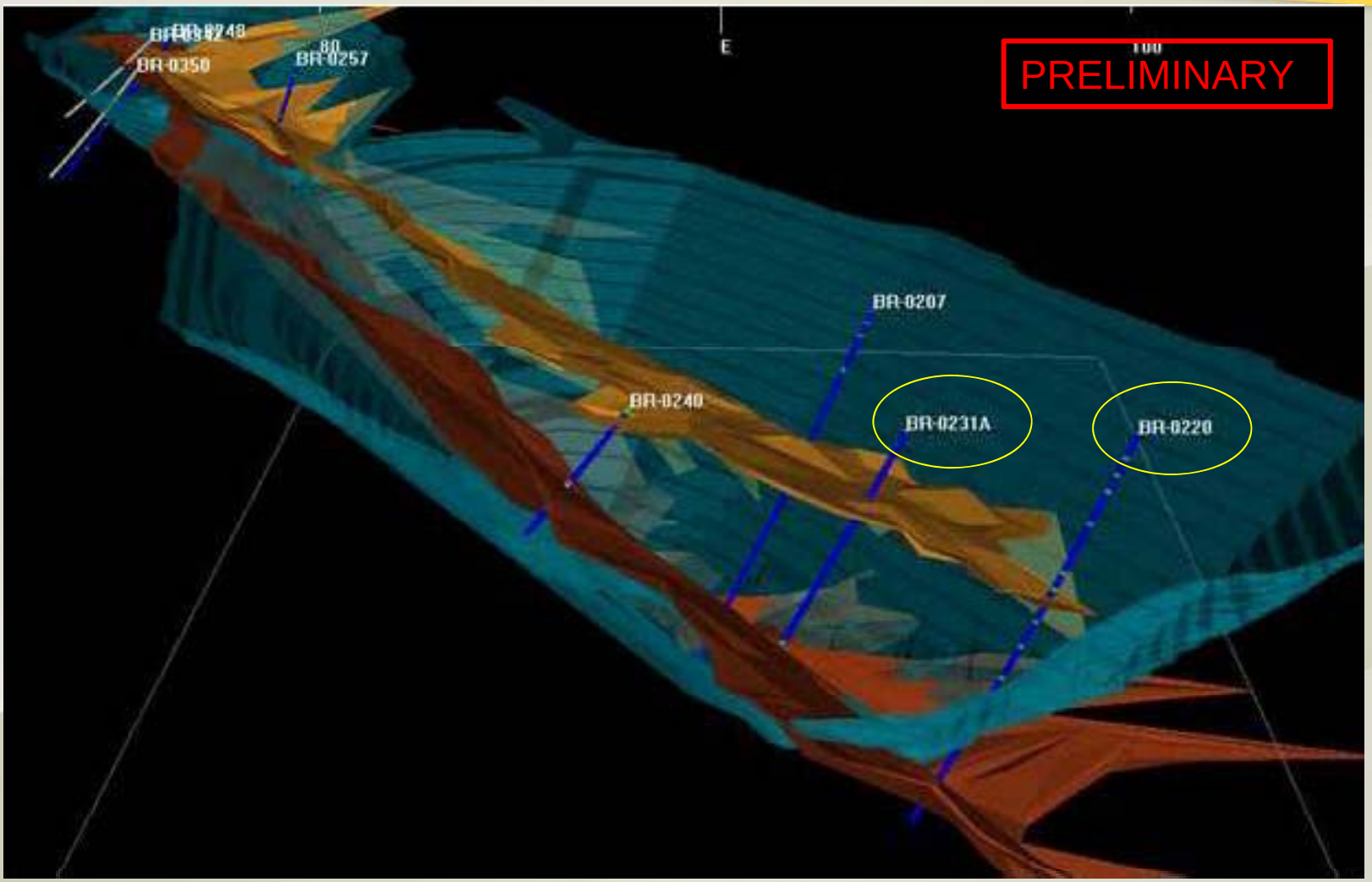
- Groundwater Quality
  - Manganese and DOC was measured at concentrations above ODWQS at many borehole locations
  - Phenols were at times greater than both CCME and PWQO criteria
  - Dissolved metals (Al, Cu, Co, W, Zn, U, As, V, Cd and Ag) were occasionally greater than both CCME and PWQO criteria
  - A single occurrence of cyanide exceeding CCME and PWQO was observed at BRH-0034A in June, 2011

Fieldwork Completed

Deep Bedrock Groundwater

Open Pit Area

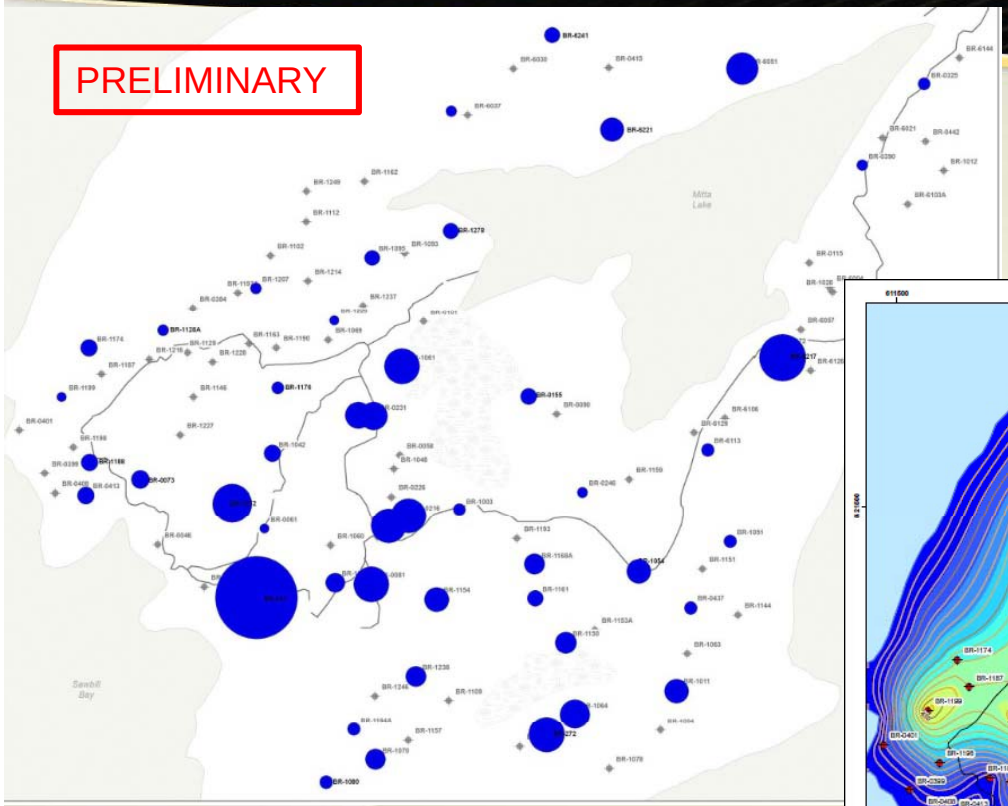
- Short-duration (12 hr) pumping tests in PQ holes BR-0220 and BR-0231
- Water quality samples collected at regular intervals throughout the tests
- Geophysical surveys completed in both PQ holes – Acoustic Televiewer
- Static water level measurements in ~140 existing exploration holes
- Installed 27 automatic data loggers for long-term water level monitoring
- Short-duration (1-2 hr) pumping tests in 45 existing NQ exploration holes
- Longer duration (5 day) pumping test in PQ hole BR-0220
- Heat pulse flow profiling and short-duration pumping test in high-yielding NQ hole BR-0433 using borehole packer to isolate upper section
- Initiated development of conceptual groundwater model



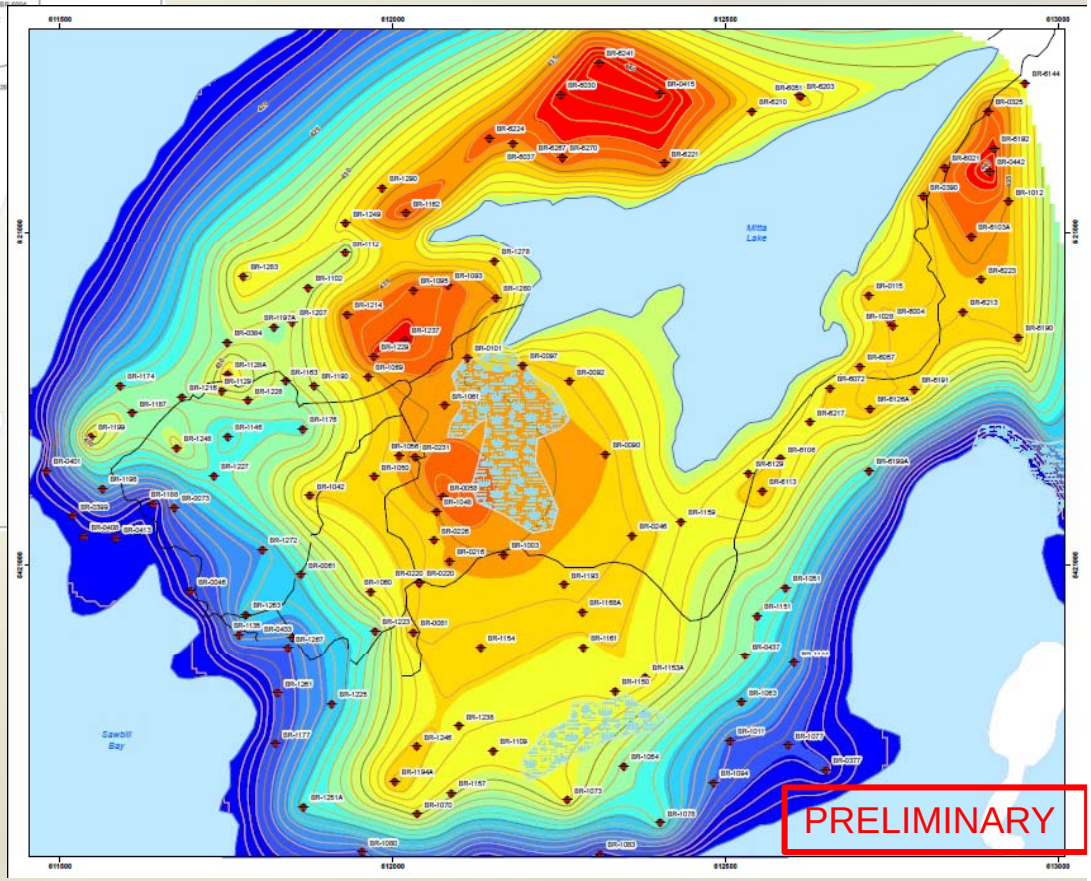
PQ boreholes BR-0220 and BR-0231A intersect upper/lower shears

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A Fresh Outlook on Mining

PRELIMINARY



NQ borehole locations selected for water level monitoring and short duration pumping tests in the proposed pit area



PRELIMINARY

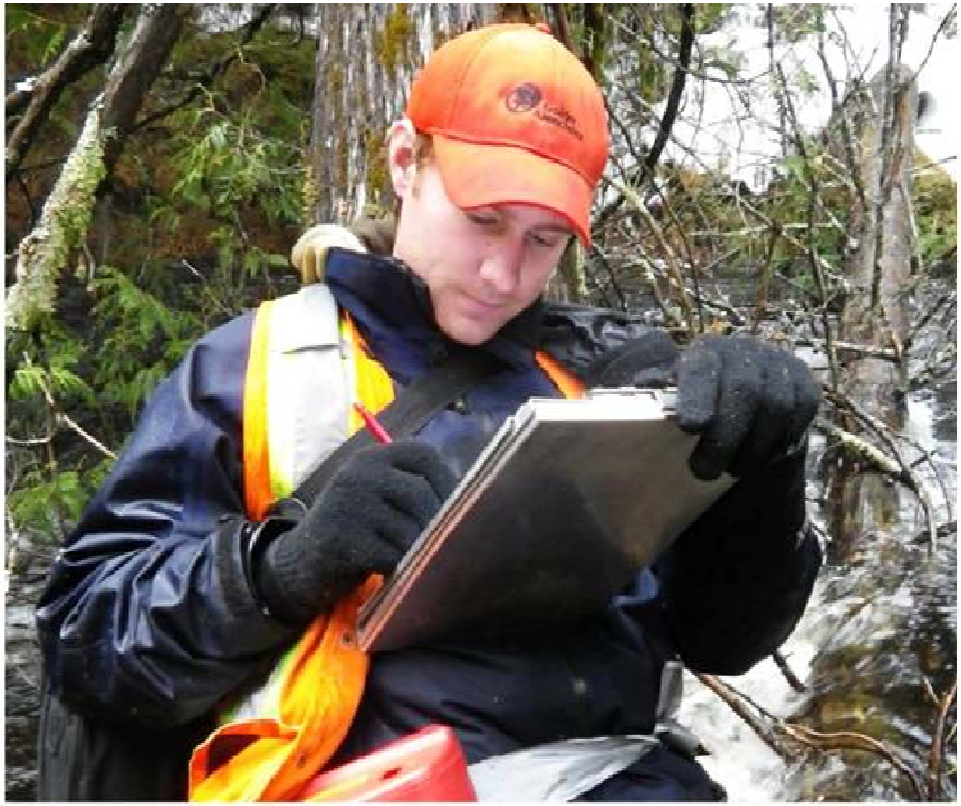
Results - Deep Bedrock Investigation

- Water table gradient reflects bedrock topography with no strongly anomalous zones that might indicate preferential connection to the reservoir
- Observed modest specific capacities ranging from 0.3 to 13.0 L/min/m, with one outlier of 41.0 L/min/m at BR-0433
- No obvious correlation between these structural features and the overall hydraulic conductivity of the bedrock mass
- Average hydraulic conductivity of upper weathered zone (<30 m depth) ranges from 10^{-6} m/s to 10^{-8} m/s
- Average hydraulic conductivity of bedrock mass (>30 m depth) ranges from 10^{-6} m/s to 10^{-10} m/s
- Average hydraulic conductivity of permeable structural features (shear zones, splays, joints, etc) ranges from 10^{-5} m/s to 10^{-7} m/s
- Deep groundwater quality results appear favorable (i.e. generally low concentrations of key parameters; meet PWQO) and similar chemistry in comparison with shallow groundwater and surface water from Marmion Reservoir.

Ongoing Work - 2012

- Two groundwater level monitoring / water quality sampling events (April/May and August)
- Assessment of groundwater quality in comparison to surface water quality in Marmion Reservoir
- Development of hydrogeological model of groundwater flow in vicinity of proposed open pit area, mill footprint and waste rock stockpile
- Assessment of groundwater pit inflows

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Golder Associates



HAMMOND REEF

Hydrology Baseline Study

May 31, 2012

BASELINE STUDIES – Characterizing the Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- Fish and Fish Habitat

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out the requirements for the description of the existing environment that must be presented in the EIS.

HYDROLOGY BASELINE STUDY - OBJECTIVES

To provide a baseline description of the hydrological environment in sufficient detail to:

- Permit the identification and assessment of environmental effects;
- Provide the data necessary to enable effective testing of predictions during the follow-up monitoring program;
- Provide input to engineering design, alternatives assessments and other environmental evaluations for the Project.

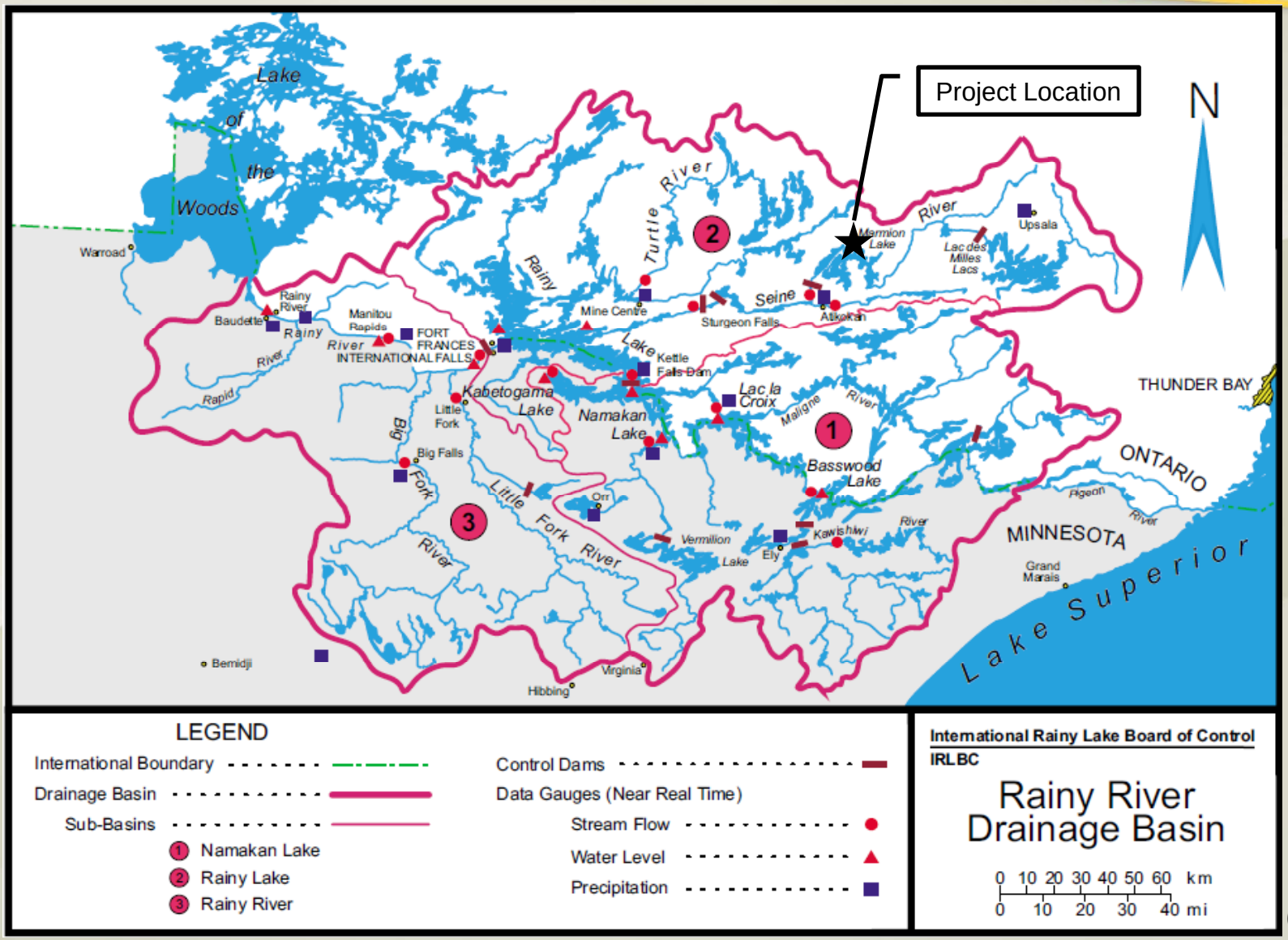
HYDROLOGY BASELINE STUDY – SCOPE OF WORK

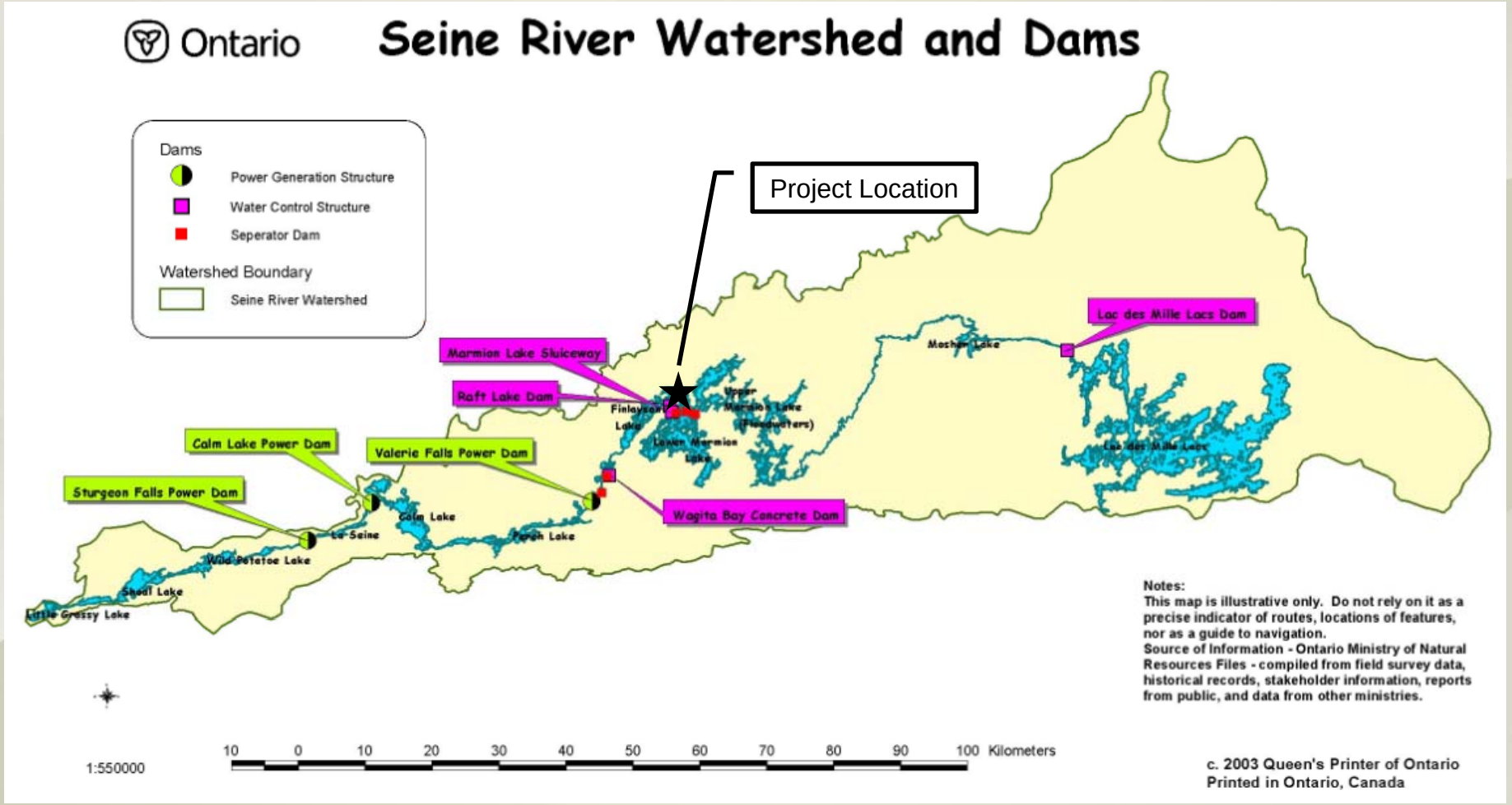
- Description of existing surface water management and use
  - Agreements under the International Joint Commission
  - 2004 to 2014 Seine River Water Management Plan
  - Existing MOE Permits to Take Water
- Description of hydrology in the site, local and regional study areas including:
  - Drainage basins;
  - Flow and water level regimes including monthly and seasonal fluctuations and year-to-year variability;
  - Normal, flood and drought properties of streams and lakes;
  - Hydrological components and processes, and their interrelations (e.g. precipitation, evapotranspiration, evaporation, runoff, groundwater recharge/discharge)
- Identification of navigable waterways and water bodies

EXISTING WATER MANAGEMENT AND USE

Source, review and summarize information available from:

- International Joint Commission website, http://www.ijc.org/
- Seine River watershed information website (e.g. 2004 to 2014 Seine River Water Management Plan), http://www.seineriverwmp.com/
- Ontario Ministry of Environment, information on Permits to Take Water is available upon request from Thunder Bay office

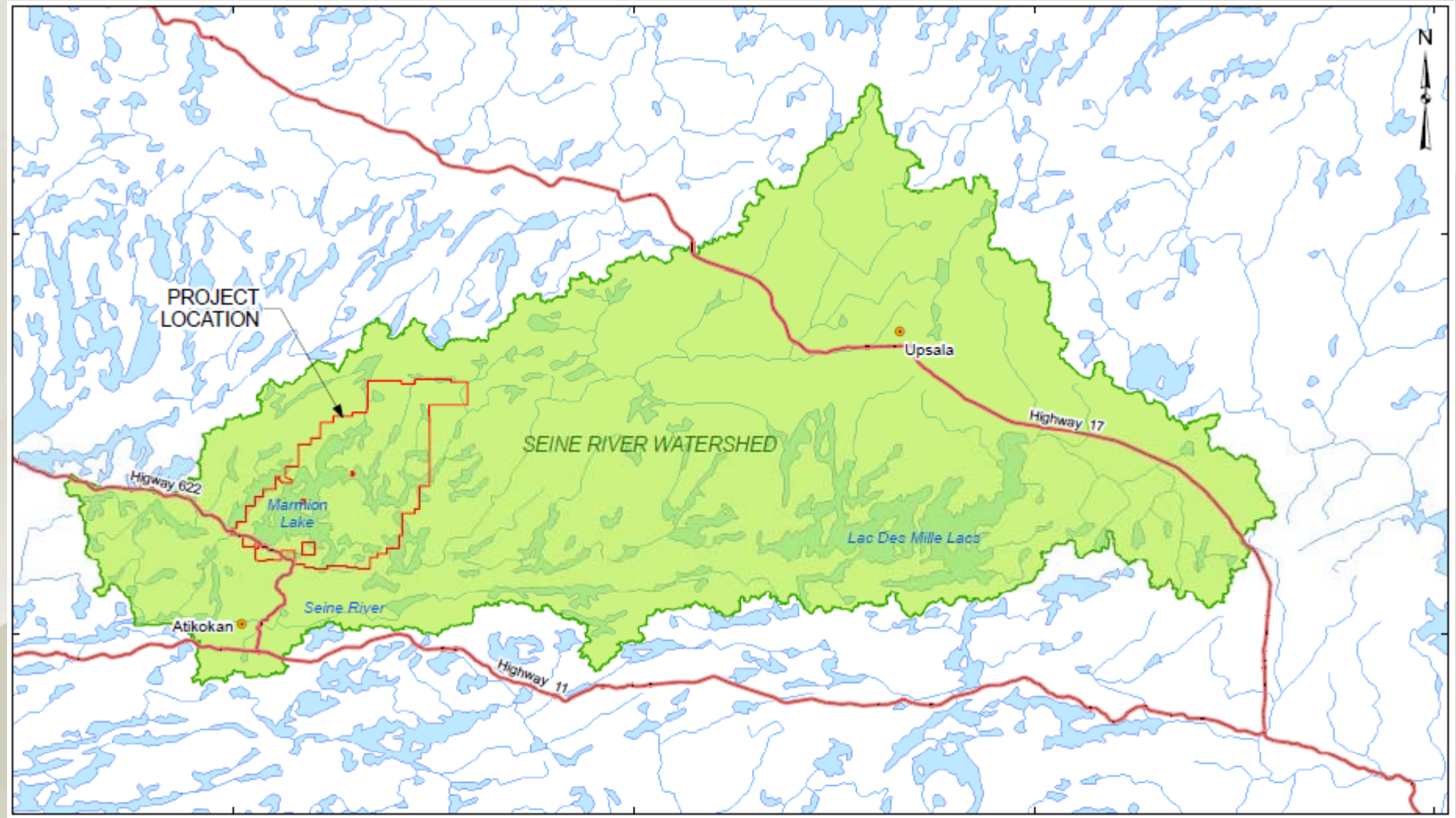

Project Location
N
Lake of the Woods
Warroad
Baudette
Rainy River
Manitou Rapids
FORT FRANCES
INTERNATIONAL FALLS
Rainy River
Rapid River
Kabetogama Lake
Little Fork
Big Fork River
Big Falls
Namakan Lake
Rainy Lake
Turtle River
Mine Centre
Sturgeon Falls
Seine
Atikokan
Kettle Falls Dam
Lac la Croix
Maligne River
Basswood Lake
Marmion Lake
Lac des Milles Lacs
Upsala
THUNDER BAY
ONTARIO
MINNESOTA
Pigeon River
Kawishiwi River
Ely
Vermilion Lake
Orr
Little Fork River
Grand Marais
Lake Superior
Bemidji
Virginia
Hibbing
1
2
3
LEGEND
International Boundary
Drainage Basin
Sub-Basins
1 Namakan Lake
2 Rainy Lake
3 Rainy River
Control Dams
Data Gauges (Near Real Time)
Stream Flow
Water Level
Precipitation
International Rainy Lake Board of Control
IRLBC
Rainy River Drainage Basin
0 10 20 30 40 50 60 km
0 10 20 30 40 mi


Ontario
Seine River Watershed and Dams
Dams
Power Generation Structure
Water Control Structure
Seperator Dam
Watershed Boundary
Seine River Watershed
Project Location
Marmion Lake Sluiceway
Raft Lake Dam
Calm Lake Power Dam
Valerie Falls Power Dam
Sturgeon Falls Power Dam
Wagita Bay Concrete Dam
Lac des Mille Lacs Dam
Mosher Lake
Finlayson Lake
Upper Marmion Lake (Headwaters)
Lower Marmion Lake
Lac des Mille Lacs
Calm Lake
La Seine
Wild Potatoe Lake
Shoal Lake
Little Grassy Lake
Notes:
This map is illustrative only. Do not rely on it as a precise indicator of routes, locations of features, nor as a guide to navigation.
Source of Information - Ontario Ministry of Natural Resources Files - compiled from field survey data, historical records, stakeholder information, reports from public, and data from other ministries.
1:550000
10 0 10 20 30 40 50 60 70 80 90 100 Kilometers
c. 2003 Queen's Printer of Ontario
Printed in Ontario, Canada

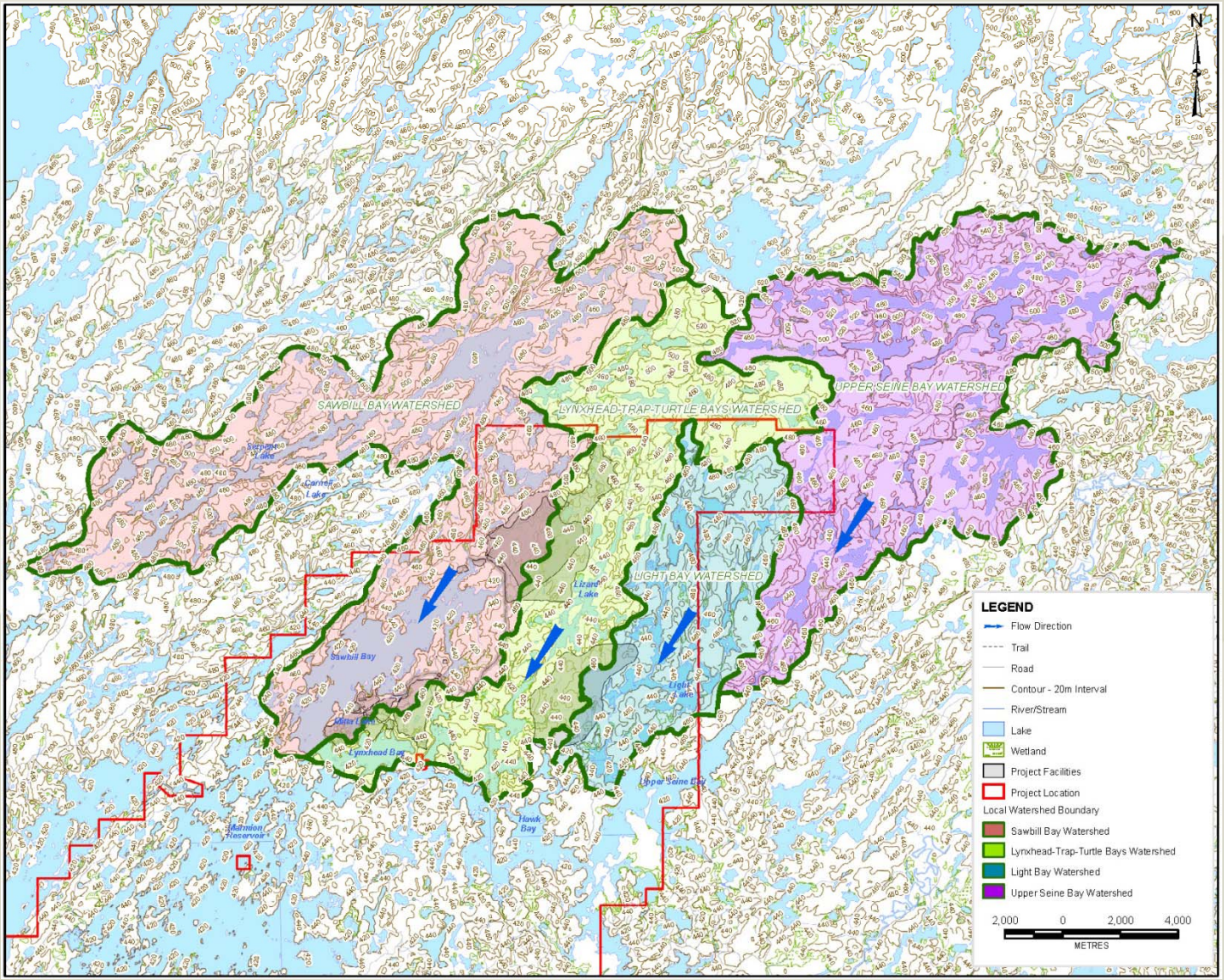
HYDROLOGY BASELINE – DRAINAGE BASINS

- **At the Site Scale** consist of the many small catchments and watercourses that drain the peninsulas where the Project and its alternatives will be located.
- **At the Local Scale** includes the watersheds draining to Sawbill Bay, Lynxhead-Trap-Turtle Bays, Light Bay and Upper Seine Bay on Upper Marmion Lake. These watersheds are drained by local watercourses/bodies which are tributary to the Seine River.
- **At the Regional Scale** consists of the Seine River watershed to the point of confluence with its right tributary, Eye River, downstream of Atikokan. This point is below Valerie Falls Generating Station and the confluence with the left tributary, Atikokan River.

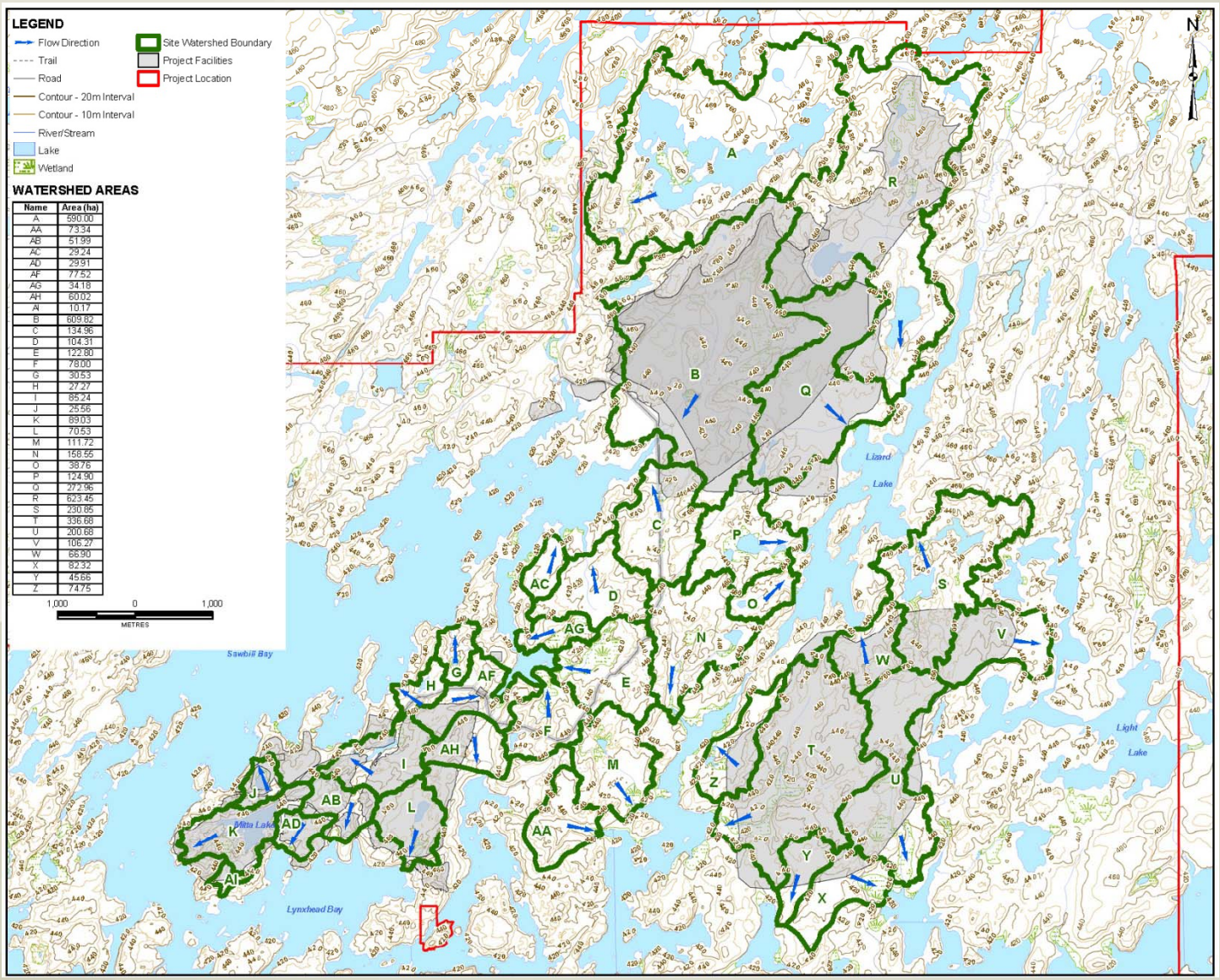
REGIONAL WATERSHED



LOCAL WATERSHEDS



SITE WATERSHEDS



FLOW AND WATER LEVEL REGIMES

- Collected short-term site/local hydrometric data:
  - Installed 13 gauging stations (9 recording and 4 manual);
  - Completed 9 site visits between Aug 2010 and May 2012 for flow and water level monitoring;
  - To compute daily mean discharges and water levels (Aug 2010 to May 2012).
- Analyzed regional long-term hydrometric data collected at Water Survey of Canada stations for:
  - Flow and water level statistics;
  - Regional relationships.
- To estimate flow and water level statistics at site/local scales using:
  - Correlation of short-term site/local hydrometric data to long-term regional hydrometric data for period of overlap;
  - Water balance methods;
  - Regional relationships.

FLOW AND WATER LEVEL STATISTICS

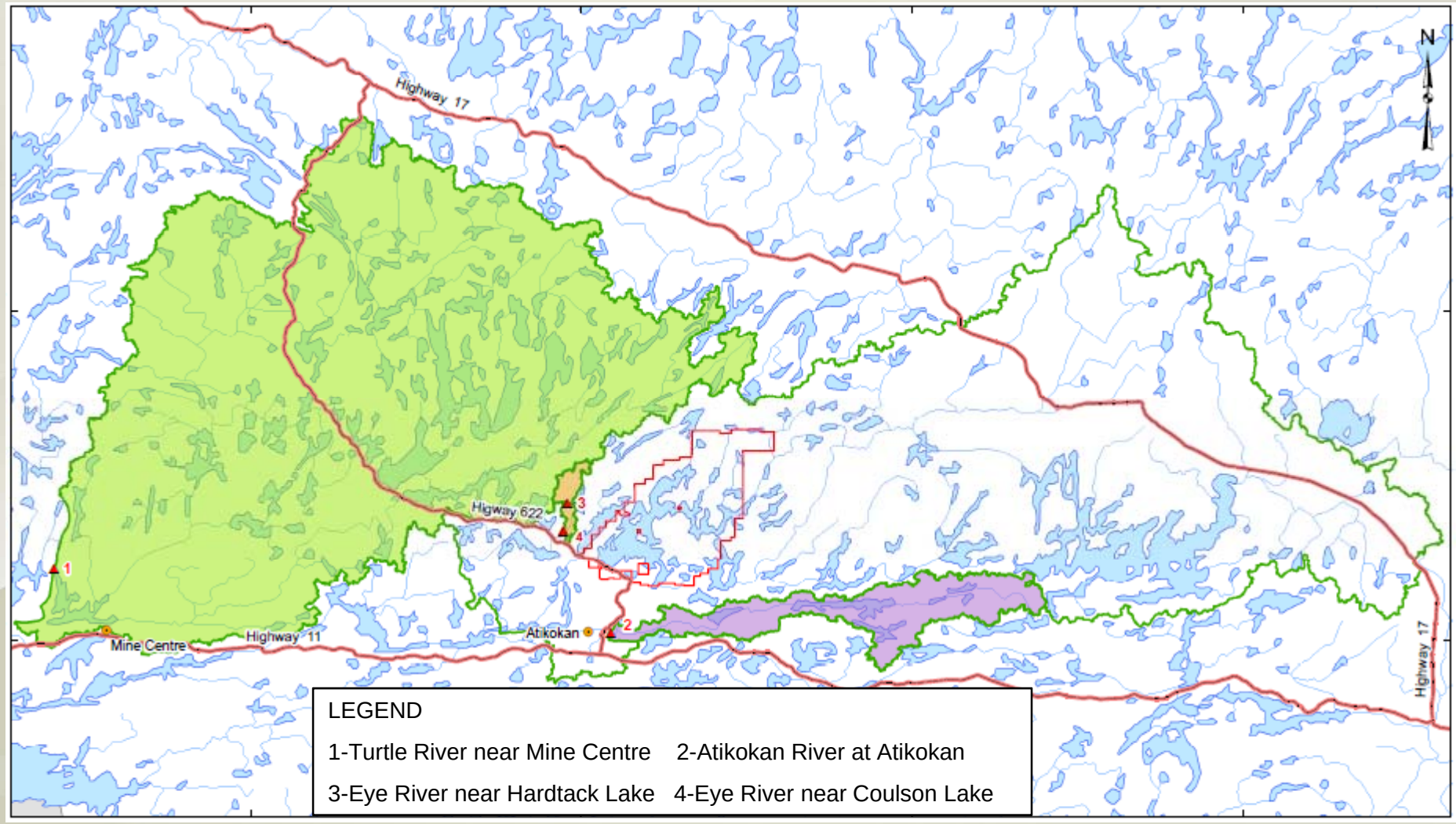
Flows:

- Monthly, seasonal and annual means with ranges;
- Annual maximum daily mean flows for selected return periods
- 7- day minimum means with 10- and 20-year return periods
- 10, 50, 90 and 95 percentile daily mean flows
- Maximum up- and down-ramping rates

Water Levels:

- Monthly, seasonal and annual means with ranges;
- DFO's 80 percentile high water mark
- Open water season range of water level fluctuation
- Winter season range of water level fluctuation

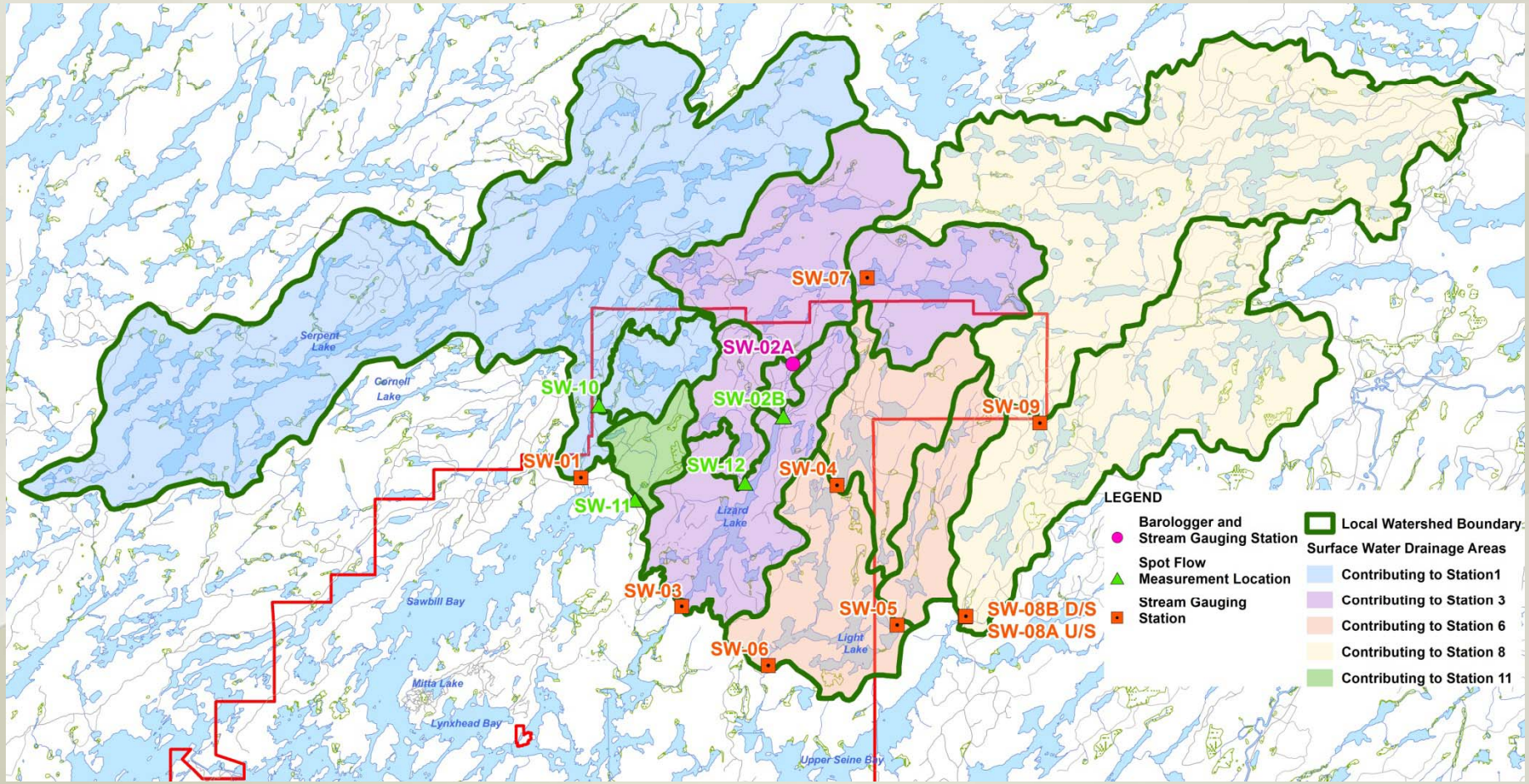
REGIONAL HYDROMETRIC STATIONS



REGIONAL HYDROMETRIC STATIONS

ID	Name	Latitude/ Longitude	Drainage Area (km²)	Status	Years of Data	Period of Record
1	Turtle River near Mine Centre	48° 51’ 0” N 92° 43’ 25” W	4,870	Active	95	1-Aug-1914 to 31-Dec-2010
2	Atikokan River at Atikokan	48° 45’ 7” N 91° 34’ 59” W	332	Active	28	1-Jan-1978 to 31-Dec-2010
4	Eye River near Coulson Lake	48° 53’ 40” N 91° 40’ 30” W	27.9	Inactive	8	1-Jan-1985 to 31-Dec-1993
3	Eye River near Hardtack Lake	48° 55’ 30” N 91° 39’ 44” W	19.8	Inactive	9	1-Jan-1985 to 31-Dec-1994

LOCAL/SITE HYDROMETRIC STATIONS

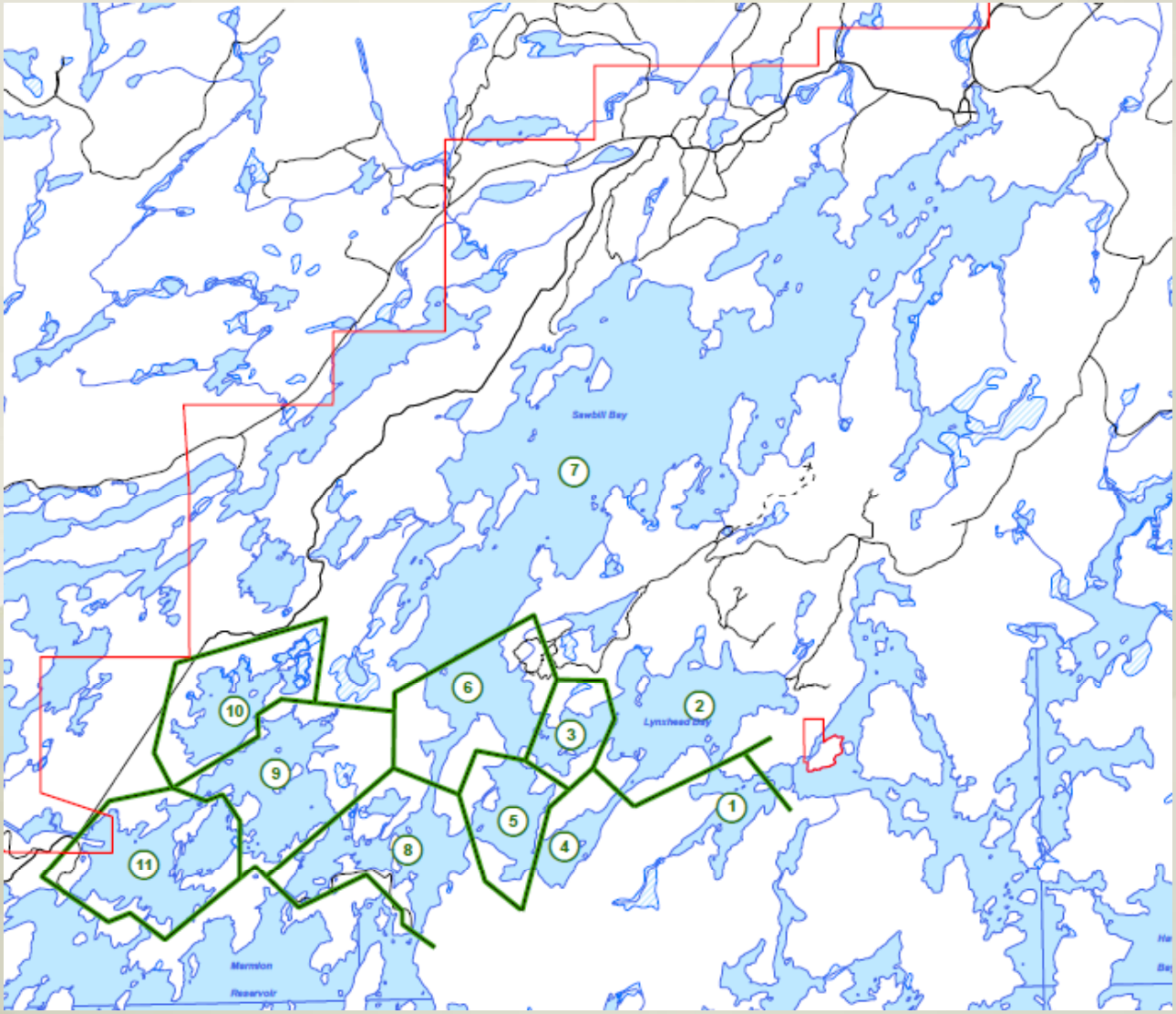


LAKE WATER MOVEMENT AND CIRCULATION

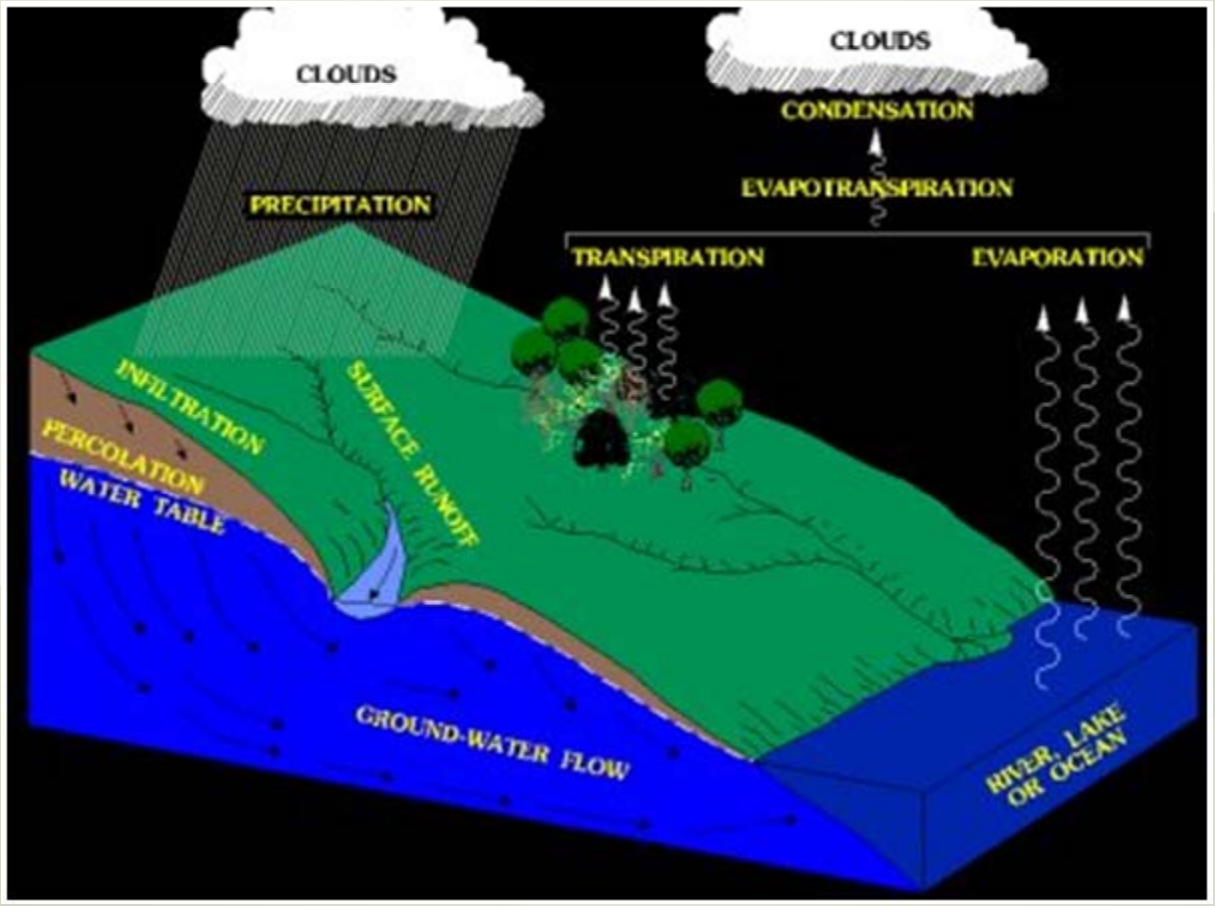
To infer potential contaminant pathways

- Completed lake current and velocity profile studies
  - Drogue studies in 6 bays on Upper Marmion Lake to investigate surface currents in October 2010;
  - Deployed Acoustic Doppler Current Profiler (ADCP) equipment for one-month period in 3 bays on Upper Marmion Lake to collect information on current patterns, velocity profiles and water temperatures
- Computed residence times in selected ‘compartments’ of Upper Marmion Lake
- Started preliminary mass balance model to estimate available dilution volumes and screen possible discharge locations

MODEL COMPARTMENTS



HYDROLOGICAL COMPONENTS, PROCESSES & INTERACTIONS



HYDROLOGICAL COMPONENTS, PROCESSES & INTERACTIONS

Precipitation, Evapotranspiration and Evaporation:

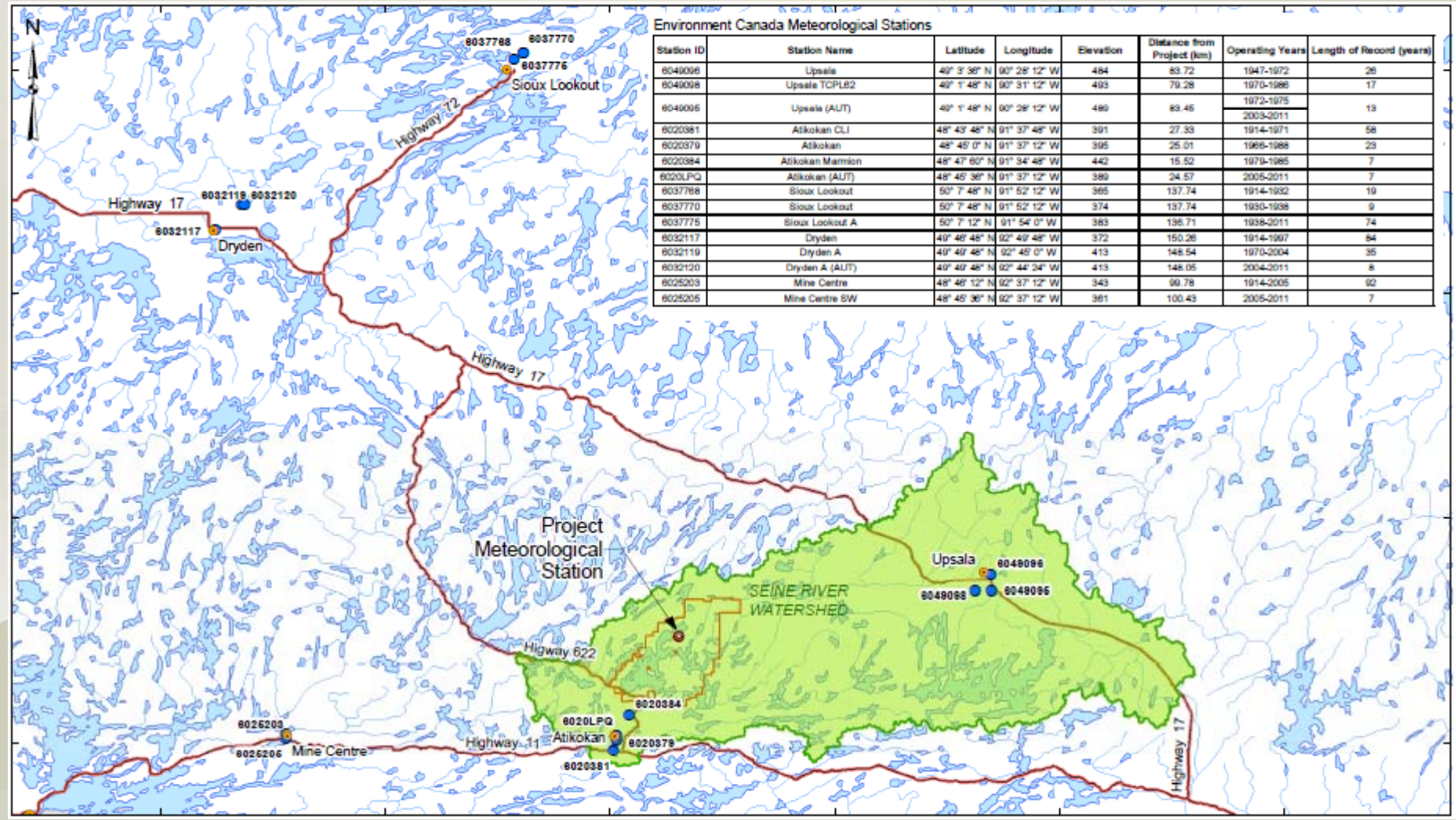
- Collecting short-term site/local meteorological data:
  - Installed Project meteorological station in March 2011;
  - Total precipitation, air temperature, relative humidity, atmospheric pressure, wind speed and wind direction recorded hourly;
  - Dewpoint temperature and evapotranspiration data are calculated;
  - Data from June 2011 generally of good quality
  - Quality of precipitation and wind direction data to be confirmed;
- Analysis of 15 regional long-term meteorological data collected at Environment Canada stations:
  - Precipitation normals and extreme annual values;
  - Rainfall and snowmelt;
  - Evapotranspiration and evaporation normals and extreme annual values.

HYDROLOGICAL COMPONENTS, PROCESSES & INTERACTIONS

Precipitation, Evapotranspiration and Evaporation:

- Estimate precipitation, evapotranspiration and evaporation statistics at the site/local scale:
  - Correlate short-term site/local meteorological data to long-term regional meteorological data using period of overlap;
  - Apply regional relationships

METEOROLOGICAL STATIONS



Environment Canada Meteorological Stations

Station ID	Station Name	Latitude	Longitude	Elevation	Distance from Project (km)	Operating Years	Length of Record (years)
6049096	Upsala	49° 3' 36" N	90° 28' 12" W	484	83.72	1947-1972	26
6049098	Upsala TCPL62	49° 1' 48" N	90° 31' 12" W	493	79.28	1970-1986	17
6049095	Upsala (AUT)	49° 1' 48" N	90° 28' 12" W	480	83.45	1972-1975 2003-2011	13
6020381	Atikokan CLI	48° 43' 48" N	91° 37' 48" W	391	27.33	1914-1971	58
6020379	Atikokan	48° 45' 0" N	91° 37' 12" W	395	25.01	1966-1988	23
6020384	Atikokan Marmion	48° 47' 60" N	91° 34' 48" W	442	15.52	1979-1985	7
6020LPQ	Atikokan (AUT)	48° 45' 36" N	91° 37' 12" W	389	24.57	2005-2011	7
6037768	Sioux Lookout	50° 7' 48" N	91° 52' 12" W	365	137.74	1914-1932	19
6037770	Sioux Lookout	50° 7' 48" N	91° 52' 12" W	374	137.74	1930-1938	9
6037775	Sioux Lookout A	50° 7' 12" N	91° 54' 0" W	383	136.71	1938-2011	74
6032117	Dryden	49° 46' 48" N	92° 49' 48" W	372	150.26	1914-1997	84
6032119	Dryden A	49° 49' 48" N	92° 45' 0" W	413	148.54	1970-2004	35
6032120	Dryden A (AUT)	49° 49' 48" N	92° 44' 24" W	413	148.05	2004-2011	8
6025203	Mine Centre	48° 48' 12" N	92° 37' 12" W	343	99.78	1914-2005	92
6025205	Mine Centre SW	48° 45' 36" N	92° 37' 12" W	361	100.43	2005-2011	7

REGIONAL METEOROLOGICAL STATIONS

Station Name	Station ID	Latitude/ Longitude	Altitude (masl)	Distance from project (km)	Operating Years	Length of Record (yrs)
Upsala	6049096	49.06° N / 90.47° N	484	84	1947 – 1972	26
Upsala TCPL62	6049098	49.03° N / 90.52° W	493	79	1970 – 1986	17
Upsala (AUT)*	6049095	49.03° N / 90.47° N	489	83	1972 – 1975 2003 – 2011	13
Atikokan CLI	6020381	48.73° N / 91.63° W	391	27	1914 – 1971	58
Atikokan	6020379	48.75° N / 91.62° W	395	25	1966 – 1988	23
Atikokan Marmion	6020384	48.80° N / 91.58° W	442	19	1979 – 1985	7
Atikokan (AUT)*	6020LPQ	48.76° N / 91.62° W	389	25	2005 – 2011	7

REGIONAL METEOROLOGICAL STATIONS

Station Name	Station ID	Latitude/ Longitude	Altitude (masl)	Distance from project (km)	Operating Years	Length of Record (yrs)
Sioux Lookout	6037768	50.13° N / 91.87° W	365	138	1914 – 1932	19
Sioux Lookout	6037770	50.13° N / 91.87° W	374	138	1930 – 1938	9
Sioux Lookout A*	6037775	50.12° N / 91.90° W	383	137	1938 - 2011	74
Dryden	6032117	49.78° N / 92.83° W	372	150	1914 – 1997	84
Dryden A	6032119	49.83° N / 92.75° W	413	149	1970 – 2004	35
Dryden A (AUT)	6032120	49.83° N / 92.74° W	413	148	2004 – 2011	8
Mine Centre	6025203	48.77° N / 92.62° W	343	100	1914 – 2005	92
Mine Centre SW	6025205	48.76° N / 92.62° W	361	100	2005 – 2011	7

HYDROLOGICAL COMPONENTS, PROCESSES & INTERACTIONS

- Precipitation – runoff relations
  - Annual/seasonal runoff coefficients for natural watershed areas
  - Based on short-term local and long-term regional flow data
- Surface water – groundwater interactions
  - Recession curve analysis
  - Baseflow separation
- Water balances
  - Watersheds (Runoff = Precipitation – Evapotranspiration – GW Infiltration)
  - Lakes (Change in Storage = Inflow - Outflow + Precipitation – Evaporation)

NAVIGABLE WATERWAYS AND WATER BODIES

- Identify navigable waterways and water bodies that will be affected by the Project:
  - Review Project Description and mapping
  - Identify small streams affected by project footprint/access road
  - Determination based on Transport Canada (2010), Minor Waters User Guide

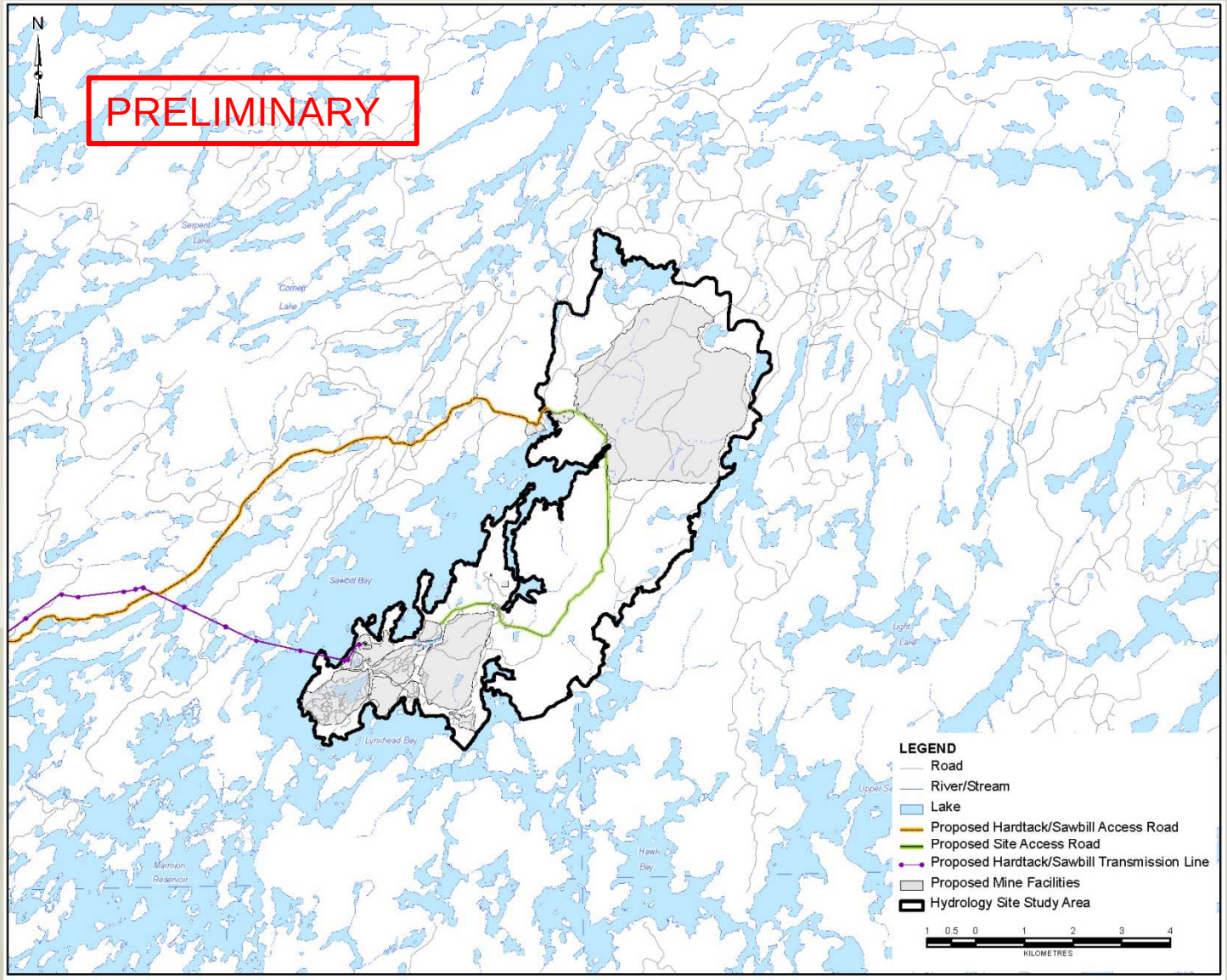
- Collect data on potentially affected waterways and water bodies:
  - Representative width, depth, gradient and flow;
  - Photographs upstream, downstream and across waterway/water body.

EFFECTS ASSESSMENT

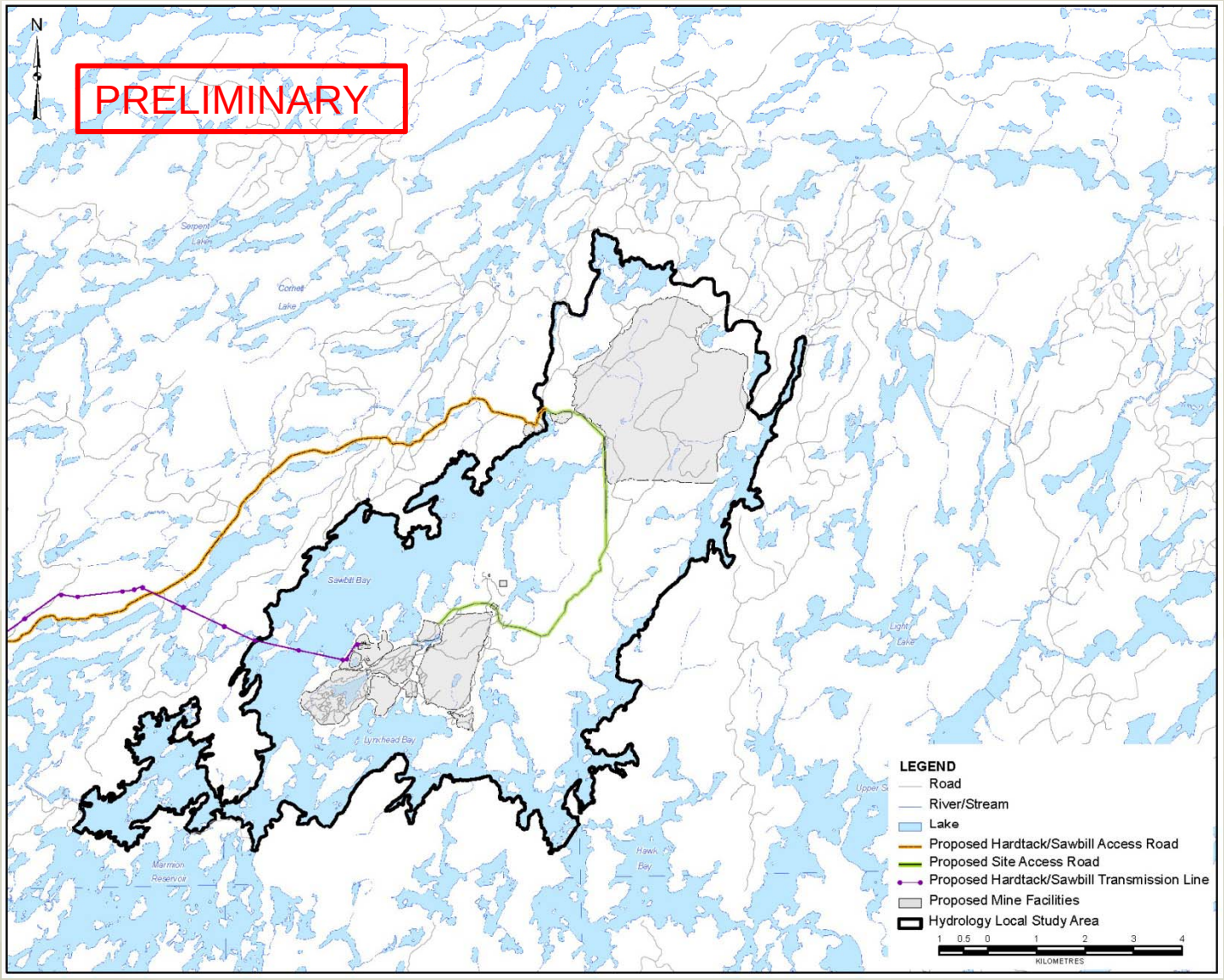
Study areas or spatial boundaries to be used in assessing the potential adverse and beneficial effects of the project:

- **Site Study Area** includes the small stream systems draining the peninsula directly affected by the project footprint
- **Local Study Area** includes the SSA and watercourses and water bodies directly and indirectly affected by the project footprint and by water withdrawals and discharges
- **Regional Study Area** includes the SSA and the LSA together with Lower Marmion Lake, Finlayson Lake and Seine River to confluence with Eye River, which may be indirectly affected by the project activities

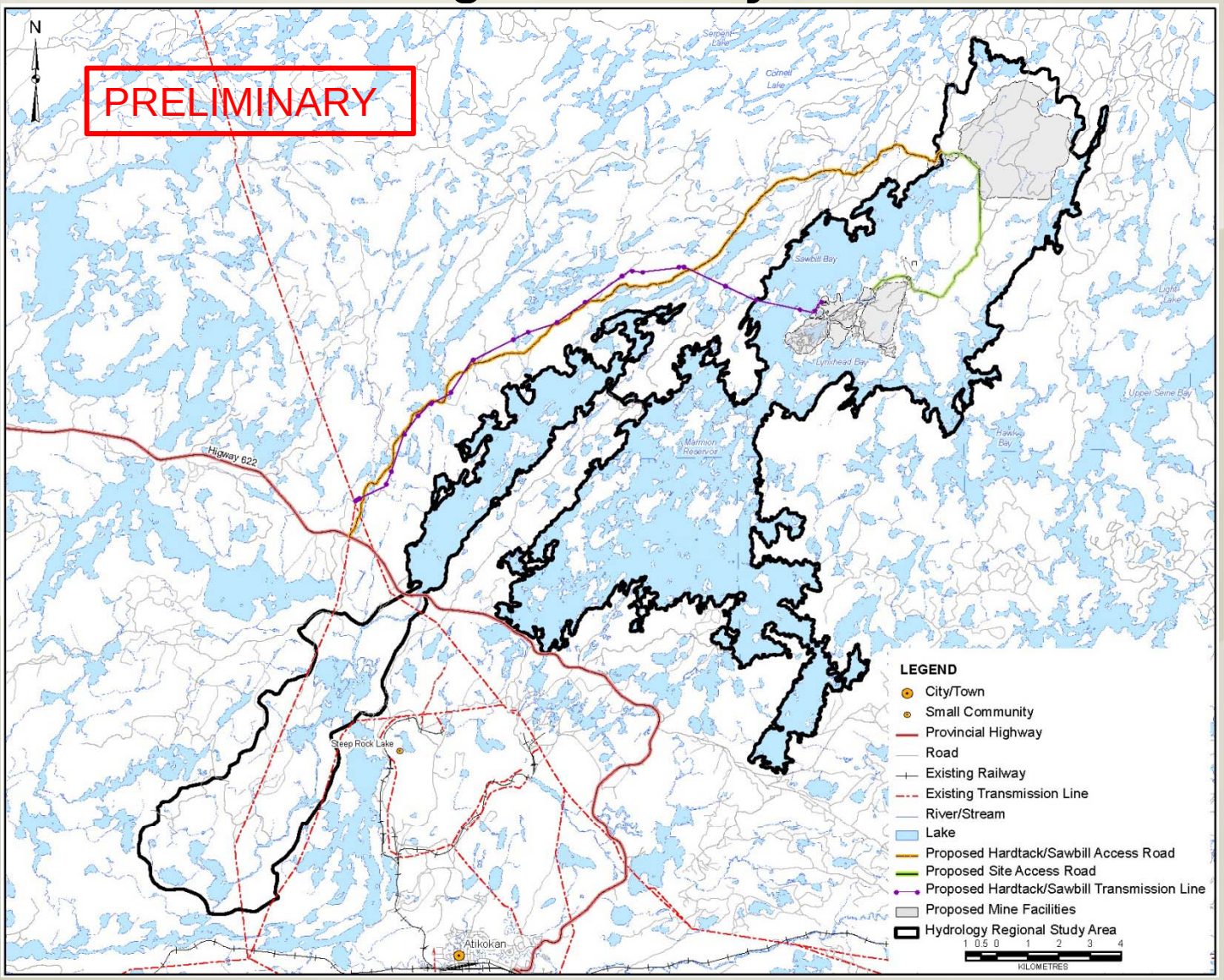
Site Study Area



Local Study Area



Regional Study Area



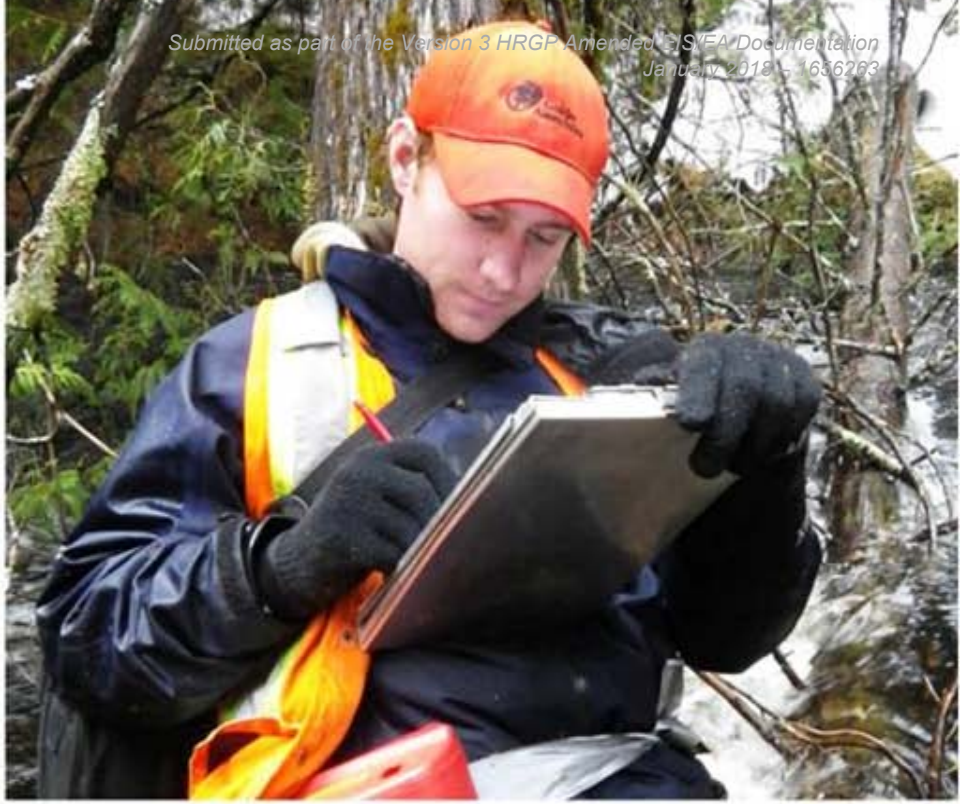
DISCUSSION

- Baseline Study Data Gaps
- Effects Assessment Study Areas

Submitted as part of the Version 3 HRGP Amended EA/EA Documentation
January 2015 - 1656263

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Introduction – Welcome - Revised Project Layout

May 2012

Introductions & Welcome

Purpose of Meeting: For Osisko to present and discuss the revised project layout and baseline data, for the proposed Hammond Reef Gold Mine Project, with the government review team.

Outcome: To identify any data gaps that need to be addressed during the 2012 field season in order to fulfill the federal EIS guidelines and the Provincial Terms of Reference.

Agenda – Day 1 – May 31 2012

	AGENDA ITEM	TIME	LEAD
1	**Welcome/Introductions**	10:00am – 10:15am	Alix Drapack
2	**Presentation of Revised Project Layout**	10:15am - 11:15am	Alix Drapack
3	**Geochemistry**	11:15am – 12:00pm	Ken DeVos/Che McRae
5	**Lunch**	12:00pm – 1:00pm	
4	**Hydrogeology**	1:00pm – 2:00pm	Karen Besemann
6	**Water Quality**	2:00pm - 3:00pm	Che McRae
7	**Hydrology**	3:00pm - 4:00pm	Christine Campbell/Terry Winhold
8	**Wrap Up**	4:00pm – 4:15pm	Alix Drapack

Agenda – Day 2 – June 1 2012

	Agenda Item	Time	Lead
1	**Welcome**	8:45am – 9:00am	Alix Drapack
2	**Atmospheric and Acoustic**	9:00am – 10:00am	Sean Capstick/Danny DaSilva
3	**Break**	10:00am – 10:10am	
4	**Terrestrial Biology**	10:10am – 11:10am	Erin Greenaway
6	**Wrap up**	11:10am – 11:20am	Alix Drapack

Other Baseline Review:

- Aquatic Biology Baseline Workshop – Thunder Bay – June 4 2012
- Archaeology Baseline Meeting – Toronto – TBD

Permitting Overview – Environmental Assessment Status

- Permitting is subject to both approvals: Federal: Canadian Environmental Assessment Agency (CEAA) and Provincial: Ministry of the Environment, Environmental Approvals Branch (MOE EAB).
- One (single) report will be prepared to meet both federal and provincial requirements.
- The Environmental Assessment / Environmental Impact Statement (EA/EIS) report will be prepared for internal (Osisko) review for December 1 2012

Permitting Overview – Environmental Assessment Status

- Federal Permitting Process:
  - Project Description document submitted April 8 2011 (formally accepted April 28 2011).
  - EA start date July 28 2011.
  - CEAA prepared DRAFT EIS guidelines for comment August 16 2011.
  - CEAA finalized EIS guidelines on October 21 2011.
  - CEAA sent out Aboriginal Consultation Plans December 23 2011.

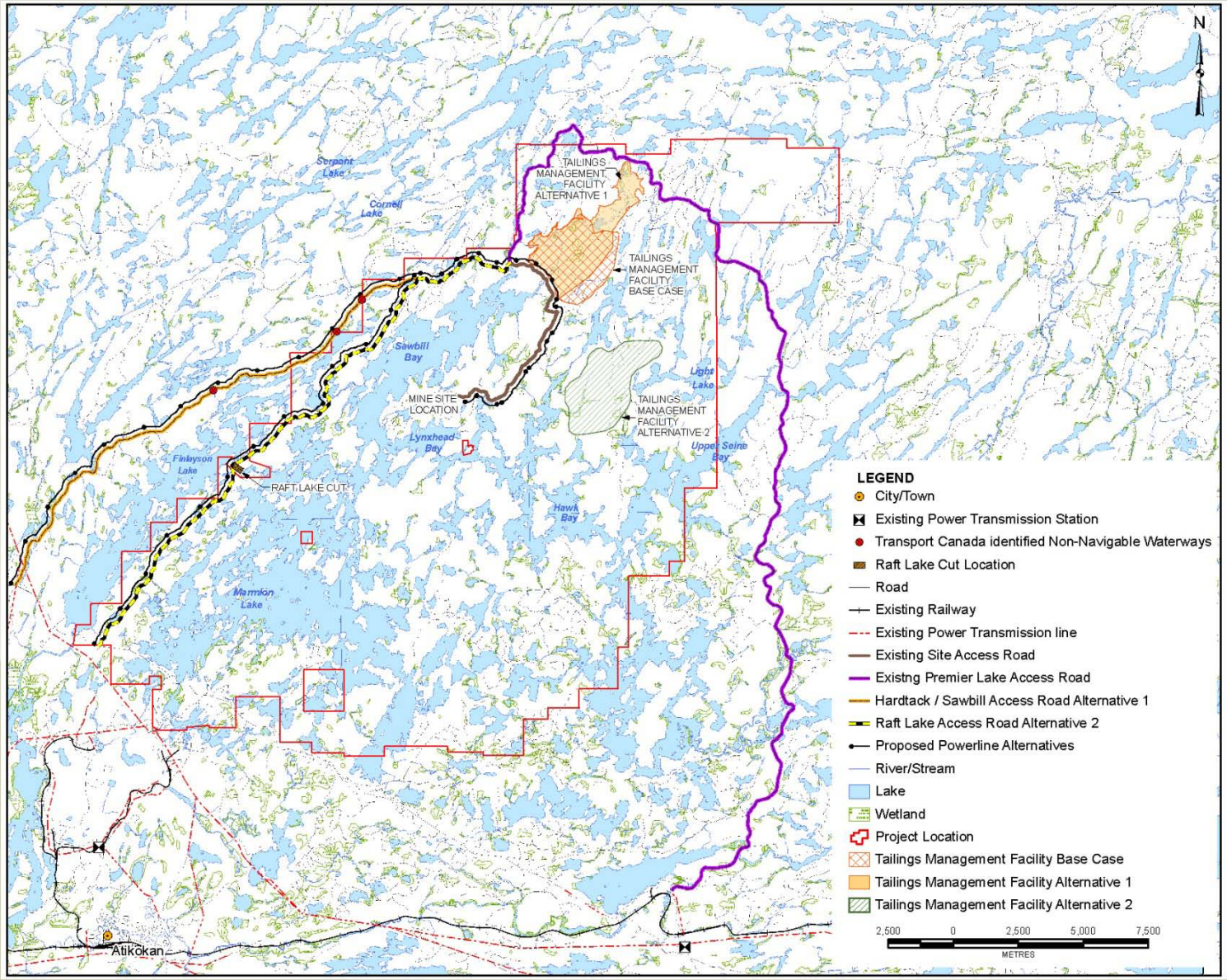
Permitting Overview – Environmental Assessment Status

- Provincial Permitting Process:
  - Osisko voluntarily committed to an Individual EA June 16 2011.
  - Osisko submitted a DRAFT Terms of Reference (ToR) on September 21 2011.
  - Following incorporation of comments from consultation, Osisko submitted a final ToR on January 23 2012.
  - Comments received on March 7 2012 from MOE EAB on the ToR dated January 23 2012.
  - Final Amended ToR was submitted to MOE EAB on April 4 2012. An errata letter was submitted to MOE EAB on April 26 2012. The Ministerial decision is expected on May 25 2012.

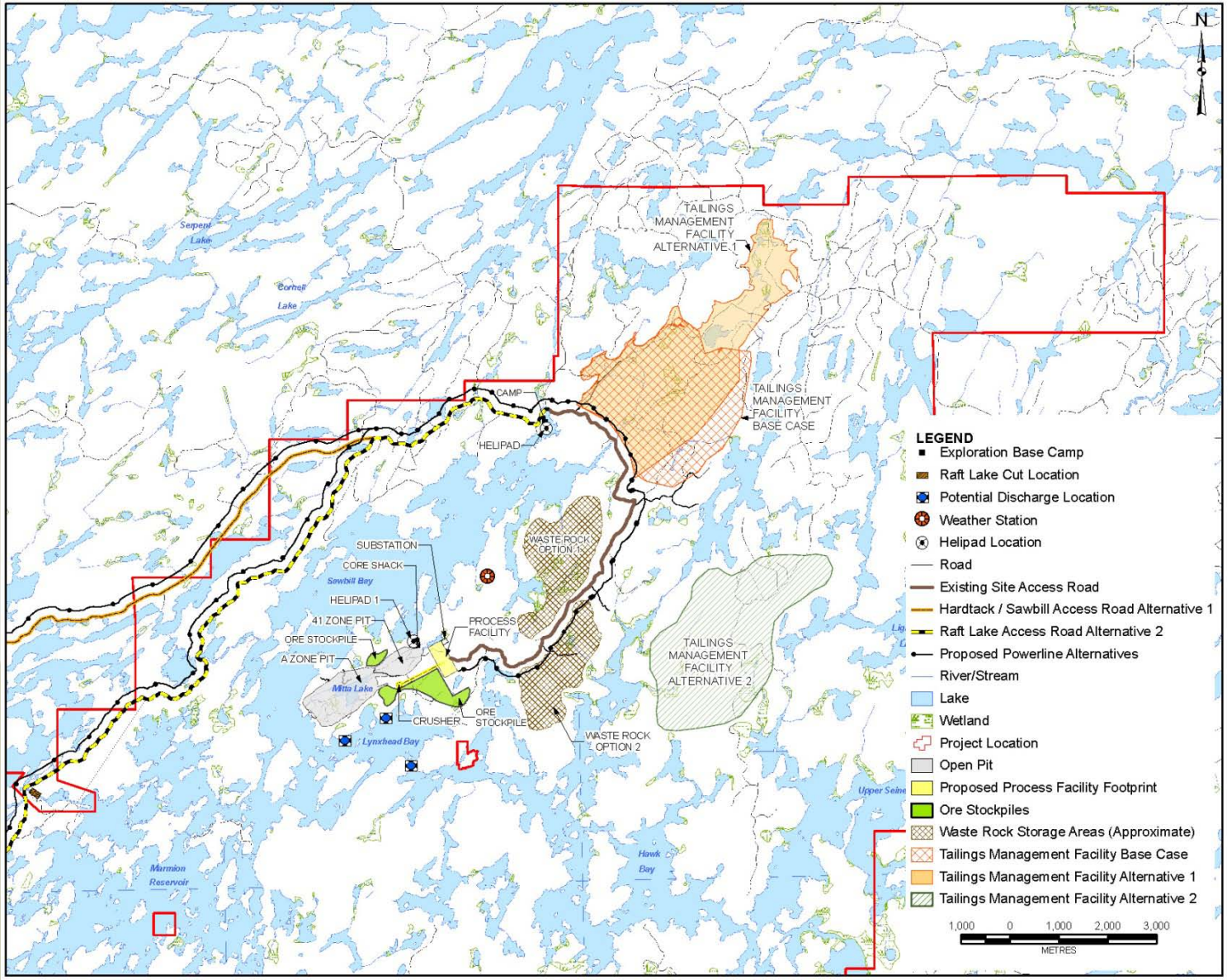
Project Layout

- Project Description (April 2011)
  - Figure 8
  - Figure 6
- Revised Layout (May 2012)
  - Figure 1
  - Figure 2
  - Figure 3

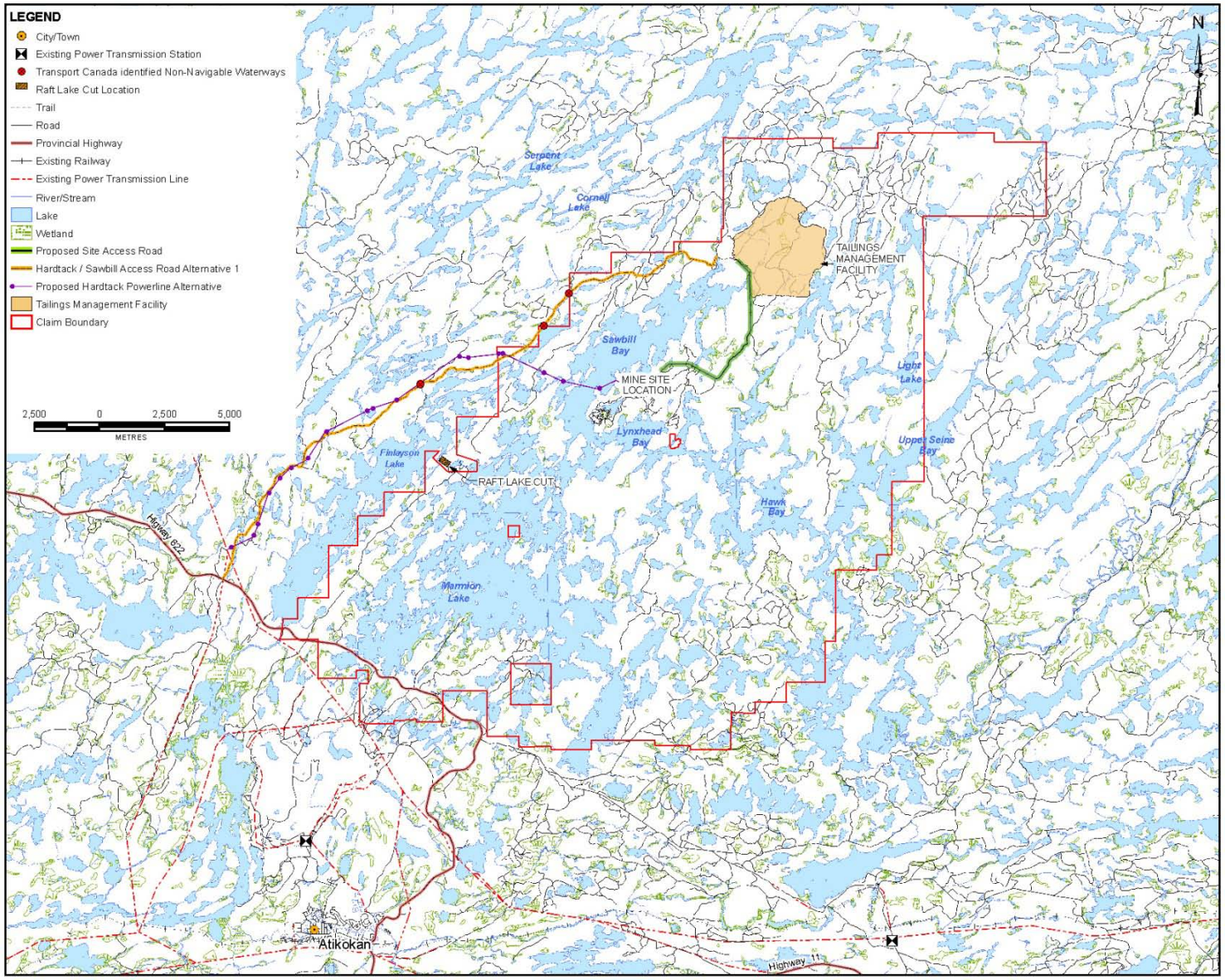
Infrastructure Corridors (April 2011)



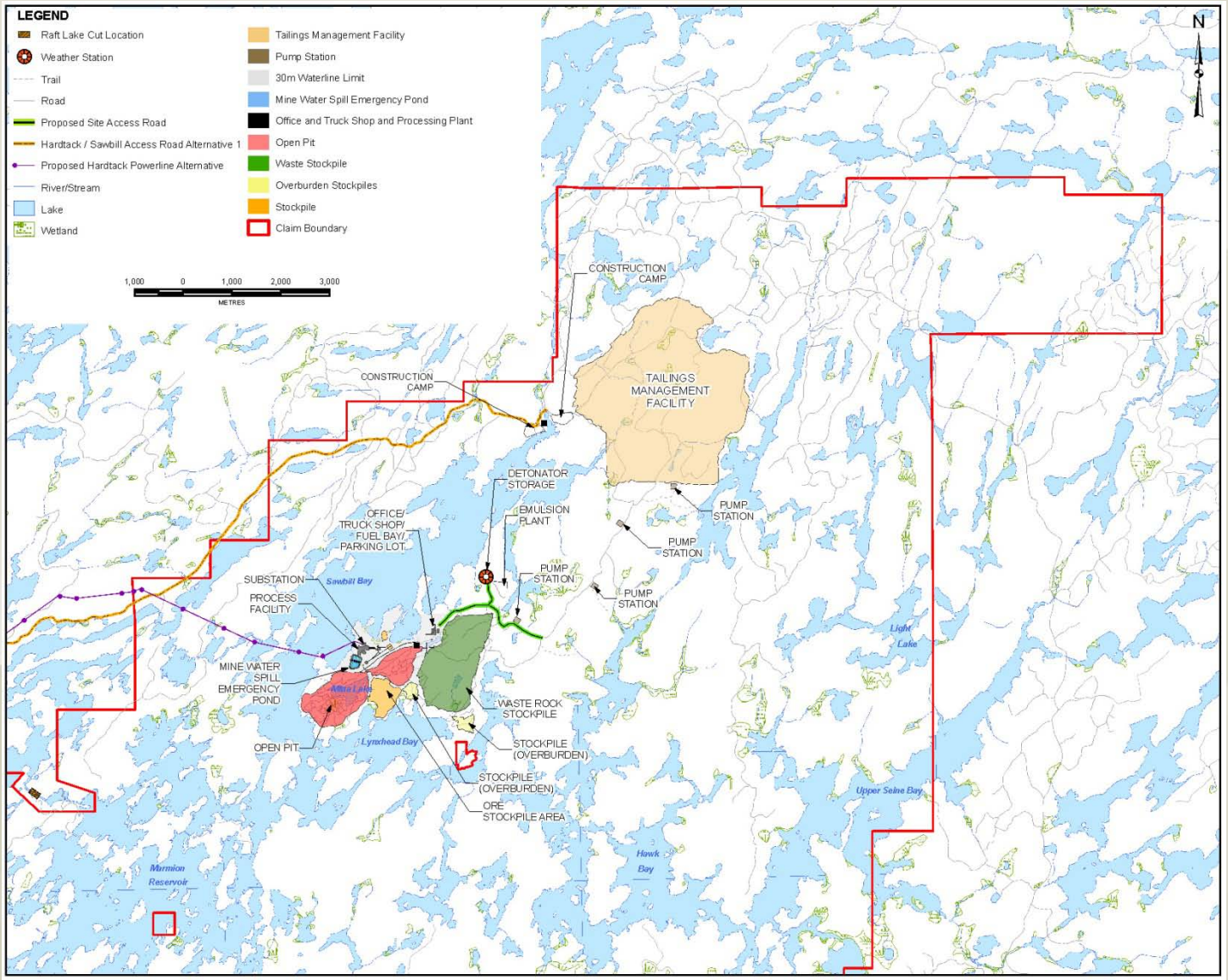
Site Layout (April 2011)



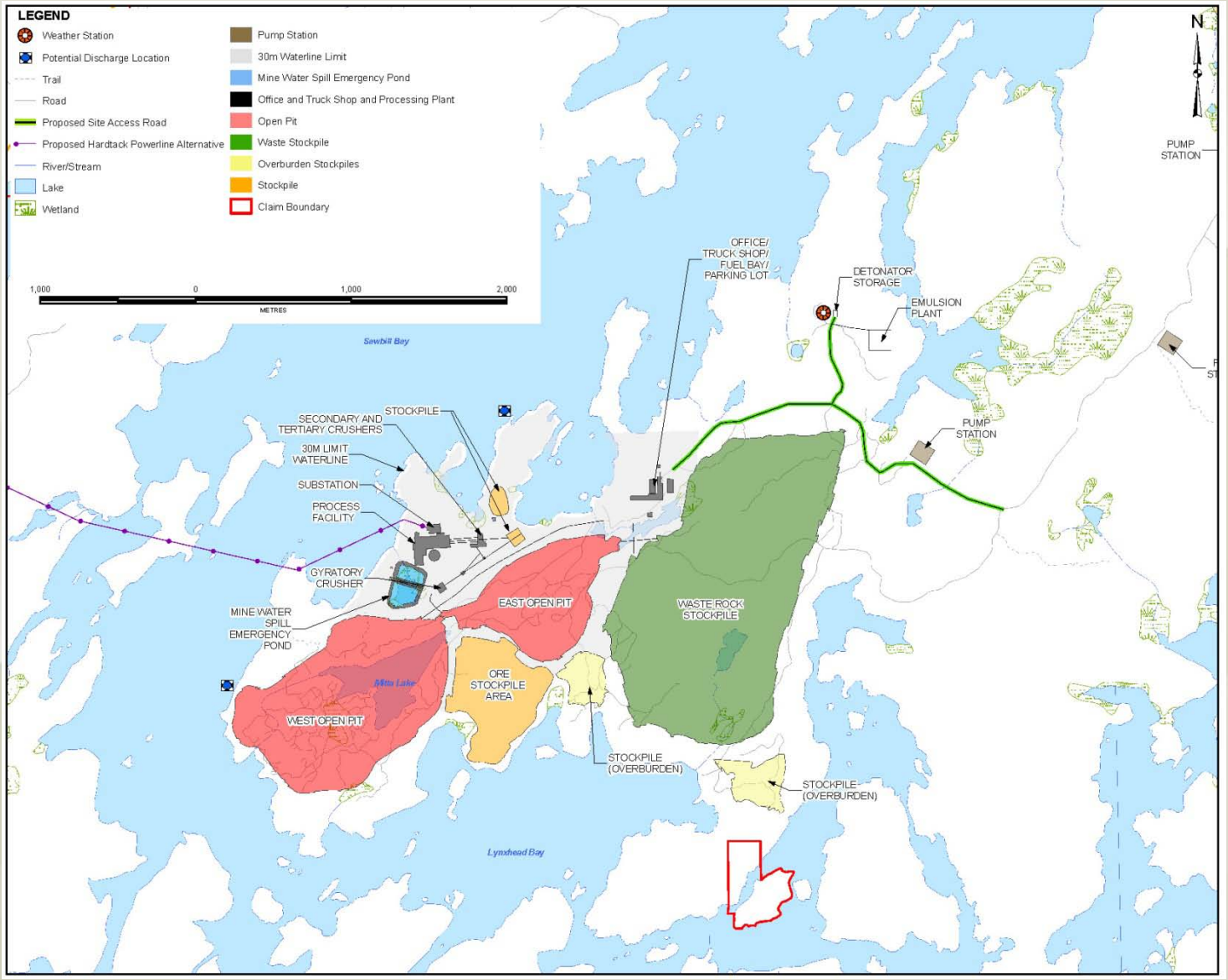
Infrastructure Corridors (2012)



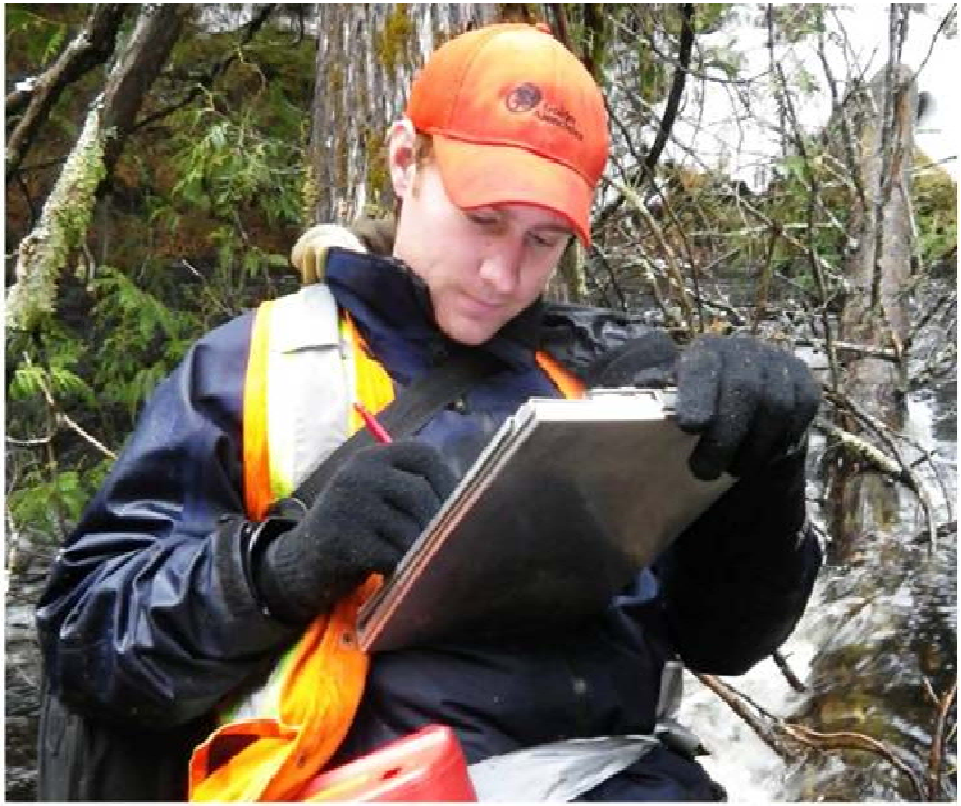
Site Layout (2012)



Close-up – Site Layout (2012)



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Baseline Study Summary - Terrestrial

May2012

Baseline Studies – Characterizing Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- Fish and Fish Habitat

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

EIS Guidelines Baseline Study Objectives

The general objectives of the terrestrial environment baseline study are to:

•Describe the **conditions and trends** in areas potentially affected by the Project in order to understand **potential impacts** and develop **appropriate mitigation** and management measures;

•Inform the **selection of alternatives** to minimize environmental impacts of the Project and **compare advantages and disadvantages**;

•**Establish benchmarks** for monitoring programs that will be implemented during the construction, operation, closure and post closure phases of the Project, such that Project **impacts can be iteratively addressed** as necessary as the project proceeds; and

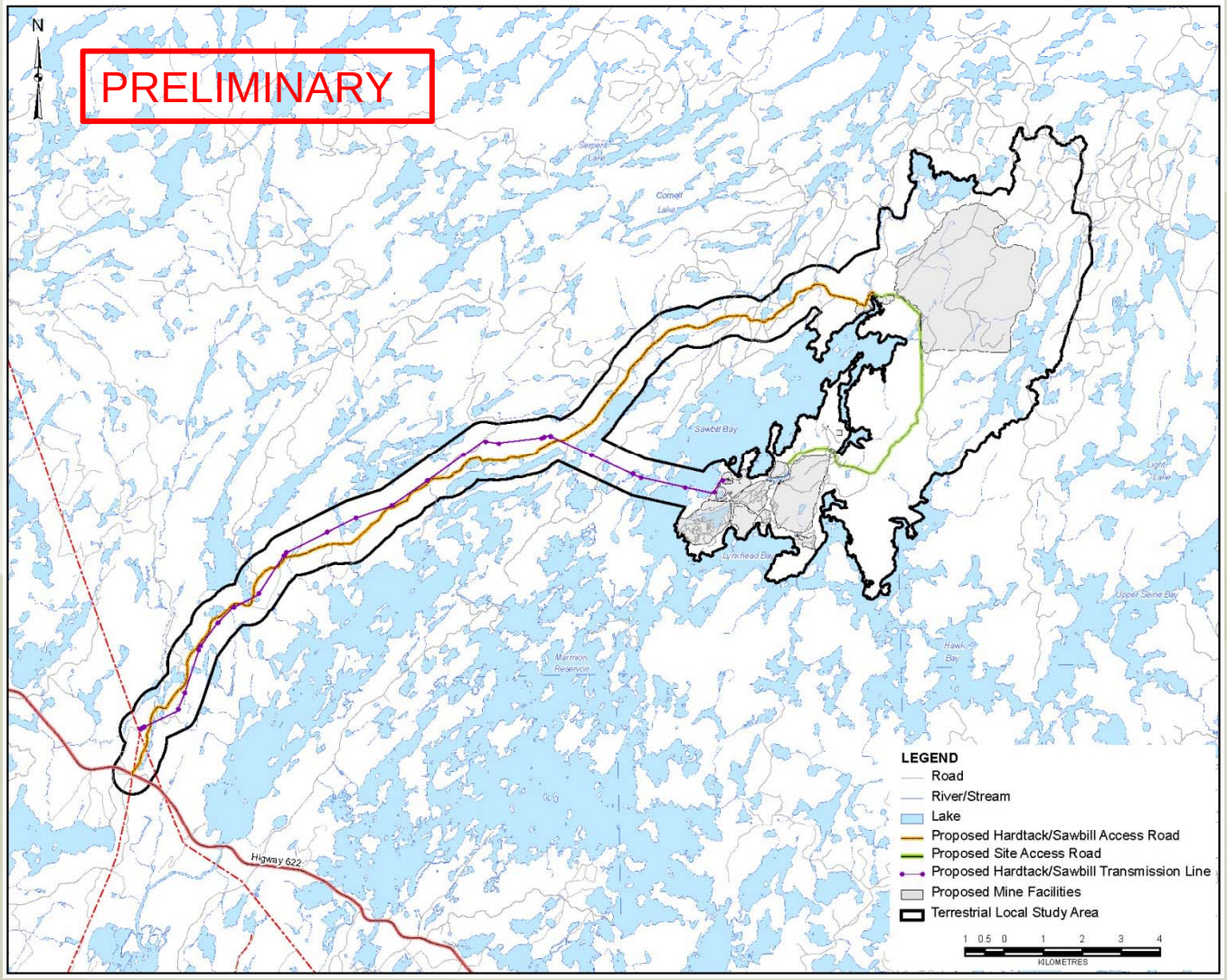
•Interact with potentially affected populations, in the course of baseline data collection in order to **exchange information** on the Project and to provide people the **opportunity to express their concerns and preferences** with regard to Project development.

EIS Guidelines Baseline Study Objectives

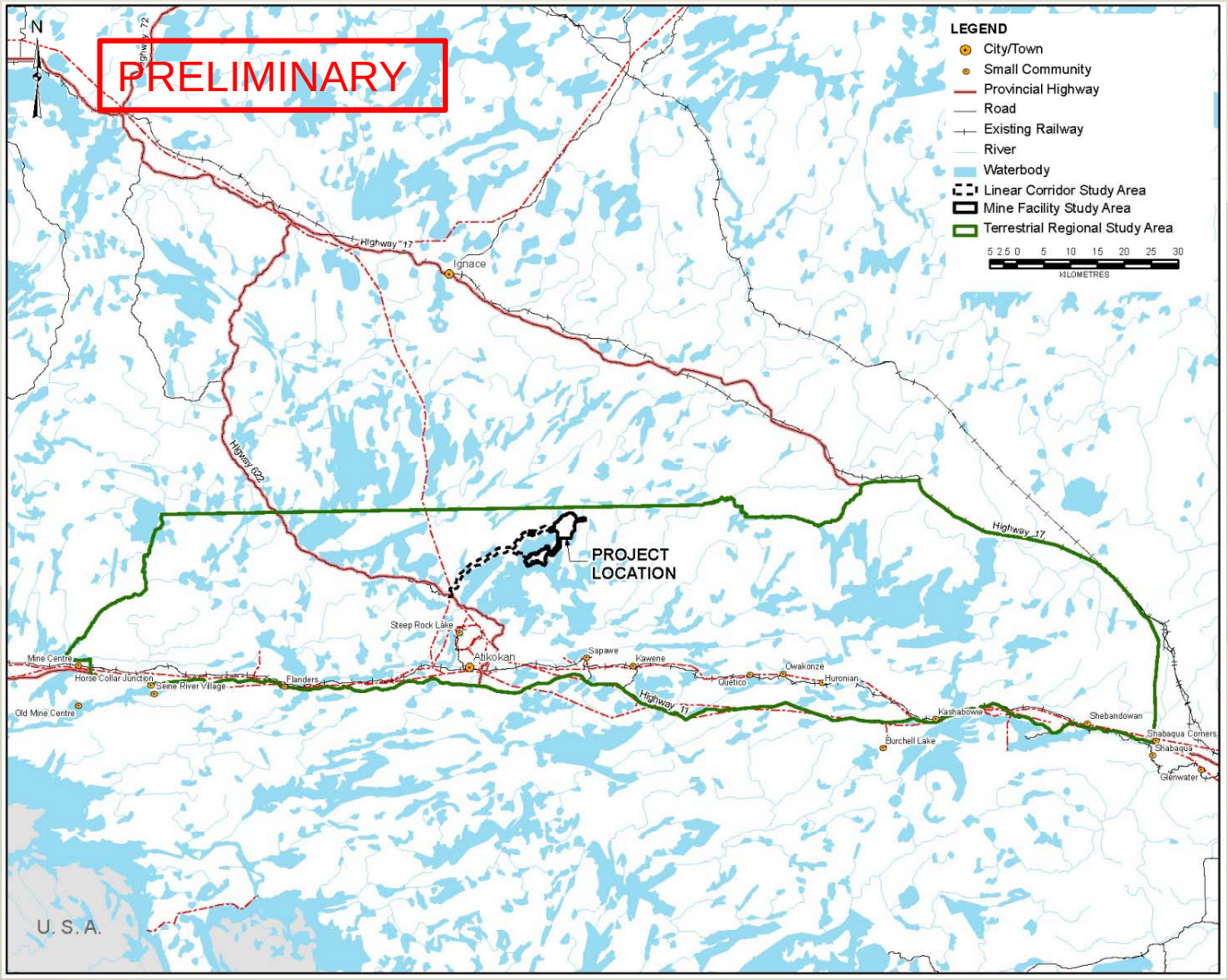
The terrestrial ecology baseline study will describe and identify, within the area potentially affected by the Project:

- Vegetative communities
- Terrestrial species and their habitat
- Wildlife corridors and physical barriers to movement
- Protected and conservation areas established by federal, provincial and municipal jurisdictions
- Use of the mine site by large carnivores, furbearers and small mammals
- Relative abundance, distribution and density of migratory birds
- Raptors and raptor habitat on the mine site
- Relative abundance, distribution and habitat use of wildlife species of conservation concern
- Amphibian habitat inventory
- Ungulate species occurring in the mine site

Terrestrial Ecology Local Study Area



Terrestrial Ecology Regional Study Area



Terrestrial Ecology

Baseline Fieldwork Completed:

Surveys	Year(s)
Breeding bird point counts	2010/2011
Call back marsh bird	2011
Lake watch bird	2010/2011
Nocturnal Point counts	2011
Turtle Basking and Nesting	2010/2011
Plant Community	2010/2011
OWES field survey	2011





Terrestrial Ecology

Table 1: Completed Vegetation Surveys (2010 and 2011)

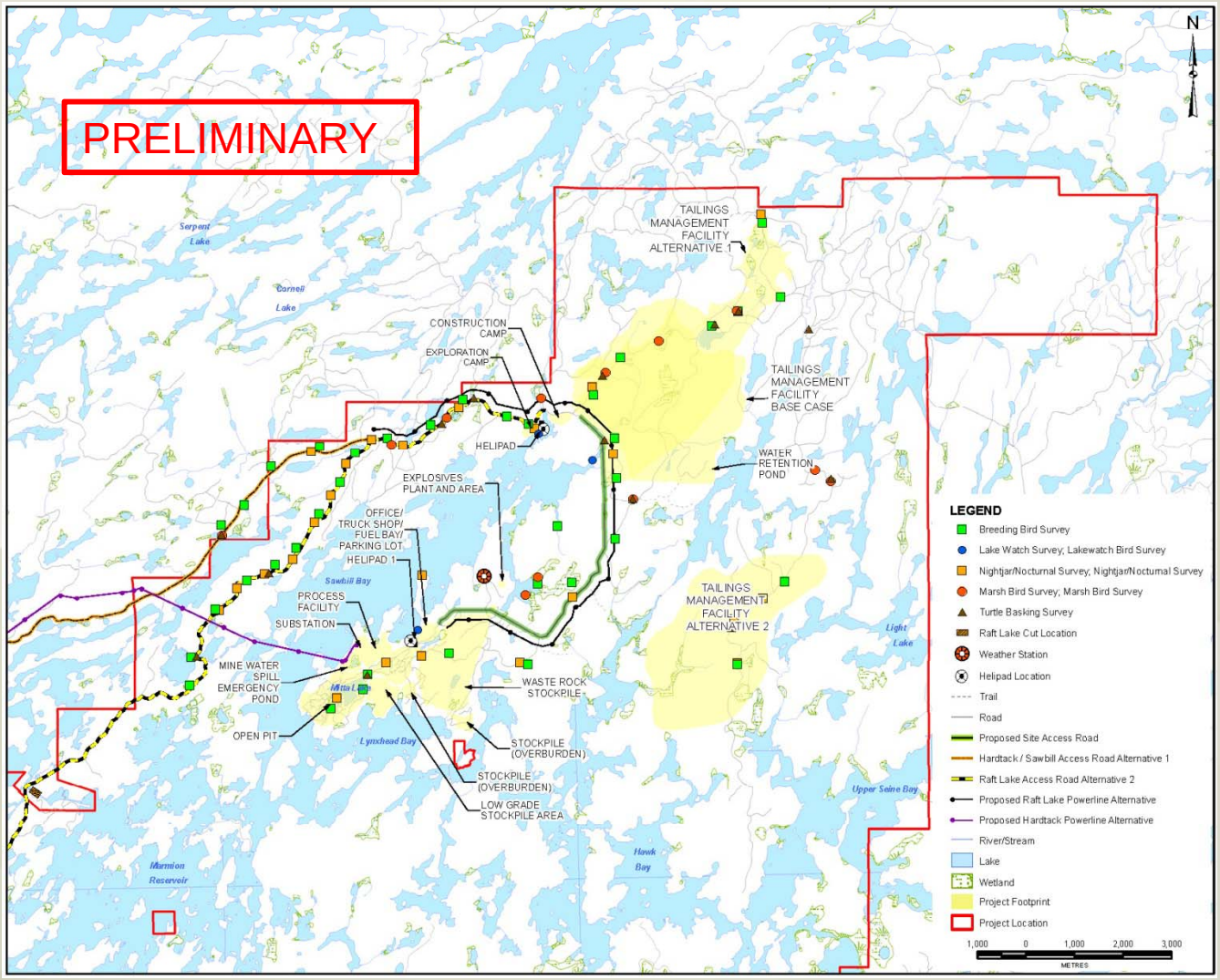
Date	Number and Type of Sites
July 19-23, 2010	Vegetation community assessment with focus on upland habitats in open pit, waste rockpile, stockpile areas, and tailings options (Osisko April 2011 GA)
August 9-13, 2010	Vegetation community assessment with focus on upland habitats in tailings options (Osisko April 2011 GA)
July 18-22, 2011	Wetland and upland community assessments along transmission right-of-ways for access road/transmission alternatives (Osisko April 2011 GA)
August 22-26, 2011	Vegetation community assessment and wetland evaluation field assessments with focus in tailings management facility alternatives (Osisko April 2011 GA)
September 12-16, 2011	Wetland evaluation field assessments in waste rock areas and tailings management facility alternatives (Osisko April 2011 GA)

Terrestrial Ecology

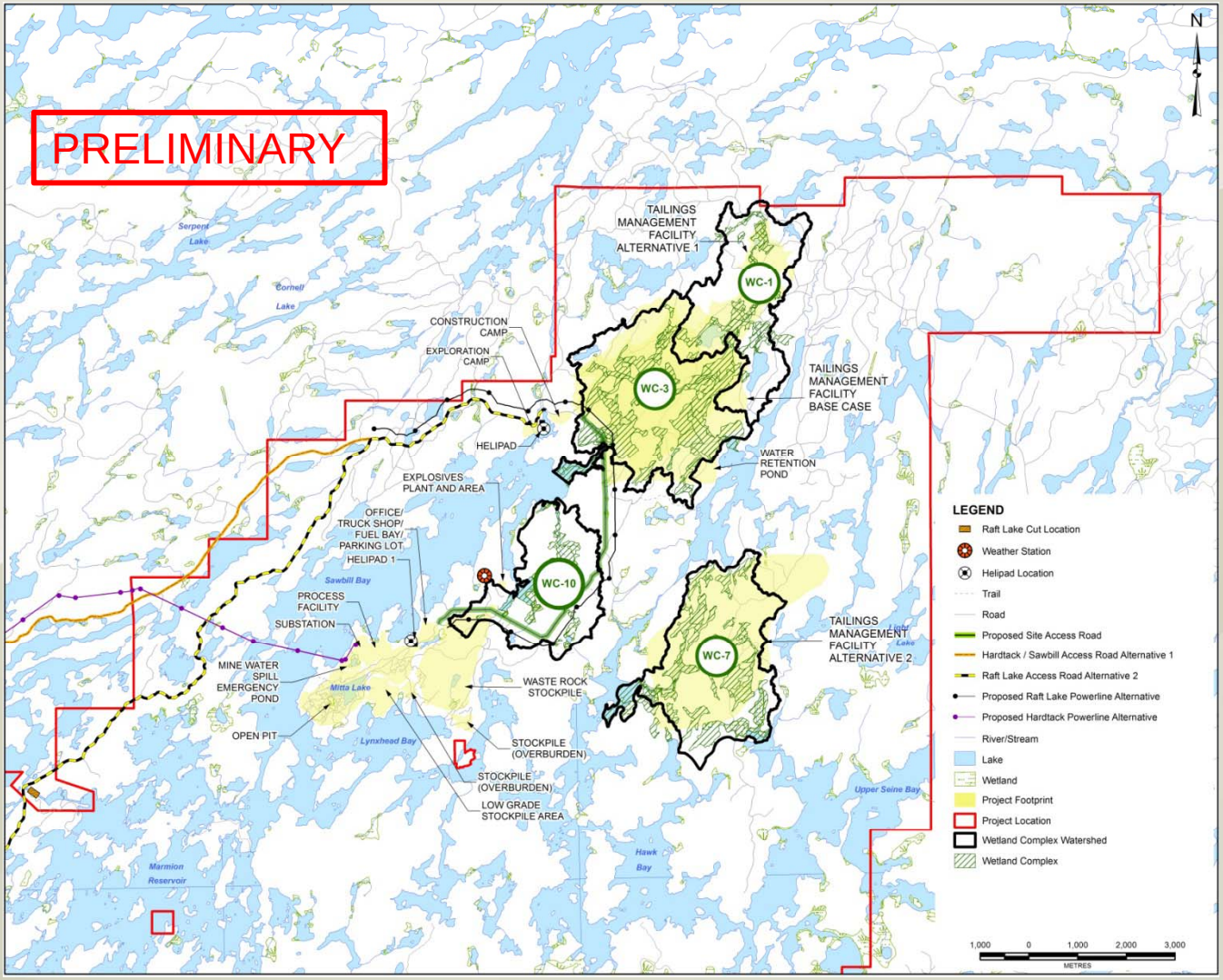
Table 2: Completed Wildlife Surveys (2010 and 2011)

Date	Surveys
June 8-10, 2010	Breeding bird surveys and incidental wildlife observations at the proposed mine site, and tailings options. A lake watch survey and turtle basking survey were conducted on Sawbill Bay.
June 30-July 1, 2010	A second round of breeding bird surveys and incidental wildlife observations were at the proposed mine site, tailings options. Turtle surveys were conducted in the vicinity of Sawbill Bay.
May 16-17, 2011	Turtle surveys and incidental wildlife observations were conducted on the proposed road/transmission corridor. Nocturnal point count surveys for eastern whip-poor-will conducted in tailings options.
June 10-12, 2011	Marsh bird surveys were conducted in wetlands and margins of lakes north throughout tailings options, waste rock piles, and proposed access road/transmission corridor. Breeding bird surveys were conducted throughout the mine site and tailings options. Turtle and incidental wildlife surveys were conducted throughout the Project area. A second round of nocturnal point count surveys for eastern whip-poor-will was conducted.
June 28-29, 2011	A second round of marsh bird surveys were conducted in wetlands and margins of lakes north throughout tailings options, waste rock piles, and proposed access road/transmission corridor and a second round of breeding bird surveys was conducted throughout the mine site and tailings options.

2010/2011 Wildlife Survey Stations



Wetland Complexes Evaluated

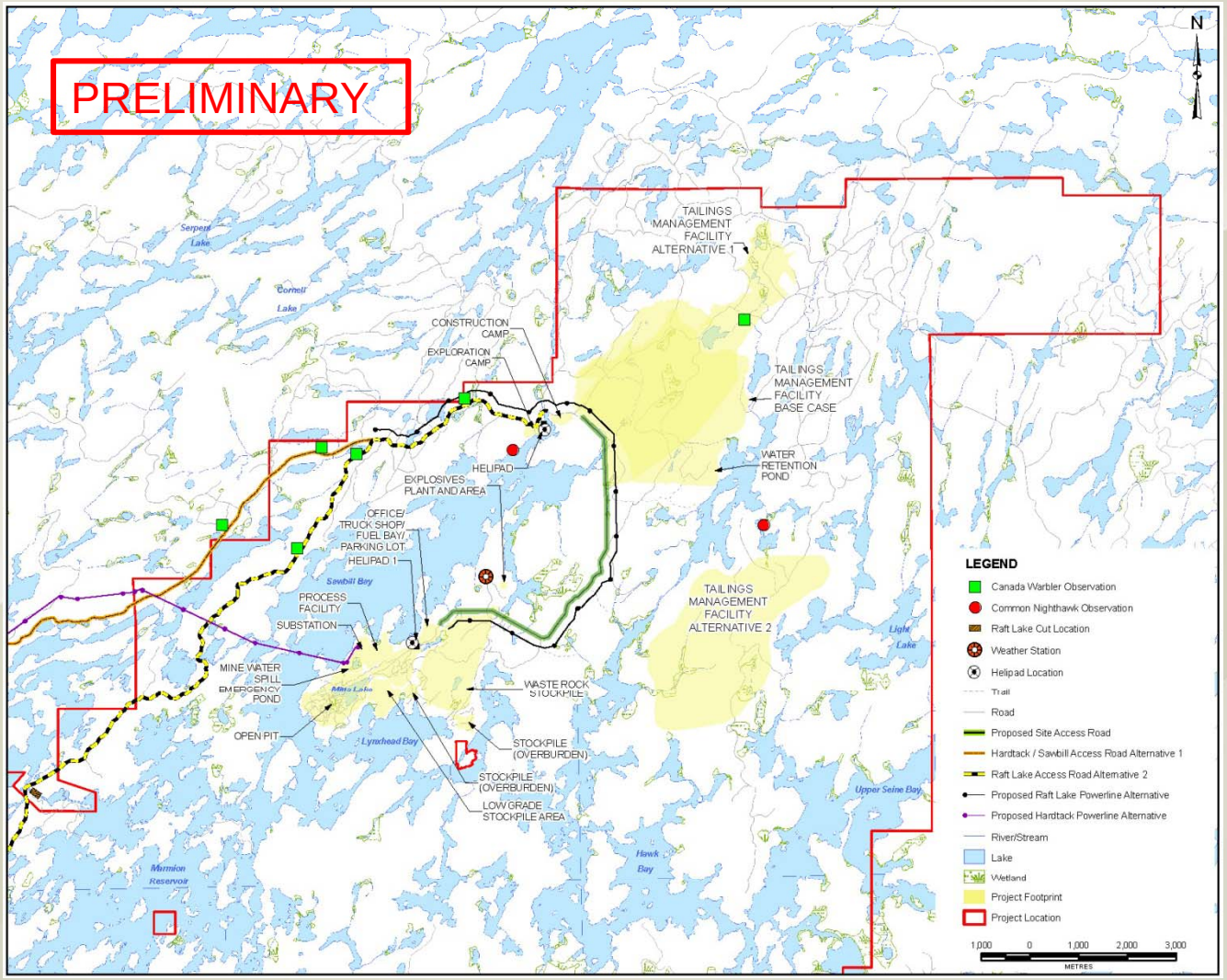


Terrestrial Ecology Results Overview

- The presence of three avian SAR, one reptile SAR, one provincially rare plant species and one culturally significant plant species were observed within the area potentially affected by the Project.
  - Canada warbler: listed as special concern under ESA, and threatened under SARA (Schedule 1)*; Habitat association= mixed forest ridges
  - Common nighthawk: listed as special concern under ESA, and threatened under SARA (Schedule 1)*; Habitat association= barren ridges and clear-cut areas, primarily south of Lizard Lake
  - Bald eagle, listed as special concern under ESA and not at risk federally. Habitat association= associated with Marmion Lake
  - Common snapping turtle: listed as special concern under ESA, and special concern under SARA; Habitat association= lakes, wetlands, watercourses.
  - One provincially rare plant species (Assiniboia Sedge) and one culturally significant plant species (Wild rice) were recorded in the Project area.

*note that prohibitions of SARA applies to migratory birds under the *Migratory Birds Convention Act.*

SAR Bird Observations in the Local Study Area



Terrestrial Ecology On-going Work

- Expansion of survey coverage based on Project layout (e.g. transmission line, processing facility, truck shop)
- Identify Wild rice abundance and distribution within the area potentially affected by the Project





Terrestrial Ecology

2012 Field Work

Wildlife Surveys

- Additional wildlife field surveys (breeding bird, marsh bird, turtle, amphibian, etc.)

Vegetation Surveys

- Additional plant community field surveys
- Inventory of Wild rice abundance and distribution

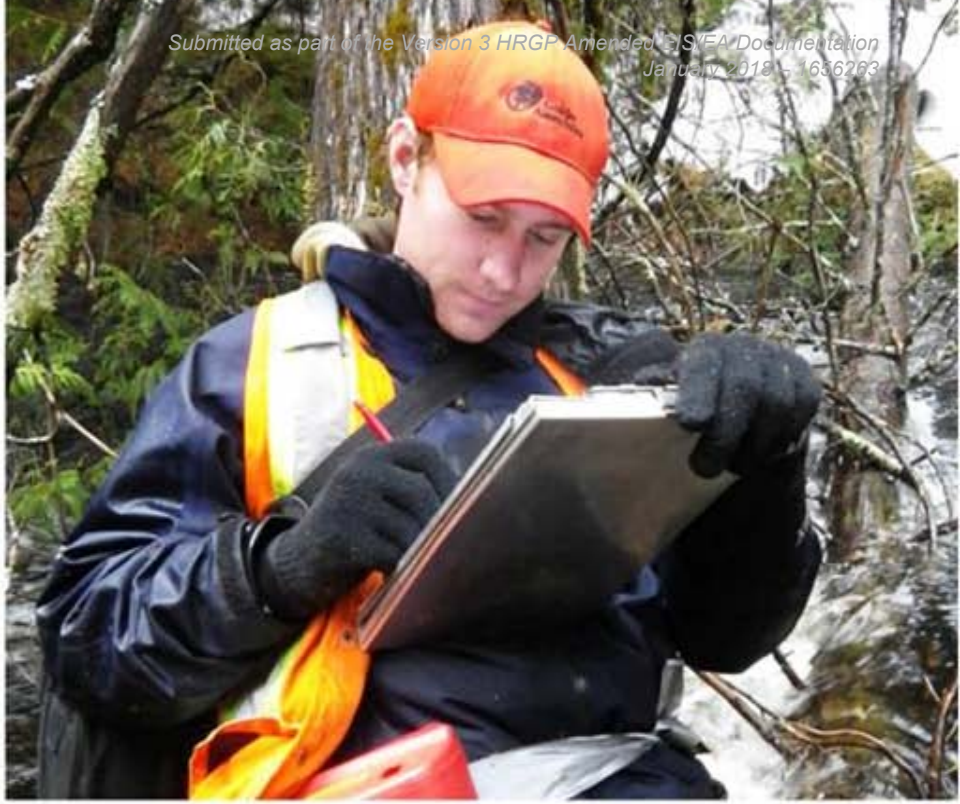




Submitted as part of the Version 3 HRGP Amended EA/EA Documentation
January 2013 - 1656263

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Baseline Study Summary - Geochemistry

May 2012

Baseline Studies – Characterizing Existing Environment

Physical Components

- **Geology and Geochemistry**
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- Fish and Fish Habitat

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

Study Objectives

The primary objective of the geochemical characterization program is to provide sufficient data for the evaluation of the environmental behaviour of the various waste materials expected to be produced during mining and mineral processing.

Components of this objective include:

- Identification of mine materials that may generate acidity and/or metal leaching (ML)
- Quantification of mineral reactions to develop metal leaching rates
- Identification of key factors that could influence site water quality
- To provide input to engineering design, alternatives assessments and other environmental evaluations for the Project

Study Objectives

The geochemical characterization includes the following tasks:

- Review of the site geology and general mine location
- Collection of drill core samples
- Static testing of mine material
- Kinetic testing of a selected subset of mine materials
- Data evaluation and characterization of ARD/ML potentials of all collected materials

Geochemical Criteria

The scope of work is consistent with the guidance documents that have gained regulatory acceptance in jurisdictions around the world and include:

- Draft Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia (Price 1997)
- Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND 2009)
- Global Acid Rock Drainage (GARD) Guide (INAP 2012)

Site Geology

- Archean rocks of the Canadian Shield
- Marmion batholith of the central Wabigoon sub-province in the western Superior Province
- Wabigon province is a granite greenstone assemblage of thin, anastomosed greenstone belts separated by large, commonly oval felsic intrusive rocks
- The greenstone belts have metamorphosed and highly deformed packages of mafic volcanic rocks with lesser components of intermediate to felsic volcanic rocks, intrusive rocks and sedimentary rocks

Site Geology

- Marmion batholith is comprised of felsic intrusive rocks
- Biotite tonalite to granodiorite
- West end of the Marmion batholith is terminated by the north-northeast trending Marmion Fault
- Complex braided zone of fault segments that have an important role in gold mineralization

Resource Characterization

- Gold mineralization at the Hammond Reef property is hosted by quartz stockworks
- The quartz stockworks overprint all phases but is only weakly developed in the mafic lenses
- Disseminated gold mineralization was delineated in two deposits situated along a northeast-southwest trend: the A Zone and the 41 Zone
- Inferred resource of 530.6 million tonnes
  - Grade of 0.62 grams/tonne (g/t) gold
  - 10.52 million ounces of gold
- Waste rock is estimated at 420 Mt
- Projected throughput of 60,000 tonnes per day
- 17.2 Mm^3 of tailings

Completed Sampling and Testing

- Waste rock samples collected in September 2010
- Tailings generated in the fall of 2011

Material Type	# Samples	Static Testing						Kinetic Testing	
		Elemental	ABA	NAG	Leach		Tailings Water	Mineralogy	Humidity Cells
					SFE	NAG			
Waste Rock	**123**	**123**	**123**	**123**	**41**	**41**	**—**	**9**	**9**
Fine Grained Granite	16	16	16	16	6	6	—	2	2
Chloritic Granite	31	31	31	31	11	11	--	2	2
Tonalite	30	30	30	30	10	10	—	2	2
Altered Granitoid	8	8	8	8	2	2	—	1	1
Pegmatite	11	11	11	11	3	3	—	1	1
Mafic Dyke	9	9	9	9	3	3	—	—	—
Chloritic Granite Porphyry	5	5	5	5	1	1	—	1	1
Minor Units(1)	13	13	13	13	5	5	—	—	—
Tailings	1	2(2)	2(2)	2(2)	2(2)	2(2)	2(2)		2(2)
Overburden	24	24	24	24	24	—	—	—	—

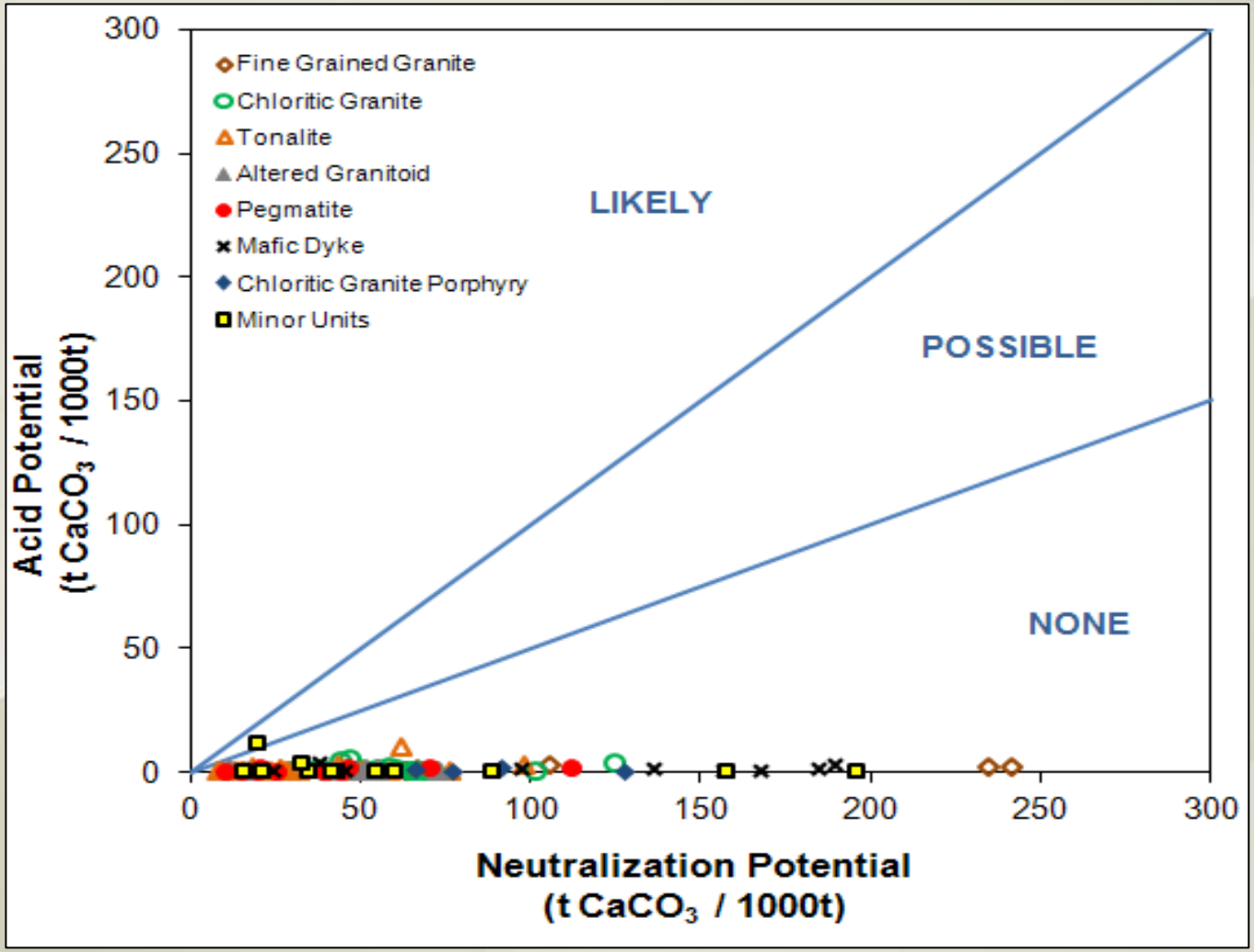
Notes:

(1) Includes aplite, diorite, gneiss, sheared mafic unit, sheared granitoid, tectonized-sheared vein zone, quartz vein zone and intermediate dyke.

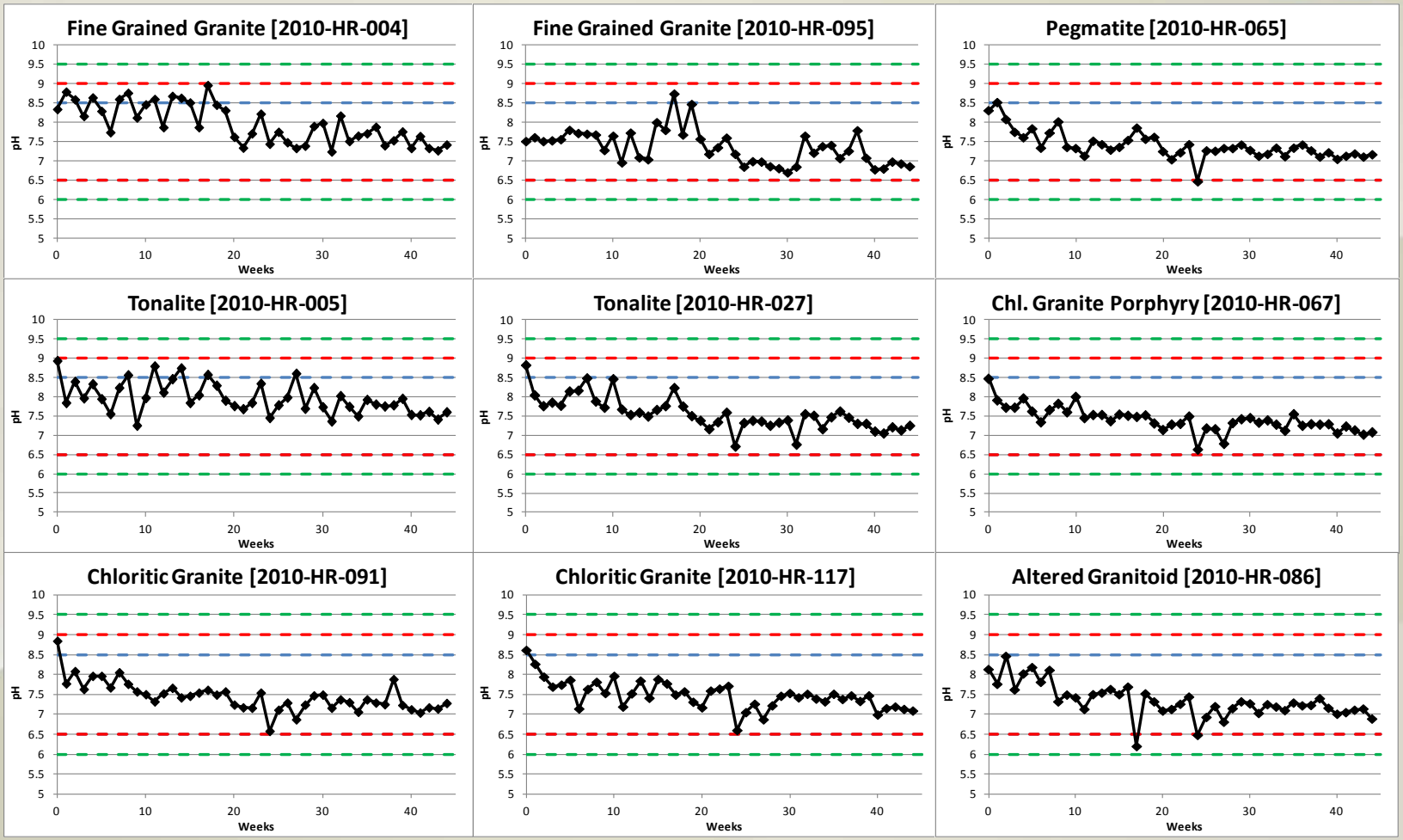
(2) One tailings sample was produced but humidity cell testing and testing on the water was done in duplicate.

Waste Rock Results

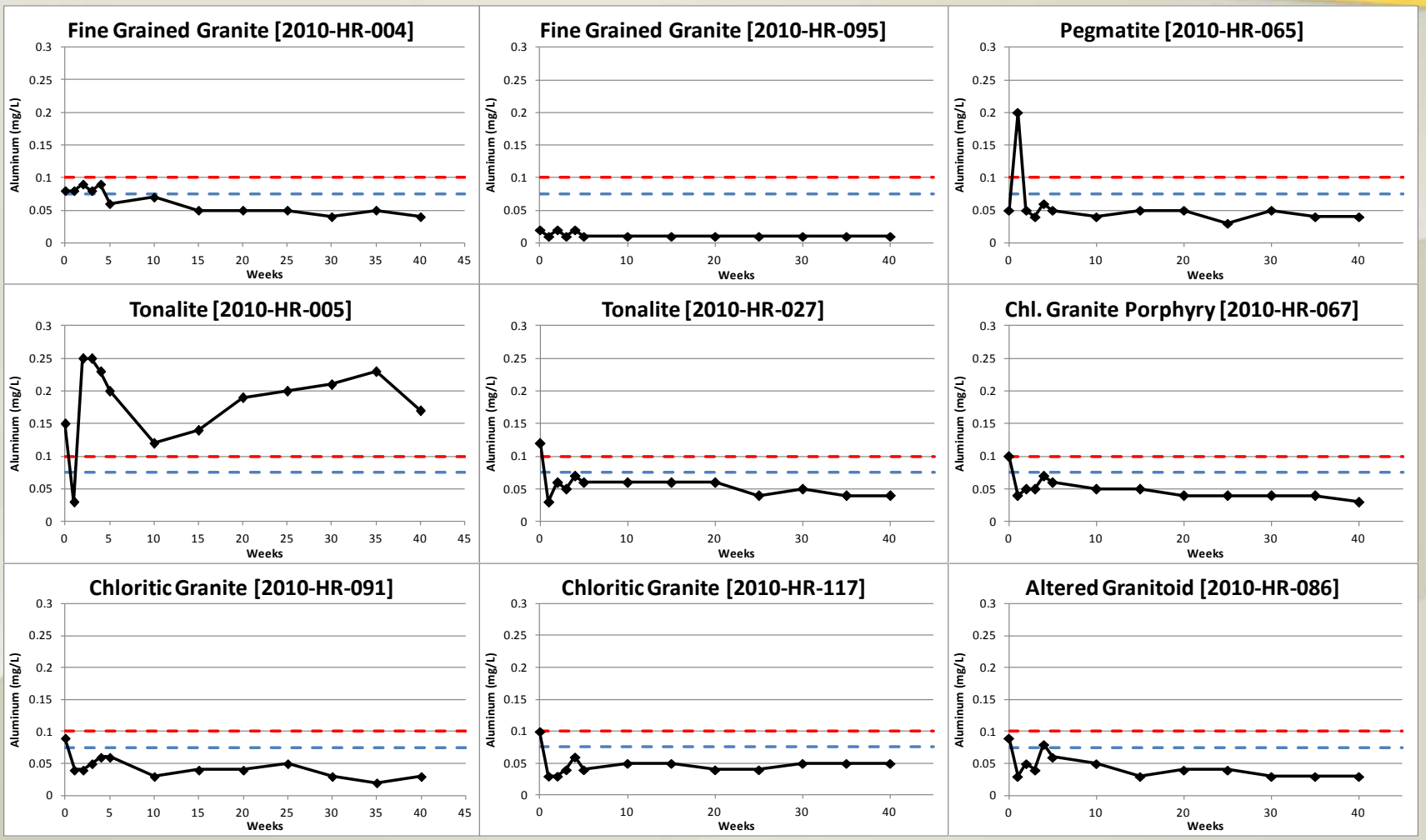
- Sulphide contents are low
  - Maximum of <0.4%;
  - Overall average of 0.03%;
- Of the 123 samples, only 1 has a potential to generate acid
  - Quartz vein which represents a very small proportion of the waste rock
- Metal leaching
  - pH value are alkaline and often outside the CCME/PWQO/MMER criteria range
  - Aluminum concentrations can be greater than CCME/PWQO/MMER criteria in the short-term leach and humidity cell testing
  - Arsenic, copper, selenium and vanadium have sporadic exceedences that are only marginally greater than CCME and/or PWQO


Fine Grained Granite
Chloritic Granite
Tonalite
Altered Granitoid
Pegmatite
Mafic Dyke
Chloritic Granite Porphyry
Minor Units
LIKELY
POSSIBLE
NONE
Acid Potential
(t CaCO3 / 1000t)
Neutralization Potential
(t CaCO3 / 1000t)
0
50
100
150
200
250
300

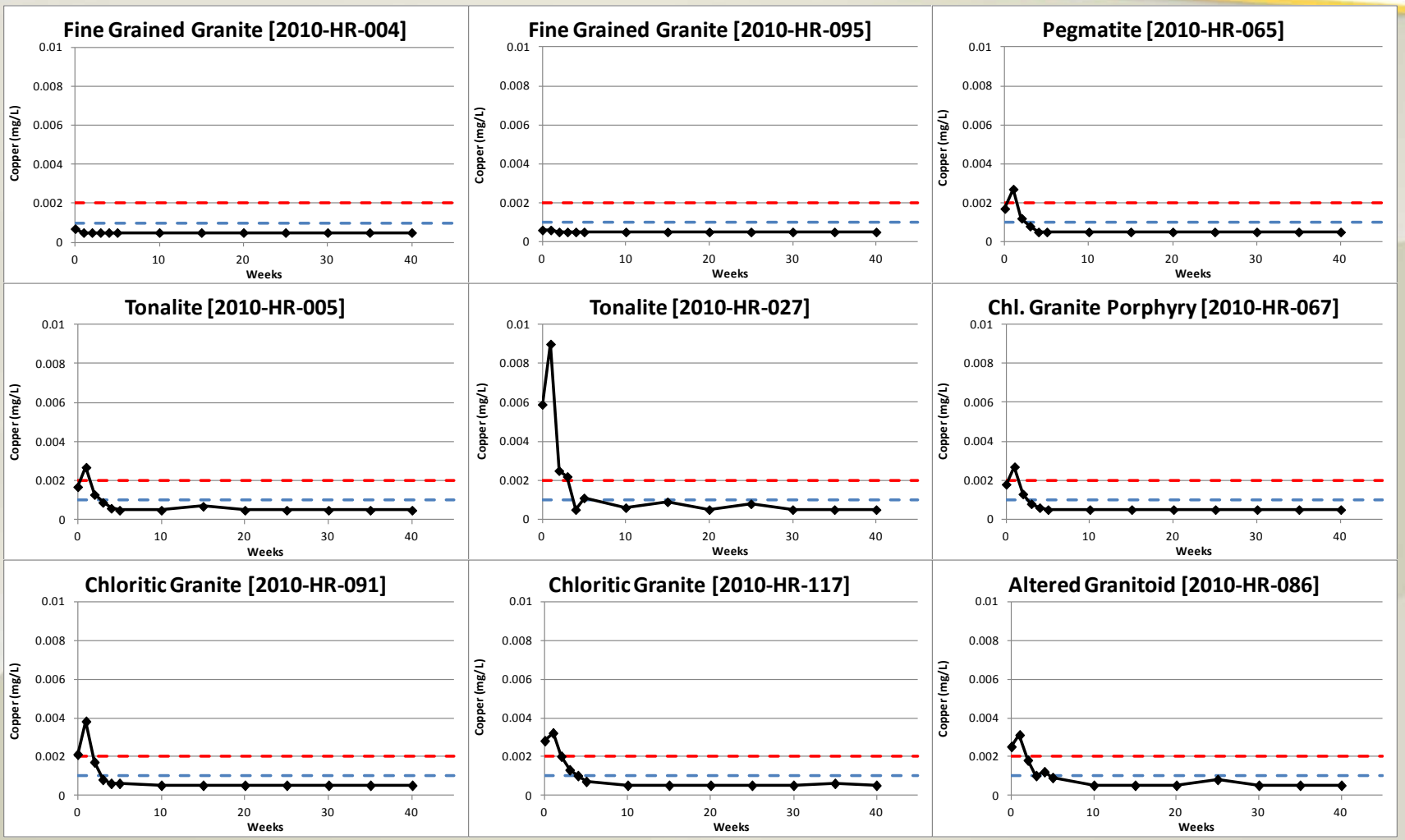
NP vs AP



Waste Rock Humidity Cell Leachate – pH



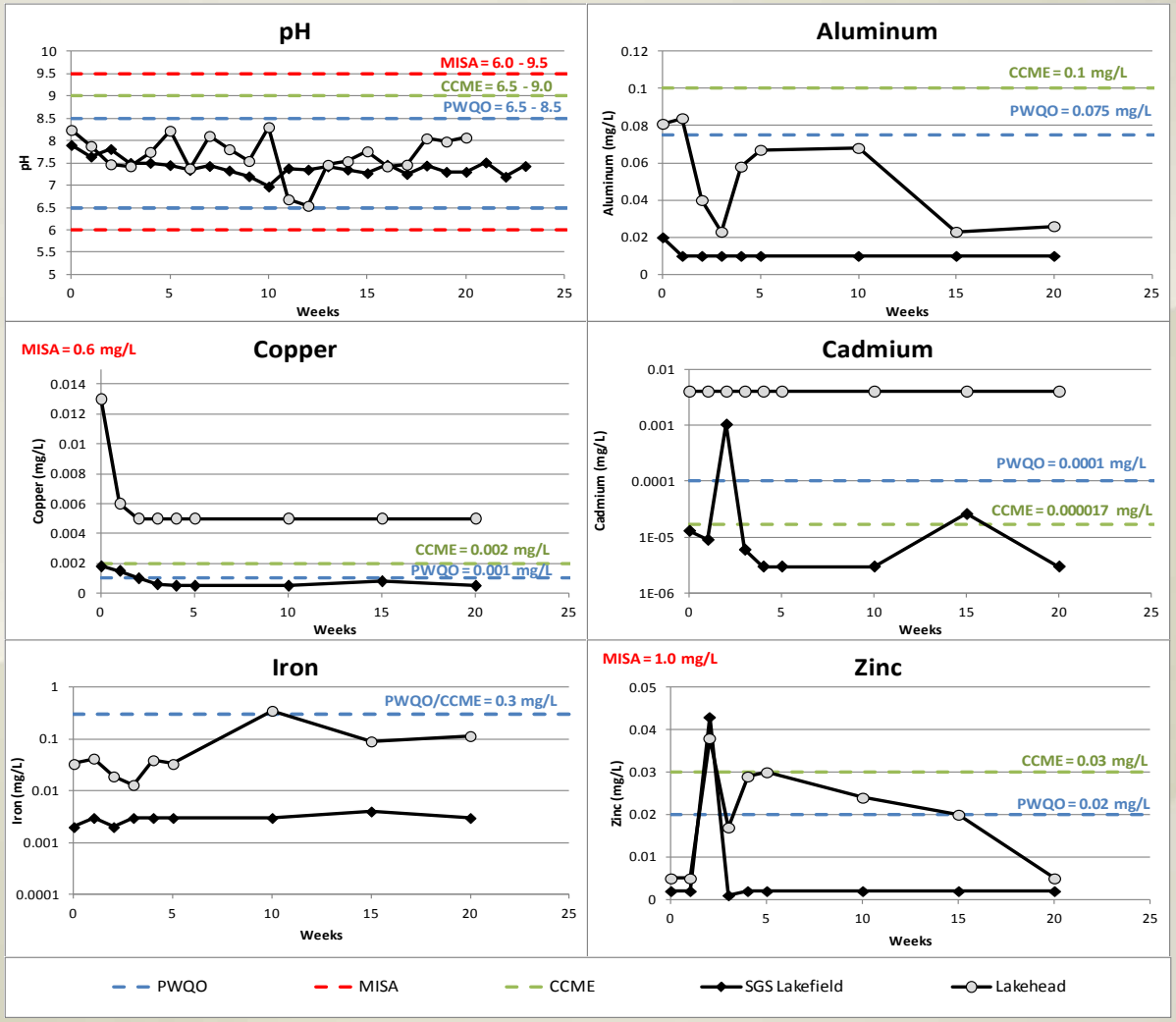
Waste Rock Humidity Cell Leachate – Aluminum



Waste Rock Humidity Cell Leachate – Copper

Tailings Results

- Sulphide contents are low and acid generation is not expected
- Metal leaching
  - pH values are neutral to alkaline and higher than the CCME/PWQO/MMER criteria range in short term tests
  - Aluminum concentrations can be greater than CCME/PWQO/MMER criteria in the short-term leach and humidity cell testing
  - Copper can be higher than the PWQO/CCME criteria in the humidity cells for the first five weeks but decreases rapidly to values close to the detection limit
  - Cadmium, silver and uranium concentrations have sporadic exceedences that are only marginally greater than CCME and/or PWQO in all leaches



Tailings Humidity Cell Leachate

Tailings Results (cont)

- Aging tests
  - Uranium, copper and molybdenum concentrations were greater than the PWQO criteria
  - Cyanide in the TMF pond is expected to be < 1mg/L

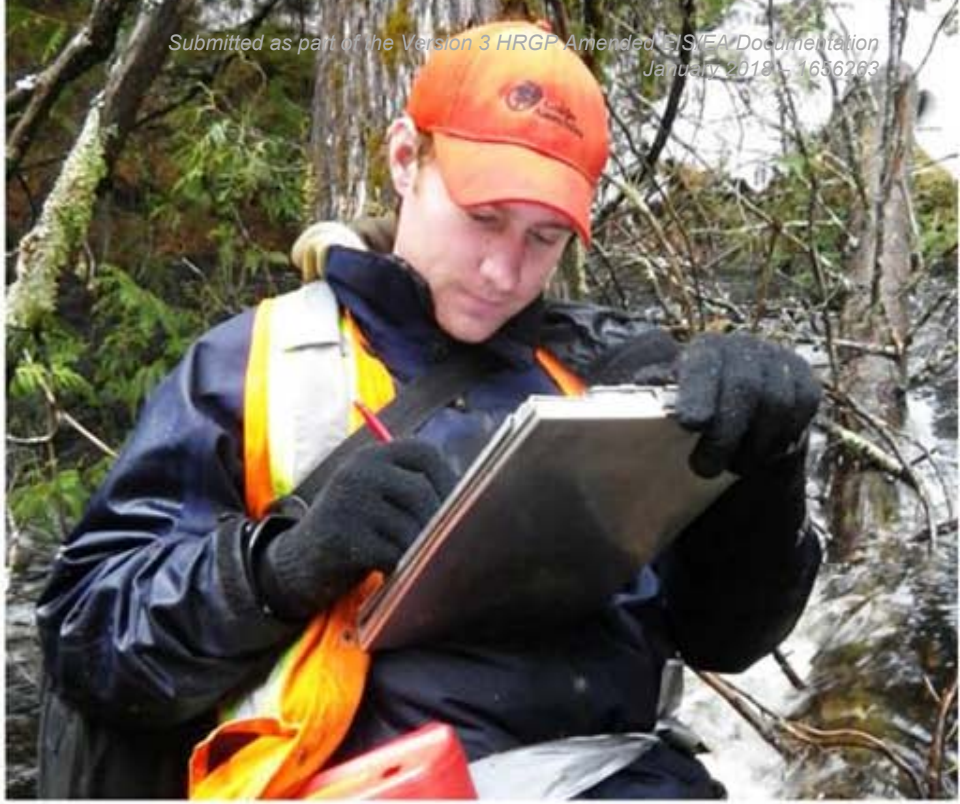
Ongoing Work

- Confirm tonnages of individual waste rock types from final mine plan
- Compare to the MEND (2009) criteria to determine if additional samples are required
- Testing of overburden is in progress

Submitted as part of the Version 3 HRGP Amended CSIEA Documentation
January 2019 - 1656263

OSISKO

HAMMOND REEF GOLD





Golder Associates



HAMMOND REEF

Baseline Study Summary – Water Quality

May 2012

Baseline Studies – Characterizing Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- **Surface Water and Sediment Quality**
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- Fish and Fish Habitat

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

Study Objectives

Baseline data was collected to meet the requirements of the EA and be consistent with provincial and federal requirements. Specifically, the water and sediment quality baseline study will provide, within the defined study area:

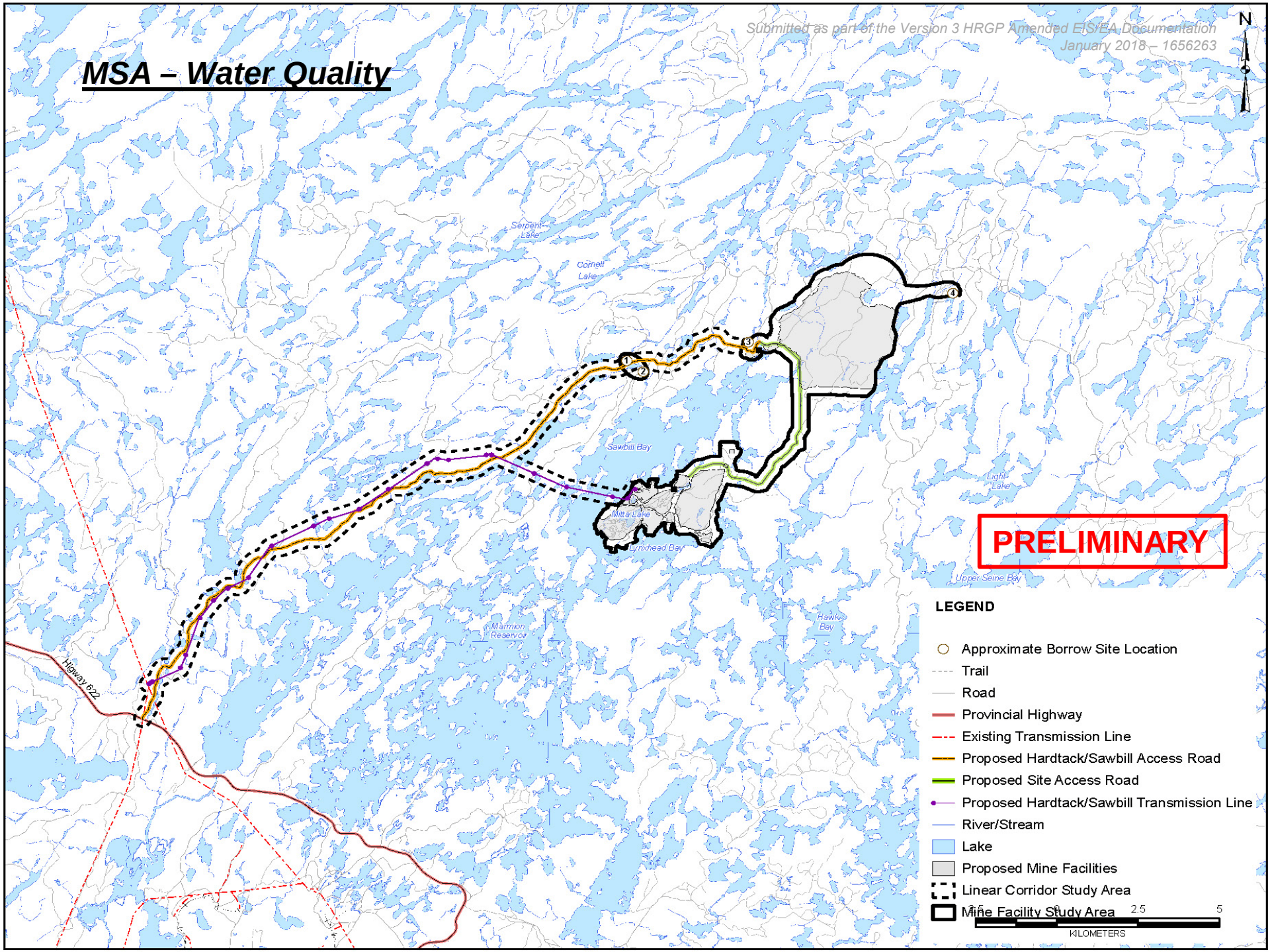
- A description of water quality and sediment sampling protocols and analytical methods and the quality assurance/quality control program followed
- A summary of the collected surface water quality data compared to the relevant criteria
- An assessment of variation relative to historical data

Study Areas

Mine Study Area: contains the mine infrastructure, the deposit, and associated servicing and maintenance areas. The ore body, waste rock facilities, plant and other infrastructure are confined to the peninsula upon which the deposit occurs while the proposed tailings management facility is located to the northwest of the peninsula and north of Sawbill Bay

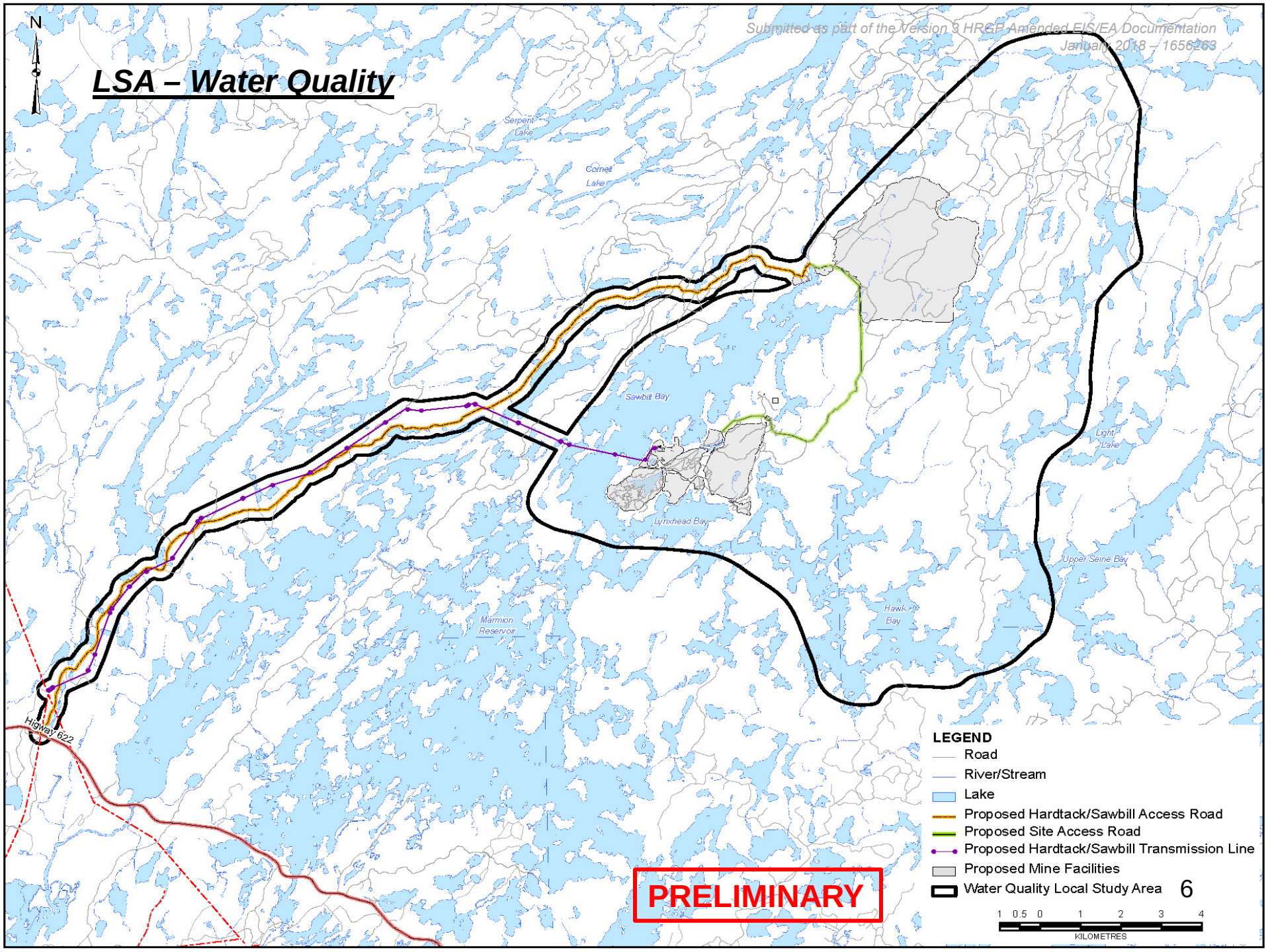
The Local Study Area: The LSA includes the lakes and rivers adjacent to the Mine Study Area such as Sawbill Bay, Lynxhead Bay, Turtle Bay, Trap Bay, Hawk Bay, Lizard Lake and various creeks and streams that drain the Mine Study Area

MSA – Water Quality



Submitted as part of the Version 3 HRGP Amended EIS/EA Documentation
January 2018 – 1656263

LSA – Water Quality



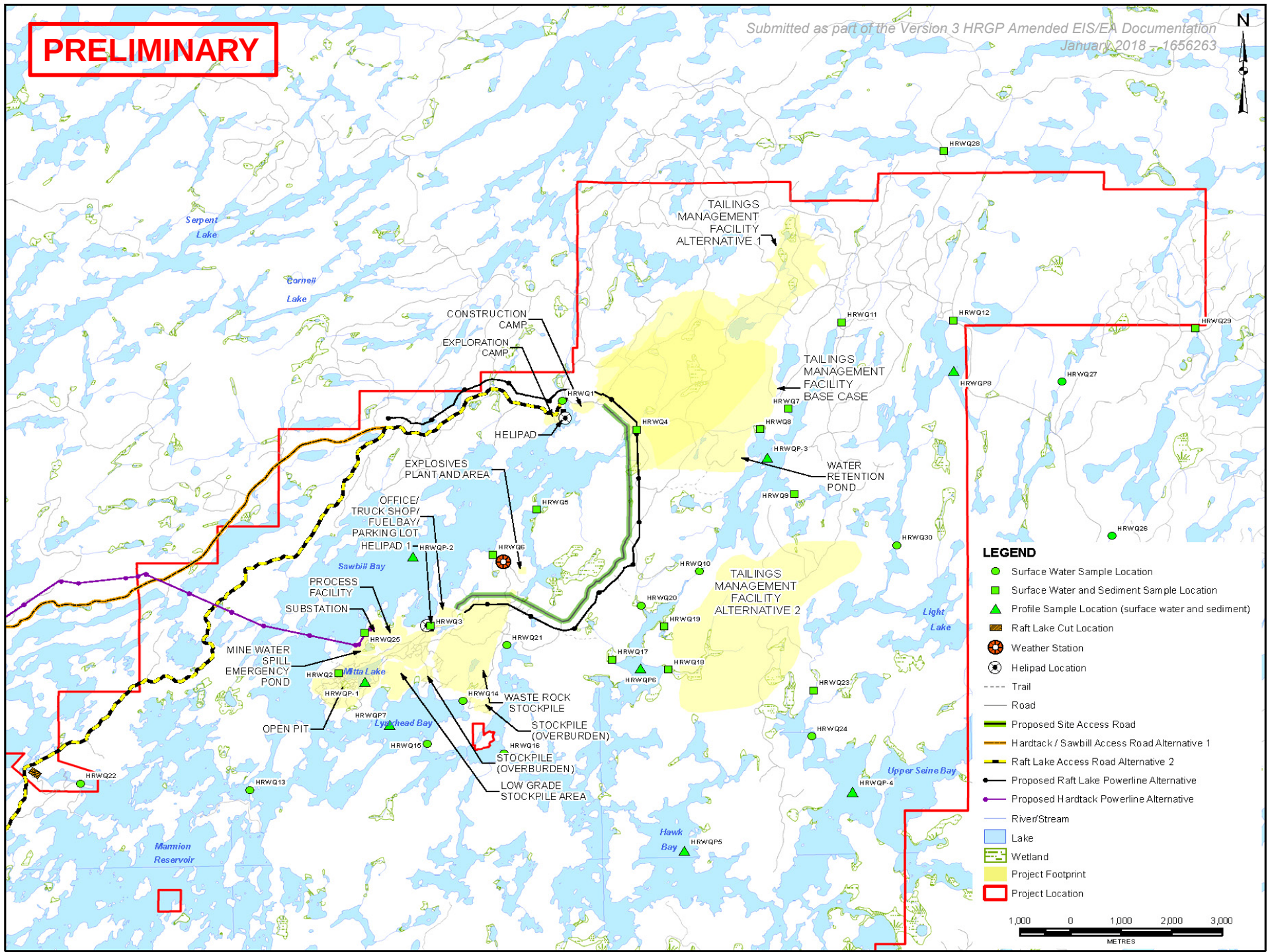
PRELIMINARY

Completed Fieldwork

- 30 surface water locations sampled within the MSA and LSA to provide an indication of water and sediment quality prior to mining
- 8 profile locations sampled
  - Water collected near top and bottom and field parameters measured along the length of the water column

Completed Fieldwork

- Collection of surface water samples, water profiles from selected lakes and sediment samples
- Sampled quarterly for 1 year
  - September 2010
  - November 2010
  - March 2011
  - June 2011
- Reduced to twice per year in 2012
  - April 2012 (completed)
  - September 2012 (planned)


PRELIMINARY
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January 2018 – 1656263
N
Serpent Lake
Cornell Lake
CONSTRUCTION CAMP
EXPLORATION CAMP
HELIPAD
EXPLOSIVES PLANT AND AREA
OFFICE/ TRUCK SHOP/ FUEL BAY/ PARKING LOT
HELIPAD 1
Sawbill Bay
PROCESS FACILITY
SUBSTATION
MINE WATER SPILL EMERGENCY POND
Mitta Lake
OPEN PIT
Lyndhead Bay
WASTE ROCK STOCKPILE
STOCKPILE (OVERBURDEN)
STOCKPILE (OVERBURDEN)
LOW GRADE STOCKPILE AREA
Mamion Reservoir
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 1
TAILINGS MANAGEMENT FACILITY BASE CASE
WATER RETENTION POND
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 2
Light Lake
Hawk Bay
Upper Seine Bay
HRWQ1
HRWQ2
HRWQ3
HRWQ4
HRWQ5
HRWQ6
HRWQ7
HRWQ8
HRWQ9
HRWQ10
HRWQ11
HRWQ12
HRWQ13
HRWQ14
HRWQ15
HRWQ16
HRWQ17
HRWQ18
HRWQ19
HRWQ20
HRWQ21
HRWQ22
HRWQ23
HRWQ24
HRWQ25
HRWQ26
HRWQ27
HRWQ28
HRWQ29
HRWQ30
HRWQP-1
HRWQP-2
HRWQP-3
HRWQP4
HRWQP5
HRWQP6
HRWQP7
HRWQP8
LEGEND
Surface Water Sample Location
Surface Water and Sediment Sample Location
Profile Sample Location (surface water and sediment)
Raft Lake Cut Location
Weather Station
Helipad Location
Trail
Road
Proposed Site Access Road
Hardtack / Sawbill Access Road Alternative 1
Raft Lake Access Road Alternative 2
Proposed Raft Lake Powerline Alternative
Proposed Hardtack Powerline Alternative
River/Stream
Lake
Wetland
Project Footprint
Project Location
1,000 0 1,000 2,000 3,000
METRES

Water Quality Parameters

- **Physical parameters:** pH, acidity, alkalinity, conductivity, hardness, temperature, total dissolved solids, total suspended solids, total organic carbon (TOC) and dissolved organic carbon (DOC);
- **Major ions:** calcium, magnesium, potassium, sodium, sulphate, chloride, fluoride and cyanide (free and total);
- **Nutrients:** nitrate, nitrite, ammonia (total and un-ionized), total phosphorus and orthophosphate;
- **Organics:** oil and grease and phenols;
- **Microorganisms:** E coli and total coliform;
- **Metals:** total and dissolved (including mercury)

Sediment Quality Parameters

- Metals – total, including mercury (mg/kg);
- Polycyclic aromatic hydrocarbons (PAHs); and
- Polychlorinated biphenyls (PCBs).

Baseline Criteria

Water Quality

- Ontario Provincial Water Quality Objectives (PWQO 1999)
- Canadian Council of Ministers of the Environment (CCME) water quality guidelines for the protection of aquatic life (CCME 2007). Only total concentrations were compared to the criteria
- The most conservative values were taken from a list of criteria for parameters that are dependent on pH or hardness

Sediment Quality

- Canadian Council of Environment Ministers (CCME) sediment quality guidelines for the protection of aquatic life Probable Effect Level (PEL) and Interim Sediment Quality Guideline (ISQG) (CCME 2002)
- Ontario Provincial Sediment Quality Guidelines (PSQG) Lowest Effect Level (LEL) and Severe Effect Level (SEL) (MOEE 1993)

Results – Surface Water Samples

- Acidic to near-neutral pH values with approximately 20% of measured values lower than the CCME and PWQO criteria (6.5)
- Almost all measured total aluminum and 35% of total iron concentrations were greater than the criteria
- Sporadic concentrations of total cadmium, chromium, cobalt, copper, lead, nickel, silver and zinc greater than the criteria
- Four total mercury concentrations greater than the CCME criteria were observed
- 20% or less of the observed phenols concentrations greater than criteria

Results – Profile Samples

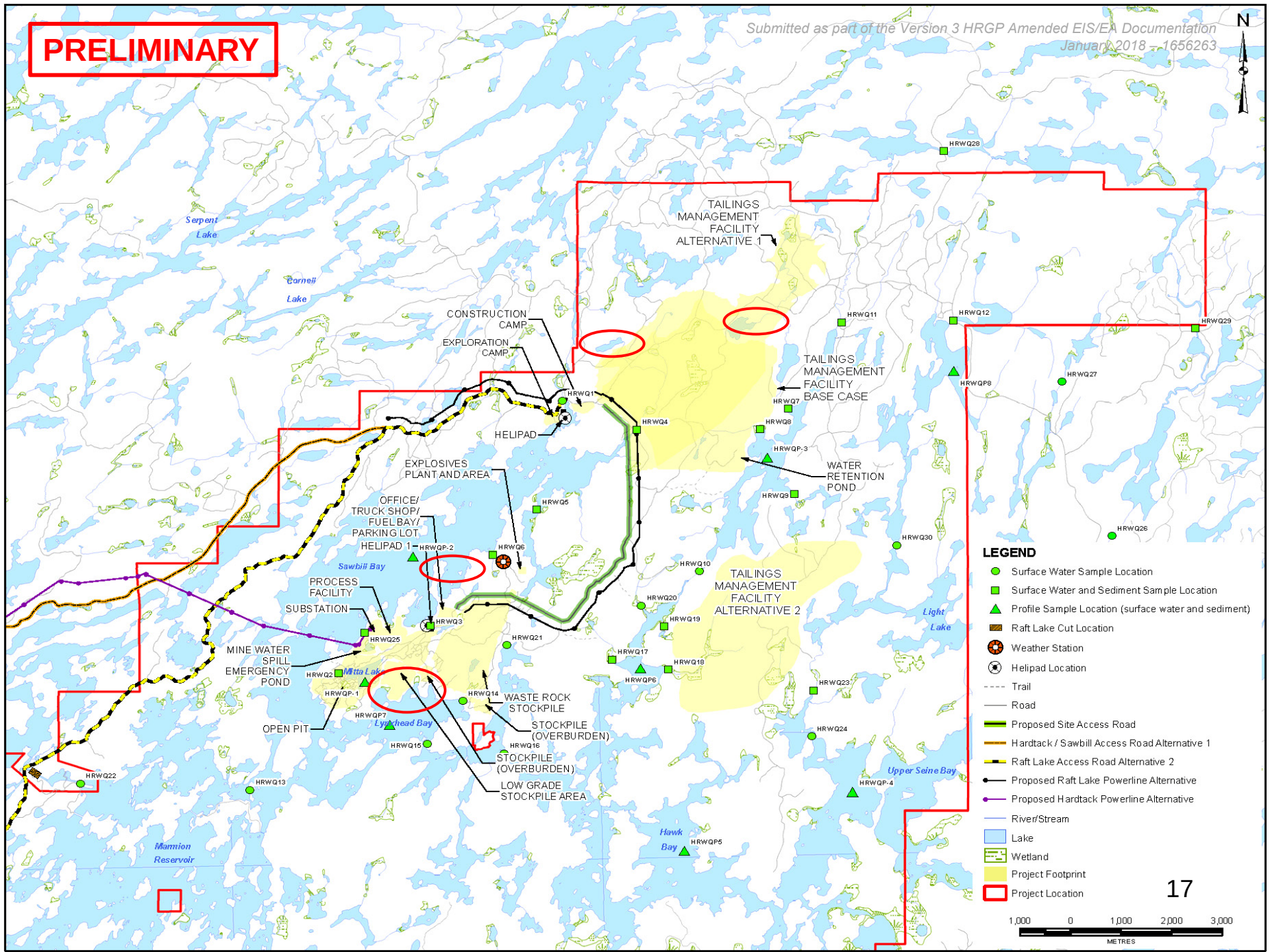
- Stratification of Mitta Lake, Sawbill Bay, Light Bay, Hawk Bay and Premier Lake was observed for some portion of the year
- Strongest stratification observed in September 2010/June 2011.
- Decreasing temperature, pH and dissolved oxygen concentrations at depth, with increasing conductivity were observed.
- Weak to no stratification was observed in Lizard Lake, Turtle Bay and Lynxhead Bay with near constant temperature, conductivity pH and dissolved oxygen values throughout the profile.

Results – Sediment

- Arsenic, cadmium, chromium, cobalt, copper, iron, manganese, mercury, nickel, silver and, zinc were greater than one or more of the sediment criteria
- Some PAH concentrations greater than the criteria

Ongoing Work for 2012

- 2 sampling events (April 2012 completed, September 2012 planned)
- 9 surface water and 2 profile locations removed
  - sample locations addressed project components no longer considered (i.e., previous TMA options)
- targeting new areas (i.e., TMA, powerline alignments, etc.)
  - 9 surface water locations added
    - 2 in Sawbill Bay (completeness)
    - 2 in Lynxhead Bay (effects from waste rock pile)
    - 2 at TMA
    - 3 along transmission line


PRELIMINARY
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January 2018 – 1656263
N
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 1
TAILINGS MANAGEMENT FACILITY BASE CASE
TAILINGS MANAGEMENT FACILITY ALTERNATIVE 2
CONSTRUCTION CAMP
EXPLORATION CAMP
HELIPAD
EXPLOSIVES PLANT AND AREA
OFFICE/ TRUCK SHOP/ FUEL BAY/ PARKING LOT
HELIPAD 1
PROCESS FACILITY
SUBSTATION
MINE WATER SPILL EMERGENCY POND
OPEN PIT
WASTE ROCK STOCKPILE
STOCKPILE (OVERBURDEN)
STOCKPILE (OVERBURDEN)
LOW GRADE STOCKPILE AREA
WATER RETENTION POND
Serpent Lake
Cornell Lake
Sawbill Bay
Mitta Lake
Lynxhead Bay
Mamion Reservoir
Hawk Bay
Light Lake
Upper Seine Bay
HRWQ1
HRWQ2
HRWQ3
HRWQ4
HRWQ5
HRWQ6
HRWQ7
HRWQ8
HRWQ9
HRWQ10
HRWQ11
HRWQ12
HRWQ13
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HRWQ22
HRWQ23
HRWQ24
HRWQ25
HRWQ26
HRWQ27
HRWQ28
HRWQ29
HRWQ30
HRWQP-1
HRWQP-2
HRWQP-3
HRWQP-4
HRWQP5
HRWQP6
HRWQP7
HRWQP8
LEGEND
Surface Water Sample Location
Surface Water and Sediment Sample Location
Profile Sample Location (surface water and sediment)
Raft Lake Cut Location
Weather Station
Helipad Location
Trail
Road
Proposed Site Access Road
Hardtack / Sawbill Access Road Alternative 1
Raft Lake Access Road Alternative 2
Proposed Raft Lake Powerline Alternative
Proposed Hardtack Powerline Alternative
River/Stream
Lake
Wetland
Project Footprint
Project Location
17
1,000 0 1,000 2,000 3,000
METRES

Ongoing Work

- Reduction in parameters (consistently non-detect) or sufficient information has been provided.
  - Oil and grease, total and WAD cyanide and microbiological removed from the water quality analytical suite
  - PAH and PCB were removed from the sediment analytical suite.

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING NOTES
REGULATOR REVIEW OF BASELINE DATA
DAY 1: MAY 31, 2012 – 10:00AM – 4:15PM
DAY 2: JUNE 1, 2012 – 8:45AM – 11:20PM
GOLDER ASSOCIATES OFFICE: GOLD/SILVER BOARDROOM
6700 CENTURY AVE. MISSISSAUGA, ON L5N 6A4
TELECONFERENCE: 416-343-2275 OR 1-877-343-2259 (CODE: 6583244)

Attendees:

Osisko:	Alix Drapack, Cathryn Moffett, Mark Bowler (present for all presentations)
Golder:	Steve Parker (present for all presentations)
CEAA/MOE/MNDM:	Amy Liu, Michelle Whitmore, Patrick Barnes (as noted)
Technical Discplines:	Various technical discipline leads from Golder Associates and the Federal and Provincial governments (as noted below)
Purpose of Meeting:	For Osisko to present and discuss the revised project layout and baseline data for the proposed Hammond Reef Gold Mine Project, with the federal and provincial government review teams.
Outcome:	To identify any data gaps that need to be addressed during the 2012 field season in order to fulfill the federal EIS guidelines and the Provincial Terms of Reference.

DAY 1: MAY 31 2012

WELCOME AND INTRODUCTIONS

- List of technical presentations
- Aquatic biology will have its own day-long workshop on June 4, 2012 in Thunder Bay
- Cultural resources meeting will be separate because MTCS wasn't available this week
- Overview of permitting process

REVISED PROJECT LAYOUT PRESENTATION

PRESENTATION BY OSISKO: Alix Drapack

ATTENDEES: in person or by teleconference

√ Amy Liu (CEAA)	√ Patrick Barnes (MNDM)	√ Michelle Whitmore (MOE)	√ Sheelagh Hysenaj (EC)
√ Rob Dobos (EC)	√ Gail Faveri (EC)	√ John Fischer (EC)	√ Anita Wong (EC)
√ Hossein Naghdianei (EC)	√ David Lavadiere (EC)	√ Kitty Ma (HC)	√ Sam Shippam (MOE)
√ Alisdair Brown (MOE)	√ Todd Kondratt (MOE)	√ Paula Spencer (MOE)	√ Twila Smitsnuk (MNR)
√ Regent Dickey (MPMO)	√ Scott Sheriff (MOE)	√ Brad Dragan (MNDM)	√ Mark O'Brien (MNDM)
√ Kate Cavallaro (NRCan)	√ Fadi Haddad (NRCan)	√ Rosanna Massimi (EC)	√ Amy Godwin (MNR)
√ Sheldon Hawe (MNR)	√ Brian Jackson (MNR)	√ Ian Callum (Golder)	√ Che McRae (Golder)

OSISKO MINING CORPORATION
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- Revised layout is **not final**, design is not finished, however we want to give an update to allow informed comments on baseline data collection
- Current planning at Osisko indicates that there will be some revision to the initial layout provided in Osisko's Project Description submitted to and accepted by CEAA. These details are outlined below:
    - Biggest change is to the alignment of transmission line. Consideration is being given to put on towers and cross a portion of the Marmion Basin this way rather that along roadway to the mine site.
    - The preferred road alternative is upgrades to the Hardtack-Sawbill Road
    - Tailings management facility is very similar to the base case
    - Waste rock stockpile has changed location and would be located west of Trap Bay
    - The pits have stayed in the same place
    - The mill location has changed location, it is now north of the pits
    - The ore stockpiles have also moved, one is between the pits and the others are adjacent to the mill
    - Effluent discharge locations are being considered in Sawbill Bay.
    - Throughput will be 60,000 tonnes per day instead of original 50,000 tonnes per day stated in the CEAA Project Description

REVISED PROJECT LAYOUT DISCUSSION:

CEA Agency - Amy Liu

Q - Transmission route: what are your plans for methods to cross Sawbill Bay?

A – We think we can do the span without putting any footings in the water. We had an engineering team fly the route and they feel the alignment shown on Figure 1 is possible and the line can span Marmion Basin without requiring a footing in the Reservoir.

MOE – Alisdair Brown

Q – Are you still considering all three tailings locations?

A – This presentation highlights the preferred option. We will carry the alternatives through and do an assessment according to the tailings evaluation requirements. We will also have a dry land option

Environment Canada - Gail Faveri

Q – The preferred location is on top of a stream that feeds in to several streams. Are you considering leachate protection?

A – Conceptual design will be include perimeter ditching around the Tailings Management Facility (TMF). Studies are being completed to determine the seepage potential and conceptual design will reflect collection of storm water run-off and potential seepage.

Environment Canada - Anita Wong

Q – What are the discharge locations for? What will be discharged?

A – They are potential discharge locations for effluent from the water treatment plant.

Q – By effluent does that include storm water and treatment water? What does that include?

A – There is only one discharge location, which will include all water - storm water, non-contact water, effluent

Q – Has the road alignment changed?

A – The general alignment will be the same; however there could be some improvements for safety, such as width and corner radius to allow for anticipated truck size and weight.

Q – I am asking about the site access road. It used to go through the location where the stockpile is now located. So there is now only one alternative for waste rock stockpile?

A – This is the preferred alternative. It was chosen to reduce impact to fish and reduce haulage times

Environment Canada - David Laverdiere

Q – You used to have two options for waste rock, now you only have one?

A – We will carry all the alternatives through into the EA, however this is the preferred option.

Comment – Make sure that all alternatives considered are carried through the EA, even if it is a short paragraph explanation.

Q – The ore stockpiles – it seemed that they may be located over fish bearing waters?

A – We will try to limit the impact on waterways. It is impossible to avoid fish bearing waterways entirely on this site.

Comment – We may have to evaluate the ore stockpiles under 36-3 (Fisheries Act), because even though it is temporary, it is a deposit of a deleterious substances into a fish bearing waterway.

Comment – As part of the EIS we will like to see a conceptual plan for the collection and treatment of effluent. This will allow us to make a determination of significance under CEAA. Components in the operations area that we would like to see how you plan to collect and monitor effluent will include: tailings, surface drainage and seepage (if contain deleterious substances – which includes TSS). Surface drainage samples must be collected and monitored for quality and flow. These requirements are based on DFO's identification of fish bearing waterways.

Golder Che McRae

Q - It is only required if tailings are discharged into a fish bearing waterway? Or does it include tailings deposited adjacent to a fish bearing waterway?

Environment Canada – David Laverdiere

A – If you can avoid discharging into waterways you will not require considerations resulting from Section 36-3 (Fisheries Act).

Natural Resources Canada - Kate Cavallaro

Q – Is the daily through-put capacity increasing?

A – Yes, from the original estimated 50,000 tonnes per day (tpd) to a now estimated 60,000 tpd to make the project economic, this is captured in the preferred layout as presented.

BASELINE DATA ACTION ITEMS

- Include new survey areas to provide coverage of the Project footprint, transmission line alternatives and road alternatives.

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

GEOCHEMISTRY

PRESENTATION BY GOLDER: Che McRae

ATTENDEES: in person or by teleconference

√ Amy Liu (CEAA)	√ Patrick Barnes (MNDM)	√ Michelle Whitmore (MOE)	√ Sheelagh Hysenaj (EC)
√ David Lavadiere (EC)	√ Sam Shippam (MOE)	√ Alisdair Brown (MOE)	√ Todd Kondratt (MOE)
√ Rosanna Massimi (EC)	√ Brad Dragan (MNDM)	√ Kate Cavallaro (NRCan)	√ Fadi Haddad (NRCan)
√ Ken DeVos (Golder)	√ Ian Callum (Golder)	√ Che McRae (Golder Technical Discipline Lead)	

GEOCHEMISTRY DISCUSSION:

Environment Canada - David Laverdiere

Q – Good to see your geochemistry program is considering the correct criteria. Slide 18 indicates you are limiting the comparison to MEND. Are you also comparing to GARD and Price?

A – Yes, MEND was referenced because it requires a specific number of samples.

MOE – Alisdair Brown

Comment – It doesn't look like there will be a lot of control requirements, but we will want to see an extensive monitoring program. You will need some contingency planning and closure plans regarding site water.

A – Absolutely, a monitoring program will be included as a recommendation in the EA Report.

MOE - Todd Kondrat

Q – Your results look good so far, but only operations will show the results over time. Contingency planning is key. Have you considered receiver-based effluent criteria?

A – We haven't yet. We are still at the stage of water quality modelling. We have been encouraged to meet with people from ECA early, and we plan to do so, however we are not quite ready to do that yet.

Environment Canada - David Laverdiere

Environment Canada would like a copy of the ECA application for the water treatment and collection system to allow us to understand the Project better. Also any comments you might receive from the province on this as well as the application and final approval documents. This is what was done on other recent mining projects.

BASELINE DATA ACTION ITEMS

- Meet with Environmental Compliance staff to discuss receiver-based effluent criteria.

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

HYDROGEOLOGY

PRESENTATION BY GOLDER: Karen Besemann

ATTENDEES: in person or by teleconference

√ Amy Liu (CEAA)	√ Patrick Barnes (MNDM)	√ Sheelagh Hysenaj (EC)	√ David Lavadiere (EC)
√ Alisdair Brown (MOE)	√ David Zeit (TC)	√ Brad Dragan (MNDM)	√ Kate Cavallaro (NRCan)
√ Rosanna Massimi (EC)	√ Paula Spencer (MOE)	√ Brian Jackson (MNR)	√ Ian Callum (Golder)
√ Karen Besemann (Golder Technical Discipline Lead)			

HYDROGEOLOGY DISCUSSION

MOE – Alisdair Brown

Q – Did you include mercury in your water quality testing?

A – Yes.

Q – What kind of frequency are water level data loggers?

A – Daily for long term, much more frequent during pump tests – i.e. approximately 1 minute. Data loggers are being run for the near surface water features.

Comment – If you are putting more wells in you should consider how those wells might be useful for long term monitoring. Wells that are inside the footprint won't be useful because they will get filled in or removed as part of mining operations.

A – Yes, I agree. Monitoring well locations were chosen based on consideration for long term monitoring.

Q – TMF1 has considerably thicker overburden. Do you have an understanding of how far the overburden extends? Does it go near the open pits?

A – We took grain size testing in those areas. There is also some geotechnical work that will focus on that area. Thicker overburden appears to be localized to one area. It does not go near the pit. With the exception of the immediate vicinity of Mitta, there is very little overburden.

Q – You have collected some data from exploration holes. Will it be an issue that these are exploration holes and not properly constructed wells?

A – We are not really concerned that they are exploration holes, in many cases the exploration holes were installed to cut across the geology structure and are useful in this regard. Generally, we have measured flows of about 10 litres/min across the structures.

Comment – When you are looking at modelling and pit dewatering we want to make sure you look at base flow and shallow water. Be sure to address shallow water effects in dewatering, i.e. Effects on shallow streams and lakes.

A – This will be addressed.

Q – Did you do water quality samples during timed pump test?

A – Yes, on the 5 day test there was 6 or 7 water samples collected/tested.

Comment – Need to look at long term impacts from de-watering and contamination transport, need to identify receptors.

A – This will be addressed.

Natural Resources Canada - Kate Cavallero

Q – Will this information be in the EIS? Your explanations of shallow and relationships between hydrology and hydrogeology will really facilitate the review. I will pass the presentation along to the hydrogeologists and see if they have any further questions.

A – Yes this information will be included in the TSD which will be submitted with the EA Report.

Q – Have you done field work during different seasons?

A – We did a full year of sampling in 2011 – spring freshet, summer and fall. We are starting again for another sampling cycle this year.

Comment – Hydrogeology underneath the tailings and waste rock needs to be studied. Seepage through dams or out the bottom is an important consideration.

A – This will be addressed.

Environment Canada - David Laverdiere

Comment – Environment Canada would like to see interactions, flow paths (groundwater and surface water) and movement of contaminants for shallow groundwater in waste rock, tailings, ore stockpile locations. It's best to do more intensive sampling in areas that may have interactions with surface water. And identify receptors of groundwater/surface water interaction.

A – This will be addressed.

BASELINE DATA ACTION ITEMS

- Ongoing sampling program planned for 2012

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WATER QUALITY

PRESENTATION BY GOLDER: Che McRae

ATTENDEES: in person or by teleconference

√ Amy Liu (CEAA)	√ Patrick Barnes (MNDM)	√ Michelle Whitmore (MOE)	√ Sheelagh Hysenaj (EC)
√ Rosanna Massimi (EC)	√ David Zeit (TC)	√ Sam Shippam (MOE)	√ Alisdair Brown (MOE)
√ David Lavadiere (EC)	√ Todd Kondratt (MOE)	√ Paula Spencer (MOE)	√ Brian Jackson (MNR)
√ Kitty Ma (HC)	√ Brad Dragan (MNDM)	Mark O'Brien (MNDM)	√ Kate Cavallaro (NRCan)
√ Ken DeVos (Golder)	√ Ian Callum (Golder)	√ Che Mc Rae (Golder Technical Discipline Lead)	

WATER QUALITY DISCUSSION

MOE - Paula Spencer

Comment – It's in the Project's best interest to have EA sampling match up with requirements for ECA. It jumped out at me that the sampling frequency has been reduced. We would be looking for at least three times a year. We want to make sure that the baseline is well understood. When you develop the receiver-based limits you need to be able to determine the mixing zone, etc. There is value in having consistent data over a number of years.

A – OHRG is willing to consider increasing the sampling frequency to include a summer event.

Comment – Make sure that the benthic and fish programs allow for characterization

A – We have full suites of samples for some of the locations. Aquatics will look at the sediment grain size and TOC in their field studies.

Comment – You need to be able to identify water quality and sediment quality triggers as well as assimilated capacity for receptors.

A - The effect of effluent on receiving waters, including the assimilative capacity (i.e., mixing zone) will be performed as part of the EA. Water and sediment quality triggers (or site-specific criteria), will be developed where appropriate. Likely these would be developed should the effluent for certain parameters in the receiving water not meet the PWQOs.

Comment- Properly characterize upstream and downstream of intake and discharges for other non-EIA permitting (i.e. MMER, ECA, PTTW etc.)

Natural Resources Canada - Kate Cavallaro

Comment – The explosives factory and storage areas will need discharge points and proper containment identified in the mitigation measures.

A - We will review the baseline sampling locations with respect to the explosives storage area to determine if additional locations are needed. The design, operation and mitigation related to the factory and storage area will be included in the EA.

BASELINE DATA ACTION ITEMS

- Add summer event to 2012 sampling program

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HYDROLOGY

PRESENTATION BY GOLDER: Christine Campbell

ATTENDEES: in person or by teleconference

√ Amy Liu (CEAA)	√ Michelle Whitmore (MOE)	√ Sheelagh Hysenaj (EC)	√ Gail Faveri (EC)
√ David Zeit (TC)	√ Sam Shippam (MOE)	√ Alisdair Brown (MOE)	√ David Lavadiere (EC)
√ Todd Kondratt (MOE)	√ Paula Spencer (MOE)	√ Brian Jackson (MNR)	√ Gail Faveri (EC)
√ Ian Callum (Golder)	√ Terry Winhold (Golder)	√ Christine Campbell (Golder Technical Discipline Lead)	

HYDROLOGY DISCUSSION:

Environment Canada - David Laverdiere

Comment – Osisko should describe briefly the tailings management alternatives in the assessment – even those alternatives that will not be considered in the EA. It will help to inform the public and others as to the process considered.

A – A tailings alternatives assessment will be included in the EA Report.

Osisko – Alix Drapack

Comment - Navigable waters – Craig from Transport Canada had travelled to the site by helicopter and may have some input.

Environment Canada - Gail Faveri

Q – Have you determined how much water will be used? What is the rate of water taking as a percentage of the Seine River annual mean flow?

A – Based on a preliminary water balance, the average rate of water taking is approximately 11,000 m^3 per day (approx 0.13 m^3 per sec). The Project would require much less than 1 m^3 per second and the annual mean flows are about 20-30 m^3 per second. Water takings will represent less than 1% of the annual mean flows in the river.

MOE - Paula Spencer

Q – Are each of the potential discharge receivers being assessed from the perspective of assimilation capacity, etc?

A – Yes, but we have only just begun a preliminary screening-level assessment. This will need to be completed before we can move to a mixing model.

CEA Agency - Amy Liu

Q – Have you sampled potential (new) water crossings on Hard Tack road?

A – No, because we don't know where any new potential crossings will be located. Further work may be required if and when any additional crossings are identified.

BASELINE DATA ACTION ITEMS

- Ongoing sampling program planned for 2012, including water crossings for road alignment, if identified.

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WRAP UP

- Thank you for your time and your input.
- Golder and OHRG will circulate meeting notes for review and comment.
- We welcome further comments if you would like to submit them once you have had a chance to review preliminary baseline results further.

ACTION ITMES

- MOE requested a site visit for key staff involved in the Project who haven't yet visited the location. OHRG to potentially coordinate a visit with existing plans for site field trips.
- Include new survey areas to provide coverage of the Project footprint, transmission line alternatives and road alternatives.
- 2012 sampling program planned for hydrology, water quality, hydrogeology.
- MOE requested that water quality modify their sampling program to add a summer event in 2012.

DAY 2: JUNE 1 2012

ATMOSPHERIC AND ACOUSTIC

PRESENTATION BY GOLDER: Sean Capstick / Danny da Silva

ATTENDEES: in person or by teleconference

√ Amy Liu (CEAA)	√ Sheelagh Hysenaj (EC)	√ Michael Ladouceur (MOE)	√ Thomas Shevlin (MOE)
√ Hossein Naghdianei (EC)	√ Kitty Ma (HC)	√ Danny da Silva (Golder Technical Discipline Lead)	
√ Sean Capstick (Golder Technical Discipline Lead)			

ATMOSPHERIC AND ACOUSTIC DISCUSSION:

MOE – Michael Ladouceur

Q - Do you intend to use this data for computer modelling? You are aware you need to work that through with Rob Bloxam?

A Yes, we will submit a section 13 notice, there are only a few years of on-site meteorological data but there are several other meteorological monitoring stations with more than 5 years of data surrounding the site.

MOE – Thomas Shevlin

Q – At what point will potential points of reception be identified?

A – We are working with the socio-economic and human health component leads at Golder as well as Osisko's team to identify appropriate receptors.

Comment – I find there is a lot of emphasis on potential effects to hunting and fishing for these northern projects.

A – We will incorporate information from land use studies into the noise assessment.

Health Canada - Kitty Ma

Comment - Health Canada will be interested in the list of sensitive and non-sensitive noise receptors. We have a guideline that defines what we consider sensitive receptors.

A – Acknowledged. We will be including this in our investigation

MOE – Michael Ladouceur

Comment – There appears to be a good buffer zone away from the mine activities area and access roadway.

MOE – Thomas Shevlin

Comment – The 5 km radius appears to be sufficient to capture direct effects from the mine and a 1 km wide area either side of the haul road.

Golder- Danny Da Silva

Comment - We will also be looking beyond these areas to be sure areas of interest and potential receptors are considered.

MOE – Michael Ladouceur

Q – Did you contemplate any US background data from Minnesota? It is closer and may be more relevant. Minnesota also has upper atmospheric data. Fort Liard is quite a stretch

A – We focused on Canadian data not American. Fort Liard is one of the only remote locations we could find. We will get upper atmosphere data from the United States We were trying to look at a prevailing NW wind direction.

Environment Canada – Hossein Naghdianei

Q – Are you using the data from Thunder Bay as your background air quality data?

A – For some compounds it's lower than the other stations, but has a higher level for NOx because of transportation. We plan to synthesize the data set

MOE – Michael Ladouceur

Comment – Environmental Monitoring and Reporting Branch (EMRB) can assist with expected background NOx in the area. They can give you a typical range for what they expect as background. There may be some existing Atikokan data that they can draw on that is not publicly available. Particulates are the parameter of concern. I think your approach is sound, but I will be in discussion with EMRB and get in touch with you.

A – I agree that cumulative effects won't be an issue because background is low.

Environment Canada – Hossein Naghdianei

Comment – I need to look at the data and get back to you after that.

Q – For assessment purposes you will provide background data and estimated operations data?

A – Yes that is correct.

Q – The trace metals will be at the property line and at the human health receptors?

A – Yes. The various disciplines at Golder on the OHRG project are supplying Golder Atmospheric and Acoustic team with their information needs for their assessment including human health risk consideration.

MOE – Michael Ladouceur

Q – Do these numbers reflect averages or peaks?

A – They are the upper boundaries

Comment – Nickel and chromium may be parameters of concern. Hex chrome has been identified as a concern where smelting is occurring and deserves attention in the assessment.

A – Acknowledged.

Environment Canada – Hossein Naghdianei

Q – Do these climate trends assume there is no Project?

A – Yes. The contribution of the Project to the GHG emissions is insignificant. It is anticipated that the Project itself will not have an effect on the climate.

Golder- Sean Capstick

Comment - Golder notes that ozone will not be part of the assessment.

MOE – Michael Ladouceur

Comment – We are okay with that approach regarding ozone

Golder- Sean Capstick

Comment - During the construction, operation and closure stages of the project, the need for local ambient air monitoring will be re-assessed

Environment Canada – Hossein Naghdianei

Comment – Golder will need to consider blasting and vibration with respect to the project and NCP-119 Guidelines.

A – Acknowledged and will be doing so.

MOE – Michael Ladouceur

Q – I have a question about the timelines. When can we anticipate documents for review?

A – We hope to be in the position to have internal review of the EA Report by December 1, 2012

BASELINE DATA ACTION ITEMS

- MOE to discuss OHRG approach with EMRB and pass on any recommendations to Golder/OHRG
- Golder will need to consider blasting and vibration with respect to the project and NCP-119 Guidelines.
- EMRB to provide background data.
- MOE through Michael Ladouceur will review their background data sources from the United States (specifically Minnesota) and will discuss with and provide that information to Golder.

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TERRESTRIAL BIOLOGY

PRESENTATION BY GOLDER: Erin Greenaway Note: Slide 6 to be resent for clarity purposes.

ATTENDEES: in person or by teleconference

√ Amy Liu (CEAA)	√ Patrick Barnes (MNDM)	√ Michelle Whitmore (MOE)	√ Sheelagh Hysenaj (EC)
√ John Fisher (EC)	√ Amy Godwin (MNR)	√ Brian Jackson (MNR)	
√ Erin Greenaway (Golder Technical Discipline Lead)			

TERRESTRIAL BIOLOGY DISCUSSION:

MNR – Brian Jackson

Q – When will we get the reports with results? Are you working on the wetland evaluation report?

A – We are very close to finishing the wetland evaluation with the forms and submit to MNR. We are just waiting on some data from Amy Godwin at the MNR.

Q – What about the bird surveys?

A – We were planning to wait until we have a complete data set including the 2012 field surveys before we submit those reports.

Environment Canada - John Fisher

Comment – Breeding bird survey stations. I counted about three dozen stations; we were looking for a minimum of twenty point counts in all major habitats. I was surprised that there were so few stations.

A – The figure as shown doesn't identify all of the point count locations in the areas assessed. We will be overlaying our habitat maps with point count locations, in the end we will show the major habitats and the coinciding point counts within the habitat types. Major habitats will have twenty point counts if they can be spaced 200m apart. We are going back to remote areas in 2012.

Q – When you did the first two years, you didn't know that Hardtack was the preferred option, but will you focus on the road this year with 10 minute point counts?

A – Yes. 10 minute point counts along the alternative road alignment will be part of the 2012 field survey program.

Comment – Lakewatch Surveys – Collision hazard of the power line going across Sawbill Bay should be addressed in the report. The existing Lakewatch Survey wouldn't give a good view of the transmission line crossing location. 2012 surveys will inform whether bird diverters will be required.

A – Yes a shoreline survey in the area of the alternative transmission line crossing will be included in the 2012 field survey program.

MNR - Amy Godwin

Comment - We would like to look at the wetland report as soon as possible. I will try to get you the information about winter cover as soon as possible.



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BASELINE DATA ACTION ITEMS

- Ongoing surveys planned for 2012.
- MNR to provide winter cover data.
- Golder to finalize wetland evaluation report and submit to MNR.
- Golder will provide more detailed survey maps in the EA to address Environment Canada's concern.

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MEETING MINUTES
AQUATIC BASELINE REGULATOR MEETING
JUNE 4, 2012 9 AM – 2:30 PM
VALHALLA INN, THUNDER BAY

Attendees:

Alexandra Drapack	Osisko Hammond Reef Gold
Mark Bowler	Osisko Hammond Reef Gold
Brian Hindley	Golder Associates
John Seyler	Golder Associates
Tom Klienboeck	Fish Habitat Biologist, Fisheries and Oceans Canada
Neville Ward	Senior Habitat Biologist, Fisheries and Oceans Canada
Amy Liu	CEAA by phone (before lunch)
Brian Jackson	Biologist, MNR Atikokan
Amy Godwin	Biologist, Intern, MNR Atikokan
Kim Armstrong	Senior Aquatic Specialist, MNR, Thunder Bay
Jim Sutton	Surface Water Specialist, MOE, Thunder Bay
Patrick Barnes	Mineral Development Officer, MNDM
Steve Bobrowicz	Management Biologist, MNR, Upper Great Lakes Area

Introductions- Alix Drapack

Review of Actions from February 29th meeting:

- Outstanding item: Golder will circulate the revised habitat accounting paper- this is a priority.

Meeting Presentation 1: Revised Project Layout

- Introduction to the revised (2012) site layout presented by A. Drapack
- Presentation highlights – infrastructure changes:
  - processing plant location (north of pits);
  - transmission alignment (now crosses Sawbill Bay);
  - Waste rock location (near pits); and
  - ore and overburden stockpiles (temporary).
- Possible effluent discharge points are included in the site plans for discussion.
- Question: Could the emergency spill pond be converted post closure to a productive pond?
  - Answer possibly yes.

Meeting Presentation 2: Baseline Summary:

- Discussion of effects on shoreline habitat. The Marmion Reservoir shore and nearshore areas do not seem as detailed with respect to habitat classification as the areas studied in the project footprint. As the footprint nears the shore in areas such as Trap Bay, or the edge of Lizard Lake this habitat will need to be classified.
- In order to estimate effluent diffusion and dilution, more should be provided on the nature of the receiving waters (Marmion Reservoir) such as the bathymetry.
- Bathymetry of surrounding reservoir areas should be checked for its adequacy/accuracy.

- Discussion of using some Steep Rock rehabilitation projects for part of the compensation of habitat that will be required for this project. A draft report on Steep Rock has come out, but is currently unavailable. MNR (Brian and/or Amy) to arrange a meeting with the MNR Steep Rock team on this subject.
- Some characterization/baseline studies are currently underway (MNR Steep Rock biologist is Brittany Emms-Richards)
- Projects that involve Steep Rock should be defensible to third parties such as Mining Watch.
- They should be in accordance with the habitat models.

Financial Considerations versus Resources

- Least preferred 'cash in lieu of' – could be cash for specific project(s)
- Letter of credit approach may work
- Through a formal agreement with MNR, it may be possible to contribute to a plan for studies – then implementation – then monitoring.

This season's field work will include evaluation of compensation opportunities on site or near site.

- Shoreline surveys may help to identify more compensation options (i.e. where important shoreline habitats may periodically be exposed during low water conditions).
- Question- was shoreline area at Lizard Lake done? Bathymetry?

Discussion of the Study area

- Brian Jackson suggests that the regional study area (RSA) include all of the floodwaters to the Southeast of the site. – he provided a map at the conclusion of the meeting to BH showing his recommendation on the RSA.

Discussion of reference lakes or controls

- The discussion started with respect to contaminant sampling in fish.
- JS- Pointed out that the Baseline Studies 'are the before project or untouched' control for the project in this case. AD pointed out that the project is not expected to have any impact on Hg levels in the water.
- Question- What metals were tested for in the baseline?
- It is pointed out that the Broadscale program tests for mercury may serve as a control.

Discussion about the changes that have occurred since exploration began

- Beaver ponds and stream modifications: how will that be accounted for since the aquatic science surveys occurred after those changes?
- JS- A way to manage that would be to use the 2010 Lidar imagery to show what was the wetted area prior to disturbance for compensation purposes.

Discussion of the limitations of low water surveys that were done in spring around the Reservoir

- Spring may have 2 meter lower water in the reservoir. This may limit pike spawning habitat availability and if it is limited then it wouldn't be measured in the survey.
- BH noted that at low water levels fish access to lower portions of tributaries may be limited or obstructed and these rivermouth areas may be the only areas for spawning/nursery habitat in early spring
- JS- There would have to be assumptions about pike habitat use for the stream mouths.
- Discussion- How close can features such as the pit get to the water as in the case of Marmion Reservoir? Brian Jackson looked for Guidance from the Crown Land Use Policy Atlas (CLUPA). There was no specific setback for mining. Forestry had a 120 m setback. Where the project nears water bodies the habitat should be studied. For example, are there wetlands in the riparian that may be dried?
- Brian Jackson- High water level throughout the summer is 415,2 m unless a drought occurs.
- CLUPA has Lizard Lake designated as a Tourist Lake.

- AD- Emphasizes that the plan is to collect all the flows into one stream for effluent treatment prior to a discharge at a single point in Sawbill Bay.
- Question- What about fish population data?
    - As a measure for monitoring and follow-up, could results of the Broadscale Monitoring Program be used?
    - 2 levels of design (netting intensity)for Broadscale assessment
    - Broadscale Monitoring of Marmion Reservoir was completed in 2010 and is scheduled to be assessed again in 2015
    - Lizard lake has never been assessed and is not scheduled for assessment
    - 2010 Marmion results may provide an adequate baseline, to be confirmed by MNR
    - Currently population health indices for species other than walleye have yet to be worked out
    - Overall health of fish populations are compared to regional data set to determine if a given population meets expectations

- Question: Did terrestrial baseline studies include evaluation of wetland areas adjacent to all aquatic features? Answer: Erin Greenaway will have the wetland analysis available for MNR review in the next few weeks.

Lunch Break

Brian Hindley- Continues his presentation from slide 21.

The slides emphasize the potentially impacted areas and what types of impact or category of impact they may be placed into.

- Destruction due to MMER (tailings or waste rock);
- Destruction (HADD) required for operations; and
- Disturbance or Alteration (HADD) required for operations.

DFO- mentions that the permanence of the change to the water bodies will be important in the assessment and that a summary like the one provided will be needed for the authorization

Brian Jackson- Mentions that there are aerial imagery data sets from 1982, and 1995 as well as satellite imagery from 2005 available.

- This imagery may be useful to examine how pond surface areas may fluctuate over time, in order to come up with a final SA for habitat accounting

Discussion of the Ontario Broadscale Monitoring Program (BSM) and whether or not it contains data that might help in putting together a monitoring plan.
Habitat Guild approach- Does that still work for assessing habitat if there is a changed Fisheries Act? Yes.

Brian Hindley queries whether the bathymetry is necessary where we can show steep shoreline features and rock using lidar on parts of the areas that are of interest on the reservoir and lizard lake.

- Seems like a reasonable approach to narrow down the area.
- Detailed assessment within 200 m of stream mouths that was done will further narrow that area.

Comment- The data may be quite detailed for bathymetry in Sawbill Bay but it was presented in a 25 meter grid manner. Need additional detail regarding the intensity of the survey.

Actions from this meeting

1. DFO and MNR to provide written comments on the baseline study report by end of this week.

2. Golder to provide summarized information on specific receivers (Sawbill Bay and Lizard Lake) to show extent of habitat mapping and fishing effort grouped by receiver instead of by API and/or catchment.

3. Golder to provide an accurate summary of aquatic features which may be subject to MMER scheduling and those locations which will represent HADDs (i.e. and not require scheduling) to ensure that they are correct going forward.

4. MNR to set up a meeting with the Steep Rock team to discuss options

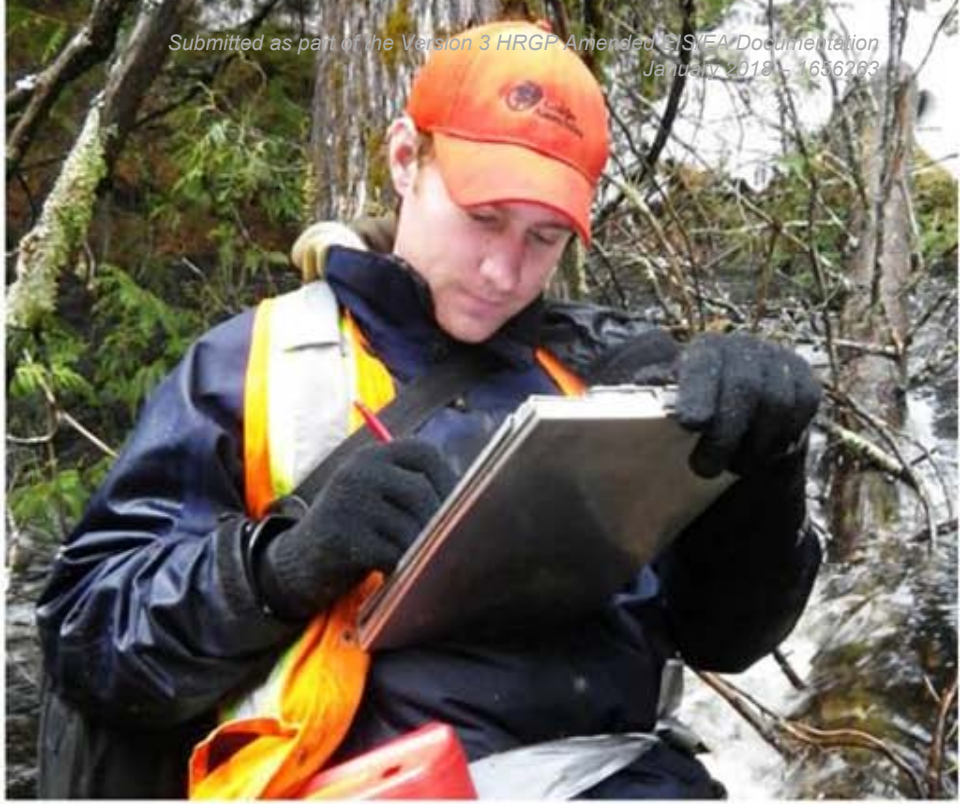
5. Brian Jackson to confirm his recommendation of the Regional Study Area boundaries. - provided

6. BH to discuss intensity of wetland assessment relative to aquatic features with Erin Greenaway (Golder terrestrial biologist).

Submitted as part of the Version 3 HRGP Amended EA/EA Documentation
January 2013 - 1656263

OSISKO

HAMMOND REEF GOLD





Golder Associates



HAMMOND REEF

Baseline Study Summary

May 28, 2012

BASELINE STUDIES – Characterizing Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- **Fish and Fish Habitat**

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

OSISKO-MNR-DFO MEETINGS

4 meetings to date:

- April 13, 2011
- July 12, 2011
- September 14, 2011
- February 29, 2012



FEBRUARY 29, 2012 NEXT STEPS

- Set up session on baseline for agencies to identify outstanding gaps and determine further baseline work (today)
- Golder to draft Habitat Suitability reference tables – using expertise and additional references (June)
- MNR to provide list of Steep Rock projects that might qualify for compensation
- Response to how amenable is DFO/MNR to off-site (Steep Rock) options
- Amy to look into MMER process parallels with the EA permitting process (March 22, 2012 letter)
- Amy to look at habitat creation and how it is scoped in the project and if it would need to have a separate EA

AQUATIC BASELINE INTERIM REPORT

FISH AND FISH HABITAT

Study Objective

Characterize local and regional aquatic resources (fish, fish habitat, benthos and sediment chemistry) to support an evaluation of potential effects of the proposed facility and infrastructure access routes, establish mitigation and compensatory measures to offset project effects and to meet federal and provincial regulatory requirements. Component investigations include:

- Fish community sampling – waterbodies and watercourses
- Fish habitat mapping – waterbodies and watercourses
- Benthic invertebrate community sampling
- Fish tissue sampling

FISH AND FISH HABITAT - METHODS

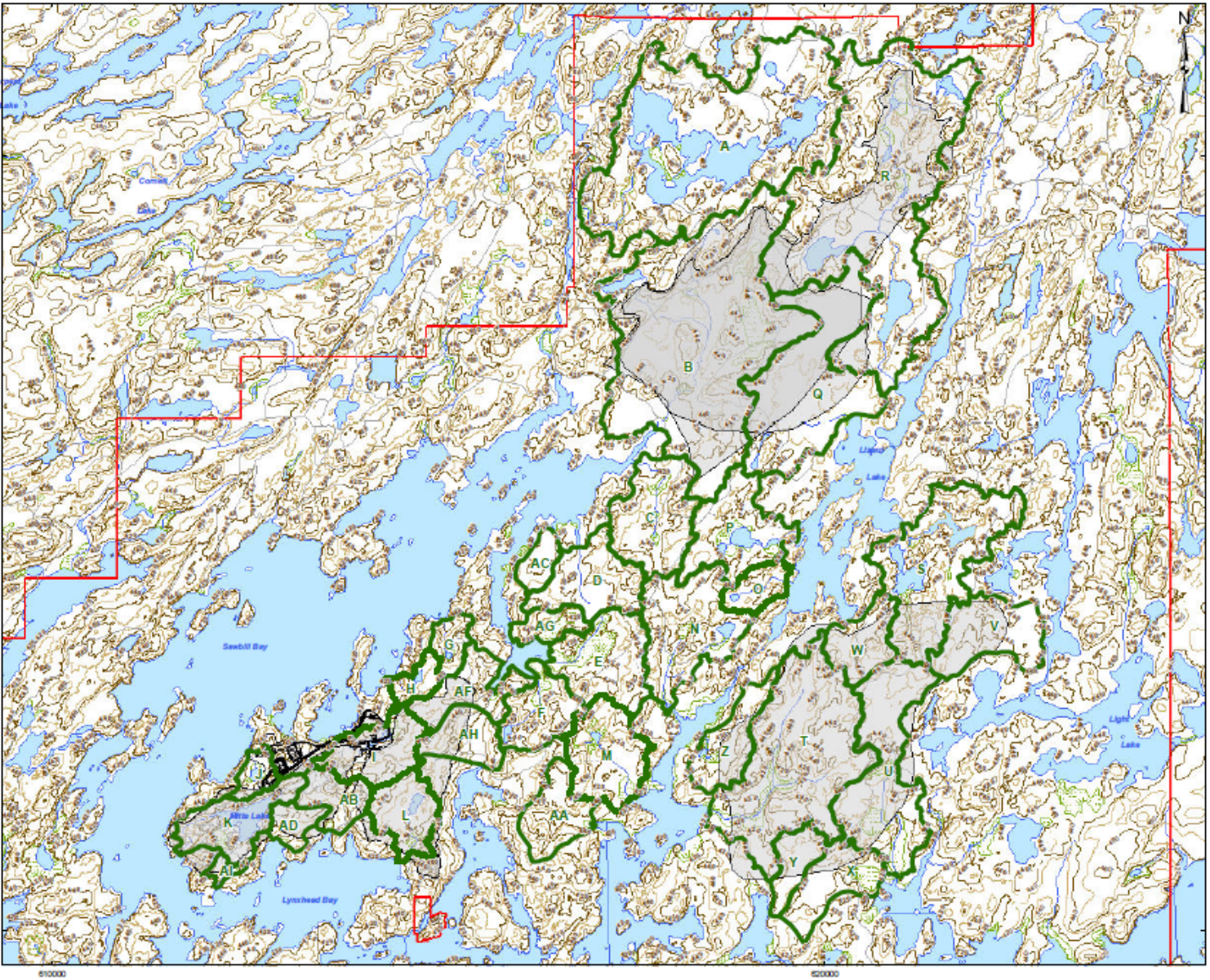
Characterization of aquatic resources included the following tasks:

- Background information review
- Consultation with MNR, DFO, Aboriginal Groups
  - Pre-field planning
  - Establishing a catchment-based sampling program to include all potential receptors
  - Coordinating sampling with other disciplines including hydrology, water quality, geochemistry
- Multi-season Field studies during 2010 and 2011 to sample
- Ongoing consultation with regulators to establish principles and approach to addressing aquatic impacts (i.e. habitat compensation)

FISH AND FISH HABITAT - SCOPE

Aquatic studies completed on a catchment and water feature basis

- Study area includes 34 small catchments (small watersheds)
- Approximately 55 aquatic features (APIs) and associated drainage features assessed
- Key potential receivers:
  - Sawmill Bay
  - Lynxhead Bay
  - Lizard Lake
  - Turtle Bay
- Transmission and access road corridors



LEGEND

- Trail
- Road
- Contour - 20m Interval
- Contour - 10m Interval
- River/Stream
- Lake
- Wetland
- Site Watershed Boundary
- Project Facilities
- Project Location

WATERSHED AREAS

Name	Area (ha)
A	590.00
AA	73.34
AB	51.99
AC	29.24
AD	29.91
AF	77.52
AG	34.18
AH	60.02
AI	10.17
B	609.82
C	134.96
D	104.31
E	122.80
F	78.00
G	30.53
H	27.27
I	85.24
J	25.56
K	89.03
L	70.53
M	111.72
N	158.55
O	38.76
P	124.90
Q	272.96
R	623.45
S	230.85
T	336.66
U	200.66
V	106.27
W	66.90
X	82.32
Y	45.66
Z	74.75

DRAFT

REFERENCE

Base Data - Provided by OSISKO Hammond Reef Gold Project Ltd.
Base Data - MNR NRVIS, obtained 2004, CANMAP v2006.4
Produced by Golder Associates Ltd under licence from
Ontario Ministry of Natural Resources, © Queens Printer 2008
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 15N

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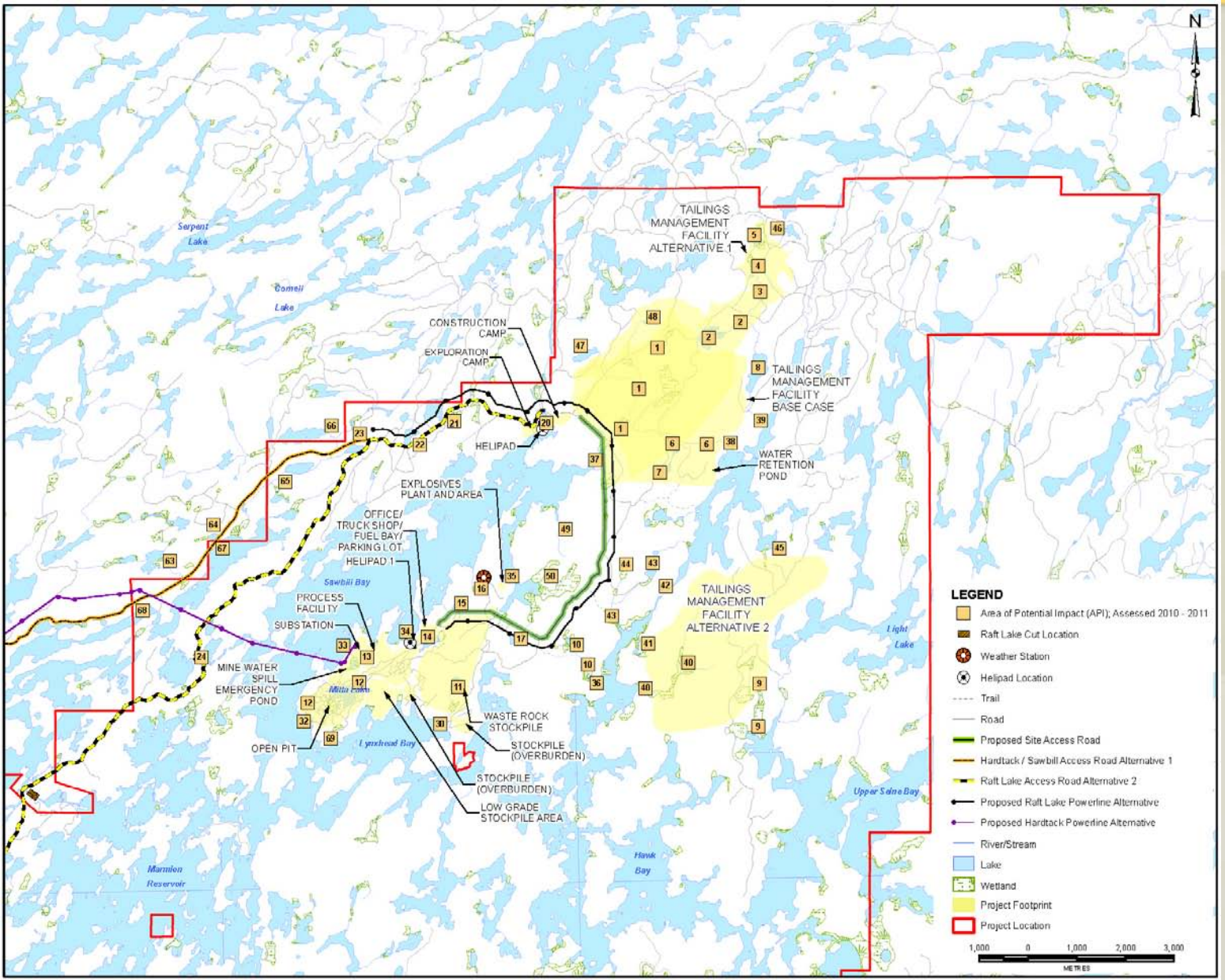
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HAMMOND REEF GOLD PROJECT
ATIKOKAN, ONTARIO, CANADA

TITLE
SITE WATERSHED BOUNDARIES

Golder Associates Mississauga, Ontario

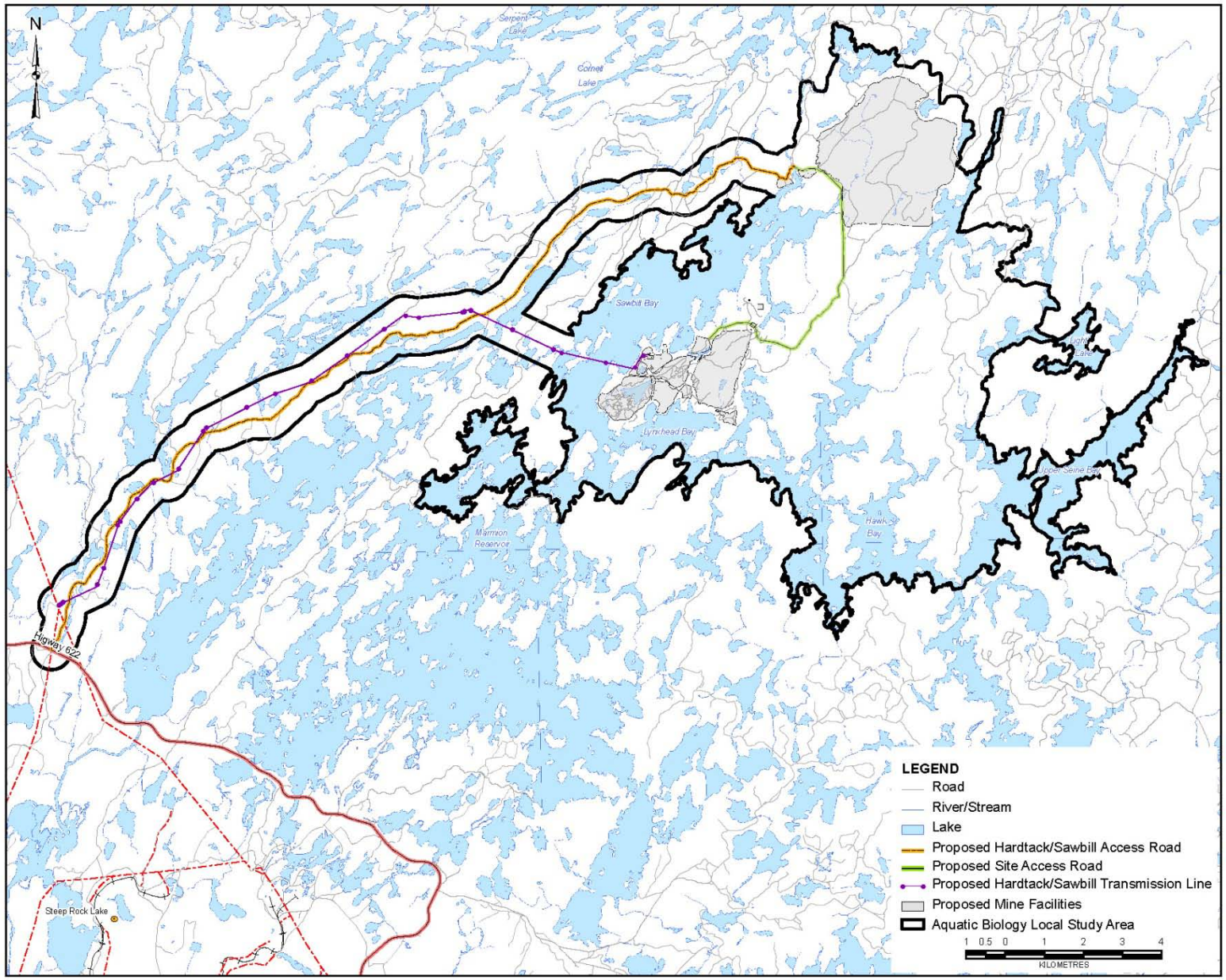
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GIS	BRD	Mar 2012	
CHECK	JD	Mar 2012	
REVIEW	JD	Mar 2012	

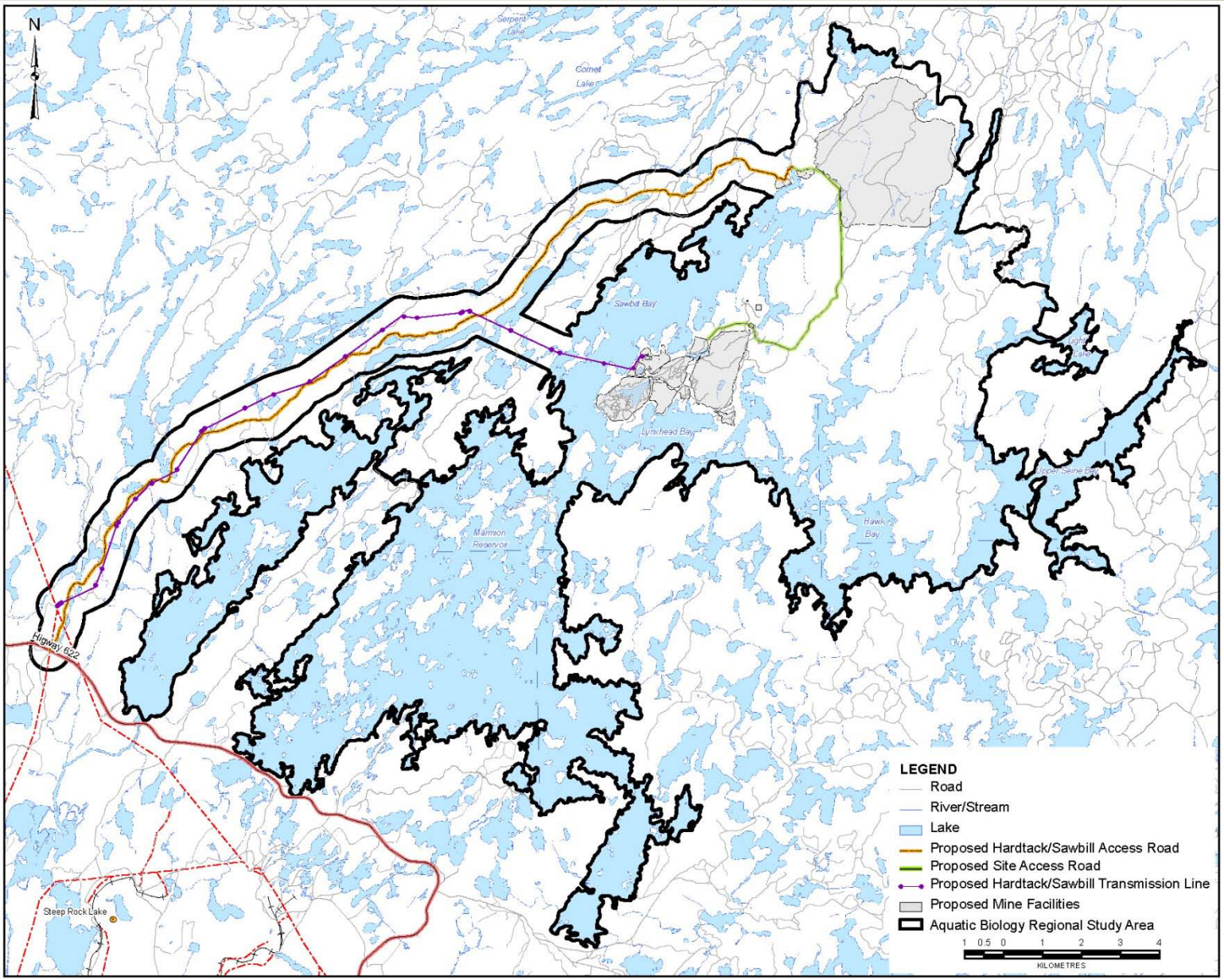
FIGURE: 3



Mine Site and Footprint

Local Study Area





Regional Study Area

FISH AND FISH HABITAT

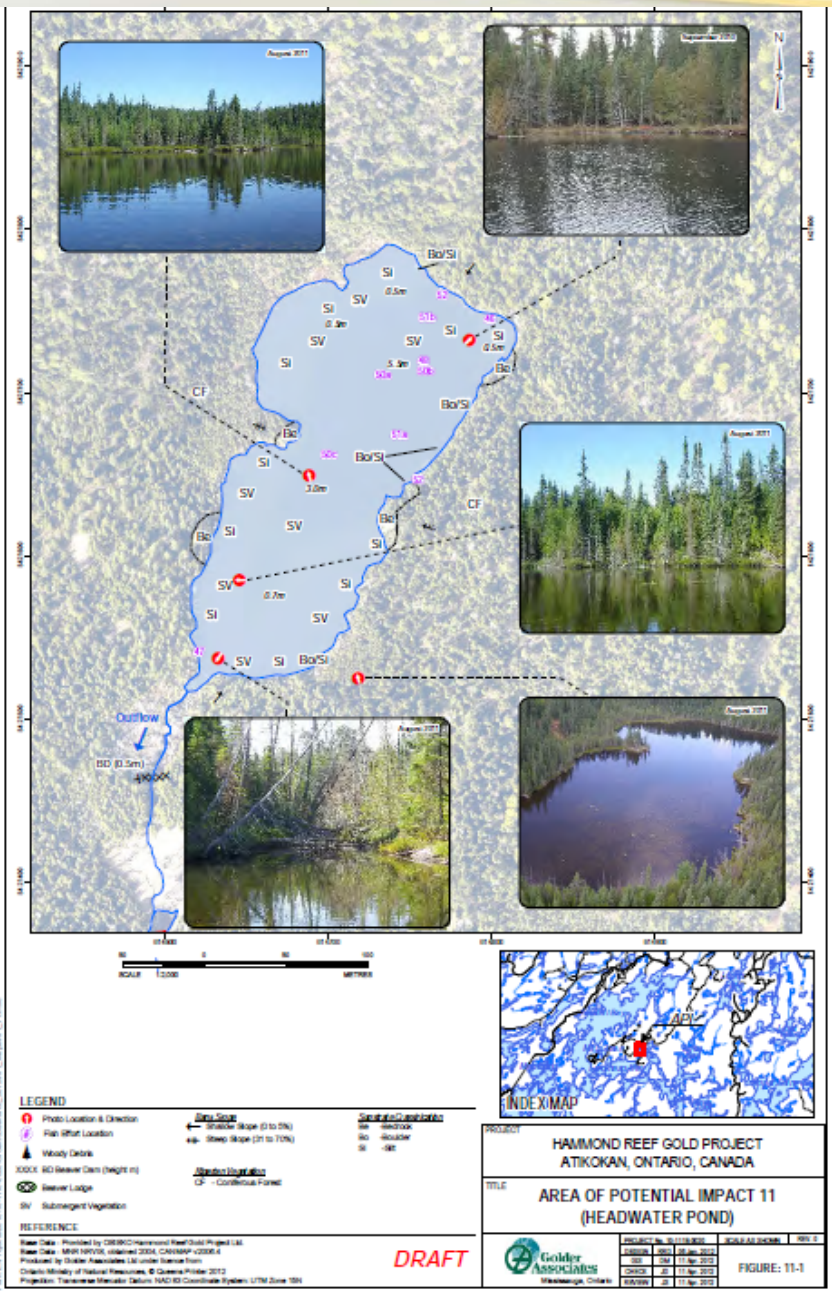
Example Results

FISH AND FISH HABITAT

API: Where the project footprint overlaps with, or is adjacent to an aquatic feature.

Includes;

- Headwater lakes/ponds
- Connecting watercourses
- Receiving bays/mouths of watercourses
- Access road crossings



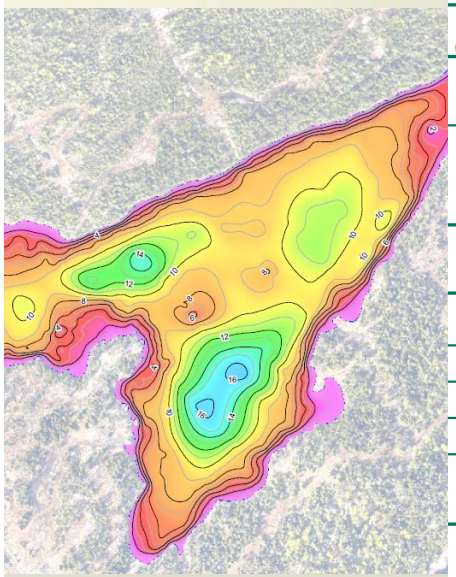


Table 1: API #11 (pond), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location (see Figure 11-1)	Date	Gear	Effort	Catch
46	September 28–29, 2010	minnow trap	18 hrs.	finescale dace (27 adult, 2 juvenile) northern redbelly dace (11 adult)
47	September 28–29, 2010	minnow trap	19 hrs.	finescale dace (36 adult) northern redbelly dace (1 adult) fathead minnow (3 adult)
48	September 28–29, 2010	nordic net	18 hrs.	finescale dace (9 adult) fathead minnow (2 adult)
49	September 28–29, 2010	gillnet - single panel (76 mm mesh)	18 hrs.	no catch
50a	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
50b	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
50c	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
51a	August 27-28, 2011	broad –scale small mesh	39 hrs.	finescale dace (7 adult) fathead minnow (1 adult)
51b	August 27-28, 2011	broad –scale small mesh	39 hrs	finescale dace (4 adult) fathead minnow (3 adult)
52	August 27-28, 2011	minnow traps (3)	63 trap hrs.	finescale dace (57 adult) northern redbelly dace (1 adult) fathead minnow (84 adult)

FISH AND FISH HABITAT

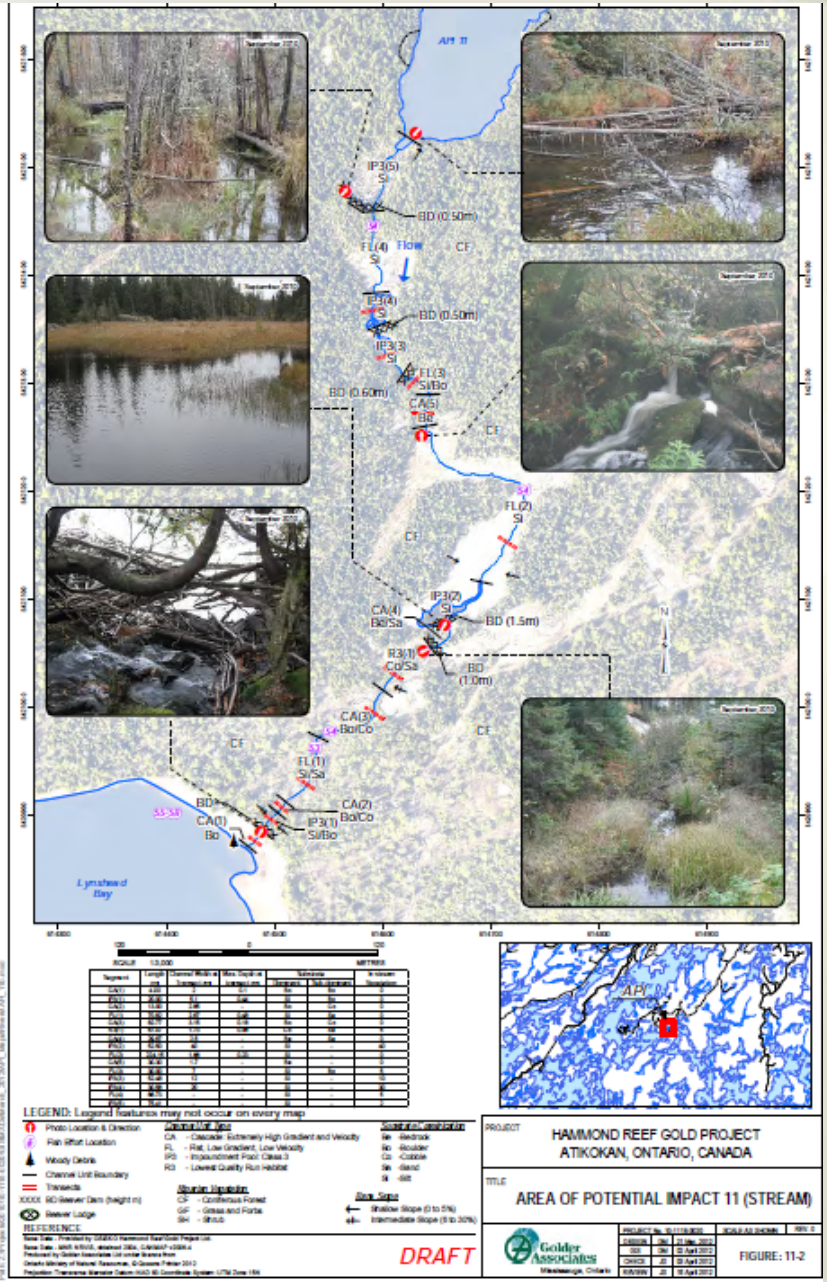


Table 1: API #11 (pond), Basic Water Chemistry Parameter Data

Date/Depth (m)	Temperature (°C)	pH	Conductivity (µmhos)	Dissolved Oxygen (mg/L)
September 28, 2010				
Surface	11.4	7.6	58	10.6
1	11.1	7.6	58	10.5
2	10.9	7.7	58	10.2
3	10.9	7.6	58	9.8
4	9.0	7.6	58	8.0
5	-	-	-	-
August 27, 2011	23.0	8.9	76	9.0

Table 1: API #11 (stream), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location (see Figure 11-2)	Date	Gear	Effort	Catch
53	September 23, 2010	backpack electrofisher	115 m	finescale dace (27 adult, 27 juvenile, 2 YOY) northern redbelly dace (2 adult)
54	September 24, 2011	backpack electrofisher	641 m	finescale dace (29 adult, 36 juvenile, 1 YOY) northern redbelly dace (5 adult, 5 juvenile) dace sp. (2 YOY unk.)

Table 1: API #11 (Lynxhead Bay), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location	Date	Gear	Effort	Catch
55	August 26, 2010	boat electrofisher	500 m	yellow perch (10 juvenile) northern pike (1 adult)
56	September 24, 2011	broad-scale small mesh gillnets (2)	17.5 hrs	walleye (2 juvenile) yellow perch (15 juvenile)
57	September 24, 2011	broad-scale small mesh gillnets (2)	17.5 hrs	walleye (1 juvenile) northern pike (1 unk.)
58	September 24, 2011	broad-scale large mesh gillnets (2)	17 hrs	lake whitefish (1 adult) white sucker (1 adult) northern pike (1 adult)

ACCESS CORRIDORS

- Two road corridor and hydro ROW alternatives
- Screening/prioritizing of watercourse crossings
- Habitat assessment
- Community assessment
- Field data collected on approximately 25 watercourse crossings

HABITAT PREFERENCE TABLES

Table 1: Habitat Preferences, Northern Pike (*Esox lucius*)

Spawning	Rearing/Nursery	Feeding	Migratory Corridor	Overwintering/Summer Refuge
General - Spring spawners, in colder areas, after ice break up at water temperatures between 4.4 to 12°C (8) Over flooded terrestrial vegetation in areas of calm, shallow water or weedy bays or backwaters (1) Optimum spawning habitat is a dense mat of flooded emergent vegetation such as sedges, cattails or grasses with a large basal coverage for egg adhesion (2) (3) Substrate preference for silt and sand although spawning-site preference is more related to adequate submergent vegetation (4) (7)	**General** - Shallow, vegetated areas such as flooded marshes, flooded terrestrial vegetation, or weedy bays (1) **Lentic** - Depth preference from 0-2 m in spring, 2-5 m in fall; over substrates of silt, clay or hardpan clay near submergent/emergent vegetation cover; specific preference by YOY for submerged vegetation versus other aquatic vegetation types (2) (5) (7) (8) Juveniles typically found along shorelines with adequate food and cover at depths of <2 m; same substrate preference as YOY, always in association with submergent vegetation (7)	**General** - Day active feeders with preference for ambush cover in the form of aquatic plants, tree stumps, fallen logs (1) YOY initial food preference for invertebrates such as Ephemeroptera, Isopoda, Cladocera with switch to vertebrate prey in fish ≥130 mm; habitat preference for submerged vegetation with rooted aquatic plants to offer cover and increased plankton and therefore the best food supply (2) (3)	**General** - From lakes and rivers up tributaries to flooded marshes, wetlands or shallow pools during spawning (1) **Lentic** - Adults usually found within shallow, vegetated regions of lakes in spring and fall, moving to deeper water as water temperature increases in summer and ice-cover forms in winter (7) (8) Movement by juveniles to areas of emergent vegetation in late summer where dissolved oxygen concentrations higher (3) **Lotic** - Avoidance for strong currents (>1.5 m/s) that can block spawning migrations (1)	**General** - Dissolved oxygen concentration important habitat variable affecting overwinter survival although NRPK more tolerant of low D.O. during winter than other temperate species; optimal temperature preference for adults between 19 and 21°C (1) (7) **Lotic** - Occur more frequently in lakes than rivers; summer habitat limited in some lakes by combination of high surface temperatures and low oxygen concentration in cooler, deeper strata (1) Adults at depths from 0-10 m throughout the year; along margins of vegetated areas or areas with in-situ materials (fallen logs, tree stumps, shoals, boulders) and substrates of mud, silt, or hardpan clay (6) (7)

FISH AND FISH HABITAT

Baseline Study Conclusions

FISH AND FISH HABITAT

- No coldwater fish species/ waterbodies
- Watercourses generally low gradient, highly influenced by beaver dams
- Flow in sections of many watercourses is seasonal or subsurface and highly variable (i.e. flashy)
- Lower portions of some tributaries are accessible to fish from major receivers – upper floodwaters area

Table 1: Fish Species Captured During Baseline Studies

Family/Subfamily	Species Common Name	Species Scientific Name
Coregoninae	lake whitefish cisco	*Coregonus clupeaformis* *Coregonus artedi*
Umbridae	central mudminnow	*Umbra limi*
Esocidae	northern pike	*Esox lucius*
Cyprinidae	longnose dace blacknose dace northern redbelly dace finescale dace pearl dace fathead minnow spottail shiner blacknose shiner brassy minnow	*Rhinichthys cataractae* *Rhinichthys atratulus* *Chrosomus eos* *Chrosomus neogaeus* *Semotilus margarita* *Pimephales promelas* *Notropis hudsonius* *Notropis heterolepis* *Hybognathus hankinsoni*
Catostomidae	common white sucker	*Catostomus commersoni*
Gadidae	burbot	*Lota lota*
Gasterosteidae	ninespine stickleback brook stickleback	*Pungitius pungitius* *Culaea inconstans*
Centrarchidae	smallmouth bass pumpkinseed	*Micropterus dolomieu* *Lepomis gibbosus*
Percidae	walleye yellow perch lowa darter	*Sander vitreus* *Perca flavescens* *Etheostoma exile*
Cottidae	mottled sculpin	*Cottus bairdi*

FISH AND FISH HABITAT

- Walleye and smallmouth bass absent from streams
- Yellow perch, northern pike, common sucker utilize lower stream reaches
- Water level management (i.e. low water conditions) affect habitat and accessibility of lower reaches
- Beaver ponds and headwater ponds provide winter refugia for stream fish
- A number of API's exhibit summer hypoxia and possible winter kill conditions
- Most waterbodies have simple communities dominated by cyprinids
- 9 ponds do not support fish communities

Discussion

- Data collection designed to address potential impacts:
  - MMER schedule 2 waterbodies – tailings and waste rock management areas
  - HADD (Destruction) – Mine footprint
  - HADD (Alteration, Disturbance) – Mine catchment area, access corridors, receiving waterbodies

Discussion (cont'd)

- Potential Schedule 2
  - API # 1, 6, 7, 11, 48
- Potential HADD (Destruction)
  - 12, 13, 14
- Potential HADD (Alteration, Disturbance)
  - API # 2, 3, 4, 5, 8, 15, 16, 30, 32, 33, 34, 37, 39, 69
  - Sawmill Bay, Lynxhead Bay, Lizard Lake, Turtle Bay

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MEETING NOTES
REGULATOR REVIEW OF BASELINE DATA
DAY 3: AUGUST 14, 2012 – 1:30PM – 3:00PM
OSISKO BOARDROOM
155 UNIVERSITY AVENUE, SUITE 1440, TORONTO, ON
TELECONFERENCE: 416-343-2275 OR 1-877-343-2259 (CODE: 6583244)

Attendees:

Osisko:	Alix Drapack, Cathryn Moffett
Golder:	Carla Parslow, Teleconference: Steve Parker
CEAA/MOE/MNDM:	Amy Liu, Michelle Whitmore, Teleconference: Patrick Barnes
Technical Discplines:	Penny Young (MTCS), Teleconference: Twila Smitsnuk, Ralph Horn (MNR)
Purpose of Meeting:	For Osisko to present and discuss the revised project layout and baseline Archaeology data for the proposed Hammond Reef Gold Mine Project, with the federal and provincial government review teams.
Outcome:	To identify any data gaps that need to be addressed during the 2012 field season in order to fulfill the federal EIS guidelines and the Provincial Terms of Reference.

DAY 3: AUGUST 14 2012

WELCOME AND INTRODUCTIONSREVISED PROJECT LAYOUT PRESENTATION

PRESENTATION BY OSISKO: Alix Drapack (attached)

- Revised layout is **not final**, design is not finished, however we want to give an update to allow informed comments on baseline data collection
- Current planning at Osisko indicates that there will be some revision to the initial layout provided in Osisko's Project Description submitted to and accepted by CEAA. These details are outlined below:
    - Biggest change is to the alignment of transmission line. Consideration is being given to put on towers and cross a portion of the Marmion Basin this way rather that along roadway to the mine site.
    - The preferred road alternative is upgrades to the Hardtack-Sawbill Road
    - Tailings management facility is very similar to the base case
    - Waste rock stockpile has changed location and would be located west of Trap Bay
    - The pits have stayed in the same place
    - The mill location has changed location, it is now north of the pits
    - The ore stockpiles have also moved, one is between the pits and the others are adjacent to the mill
    - Effluent discharge locations are being considered in Sawbill Bay.
    - Throughput will be 60,000 tonnes per day instead of original 50,000 tonnes per day stated in the CEAA Project Description
    - There will be an alternative to include a permanent camp on-site for workers during operations.

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REVISED PROJECT LAYOUT DISCUSSION:

CEA Agency - Amy Liu

Q – Are you adding a permanent camp alternative? If so, the footprint will need to be considered for all baseline data collection.

A – We plan to add the permanent camp as an alternative method. We can discuss this at our regular meeting at 3 pm today. Golder is aware of the permanent camp alternative and they have revised their field program for 2012 to collect any additional baseline data to reflect the addition of the camp.

MNR – Ralph Horn

Q – Transmission route: what are your plans for methods to cross Sawbill Bay?

A – We plan to have an overhead transmission line that crosses Sawbill Bay.

Comment: You will need to mark the line for float plane traffic and for birds.

A – The MNR terrestrial biologist also noted the need to mark the line for birds and the federal review team commented on the need to mark the line for float plane traffic. Thanks.

BASELINE DATA ACTION ITEMS

- Include new survey areas to provide coverage of the permanent camp alternative.

ARCHAEOLOGY

PRESENTATION BY GOLDER: Carla Parslow (attached)

ARCHAEOLOGY DISCUSSION:

Osisko – Alix Drapack

Comment – A First Nations monitor (Nicholas Spencer – SRFN) assisted with the Property Inspection in October 2011. He also assisted in the aquatic biology, terrestrial biology and bathymetry data collection in 2011 so he was familiar with the Site. The Stage 2 Archaeology also had Aboriginal assistants (2) for the entire field program in 2012.

NOTES:

- Slide 11: "Transportation" should be changed to "Electrical Transmission Line".
- Slide 12: Remove "approximately" – 100% of the Stage 2 has been completed.
- Additional scouting of the Site was also completed while the Stage 2 was underway. The drumlins were investigated.
- No evidence of Aboriginal pre-contact archaeology was found.
- More work may be required on the concrete foundations that were found. They are not considered built structures.
- More analysis of the gas engine is required to determine how best to commemorate the history of mining in the area.

MTCS – Penny Young

Q – Where specifically does it say in the EA that you don't have to conduct a Stage 2?

A – The EA says baseline must be conducted but does not specifically say a Stage 2 should be completed. Carla will send the reference to Penny Young.

MNR – Ralph Horn

Q –Have Elders been contacted?

A – We are conducting a Traditional Use Study (TUS) with the First Nations and have a separate Traditional Use Study being completed by the Métis communities. The TUS with the FNs is a combination of individual interviews with trap-line holders and wild rice harvesters as well as 3 meetings with the Elders. Meeting #1 was completed on July 31 and the goal was to introduce the objectives of the TUS and explain what will happen during the following 2 meetings. Meeting #2 is scheduled for August 16 and meeting #3 will be on September 18. We have had an expert review of our approach to gathering TUS information from the FNs by Professor McPherson (a Lakehead University Professor in Aboriginal Studies and a member of the Couchiching FN). Carla Parslow and other technical leads (Brian Hindley – aquatic biologist and Erin Greenaway – terrestrial biologist) will be assisting with Meeting #2 and will provide the Elders with a summary of the baseline data that was collected in their respective areas.

MTCS – Penny Young

Q – What are your plans for reporting? Will you be combining the Stage 1 and 2 into a single report?

A – The report will be a combined Stage 1/Stage 2 report and will be submitted to meet the licensing requirements. For the EA, there will be a Technical Supporting Document that includes Built Heritage, Cultural Landscape and Archaeology. It will also include the relevant findings from the TUS from both the FNs and Metis.

Comment – It would be useful for MTCS to have an opportunity to review it in advance of the EA report.

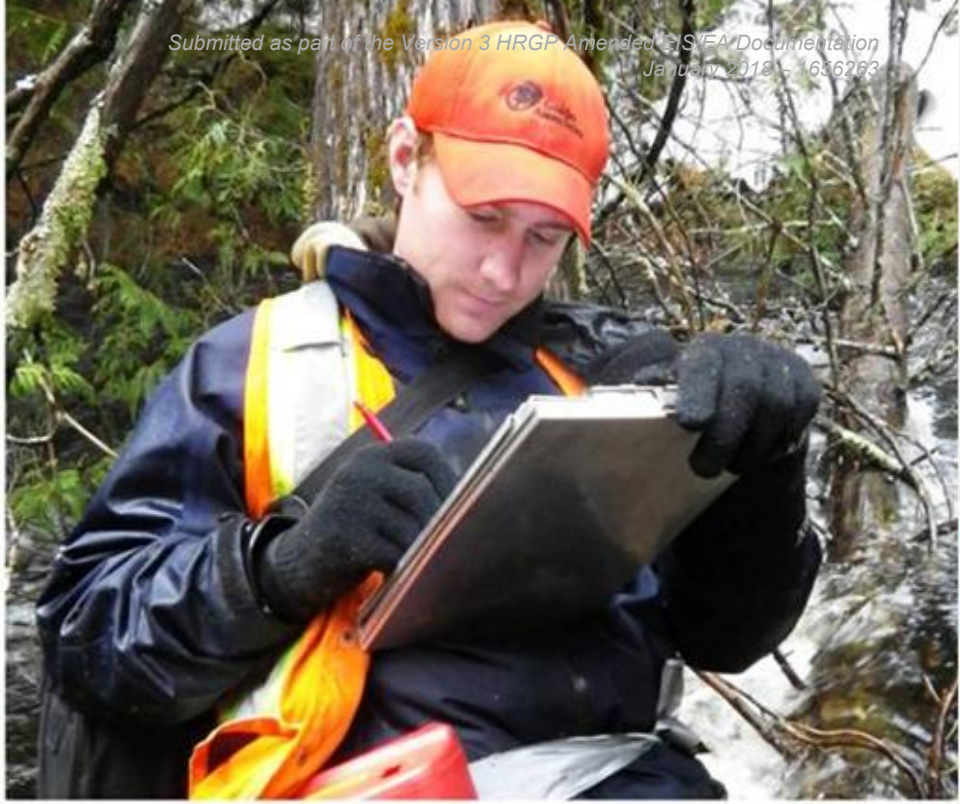
BASELINE DATA ACTION ITEMS

- The cultural heritage section of the report should include history on mining. An analysis of what has been done for preserving past mine sites would be useful.
- The TUS info should be part of the Archaeology section – especially the country foods info – it is not just terrestrial as it describes historical use of the site and is cultural.

Submitted as part of the Version 3 HRGP Amended EA/EA Documentation
January 2015 - 1656283

OSISKO

HAMMOND REEF GOLD





Golder Associates



HAMMOND REEF

Baseline Study Summary

August 14 2012

Baseline Studies – Characterizing Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- Fish and Fish Habitat

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

CULTURAL HERITAGE
EIS Guidelines Baseline Study Objectives

The general objectives of the cultural heritage baseline study are to:

- Consider terrestrial and aquatic areas containing features of historical, archaeological, paleontological, architectural or cultural importance within the study area;
- Identify cultural heritage resources located on and off site which potentially could be affected by the project;
- Assess the potential for the presence of cultural heritage resources first through site survey or inspection then identify and evaluate them;
- Development of mitigation measures for any adverse effects to cultural heritage resources; and
- Development of a follow up program to verify the accuracy of the EA and to determine the effectiveness of any mitigation measures that have been implemented.

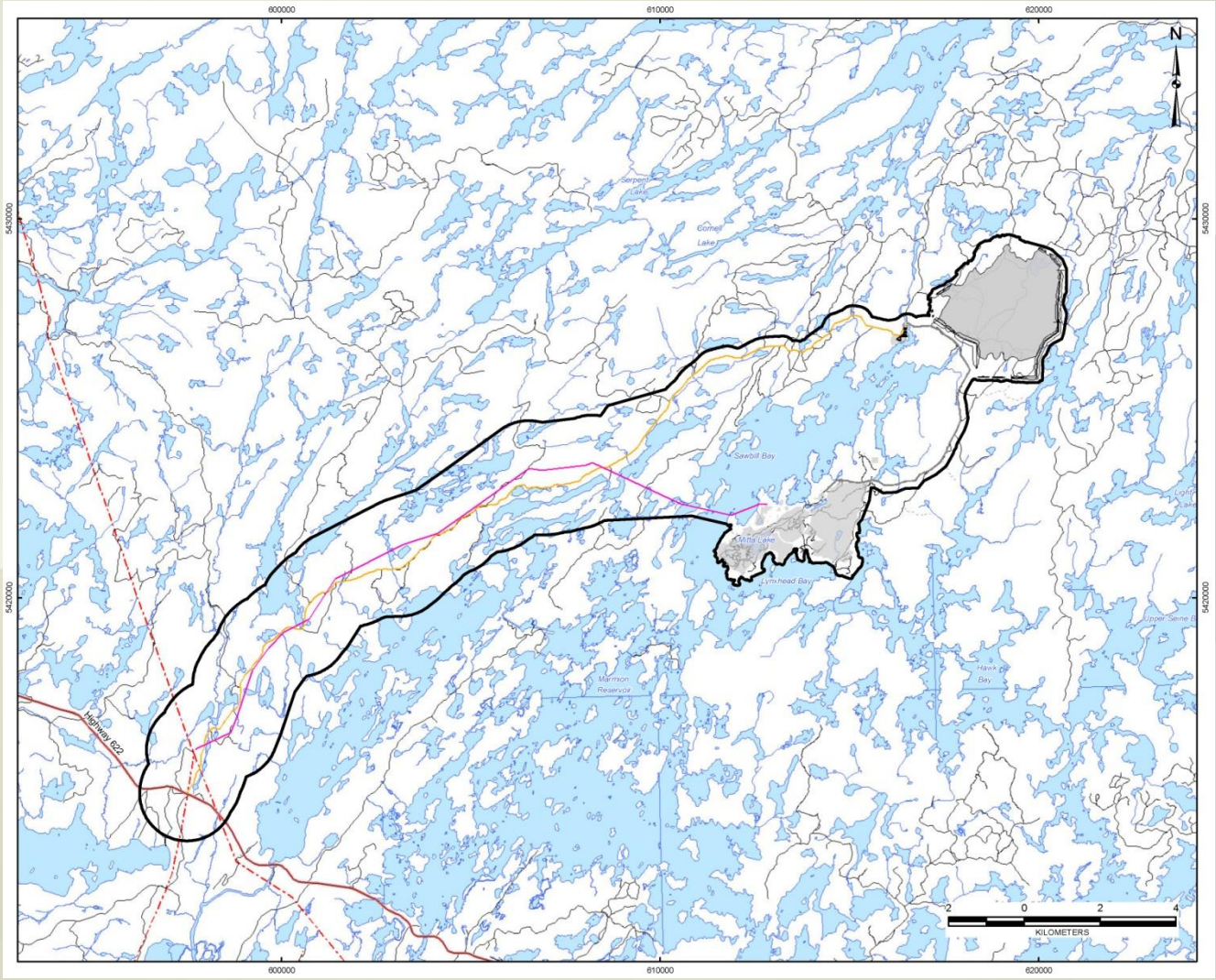
CULTURAL HERITAGE
EIS Guidelines Baseline Study Objectives

The cultural heritage baseline study will describe and identify, within the area potentially affected by the Project:

- Archaeological sites
- Built heritage (heritage structures)
- Cultural heritage landscapes
- Sites of cultural significance (sacred sites; sites of traditional use)

CULTURAL HERITAGE

Local Study Area:



CULTURAL HERITAGE

Regulatory Framework:

- *Canadian Environmental Assessment Act*
  - Reference Guide on Physical and Cultural Heritage Resources
- *Ontario Heritage Act* R.S.O. 1990, c. 0.18
  - MTCS is charged under Section 2 of the OHA with the responsibility to determine policies, priorities and programs for the conservation, protection and preservation of the heritage of Ontario
  - MTCS fills the lead provincial government role in terms of direct conservation and protection of cultural resources.
  - Standards and Guidelines for Consulting Archaeologists (2011)

CULTURAL HERITAGE

Interim Baseline Completed:

- Stage 1 (desktop) Archaeological Assessment (draft report)
- Property inspection to access areas of archaeological potential and inventory for subject property and adjacent property
- Property inspection completed in October 2011
- General history of the regional and local study area
- Built Heritage and Cultural Landscape screening

CULTURAL HERITAGE

Archaeology Conclusions:
The findings based on the property inspection have concluded that **the following areas for the Project have archaeological potential and are recommended for further archaeological assessment**:

- Small pockets of land on the east side of Mitta Lake for Open Pit Mine (A);
- Relatively flat, dry lands along the bay, higher flat lands that are not classified as bedrock, as well as areas with pockets of sandy soil, indicative of relic beach ridges for Open Pit Mine (A1);
- The northern end of the Transportation Route where it crosses a waterway; and
- The higher elevation at the bend in the river in the western section of the Tailings Pond

CULTURAL HERITAGE

Archaeology Conclusions:

For those areas that could not be confirmed through the property inspection due to access issues or changes in the Project footprint since the inspection: **should there be any development in the areas identified as having archaeological potential, further assessment is recommended**.

The modelling is based on the following features that are within the Project area from the list of sources above:

- Areas within 50 m of a modern water source; and
- Areas within 150 m of identified glacial features such as eskers, drumlins and relict shorelines.

Further assessment is not required in permanently waterlogged areas, areas of previous disturbance, or upon areas of exposed bedrock.

CULTURAL HERITAGE

Built Heritage and Cultural Landscapes:

- No provincially designated built heritage or cultural landscape within local study area or adjacent properties
- No municipally designated built heritage or cultural landscape within local study area or adjacent properties
- No heritage easements within local study area or adjacent properties
- No national historical sites within local study area or adjacent properties
- Heritage Inventory:
  - 2 discontinued Exploration/Vertical Shaft within local study area
  - No Evidence of any remaining structures (Mill, Mill Foundation, Lateral Workings, etc)

CULTURAL HERITAGE

Built Heritage and Cultural Landscapes:

- Heritage Inventory within study area:
  - 2 discontinued Exploration/Vertical Shaft within local study area
  - No Evidence of any remaining structures (Mill, Mill Foundation, Lateral Workings, etc) – Direct Impact
  - Trapper Cabin – No Impact
- Heritage Inventory adjacent properties:
  - Raft Lake Dam: built by Steep Rock Iron Mines in 1943 – No direct or indirect impacts (approx. 5 km from study area)
  - Marmion Sluiceway: Originally constructed in 1952, upgraded in 1983 and reconstructed in 1997 – No heritage value (approx. 5 km from study area)

CULTURAL HERITAGE

Stage 2 Archaeological Assessment:

- Initiated July 17, 2012.
- Completed approximately 100% of areas identified as having archaeological potential.
- Golder archaeological team and Aboriginal assistants
- Test pit survey



CULTURAL HERITAGE

Stage 2 Archaeological Assessment: Conditions:

The study area is overwhelmingly poorly drained steeply sloped.

The soil in the test pit areas has ranged on texture from: Orange Sand, Orange Sand Gravel mix, Grey Silt to pure decaying organic material over sold bed rock.

Almost universally test pits contain some charcoal at the organic/soil interface and is clearly the result of past forest fires.



CULTURAL HERITAGE

Stage 2 Archaeological Assessment - Finds to Date:

Two historic sites both related to the earlier mine exploration activates.

Site 1: Sawbill Mine Site:

- Centered on and around the remains of a large gas engine and the original Sawbill mine shaft.
- The site dates to the 20th Century 1940's.
- The test pits appear to indicate a habitation location or dining area as they are associated with the remains of a large cast iron stove with the word "HAZELWOOD" embossed on it.
- The recovered artifacts include wire drawn nails, part of an oil lamp burner, a medicine bottle and a piece what appears to be porcelain that has "JAPAN" printed on its underside.
- The Sawbill Mine Site also contains the remains of a tram line that leads from the cement foundations down the valley into Sawbill Bay.

Sawbill Mine Site:

Gas Engine (circa 1940)



Mine Shaft



Site 1: Sawbill Mine Site:

- Located on the east side of a trapper cabin (not historic cabin).
- The scatter is approximately 20m by 15m N/S.
- 20th century site
- The scatter is comprised of wire drawn nails, a few pieces of iron stone, a piece of an iron stove and glass.
- In total 61 artifacts were collected from the surface.
- In addition to the surface collection two 1m by 1m test pits were excavated. The first test pit contained four artifacts and the second contained one artifact.
- The soil in the area has been heavily disturbed by an early mining road and as such the test units are only 5-10 cm in depth.
- Site believed to be associated with earlier mining activity rather than the trapper cabin

4 – EA Results Meetings

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MEETING AGENDA
OSISKO HAMMOND REEF GOLD LTD.
REVIEW OF DRAFT EIS/EA REPORT
FEBRUARY 19, 2013 – 9:00AM – 12:00PM
CEAA ONTARIO BOARDROOM 312 [CEAA] / TELECONFERENCE
CONFERENCE ID 3832666 LOCAL DIAL-IN NUMBER 613-960-7516

Participants:	**Teleconference**	**In person**
Confirmed	Sam Shippam – MOE	Amy Liu – CEAA
	Alisdair Brown – MOE	Michelle Whitmore – MOE
	Scott Sheriff – MOE	Keri Holtby Levine – TC
	Joseph Tyance - MOE	Sheelagh Hysenaj – EC
	Rachel Hill - MNR	Alix Drapack – Osisko Hammond Reef Gold
	Twila Smitsnuk – MNR	Cathryn Moffett - Osisko Hammond Reef Gold
	Sheldon Haw – MNR	Marie Manchester - Osisko Hammond Reef Gold
	Brian Jackson – MNR	Bill McGuinty - Osisko Hammond Reef Gold
	Amy Godwin – MNR	
	Barb Elliott - MNR	
	Pat Barnes – MNDM	
	Mark O'Brien – MNDM	
	Rob Purdon – MNDM	
	Linda Braun – MNDM	
	Brad Dragan – MNDM	
	Bob Brent - MNDM	
	David Zeit – TC	
	Caroline Dreary - TC	
	Neville Ward – DFO	
	Lisa Fowler - DFO	
	Angelique Magee – NRCan	
	Sheryl Lusk - EC	
	Charles Gauthier – EC	
	Kitty Ma – HC	

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Purpose of Meeting: To present an overview of the DRAFT EIS/EA report for the proposed Hammond Reef Gold Mine Project, with the GRT.

Welcome & Introductions
Overview of EIS/EA Report
Conclusions of the EA
Stakeholder Engagement
Alternatives Assessment/Preferred Alternative
Conclusions by EA Component

A brief overview of the potential effects, mitigation measures and follow up program by component:

- Geology/Soils
- Atmospheric
- Hydrology
- Hydrogeology
- Water Quality
- Aquatic Biology
- Terrestrial Biology
- Human Health
- Socio-Economics
- Conceptual Closure and Rehabilitation

Environmental and Social Management Planning
Benefits of the Project

Questions and Answers

Q Amy Liu – Have you identified atmospheric receptors on a map?
A – Yes, the receptors are shown in the DRAFT EIS/EA Report

Q David Zeit – With regards to Mitta Lake, are there any activities taking place on the lake such as traditional activities or fishing?
A – It is part of a bait fishing block.

Q David Zeit – We will be looking for more information on the Aboriginal position with respect to Mitta Lake and Osisko's plans to compensate the bait fisher. Section 23 requirement under Transport Canada and will need an order in council.
A – Osisko has had ongoing traditional ceremonies for Mitta Lake and plans to include Aboriginal people in fish relocation planning and implementation.

Q Keri Holtby – Transport Canada should be involved in Mitta Lake planning because of our regulatory process that requires an order in council. We are not sure yet if Section 23 applies. We will get back to you.



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Q Neville Ward –Offsets for the TMF/Waste Rock Management Facility and other lost habitat (i.e. Mitta Lake) should be separated. These are two separate compensation plans. We have separate approval processes for Environment Canada (MMER Schedule 2) and DFO (HADD authorization).

Q Amy Liu – Are the Resource Sharing Committees planned to be active throughout all phases of the Project?
A – Yes.

Q Charles Gauthier – What was the name of the community that was interested in the Project but stated their wild rice harvesting would not be impacted?
A – Wabigoon Lake Ojibway Nation

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GOVERNMENT UPDATE PRESENTATION

DRAFT EIS/EA REPORT SUBMISSION

February 2013



Golder Associates

DRAFT ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL ASSESSMENT (EIS/EA) REPORT OVERVIEW

- Welcome and Introductions
- Overview of EIS/EA Report
- Conclusions of the EA
- Stakeholder Engagement
- Alternatives Assessment/Preferred Alternative
- Presentations by Component
- Environmental and Social Management Planning
- Benefits of the Project

EIS/EA REPORT CHAPTERS

Executive Summary
Chapter 1 Introduction
Chapter 2 EA Methods
Chapter 3 Existing Conditions
Chapter 4 Alternatives Assessment
Chapter 5 Preferred Alternative
Chapter 6 Effects Assessment
Chapter 7 Public Consultation and Aboriginal Engagement
Chapter 8 Environmental and Social Management Planning
Chapter 9 Commitments Registry
Chapter 10 Other Approvals
Chapter 11 Economic and Social Benefits of the Project
Chapter 12 Conclusions

TECHNICAL SUPPORT DOCUMENTS

The following reports have been prepared to support the EIS/EA Report:

- Atmospheric Environment TSD.
- Geochemistry, Geology and Soil TSD.
- Hydrogeology TSD.
- Hydrology TSD.
- Water and Sediment Quality TSD.
- Site Water Quality TSD.
- Lake Water Quality TSD.
- Aquatic Environment TSD.
- Terrestrial Ecology TSD.
- Aboriginal Interests TSD.
- Cultural Heritage Resources TSD.
- Human Health and Ecological Risk Assessment TSD.
- Socio-economic Environment TSD.
- Alternatives Assessment Report.
- Conceptual Closure and Rehabilitation Plan.

EA CONCLUSIONS

Based on the findings of the environmental assessment and planned mitigation measures the Hammond Reef Gold Project can be developed such that there is no significant residual impact to the biophysical environment.

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.

Detailed conclusions regarding the effects assessment, mitigation measures, environmental and social management planning and the economic benefits of the Project area provided in the following slides.

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Stakeholder Engagement

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Notice of Public Comment Period

DRAFT Environmental Impact Statement / Environmental Assessment Report

Osisko Hammond Reef Gold Project

Osisko Hammond Reef Gold (OHRG) has developed a draft Environmental Impact Statement /Environmental Assessment (EIS/EA) Report for the Hammond Reef Gold Project (the Project).

Over the next seven weeks, OHRG will be sharing the details of the draft EIS/EA Report with the Project stakeholders and accepting comments. Planned information sharing includes presentations to government, meetings with Aboriginal groups and an Open House in Atikokan.

The combined draft EIS/EA Report was prepared according to provincial and federal information requirements for the Project. Provincially the requirements include the Terms of Reference approved by the Minister of the Environment on July 4, 2012. Federally, the requirements include the EIS Guidelines prepared by the Canadian Environmental Assessment Agency and posted on the Canadian Environmental Assessment Registry on December 15, 2011.

The Project is a proposed mine located approximately 23 km northeast of Atikokan, Ontario. The Project involves the establishment, construction, operation, and closure of an open pit gold mine, and any ancillary activities and structures.



The draft EIS/EA Report will be available for public review and comment from February 15, 2013 to April 5, 2013. You may review the draft EIS/EA Report on the Osisko website at

http://www.osisko.com/en/properties/hammond-reef/enviromental.html

The draft EIS/EA Report is also available for review in hard copy Monday to Friday 8:30 am – 5: 00 pm at the following locations:

Osisko Hammond Reef Gold Ltd.
101, Goodwin Street
Atikokan, ON P0T 1C0

Ministry of the Environment
Environmental Approvals Branch
St. Clair Avenue West, Floor 12A
Toronto, Ontario M4V 1L5
416-314-8001/1-800-461-6290

Anyone wishing to provide comments on the draft EIS/EA Report should submit their comments in writing and/or by email to Osisko Hammond Reef Gold by April 5, 2013. All comments should be submitted to:

Osisko Hammond Reef Gold Ltd.
Alexandra Drapack
Manager, Sustainable Development
155 University Avenue, Suite 1440
Toronto, ON M5H 3B7
Email: adrapack@osisko.com

Details on an upcoming Open House in Atikokan will be provided through advertisements in the Atikokan Progress, Fort Frances Times and Thunder Bay Chronicle.

OSISKO HAMMOND REEF GOLD LTD.

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Under the Freedom of Information and Protection of Privacy Act and the Environmental Assessment Act, unless otherwise stated in the submission, any personal information such as name, address, telephone number and property location included in a submission will become part of the public record files for this matter and will be released, if requested, to any person.

DRAFT EIS/EA Report is available online

Electronic and hard copies distributed to Project stakeholders

February 15 began 7 week public comment period (ends April 5 2013)

ABORIGINAL ENGAGEMENT

- Ongoing information sharing, community investments and partnerships
- Long term positive relationships with local Aboriginal communities
- Formal letters received from all three Aboriginal groups involved in the Project.
    - January 30, 2013 the Chief of LDMLFN
    - February 11, 2013 the Region 1 President of the Métis Nation of Ontario
    - February 12, 2013 the Fort Frances Chiefs Secretariat
- The letters recognized that OHRG:
- Provided clear and ongoing communications had taken place regarding the Project.
- Worked to be a leader in Canada in working with First Nations.
- Showed efforts to engage community members, both Elders and youth.

Continued discussions and ongoing communications regarding identified concerns to date are planned

ABORIGINAL ENGAGEMENT – Completed Activities (FNs)

- Bi-Weekly Community News Briefs
  - Wawatay Times
  - Band Council offices
- Summer Experience Program (LDMLFN; FFCS)
- Presentations to Chiefs
  - Project updates
  - Baseline Results
  - Traditional Use Study
  - Closure planning
- First Nations Community Meetings
- Elders Forums
- Resource Sharing Committees

Planned Consultation:

FFCS Presentation: February 21 2013

Resource Sharing Committees: February 22 2013

ABORIGINAL ENGAGEMENT – Completed Activities (Métis)

- Métis Voyageur Publications
- Summer Experience Program
- Métis Nation of Ontario Consultation Committee
  - Project Overview and Issue Scoping
  - Baseline Reports
  - SiteTour
  - Environmental Assessment
  - Closure
  - Traditional Knowledge Study
- Métis Community Meetings

The completion of 6 MNO Committee Meetings in 2012 also formally signalled fulfillment of meaningful consultation on the Project, as per the MoU.

Planned Consultation:

Presentation: February 23 2013

ABORIGINAL ENGAGEMENT – Feedback Received

Environmental Concerns
Holistic concerns
Water and air quality
Terrestrial and aquatic biology

Cultural Concerns
Ojibway language
Medicinal plants
Cultural practices
Métis Way of Life

Economic Concerns
Employment
Education and training
Business opportunities

PUBLIC CONSULTATION

Information Sharing

- Bi-Weekly Community News Briefs
  - Atikokan Progress
  - Fort Frances Times
  - Ignace Driftwood
  - Thunder Bay Chronicle
- Community Presentations
- Career Fairs
- Workshops
- Open House

Community Support

- Town Council Resolution - Atikokan
- Terms of Reference
  - Town of Atikokan, Town of Ignace, Atikokan Hospital.

PUBLIC CONSULTATION – Community Open Houses

Open House 1: June 18, 2011 (220 people signed in)
Shared the details of the Project Description

Open House 2: October 19, 2011 (50 people signed in)
Shared the details of the Draft Terms of Reference

Open House 3 and 4: March 9 and 10, 2012
Atikokan (60 people) and Fort Frances (20 people)
Shared the details of the Terms of Reference

Open House 5: August 18, 2012 (105 people signed in)
Shared the results of the baseline studies and Project alternatives
Solicited feedback about community land use.

Planned Consultation:
Town Presentation: February 20 2013
Open House 6: Q1 2013

GOVERNMENT REVIEW MEETINGS - Completed Activities

Lead Agency Coordination
- CEAA, MOE EAB, MNDM
- Regular meetings since January 2012

Baseline Study Results
- Provincial and federal agencies
- May, June, August 2012

Fish Compensation Planning (discussed later)

Mine Waste Alternatives and MMER Schedule 2
- November 2012

Site Specific Water Quality Objectives
- November 2012

Planned Consultation:
Technical Presentations: Week 6 (End of March)

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Alternatives Assessment



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Alternatives to the Project

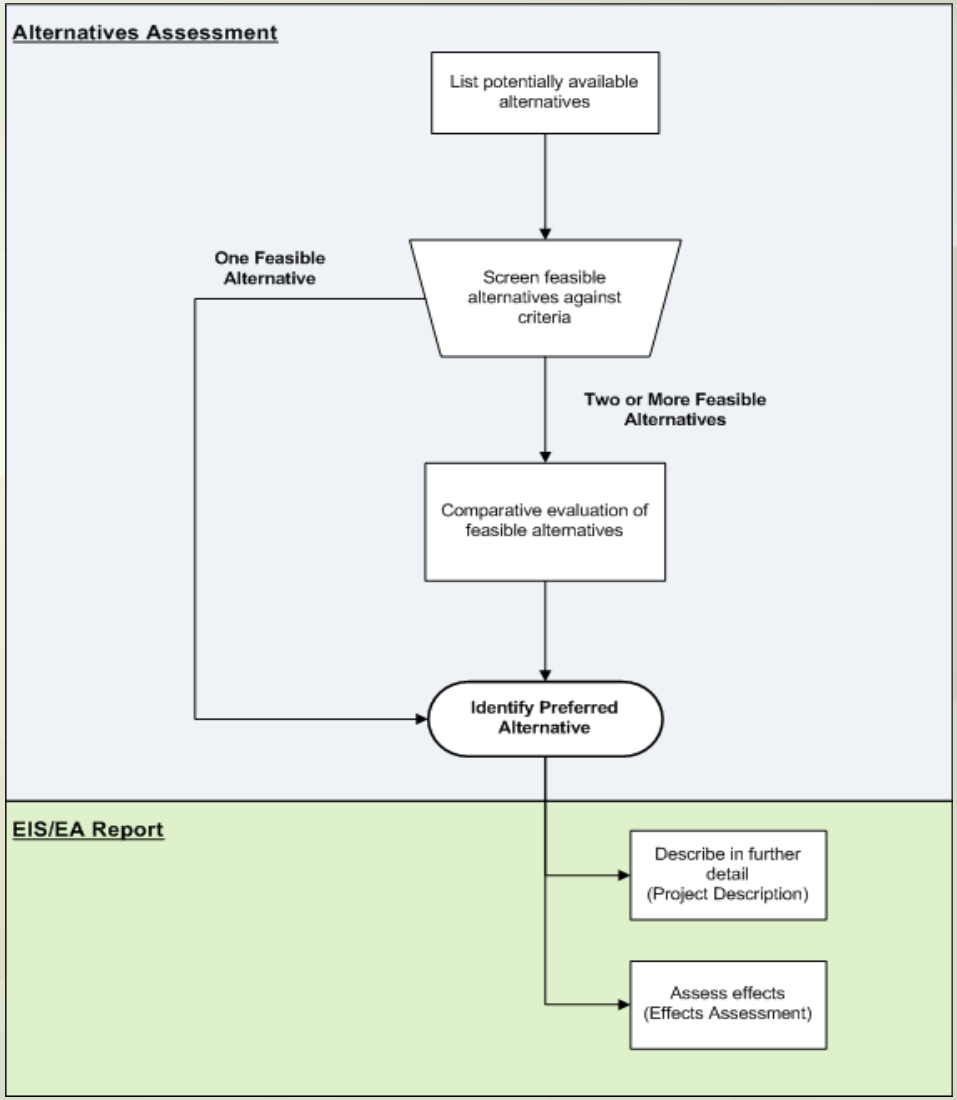
- Proceeding with the Project
- Do Nothing Alternative

Advantages of the Project	Disadvantages of the Project
- Job creation - Increased household and individual incomes - Improved purchasing power - Improved access to training opportunities - New business opportunities - Purchasing of goods and services promotes economic growth in Atikokan and surrounding communities - Community infrastructure improvement - Collection of valuable environmental data	- Loss of fish-frequented habitat (Mitta Lake and TMF footprint) - Changes in water quality - Increased noise and vibration from blasting - Permanent landscape alteration - Soil erosion and soil compaction in Project footprint - Loss of vegetation, wetlands and streams - Increased risk vehicular accidents - Loss of recreational fishing areas - Increased strain on community infrastructure

- Proceeding with the Project is the preferred alternative
  - Not expecting to have significant negative impacts due to implementation of mitigation measures
  - Potential positive socio-economic effects are attractive to Atikokan, Aboriginal partners, and neighbouring communities

Assessment Approach for Alternative Means of Carrying Out the Project

- Screened against criteria adapted from Ontario Ministry of the Environment's Code of Practice
- Screening identified one preferred alternative or multiple alternatives that were advanced for comparative evaluation
- Comparative evaluation based on environmental, socio-economic, Project economics, and technical characterization



Alternative Means of Carrying Out the Project

- Evaluation of the technically and economically feasible ways the Project can be implemented

Project Component	Project Aspect	Alternative Means Assessed
Ore Processing Facility	Ore Processing Method	Use of a cyanide destruction circuit
		Natural degradation of cyanide
Power Supply	Transmission Line Alignment	Transmission line along Hardtack/Sawbill Road
		Transmission line along Raft Lake Road
		Transmission line along Hardtack/Sawbill Road and crossing Sawbill Bay
Sewage Treatment Facility	Site Location	One centrally-located facility
		Dedicated facilities for the camp and the mine site area
	Sewage Treatment Technology	Septic tank and tile field
		Package sewage treatment plant
Water Management	Water Discharge Location	Underwater pipeline with discharge to Lynxhead Bay Narrows
		Overland pipeline with discharge to Lynxhead Bay
		Overland pipeline to the northwest with discharge into the central portion of Sawbill Bay
		Overland pipeline to the south with discharge to the south end of Sawbill Bay
Access Road	Access Road Alignment	Hardtack/Sawbill Road
		Raft Lake Road
Office and Support Facilities	Worker Accommodation	On-site Accommodation Camp
		Off-site Accommodations

Summary of Preferred Alternative Means of Carrying out the Project

Project Component	Preferred Alternative
Ore Processing Method	Processing using cyanide including a cyanide destruction circuit
Low-grade Ore Stockpile Siting	South of the East Pit and East of the West Pit
Power Transmission Line	Transmission line along Hardtack/Sawbill Road and crossing Sawbill Bay
Auxiliary Power Line	Auxiliary power line along Highway 622
Sewage Treatment Site Location	Dedicated facilities for the camp and the mine site area
Sewage Treatment Technology	Package Sewage Treatment Plant
Organic and Solid Waste Management	Partner with the Town of Atikokan to design and construct a landfill off-site
Water Discharge Location	Overland pipeline to the south with discharge to the south end of Sawbill Bay
Access Road	Hardtack/Sawbill Road
Worker Accommodation	On-site accommodation camp
Fibre Optic Line	Fibre optic line along Hardtack/Sawbill Road and crossing Sawbill Bay

Mine Waste Alternatives Assessment Guidelines from Environment Canada

Project Aspect	Alternatives Assessed
Waste Rock Stockpile Siting	Waste Rock Stockpile 1
	Waste Rock Stockpile 2
	Waste Rock Stockpile 3
Tailings Management Facility Siting	Tailings Management Facility Alternative 1
	Tailings Management Facility Alternative 2
	Optimized Base Case (TMF Alternative 3)
Tailings Deposition Technology	**Thickened Tailings**
	Conventional Tailings

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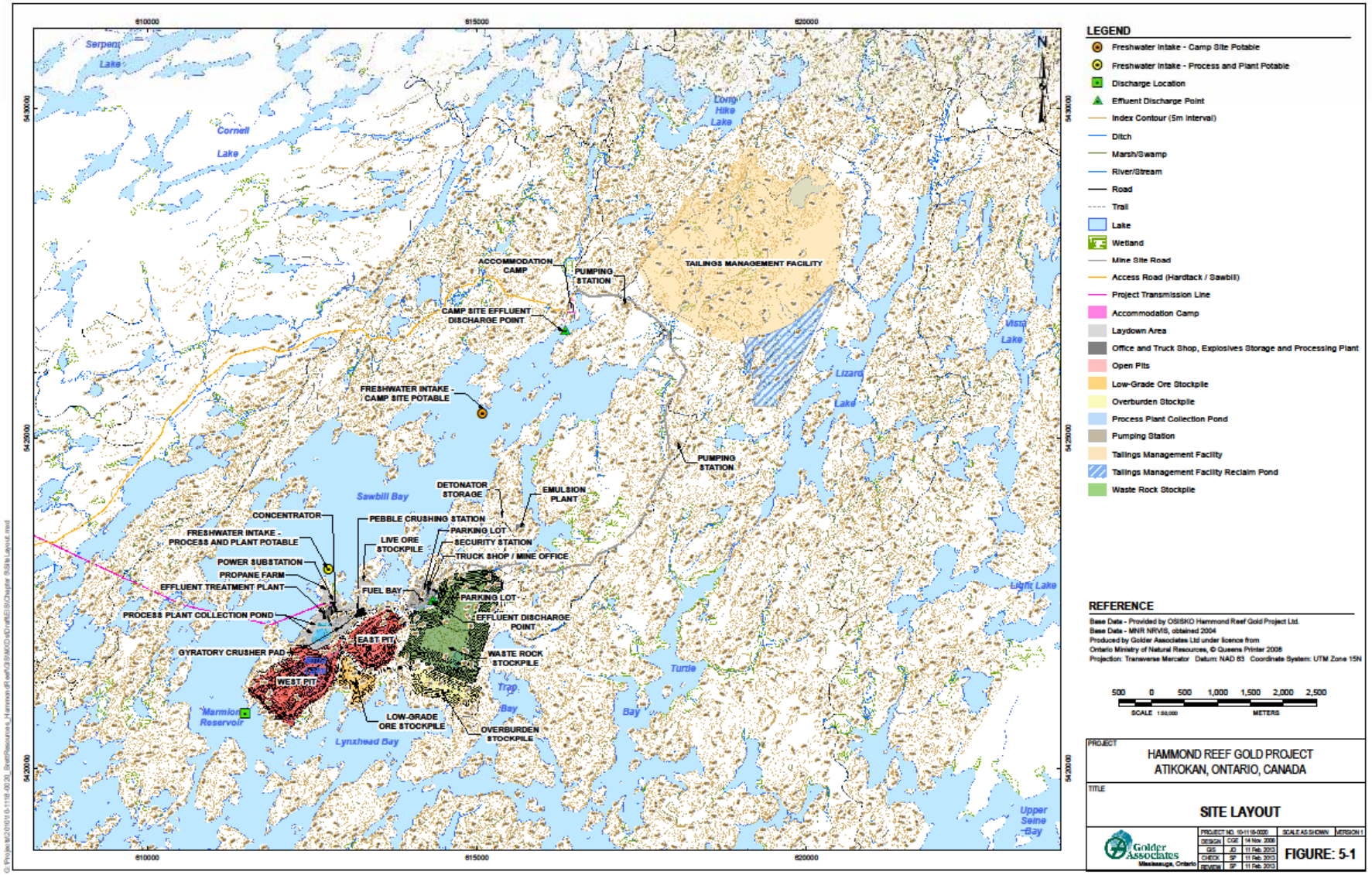
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Project Description

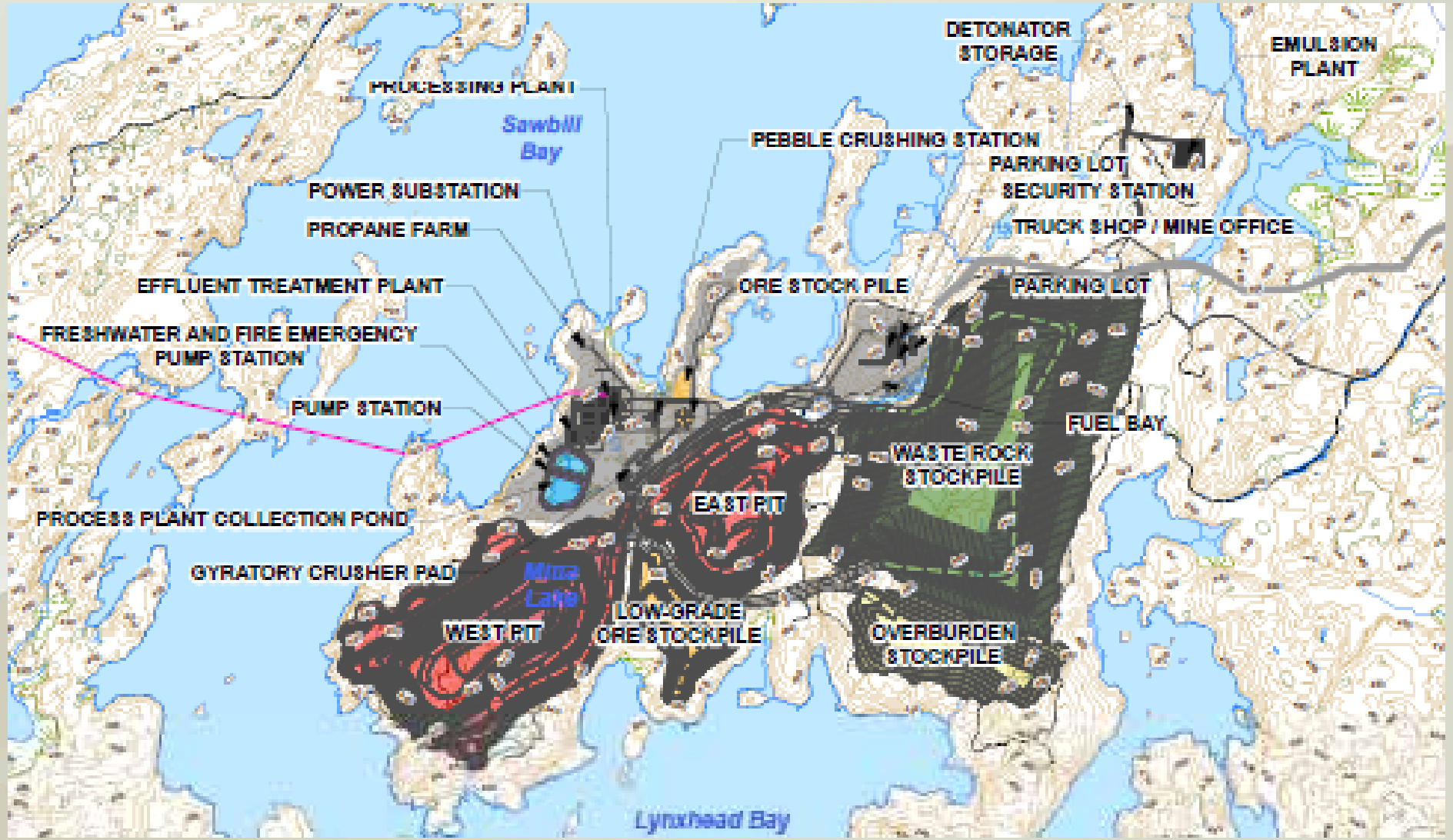


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Preferred Site Layout



Site Infrastructure



Project Components

Project Components:

- Mine, including two open pits (i.e., east pit and west pit).
- Waste Rock Management Facility (WRMF).
- Ore Processing Facility.
- Tailings Management Facility (TMF).
- Support and Ancillary Infrastructure.
- Water Management System.
- Linear Infrastructure.
- Borrow Sites.

Construction Phase (30 months)

- Upgrading access roads.
- Construction of transmission lines and communication lines.
- Construction of workers accommodation.
- Site Grading and construction of laydown areas.
- Transport of equipment to the Project Site.
- Preparation of site components and facilities.
- Construction of infrastructure.
- Construction of initial containment structures for the Tailings Management Facility (TMF).

Operations Phase (11 years)

- Maintaining site Access Roads, transmission lines and communication.
- Maintaining accommodation camp.
- Operation of the Mine.
- Storage and production of explosives.
- Operation of Process Facilities including ore stockpiles.
- Operation of mine waste facilities (waste rock stockpile, overburden stockpiles, TMF, and pipelines).
- Transport of equipment and supplies to and from the Project Site.
- Transport of workforce to and from the Project Site.
- Transport of gold doré bars off-site.

Closure (2 years) & Post-closure Phases (10 years)

- Stabilization of tailings surface and revegetation.
- Cessation of pit dewatering operations.
- Pumping of water from various seepage collection ponds to the open pits until water quality is acceptable for direct discharge to the environment.
- Grading of the surface of the waste rock stockpile and overburden stockpile.
- To the extent practical, using overburden stockpile materials as cover to promote vegetation growth in various site areas.
- Decommissioning of site Infrastructure.
- Establishment of open pit “safe lines” based on a rock mechanics evaluation.

In-design Mitigation

- Relocation of Infrastructure to avoid fish-bearing water bodies.
- Discussion with Aboriginal groups to avoid “special sites” that have been identified in the vicinity of the project.
- Adherence to set-back criteria and adjustments to the pit shell to maintain a buffer zone between the pit and the lake.
- Using west pit to store some of the waste rock from east pit in order to reduce the size of the waste rock stockpile.
- Avoidance of Lynxhead Narrows as an effluent discharge point due to identification of walleye spawning area.
- Inclusion of a contingency for treatment of suspended solids if necessary.
- Inclusion of a cyanide destruction circuit within the process.
- Use of existing transportation corridors where possible to minimize requirements for additional environmental disturbance.

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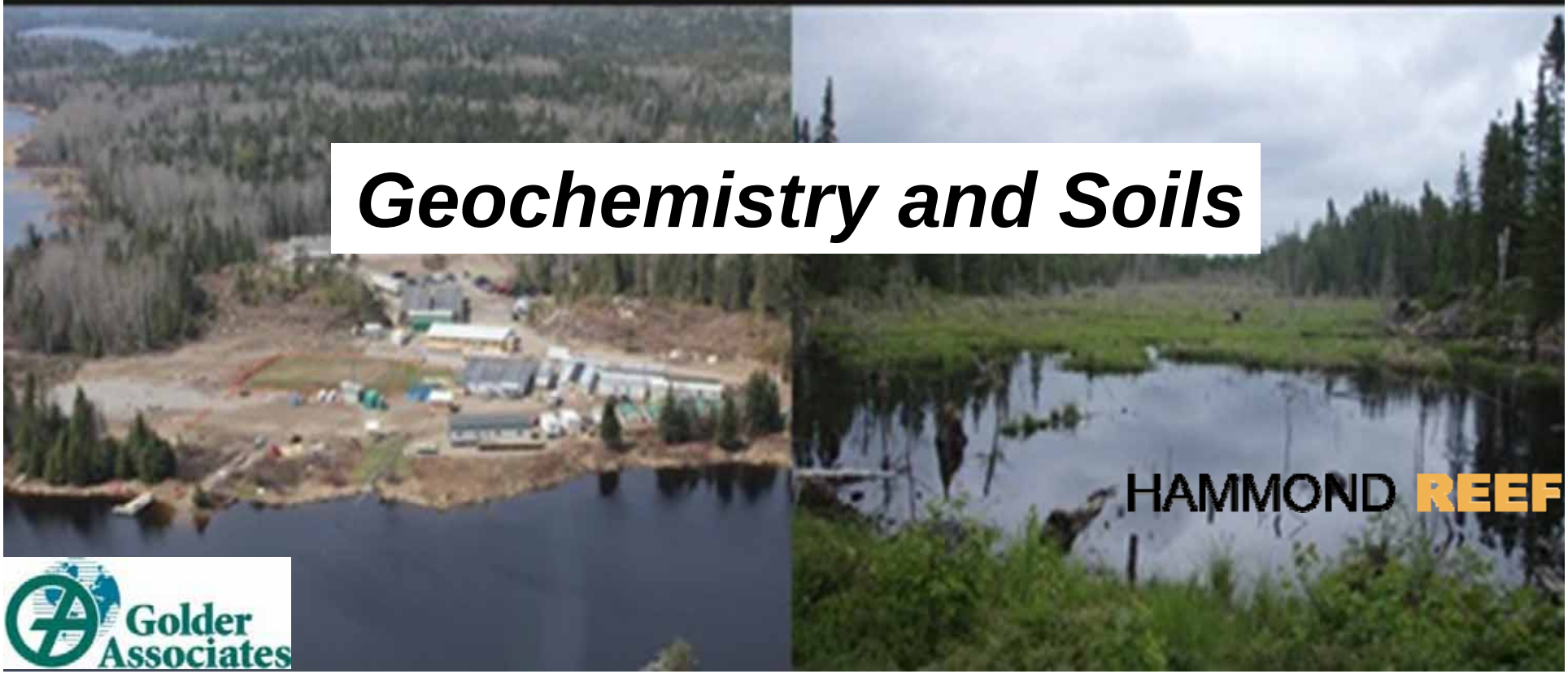
Conclusions by Component



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Geochemistry and Soils

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Geology, Geochemistry and Soils Overview

Geology includes**:**

- Description of geological information relevant to the Project

Geochemistry criteria include:

- Acid Generation
- Metal Leaching
- Tailings Water Quality

Terrain and Soils includes:

- Terrain types
- Soil types, chemistry and depths
- Soil erosion risk

No significant impacts were identified.

Effects Assessment

- Soil erosion may influence slope stability and water quality
- Spills may degrade soil quality
- 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.

- Terrain will be altered during the construction and operations phases of the Project. As a result, topography, site elevation and drainage patterns will be altered on a local scale.

Results were also provided for assessment by Aquatic Biology, Terrestrial Ecology and Water Quality.

Mitigation Measures

- An Erosion Management Plan will be developed during construction, operations and closure. Site drainage will be managed to ensure that runoff does not cause erosion, flooding, or contamination in downstream areas.
- Develop and implement an appropriate remediation plan that accounts for soil salvage, stockpiling, and reclamation where possible.
- Minimize soil contamination through implementation of a Spill Management Plan.
- Geotechnical assessments will be completed for mine facilities and monitoring of stockpiles will also be undertaken to verify and to ensure long-term stability.
- Timber harvesting agreements will mitigate loss of timber resources

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Atmospheric



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Atmospheric Environment Overview

- Air quality
- Noise
- Light
- Vibrations from blasting
- Climate change assessment

Assessment focuses on the Operation Phase (worst case scenario).

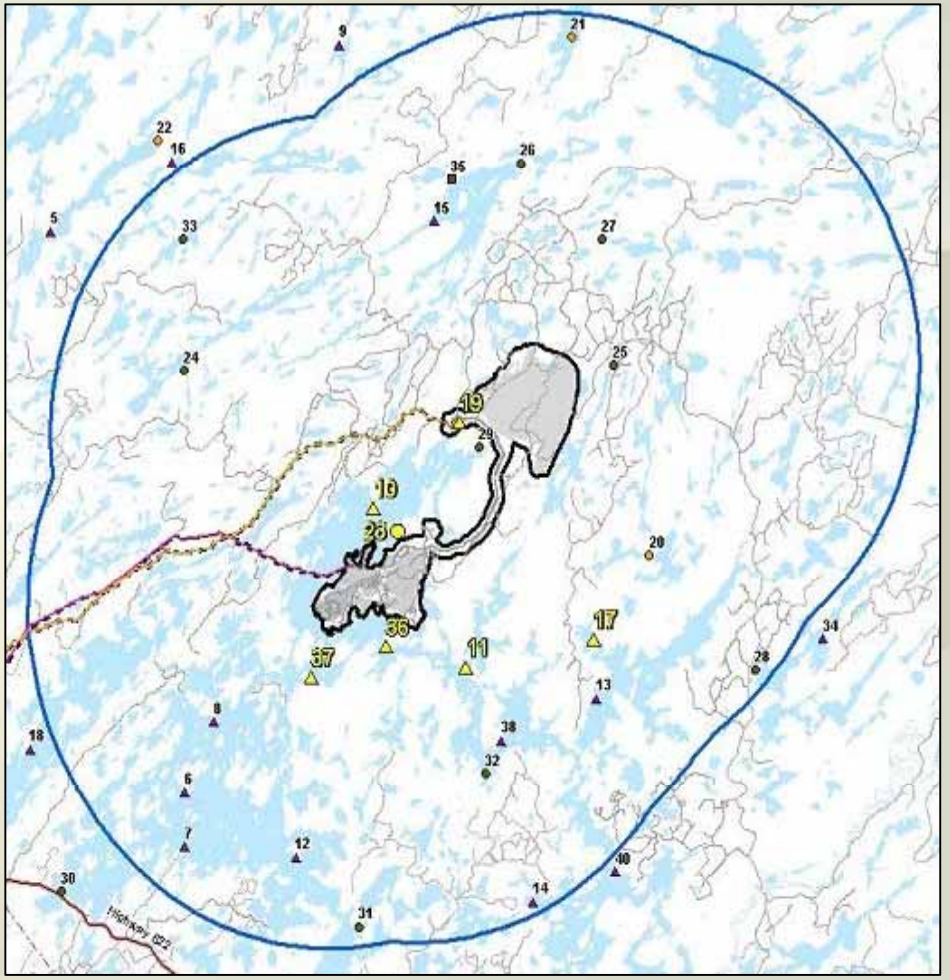
Results were also provided for assessment by the Terrestrial Ecology, Aquatic Biology, Socio-economic and Human Health components.

Atmospheric Conclusions

- Meets regulations for air quality
- Meets regulations for noise with some restricted access

- Further access restrictions are recommended based on the results of a human health risk assessment

- Controlled access to identified sites will be managed through cooperation with Project stakeholders



Vibration Management Plan

- Develop an Adaptive Management Plan for Vibrations.
  - Confirm with test blast during initial operations to develop **site-specific** vibration attenuation.
    - Assess ground and air vibrations from blasting at receptors.
    - Assess blast-induced water overpressure level at shoreline.

IF impacts are identified:
Proposed mitigation to reduce PPV:

- Relocation of the blasting to locations further from the active spawning beds (during that time);
- Designing the blast with the progression of holes moving away from it (vibrations in front of blast are lower).
- Reduce the maximum charge weight per delay (via borehole diameter reduction, decking)

Proposed mitigation to reduce overwater pressure:

- Implement methods to move fish from overpressure areas before the blast.

Mitigation and Monitoring

In-design mitigation:

- Dust management and a dust management plan
- Design to appropriate air quality standards
- On-site roads will be well maintained to limit noise emissions
- All equipment will be kept in good repair
- Optimize Site lighting design to minimize over lighting, and use shielded light fixtures where possible to minimize uplight to the atmosphere.

Compliance monitoring including:

- Source testing to confirm process emissions
- Ambient air monitoring for indicator compounds

Register and investigate any air quality or noise complaints

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Hydrology



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Overview of Hydrology

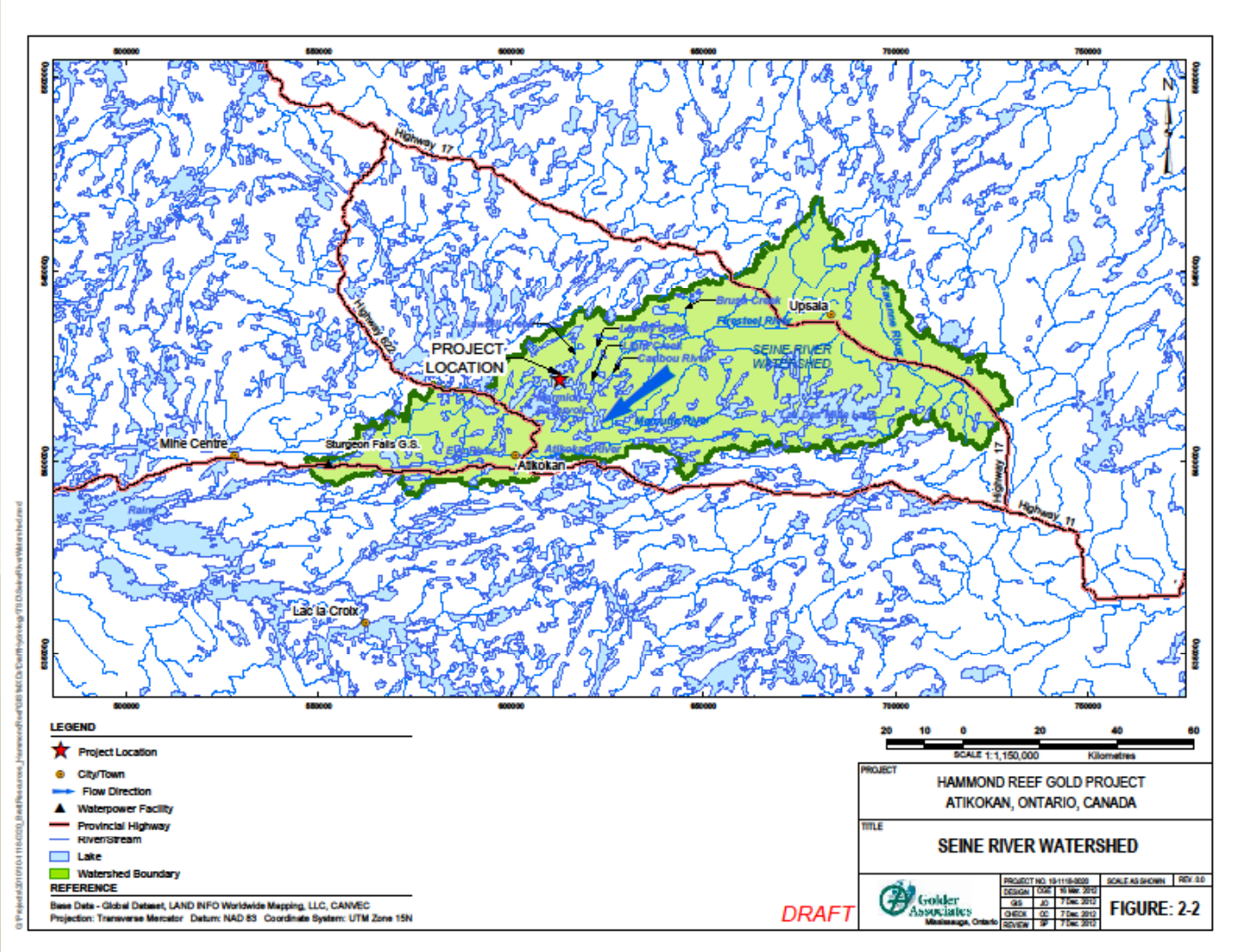
Drainage Basins

- Regional: Seine River Watershed
- Local: Sawbill Bay; Lynxhead/Trap/Turtle Bay Bays; Light Bay & Upper Seine Bay
- Site: 44 site scale tributary catchments (29 in project footprint)

Hydrological Components

- Runoff collection
- Water taking
- Treated wastewater discharge
- Mine dewatering
- Road crossings
- Water intake and discharge structures

Seine River Watershed



Study Areas – Drainage Basins

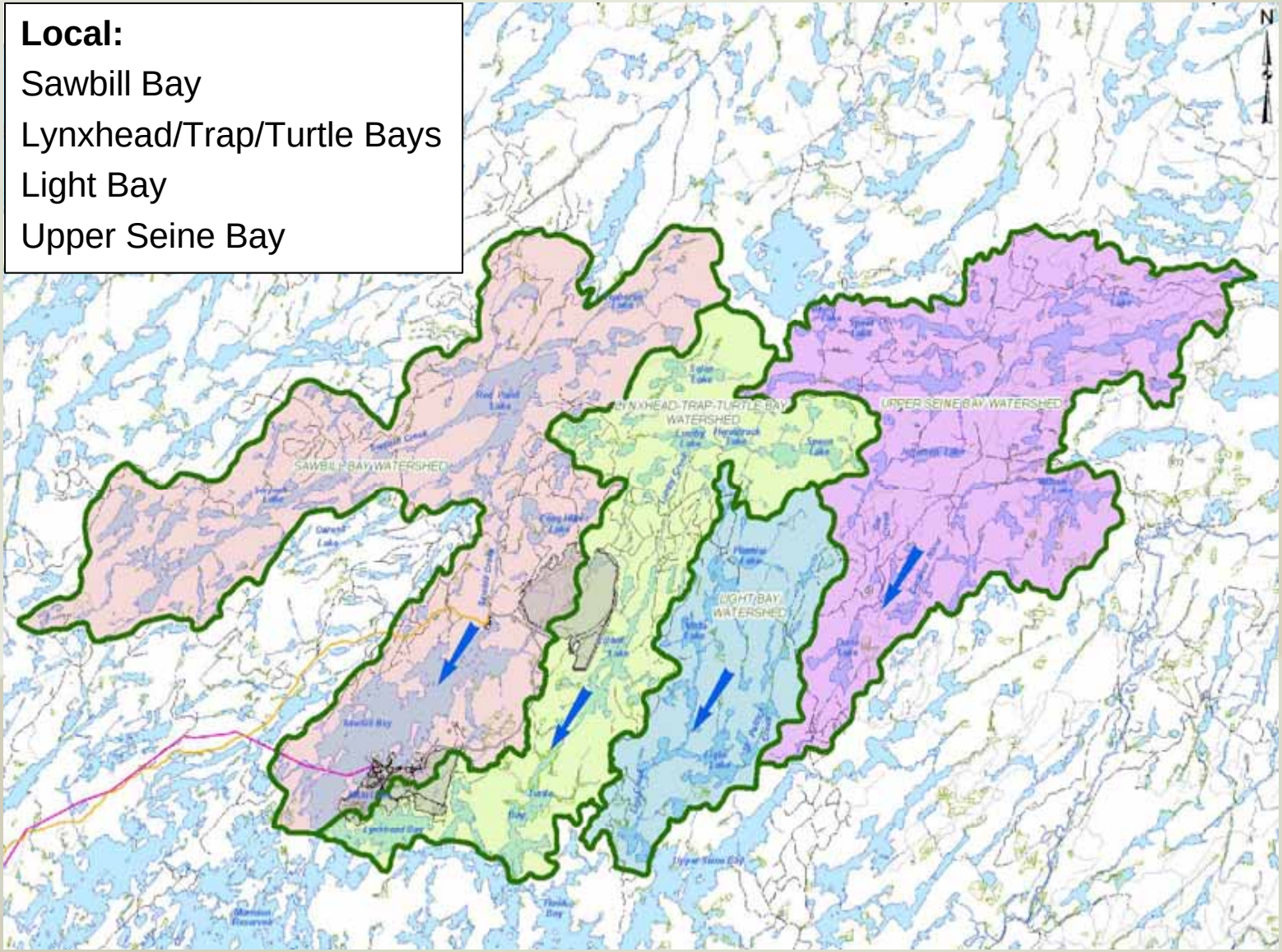
Local:

Sawbill Bay

Lynxhead/Trap/Turtle Bays

Light Bay

Upper Seine Bay

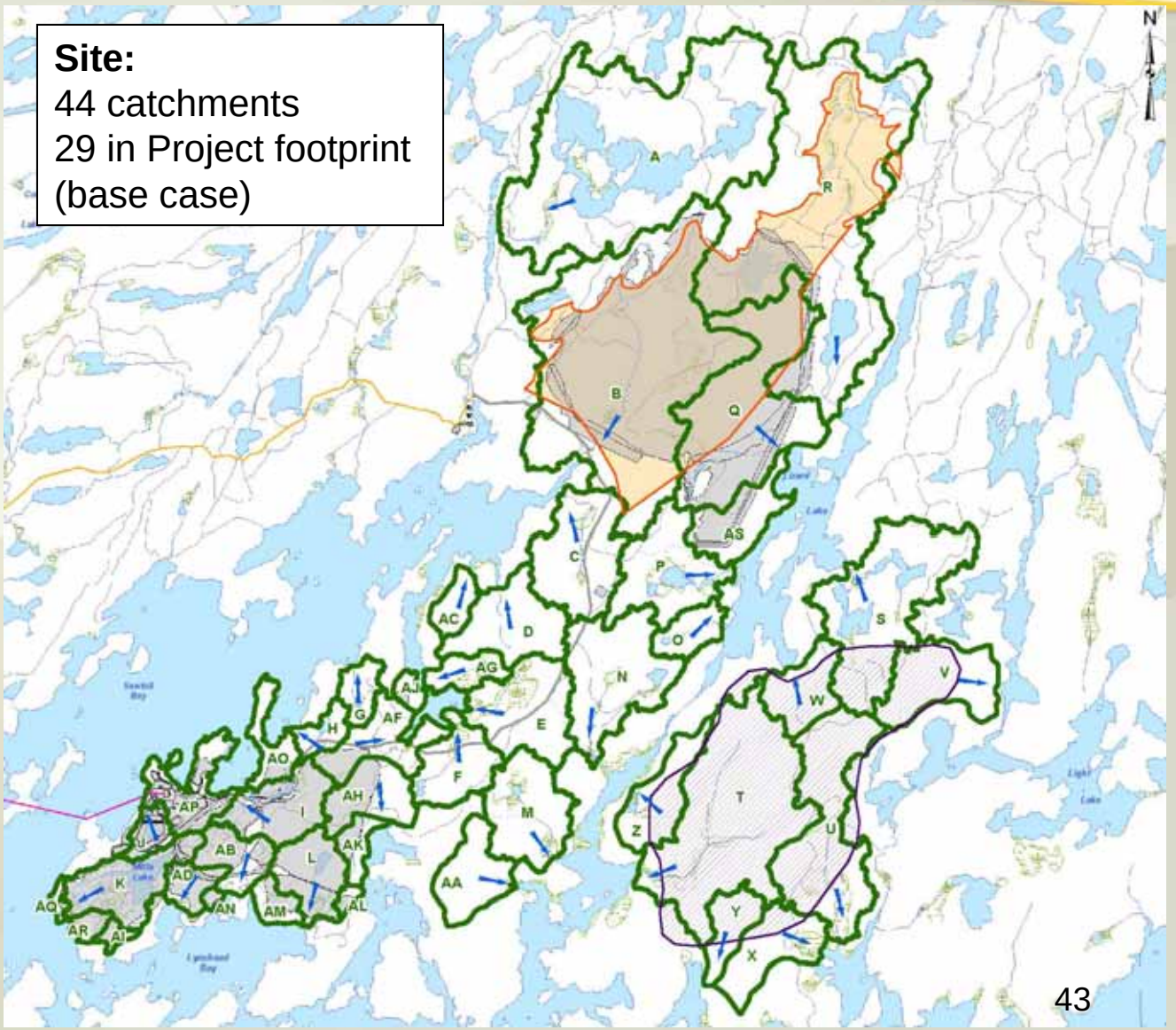


Study Areas – Drainage Basins

Streamflows: 13 flow monitoring stations (8 automatic recording)

Lake Levels: 5 lake level monitoring stations (all automatic)

Navigability: data collected at approx. 40 sites



Planned Project Water Intake and Discharge

Fresh water will be taken from two separate locations in Sawbill Bay, Upper Marmion Reservoir.

- Potable water supply for the accommodation camp will be drawn from an intake point adjacent to the accommodation camp.

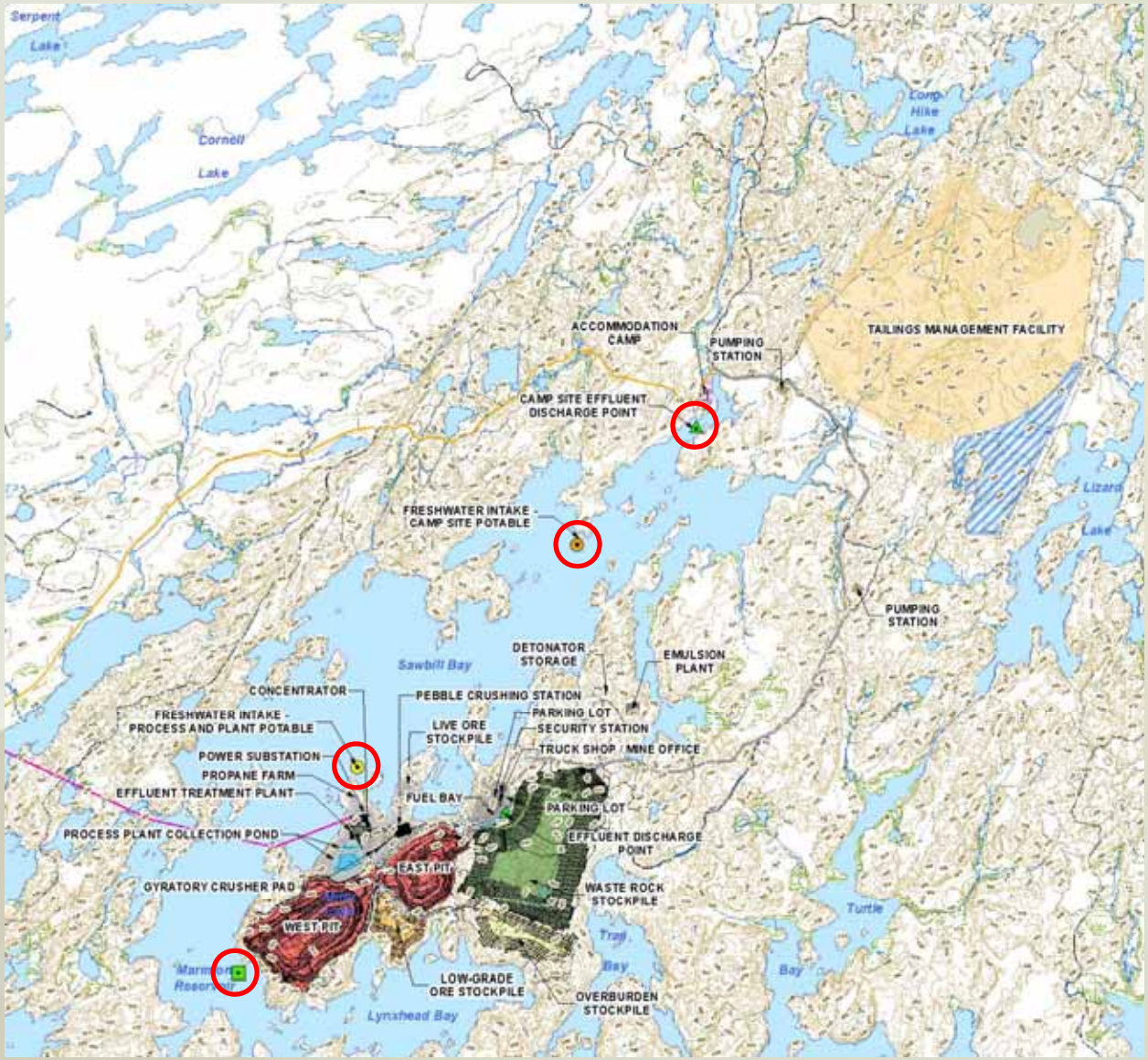
- Fresh water supply for potable and process water use at the processing plant will be drawn from an intake point adjacent to the processing plant.

Treated effluent will be discharged at two separate locations in Sawbill Bay, Upper Marmion Reservoir.

- Treated sewage effluent from the accommodation camp will be discharged near the mouth of Sawbill Creek.

- Treated wastewater effluent from the processing plant will be discharged at the outlet of Sawbill Bay.

Planned Project Water Intake and Discharge Locations



Site Water Balance for Hammond Reef Project

Fresh water required for ore processing and domestic use:

- Processing plant requires ~34,000 m³/day of water,
- Fresh water for processing plant ~7,200 m³/day in average year,
- Potable water for accommodation camp ~300 m³/day.

Flood Planning:

- Modeling informed design of water management system
- Calculated accumulation of water in the Collection Pond during a 24-hr 100-yr storm
- Calculated volume of ~350,000 m³.

Collection Pond will include two lined cells designed for the following volumes:

- Spill cell capacity ~100,000 m³
- Runoff cell capacity ~300,000 m³.

Predicted Changes to Upper Marmion Reservoir

Outflows:

- No increase in frequency of outflows below minimum requirements of 2004 to 2014 Seine River Water Management Plan
- Reduction of 0.192 m^3/s (<1%) in annual mean outflow - average year
- Maximum reduction of 4.9% in monthly mean outflow – 1:100 year dry

Water Levels:

- No increase in frequency of water levels below minimum requirements of 2004 to 2014 Seine River Water Management Plan
- Maximum reduction of 9.0 cm in monthly mean water levels – 1:100 year wet and dry

Predicted Changes to Site and Local Hydrology

Local and Site Streams

- 15 of 29 small catchments reduced in size by > 50% by Project footprint
- Maximum reduction of ~7% in monthly mean flows in Lumby Creek flows
- Maximum reduction of < 1% in monthly mean inflows to Upper Marmion Reservoir

Local and Site Lakes

- 4 small unnamed lakes will be filled in by Project footprint
- Maximum reductions in monthly mean water levels of 2-3 cm in Unnamed Lake 5 and Lizard Lake

Waterway Navigability

- Loss of navigability within the Project footprint
- 5 new water course crossings
- Intake and discharge structures in Marmion Reservoir

Mitigation Measures for Hydrology

- Install temporary signage during construction of water intake and effluent discharge structures in Marmion Reservoir
- Install permanent signage warning boaters of submerged structures
- Precipitation (weather station) records will be used for design and flow evaluation and adaptive management
- Ongoing discussions with other local water users and participation in the Seine River Watershed Management Plan.
- Develop and implement a site water management plan prior to operations

Environmental Monitoring Objectives

- Support adaptive management measures to address unanticipated outcomes
  - Confirm assumptions
  - Verify predictions

- Satisfy compliance monitoring requirements
  - Certificates of Approval
  - Permits to Take Water
  - Fisheries Act Authorizations
  - Navigable Waters Act

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HYDROGEOLOGY



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Overview Hydrogeology

- Predicted changes of groundwater quantity developed from 3-dimensional groundwater flow model of open pit and mine site area
  - Pit inflows estimated to range from about 1200 m^3/d decreasing to about 740 m^3/d at end of mining
  - About 50% of inflows derived from Marmion Reservoir with about 50% derived from seepage from adjacent stockpiles
  - Concern for high permeability in fractures could result in greater than predicted inflows that would require mitigation by grouting or pressure relief drain holes and/or wells
  - Extent of groundwater drawdown localized to pit area (extending about 700 m to the northeast from pit perimeter)
  - Flow in local streams (within about 700 m from pit perimeter) will be reduced and intermittent streams will experience longer dry periods seasonally
  - Groundwater levels will recover to approximate pre-mining conditions during post-closure
- Groundwater quality predictions considered in Water Quality TSD

Hydrogeology Conclusions

- Pit inflow, dewatering, lake level, and water quality aspects are influenced by hydrogeology.
- Pit slope stability may also be influenced by groundwater levels.
- Groundwater inflows to the pit will be managed by operation of in-pit sumps.
- Mitigation of incomplete depressurisation of pit slopes could require installation of pressure relief drain holes on pit wall or vertical wells
- Mitigation of greater than expected inflows could require grouting or other control measures as appropriate.
- Seepage rates out of any Facility collecting water will be controlled, either by using low permeability containment or relocating a pumping station to nearby area with more favourable subsurface conditions.

Follow Up Program

Additional hydrogeology investigations will be conducted in the area of the PPCP to refine the understanding of the subsurface conditions locally.

Develop and implement a groundwater monitoring program to include:

- Regular monitoring of pore pressures on pit slopes during operations
- Regular monitoring of groundwater levels and water quality at a minimum of 20 monitoring well nests at the Project Site throughout all stages of mining and post-closure.
    - Continuation of existing program
    - Drilling/installation of additional well nests may be required.
- Installation and monitoring of 5 monitoring wells adjacent to surface water monitoring stations to assess groundwater/surface water interactions during construction phase

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Site Water Quality & Lake Water Quality



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Water Quality Overview

- Water and Sediment Quality TSD: Baseline Information
- The Site Water Quality TSD includes the methods and results of the site water quality model.
- Site water quality model was developed to predict range of water quality from key site facilities, based on the defined Project, expected water balance, baseline water quality and geochemical studies.
- Site water quality predictions were completed for operating and post-closure conditions.
- The Lake Water Quality TSD includes the methods and results of the lake water quality model.
- Lake water quality model was developed to predict range of lake water quality due to the Project operations, closure and post-closure, based on the Project discharge concentrations and flows (Site Water Quality TSD), local water balance, Site water balance, and baseline lake water quality.
- Lake water quality predictions were completed for operating and post-closure conditions.

Significant Impacts for the Site Water Quality & Lake Water Quality TSDs

- There are no direct significant impacts to downstream water bodies from Site water quality.
- Significance of water quality is assessed in the Lake Water Quality TSD, Aquatic Ecology TSD, Terrestrial Ecology TSD, and Human Health Risk Assessment TSD.
- Most lake water quality parameters meet receiving water quality criteria within Marmion Reservoir and the Raft Lake Dam (ODWS, CCME, PWQO and MISA).
- For parameters exceeding a criteria, the significance is assessed in the Aquatic Ecology TSD, Terrestrial Ecology TSD, and Human Health Risk Assessment TSD. Site Specific Water Quality Objectives for copper and free cyanide.

Proposed Mitigation Measures for the Site Water Quality & Lake Water Quality TSDs

- Appropriate mitigation measures to limit TSS discharge will be put in place.
- Treatment for suspended solids and other potential parameters will be implemented prior to discharge, if necessary.
- There may be a need to install an Effluent Treatment Plant.
- Seepage will be captured and directed to the TMF during operations. In Post-Closure seepage will be directed to the open pit until it meets appropriate discharge standards (a series of collection ditches and pumps will be required).
- Appropriate clean-up of any spills will occur.
- Use of appropriate diffuser and diffuser design at Site discharge.
- Monitoring of Site water at various internal locations will be conducted.
- Monitoring and reporting of lake water quality at various locations will be conducted.
- Monitoring of Phosphorus concentrations in Sawbill Bay.

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Aquatic Biology



Golder Associates

Overview of Aquatic Environment TSD

The Aquatic Environment was described and evaluated at three spatial scales, representing the following drainage basins

Regional

- Seine River Watershed

Local:

- Upper Marmion Lake (Sawbill Bay and Lynxhead Bay),
- Lizard Lake
- Corridors

Site:

- 25 tributary catchments draining to Upper Marmion and Lizard Lake

The study was focused on Valued Ecosystem Components, represented by the following fish species and aquatic indicators:

- Lower Reaches & Receivers
- Small-bodied fish - baitfish
- Sport fish – walleye, northern pike, smallmouth bass
- Benthic invertebrates

Table 2-1: Summary of Field Program Dates

Overview of Aquatic Biology Field Work

- 55 APIs were investigated over multiple seasons
- 24 species of fish were found
- Not all APIs supported fish

Field Data Collected	2010	2011	2012
Fish and Aquatic Habitat	May 8 -15, August 1-6, 18-29, September 23-30, October 14-20	May 3-10, May 27 - June 5, August 26-30, September 23-29	August 22-31, September 13-22
Fish Tissue	August 18-29	September 23-29	
Benthic Invertebrates	October 14-20		
Aquatic Sediments	October 14-20		

Aquatic Biology Baseline Field Survey Locations

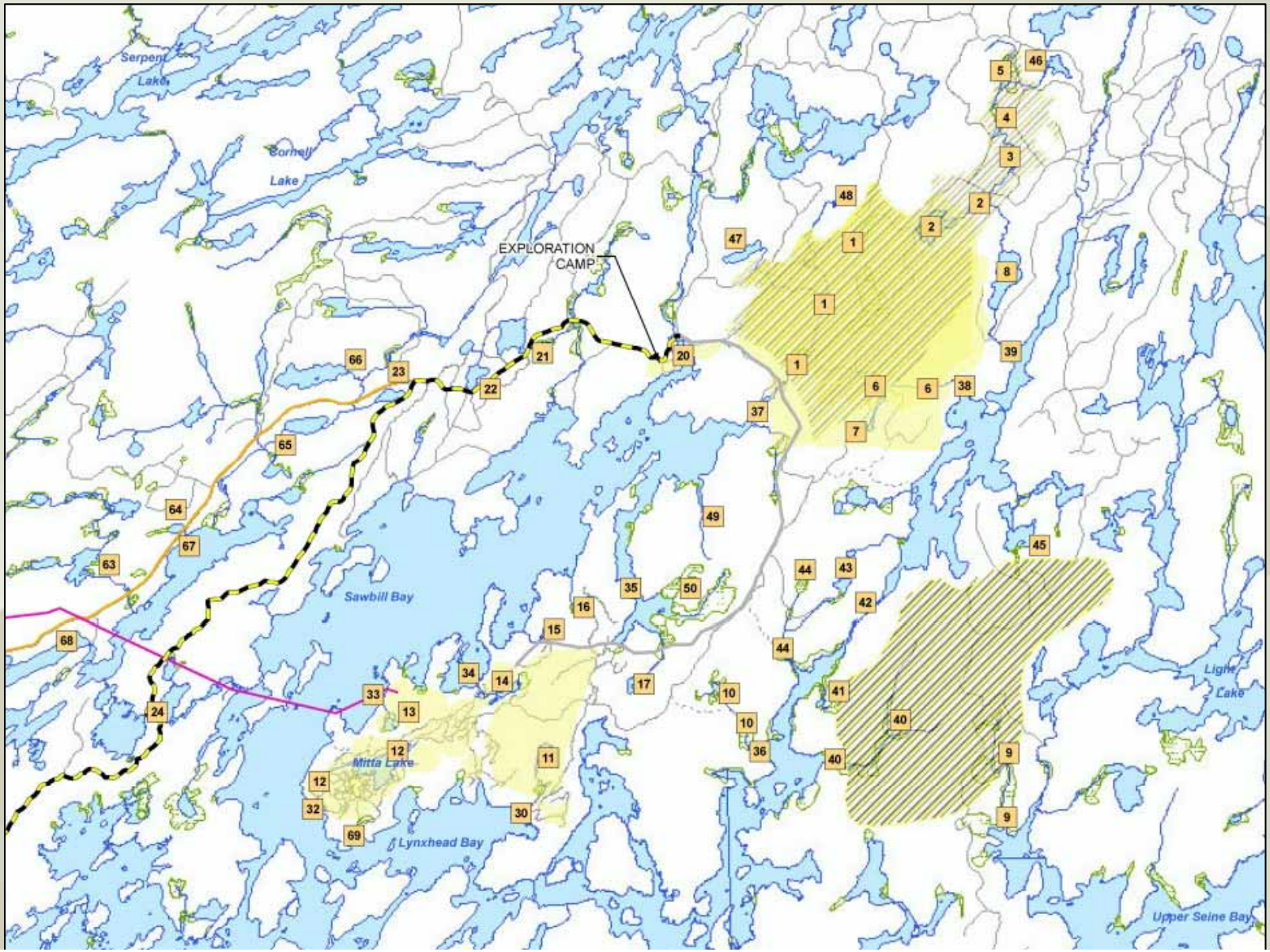


Table 2-1: Summary of Field Program Dates

No Net Loss Planning

- A series of meetings took place to development approved Habitat Accounting Methodology which will be implemented in the no net loss planning for the Project.
- No net loss planning includes both habitat compensation and offsets

Date	Topic	Agency Attendees
4/1/2011	Initial Meeting to Present Project Overview; Presented data collected to date (2010).	DFO, MNR, MOE, CEAA
7/12/2011	Discussion of Proposed Work Plan for 2011 baseline collection; Discussion of Collection Methods and Summary of info collected to date.	DFO, MNR
9/14/2011	Site Visit & Helicopter Tour; Presented data collected to date.	DFO, MNR, CEAA
2/29/2012	No Net Loss Planning Workshop	DFO, MNR, CEAA, MNDM
6/4/2012	Meeting to Present Aquatic Baseline Data	DFO, MNR, CEAA, MOE, MNDM
6/19/2012	Site Visit to Tour Steep Rock regarding Compensation Opportunities	MNR
10/22/2012	Meeting to Finalize Habitat Accounting Methodology; Discussions regarding Compensation Opportunities	DFO, MNR, CEAA, MOE, MNDM
10/31/2012	Meeting to present Project Overview and Update on Habitat Accounting Methodology to new DFO representative	DFO, CEAA

Project Design Influences

- Infrastructure placement & road crossings & in-water structures (water intake structures, effluent discharge structures)
  - Potential loss of habitat
- Water takings = flow and water level changes
  - Potential loss of habitat
- Drainage area interception = flow and water level changes
  - Potential loss of habitat
- Treated wastewater discharge
  - Potential toxicity effects

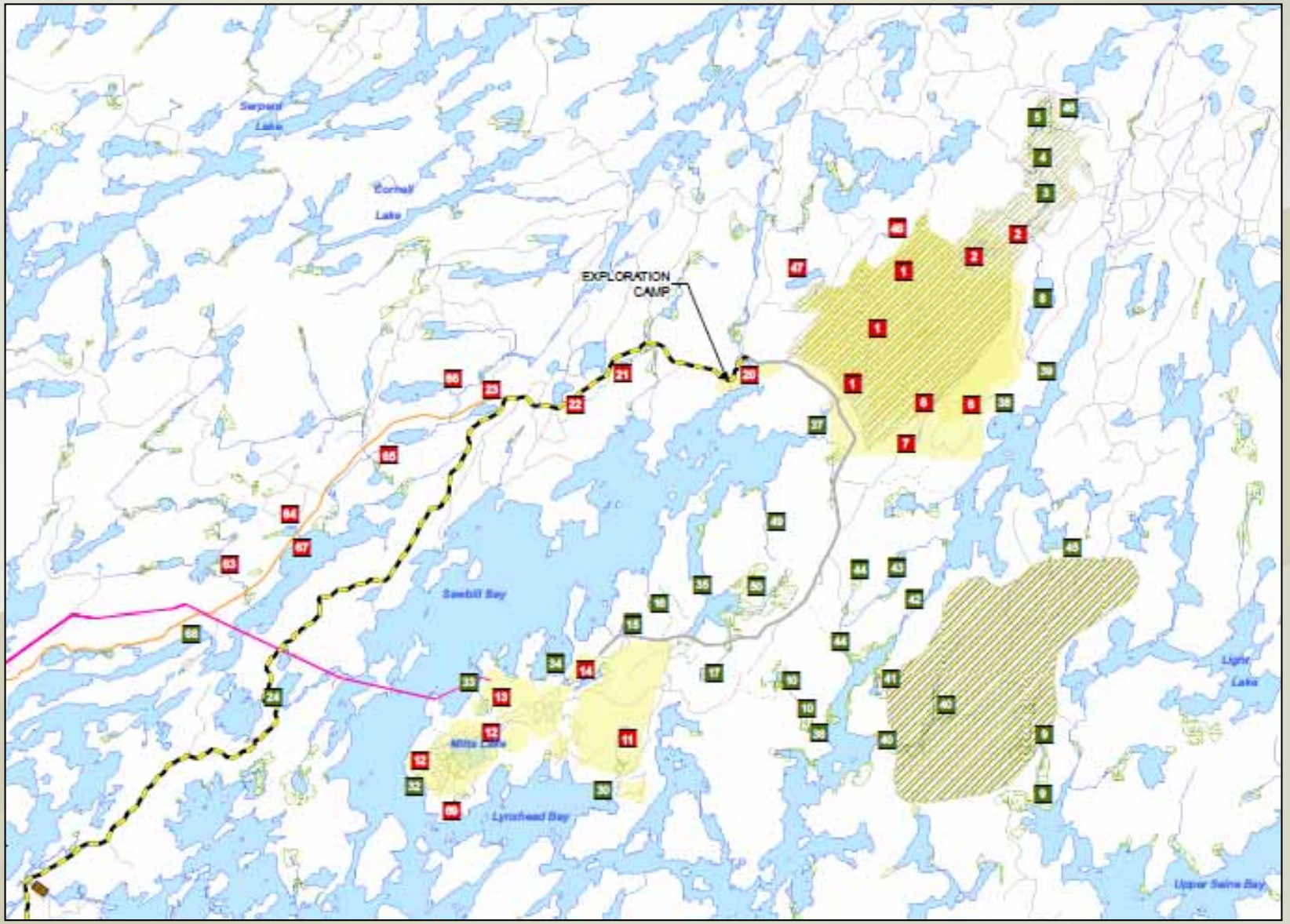
Project Impacts to the Aquatic Environment

- Changes in lake levels of receivers under predicted model are less than 5 cm and result in negligible impacts.
- Discharges as currently modeled meet receiving water criteria and do not result in impacts to aquatic life.
- No predicted impacts from water level changes or discharges predicted downstream of Upper Marmion Reservoir in the Seine River.
- Infrastructure and road crossings resulted in loss of aquatic habitat
  - limited to the mine footprint and road crossings but can be offset by habitat compensation using the agreed upon Habitat Accounting Methodology

Project Impacts to the Aquatic Environment (cont.)

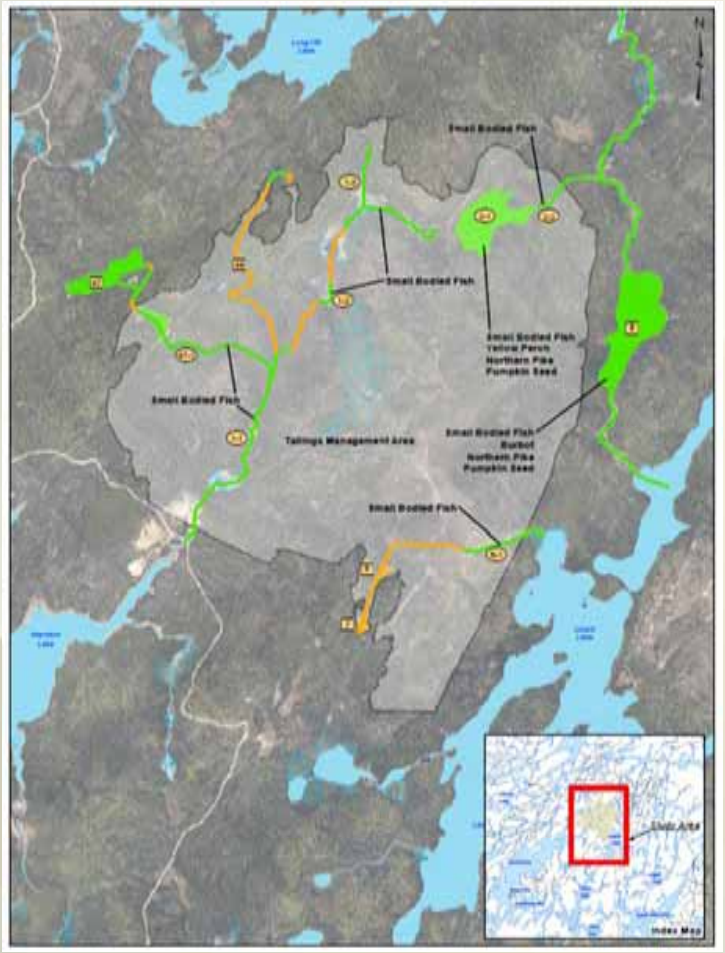
- Roughly 40 ha of aquatic habitat, representing about 11 water bodies (streams, ponds, lakes) will be lost within the mine footprint
  - Open Pit: API #12:Mitta Lake; API #14: stream; and API #69: headwater pond & stream.
  - PPCP: API #13: headwater pond & stream (fishless)
  - Waste Rock Stockpile: API #11: headwater pond & stream
  - TMF: API #47: stream; API #48 stream & headwater pond;API #1 stream & beaver impoundments; API #7; API #6; API #2.
- 14 watercourse crossings will be upgraded/constructed for the access road and mine road with onsite compensation to offset habitat losses
- Aquatic habitats slated for MMER Schedule 2 listing (API #2, APIs #1/47,API #11, API #14) are small water bodies (less than 12 ha) or headwater tributaries
  - MMER Schedule 2 process can take 2 years following the EA approval (required for operations not construction)
- An onsite compensation plan has been developed to offsite habitat losses, that focuses on enhancing habitat for the valued fishery in Upper Marmion Lake and small water bodies connected to it

Affected Waterbodies

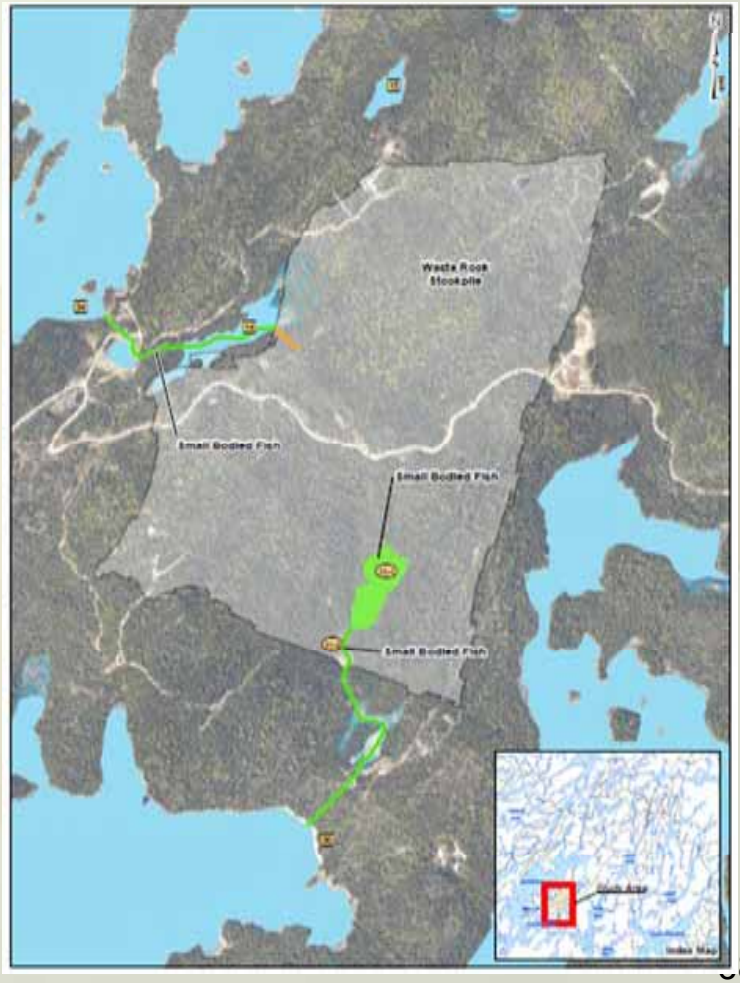


MMER Waterbodies

Tailings Management Facility

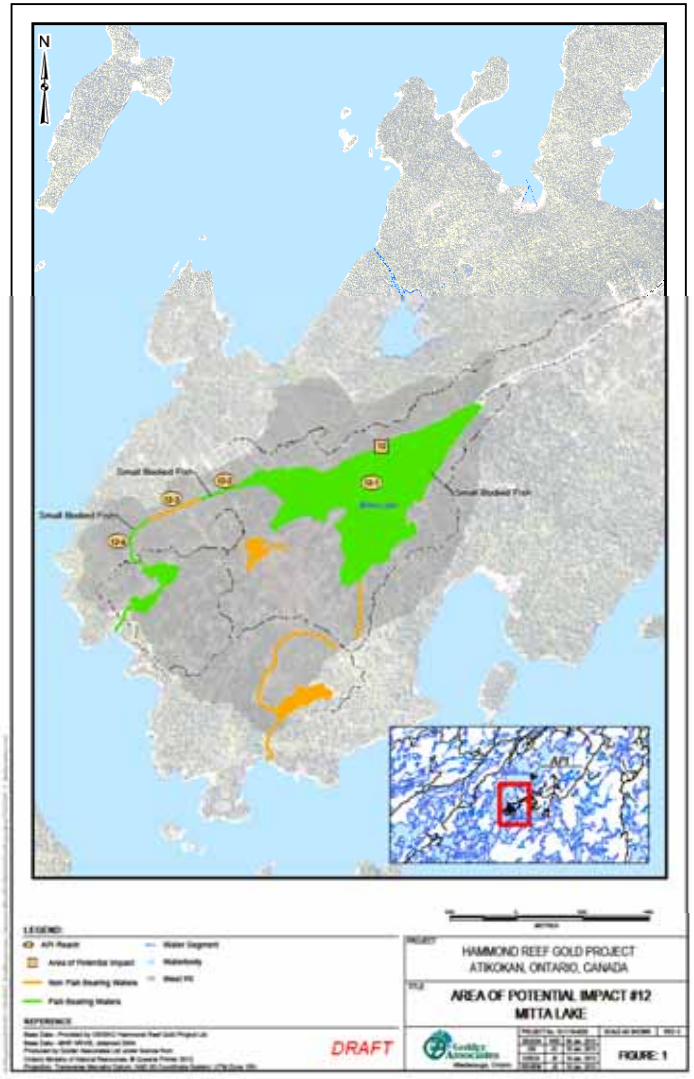


Waste Rock Stockpile



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A Fresh Outlook on Mining

Waterbodies affected by the Open Pit



Fish Habitat Compensation

- Onsite compensation plan to address valued fishery:
  - Stock 4 fishless ponds and create 3 headwater ponds
  - Create fish passage (walleye, pike) in lower Sawbill and Lumby Creeks
  - Create pike spawning habitat in Sawbill Bay in 3 locations
  - Create stream habitat/remove fish barriers at 14 stream crossings (along access and mine road)
- Complete compensation measures during the construction phase of project and monitor during operations phase
- Consider Steep Rock remediation efforts in lieu of some onsite work
  - MNR, public and Aboriginal groups have shown interest in Steep Rock alternative.
- Implement biannual Monitoring program (5 surveys over 10 years) to assess compensation success

Mitigation Measures

- Develop and implement Fish Compensation Plan
- Develop and implement Fish Salvage Plan
- Intake structures will be set at an appropriate height above the lake bottom and will be designed to minimize inflow velocities to minimize entrainment of aquatic organisms.
- Implement standard in-design mitigation erosion control measures
- Maintain sufficient flows in streams during construction of stream crossings and avoid sensitive periods for fish.
- Develop a policy to restrict fishing by Osisko employees while living at the accommodation camp
- Conduct test blast and adjust blasting operations to meet DFO guidelines

Follow Up Program

- Monitor lake levels
  - Adjust water taking if levels fall below minimum to maintain fish habitat downstream in the Seine River.
- Monitor discharge water quality
  - Implement additional treatment if water quality exceeds predicted concentrations of metals, sulphate and cyanide.
- Monitor seepage from TMF to Lizard Lake
  - Implement control measures if water quality exceeds worst case predictions.
- Monitor water quality post-closure
  - Implement additional treatment if water quality exceeds predicted concentrations for metals.
- Additional Environmental Monitoring to confirm
  - Compensation Success
  - Construction Compliance
  - Environmental Effects Monitoring (EEM)

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Terrestrial Ecology



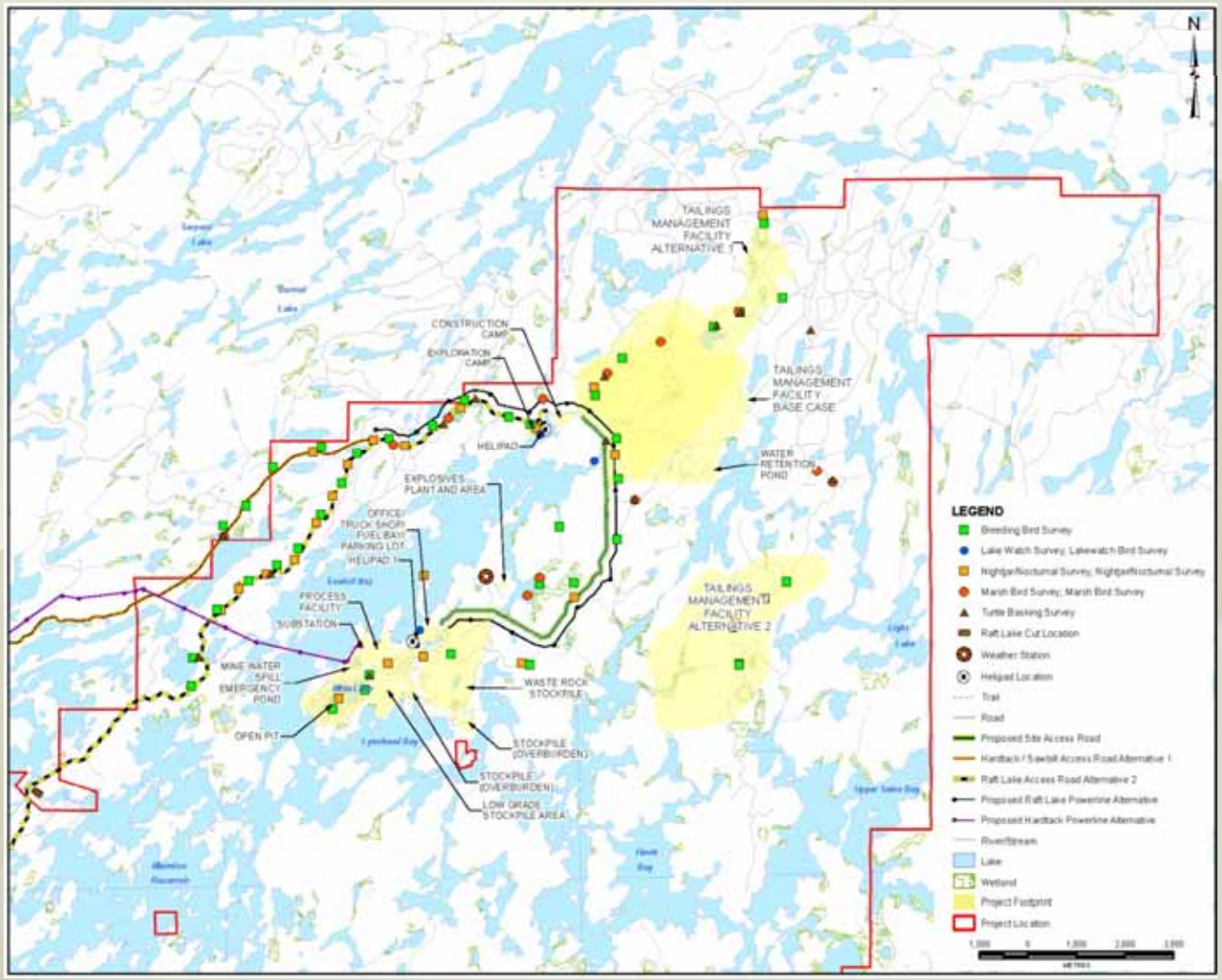
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Overview of Terrestrial Ecology TSD

Valued Ecosystem Components

- **Habitat VECs**
  - **Wetlands**
  - **Forest Cover**
- **Group VECs**
  - **Furbearers**
  - **Upland Breeding Birds**
  - **Species At Risk**
- **Species VECs**
  - **Moose**
  - **Wild rice**

Terrestrial Ecology Baseline Field Survey Locations



Residual Impacts and their Significance for the Terrestrial Ecology TSD

VEC	Effect	Geographic Extent	Magnitude	Duration	Overall Significance of the Effects
Wetlands	Loss and alteration of vegetation	low	moderate	moderate	**LOW**
	Alteration of Flows and Drainage Patterns	moderate	low	moderate	**LOW**
Forest cover	Loss and alteration of vegetation	low	moderate	low	**LOW**
Moose	Loss of habitat	low	negligible	low	**NEGLIGIBLE**
Furbearers	Loss of habitat	low	moderate	moderate	**LOW**
	Alteration of flows and drainage patterns	moderate	low	moderate	**LOW**
Species at risk	Loss of habitat	low	moderate	moderate	**LOW**
	Alteration of flows and drainage patterns	moderate	low	moderate	**LOW**
	Risk of Injury/Mortality	low	low	high	**LOW**
Upland breeding birds	Loss of habitat	low	moderate	moderate	**LOW**

Mitigation Measures

- Stockpile soil
- Capture runoff from stockpiles & TMF
- Domestic sewage effluent will be treated
- Excess water will be treated and returned to Marmion Reservoir
- Minimize wildlife/vehicle collisions.
  - Post speed limits & warning signs.
  - Awareness training for workers (especially for snapping turtles).
- Stop blasting temporarily if large mammals are observed within the zone.
- Vegetation clearing will consider breeding birds
- Develop a policy to restrict hunting, harvesting and trapping by Osisko employees while living at the accommodation camp
- Install markers on Transmission line and limit the use of guy wires.
- Selectively clear the pathway of the transmission line (not graded)
- Vegetated riparian buffers will remain around watercourses at access road crossings to the extent possible.
- Native species for re-vegetation at closure.
- Develop an invasive plant management strategy
- Develop an industrial and domestic waste management plan
- Animals that become a nuisance will be trapped and moved to remote locations for release.

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Human Health and Ecological Risk Assessment



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Human Health and Ecological Risk Assessment (HHERA)

- Human Health Effects Assessment
  - Acute and chronic inhalation assessment
  - Noise assessment
  - Particulate matter assessment
  - Multi-media assessment (includes water and soils)
- Ecological Health Effects Assessment

No residual effects for, acute inhalation, chronic inhalation, multi-media assessment or ecological health.

Assessment of Effects

Noise Effects		Diesel Particulate Matter Effects		PM_{10} Effects	
Level	**Rationale**	**Level**	**Rationale**	**Level**	**Rationale**
Low	Predicted health measures are below Health Canada guidelines Additional literature search identified potential noise effects at levels below guidelines Assumed the receptors are subject to the predicted noise concentrations on a long-term basis	Low	The ILCR for both locations is 1.6×10^{-6} DPM concentration based on maximum emissions during operation phase and assumed to apply for the entire constructions, operations and closure phases The ILCR exceeded the target cancer risk level at one location only Assumed that trapper is exposed to the maximum annual DPM concentration for 8 hours per day, 105 days per year for 15.5 years	Low	The maximum predicted 24-hour concentration was within 10 $\mu g/m^3$ of the screening threshold The PM10 concentration was only above the screening threshold at one receptor location 95% of the time the PM10 concentration would be below the screening threshold at that receptor location

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Socio Economic



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Socio-Economic Indicators

Socio-Community

- Population and Demographics
- Labour Market
- Government Finances
- Public Services and Infrastructure
- Housing and Accommodation
- Transportation

Land and Resource Use

- Outdoor Tourism and Recreation
- Hunting, Trapping, Fishing
- Mining and Forestry
- Water Use and Access

Study Areas

- Population, services and infrastructure focussed on Town of Atikokan
- Economic benefits also include districts of Rainy River, Thunder Bay and Kenora
- Land and Resource Use focussed on study area identified by Aquatic and Terrestrial Biologists

Effects Assessment

VEC	Overall Residual Effect	Description
Population and Demographics	Positive	Population increase associated with Project will augment the population of the Town. This will have an overall beneficial effect on the community.
Labour Market	Positive	Increase in employment and training will bring additional income into the LSA, which will contribute to overall economic wellbeing of the community.
Government Finance	Positive	Beyond additional revenue to federal and provincial governments, new construction in LSA will generate additional revenue for Town of Atikokan.
Public Services and Infrastructure	Neutral	There is sufficient capacity in existing services and infrastructure to absorb increases in demand associated with the Project.
Housing and Accommodation	Positive	Vacancy rate in Town of Atikokan will be reduced by influx of workers and their families, and new housing will be constructed. This will help stabilize the local housing market.
Transportation	Low-level adverse effect	Local transportation network currently operates well below capacity levels; increase created by the Project can readily be absorbed.

Effects Assessment

VEC	Overall Residual Effect	Description
Outdoor Tourism and Recreation	Neutral	Mitigation measures required for air quality and/or noise compliance results in no residual adverse effects on tourism and recreation. Overall attractiveness of study areas is not likely to be affected by the Project.
Hunting	Low-level adverse effect	No effect is anticipated on the number of hunting licences issued or on general hunting activity. A relatively small amount of land will no longer be available for hunting.
Trapping	Neutral	Upon the application of mitigation for the loss of some portions of tenured trap line areas, no residual adverse effect on trapping is anticipated.
Fishing	Neutral	Overall fishing activity in the study areas is not likely to be affected.
Mining	Positive	Beyond the positive effects of the Project described, the Project would likely have net beneficial effects on exploration and development in this area.
Forestry	Neutral	Upon the application of mitigation, no residual adverse effect on forestry is likely.
Water Use and Access	To be determined	Flow reductions need to meet the Seine River Management Plan. Osisko to negotiate with parties to the plan.

Benefit Enhancement & Mitigation Measures

- Encourage workers to relocate their families to Town of Atikokan
- Provide incentives (e.g., transport to and from the Project Site) for workers to live in Town as opposed to on-site camp
- Work with the Town of Atikokan and the Atikokan Economic Development Corporation to identify opportunities for local businesses to develop or expand
- Work with the Town of Atikokan to support the licensing, construction and operation of a new municipal landfill site.
- Promote tourism in the Atikokan area through sponsorships of community events such as the Atikokan Bass Classic.
- Upon the closure stage, there will be employee transition planning including training and placement support to assist employees in finding other employment in the community or elsewhere in the resource extraction sector.
- Access to nine designated campsites and one tourism establishment area will be restricted in order to comply with noise standards and reduce impacts to human health.
- Implement a policy to restrict hunting/fishing for workers while at camp.

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Aboriginal Interests



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Overview of Aboriginal TSD

Valued Ecosystem Components

- **Aboriginal Community Characteristics VEC**
  - Project-related employment opportunities
  - Project-related expenditures
  - Project-related education and training

Aboriginal Heritage and Culture VEC

- Project-related disturbance of archaeological sites
- Restricted access or disturbance of cultural or spiritual sites

- **Traditional Land Use VECs**
  - Project-related changes to fishing opportunities
  - Project-related changes to hunting, trapping and plant harvesting opportunities
  - Project-related changes to source and safety of country foods

Aboriginal Heritage and Culture

- No Aboriginal artefacts were identified in the archaeological assessment
- Discussions regarding special sites took place to ensure any sites would not be impacted by the Project footprint

Traditional Land Use

- **Approach**
  - Osisko led First Nations study, provided funding for Métis study
  - Followed principles outlined under the CEAA
  - Solicited input from First Nations Chiefs and Elders
  - Academic Review by Professor McPherson of Lakehead University
- **Information Gathering**
  - Individual interviews
  - Elders Forums
  - Community surveys
- **Results**
  - No wild rice harvesting in the Project area
  - Primary land users are trapline holders
  - Reliance on country foods is minimal

Predicted Impacts and Proposed Mitigation

- **Aboriginal Community Characteristics VEC**
  - Positive effects only
  - Need for enhancement to education and training

- **Aboriginal Heritage and Culture VEC**
  - No effects
  - Share construction plans with Métis and First Nations on an ongoing basis

- **Traditional Land Use VECs**
  - Adverse effects to trapline holders
    - Mitigated by financial compensation in agreements
  - Adverse effect to availability of land for traditional activities
    - Effect is low to due to regional use of lands and low reliance on country foods

Follow Up Plan

- Ongoing information sharing throughout all Project phases
- Involvement in fish relocation planning
- Ongoing use of Resource Sharing Committees

- Economic Commitments
  - 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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Cultural Heritage



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CULTURAL HERITAGE

- Stage 1 (desktop) Archaeological Assessment (draft report)
- Property inspection completed in October 2011
- General history of the regional and local study area
- Built Heritage and Cultural Landscape screening

Stage 2 Archaeological Assessment – Completed August 2012:

- Golder archaeological team and Aboriginal assistants
- Test pit survey
- Two historic sites both related to the earlier mine exploration activates.

CULTURAL HERITAGE

Built Heritage and Cultural Landscapes:

- No provincially designated built heritage or cultural landscape within local study area or adjacent properties
- No municipally designated built heritage or cultural landscape within local study area or adjacent properties
- No heritage easements within local study area or adjacent properties
- No national historical sites within local study area or adjacent properties

Sawbill Mine Site:

- Complete a cultural heritage evaluation report for the Sawbill Mine Site.

Gas Engine (circa 1940)



Mine Shaft



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EA Closure Concepts

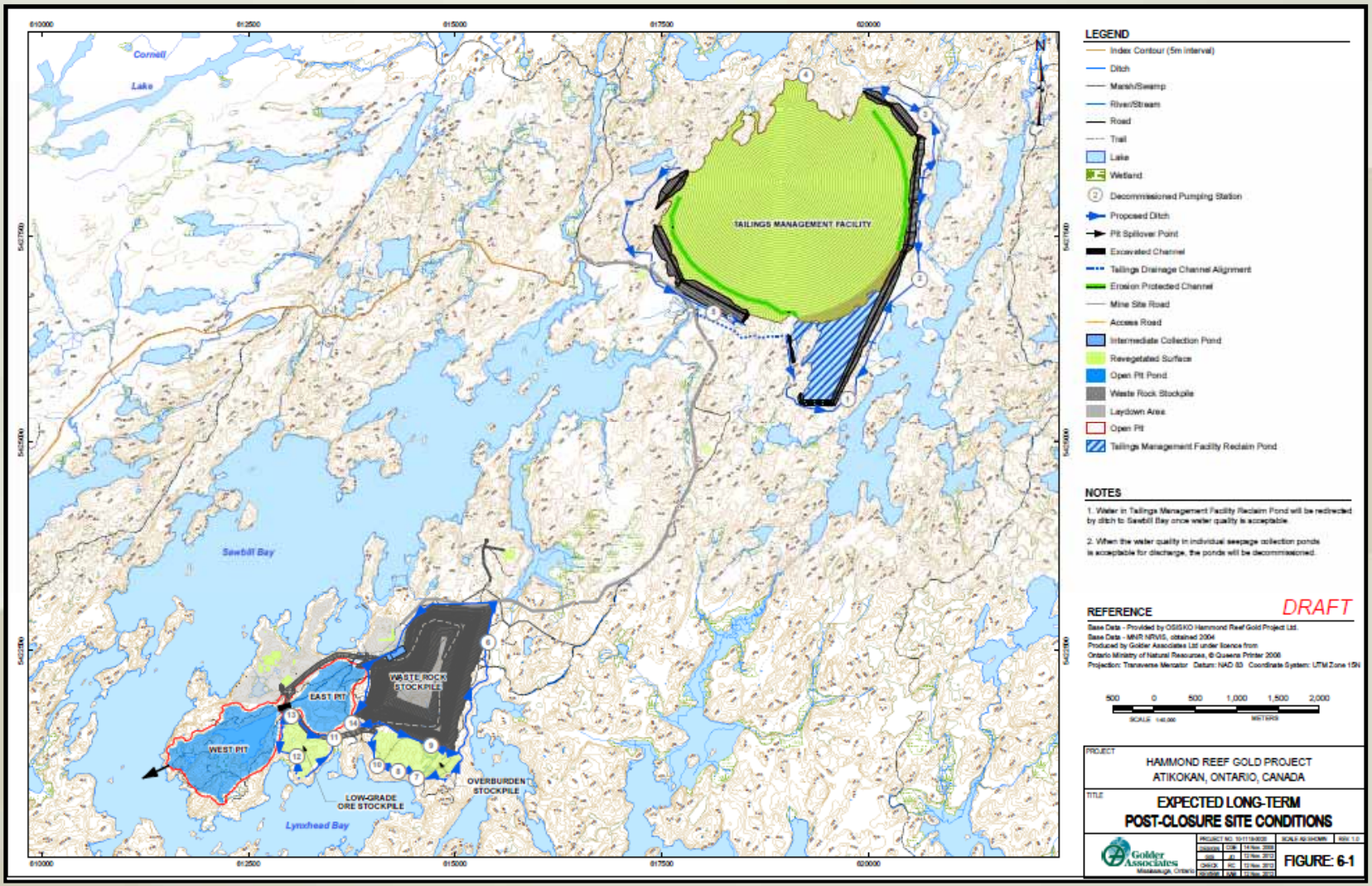


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Overview of Conceptual Closure and Rehabilitation Plan

- **OBJECTIVE**: Restore the Project Site to its former use or an acceptable alternative use, to the extent possible AND to prevent personal injury / property damage that is reasonably foreseeable as a result of closing out the Project.
- Mine closure must follow the Mine Rehabilitation Code of Ontario (O. Reg. 240/00)
- Closure components:
  - Progressive rehabilitation (actions during operations)
  - Rehabilitation measures at closure
  - Post-closure monitoring (physical / chemical stability and biological monitoring)
  - Post-closure maintenance

Expected Site Conditions at Long-term Closure



Closure Concepts

- Progressive Rehab
  - Re-vegetation of tailings surface commencing one year prior to closure
  - Rehabilitation of borrow sites as per Aggregate Resources Act
- Closure:
  - At closure, run-off from all site components will be pumped to the open pit. When the water quality of runoff from each component is shown to be suitable, pumping will cease and it will be allowed to discharge directly to the environment
  - TMF run-off and seepage directed to the Reclaim Pond will initially be pumped to the open pit, followed by discharge to Sawbill Bay when WQ is suitable for direct discharge to environment
  - Open pit flooding largely passive. No attempt to pump fresh water in to accelerate flooding.

Closure Concepts (Cont'd)

- Closure (cont'd)
  - After about 70 to 80 years, the Open Pits will overflow into Marmion Reservoir (near former effluent point).
  - There will be no requirement to treat effluent off the site after closure (except possibly open pit overflow after ~70 years)
  - Flooded open pits not claimed to be aquatic habitat.
  - Direct re-vegetation of TMF and overburden stockpile. (Seeding and fertilizer applied, but no topsoil)
  - No re-vegetation of waste rock stockpile (graded if necessary for physical stability and drainage)
  - Low-grade ore stockpile to be entirely milled prior to closure
  - Buildings / site infrastructure demolished – non-hazardous material placed in a licensed landfill within the TMF

Closure Concepts (Cont'd)

- Post-Closure Monitoring
  - Physical Stability: open pit slopes, waste stockpiles, tailings dams, process plant embankment slopes, and flow conveyance structures remaining at closure
  - Chemical Stability: surface and groundwater (upstream and downstream of site and effluent points of major site components)
  - Biological Monitoring: inspection of re-vegetation areas (twice annually for up to 10 years). Biological monitoring to be coordinated with EA monitoring requirements
  - Post-closure Maintenance
  - Clearing of flow conveyance structures
  - Removing trees from dams
  - Financial Assurance (in the form of irrevocable letter of credit) to cover costs at closure be filed with MNDM.

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Environmental and Social Management Planning



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EVIRONMENTAL MANAGEMENT PLANNING

Conceptual plans

- Monitor the effectiveness of mitigation measures
- Verify the predicted changes to the environment

Detailed plans

- Developed in cooperation with Project stakeholders
  - Aboriginal
  - Public
  - Government
    - Provincial & Federal – identify lead agencies (direction/report review)

Social Management Planning – OHRG/Atikokan Committee

- A local monitoring committee will be established to facilitate ongoing communications with the public and ensure the long term well being of the Town of Atikokan is represented.

- OHRG/Atikokan Committee will work to develop measures that contribute to the quality of life of the local populations.

- OHRG will continue to provide **community sponsorships and support** throughout the Project phases through a long term beneficiary fund administered by the OHRG/Atikokan Committee.

- The general criteria for selection of projects supported by the OHRG/Atikokan Committee will be their capacity to improve the cultural, social, physical, educational and environmental components of life for as many Atikokan residents as possible.

Social Management Planning – Monitoring Program

- Social indicators will be identified and confirmed through ongoing consultation.

- These indicators will be included in a detailed social management plan and will be based on measurements that can be compared over time with those presented in Chapter 3 Baseline Conditions.

- Social monitoring plans will be developed in cooperation with the OHRG/Atikokan Committee and Aboriginal Committees established as the Project planning process moves forward.

Monitoring will facilitate the adaptive management of socio-economic effects.

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Economic & Social Benefits



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BENEFITS OF THE PROJECT

The Project is anticipated to provide substantial economic benefits to local community members through direct employment.

Estimated wages and salaries:

- Total:$2 billion.
- Local: $332 million

The total combined estimated wages and salaries paid to Aboriginal community members for the construction and operations phases are $124 million.

BENEFITS OF THE PROJECT

The Project is anticipated to provide substantial economic contributions through provincial and federal revenues from personal income taxes.

Estimated income and payroll tax revenues are provided for the construction and the operations phase.

- Total: $490 million
- Provincial: $175.7 million
- Federal: $315.1 in federal taxes.

Taxes considered include those paid by direct labour and by spin-off employment, either indirect or induced.

BENEFITS OF THE PROJECT

The Project is anticipated to provide substantial long term social benefits through workforce training.

Enhancement of existing skills
Opportunities to develop new skills

Workforce training will occur through a number of pathways including:

- On-job and on-site training programs carried out by OHRG as part of daily operations
- Focussed off-site training for specific jobs and tasks
- Community-based training directed towards obtaining employment by OHRG or its suppliers

5 – Draft EIS-EA Report Comments

Ministry of Natural Resources

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
MINISTRY OF NATURAL RESOURCES
AUGUST 21, 2013 – 10:00 AM – 4:00PM
OSISKO MAIN STREET OFFICE

Attendees:

Osisko: Alix Drapack, Bud Dickson, Adam Johnson, Cathryn Moffett

Golder Associates: Ken DeVos, Erin Greenaway, Teleconference: Adam Auckland
Ministry of Natural Resources: Twila Smitsnuk, Sheldon Haw, Rachel Hill, Barb Elliot, Andrea Ellis-Nsiah, Matt Myers, Brian Jackson

Ministry of Environment: Amy Godwin, Teleconference: Alissa Sugar , Michelle Whitmore

Canadian Environmental Assessment Agency: Teleconference: Amy Lui

MEETING PURPOSE

The purpose of the meeting was to provide responses to the comments received from the Ministry of Natural Resources on the Draft EIS/EA Report and to get feedback on the responses.

POWER POINT PRESENTATION (ATTACHED).

1. ALTERNATIVES ASSESSMENT

Rachel – The alternatives assessment is an overlapping area for three agencies: MOE, CEAA, MNR. We will provide a response back to Osisko at a later date. This topic needs more discussion. More work should be done on the alternatives assessment, especially with regard to the two big components that were left out.

Alix – We understand that the onsite accommodation camp is a change from the Terms of Reference, but the fibre optic line shouldn't be considered a "big component". It is on the same poles as the transmission line.

Rachel – You've described the fibre optic line as "above and beyond the Terms of Reference" in your September 2012 letter.

Matt – We understand that the purpose of this meeting is to digest Osisko's responses before moving forward?

Alix – Yes. But it would also be good to get clarity from the regulators. For example, we need to understand why the fibre optic line is a concern.

Barb – We want to work towards solutions, but we need to understand each other's point of view. We may need to have more discussion on key topics at a later date.

Ken – Osisko is here to provide clarity on the questions and comments provided by MNR, but clarification should go both ways. Osisko also needs some clarity on why MNR thinks the fibre optics line would need any further assessment. We are hoping that this discussion will help Osisko and Golder focus our efforts.

Rachel – We disagree that regulators were consulted about alternatives. MNR wasn't at all the meetings and there weren't any meetings whose sole purpose was to discuss alternatives. The statement in the report is misleading because MNR did not select the alternatives.

Alix – The response clarifies exactly which regulators were consulted about alternatives and on which date.

TAILINGS PIPELINE

Rachel – In the errata letter to the Terms of Reference Osisko committed to having regulatory agencies review alternatives. The EIS/EA Report did not provided the reasoning you have given in the comment response as to why tailings pipeline alternatives weren't assessed further.

Ken – You are right that the EIS/EA Report doesn't include a description of everything. We can't capture everything. If MNR requires more detail about a specific topic, it can be added.

Barb – We are representing the people of Ontario. There seems to be some resistance to meeting our requests. We have a process to follow and we are looking for mutual respect.

Cathryn – We are not resisting your requests. We have spent the past five months answering your comments and incorporating them into the EIS/EA Report. We are here to keep things moving forward and understand if our responses are satisfactory to you.

ACCOMMODATION CAMP

Ken – Is the location of the camp on the site a concern? Or the fact that it is on site instead of the original plan to keep it off site?

Rachel – Further detail about the camp alternatives needs to be provided in the EIS/EA Report. Osisko also needs to address the Land Use Guideline for Marmion that requires a 120m buffer from the shore for all infrastructure.

Alix – The current plan includes a setback of 30m. We can clarify the planned setback for the accommodation camp.

Rachel – The Land Use Guideline for Marmion isn't considered fully in the EIS/EA Report. We also feel that Osisko is reaching the conclusion that there won't be any effects much quicker than they should. The EA should be a decision tool. The public needs to understand and be able to comment.

Ken – There might be disagreements, but we will all put forward our positions and a decision will be made whether the Project should go forward.

SITE LAYOUT

Rachel – Further detail on alternatives for the site layout should be provided in the EIS/EA Report.

Alix – We can add the alternative of constructing a 25m retaining wall that was ruled out because of safety. The 0.8ha of shoreline impacts are the selected alternative and are included in the fish habitat compensation plan.

ROADS AND MOU

Rachel – Are you saying that there will be another consultation period during MOU development? We need to know where the roads are going to be.

Cathryn – We are saying that we plan ongoing discussions with government. We are not planning a formal consultation period.

Ken – Aggregates would be done under a separate Act. Osisko can't be expected to do a detailed design of the onsite roads years before the mine is constructed.

Matt – Is there value in discussing some of the principles that would be included in the MOU?

- Maintenance
- Responsibilities

- Scheduling
- Closure of Road

CAMPSITES

Matt – Osisko should provide a map that identifies which campsites will have signs posted for noise.

AGGREGATES

Rachel – Should include the table that was provided in the response directly in the EIS/EA Report.

2. PROJECT DESCRIPTION

MITTA LAKE

Rachel – Need more detail on the draining of Mitta Lake

Alix – We need to consult with First Nations on this point. We didn't want to publish the plan before speaking to the First Nations and getting their input. We can provide some high level aspects of the plan in the EIS/EA Report.

COMMUINICATIONS TOWER/WEATHER STATION

Sheldon – Add locations of current infrastructure onto the map.

METHODS

Michelle – Osisko needs to talk about advantages and disadvantages of the Project.

Cathryn – The alternatives assessment provides a discussion of advantages and disadvantages. Section 11 outlines the benefits of the Project, which are mainly socio-economic.

MONITORING

Michelle – Basic minimums about what will be monitored need to be included in the EA

Brian – Some clarity is required on what is monitored and what is measured. It doesn't always match up or carry through.

Matt – We should have a separate meeting on monitoring.

3. CONCLUSIONS

Rachel –Osisko should clearly state that there will be a change to the environment due to the Project. You can't possibly not have any environmental effects. The landscape will change. You should be upfront.

Brian – Osisko's conclusions that no significant effects will occur is harming your credibility. The conclusions should list the permanent/long term changes to the landscape that will result if the Project is constructed.

Alix – We can consider adding this information to the conclusions. We will add the visual assessment results to the conclusions.

Rachel – You are missing the social effects assessments. The Town is going to lose a fishery. You aren't considering the effects of 1,200 people living at camp.

Brian – What I don't see is a clear picture of what the effects are in the conclusions.

Cathryn – We can provide more of a clear summary of effects in the conclusions.

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4. TERRESTRIAL

BASELINE

Rachel - A sentence should be added to state that baseline studies were undertaken in a disturbed condition.

Brian – The person that reviewed terrestrial had difficulty finding things. Some of the conclusions in the EIS/EA Report pop out of nowhere and can't be traced back or understood unless the TSD has also been reviewed.

METHODS

Brian – Ensure that effects link back to monitoring. Ex. Snapping turtles – effect from road mortality cannot be measured by availability of habitat.

VECS

Brian – Salamander could be a better VEC to measure water quality than snapping turtle.

Erin – Water quality pathway is considered through other VECs.

STUDY AREA

Brian – WMU 12B is very big for an RSA. It would never show an impact to wildlife no matter what the Project. I am struggling with the RSA.

Erin – The assessment was largely based on the LSA. Do you think that a different conclusion would be reached if a different RSA was selected?

Brian – No, just need more explanation as to why it was chosen.

5. SPECIES AT RISK

BEAR

Brian – Include description as to why bear weren't considered as a VEC.

CARIBOU

Brian – Include the fact that an individual caribou was recorded in the region once.

HABITAT LOSS

Brian – We would like to see further predictions on what type of vegetation will be growing in the different areas. What are the medium term ecosites? Clarify that some VECs will lose their habitat.

6. WATER QUALITY

TAILINGS MANAGEMENT FACILITY

Brian – I found it very difficult to find information about the TMF. What is the water quality? What is the size? What does it look like? How did you come up with the conclusion that there is no risk?

There is a disconnect between some statements. For example, the report claims that the water quality is great, yet for some reason no fish or wildlife will live there.

MNR is more concerned about closure than operations. The operations phase is short. Was a risk assessment conducted for the closure phase?

Has thiocyanate been evaluated?

Ken – Total cyanide includes free cyanide and cyanide which is bound to other compounds, such as thiocyanate. Organic cyanide could remain in solution a bit longer than free cyanide, but it will cycle through the natural cyanide destruction process.

WATER LEVELS

Brian – The 2010 information that was provided did not meet our expectations. The other water users aren't comfortable with the idea that they will have to manage their operations around low flows. A 5cm change in water levels may be low in the overall scheme of water changes, but it is a big amount at some times of the year. For example, in May a 5cm change could result in 5 days of the sluiceway not being open.

7. AQUATIC ENVIRONMENT

AQUATIC HABITAT LOSS

Brian – The loss of API 37 may not be settled completely. Discussions with Brian Hindley may or may not be captured in the EIS/EA Report.

PIT LAKES

Brian – Power companies would be happy if Osisko would take water from the reservoir when the levels are high.

Alix – This is something we may be willing to consider, however we do not want to begin an assessment of new potential effects at this point in the planning process.

Rachel – We want to see a commitment to work together during the closure phase to use water in a way that benefits the public.

Brian – Osisko should create fish habitat in the pits. It could be a major benefit.

Ken – Safety and closure requirements may not allow the public to go fishing in the pits.

8. SOCIO-ECONOMICS

Rachel - Why isn't quality of life considered for all communities? Is it only considered for Aboriginal communities?

Alix – We will follow up on this question.

FISHING

Brian - The indicators you have listed cannot measure changes to Marmion. We have information that could be used. For example, we have data on fishing estimates for recent years. A site specific count of fishing boats on the lake should be done. We have done aerial surveys in the past.

Ken – This has historically been MNR's responsibility. It may not become Osisko's responsibility just because they are proposing to build a mine in the area.

Rachel – You have emphasized the importance of the recreational fishery more clearly in the closure plan than in the EA.

Brian – The fishing activity could actually decrease due to mining activities. Some more detailed consideration of potential effects and specifically monitoring of fishing activities should be considered. A better description of baseline fishing activities should be included. MNR has information that can be used.

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HUNTING

Brian – Clarify that restricting hunting means no hunting at all. No firearms at all would be permitted.

TOURISM

Rachel – More description of existing tourism is required.

Twila – Agreements with operators should be clarified; these would minimize effects. If Osisko is not able to disclose the details or parties to the agreements, then you should at least state that discussions are underway.

9. CLOSURE

Clarify that the term "Borrow Pits" is no longer used, the correct term is "aggregate".

WETLANDS

Brian – Osisko could potentially create a huge wetland in the area of the TMF at closure. MNR would prefer that a wetland be created if it is feasible to engineer. Is there an intent to keep the pond shallow?

Ken – The depth of the TMF will be determined at the detailed design stage.

Barb – Who is responsible for the dams after closure?

Alix – Osisko is responsible for the tailings dams in the long term.

WATER QUALITY

Need a call to discuss further with Amy Godwin.

RE-VEGETATION

Brian – Our idea of restoration is not the same as what you are describing. The word "restore" implies that the site will be as close to the original environment as before, but this is not the case.

Ken – We are using the word as it is defined in the Mining Act.

Rachel – There should be a section in the report that speaks specifically to restoration. We would like to see some information about what areas will be re-seeded, mulched, etc. We care about habitats, not just chemical and physical stability.

Brian – If all you are going to do is make it green, then you can't claim that the site is going to be restored. MNR is worried about the long term.

10. NEXT STEPS

Further discussion regarding monitoring required at a separate meeting

MNR would like to provide comments on alternatives and expectations for revised report.

Rachel would like to discuss further the remaining comments that weren't mentioned today.

Sheldon – Comment 174 was requesting that figure extend to include WMU12a and WMU12b

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NOTES BY SLIDE

Additional actions or notes as indicated by slide are provided below (to be read in conjunction with the attached slides):

Alternatives

Slide 7 – Pre-Screening – MNR to review and respond with MNR, MOE, CEAA.

MNR wants more time for discussion.

Action – Rachel will talk with Amy at a later date.

Slide 8 - Consultation

MNR feel that the report indicates the government were involved in the identification of alternatives and theydo not want the report to be misleading. Theconsultation with the GRT was focused on Mine Waste and MNR was not present at meetings related to alternatives.

Slide 9 – Access Road – update number of crossings for EA.

Slide 10 – Tailings Pipeline - describe and add some discussion in EA

Slide 11 – Transmission Line – add summary to alternative discussion

Slide 12 – Fibre Optic Line – add discussion in EA as per slide

Slide 13 – Accommodation Camp

Add discussion in EA of how the site was determined

Land use buffer? / Guideline – 120 m in guideline. Clarify with respect to accommodation camp

“Other Alternatives” , i.e. Combination of on-site and off-site.

1) On site
2) In town
3) Combination of both

Reference “Crown Land Use Atlas Policy”

Osisko: The combination is the preferred alternative but

Slide 14 – Solid Waste Management – no comments

Slide 15 – Site Layout – additional discussion required on the need to fill in 0.8 ha (for example: add that a 25 m high retaining wall was required and was considered but was ruled out due to frequent blasts).

Project Description

Slide 17 – Access Roads – Road use is an important issue for MNR

Clarify that an MOU cannot be completed until there is more clarity which will be provided as part of detailed design. However MNR recommends a bit more explanation relative to MOU and typical components (e.g. ”It is our intention to develop MOU etc,,, ”) be provided in the revised report.

Slide 18 – Site Access Restrictions – Response is fine, OK to post signs regarding noise at camp sites.

Slide 19 – Accommodation Camp – Discharge location will be moved and location will be proposed in revised report.

Slide 21 – Aggregate – Need to include “table from IR response” in revised EIS/EA report

Slide 22 – Fire Protection – provide information in EA report

Slide 23 – General/Infrastructure – Add the existing communication tower and weather station to figures.

Slide 24 – Land Use – No additional comment provided.

Slide 25 – Mitta Lake - Add detail on Mitta Lake drainage is requested. (Basics of drainage plan would be fine)

Environmental Assessment

Slide 27 – Methods – OK, they will get back to us if there is something specific

Slide 28 – Study Areas – OK, they will get back to us if there is something specific

Slide 29 – Study Areas – Explain better in the EA why the two communities are not included.

Slide 30 - Monitoring – Will include additional information, perhaps a follow-up discussion

Slide 31 - Conclusions – Rachel: perhaps acknowledge permanent “aesthetic” impact and provide balance of results and conclusions that acknowledge permanent changes.

1) List “permanent aesthetic alterations”
2) Acknowledge Fisheries pressure
3) Add clarity in Conclusion and Executive Summary of EA definition of “negligible” vs. “permanent changes”.

Water Quality (WQ)

Slide 33 – Study Areas – OK

Slide 34 – Effluent Discharge – a bit more clarification in EA requested

Slide 34 & 35 – Effluent Discharge & TMF Reclaim Pond – Cyanide / Thlocyanide

Information sheet would be useful

Provide better clarify on WQ and WQ implications in EIS/EA with respect to aquatics in tailing reclaim pond.

Hydrology

Slide 37 & 38 – Water Levels – If the mine had been in place in 2010, what would the potential impact have been?

Need follow-up with Brian and power producers - During draught periods 5 cm on a range of 20 cm is considered significant

Slide 40 – Baseline – comment, should note that there was some disturbance in existing baseline due to exploration

Slide 41 – Winter – Terrestrial Review SAR - Clear up where uncertainty is

Slide 42 – Methods – link appropriately with monitoring / mortality

Slide 44 - Indicators – "make sure habitat exists and measure habitat"

Slide 45 - VECs – Brian to look at pathway and comment if missing amphibians is relevant

Slide 46 – Study Areas – air quality is fine

Think "regional study area" is too big, however, does not have information to provide on a finer scale soslide is fine

Slide 47 – Project Phases – Explained

Slide 48 & 49 – Bats & Breeding Birds – will update EA based on additional bat survey results.

Slide 50 & 51 – Turtles and Other Species at Risk – MNR to respond

Relationship of comment to EA vs. permitting requested (i.e. is the comment more applicable to permitting?)

Slide 52 – Black Bears – add discussion to EA as per slide

Slide 53 – Woodland Caribou – add discussion to EA as per slide; one caribou has been seen however…

Slide 54 – Other Species – add note as per slide on regionally significant application

Slide 55 – Ecosites / Habitat Loss – some discussion of land types (e.g. what ecotype, what has changed, what VECs will change)

Slide 56 – Contaminated Waterbodies – Water Quality / ERA

Need to assume animals may frequent and feed at location; primarily at closure

Slide 57 – Accommodation Camp – include response in camp discussion of EA

Slide 58 - Monitoring – response OK

Aquatic Environment

Slide 60 – Habitat Loss – API, API37 – still some concern

Slide 62 – Pit Lake – wording to work with Government, commitment in decommissioning to consult

Slide 63 - Compensation – OK

Slide 64 – Fishless Lakes – OK

Socio-Economic

Slide 66 – Study Areas – OK

Slide 67 - VECs – what about Atikokan – Cathryn to review.

Slide 68 & 69 - Fishing – Fishing Pressure (request to monitor fishing pressure)

Aquatic effects monitoring programs (i.e. direct counts in fishing? Aerial effort survey, Boat counts)

If it is a policy it needs to be enforced and documented how Osisko will do this.

Slide 70 - Hunting – clarify ("No weapons") on site

Slide 71 - Tourism – Osisko is working with the operators on the lake and negotiating appropriate agreements

Cumulative Effects

Slide 73 – Other Projects – revision happening

Slide 74 – Aquatic Life – add statement as per slide

Slide 75 – Forestry – No Comments

Closure

Slide 77 - Alternatives – will provide memo on closure alternatives

Slide 78 – Consultation – covered

Slide 79 – Aggregates – use the word "Aggregate" – not "borrow"

Slide 80 – Accommodation Camp – No Comments.

Slide 81 – Solid Waste Landfill – No Comments.

Slide 82 – Water Management – No Comments.

Slide 83 – Wetlands – Question - can we slope tailings to increase wetlands?

Slide 84 – TMF – No Comments.

Slides 87 - 93 - Need to clearly define "restoring" to MNDM standards, in Executive Summary, not back to pre-development conditions. Provide summary of areas including permanent changes or uses

Presentation Overview

- OHRG Permitting Status
- Overview of Information Requests (IRs) received
- Organization of IRs by Response Type and Topic/Sub-topic
- Review of "Key" IRs by Topic/Sub-topic
  - Alternatives
  - Project Description
  - Environmental Assessment
  - Water Quality
  - Hydrology
  - Aquatic Environment
  - Terrestrial Ecology
  - Socio-Economic
  - Cumulative Effects
  - Closure

Permitting Status Update

- EIS Guidelines published December 2011
- Terms of Reference approved July 2012
- Draft EIS/EA Report published February 2013
- Agencies reviewed the Draft EIS/EA Report and provided comments
  - Responses are currently in preparation or submitted as draft for review/discussion
- Since the EA was submitted, NNLP/Habitat Offset Plan has been advanced in consultation with DFO and MNR
  - DFO has accepted the NNLP/Habitat Offset Plan in principle

Summary of MNR Information Requests

- 291 individual IRs received
  - Numbered 1 through 294 (i.e., MNR-1 to MNR-294)
  - 9 IRs were "missing"
    - 36, 43, 50, 57, 72, 74, 75, 228 and 230
  - 6 IRs had two parts (i.e, MNR-70 and MNR-70b)
    - 70, 71, 141, 148, 162, 219

- 294 – 9 "Missing" + 6 "Part b" = <u>291 total</u>

- Draft responses were prepared and issued to MNR on Aug. 7, 2013

- Responses were organized by Topic/Subtopic and response type for discussion at today's meeting

Organization of IRs Responses for Discussion

- 119 responses identified as “easy” and were not considered to require discussion at this time
  - Suggestions/comments accepted and revisions made (39 total)
    - 2, 9, 19, 20, 21, 25, 28, 29, 30, 31, 35, 44, 54, 59, 60, 61, 89, 99, 103, 105, 119, 123, 124, 125, 137, 138, 141b, 142, 169, 172, 175, 198, 199, 207, 215, 218, 219b, 262, 290
  - Clarification or information provided to reviewer (46 total)
    - 14, 19, 24, 27, 33, 46, 62, 63, 88, 90, 93, 96, 100, 120, 132, 143, 147, 149, 154, 155,157, 158, 159, 160, 161, 162a, 164, 167, 168, 173, 176 ,181, 188, 189, 190, 200, 212, 216, 217, 219a, 220, 221, 226, 227, 247, 248
  - Figure revisions made (20 total)
    - 32, 37, 38, 39, 40, 41, 45, 47, 52, 109, 112, 150, 162b, 170, 171, 186, 187, 195, 203, 104
  - Location of requested information in EA documents provided (13 total)
    - 17, 18, 23, 84, 145, 165, 166, 191, 197, 208, 210, 214, 256
  - Suggestion (1)
    - 225
- One comment (174), it was unclear what the reviewer was asking

Organization of IRs Responses for Discussion

- 171 remaining IRs and responses were organized and summarized by topic and sub-topic for discussion

- Although some may be categorized under multiple topics, a general breakdown of the number of IRs per topic is as follows:
  - Alternatives (17)
  - Project Description (18)
  - Environmental Assessment (12)
  - Water Quality (4)
  - Hydrology (4)
  - Terrestrial Ecology (43)
  - Aquatic Environment (17)
  - Socio-Economic (14)
  - Cumulative Effects (3)
  - Closure (40)

Alternatives

Sub-topics

- Pre-screening
- Consultation
- Access Road
- Tailing Pipeline
- Transmission Line
- Fibre Optic Line
- Accommodation Camp
- Solid Waste Management
- Site Layout

Alternatives

Pre-Screening

- **Summary of Comments (71b, 73)**
  - "Step 1 – List all potentially available alternatives" was not done
  - Report needs to list all alternatives together, and describe how they were pre-screened and how the conclusions were reached
  - A more detailed description is required for components where a single feasible alternative was identified
- **Summary of Responses**
  - All potentially available alternatives are listed in two areas
    - Project components with more than one feasible alternative are listed in Table 3-1 of the alternatives assessment and were assessed
    - Those with only a single feasible alternative are described in Section 3.1
  - Pre-screening was completed at the ToR stage and is provided in Section 5.3 of the ToR. A reference to the ToR should be considered sufficient.
  - Some alternatives were identified through subsequent advancement of the project

Alternatives

Consultation

- **Summary of Comment (69)**
  - It is not felt that alternatives were selected with input from regulatory agencies
  - Agencies comments on alternatives were provided during the review of the ToR.
- **Summary of Response**
  - OHRG actively engaged regulatory agencies throughout the Project planning process.
    - Including regular meetings with MNDM, EAB and CEAA
  - Consultation details provided in Chapter 7 of EIS and associated appendices
  - Meetings with regulatory agencies were held on Mar. 9, 2011, May 31, 2012, Jan. 8, 2013 and Jan. 25, 2013 to specifically discuss alternatives

Alternatives

Access Road

- **Summary of Comments (66, 67, 83)**
  - More detail required on road construction and water management
  - The assessment should be redone because an incorrect number of water crossings were noted for the alternatives considered (3 for each).
- **Summary of Responses**
  - Details regarding access road water management and construction will be provided at detailed design phase
  - Number of crossings has been revised to 14 on Hardtack/Sawbill and 7 on Raft Lake Rd
  - Selection was mainly based on extensive upgrading required on the Raft Lake Rd
    - Raft Lake Road requires widening, realignment of sections, new road sections and water crossings
    - Hardtack/Sawbill road requires only widening. All water crossing are existing.
  - Total number of crossing won't change result of assessment

Alternatives

Tailings Pipeline

- **Summary of Comments (13, 79, 81 82)**
  - ToR did not screen potential alternatives
  - Needs to be an assessment of alternative pipeline alignments
  - Details on the design not provided
- **Summary of Responses**
  - Selection of pipeline alignment is directly linked to selected TMF location
    - Shortest distance between the processing plant and TMF location without interfering with mine infrastructure
    - Follow upgraded mine site road and avoid fish habitat to extent possible
    - No other alternatives were assessed
  - Pipeline will be constructed above ground with drainage points and spill containment areas located at topographical lows
  - Pipeline will be protected on either side by berms that would direct any potential spillage to constructed containment areas

Alternatives

Transmission Line

- **Summary of Comments (70a, 81, 240)**
  - Alternative of submerged (i.e. underwater) cable not considered which has the potential to mitigate impacts to birds, views
  - What is included in the transmission line (i.e, does it include the auxiliary power line and fibre optic line)?
- **Summary of Responses**
  - Underwater construction was not considered a feasible alternative due to technical, cost and environmental concerns
  - The 10 km auxiliary line is considered part of the transmission line.
    - Required to connect transmission line to provincial electricity grid;
    - The only available alternative is to source power from the Atikokan Generating station and align auxiliary line adjacent to Hwy 622
  - Fibre optic line does not supply power and is considered to be an “Office and Support Facility”

Alternatives

Fibre Optic Line

- **Summary of Comments (22, 70b, 71a, 76, 78)**
  - Fibre optic line was not included in pre-screening assessment and alternatives were not presented
  - More clarity is required on this component
- **Summary of Responses**
  - Fibre optic line was added after the ToR stage
  - Selected alignment follows the auxiliary transmission line and then uses the same corridor and support structures as the selected transmission line
    - Does not result in additional biophysical impact and material and installation costs are minimized
    - No other alternatives were assessed

Alternatives

Accommodation Camp

- **Summary of Comments (22, 70b, 71a, 76, 78)**
  - Accommodation camp was not included in pre-screening assessment
  - Too few alternatives presented (i.e., restricted to on-site and off-site)
    - Alternative locations, sizes and combinations of on/off site should be included
  - More clarity is required on this component
- **Summary of Responses**
  - On-site camp alternative was added after the ToR stage
  - Location selected because existing camp is sited there
    - Close to road and site is already cleared (reduced terrestrial impact)
  - Combination of on-site and off-site selected as compromise with the town
  - The Town of Atikokan prefers that workers be housed in town
  - OHRG has committed to providing logistical means and incentives for workers to stay in town

Alternatives

Solid Waste Management

- **Summary of Comment (76)**
  - No alternatives presented for waste management
  - Several references are made to a landfill on-site within TMF. Where is it?
- **Summary of Response**
  - Off-site disposal was identified in the ToR as the only available alternative for management of solid waste during operations
  - At closure, solid waste generated from the decommissioning phase will be disposed of in an on-site solid waste facility within the TMF
  - The closure facility will be sited prior to closure and operated and closed according to the license obtained.

Alternatives

Site Layout

- **Summary of Comments (241, 273)**
  - Were alternatives not considered for the location of mine buildings that prevented impacts to Sawbill Bay, including infilling of 0.8 ha and other shoreline impacts
- **Summary of Responses**
  - The infrastructure locations were selected to minimize footprint area and be located close to the pit/processing plant
  - The option of building a ~25 m high retaining wall was considered as an alternative to in-filling within the drawdown zone in Sawbill Bay
    - Deemed less desirable due to the close proximity to the pits and frequency of vibrations due to blasting
  - The proposed filling is in an area of seasonal fish habitat and has been included in the NNLP / Habitat Offset Plan

Project Description

Sub-topics

- Access Roads
- Access Restrictions
- Accommodation Camp
- Aggregate
- Fire Protection
- General/Infrastructure
- Land Use
- Mitta Lake

Project Description

Access Roads

- **Summary of Comments (80, 95)**
  - Road use management strategy is not included
  - ToR committed that an MOU would be developed during the EA
  - Will road use post-closure be included in the MOU?
  - The EA needs to address all planned roads (i.e., to aggregate sources, service roads, etc.)
- **Summary of Responses**
  - The Hardtack/Sawbill road is the property of MNR and will be improved and used by OHRG under an MOU. However, the project has not reached this level of detail.
  - The MOU will be developed in consultation with MNR, the public and other interested stakeholders and will include a road use management strategy and mitigation measures for safe road use.
  - OHRG will continue to use the road after closure for monitoring and maintenance
  - Secondary access roads (i.e., to aggregate sources, service roads, etc.) will be designed during the detailed design phase

Project Description

Site Access Restrictions

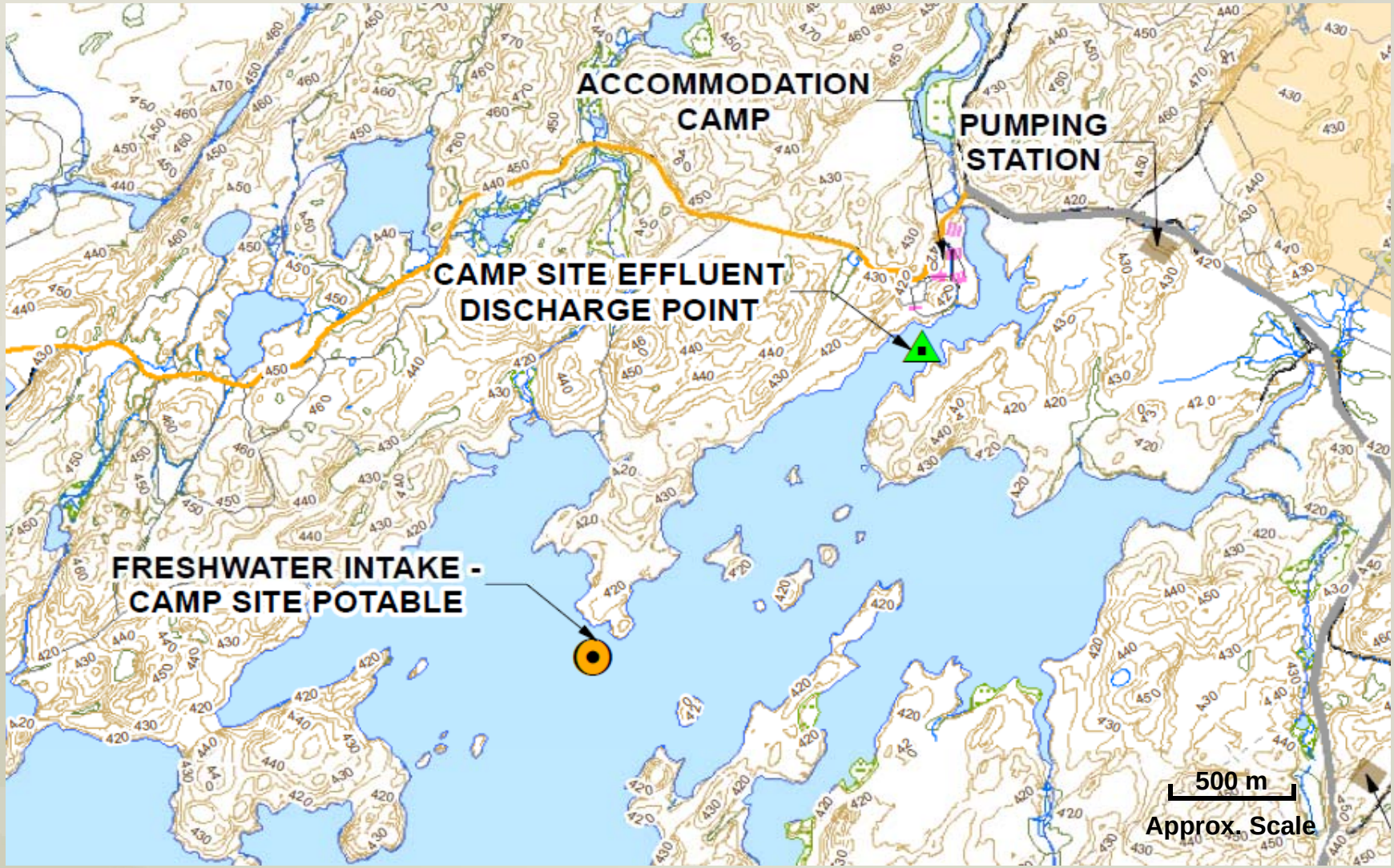
- **Summary of Comment (42)**
  - The EA states that there will be restrictions to access of lands associated with the project. A description and a figure showing these lands is required
  - Aboriginal Community and public need to be aware of lands that will have access restrictions
- **Summary of Response**
  - OHRG had understood that the camp sites to which access restrictions were proposed were ‘designated’ and/or part of a commercial operation
  - OHRG now understands that these locations are merely ‘suggested’ camping areas and are no longer considered ‘points of reception’
  - Mitigation measure to restrict access is no longer required and will be removed from the EIS documents
  - Signs will be posted to advise potential campers of elevated noise levels.
  - Access to the peninsula and area immediately adjacent to the mining operations will be controlled for safety reasons

Project Description

Accommodation Camp

- **Summary of Comments (65, 68, 70a, 249)**
  - How will the camp be powered (i.e., electricity, diesel generators or other)?
  - Proposed camp expansion is in the direction of known spawning habitat.
  - Effluent discharge located in critical walleye spawning and nursery habitat.
- **Summary of Responses**
  - The camp is located within the Mine Study Area (MSA) which includes a utility corridor.
  - OHRG must have the flexibility to supply power as required within the MSA.
  - Specifics of the distribution system will be developed during detailed design.
  - Camp location is outside the normal high water level in Sawbill Bay. A surface water drainage system will be constructed and runoff will be treated or pumped to the TMF.
  - Although no impacts are predicted, the discharge location will be reviewed as part of detailed design and may be relocated to an area where there is no perceived influence on fish habitat (Where?)

Project Description



Project Description

Aggregate

- **Summary of Comments (12, 26, 106, 111)**
  - It is a requirement of the EA to identify aggregate sites which are potential or known sites or where aggregate can be purchased
  - A description of aggregate plans is required.
  - Authorization under the Aggregate Resources Act (ARA) is required to extract aggregate from Crown land
- **Summary of Responses**
  - OHRG currently holds three aggregate permits in the vicinity of the project. These would remain in use
  - Other prospective sources have been identified and, in due course, applications will be filed for additional permits in full compliance with the ARA
  - Pits will be managed and rehabilitated as required by the ARA
  - OHRG may also choose to purchase aggregate from commercial sources or crush waste rock (if deemed geochemically acceptable)

Project Description

Fire Protection

- **Summary of Comments (121, 122, 126)**
  - Project site is outside jurisdiction of the Atikokan and Niobe Fire Departments
  - Fire protection agreements must be in place with municipal leaders
  - Confirm if infrastructure will include appropriate buffers to comply with the Forest Fire Prevention Act (FFPA)
- **Summary of Responses**
  - OHRG intends to develop a fire response agreement in discussion with municipal service providers as part of the Atikokan/OHRG Committee.
  - OHRG will maintain the capability to respond to fires near the Project
    - Maintain pumping capacity and fire-fighting equipment in working order
    - Develop and implement procedures to minimize the potential for fires
  - All site infrastructure will be designed with appropriate buffesr as required by the FFPA

Project Description

General/Infrastructure

- **Summary of Comments (11, 110, 141a)**
  - Locations of water supply pipeline, communications tower and weather station not provided
  - Description of how tailings get from plant to TMF is required. What is the purpose of the pumping stations? What is the design?
  - What is the purpose of the emulsion plant? Why is it so far away?
- **Summary of Responses**
  - The locations of water supply pipeline, communications tower and weather station will be determined during final engineering design.
  - Tailings will be pumped from the processing plant to the TMF. Booster pumping stations are required to provide the head needed to transport the tailings the full length of the pipeline.
  - Detailed layout and design of the tailings pipeline will be provided in the detailed design phase
  - The emulsion plant is where blasting agents are prepared. It is located away from the main site for safety reasons.

Project Description

Land Use

- **Summary of Comment (128)**
  - The MNR will not be issuing land tenure under a License of Occupation
- **Summary of Response**
  - All facilities, with the exception of the transmission line right-of-way, are located on lands that OHRG holds mineral claims. These lands will be administered under the Mining Act.

Project Description

Mitta Lake

- **Summary of Comment (64)**
  - More detailed description of the plans for Mitta Lake is required
- **Summary of Response**
  - Water will be drained to Marmion Reservoir
  - Fish habitat compensation has been included in the NNLP / Habitat Offset plan
  - Detailed planning and logistics for draining Mitta Lake will take place after EA approval and will incorporate consultation with aboriginal communities
  - A fish salvage and relocation plan has been be developed and will be implemented

Environmental Assessment

Sub-topics

- Methods
- Study Areas
- Monitoring
- Conclusions

Environmental Assessment

Methods

- **Summary of Comments (55, 56, 115)**
  - How can a project effect be judged as positive (and not assessed further) without consultation? Why does Section 11 only describe economics and not other positive effects deemed to require no further evaluation.
  - How was it determined that some project activities would not interact with the environment (and not assessed further)?
  - What are the indicators used to measure magnitude?
- **Summary of Responses**
  - The purpose of an EA is to identify and evaluate potential negative effects and determine appropriate mitigation measures, not to evaluate positive effects.
  - All positive effects are included in Section 11
  - Not every project component interacts with every environmental component (e.g., draining of Mitta Lake does not interact with soils).
  - The magnitude of expected impacts was determined in consideration of the overall project within the context and setting of the local and regional study area

Environmental Assessment

Study Areas

- **Summary of Comment (10)**
  - The Mine Study Area (MSA) and Linear Study Area (LISA) should include a wider area around the components.
  - Why does the road from the TMF to the Mine include a buffer but the access road and power supply corridor do not?
- **Summary of Response**
  - Both the mine site road and access road include buffer areas.
  - The mine site road buffer area is larger because the route has not been developed to the same level of detail as the access road
  - The width of the LISA varies depending on the environmental component being considered (e.g., the aquatic component considers a 1 km buffer while hydrology considers only a 30 m buffer)

Environmental Assessment

Study Areas

- **Summary of Comment (34, 51)**
  - Why are Lac Des Mille Lac and Atikokan not included in the Atmospheric environment and Human Health RSA
  - Explain the exclusion of the Kenora Metis Community Council and the Northwest Metis Nation of Ontario Council from the Aboriginal Interests RSA
- **Summary of Response**
  - Air quality effects are not expected to be measureable beyond the RSA and the human health assessment did not identify pathways for the project to affect Lac des Mille Lac or the Town of Atikokan.
  - The Aboriginal Interest RSA was chosen because it is the area governed by the regional First Nations government body, the Fort Frances Chiefs Secretariat (FFCS).
  - The economic effects on Aboriginal communities are assumed to occur primarily within the RSA.

Environmental Assessment

Monitoring

- **Summary of Comments (7, 58)**
  - A complete environmental effects monitoring plan is required in the EIS
  - Monitoring plan needs to be in place vs. a commitment to prepare one with agencies.
- **Summary of Responses**
  - The EIS (Chapter 8) has been revised to provide more detail to ensure that Section 8.3 of the ToR is met.
  - OHRG's approach is to include community members in detailed monitoring planning through three distinct committees: First Nation, Metis, and the Public
  - Flexibility is required to manage environmental effects as site experience is gained
    - Monitoring plans in EIS are considered 'draft'
    - They will continue to evolve as they are informed by ongoing consultation and unique situations encountered as the project develops
  - A detailed EEM program will be developed/approved in consultation with agencies as required under the MMER legislation

Environmental Assessment

Conclusions

- **Summary of Comments (1, 8, 269, 270)**
  - Conclusions of predicted impacts are 'overly optimistic' and assumptions are not clearly justified
  - Statement that there are no predicted residual impact is not realistic
  - It is felt that there may be difficulties implementing some of the proposed mitigation measures
  - Proponent should revisit their approach to presenting the mitigation commitments and conclusions
- **Summary of Responses**
  - OHRG is confident in the conclusions of the EA.
  - EA conducted using reasonable exposure scenarios, conservative assumptions and predicts a realistic prediction of potential impacts.
  - Assumptions have been explained and calculation details are provided
  - A draft NNLP / Overall Benefits Plan to address fish habitat effects has been developed in consultation with DFO and MNR, and has now been accepted in principle by DFO. It will be included in the final EA
  - Project can be developed with no significant impact to the biophysical environment and provides substantial socio-economic benefits to local communities

Water Quality

Sub-topics

- Study Areas
- Effluent Discharge
- TMF Reclaim Pond (during operations)

Water Quality

Study Areas

- **Summary of Comment (53)**
  - Provide information on how the WQ study areas were determined
- **Summary of Response**
  - Study areas were determined by considering planned Project infrastructure and natural linkages
  - The LSA is the immediate vicinity of the Project site that could be directly affected by the project
  - The RSA provides context and environmental setting.
    - Upstream areas are included to define baseline and reference water quality.
    - Downstream area extends past Atikokan as they are the primary water users

Water Quality

Effluent Discharge

- **Summary of Comment (4)**
  - It is better to state that water quality will meet or exceed regulatory requirements than that there will be no effects
- **Summary of Response**
  - There are instances were baseline water quality is above regulated values such as CCME or PWQO, it is therefore more appropriate to ensure there are no adverse impacts

Water Quality

TMF Reclaim Pond (during operations)

- **Summary of Comments (293, 294)**
  - Are cyanide or other substance levels predicted to be above PWQO and levels impacting aquatic life?
  - Was an Ecological Risk Assessment completed for the TMF pond?
- **Summary of Responses**
  - Although cyanide levels in the TMF are above PWQO, the TMF reclaim pond is not considered to be part of the natural environment and thus PWQO or CCME guidelines do not apply.
  - A risk assessment was conducted for exposure to wildlife drinking from the TMF during operations and results predicted no effects
  - There would be no aquatic life in the TMF reclaim pond, therefore, risks to aquatic life were not predicted.

Hydrology

Sub-topics

- Water Levels (Marmion Reservoir)

Hydrology

Water Levels

- **Summary of Comments (251, 259, 266, 277)**
  - Declines in water levels of up to 9 cm in May could impact navigability of the sluiceway between Upper and Lower Marmion Reservoir and the ability to achieve Seine River Water Management Plan Objectives
  - MNR requested assessment of impacts based on the past 10 years (incl. 2010)
  - Seasonal water level decreases due to the project need to be assessed in the context of cumulative effects
- **Summary of Responses**
  - The 9 cm decrease is a cumulative change based on a single-year water balance where lake outflows are unchanged (water withdrawal for the project is entirely from lake storage).
    - This is worst case scenario because outflows will be actively managed to achieve water level targets.
    - The occurrence of the maximum decrease in May is based solely on the selected water year June to May (cumulative impact occurs in May)

Hydrology

Water Levels (continued)

- **Summary of Responses (continued)**
  - Based on continuous modelling from 1984 to 2010, where outflows were assumed to be adjusted to meet water level targets (a more realistic assessment):
    - Water level changes in May ranged from 0 to (–1.4) cm.
    - A maximum change of (-6.8) cm occurred in January of 1999 assuming water maximum water withdrawal for the project (100-year dry conditions).
    - Water level changes during the open water season ranged from 0 cm to (-4.8) cm in November
  - Changes of this magnitude not expected to have significant effect on navigability or the ability to meet water management objectives
  - Information with respect to 2010 was provided by Osisko via email to Brookfield renewable Energy Group, H20 Power, OPG and MNR on Feb. 28, 2013.
  - Changes in water levels are assessed as direct effects on downstream water users rather than cumulative effects because there are no other projects in the area that could interact with the OHRG project.

Terrestrial Ecology

Sub-topics

- Baseline
- Winter
- Methods
- Indicators
- VECs
- Study Areas
- Project Phases
- Bats
- Breeding Birds
- Turtles
- Other Species at Risk
- Black Bears
- Woodland Caribou
- Other Species
- Ecosites / Habitat Loss
- Contaminated Waterbodies
- Accommodation Camp
- Monitoring

Terrestrial Ecology

Baseline

- **Summary of Comments (151, 163, 192)**
  - Impact to wildlife in the area from mineral exploration activities related to the project prior to 2010 doesn't seem to have been considered
  - Would baseline conditions for birds already be considered low due to high levels of industrial activity in the area?
  - Aside from breeding birds, it doesn't appear that baseline surveys occurred in the wetlands to be covered by the TMF.
- **Summary of Responses**
  - Baseline studies were carried out over a period of three years and are considered appropriate to characterize the existing environment
  - Wetland evaluation and detailed vegetation surveys occurred in the wetlands within the TMF footprint. Other baseline wildlife surveys included secretive marsh birds and turtle basking and nesting surveys.

Terrestrial Ecology

Winter

- **Summary of Comments (152)**
  - Why was wildlife inventory sampling only conducted in snow free seasons?
  - There are a number of statements implying that there is uncertainty related to winter use of the site (e.g., moose)
- **Summary of Responses**
  - Used a conservative approach of assuming that if the habitat occurred in the study areas that the species would be using it.
  - The moose HSI model (based on the Minnesota area) accounted for the physical structure and spatial configurations of a variety of habitat types used by moose at different times of the year including winter.
  - This type of approach was also used for a variety of other species (e.g. marten habitat suitability)
  - Additional winter wildlife background resources included data from Christmas Bird Counts, Owl Survey, MNR information on suitability of the site as moose wintering habitat and Resource Report-Status of Moose)

Terrestrial Ecology

Methods

- **Summary of Comments (204)**
  - How is frequency of effect not applicable to terrestrial ecology?
- **Summary of Responses**
  - As habitat alteration/loss are the residual effects of the project and the effects occur all at one point in time, frequency was not considered appropriate in the assessment.
  - Duration is more appropriate as is takes into consideration the length of time that the VECs are exposed to the Project effects

Terrestrial Ecology

Methods

- **Summary of Comment (146)**
  - Measures do nor consider the actual presence of the VECs. Just because habitat exists doesn't mean it is used by the VEC (indicator species)
  - It is not clear how habitat suitability will be measured
  - Measureable effects should be determined by species presence or absence.
- **Summary of Response**
  - Habitat suitability was measured qualitatively because it is not possible to acquire data on the abundances of all VEC species.
  - Site-specific preferred habitat types were defined using ecosite types ranked as high, moderate or low for each VEC species. VEC species were assumed to use these habitats. This approach is considered conservative.
  - For VEC species in which abundances per habitat type could be measured or an HIS model had been developed, a quantitative assessment was performed.

Terrestrial Ecology

Indicators

- **Summary of Comment (205, 239)**
  - Has sufficient data been collected to assess magnitude?
  - Identify indicators used to measure magnitude of impact. For example, how do you measure a 10% change in moose presence/persistance?
- **Summary of Response**
  - The measures for the VEC are, for instance, areal extent of wetlands, change in hydrological regime in wetlands, changes in habitat suitability and availability for species VECs. Moose presence/persistence is an 'indicator' and is measured by changes in habitat availability and suitability.
  - Magnitude was measured by assessing change in habitat availability and suitability based on the proposed project activities and the latest scientific research available, professional opinion and conservatism and considers normal variation in biological systems

Terrestrial Ecology

VECs

- **Summary of Comments (148a, 148b, 206, 239)**
  - Why have amphibians and reptiles not been included as a VEC?
  - Is muskrat the best species to choose for a VEC?
  - How was the VEC relevant spatial area determined/justified?
- **Summary of Responses**
  - The snapping turtle has been considered as a VEC and acts as a surrogate for herpetofauna reliant on wetland and aquatic features. The pathways of effect to other herpetofauna are covered in the assessment of effects on snapping turtle.
  - Muskrat was chosen because it is a common aquatic furbearer and is one of the most abundantly trapped furbearers in the study areas
  - The selection of the VECs was reviewed by MNR and the proposed VECs were accepted by MNR reviewers.
  - The VEC relevant study areas are spatial extents at which a healthy population of VEC species can be supported.

Terrestrial Ecology

Study Areas

- **Summary of Comments (182, 202, 209)**
  - If air quality effects can be observed up to 750 m away from the pits, why isn't this area considered in the LSA?
  - Why are nearby islands not included in the LSA?
  - It is not clear why the footprint of WMU 12B was chosen to represent the regional study area.
- **Summary of Responses**
  - The LSA is based on connectivity of terrestrial resources such as sub-watersheds and the physical barrier between land and water.
  - The effects assessment was not limited to the study area boundaries. Effects were fully assessed to the point where air quality and noise disturbances went back to baseline.
  - The RSA was selected to represent the WMU established by the MNR which was assumed to represent populations of big game species. The big game species selected was moose (represented by WMU 12b)
  - The ecology study areas were presented to the GRT on May 31, 2011 for comment and none were raised.

Terrestrial Ecology

Project Phases

- **Summary of Comment (144)**
  - Would the operations phase also have impacts on terrestrial ecology, particularly wildlife (i.e., noise and light pollution)?
- **Summary of Response**
  - The effects of the Project during the construction and operations phases where assumed to be similar and were therefore considered together
  - Rehabilitation of habitat altered during construction will not occur until closure

Terrestrial Ecology

Bats

- **Summary of Comments (130, 131, 139, 223)**
  - There are 5 bat species that likely occur in the study area
  - Northern bat is omitted as a Species at Risk (SAR)
  - Assessments conducted to date are inconclusive as to whether endangered bat species are occurring in the project area
- **Summary of Responses**
  - Northern brown bat has not been observed in the vicinity of the Project site and was not listed as endangered at the time of the baseline studies or report publication
  - Field studies of bats are being conducted in 2013 during the maternity roosting and swarming/hibernation periods.
  - Habitat assessments and acoustic and visual surveys at potential key habitat features are being carried out
  - Presence of endangered bat species and the need to develop mitigation measures will be confirmed through these studies
  - An addendum to the TSD will be issued to present the findings of these investigations

Terrestrial Ecology

Breeding Birds

- **Summary of Comments (133, 213)**
  - To provide context to impact on Canada Warbler, express impact as predicted density within the area of impact
  - Of the 82 birds identified in the baseline survey, more of a connection as to which birds depend on this area year round is required (i.e., which birds may be impacted more by the proposed activity?)
- **Summary of Responses**
  - The predicted number of individuals (or pairs) of Canada Warbler (and other BCR priority species) displaced based on density of bird species per habitat type has been calculated and provided with the IR responses
  - As the majority of birds in Ontario are migratory, surveys for birds focussed on breeding birds which was used as a VEC. As breeding is a critical life stage and loss of breeding habitat is identified as one of the main threats to migratory bird populations, it was determined to be appropriate to focus surveys for birds on breeding birds.
  - Most birds do migrate to some degree especially when food is in short supply. Upland game birds are the only birds that do not migrate.

Terrestrial Ecology

Turtles

- **Summary of Comments (135)**
  - The amount of direct habitat loss for snapping turtle should be provided.
- **Summary of Responses**
  - Based on open wetlands and small open areas within the footprint of the mine infrastructure, about 32.7 ha (or approximately 12% of the snapping turtle habitat in the LSA) will be lost.
  - This does not account for the vast amount of habitat in Marmiom Reservoir that is not in the LSA.

Terrestrial Ecology

Other Species At Risk

- **Summary of Comments (134, 136)**
  - The statement that the Project "is not expected to prevent the establishment of self-sustaining populations of known SAR" requires further explanation
  - Common nighthawk and olive-sided flycatcher were not evaluated
- **Summary of Responses**
  - The removal of a relatively small portion of habitat with respect to the surrounding landscape was assessed as a residual effect on SAR in the area.
  - The SAR that occur in the area do not have specialized habitat requirements that do not occur elsewhere in the MSA, LSA and RSA.
  - Displacement of individual SAR from within the mine footprint is not expected to have a measureable impact on SAR populations
  - Effects on common nighthawk were assessed in the Terrestrial TSD
  - The olive-sided flycatcher shares similar habitat requirements, feeding strategies and range as the Canada warbler for which an effect assessment was conducted.

Terrestrial Ecology

Black Bears

- **Summary of Comment (222)**
  - A description of impacts to black bear is required
- **Summary of Response**
  - Black bear was not selected as a VEC because it is considered a habitat generalist and its survival and reproductive success is does not rely on specific habitat types but more so on the availability of food
  - Black bears forage plants and hunt prey species such as deer fawns and moose calves. The assessment of these species (as food sources for bear) has covered the pathways of effects to black bear

Terrestrial Ecology

Woodland Caribou

- **Summary of Comments (153)**
  - Woodland Caribou have been observed in the area in the past, however it is determined that no permanent population is known to inhabit the area
- **Summary of Responses**
  - In consultation with MNR in 2010 and 2011 it was determined that Woodland Caribou do not occur on or in the vicinity of the Project
  - The Project is located south of the area in which Ontario's Woodland Caribou Conservation Plan is applicable.

Terrestrial Ecology

Other Species

- **Summary of Comments (177, 219a, 224)**
  - Some species documented on site (e.g., greater yellowlegs, connecuit warbler and palm warbler) are considered regionally significant species
  - It is likely that the blue spotted salamander and eastern newt also occur in the MSA, LSA and RSA. Red-bellied snakes and red-sided garter snake have also been documented near Atitkokan and may be present in the study area
- **Summary of Responses**
  - It is noted the bird species are specified as 'regionally significant' for Ecoregion 4 in the Northern Ontario Wetland Evaluation System.
  - In the TSD, bird species were designated by global and provincial status under SARA and Ontario ESA and analyzed according to the Ontario Landbird Conservation Plan
  - The potential occurrence of species noted in the second bullet is noted. The addition of these species to the species list does not change the conclusions of the assessment.

Terrestrial Ecology

Ecosites / Habitat Loss

- **Summary of Comment (178, 211, 231, 232, 242, 285, 286, 289)**
  - Soil types in these ecosites will likely not be consistent with the conditions left post mining. The residual areas will therefore have decreased species diversity
  - Clear statements identifying existing habitat that will be lost is required
- **Summary of Response**
  - Changes in vegetation communities has been considered a residual effect of the project and evaluated as being of low significance in relation to:
    - The extent of wetland and forest habitat in and adjacent to the study areas; and,
    - Re-naturalization of other areas of the project footprint through progressive rehabilitation.
  - At closure, overburden and topsoil stockpiled during construction will be spread over some areas and drainage from reclaimed areas will be reinstated.
  - Post-closure, cleared areas will build soils and vegetation over time through natural succession. Therefore, plant species density is expected to develop with time.
  - The effects assessment in the Terrestrial TSD provide detailed habitat losses based on ecosite type in the MSA and LSA. This has also been calculated and provided for each infrastructure footprint in the IR responses

Terrestrial Ecology

Contaminated Waterbodies

- **Summary of Comments (229, 255)**
  - Impact of access to potentially contaminated waterbodies (TMF Pond, PCPP and pit lakes) needs to be considered.
  - Will there be any infrastructure to keep wildlife out of the tailings pond?
- **Summary of Responses**
  - A risk assessment was conducted for exposure to wildlife drinking from the TMF during operations and predicted no risks to wildlife.
  - There will not be any measures in place to keep wildlife out of the pond
  - The PCPP is located close to the processing plant in an area of high human activity which would preclude wildlife from frequenting this area. Therefore, risks were not evaluated.
  - Risks to wildlife were considered for the pit lakes at closure and no risks were predicted

Terrestrial Ecology

Accommodation Camp

- **Summary of Comments (113, 114, 201)**
  - Need to consider effects of worker camp on aquatic and terrestrial biota.
  - Impacts in terms of wildlife displacement is not described
  - Camps can attract wildlife. The EA should have an approach in place for dealing with dangerous species (e.g., bears) and species that could be protected.
- **Summary of Responses**
  - The effect of the camp is largely terrestrial habitat loss. The camp is located outside the high water level in Sawbill Bay therefore impact to aquatic environment is limited
  - The effects assessment considered sensory disturbance, vehicle injury/mortality, dust deposition and air emissions and wildlife attraction.
  - Wildlife attraction will be mitigated through the development and implementation of a waste management plan including use of appropriate receptacles and regular incineration of food waste
  - Feeding of wildlife will be prohibited and workers will be educated to the risks associated with feeding wildlife and careless disposal of food waste

Terrestrial Ecology

Monitoring

- **Summary of Comments (194, 234)**
  - There doesn't appear to be any intent to monitor the rehabilitation of impacted areas for actual use by wildlife.
  - Will monitoring activities occur at the same locations as baseline monitoring? Will all the same species be monitored?
  - Will this monitoring only occur until 5 years after closure?
- **Summary of Responses**
  - Monitoring program is designed to confirm the predictions of the effects assessment. As vegetation loss/alteration is one of the predicted residual effects, monitoring of plant species and diversity is planned
  - Some monitoring will occur at the same locations as baseline (e.g., breeding bird counts will continue at undisturbed baseline stations)
  - Field monitoring will occur for vegetation, breeding birds. All other incidental observations will be recorded in a wildlife log and database.
  - Wildlife use of the area will be monitored through review of MNR hunting/trapping records.
  - The monitoring program duration will be outlined in the detailed monitoring plan.

Aquatic Environment

Sub-topics

- Habitat Loss
- Indicators
- Pit Lake
- Compensation
- Fishless Lakes

Aquatic Environment

Habitat Loss

- **Summary of Comments (250, 258, 267, 273, 274, 275, 276)**
  - Describe impacts of loss of watershed area to wetlands and fish habitat (particularly the impact of the loss of the API 1 watershed on habitat in upper reaches of API 37)
  - Assess ecological impact of water level changes resulting from mine operation
  - How does the proposed infilling of Sawbill Bay affect bass and pike but not walleye?
- **Summary of Responses**
  - Indirect impacts considered to be significant were included as direct losses.
  - Losses in inflowing streams to Marmion Reservoir and lower reaches of tributaries to Lizard Lake were considered as direct losses
  - Habitat loss calculated at API 37 considered a direct loss of pike habitat
  - Given the current fluctuation in water level, the predicted water level changes in Marmion Reservoir were not predicted to affect aquatic habitat
  - The 0.8 ha of habitat lost due to infilling of Sawbill Bay is too shallow to be utilized by walleye. Regardless, this lost habitat is reflected in the overall habitat loss estimate.

Aquatic Environment

Indicators

- **Summary of Comment (238, 272, 282)**
  - Identify indicators used to measure magnitude of impact. For example, how do you measure a 10% change in fish community?
  - Population status could also determine impacts missed during habitat assessments.
  - Add population status as an indicator and identify how it will be measured
- **Summary of Response**
  - Due to the difficulty in measuring population change, magnitude was assessed in the EA using loss of habitat as a surrogate for population loss.
  - The effects on fish populations are primarily losses of habitat and cannot be effectively measured by population studies
  - An EEM program will be developed to measure changes in the aquatic ecosystems due to effluent release. EEM study elements include:
    - Fish population and habitat assessments, benthic invertebrate surveys, fish tissue analyses, effluent characterization, sub-lethal toxicity and water quality monitoring
  - The first EEM design will be submitted with 12 months of the day the mine becomes subject to the Regulations

Aquatic Environment

Pit Lake

- **Summary of Comments (257, 260, 261, 279, 281)**
  - Is OHRG proposing to place material or design pit walls to create shallow areas in the pit lakes suitable for wetland establishment in the pit lakes to mitigate wetland loss?
  - Given statements around “restore to the extent possible” and “no significant biophysical impacts”, it is unacceptable to have a large water body without attempting to restore it as a functioning aquatic ecosystem
- **Summary of Responses**
  - Pits are not expected to overflow until about 218 years after closure and are not considered part of habitat offests/gains in the NNLP.
  - An excavated channel connecting the pits will provide some area with appropriate depth for aquatic habitat
  - Modification to pit design currently not proposed:
    - May have significant mine planning and cost ramifications
    - Encouraging recreation interest in the flooded pits may be contrary to safety considerations indicated by closure regulations (O.Reg. 240/00)
  - Further discussion is proposed with MNR, DFO and OHRG prior to final submission of the Section 35 Authorization Application

Aquatic Environment

Compensation

- **Summary of Comments (280, 281)**
  - Some compensation projects have not been discussed with MNR and seem to have questionable benefit
  - The EA fails to identify habitat projects to replace lost aquatic habitat with equivalent or more valued habitat
  - The lack of projects that will significantly enhance the fishery and the lack of a plan to develop habitat in pit lakes means there will be significant residual impact
- **Summary of Responses**
  - A draft NNLP is provided with the Aquatic Environment TSD which describes in detail how the habitat losses will be offset.
  - Meetings were held with DFO and MNR on Apr. 16, 2013, May 9, 2013 and May 27, 2013 to discuss in detail the compensation projects
  - Following theses meetings, DFO stated “This should be enough direction as to what habitat gains will be created to offset the losses for the EIS phase”

Aquatic Environment

Fishless Lakes

- **Summary of Comment (271)**
  - Given the proposal to introduce fish into currently fishless water bodies as habitat offsets, it is important to consider what other species (e.g., amphibians) may be negatively impacted.
- **Summary of Response**
  - Extensive netting and minnow trapping, which is also effective in trapping amphibians, resulted in the capture of only a few specimens
  - It was concluded that these water bodies do not represent significant habitat for species that thrive in fishless environments.

Socio-Economic

Sub-topics

- Study Areas
- VECs
- Fishing
- Hunting
- Tourism

Socio-Economic

Study Areas

- **Summary of Comments (49)**
  - Socio-economic RSA is too large resulting in a dilution of impacts to values that are more immediate to the area
  - Modification to the RSA should be considered
- **Summary of Responses**
  - RSA is useful for characterizing existing conditions over the broadest area that may experience measurable changes to the economy as a result of the Project.
  - The RSA is where cumulative effects are likely to occur
  - Socio-economic effects in the immediate area are presented at the LSA scale

Socio-Economic

VECs

- **Summary of Comment (3)**
  - Prediction of impact to social environment should include quality of life for all communities
- **Summary of Response**
  - The socio-economic VECs were selected to represent economic, social, and land and resource use features that can be measured
  - Quality of life can be subjective and is not easily measured
  - The combination of VECs selected is considered to represent quality of life through indicators such as:
    - Dependency ratios
    - Median incomes
    - Access to heath services

Socio-Economic

Fishing

- **Summary of Comments (5, 78, 117, 127, 129, 237, 263, 264, 265)**
  - A better description of the fishery is required and the value/importance to socio-economics and recreation needs to be identified
  - It is incorrect to say there will be no direct effects or residual adverse effects on fishing and potential effects on fishing need to be addressed.
  - The 1200 person camp could result in declines in fish populations. What restrictions will be placed on fishermen at the camp to prevent overharvest?
  - Indicators will not allow determination of impact on recreational fishing. Changes in angling effort needs to be included as an indicator

Socio-Economic

Fishing (continued)

- **Summary of Responses**
  - Fishing is assessed using three indicators: recreational fishing participation; fishing areas, licence sales and harvest volumes; and baitfish areas and volumes
  - Project will not restrict access or result in the removal of any commonly used fishing areas
  - Negotiation with commercial baitfish harvest licence holders may be required where access to baitfish habitat is altered/removed or access is restricted.
  - Fishing by camp personnel while on-site will be restricted by OHRG and enforced by appropriate human resource management disciplinary action.
  - OHRG has committed to promoting tourism in the area through sponsorships of community events such as the Atikokan Bass Classic
  - A biannual fishing questionnaire of the project workforce will be added as an indicator to estimate fishing pressure from the project
  - Once the mine closes, it is expected that increased fishing pressure would return to pre-project levels

Socio-Economic

Hunting

- **Summary of Comments (118, 129, 265)**
  - Only specific species (adult deer, moose and bear are limited to non-residents by quotas). Other small game species will be impacted by easy access and a large number of hunters living at site.
  - Impacts to large and small game need to be addressed in the report.
- **Summary of Responses**
  - The effects assessment considered potential impacts due to an increased number of hunters living at site.
  - Increased hunting pressure may result from recreational hunting by workers at camp. This represents an adverse effect and assessment/identification of practicable mitigation measures is required.
  - Osisko has committed to restricting hunting by camp personnel while on-site through a policy included in site training received by all personnel.

Socio-Economic

Tourism

- **Summary of Comments (116, 156)**
  - How can a project of this scale not impact to the socio-economic environment or tourism?
  - If OHRG has entered into agreements with directly impacted stakeholders, it should be stated.
- **Summary of Responses**
  - The socio-economic and tourism assessment was carried out in a thorough and transparent manner and considered input from local tourism operators.
  - The assessment considered effects on hunting, trapping, fishing and outdoor recreation.
  - OHRG is confident in the conclusions of the assessment
  - OHRG has not entered into any agreements with tourism operators at this time
  - The following commitment has been added: OHRG will provide capacity for advertisement to promote tourism in the area

Cumulative Effects

Sub-topics

- Other Projects
- Aquatic Life
- Forestry

Cumulative Effects

Other Projects

- **Summary of Comment (48)**
  - Inclusion of the following projects needs to be considered:
    - Josephine Cone Mine
    - Dimensional Wood Mill Site at Sapawe Lake
    - Former Atikokan Gold Mine near Osinawi
    - Future Atikokan Renewable Fuels Mill
    - Resolute Forest Products Sawmill in Atikokan
- **Summary of Response**
  - The cumulative effects assessment has been revised to include the suggested projects where:
    - Information is available;
    - The geographic location is appropriate;
    - There exists the potential to interact with the Project; and,
    - The timing is anticipated to overlap with the Project.

Cumulative Effects

Aquatic Life

- **Summary of Comment (6)**
  - The report should identify if there is potential to impact downstream values such as recreational fisheries, recreational opportunities and impact to other stakeholders in the Seine River watershed
- **Summary of Response**
  - There is no predicted hydrological or water quality impact to the Seine River downstream of Raft Lake dam. As a result, there would also be no impact to aquatic life.
  - Effects upstream of the Raft Lake Dam are assessed directly in the assessment, since they represent direct effects rather than cumulative effects

Cumulative Effects

Forestry

- **Summary of Comments (268)**
  - Need to consider impact of forestry operations (road construction, forest harvesting) in context of cumulative impacts.
  - Deforestation resulting from the project has potential impacts on forestry operations and potential cumulative ecological impacts such as forest fragmentation
- **Summary of Responses**
  - Cumulative effects assessments are conducted against “reasonably foreseeable” projects
  - It is not possible to predict future forest access road construction
  - The assessment has shown that the effects on land clearing due to the Project are confined to the Project footprint and have minimal effect on terrestrial fauna

Closure

Sub-topics

- Alternatives
- Consultation
- Aggregate Sources
- Accommodation Camp
- Solid Waste Landfill
- Water Management
- Wetlands
- TMF
- TMF Reclaim Pond
- Water Quality / Discharge
- Pit Lakes
- Re-vegetation
  - General
  - Natural Succession
  - TMF
  - Invasive Species
- Monitoring

Closure

Alternatives

- **Summary of Comments (77)**
  - As per the ToR, the EA will assess alternative methods for the decommissioning and closure phase
  - There are no clear alternative methods presented
- **Summary of Responses**
  - In preparation of the conceptual closure plan, due consideration was given to alternative approaches for closure of each project element.
  - A Technical Memorandum has been prepared to provide a brief description of the alternative considered and the rationale used to select the preferred alternative.
  - This memorandum will be submitted with the final IR response package.

Closure

Consultation

- **Summary of Comments (77, 85)**
  - There needs to be a commitment that a planned approach to consult with applicable agencies, First Nations and the public in identifying new land use strategies for the site
  - The report needs to identify a conceptual consultation plan for closure and a schedule of consultation opportunities
- **Summary of Responses**
  - OHRG has had ongoing discussions with stakeholders regarding closure
  - Closure plans are subject to O.Reg 240/00 under the Mining Act and MNDM is the lead agency. MNDM has suggested that OHRG consult with them on closure issues.
  - Under O.Reg 240/00, as amended by O.Reg. 307/12, the Director of Mine Rehabilitation will provide direction on consultation requirements
  - Consultation will be a condition for filing the certified closure plan which, per the Mining Act, will not be submitted until EA approval is received.

Closure

Aggregates

- **Summary of Comments (87)**
  - Provide indication of decommissioning plans for aggregate sources
- **Summary of Responses**
  - Borrow sites will be progressively rehabilitated when no longer required
  - Rehabilitation will adhere to conditions of the permit issued under the Aggregate Resources Act (ARA)
  - As conditions of ARA permit are presently unknown, rehabilitation plans cannot be provided.
  - In general rehabilitation will involve:
    - Re-vegetation using topsoil and overburden stripped; and,
    - Ensuring stable excavation slopes and adequate drainage conditions exist.

Closure

Accommodation Camp

- **Summary of Comments (86)**
  - How ill the worker camp be used/reduced/decommissioned during the closure phase?
- **Summary of Responses**
  - There is no definitive schedule for closure
  - In general, the bulk of the labour intensive construction will be completed within 2 years of cessation of mining, after which, the camp will be reduced to about 5 people
  - The camp is expected to be completely removed with 5 years of cessation of mining, after which, ongoing monitoring will likely be carried out by staff based in Atikokan

Closure

Solid Waste Landfill

- **Summary of Comments (94, 107)**
  - Details of the landfill within the TMF need to be included
- **Summary of Responses**
  - A disposal facility for non-hazardous solid waste will be established with the TMF at closure for debris generated during demolition of site facilities
  - The waste facility will be fully licenced under applicable landfill regulations
  - After demolition is completed, the landfill will be closed following terms of the licence. This is expected to involve placing a cover over the waste and monitoring
  - No decision has been made as to the location of the landfill within the TMF. Such details will be provided when the landfill licence application is submitted.

Closure

Water Management

- **Summary of Comments (101, 102, 278)**
  - It is not clear where the water collected in the seepage ponds will be released
  - What measures will be in place if water quality is not suitable for release?
  - What if tailings and waste rock are not geochemically benign?
- **Summary of Responses**
  - Water collected in the seepage collection ponds will either be pumped back to the TMF reclaim pond or to the open pits until water quality is acceptable for discharge
  - Excess water collected in the TMF reclaim pond will be transferred to the open pits until water quality is acceptable for discharge
  - When acceptable for discharge, collection pond dykes will be breached and pumping systems will be removed
  - Until acceptable water quality standards are met all site water collected will be transferred and contained within the open pits
  - If tailings or waste rock generate acid, runoff and seepage would continue to be collected and contained within the open pits.

Closure

Wetlands

- **Summary of Comments (183)**
  - There does not appear to be any plan to “restore” wetlands. This contradicts a sentence which states that effects to wetlands are reversible.
- **Summary of Responses**
  - Contingent on engineering constraints and final topography, every opportunity to restore wetlands will be investigated.
  - Where possible, flows will be directed to wetlands or topographical low areas and these drainage paths will left to re-naturalize as wetlands.
  - The TMF reclaim pond will also be left to re-naturalize as a wetland post-closure.

Closure

TMF

- **Summary of Comments (179, 180, 287, 293, 294)**
  - How can normal runoff flow direction be restored with dams in place?
  - Indicate area and bathymetry of the TMF reclaim pond post-closure.
- **Summary of Responses**
  - The TMF will result in a permanent change to the drainage pattern in the area as the TMF dams must remain in place to contain the tailings.
  - Runoff will be collected in the TMF reclaim pond until WQ is suitable for discharge.
  - When suitable for discharge, the spillway will be lowered and drainage will be directed southward to Sawbill Bay.
  - After flows are released to Sawbill Bay, the residual pond will have an area of about 65 ha and a volume of about 3.4 Mm^3.
  - Bathymetry will change with time and cannot be predicted.

Closure

TMF Reclaim Pond Water Quality

- **Summary of Comments (245, 252, 287)**
  - Where is the information to support statement that TMF water quality will improve with time?
  - What is the predicted water quality at time of discharge?
- **Summary of Responses**
  - Water quality in the TMF pond is expected to improve with time for the following reasons:
    - The overall deposit and tailings are not acid generating (indicated in the Geochemistry, Geology and Soils TSD).
    - The addition of cyanide and ammonia will cease at closure. These compounds will naturally degrade with time through oxidation, volatilization, photolysis and hydrolysis (references provided).
    - Re-vegetation will reduce suspended sediment loading to the pond.
  - TMF water quality is conservatively assumed to be constant and equal to steady-state concentrations measured during humidity cell testing of the tailing sample (summarized in the Geochemistry, Geology and Soils TSD).
  - The water quality is predicted to meet PWQO.

Closure

Water Quality / Discharge

- **Summary of Comments (246, 278, 284)**
  - What water quality objectives will be used to assess whether water can be discharged from the site?
- **Summary of Responses**
  - It is not possible to predict water quality objectives that will apply more than 20 years after mine operations begin.
  - Water quality objectives that are protective of aquatic life will be used and are assumed in the EIS. This is the same objective that PWQOs and CWQCs have been developed to achieve.
  - Objectives will include established guidelines and site-specific water quality objectives as appropriate.

Closure

Pit Lakes

- **Summary of Comments (243, 244, 253, 254, 284, 288)**
  - Will water pumped to pits (e.g., from the TMF) be treated to ensure contaminated water is not entering the pits?
  - What infrastructure will remain to treat pit lake water if required at time of overflow?
- **Summary of Responses**
  - The pits are considered part of the site until water overflows to Marmion Basin (about 218 years after closure), therefore, flows entering the pits will not be treated
  - Use of the open pits as part of water management system at closure allows time for water quality to improve and time to monitor site water quality to confirm it is suitable for release.
  - Pit lakes are expected to be highly stratified and surface waters will largely reflect the chemistry of precipitation and recent local runoff. Therefore, overflow is expected to be suitable for release.
  - On-going monitoring of water quality will take place and, if treatment is required near the time of discharge, appropriate treatment methodologies will be considered at that time

Closure

Re-vegetation – General

- **Summary of Comments (15, 92, 97, 98, 108, 233, 235, 236, 292)**
  - A complete re-vegetation plan is not provided.
  - Details as how re-vegetation will take place is required (types, techniques, etc.).
  - How will re-vegetation be accelerated?
  - It is likely that topsoil will required in areas where organic material is absent
  - Why is OHRG not planning to reforest disturbed areas.
- **Summary of Responses**
  - Active re-vegetation is proposed in aggregate borrow areas, on the surface of the TMF and on the overburden stockpile.
  - The TMF will be re-vegetated using organic mulch, fertilizer and seeding.
  - Similar techniques and test plotting will be undertaken for the overburden stockpile and aggregate borrow areas.
  - The limited volume of topsoil recovered during construction will be utilized in some areas to accelerate re-vegetation.
  - Seed mixtures will be determined using test plots. Seeding will be herbaceous; tree planting is not currently planned.
  - Active reforestation of a site this large would be cost prohibitive. Natural succession has established extensive forested areas in the area.

Closure

Re-vegetation – Natural Succession

- **Summary of Comments (108, 140, 184, 193)**
  - Clarification on what is entailed in “restoration” is required. The word implies that affected areas will be returned to their natural state.
  - Heavy reliance is placed on natural succession.
  - What will the terrestrial ecosystem look like post closure? How long will it take?
- **Summary of Responses**
  - The aim of restoration is the establishment of a self-sustaining, maintenance free vegetation cover.
  - Given the project climate and setting, natural vegetation is expected to readily invade once impediments are removed (except in the TMF area)
  - Terrestrial portions of the site will rapidly develop a grassland cover which will gradually revert to a forest cover through natural succession.
  - Native species such as Labrador-tea, trembling aspen and white birch are expected to colonize with time as seeds from nearby conifers are blown onto site.
  - A typical time frame for a former industrial site to return to a mixed forest is estimated to be about 40-50 years.

Closure

Re-vegetation - TMF

- **Summary of Comments (15, 91, 92, 242, 283, 291)**
  - There needs to be some detail of what re-vegetation will include? What kind of pulp mill sludge will be used? Will testing be done?
  - Will the TMF support a mixed forest and how will OHRG ensure a forest condition will result?
- **Summary of Responses**
  - The surface of the tailings will be directly seeded to ensure physical stability, prevent dust generation and improve aesthetics.
  - Organic mulch (either pulp mill sludge or stabilized sewage sludge) will be used. The type of sludge will be decided a few years before closure in consideration of availability, haul distance and sludge characteristics.
  - It is anticipated that sludge use will be subject to approval and will require testing
  - There are numerous precedents for using these materials and direct re-vegetation of tailings (even those that are not geochemically benign) at mine sites in Ontario which implies that use is operationally practical and feasible, and environmentally acceptable.
  - Eventually, the area will be invaded by native trees through natural succession.

Closure

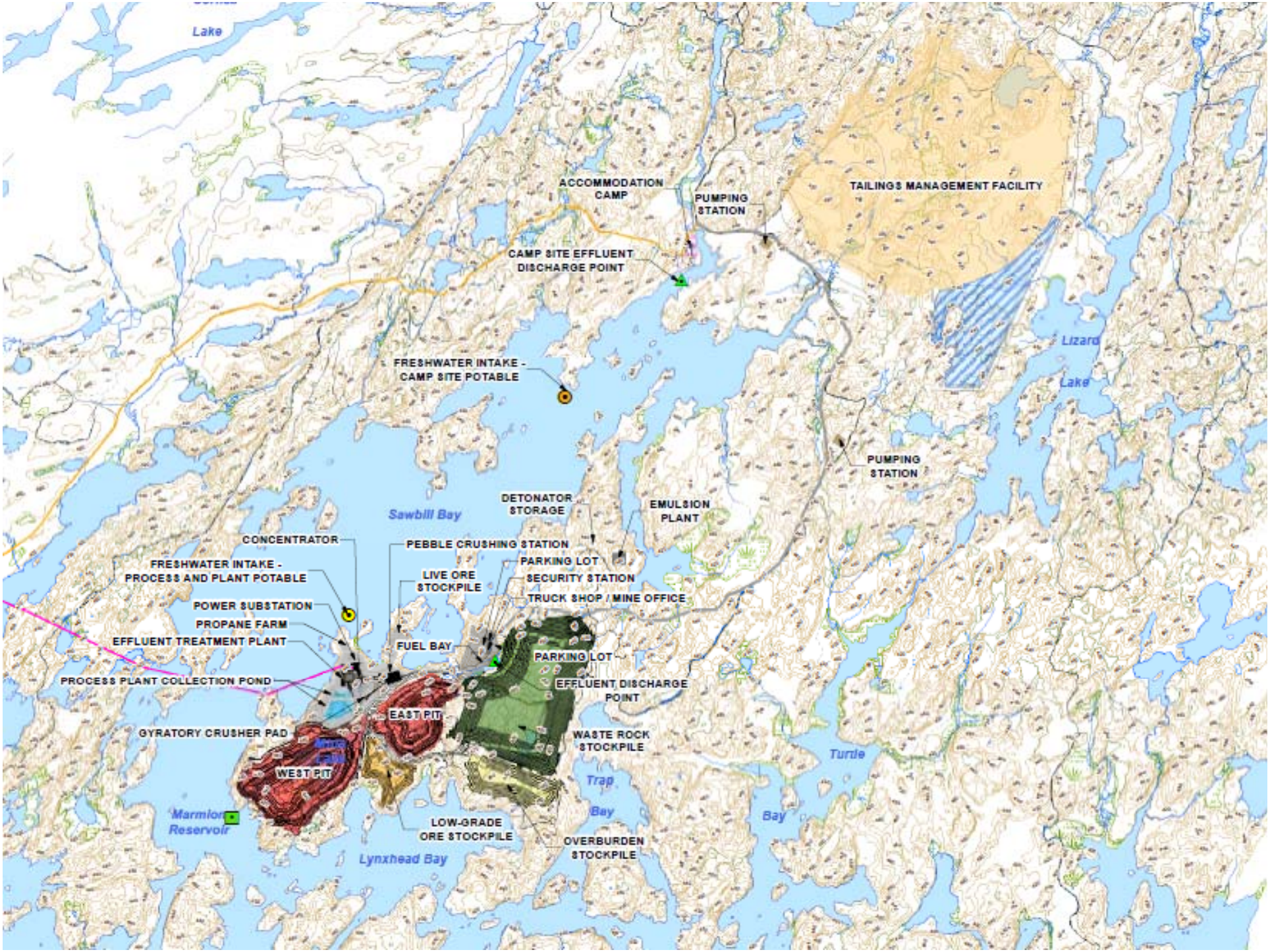
Re-vegetation – Invasive Species

- **Summary of Comments (184, 185)**
  - If depending on natural succession, this gives invasive species the opportunity to outcompete naturally occurring species.
  - What strategies will be in place to mitigate this?
- **Summary of Responses**
  - An invasive plant management strategy will be developed prior to construction and will be implemented through all project phases.
  - The strategy will include controls such as monitoring and removal of invasive species

Closure

Monitoring

- **Summary of Comments (196, 284)**
  - Has consideration been given to monitoring and maintenance that may be required post-closure?
- **Summary of Responses**
  - Post closure monitoring programs are summarized in the CCRP which provide details on proposed frequency and minimum period of sampling.
  - In general, sampling will be discontinued 5 years after closure if certain conditions are met
  - Overflow from the pit lakes will be sampled for a period of at least 5 years after overflow occurs.


Lake
ACCOMMODATION CAMP
PUMPING STATION
TAILINGS MANAGEMENT FACILITY
CAMP SITE EFFLUENT DISCHARGE POINT
FRESHWATER INTAKE - CAMP SITE POTABLE
Lizard
Lake
PUMPING STATION
DETONATOR STORAGE
EMULSION PLANT
Sawbill Bay
CONCENTRATOR
PEBBLE CRUSHING STATION
PARKING LOT
SECURITY STATION
TRUCK SHOP / MINE OFFICE
FRESHWATER INTAKE - PROCESS AND PLANT POTABLE
LIVE ORE STOCKPILE
POWER SUBSTATION
PROPANE FARM
EFFLUENT TREATMENT PLANT
FUEL BAY
PARKING LOT
EFFLUENT DISCHARGE POINT
PROCESS PLANT COLLECTION POND
EAST PIT
GYRATORY CRUSHER PAD
WASTE ROCK STOCKPILE
WEST PIT
Turtle
Trap
Bay
Bay
Marmion Reservoir
LOW-GRADE ORE STOCKPILE
OVERBURDEN STOCKPILE
Lynxhead Bay

Water Quality

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
SITE SPECIFIC WATER QUALITY DISCUSSION
NOVEMBER 20, 2012 – 11:30AM – 12:00PM
TELECONFERENCE

Attendees:

Osisko:	Alix Drapack
Golder:	Ken DeVos, Steve Parker, Craig Hebert, Erin Thomas, Michelle Bingley
GRT:	Amiel Blajchman (CEAA), Sheelagh Hysenaj (EC), Sam Shippam (MOE), Jim Sutton (MOE), Alisdair Brown (MOE), Edgar Tovilla (MOE), Angelique Magee (NRCan), Patrick Barnes (MNDM)

BACKGROUND AND MEETING PURPOSE

On January 16 2012, Osisko attended an Ontario Mining Association (OMA) teleconference with Doris Dumais (MOE Director, Environmental Approvals Access & Service Integration) to discuss setting limits and objectives for Environmental Compliance Approvals (ECAs). There were over 30 OMA members on the call. Doris committed that limits and objectives for ECAs will be site specific and receiver based (i.e. the receiving water is taken into account as well as the operation of the applicant). She strongly encouraged early meetings with her EAB group and the regional MOE representatives to discuss the setting of limits and objectives.The purpose of the meeting was to have preliminary discussions with the OHRG government review team regarding water quality findings for the OHRG Project.

KEY DISCUSSION POINTS

- Golder presented some general comments on water quality observed during the on-going assessment and requested input to the following questions:
    1) There are some existing baseline values that are close to, but above PWQO and CCME values – how does MOE / CCME want these values incorporated into the assessment and development of SSWQO?
    2) Based on preliminary values, changes to water quality are expected to be within the natural variability of baseline concentrations for both expected and worst case conditions, how will this be received considering that some baseline values are above PWQO and CCME?
    3) Based on preliminary values, there may be one or two parameters elevated above baseline water quality values, but are not expected to have any significant aquatic or human health effects, how will this be received with respect to SSWQO development?
    4) Can the regulators provide some guideance on the process / procedure / and timelines associated with development on SSWQO from their perspective and experience?
- In response, Jim Sutton confirmed that he would need to review these questions internally with collegues at the ministry and would then be in a better position to respond. Jim requested that he be provided with a ‘snapshot’ of the Project chemistry to assist with their understanding of water quality for the Project. Those details could include summary of ranges and boundary of analytical chemistry.
- The regulators were informed that there will be one point of discharge of site/process treated effluent discharge and that at some periods during operation there will infact be no discharge

depending on the seasonal variation. Further, Golder completed dispersion modeling in the potential receiving waters.

ACTION ITEMS

1) Golder will prepare and send a summary 'snapshot' of the Project findings.
2) Once he receives the above noted information from Osisko/Golder, Jim Sutton will prepare comments to the questions presented above and will provide comments back to Osisko.
3) Jim Sutton indicated that it will take one to two months for the MOE to review the proposed development.
4) Other regulators on the call confirm they will wait to review the EIS/EA document once it is submitted.

From: Alexandra Drapack
Sent: January 22, 2013 8:46 AM
To: 'Jim.Sutton@ontario.ca'
Cc: Liu,Amy [CEAA]; Whitmore, Michelle (ENE); 'Barnes, Patrick (MNDM)'; Cathryn Moffett; Parker, Steven; Jaagumagi, Rein; De Vos, Ken
Subject: FW: Osisko Hammond Reef Gold Ltd: Minutes from Nov. 20 2012 Teleconference re: Site Specific Water Quality Objectives
Attachments: 2012-11-20 SSQWO Teleconference with GRT.pdf.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Jim,

In follow-up to our November 20, 2013 meeting, I provide the additional information regarding background information to support site specific water quality objectives for free cyanide and copper for the OHRG project. Please let me know what further information you will require to support your review. Osisko's intention is to file our DRAFT EIS/EA report to the government review team on February 15 2013.

A Site Specific Water Quality Objective of 9.8 µg/L was developed for free cyanide. In 2007, the Water Environment Research Foundation (WERF) completed a scientific review and evaluation of the current USEPA criterion (WERF 2007). Two criteria were generated: one that considers all aquatic species for which there are data; and a second that excludes salmonids, which are the most sensitive group of aquatic organisms to free cyanide. The criteria calculated were 4.8 µg/L (considering all species) and 9.8 µg/L (excluding salmonids).

Salmonids have not been captured in the Project Study Area. The species included in the dataset used to calculate the criterion excluding salmonids included yellow perch, bluegill, black crappie and stickleback. Yellow perch and stickleback have been identified in the Project Study Area. Bluegill and black crappie have not been identified in the Project Study Area but other cyprinids (e.g., fathead minnow) and centrarchids (smallmouth bass and pumpkinseed) have been identified in the Project Study Area. Following salmonids, yellow perch is the most sensitive species to free cyanide.

A Site Specific Water Quality Objective of 9.8 µg/L for free cyanide is considered appropriate given the fish species identified in the Project Study Area and that the criterion is based on more complete and recent datasets than the PWQO. Furthermore, the criterion was developed using a species sensitivity distribution (SSD)-type approach. The CCME has used an SSD approach to develop the CWQGs for the protection of aquatic life for some substances, including boron, chloride and uranium (CCME 2009; CCME 2011a; CCME 2011b). The CCME (2007) recommends using this approach to develop other CWQGs and to develop SSWQOs.

A Site Specific Water Quality Objective of 7.9 µg/L was developed for copper. Since the development of the PWQO for copper in 1994, there have been a number of advances in the understanding of copper toxicity and the factors that influence toxicity in surface waters. While hardness, and specifically calcium and magnesium ions, plays an important role in mitigating the toxicity of copper to aquatic organisms, other water quality parameters also influence toxicity [e.g., dissolved organic carbon (DOC)].

In recognition of this, the USEPA recently revised the aquatic life ambient freshwater criteria for copper (USEPA 2007). In the revision, a Biotic Ligand Model (BLM) based approach was used in place of the formerly applied hardness-based approach to calculate the water quality criteria for copper. The BLM approach offers a vast improvement over the

hardness-based approach because in addition to water hardness, it incorporates the protective effects of other water chemistry parameters on copper toxicity, including the competitive influences of various cations (e.g., calcium, potassium, magnesium and sodium) as well as the influence of important complexing anions (e.g., DOC, sulphate and chloride). The BLM generates acute and chronic criteria (criterion maximum concentration [CMC] and criterion continuous concentration [CCC], respectively); the chronic criterion is calculated from the acute criterion using an acute-to- chronic ratio (ACR).

The BLM was used to derive an SSWQO for copper in the Marmion Reservoir. Measured baseline water quality data for Lynxhead Bay and Sawbill Bay were used in the model. Baseline data were used because water quality predictions are not available for all parameters required to run the BLM. This is considered to be a conservative approach because the concentrations of most water quality parameters are predicted to increase with the Project, resulting in lower copper toxicity. The fifth percentile of the BLM-derived chronic criteria was calculated for the Marmion Reservoir, and this value (7.9 µg/L) was used as the SSWQO for copper in the assessment.

Thanks
Alix

Alexandra Drapack, MBA, P. Eng.
Director Sustainable Development / Directrice développement durable
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101 Goodwin Street | PO Box 2020 | Atikokan, ON P0T 1C0
Tel. : 416-363-8653 #110 | Cell. : 416-606-1692 | Fax: 416-363-7579
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From: Alexandra Drapack
Sent: December 5, 2012 10:02 AM
To: DeVos, Ken; Parker, Steven; Hebert, Craig; Thomas, Erin; Bingley, Michelle; Blajchman,Amiel [CEAA]; 'Hysenaj,Sheelagh [Ontario]'; 'sam.shippam@ontario.ca'; 'Jim.Sutton@ontario.ca'; Brown, Alisdair (ENE); edgar.tovilla@ontario.ca; Magee, Angelique; patrick barnes
Cc: 'Liu,Amy [CEAA]'; Whitmore, Michelle (ENE); Cathryn Moffett
Subject: Osisko Hammond Reef Gold Ltd: Minutes from Nov. 20 2012 Teleconference re: Site Specific Water Quality Objectives

All,

Please see attached. Let me know if you have any comments or changes.

Thanks
Alix

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OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
SITE SPECIFIC WATER QUALITY DISCUSSION
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KEY DISCUSSION POINTS

- Golder presented some general comments on water quality observed during the on-going assessment and requested input to the following questions:
    1) There are some existing baseline values that are close to, but above PWQO and CCME values – how does MOE / CCME want these values incorporated into the assessment and development of SSWQO?
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- In response, Jim Sutton confirmed that he would need to review these questions internally with collegues at the ministry and would then be in a better position to respond. Jim requested that he be provided with a ‘snapshot’ of the Project chemistry to assist with their understanding of water quality for the Project. Those details could include summary of ranges and boundary of analytical chemistry.
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depending on the seasonal variation. Further, Golder completed dispersion modeling in the potential receiving waters.

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2) Once he receives the above noted information from Osisko/Golder, Jim Sutton will prepare comments to the questions presented above and will provide comments back to Osisko.
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4) Other regulators on the call confirm they will wait to review the EIS/EA document once it is submitted.

DRAFT - MEETING MINUTES

TO Alix Drapack, OHRG; **DATE** June 3, 2013

CC Cathryn Moffett, OHRG; Ken DeVos and Rein Jaagumagi, Golder

FROM Adam Auckland, Golder **PROJECT No.** 13-1118-0010

OSISKO HAMMOND REEF GOLD (OHRG) SITE SPECIFIC WATER QUALITY OBJECTIVES

Date and Time:	**June 3, 2013** **1:00 pm to 2:30 pm**	
Attendees	Alix Drapack, OHRG	David Laverdiere, EC
	Amy Liu, CEAA	Ken DeVos, Golder
	Todd Kondrat, MOE	Rein Jaagumagi, Golder
	Amy Godwin, MOE	Adam Auckland, Golder
	Michelle Whitmore, MOE	
	Sheelagh Hysenaj, EC	
	Debbie Audet, EC	

MEETING PURPOSE

On November 20 2012, Osisko and Golder participated in a meeting with the OHRG to discuss preliminary water quality findings and the development of Site Specific Water Quality Objectives (SSWQO). Following that meeting, MOE (Jim Sutton) was to review the preliminary water quality findings and associated questions from Osisko/Golder and provide comments. Comments from MOE were not received and SSWQO were developed by Golder and used as a basis for completing the OHRG EIS/EA. The purpose of the meeting was to discuss the Site Specific Water Quality Objectives (SSWQO) proposed by Golder and the results of the EA with the OHRG review team.

KEY DISCUSSION POINTS

- A response to the questions posed by Golder at the November 20, 2012 meeting was issued by MOE via email in February 7 2013 but was not received by Osisko or Golder.
- Todd Kondrat of MOE (replacing Jim Sutton on OHRG review team) noted the following:
  - The EA approach was not what MOE was expecting. It proposed whole lake water quality effluent criteria as opposed to receiver based effluent criteria based on a detailed effluent mixing model and specific ecological thresholds;
  - An understanding of how effluent will be mixed is required;
  - The WQ TSD's were difficult to follow and the explanation of how the WQ results were arrived at was not sufficient

- David Laverdiere noted that EC does not want to impose anything on Osisko that isn't required by the federal EA guidelines but would require time to review any technical issues raised by MOE
- Golder noted the following:
  - The EA was focused on determining if discharge of mine effluent would be acceptable for aquatic life and that the SSWQO were developed based on current and accepted practices. The focus of the EA was to assess whether there were significant adverse effects from the project.
  - A mixing modelling assessment would be completed and receiver based effluent criteria developed as part of the Environmental Compliance Approval (ECA) for the effluent diffuser. These are not typically required at the EA stage of a project.
  - A detailed mixing model would provide limited value because:
    - Sufficient information has already been provided in the WQ TSD's to determine the extent of potential environmental effects due to effluent release
    - Acute or chronic effects are not predicted even under the worst case scenario
- Alix Drapack suggested that a follow-up meeting be held for Golder to explain their methods, results and why detailed mixing modelling is not required. Todd Kondrat agreed that a follow-up meeting would be helpful.
- Golder requested that a representative of the Standards Branch of MOE attend the meeting to discuss the suitability of the proposed SSWQO

ACTION ITEMS

- Osisko to arrange a follow-up meeting between Golder, Osisko, MOE and any other interested parties.
- Golder to prepare a presentation to provide an overview of the EA methodology and results.

Environmental Monitoring

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
MEETING TO DISCUSS MONITORING SECTION OF EIS/EA REPORT
OCTOBER 15, 2013

Attendees:

Osisko:	Alix Drapack, Cathryn Moffett
CEAA:	Amy Liu, Andrea Adamson
MOE:	Michelle Whitmore, Teleconference: Alisdair Brown, Amy Godwin, Sam Shippam
MNR:	Teleconference: Sheldon Haw, Rachel Hill
Environment Canada:	Teleconference: Sheelagh Hysenaj, Debbie Audet
MNDM:	Teleconference: Rob Purdon, Patrick Barnes
DFO:	Teleconference: Sara Eddy

MEETING PURPOSE: To discuss the revisions to the Monitoring Section of Osisko's Hammond Reef Draft Environmental Impact Statement/Environmental Assessment Report based on comments received from the government review team.

POWER POINT PRESENTATION ATTACHED

1. Revisions to Slides (complete in attached)

Change "Certificate of Approval (C of A)" to "Environmental Compliance Approval (ECA)".
Slide 29: wrong VEC
Slide 26: Add more fulsome monitoring objective --- not just nests.

2. Report Revisions

Rachel: What are you expecting from us?
Alix: We appreciate your comments. We will take them into consideration in finalizing the report.

Rachel: Acknowledged that effort has been made by Osisko to address the comments on the DRAFT report. Can MNR review the narrative sections of Chapter 8 (Monitoring)?
Alix: The narrative will be provided with the final submission of the EIS/EA report at the end of November.

Sheelagh: EC has a few items to add once discussions with technical leads take place. We will forward our comments to you.

Brian: We saw a lack of linkages between effects and monitoring. We were supposed to have a monitoring meeting and that never happened. We are not seeing a link between the moose VEC and the monitoring plan.
Alix: This is the meeting on monitoring. I will talk to Golder about reviewing the linkages.

Sara: Can I forward some comments on wording prior to the November final submission?
Alix: Yes, please.

3. Closure Planning

Rachel: We have concerns on the schedule for the project and closure planning. What happens to the commitments if the schedule changes? You are planning very far in the future. What is the timeframe for the closure and post-closure phases?
Alix: Closure phase will be approximately 2 years. Post closure is much longer but very few monitoring commitments are contained in the post closure planning unless linked to water quality.

Pat: The Certified Closure Plan (CCP) requires the Proponent to outline what will happen during not only closure but also for temporary suspension. Commitments are outlined in the CCP for both closure and temporary suspension as well as definitions for both.

Amy: Will the monitoring plans during operations and closure be different from what is presented here?
Alix: No, but the plans allow for adaptive management.

4. Social Monitoring

Alix: Please consider further our approach to social monitoring. We will not be providing the tables with frequency, duration etc. but instead have relied on a “committee approach” for social monitoring.

Amy: The federal perspective is on adverse effects and if the mitigation is effective. The monitoring plans need to assess whether the mitigation is working. Another requirement is identifying the roles and responsibilities. This discussion still needs to take place so that it can be included in the Comprehensive Study Report (CSR).

5. Contingency Planning

Rachel: MNR is concerned that dams have adequate monitoring plans – must ensure the LRA and PLRA requirements are met.

Amy: Contingency plan includes a commitment to enhance measures – in some cases it includes “such as” examples like in the air quality section. Can you please include these type of examples for the other sections?
Alix: We can look at including other “such as” examples for contingency.

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HAMMOND REEF GOLD



ENVIRONMENTAL AND SOCIAL MANAGMENT PLANNING

GOVERNMENT REVIEW TEAM

OCTOBER 15, 2013

Golder Associates

Comments Received

Agency	Comments	Topic
CEAA	3	Objectives, Frequency, Duration
MOE EAB	11	Guidelines, Consultation, Schedule, Frequency, Indicators, Terms of Reference
Health Canada	1	Country Foods
MNDM	4	Groundwater, Water Quality,
MNR	3	Committees, Terms of Reference, Fish Populations
MOE	3	Noise, Groundwater

Human Health and Country Foods

- **Comment:** Given that the operational phase is used as a bounding scenario, please discuss whether monitoring data is needed during the post-closure phase to confirm the results of modelling where soil concentrations remain below the appropriate guideline.

- **Response:** The deposition rates that were used to calculate soil concentrations would be the same deposition rates used to calculate country food concentrations.
- Changes in country food concentrations as a result of the Project will be limited to less than 1%.
- Given the conservative nature of the predicted Project-related emissions that are applied in the multi-media screening and the negligible incremental change in vegetation concentration, monitoring data is not required during post-closure.

Terms of Reference

The Environmental Effects Monitoring Plan should include:

1. A description of the potential negative environmental effect for each criterion.
2. Mitigation and protection measures planned for each criterion and performance measures.
3. How the project will be monitored to ensure that mitigation strategies are meeting performance objectives.
4. A contingency plan to be implemented should monitoring reveal that mitigation measures have failed.
5. A description of frequency and duration of monitoring for each negative impact, for each phase of the project.
6. A non-compliance strategy that will identify a plan of action for out of compliance situations.

EIS Guidelines

The EIS shall provide the following:

- A discussion of the proposed follow-up program and its objectives;
- A description of the main components of the program and each monitoring activity under that component;
- A discussion of the objectives the monitoring activity is fulfilling (i.e. confirmation of mitigation, confirmation of assumptions; verification of predicted effects);
- The structure of the program;
- A schedule for the finalization and implementation of the follow-up program;
- A description of the roles and responsibilities for the program and its review process, by both peers, Aboriginal groups, and the public;
- Possible involvement of independent researchers;
- The sources of funding for the program; and
- Information management and reporting.

Physical Environment Management Planning

Project Interaction	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Air emissions	Risk to human and ecological health Increase in dust levels Change to ambient air quality	Design Ore Processing Facility to meet air quality standards Dust management plan	Confirmation of process emissions Confirmation of predicted indicator compound levels in ambient air Confirmation of predicted indicator compound levels at receptor locations	MOE: Environmental Compliance Approval Ontario Regulation 419/05 Emission Summary and Dispersion Modeling Report
Noise emissions	Noise levels may be annoying to recreational users	Post signs at camp sites to indicate potential for elevated noise levels Provide contact information on signage	Confirmation that recreational users are not being affected by elevated noise levels	Ontario Environmental Protection Act MOE publication NPC 232 "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)"
Vibration from blasting	Changes to fish habitat	Adjust blast intensities as required to protect sensitive fish species during critical life stages. Develop blast monitoring and mitigation plan.	Confirmation that underwater overpressure will meet regulated levels	Fisheries Act authorizations

Physical Environment Management Planning

Project Interaction	Potential Effect	Contingency Plan
Air emissions	Risk to human and ecological health Increase in dust levels Change to ambient air quality	Register and investigate any air quality complaints Adjust dust management plan, preventative procedures and control measures Modify in-design fugitive dust control devices (e.g., enclosures, baghouses) Review non-road vehicle emissions and consider: • Alternative vehicles • Alternative fuel types • Reduced fleet sizes
Noise emissions	Noise levels may be annoying to recreational users	Register and investigate any noise complaints Noise reduction measures will be implemented based on receipt of complaints
Vibration from blasting	Changes to fish habitat	Reduce the maximum explosive weight detonated per delay if required through: • Reducing the borehole diameter; • Introducing decked charges; • Reducing the borehole length.

Physical Environment Management Planning

Project Interaction	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Water Discharge	Changes to water quality	Capture of runoff and seepage to collection ditches and sumps to the extent practicable Recirculation of water in process plant Capture water within the reclaim pond and PPCP to settle solids Implement management controls if necessary to reduce nutrient loading Include a treatment facility for suspended solids which would be operated if necessary Develop contingency plan that considers treatment of metals or phosphorus At closure and post closure re-establish direct drainage from Project Site areas to lakes and reservoirs	Confirmation of water quality predictions Management of on-site water quality Ensure regulatory compliance	MOE: Environmental Compliance Approval MOE: Permit to Take Water DFO: Fisheries Act authorizations MMER regulatory requirements MNDM: Closure Plan and amendments MISA Industrial Sewage works Environmental Compliance Approval

Physical Environment Management Planning

Project Interaction	Potential Effect	Mitigation Measure	Monitoring Objective	Regulation or Guideline
Spills	Changes to water quality Degradation of soil quality	Develop standard spill response procedures and protocols Develop and communicate roles and responsibilities for spill response including environment department and management teams Worker training on spill response protocols during general site orientation and for responders Maintenance of a spill and spill response database	Rapid and appropriate clean-up of spills Continual improvement of spill response	Spills reporting to MOE
Earth works	Loss of soil and alteration of terrain may reduce wildlife use Some timber resources will be lost Erosion may influence slope stability and water quality	Timber harvesting agreements will mitigate loss of timber resources Soils will be stockpiled, protected against erosion and used in progressive restoration of habitat to the extent practicable. Maintenance of roadways and embankments to protect against erosion	Assurance of embankment stability and pit slopes Minimize site erosion	Mining Act of Ontario Canadian Dam Association Guidelines MOE requirements for protection of ecological habitat

Physical Environment Management Planning

Project Interaction	Potential Effect	Contingency Plan
Water discharge	Changes to water quality	Enhance water treatment measures Adjust sizing of ponds and pumping systems Enhance containment measures
Spills	Changes to water quality Degradation of soil quality	Develop and implement a specific spill prevention management plan Enhance containment measures for potentially harmful materials Contaminated soils may be excavated, disposed of in an approved disposal area and replaced with uncontaminated soil
Earth works	Loss of soil and alteration of terrain may reduce wildlife use Some timber resources will be lost Erosion may influence slope stability and water quality	Enhanced erosion and sediment control measures such as - Placement of armouring on slopes - Use of silt curtains Work with local communities to identify alternate resource and wildlife areas.

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A Fresh Outlook on Mining

Physical Environment Management Planning

Project Interaction	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Water discharge and taking	Changes to water levels Changes to water quality Loss of navigable waters	Discussion with water users and members of the Seine River Watershed Management Plan. Design of facility and flows will be optimized for local environment Precipitation records will be used for design and flow management	Confirmation of water level predictions Ongoing information sharing with other water users Correlation of water levels and weather station data	Seine River Watershed Management Plan MMER MOE: Environmental Compliance Approval MNDM: Closure Plan and amendments MISA Industrial Sewage works Environmental Compliance Approval Navigable waters protection act
Pit dewatering	Changes in lake levels Changes in water quality Pit slope stability	Pumping within water management system and release of water through discharge locations Monitoring and/or treating to ensure appropriate water quality Pit design to ensure slope stability	Confirmation of water level predictions Confirmation of design assumptions	MMER: requirements MOE: Environmental Compliance Approval MNDM: Closure Plan and amendments

Physical Environment Management Planning

Project Interaction	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Excavation and stockpiling	Potential oxidation or acid mine drainage influence	Waste rock and tailings will be stored appropriately. Runoff and seepage from WRMF and TMF will be captured and directed to the PPCP Water in the PPCP will be treated if necessary. Development of a geochemical management plan	Confirmation of predicted geochemical characteristics Confirmation that oxidation and acid mine drainage is not occurring Collection of further geochemical characterization information for consideration in the Certified Closure Plan	Mining Act of Ontario - Regulation 240/00

Physical Environment Management Planning

Project Interaction	Potential Effect	Contingency Plan
Water discharge and taking	Changes to water levels Changes to water quality Loss of navigable waters	If water level changes are greater than expected: • Withdraw water only during certain periods of the year and store it on-site • Consider additional fish habitat compensation projects If consistent flooding occurs structural modifications will be investigated and implemented
Pit dewatering	Changes in lake levels Changes in water quality Pit slope stability	Modify seepage collection systems and enhance treatment if necessary to ensure downstream aquatic health is protected. If seepage inflows are larger than expected, construct additional pumping infrastructure. Implement adaptive modifications to ensure pit slope stability. Install dewatering wells in specific areas or zones around the mine
Excavation and stockpiling	Potential oxidation or acid mine drainage influence	If runoff from site materials is found to be acidic or contain unacceptable metal concentrations : Materials could be relocated to a chemically stable environment, and/or treatment could be enhanced. Modifications to the closure plan will be made as necessary to ensure long-term protection of aquatic and terrestrial life

Physical Environment Monitoring Plan

Potential Effect	Indicator	Location(s)	Method	Frequency	Duration
Increased risk to human and ecological health	TSP PM_{10} $PM_{2.5}$ Metals NO_X CO SO_2 HCl NH_3 NaOH	At the emissions source	Source testing of emissions rates	One time	Operations phase
Increase in dust levels	Road silt loadings	On the access road	Periodic sampling	Annually During summer months	Operations phase
Changes to ambient air quality	TSP/PM_{10}/$PM_{2.5}$ Indicator compounds	Monitoring location to be selected based on logistics	Installation of long term air quality monitoring station	6 day National Air Pollutant Surveillance Cycle	Operations phase

Physical Environment Monitoring Plan

Potential Effect	Indicator	Location	Method	Frequency	Duration
Changes to fish habitat	Ground and air vibration level monitoring from blasting operations to develop site-specific vibration attenuation.	6 sites during each blast Set up at distances varying from about 300 m to 2000 m from the blast	Establish a series of seismographs at varying distances from blasts and keep a detailed record of the loading parameters.	Minimum of 12 blasts	To be determined based on data recorded during initial blasts and ECA requirements
Changes to fish habitat	Blast ground and air vibrations	Nearest fish habitat or fish spawning location	Instrumentation to record ground and air vibration intensities. Data would be compared to known blast times to assess peak ground and air vibration intensities produced.	To be determined based on environmental compliance approval (ECA) requirements	
Changes to fish habitat	Blast-induced water overpressure level	Nearest fish habitat or fish spawning location	Instrumentation to record water overpressure intensities, including a hydrophone and data acquisition unit.	Periodic monitoring as the blasts approach the nearest fishery. Based on data recorded during initial blasts, a decision will be made on subsequent monitoring requirements.	

Physical Environment Monitoring Plan

Potential Effect	Indicator	Location(s)	Method	Frequency	Duration
Changes to Flows and Lake Water Levels	Water withdrawal rates	Potable and fresh water intakes	Install instrumentation for continuous flow recording; Manual flow measurements where continuous recording is not possible	Daily, or weekly if continuous recording not possible	Construction phase Operations phase
	Effluent discharge rates	Treated sewage and mine wastewater effluent discharge outlets			
	Mine dewatering flows	Variable based on areas being dewatered			
	In-pit runoff and seepage collection volumes	Mine pit pumping station(s)			
	Project site out-of-pit runoff and seepage collection volumes	Site water collection pumping stations			
	TMF seepage collection volumes	TMF seepage collection pumping stations	Manual flow measurement	Weekly	
	Recycle water use and TMF precipitation and runoff collection	TMF reclaim pond pumping station			

Physical Environment Monitoring Plan

Potential Effect	Parameter	Location(s)	Method	Frequency	Duration
Changes to Flows and Lake Water Levels	TMF reclaim pond water level	TMF reclaim pond	Install instrumentation for continuous water level recording	Continuous, or weekly if continuous recording not possible	Construction phase Operations phase
	Daily mean flow	Sawbill Creek above Sawbill Bay	Install instrumentation for continuous flow recording		
		Lumby Creek above Lizard Lake			
		Seine River above the Upper Marmion Reservoir			
	Daily mean flow and daily mean lake water level	Lizard Lake West Tributary at Unnamed Lake 5	Install instrumentation for continuous flow and water level recording		
		Lumby Creek below Lizard Lake			
	Instantaneous flows	Sawbill Bay East Tributary	Manual flow measurement	Periodic	
		Lumby Creek Tributary at Lizard Lake			

Physical Environment Monitoring Plan

Potential Effect	Parameter	Location(s)	Method	Frequency	Duration
Changes to Groundwater Levels	Groundwater Elevation	Downgradient from the Mine, Stockpiles, WRMF and Water Management Systems	Manual depth to water measurements at all locations and continuous monitoring using data logging pressure transducer at select locations	Quarterly for manual depth to water measurements. Continuous for locations with data logging pressure transducers	Construction phase Operations phase
		Between the open pits and Upper Marmion Reservoir			
		Downgradient from the TMF near the shoreline of Lizard Lake and Upper Marmion Reservoir	Manual depth to water measurements	Bi-annual	
		Downgradient from the Accommodation Camp's septic system near the shoreline of Upper Marmion Reservoir			
		Near surface water monitoring stations		Quarterly	
Changes to Groundwater Quality	Water Quality Parameters	Downgradient from the Mine, Stockpiles, WRMF and Water Management Systems	Grab samples Laboratory analysis	Bi-annual	
		Between the open pits and Upper Marmion Reservoir			
		Downgradient from the TMF near the shoreline of Lizard Lake and Upper Marmion Reservoir			
		Downgradient from the Accommodation Camp's septic system near the shoreline of Upper Marmion Reservoir and the chemical/fuel storage and maintenance facilities.			

Physical Environment Monitoring Plan

Potential Effect	Indicator	Location(s)	Method	Frequency	Duration
Changes to Water Quality	Suspended solids Metals Nutrients Cyanide	Sawbill Bay Upstream of mine effluent discharge Raft Lake Dam Unnamed Lake upstream of Site and TMF	Grab samples Laboratory analysis	Quarterly	Construction Phase Operations phase Closure phase
Changes to Water Quality	pH Temperature Dissolved oxygen Suspended solids (for laboratory analyses: Metals, Nutrients, cyanide)	Sawbill Bay Lizard Lake Hawk Bay Turtle Bay Lynxhead Bay	Water column profile Laboratory analysis	Quarterly	Construction Phase Operations phase Closure phase
Changes to Water Quality	Suspended solids Metals Nutrients Cyanide	North Sawbill Bay Camp discharge location	Grab samples Laboratory analysis	Quarterly	Construction Phase Operations phase
Changes to Water Quality	pH Temperature Dissolved oxygen Suspended solids (for laboratory analyses: Metals, Nutrients, cyanide)	South Sawbill Bay Mine effluent discharge site	Water column profile Laboratory analysis	Quarterly	Construction Phase Operations phase
Changes to Water Quality	Suspended solids Metals Nutrients Cyanide	Open pit	Grab samples Laboratory analysis	Annually prior to discharge Monthly after discharge	Closure Phase Post Closure until 5 years of acceptable results have been obtained.

Biological Environment Management Planning

VEC	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Wetlands Forest cover	Habitat loss Altered drainage patterns Changes to wildlife and plant communities	Vegetated riparian buffers will remain around watercourses Invasive Plant Management Plan: • Demarked areas to minimize encroachment into natural areas • Construction equipment regularly cleaned on-site • Areas undergoing natural regeneration to be isolated	Ensure successful colonization of native plants in regenerating areas	Environmental Protection Act of Ontario

Biological Environment Management Planning

VEC	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Species at Risk Furbearers Moose Wild rice	Changes to water levels	Recirculation of water in process plant Implement management controls (i.e. interrupt operations) if necessary	Ensure effectiveness of mitigation measures	Environmental Protection Act of Ontario
Species at Risk Furbearers Moose	Risk to ecological health Increase in dust levels Change to ambient air quality	Design Ore Processing Facility to meet air quality standards Dust management plan	Ensure effectiveness of mitigation measures	MOE: Environmental Compliance Approval Ontario Regulation 419/05 Emission Summary and Dispersion Modeling Report

Biological Environment Management Planning

VEC	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Species at Risk Furbearers Upland breeding birds Moose	Displacement of wildlife species due to removal of habitat, noise and human activity. Predicted noise levels near the open pit could alter wildlife behaviour. Human activity in the Mine Study Area may reduce wildlife use of surrounding habitats.	Avoid vegetation clearing within the breeding bird window If activities must occur within the window, pre-clearing surveys and demarcation of active nests Hunting, harvesting, trapping and fishing policies for camp workers Design transmission line to minimize collisions and electrocution of birds Selectively clear transmission line pathway without grading or stripping of topsoil	Protect active nests Protect bird populations Track and respond to wildlife use of the Mine Site Educate workers and minimize increased pressure to fishing and hunting in the area.	Environmental Protection Act of Ontario Ontario Ministry of Natural Resources

Biological Environment Management Planning

VEC	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Species at Risk Furbearers Upland breeding birds Moose	Direct loss of wildlife individuals through nuisance interactions. Direct loss of wildlife individuals through accidents such as vehicle collisions.	Industrial and domestic waste management plan • Waste receptacles to limit attraction of wildlife. • Food wastes will be appropriately managed All workers will be educated on: • Risks of feeding wildlife • Hazards to wildlife individuals • Species at risk on site Speed limits will be posted and enforced on roads Nuisance animals will be trapped and moved to remote locations for release.	Improvement of the waste management program Evaluation of the effectiveness of the wildlife management plan	Environmental Protection Act of Ontario

Biological Environment Management Planning

VEC	Potential Effect	Contingency Plan
Wetlands Forest cover	Habitat loss Altered drainage patterns Changes to wildlife and plant communities	If invasive species are found to be preventing regeneration of native vegetation adaptive measures such as plant removal or isolation of areas undergoing natural regeneration will be implemented.
Species at Risk Furbearers Moose Wild rice	Changes to water levels	Enhance re-circulation and water storage/retention efforts. Temporarily interrupt operations if necessary.
Species at Risk Furbearers Moose	Risk to human and ecological health Increase in dust levels Change to ambient air quality	Enhance air treatment/dust suppression efforts. Temporarily interrupt operations if necessary.

Biological Environment Management Planning

VEC	Potential Effect	Contingency Plan
Species at Risk Furbearers Upland breeding birds Moose	Displacement of wildlife species due to removal of habitat, noise and human activity. Predicted noise levels near the open pit could alter wildlife behaviour. Human activity in the Mine Study Area may reduce wildlife use of surrounding habitats.	If monitoring data suggests displacement is greater than predicted or stakeholder concerns are raised, targeted studies may be initiated to assess the potential causes of displacement, the adequacy of the active monitoring program and to investigate and identify potential mitigation measures .
Species at Risk Furbearers Upland breeding birds Moose	Direct loss of wildlife individuals through nuisance interactions. Direct loss of wildlife individuals through accidents such as vehicle collisions.	If required, revise Industrial and domestic waste management plan to include: Installation of temporary wildlife barriers (fences) More frequent incineration of food wastes Stricter implementation of food waste policies. If required, signage may be posted to warn drivers of areas were frequent vehicle-wildlife interaction occur

Biological Environment Management Planning

VEC	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Upper Marmion Reservoir	Changes in receiving water levels	Discussion with water users and members of the Seine River Watershed Management Plan. Design of facility and flows will be optimized for local environment Precipitation records will be used for design and flow management	Assess aquatic health of water bodies impacted by water level changes Confirm assumptions related to habitat loss	Environmental Protection Act of Ontario Fisheries Act
Lower Reaches Baitfish Walleye Smallmouth Bass Northern Pike	Elimination of headwater water bodies and water courses within mine footprint.	Develop fish relocation plan with input from stakeholders and Aboriginal communities Minimize the direct loss of fish by relocating fish to other waterbodies No Net Loss Plan that provides habitat compensation under Section 35 of the *Fisheries Act* and the MMER Schedule 2 waterbody listing.	Assess the effectiveness of habitat offset projects in replacing lost habitat.	Fisheries Act Metal Mining Effluent Regulations

Biological Environment Management Planning

VEC	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Walleye Northern pike Upper Marmion Reservoir	Loss of small areas of lake bottom habitat from water intake and discharge structures. Water quality changes in Sawbill Bay from Project discharge	Intake structures will be designed to minimize entrainment of aquatic life Discharge structures will be elevated above the lake bottom Effluent diffusers will be constructed to enhance mixing and dilution at the discharge location. Aquatic effects monitoring plan will be developed with input from stakeholders and Aboriginal communities	Confirm operation of intake structures within operational velocity criteria Assess aquatic health of water bodies in areas near the discharge structures.	Environmental Protection Act of Ontario Fisheries Act

Biological Environment Management Planning

VEC	Potential Effect	Mitigation Measures	Monitoring Objective	Regulation or Guideline
Baitfish Walleye Smallmouth Bass Northern pike	Impacts on aquatic life due to changes in channel alignments from road construction.	Road and culvert/bridge construction will adhere to strict erosion and sediment control plans Road and culvert/bridge construction will be timed to avoid fish spawning windows. Habitat compensation at stream crossings	Minimize road impingement on habitat and sediment release during construction Assess aquatic health of channel upstream and downstream of road crossings. Assess the effectiveness of habitat offset project in achieving the objective of replacing lost habitat.	Environmental Protection Act of Ontario Fisheries Act
Baitfish Walleye Smallmouth bass Northern pike	Potential effect on sensitive fish spawning and nursery area due to blasting operations.	Develop blast monitoring and mitigation plan. Adjust blast intensities as required to protect sensitive fish species during critical life stages.	Confirmation of predictions related to impacts on fish habitat	Fisheries Act

Biological Environment Management Planning

VEC	Potential Effect	Contingency Plan
Upper Marmion Reservoir	Changes in receiving water levels	If habitat offset projects prove to be ineffective or do not meet the objectives of the NNLP, alternative offset projects will be considered
Lower reaches Baitfish Walleye Smallmouth Bass Northern Pike	Elimination of headwater water bodies and water courses within mine footprint.	If effects on water levels are greater than predicted, mitigation measures will be re-evaluated and the need for additional habitat offset projects will be considered
Baitfish Walleye Smallmouth Bass Northern Pike	Loss of small areas of lake bottom habitat from water intake and discharge structures. Water quality changes in Sawbill Bay from Project discharge	If intake velocities exceed guideline criteria, appropriate measures will be implemented to reduce velocities such as: • Modifying the intake to provide a larger intake screen area; or, • Reducing the operational withdrawal rate through appropriate water management activities If monitoring of effluent discharge shows trends that may eventually result in significant adverse effect on aquatic life re-evaluation of the mitigation strategies will be conducted and additional mitigation measures may be implemented

Biological Environment Management Planning

VEC	Potential Effect	Contingency Plan
Baitfish Walleye Smallmouth Bass Northern Pike	Impacts on aquatic life due to changes in channel alignments from road construction.	On-going erosion and sediment control measures will be reviewed and revised as necessary during construction. If required, water conveyance structures will be modified/repaired to ensure proper flow conveyance and fish passage. If habitat offset projects prove to be ineffective or do not meet the objectives of the NNLP, alternative offset projects will be considered
Baitfish Walleye Smallmouth Bass Northern Pike	Potential effect on sensitive fish spawning and nursery area due to blasting operations.	Adjust blast intensities as required to protect sensitive fish species during critical life stages. Develop blast monitoring and mitigation plan.

Biological Environment Monitoring Plan

Potential Effect	Indicator	Location	Method	Frequency	Duration
Loss and/or Alteration of Vegetation	Composition and diversity of plant communities in LSA	Disturbed areas within the mine site and access roads that have been left to regenerate.	Visual assessment of areas undergoing natural regeneration by an ecologist.	Periodically at each site Approximately every 2 years after natural re-vegetation begins	Operations phase Until native vegetation communities become established.
Displacement of wildlife Change in habitat availability and suitability	Presence and persistence of wildlife species in the LSA	Locations to be selected based on ongoing mine activity	Breeding bird point counts	Annually	Construction phase Operations phase Closure phase
			Bat acoustic monitoring using stationary devices		
		Areas adjacent to the mine site and within the LSA	Review of secondary source data from MNR	As records are updated and available	
Wildlife Injury Wildlife Mortality			Recording of visual observations in a Wildlife Log	On-going	
			Reporting of wildlife mortalities by workers		

Biological Environment Monitoring Plan

Potential Effect	Indicator	Location	Method	Frequency	Duration
Changes to fish habitat	Water levels	Upper Marmion Reservoir Lizard Lake API-8	Water level loggers	Continuous	Operations phase Closure phase
Changes to fish habitat	Distribution/success of aquatic vegetation Littoral cover features Fish use (age composition, abundance, diversity)	Upper Marmion Reservoir Lizard Lake API-8	Vegetation mapping Electrofishing Seine netting	Bi-annual	Operations phase Closure phase
Mortality of aquatic species	Intake velocity	Intake locations	Flow metering	Daily	Operations phase Closure phase
Changes to aquatic health	Benthic community diversity and composition Fish tissue concentrations	Discharge locations	Benthic community assessment Fish tissue sampling	Bi-annual	Operations phase Closure phase

Biological Environment Monitoring Plan

Potential Effect	Indicator	Location	Method	Frequency	Duration
Changes to fish habitat	Total suspended solids Dissolved oxygen Erosion Water levels	Stream crossings	Grab samples	Daily	Construction Phase
			Water level loggers	Continuous	
Loss of fish habitat	Distribution and success of aquatic vegetation Littoral cover features Fish use (age composition, abundance, diversity)	Stream crossings Habitat offset projects	Vegetation mapping Electrofishing Seine netting	Bi-annual	Operations and Closure Phase
Loss of fish habitat	Water quality Water levels	Stream crossings Habitat offset projects	Grab samples	Monthly	Operations and Closure Phase
			Water level loggers	Continuous	
Changes to fish habitat	Blast-induced water overpressure level	Nearest identified fish habitat or fish spawning location to active blasting	Recording of water overpressure intensities using a hydrophone and data acquisition unit.	Initial blast event	Initial blast event

Schedule

- Q3 2013 – Submit Final EIS/EA Report
- Q1 2014 – Form Town Consultation Committee
- Q2 2014 - Consult on Monitoring Plans
- Q3 2014 – Finalize Construction Monitoring Plans
- Q4 2014 – Receive EIS/EA Approval
- Q1 2015 – Begin Project Construction
- Q1 2016 - Finalize Operations Monitoring Plans
- Q1 2027 – Finalize Closure Monitoring Plan

Construction Monitoring Consultation

- Planned for Q2 2014
- Committee discussions:
  - Planned monitoring framework
  - Parameters, methods, duration and frequency of monitoring
  - Opportunities for community involvement in monitoring activities
  - Preferred mechanism for sharing monitoring results
- Community information materials:
  - Prepared by Osisko
  - Reviewed by the committee members.
  - Shared by committee members and Osisko
  - Follow up meeting for community feedback

First Nations Committees

- Three Resource Sharing Committees
- Provide a communication link between the Fort Frances Chiefs Secretariat (FFCS) communities, Lac des Mille Lacs First Nation (LDMLFN) and Osisko.
- Two members from Osisko, and one member each from the FFCS and LDMLFN.
- Meet on a quarterly basis
- Address the social, environmental and economic commitments.
- The environment committee is expected to take the most active role in the monitoring plan development and finalization.

Metis Committee

- A Métis consultation committee was formed in November 2011
- It is anticipated that a similar committee will be formed prior to the construction phase, likely in Q1 2014
- The structure of the committee will be dictated based on a negotiated agreement between Osisko and the Métis Nation of Ontario

Atikokan Committee

A Town committee will be formed to focus on social management planning. It is anticipated that the committee will be formed prior to the construction phase of the Project, likely in Q1 2014.

The structure of the committee will be based on the key parameters to be monitored and is anticipated to include representatives from the following sectors:

- Recreation and tourism
- Emergency response and preparedness
- Health and wellness
- Education and training
- Municipal infrastructure and services

The committee will also include two Osisko staff members. The committee is anticipated to meet on a quarterly basis and will be consulted throughout all phases of the Project.

Reporting

Osisko will report on the results of the monitoring programs through three different pathways:

Compliance Monitoring Results
- Reported annually and discussed with regulators
- External audits reported to national authorities as applicable
- Compliance reporting requirements are included in Osisko's Commitments

Stakeholder Communications
- Two public meetings per year since 2011
- Continually published a Community News Brief on a bi-weekly basis since 2011
- Similar level of information sharing throughout the permitting stage
- Town Committee

Aboriginal Communications
- Meetings have taken place on a quarterly basis since 2011
- Similar level of information sharing throughout the permitting stage
- First Nations Committee
- Metis Committee

Terrestrial Ecology – Bats

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
BAT STUDIES MEETING
OCTOBER 17, 2013

Attendees:

Osisko:	Alix Drapack, Cathryn Moffett
Golder:	Erin Greenaway
Environment Canada:	Sheelagh Hysenaj, Paul Watton
MNR:	Rachel Hill, John Vandenbroeck, Brian Jackson, Barb Elliot, Brittney Ems, Sheldon Haw
MOE:	Michelle Whitmore

MEETING PURPOSE: To share the results of the bat studies carried out at the Osisko Hammond Reef Gold project site and to discuss planned mitigation measures for inclusion in EIS/EA Report.

POWER POINT PRESENTATION ATTACHED

1. Federal Designation

Paul – Bats not currently listed under Species At Risk Act (SARA).

Osisko should expect to receive most guidance from the province with respect to bats. EC involved in the discussion out of interest and to maintain consistency.

2. Planned Mitigation Measures

Erin – Working with bat specialists in Manitoba to identify compensation opportunities.

Plan to develop a site specific plan with experts who have undertaken this work before.

Alix – Plan to include a conceptual compensation plan in the EIS/EA Report

Also include a commitment to developing a more detailed plan that is agreeable to regulators.

John – Should leave planned compensation measures fairly open.

Donation to research should be avoided, talk more about partnerships for research.

3. Permitting Process

John – EA Report should acknowledge an authorization may be required under the Endangered Species Act. There must be full disclosure in the EA and during consultation on the EA that the "Species at Risk" bats were found at the OHRG site and that mitigation measures, habitat compensation and a monitoring program will be developed in compliance with Ontario's Endangered Species Act (ESA).

Not currently sure if permit will be required.

Need more details to know if Project will trigger Endangered Species Act

If Act is triggered would require “overall benefit” (Section 17C) permit.

Bats should be added to the monitoring plan in the EIS/EA Report.

Permit would rely on EA for consultation, although it is a separate process**.**

Alix – How long does permitting take?

John – Discussion of permitting process.

Timing can vary, but Osisko should expect approximately one year process.

Erin – Since swarming surveys didn’t confirm it was hibernation habitat – can we just assume?

John – We would want to differentiate between all bat species and endangered bat species.

4. Next Steps

Alix – EA will say that bats could be affected and bats will be included in Chapter 8 monitoring plans. EA will also acknowledge that an ESA authorization may be required.

Osisko will consult with stakeholders on the results of bat studies as part of the public comment period that is required after the publication of the final EIS/EA Report.

EIS/EA Report will commit to further studies of bats in the future.

John – Sounds good.

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BAT SURVEY RESULTS

GOVERNMENT REVIEW TEAM

OCTOBER 17, 2013

Golder Associates

PRESENTATION OVERVIEW

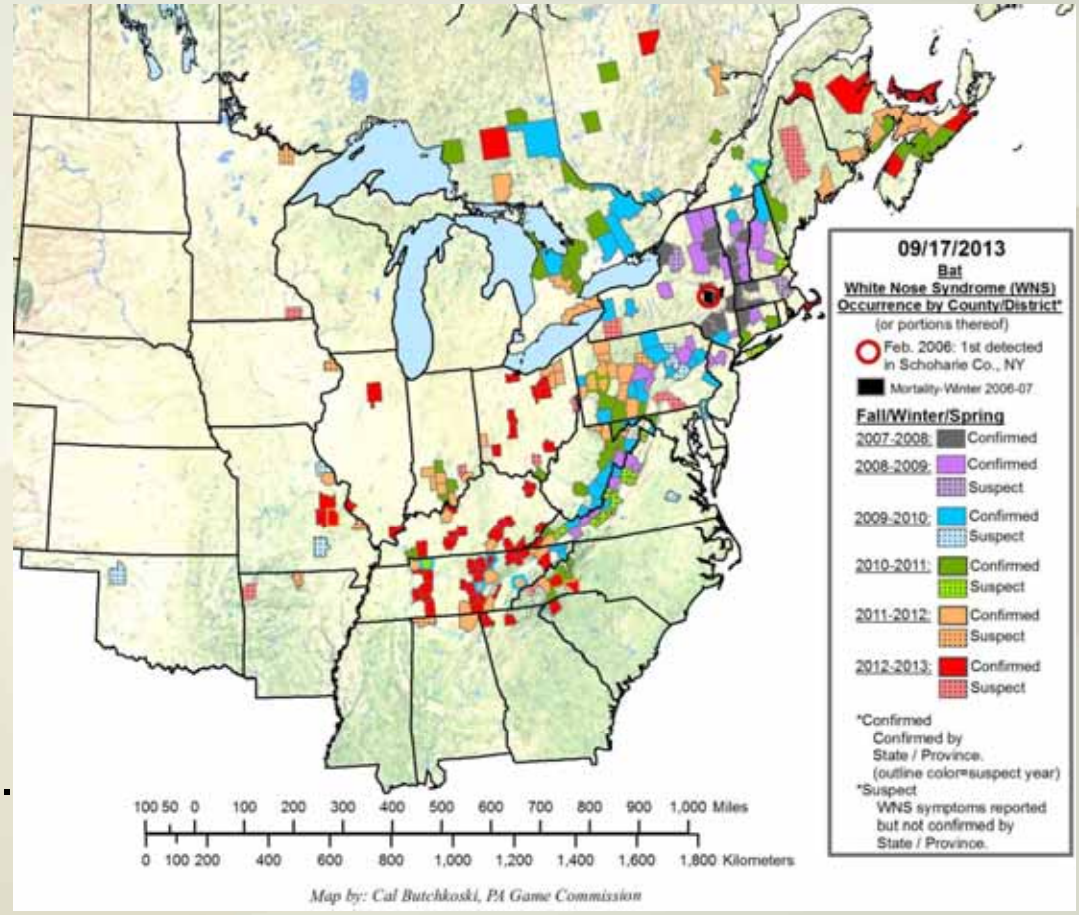
- Welcome and Introductions
- Summary of Results of Bat Surveys
- Proposed Off-set (Compensation) Ideas
  - Maternity Roost Habitat
  - Hibernation Habitat
- Discussion

BAT STUDIES

- Bat surveys were conducted in during the maternity season and swarming/hibernation period in 2013 at the Hammond Reef site using MNR guidelines (*Bats and Bat Habitats: Guidelines for Windpower Projects*).
- Results of the bat field surveys at Hammond Reef identified numerous species of bats:
  - Included endangered species
    - little brown bat
    - northern myotis
  - Bats are using the site and/or habitats in the vicinity of the site during:
    - maternity roosting period (June)
    - swarming (mating) period (August), prior to hibernation.
  - The presence of bats during these two periods indicates that they have a high potential to be using habitat on the mine site during two crucial periods in their life cycle (giving birth/nursing and hibernation).

BAT STUDIES

- Bat species listed as endangered under Ontario's Endangered Species Act have populations that are in decline due to white nose syndrome (WNS).
- WNS has not yet been detected in the bat population in vicinity of the Hammond Reef site.

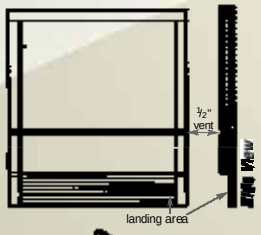


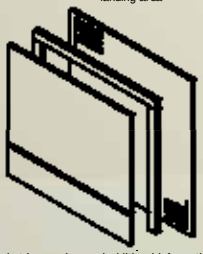
MATERNITY ROOST HABITAT

- Seven species of bats were recorded on the Hammond Reef site during the maternity roost surveys which indicates the potential for maternity roost habitat on the mine site.
- Those species that roost colonially (such as little brown bat) typically do so in tree cavities, buildings or a variety of other structures.
- Given this, the availability of trees/forest with mature trees for roosting habitat for bats is not limited to the mine site.
- However, there will likely be some loss of maternity roosting habitat and as such compensation for this loss will need to occur.

MATERNITY ROOST HABITAT COMPENSATION IDEAS

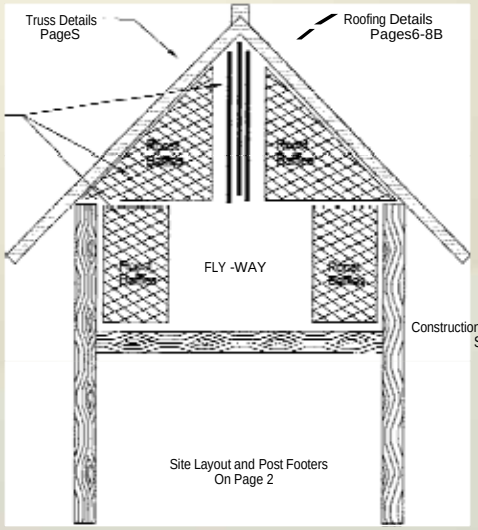
- Bat boxes and bat condos have been known to be used by maternity colonies but only if they meet the important environmental factors bats look for in structures.
- Size, temperature, thermal stability, humidity, accessibility, and disturbance levels are some of the most important things bats look for when choosing a man-made structure for a maternity roost.
- Recommendation: Put up two bat condos and numerous bat boxes to offset the loss of maternity roosting sites.





More bat-house plans and additional information can be found in BCI's *Bat House Builder's Handbook*, available at *www.batcatalog.com.*

END VIEW (Cutaway)



PA GAME COMMISSION BAT CONDO **PAGE:**

HIBERNATION HABITAT

- There were six species of bats, including the endangered species, recorded during the swarming surveys.
- The results obtained from the monitoring of the existing mine adits on the site during the swarming period (prior to them entering hibernation) may indicate that they are using the old mine shafts as hibernacula.
- The bat activity outside of the adits was higher than the bat activity recorded at two reference stations which could indicate swarming behaviour and the potential for hibernacula.
- Note that more monitoring would be required to confirm if the mine shafts are hibernacula.
- The adits are located within the footprint of the open pit and the proposed mine will require the removal of the potential hibernacula.

HIBERNATION HABITAT COMPENSATION IDEAS

- Rehabilitation of old mine shafts in this part of Ontario to create/enhance their capacity as hibernacula.
- Phase 1 safety inspections of mines in NW Ontario to allow bat researchers (academics, MNR biologists) to enter old mines that are known/suspected hibernacula to conduct their studies.
- Training of MNDM or MNR staff to be able to do Phase 1 safety inspections as a way to promote the studies of bats in the province.
- Installation of gates on old mines to protect bats by preventing public access and degradation of the feature.
- Donation to WNS research.

Discussion

6 – Closure Planning

OSISKO HAMMOND REEF GOLD PROJECT LTD.

TELECONFERENCE TO DISCUSS DEVELOPMENT OF CERTIFIED CLOSURE PLAN
JULY 29, 2013 – 9:30 AM – 11:30 AM

Attendees:

OHRG:	Alix Drapack (AD)
Golder Associates Ltd.:	Ken Bocking (KB), Adam Auckland (AA), Rui Couto (RC)
MNDM:	Pat Barnes (PB), Mike Grant (MG), Neil Bennett (NB)

The purpose of the this teleconference was to discuss the proposed closure measures, closure alternatives analysis, and responses to the closure related information requests (IRs) from the DRAFT EIS/EA report with MNDM in order to develop a path forward for the continued development of the certified closure plan (CCP) for the Hammond Reef Gold Project. Prior to the teleconference, Osisko Hammond Reef Gold (OHRG) provided MNDM with a preliminary draft version of the certified closure plan, a copy of the 66 responses to the closure related IRs, and a PowerPoint presentation summarizing the development of the closure measures to date.

- Teleconference commenced with **AD** outlining the purpose for the call (see description above) and proceeding to run through powerpoint presentation (attached).
- **AD** indicated that the draft certified closure plan (CCP) document is has been drafted but can't be formally submitted to MNDM pending EA approval.
- **PB** highlighted that the MNDM won't open the completed CCP until the EA has been approved and financial assurance has been received; at which point the 45 day review process begins. The percentage of the financial assurance that is posted can be negotiable (for e.g. based on the progressive expansion of the site footprint).
- **AD** indicated that she didn't want to attach the CCP as a technical support document (TSD) to the Revised EIS/EA report as it would then become subject to review by the entire government review team whereas the approval of the CCP is part of MNDM's jurisdiction. **PB** indicated that he has seen it done either way and that it is OHRG's choice – MNDM is the lead agency for closure, though the EA must show that you have satisfied the Terms of Reference (TOR).
- **AD** indicated that the current version of the CCP doesn't include a summary of the Aboriginal consultation. OHRG has initiated discussions and extensive consultation on the project, including initial discussions on Closure have already taken place and are detailed in the DRAFT EIS/EA report.
- **PB** indicated that he believes OHRG falls under the old legislation (i.e. does not need to meet the requirements of O.Reg. 307/12) and therefore the old requirements for aboriginal consultation still apply (as per the discretion of the Director of the MNDM).
- **AD** indicated that they welcome any informal comments from the MNDM during their review of the preliminary CCP and its ongoing development.
- As per content of Slide 3 in the presentation, **PB** indicated that they have never had a site that has been returned to the crown, as no one has ever been able to negotiate an "exit ticket" that would satisfy the Ministry of Environment (MOE).

- **AD** indicated that technical certifications have not been completed but will be provided upon formal submission of the CCP. MNDM indicated that this is fine.
- **Slide 5 – Stages of Closure**: Time frame for cessation of pumping from the seepage collection ponds is an estimate only – the governing criterion is acceptable water quality. **PB** indicated that OHRG should communicate that the commitment is to only release when water quality is acceptable and that some reviewers think that only a few years of monitoring is unrealistic. **PB** suggests that the wording should state that "pumping should cease once discharge limits are met as defined by the ECA". **AD** agrees with this approach though indicated that OHRG will negotiate site specific water quality objectives (SSWQOs) for several parameters. **PB** also mentioned that any wording to the effect of water quality being protective of aquatic life would need to be defended.
- **Slide 8** – **PB** inquired of the Ministry of Natural Resources (MNR) comments on the borrow pit sourcing / licensing as per the Aggregate Resources Act (ARA). **AD** indicated that aggregate sites have not been divulged for commercial reasons and the borrow pit sourcing has, at this stage, not been fully defined. MNDM indicated that's fine, but advised that MOE and MNR may consider it to be an important environmental component (e.g. hauling aggregate from off-site).
- **Slide 9** – **AD** indicated that the flooded open pit has not been claimed as habitat gain in the No Net Loss Plan (NNLP). In the future, the pits will become a lake after about 218 years. The issue of pit flooding is important to Aboriginal groups in the area, but OHRG does not want to explicitly state that it will become fish habitat. Littoral zones will likely develop given the configuration of the open pit upper bench and ramp. **PB** concurs with this approach.
- **AD** indicated that the inclusion of the low-grade ore stockpile at closure is a contingency only. In reality it is highly likely to be milled. **PB** agrees.
- **AD** indicated that the current preliminary estimate for the financial assurance is $40 million.
- **Slide 12 – Closure Alternatives – AD** indicated that closure alternatives were not included in the original EA, but it is a TOR commitment. Golder has produced an addendum technical memo summarizing the alternatives considered for each closure measure and the rationale for the selection of the preferred alternatives. The technical memorandum will be part of the submission of the revised EIS/EA report.
- **Slide 13 – MG** asked what are some examples of successful direct re-vegetation on tailings. **PB** indicated that their rehab group will want to be reassured that direct re-vegetation will work as they have seen failures in the past. **KB** agrees and that examples can be provided if requested. Most likely organic mulch (sludge or mill pulp) will be applied to the surface. The source of the mulch is unknown at this juncture.
- **Slide 14 – AD** indicated that if the low grade ore stockpile were to still exist at closure, it would be treated in same way as the waste rock stockpile with respect to closure. **PB** indicated that a geochemical comparison between the low grade ore and waste rock should be commented on / highlighted in the closure plan as they may be different and could require different methods of closure.
- **AD** indicated that the current plan is to not re-vegetate waste rock stockpile as it is geochemically stable. **PB** indicated that in consultation, re-vegetation may be a hot topic. **AD** stated that OHRG has attempted to be very transparent with their re-vegetation plan and that re-vegetation of the waste rock stockpile would be very cost prohibitive and may make the project a "no-go". **MG** indicated that he believes that Chief Klyne (Seine River) may have signed a memorandum of understanding (MoU) with Brett Resources that

contained specific commitments with respect to re-vegetation. **AD** stated that the MoU preceded the Resource Sharing Agreement, which doesn't address re-vegetation. OHRG will follow-up.

- **PB** indicated that he is aware that Seine River wants to be involved in re-vegetation activities. **AD** indicated that OHRG has a planned meeting with Seine River on August 19th, and will discuss the topic of re-vegetation with them then.
- **Slide 17 – Discussion of IRs – PB** indicated that the monetary figure of the financial assurance is a public number, but the form of the financial assurance is confidential. You could discuss order of magnitude of financial assurance as part of the EA stage (not in ToR) to provide reassurance that closure costs have been considered. **AD** stated that they don't want other provincial ministries to get involved in what is MNDM's mandate.
- **PB** made the point that the financial assurance could evolve over the project life, and that currently there is no requirement for regular recalculation of the financial assurance. Many examples of extended mine life and revisions to the financial assurance exist. **AD** indicated that in such a case, where a change to the project requires an update to the financial assurance, it would trigger an update or addendum to the filed closure plan, with an update to the financial assurance amount and additional Aboriginal consultation.
- **Slide 18** – **PB** indicated that public notice and aboriginal consultation are mandatory under the Mining Act. OHRG should point out to the MNR that the borrow pits will comply with the Aggregate Resources Act (ARA).
- **Slide 20 – AD** indicated that OHRG will provide the updated details of the open pit backflooding model in a memo. Closure alternatives have been provided in a supplemental memo as previously stated. Topsoil and peat will be salvaged in the areas of the open pit, process plant, shops, and under the TMF dams.
- **AD** indicated that any comments on the closure plan would be appreciated. **PB** stated that the MNDM will need to sit down and discuss internally the IR responses and that some staff may have concerns or objections. **AD** stated that they have had good dialogue with other government branches and that they would like similar dialogue with the MNDM on closure. **PB** agrees and doesn't know yet where the potential closure comments will lead.
- **PB** suggests that OHRG review their re-vegetation proposal with respect to Part 9 of O.Reg. 240/00 to verify that they are in line with the mine rehabilitation code.
- **AD** indicated that the public and Aboriginal groups want the project to go forward and is confident that we can find a way to make the project a reality.
- **AD** indicated that she and Cathryn Moffett will be on vacation from August 6th to the 16th, and that the current goal is to provide a revised EIS/EA report for submission to CEAA and MOE by the end of September. **PB** indicated that they will attempt to flush out their comments and responses to the IRs with that goal in mind.

ATTACHMENTS

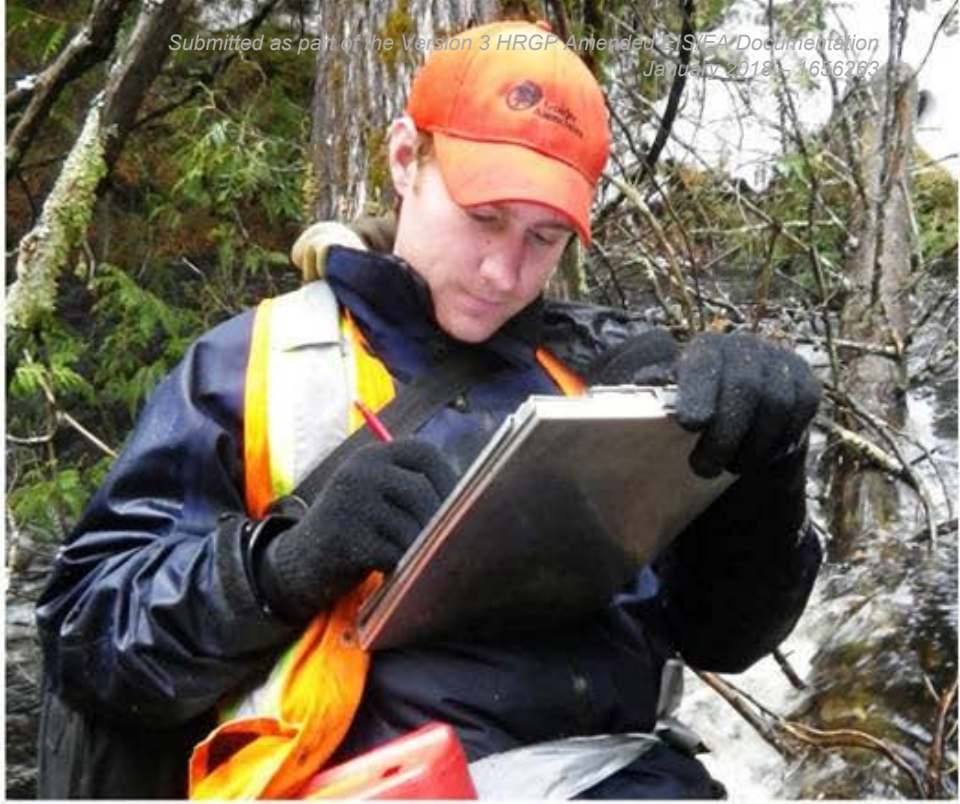
- Closure Plan Presentation

ATTACHMENT

Submitted as part of the Version 3 HRGP Amended EA/EA Documentation
January 2018 - 1656763

OSISKO

HAMMOND REEF GOLD





Golder Associates



HAMMOND REEF

July 29 2013

Presentation Overview

- Overview of Certified Closure Plan Requirements
- Summary of Closure Concepts for site components
- Summary of Post-Closure Monitoring and Maintenance
- Summary of OHRG Closure Alternatives Analysis and Conclusions
- Discussion of Closure Comments on DRAFT EIS/EA report.

Overview of Certified Closure Plan Requirements

- **OBJECTIVE**: Restore the Project Site to its former use or an acceptable alternative use, to the extent possible AND to prevent personal injury / property damage that is reasonably foreseeable as a result of closing out the Project.
- Mine closure must follow the Mine Rehabilitation Code of Ontario (O. Reg. 240/00 as amended)
- Closure components:
  - Progressive rehabilitation (actions during operations)
  - Rehabilitation measures at closure
  - Post-closure monitoring (physical / chemical stability and biological monitoring)
  - Post-closure maintenance
- “Return to crown” will likely not happen

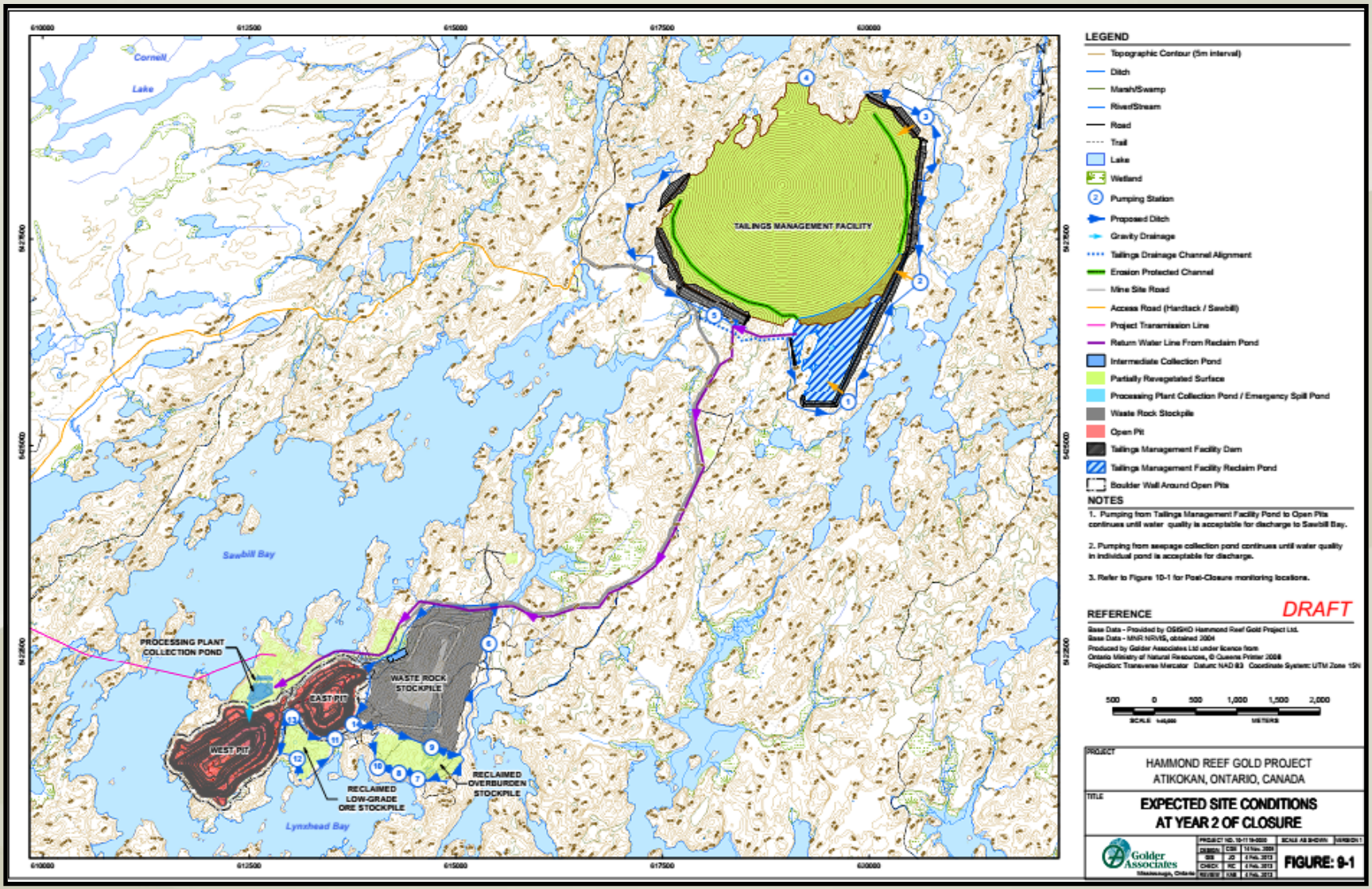
Closure Plan Development to Date

- MNDM letter dated November 9, 2012: “The certified Closure Plan will not be accepted as filed until the completion of the federal and provincial EA processes.”
- MNDM invited OHRG to discuss closure planning for the Hammond Reef project prior to submission of the closure plan.
- OHRG has prepared a draft “preliminary” closure plan (dated July 26, 2013) to support discussions with MNDM.
- The preliminary closure plan is not a final submission for filing. That will be submitted later, after EA approvals.
- OHRG has already undertaken extensive Aboriginal Consultations – Director is to provide direction in writing as to requirements.
- Draft Technical Certifications (as required under O.Reg. 240/00) will be provided later by Golder

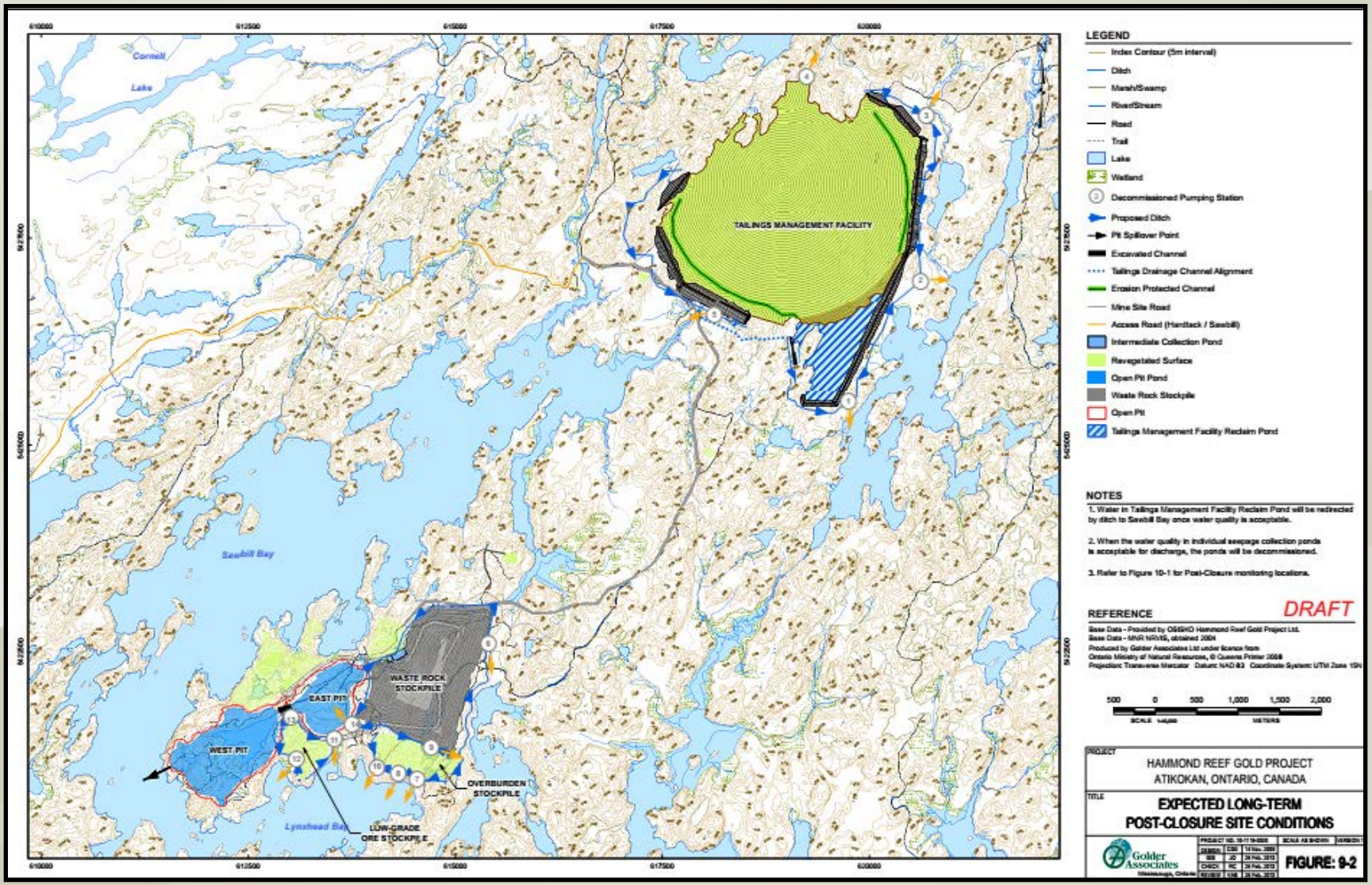
Expected Stages of Closure Implementation

- **During operations** – Some progressive reclamation (limited by nature of project)
- **Years 1 and 2** – Active closure measures (decommissioning and salvage, demolition, cleanup, revegetation of TMF and Overburden Stockpile, etc.)
- **Years 1 to 3??** – Pumping of water from TMF Reclaim Pond to open pits, followed by diversion to Sawbill Bay when water quality is acceptable
- **Years 1 to 5??** – Pumping of water from seepage collection ponds (SCPs) to open pits, followed by direct release to environment
- **Years 5?? to 218** – Flooding of the open pits by gravity, no discharge off-site.
- **After Year 218** – Open pits overflow to Marmion

Expected Site Conditions at Year 2 of Closure



Expected Site Conditions at Long-term Closure



Closure Measures

- **Progressive Rehabilitation**
- Because of conical deposition, re-vegetation of tailings surface can only start about one year prior to closure
- Rehabilitation of borrow sites as per Aggregate Resources Act
- **Closure:**
- At closure, run-off from all site components will be pumped to the open pit. When the water quality of runoff from each component is shown to be suitable, pumping will cease and it will be allowed to discharge directly to the environment
- TMF run-off collected in Reclaim Pond will initially be pumped to the open pit, followed by discharge to Sawbill Bay when WQ is suitable for direct discharge to environment
- Open pit flooding largely passive. No attempt to pump fresh water in to accelerate flooding.

Closure Measures (Cont'd)

- After about 218 years, the Open Pits will overflow into Marmion Reservoir (near former effluent point).
- There will be no requirement to treat effluent off the site after closure (except possibly open pit overflow after ~218 years)
- Flooded open pits not claimed as part of NNLP to be aquatic habitat.
- Direct re-vegetation of TMF (organic mulch, fertilizer and seed to be applied, but no topsoil)
- Direct revegetation of overburden stockpile. (Seeding and fertilizer applied)
- No re-vegetation of waste rock stockpile (graded if necessary for physical stability and drainage)
- Low-grade ore stockpile to be entirely milled prior to closure
- Buildings / site infrastructure demolished – non-hazardous material placed in a non-hazardous solid waste landfill to be licenced within the TMF

Post-Closure Monitoring and Maintenance

- **Post-Closure Monitoring**
  - Physical Stability: open pit slopes, waste stockpiles, tailings dams and flow conveyance structures remaining at closure
  - Chemical Stability: surface and groundwater (upstream and downstream of site and effluent points of major site components)
  - Biological Monitoring: inspection of re-vegetation areas (twice annually for up to 10 years), fish inventories, benthic invertebrate and phytoplankton sampling (immediately after closure and 5 years after closure)
- **Post-closure Maintenance**
  - Clearing of flow conveyance structures
  - Removing trees from dams

List of Commitments for the EIS/EA and Certified Closure Report

- Financial Assurance (in the form of irrevocable letter of credit) to cover costs at closure be filed with MNDM. (Estimate in progress, probably in the range of $40 million.)
- Demolition / decommissioning of site infrastructure
- Maintain on-site access roads to various areas on site (e.g. open pit, waste stockpiles, TMF, etc…) for post-closure monitoring
- Maintain toe seepage collection systems (waste stockpiles and TMF) until water quality deemed suitable for direct discharge to environment
- Post-closure monitoring (including monitoring of pit effluent at the time of spillover)
- Due to stratification, open pit overflow will likely be suitable for release. If not, treatment (in-pit or wetlands?) will be used.
- Post-closure maintenance

Closure Plan Alternatives Assessment

- Alternatives assessment is not required by O.Reg. 240/00, but was a commitment in the ToR for EA.
- **PURPOSE:** to provide due consideration to possible alternative approaches that could be taken at closure for each element of the project
- Site Infrastructure
  - At closure, Project site will include infrastructure (i.e. power supply, access roads, industrial buildings) that could potentially support an on-going industrial operation (i.e. “an approved alternative land use” → scenario unlikely as there are similar sites available that are less remote
  - Consideration to dispose non-hazardous waste in a landfill within the TMF rather than haul to nearest existing solid waste landfill. Latter would be more expensive, therefore operational cost savings would justify permitting and operating a landfill in TMF

Closure Plan Alternatives Assessment (Cont'd)

- Tailings Management Facility
  - Relocation of tailings from TMF to open pit at closure – very cost prohibitive
  - Re-vegetation with 0.3 m of topsoil would require 2.0 M-m^3 of topsoil or 1.0 m of overburden (6.8 M-m^3); such volumes will not be available based on estimated stripping
  - Cost of hauling topsoil or overburden to the TMF also prohibitive
  - Considering chemistry of tailings, and other examples of successful rehabilitation efforts at closed tailings facilities, direct re-vegetation was selected.

Closure Plan Alternatives Assessment (Cont'd)

- Waste Rock Stockpile
  - Relocation of waste rock to open pit – "bulking" of rock would not allow all of it to be contained in pit. Only benefit would be aesthetic as waste rock is geochemically stable. Cost also prohibitive
  - Could place soil cover – no benefit as rock is geochemically stable and a cover would not eliminate requirement to capture seepage
- Overburden Stockpile
  - Base case is to use some (but not all) of the overburden around project site for re-grading and re-vegetation and stabilize the rest in-place,
  - Alternative is to use it all, thereby making closure measures for stockpile redundant
  - Cost is prohibitive and would generate higher turbidity loadings than a stable, concentrated stockpile
- Low-Grade Ore Stockpile – contingency only if some LGO remains unprocessed at closure. Alternatives the same as for Waste Rock Stockpile

Closure Plan Alternatives Assessment (Cont'd)

- Open Pits
  - Backfill with waste rock – cost prohibitive
  - Flood open pits by actively pumping water from Upper Marmion Reservoir – could achieve overflow in 5 to 10 years. No geochemical advantage for pit walls and would impact generation of hydropower downstream.
- Water Management
  - Active flooding of open pits (see above)
  - Continue operational procedure of collecting seepage and run-off into the PPCP for treatment and release to Marmion Reservoir, rather than diverting to open pits. Treatment would cease once individual flow sources deemed suitable for direct discharge to the environment
  - Diverting flows to Open Pit however results in less immediate impact to receiver (no effluent until about 218 years once pit overflows)

Summary of Closure Comments

- Total of 66 Information Requests (IRs) received on Closure
  - 21 – Ministry of Northern Development and Mines
  - 39 – Ministry of Natural Resources
  - 3 – Environment Canada
  - 2 – Ministry of Environment, Environmental Approvals Branch
  - 1 – Fisheries and Oceans Canada

Summary of Selected Responses to MNDM IRs

- Reclamation of Waste Rock Stockpile and TMF
  - Waste rock will be geochemically and physically stable. No requirement to actively re-vegetate to ensure stability. Sufficient topsoil is not available.
  - Some of overburden stockpile will be used for closure. Direct seeding of remaining overburden with grasses will stabilize soils from erosion.
  - TMF will be directly revegetated using organic mulch, fertilizer and seed. There is insufficient topsoil and covering with overburden would be cost prohibitive
- Water Management at Closure
  - Water will not be discharged from site until water quality standards are met; ponds will be equipped with emergency spillways
- Handling of Non-hazardous waste
  - Non-hazardous waste facility to be established in TMF at closure. It will be operated and closed according to the licence
- Financial Assurance
  - CCRP is NOT the certified closure plan. More details of closure including financial assurance information to be included in certified closure plan report (under review)
- Closure Alternatives
  - Alternatives considered provided in supplemental memorandum

Summary of Responses to Selected MNR IRs

- Closure Alternatives
  - Alternatives considered provided in supplemental memorandum
- Stakeholder / public consultation
  - OHRG has actively consulted on the project, including closure. Formal consultation on the certified closure plan will follow directions from MNDM Director per O.Reg. 307/12.
- Closure of Aggregate sources (i.e., Borrow Pits)
  - Borrow pits will be permitted under the Aggregate resources Act and closed according to permit requirements
- Re-vegetation plan
  - Only borrow pits, TMF and overburden stockpiles will be re-vegetated. Detailed re-vegetation plans (including source of organic mulch) to be determined based on test plots.
  - Planting of trees is not proposed; these will colonize
- Tailings/Waste Rock geochemistry and runoff/seepage
  - Tailings/Waste Rock are geochemically stable; water will not be discharged unless it meets WQ standards (will otherwise be pumped to the open pits)
- Handling of Non-hazardous waste
  - Non-hazardous waste facility to be established in TMF at closure. It will be operated and closed according to the licence

Summary of Responses to Selected MNR IRs (part 2)

- Quality of Pit Lake Outflows and Potential Need for Treatment
  - Open pit outflow is expected at about 218 years and water quality is predicted to be acceptable due to stratification
  - If, as a contingency, treatment of open it water was required, it would probably be by in-pit treatment or wetland polishing.
- Aquatic Habitat in Pit Lake
  - Development of aquatic habitat in pit lake is not currently proposed and is not included in the draft NNLP. Discussions are proposed with DFO and MNR prior to final submission.
- Aggregate Use Plan?
  - Borrow search is at a preliminary stage. All pits will be compliant with Aggregate Resources Act
- Irreversible Terrestrial Effects
  - Topsoil under WRMF and TMF will not be removed. Terrestrial habitat will be re-established in TMF area. Closure will divert some drainage from Lizard Lake to Sawbill Bay.
- TMF Water Quality after Closure
  - Tailings are NAG. Input of cyanide will cease, residual CN- will degrade. Revegetation will control TSS.
- Net Project Impacts after Closure
  - Provided a table of existing ecosites for the TMF, WRMF, Overburden Stockpile and Low Grade Ore
  - Described areas and post-closure status of these areas.

Summary of Response to DFO IR

- Details of Pit Flooding Duration Estimate
  - Details of backflooding model to be provided in supplemental memorandum
  - Flooding time has been updated to 218 years

Summary of Responses to EAB IRs

- Closure Alternatives
  - Alternatives considered provided in supplemental memorandum
- Description of Net Effects
  - Provided in Section 6 of EIS/EA report

Summary of Responses to EC IRs

- Soil Salvage and Separation
  - Topsoil and peat will be salvaged in the areas of the open pit, process plant, shops and under the TMF dams
  - Sediment from Mitta Lake, topsoil and peat will be stored in overburden stockpile area separate from overburden and used in progressive reclamation

7 – Fish Compensation Planning

OSISKO MINING CORPORATION
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MINUTES
HAMMOND REEF GOLD LTD.
AQUATIC BIOLOGY MEETING & HELICOPTER TOUR
SEPTEMBER 14, 2011 – 9:00 AM – 1:30 PM
MAIN BOARDROOM – ATIKOKAN/HELICOPTER TOUR OF OHRG SITE

Attendees:

Osisko:	Alix Drapack, Cailey Anderson
DFO:	Tom Kleinboeck, Lauren Nelson
MNR:	Brian Jackson, Sheldon Haw
CEAA:	Amy Liu (teleconference)
Golder:	John Seyler

Visual Aids:
Power Point Presentation and Catch / Effort Summary Table. Copies of these are attached in Appendix A.

Previous Minutes:

- Tom Kleinboeck sent comments/revisions to the July 12 Meeting Minutes to Alix/John. John will incorporate the comments and re-send the document to the participants.

Wetlands:

- The bullet point on the precautionary approach was to address previous comments regarding whether fish habitat exists in the wetlands. Osisko's approach will be to take a precautionary approach: where fish are present within a water course or pond, and where suitable (nursery) habitat exists it will be assumed that these locations represent important fish habitat features, regardless of whether or not fish were actually captured at each specific location, and this will be reflected in accounting for habitat losses.
- Tom commented that this approach assumes that the catch effort has adequately assess the species and the presence/absence of species.
- Fish presence-absence is an important cornerstone of the proposed method of habiat accounting. Catch and fishing effort data should be considered at a catchment level. e.g. If fish were captured in 2 of 3 connected ponds then it will be assumed that all 3 ponds and their connections support the captured fish species.
- Brian noted that there are challenges with respect to coastal wetlands due to the water management of Marmion. Habitat that appears to have the physical attributes to support spawning may not actually be used by fish for spawning because of changes in water levels are certain times of the year. This makes other areas extremely important for spawning. Osisko/Golder should work with MNR to address this issue.
- Brian cautioned that some wetland areas may not be "provincial significant" but may be critical fish habitat. Fish compensation planning will need to take this into account.
- Local and regional knowledge of fish habitat utilization relationships in northern Ontario must be incorporated into habitat compensation planning.

Habitat Accounting:

- Osisko/Golder will need to determine what physical attributes represent habitat types for each species.

- Tom suggested preparing a document (literature search) summarizing the habitat requirements of each fish species potentially affected by the Project with emphasis on various life history stages (rearing, spawning etc.). The document will be sent to DFO/MNR for comment. It should contain a detailed summary of the definition of HSI relationships for each species and outline how habitat units for each species will be calculated. The document should cite a list of references for the models used for habitat accounting.
- After the document is prepared, Osisko/Golder should hold a workshop involving local and regional fisheries experts to confirm the definitions. The concern is that some of the habitat models may not be indicative of the local area (i.e. if the models were developed in the arctic or in a different climate/region). Osisko/Golder should consider inviting provincial, federal and academic representatives to the workshop.

Baseline Data Collection Gaps:

- Cailey mentioned a new pond south of Mitta Lake that may not have been previously assessed (did not appear on previous maps). John Seyler will check if the pond has been assessed and if it has NOT, Jay will assess it next week.
- Tom Kleinboeck asked if additional baseline data collection is planned for the 2012 field season.
- Alix said that the “Baseline Data Collection” will be completed this fall. However, based on the feasibility study and the preparation of the EA/EIS report, there may be a need to complete additional field work in 2012. There may also be a need to collect additional field data to prepare the fish compensation planning. Osisko will begin work on the EA/EIS report this fall/winter and will identify any additional field work that may be necessary in advance of the 2012 field season.
- Regarding the bathymetry data, there was some confusion on when it was collected. Alix and John will verify and send the info back to DFO/MNR. Brian was concerned that it occurred at low water levels. Brian suggested we should agree on an elevation for the high water mark.

Helicopter Tour of all Site APIs followed: John Seyler, Alix Drapack, Brian Jackson, Tom Kleinboeck and Lauren Nelson.

ACTIONS:

1. John Seyler to incorporate Tom’s revisions to July 12 2011 meeting and re-send to participants.
2. Osisko/Golder will prepare an outline for the document including references to be used to develop models. Osisko/Golder will prepare a DRAFT list of workshop attendees including academia.
3. DFO/MNR will provide specific references if they would like to see specific habitat utilization models or documents cited/included. DFO/MNR will provide suggestions on academia they feel would be helpful at the workshop. DFO/MNR will provide feedback on the outline prior to Osisko/Golder completing the actual document.
4. John Seyler will check pond south of Mitta Lake and if it has not been assessed, ensure Jay assesses it next week. Alix/John to verify bathymetry dates and send to Brian/Tom.
5. John/Brian to agree on elevation for high water mark.



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APPENDIX A

Submitted as part of the Version 3 HRGP Amended EIS/EA Documentation
January 2018 – 1656253

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HAMMOND REEF

September 14 2011

Overview

- Review / Approval of Minutes from July 12 Meeting.
- Distribution of Catch Effort data collected to date; determination of fish presence/absence.
- Fish Habitat and Wetlands
- Discussion regarding Habitat Accounting methods proposed at July 12 meeting.
- Outstanding GAPS in the baseline study collection?
- Helicopter tour
  - Identify Areas of Potential Impacts (APIs) to be visited
  - Remediation areas (Alix & John to swap with Robert Kidd and Shane Manford)

Catch Effort Data

Objectives of fish community assessment

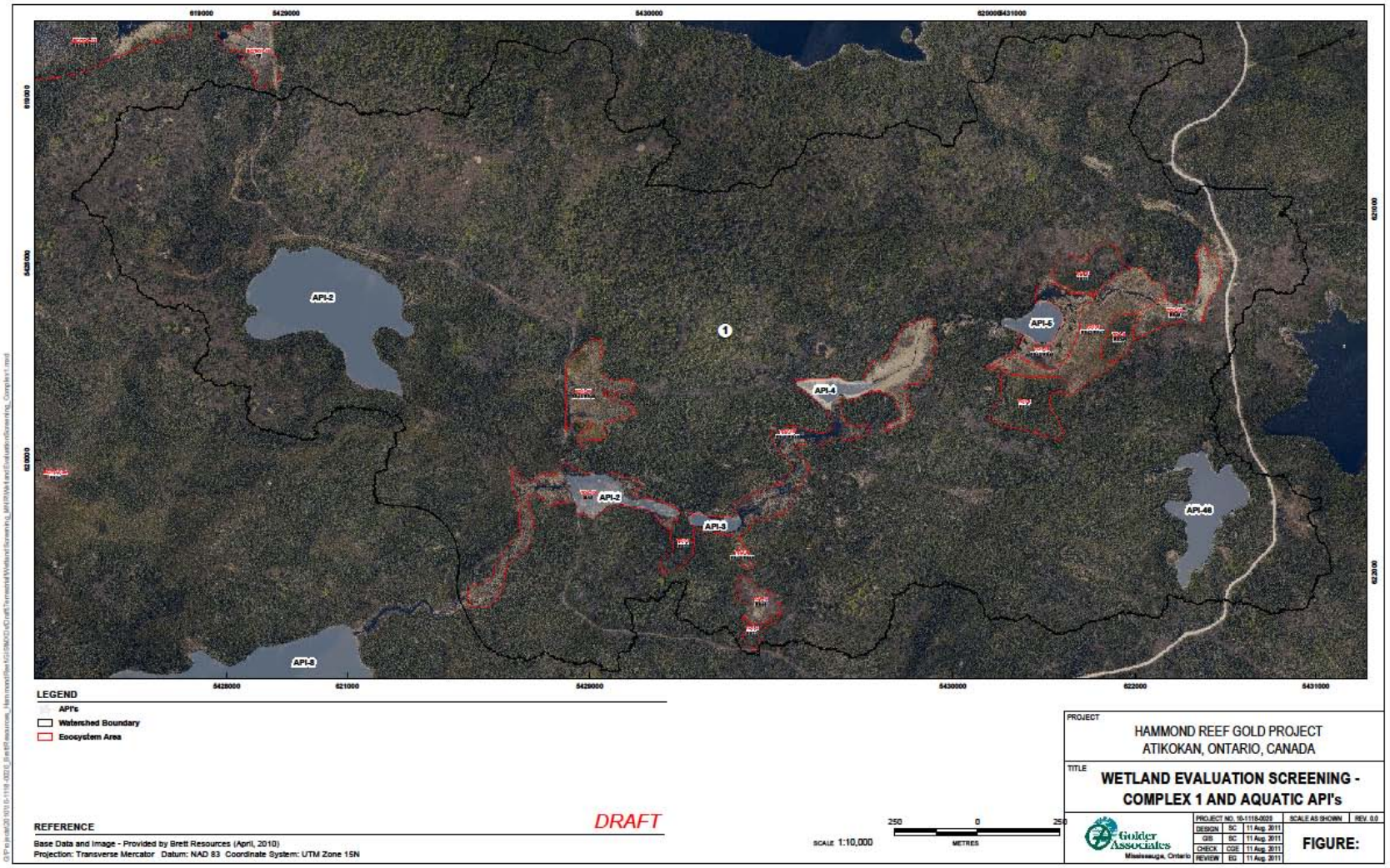
- Determining which spp. are present
- Mapping sp. distribution within each catchment
- Demonstrating ‘presence and absence’ of fish

…dependent upon

- Gears
- Expending sufficient fishing effort
- Spatial extent of sampling
- Timing, frequency

Wetlands and Fish Habitat

- Aquatics and Terrestrial (wetland evaluation) data will be used to evaluate wetlands as fish habitat
- Determine if alterations in stream flows likely to affect d/s wetlands
- Fish Use of Wetlands in Northwestern Ontario: A Literature Review and Bibliography (NWST Technical Report TR-090, February 1996).
  - habitat utilization relationships
  - fish habitat accounting for compensation planning
- Precautionary approach; where fish are present and where suitable (nursery) habitat exists it will be assumed that wetlands are important fish habitat features and this will be reflected in accounting for habitat losses
- Coastal wetlands; must be able to differentiate between potential effects of the project from management of water levels in Marmion reservoir


619000
5429000
5430000
620000
5431000
619000
5428000
621000
622000
API-2
API-3
API-4
API-5
API-6
API-4a
1
LEGEND
API's
Watershed Boundary
Ecosystem Area
REFERENCE
Base Data and Image - Provided by Brett Resources (April, 2010)
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 15N
DRAFT
SCALE 1:10,000
250 0 250
METRES
PROJECT
HAMMOND REEF GOLD PROJECT
ATIKOKAN, ONTARIO, CANADA
TITLE
WETLAND EVALUATION SCREENING - COMPLEX 1 AND AQUATIC API's
Golder Associates
Mississauga, Ontario
PROJECT NO. 10-1118-0025
SCALE AS SHOWN
REV. 0.0
DESIGN SC 11 Aug. 2011
GIS SC 11 Aug. 2011
CHECK CGE 11 Aug. 2011
REVIEW EG 11 Aug. 2011
FIGURE:

Habitat Accounting (Loss vs Gain)

Habitat Units (surrogate for productive capacity)

Fish spp. present (individual spp. or guild representatives?)

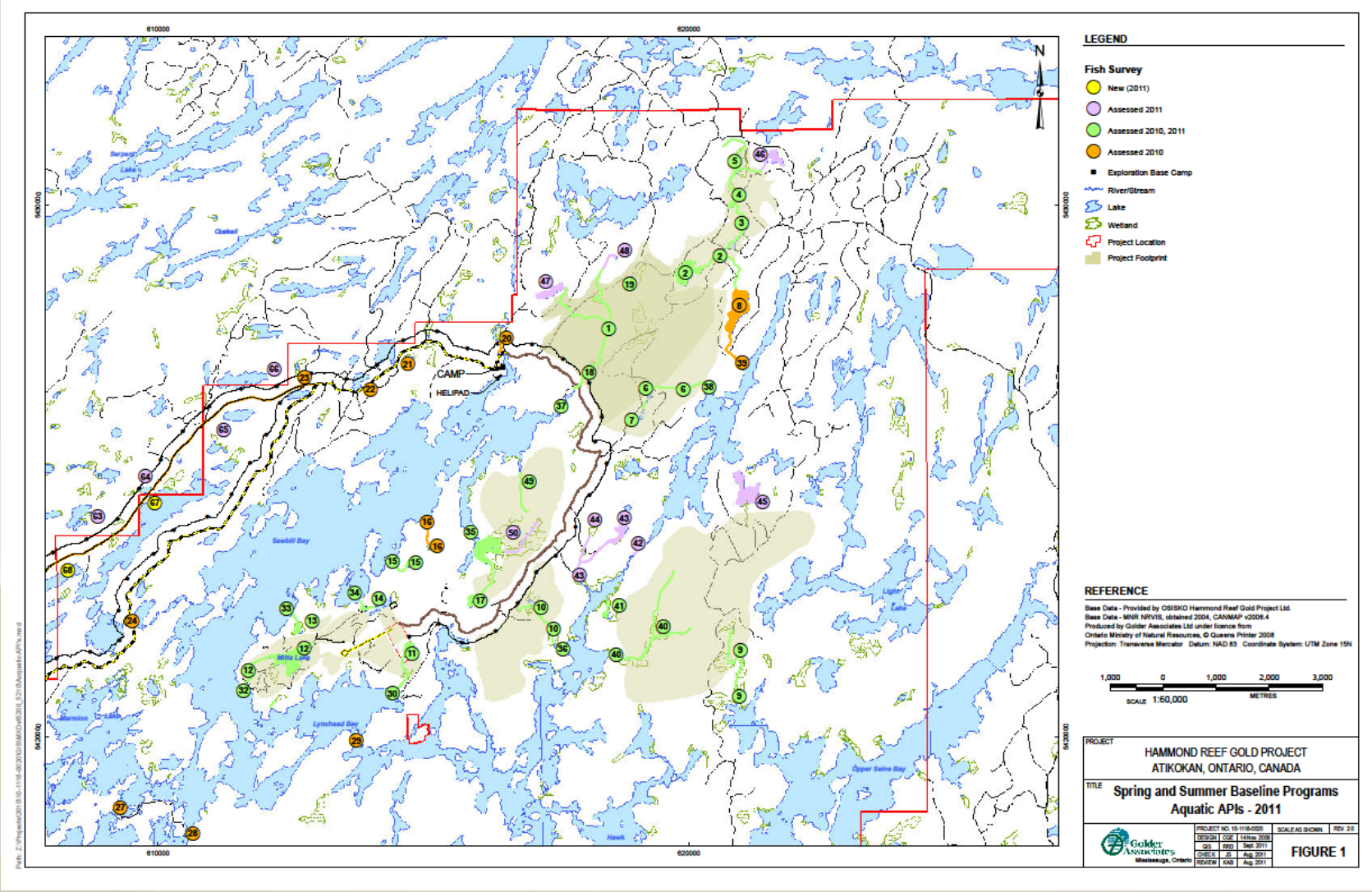
Habitat type present (Golder habitat/bathymetric mapping relative to spawning, nursery, rearing, foraging habitat requirements)

Suitability of habitat present (H.S.I. values; 0-1)

X Quantity of habitat present (square meters)

Habitat Units lost/gained (Construction, operation and closure)

Gaps: Are there outstanding gaps in the baseline data collection?



Proposed Site Tour (Helicopter flight plan)

- Which API's do we want to visit?
- Put sampling program and results into context
  - Snail Bay ?
  - Small streams (API #9) ?
  - Beaver ponds (APIs 3,4,5) ?
  - ….

- P.M. flight with Robert Kidd and Shane Manford.

Alix Drapack
Osisko Mining Corporation

Fish Community Assessment
Hammond Reef Gold Project
(Effort, Gear and Catch Summaries)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
Pit					
API 12 (Mitta Lake)	SA= 171,115m^2 Max. depth= 17m (Aug. 2010 profile) Depth (m) / Temp (^{o}C) / D.O. (mg·l^{-1}) 1 / 21.9 / 8.6 2 / 21.1 / 8.9 3 / 20.3 / 8.9 4 / 19.9 / 8.9 5 / 17.2 / 10.3 6 / 10.5 / 5.6 7 / 7.4 / 0.5 8 / 6.4 / 0.5 9 / 5.7 / 0.3 10 / 5.3 / 0.3 11 / 5.0 / 0.2 12 / 4.8 / 0.2 13 / 4.7 / 0.2 14 / 4.6 / 0.2 15 / 4.5 / 0.2 16 / 4.5 / 0.2 17 / 4.5 / 0.1	September 21-22, 2010	minnow traps (2)	43 trap hrs.	Mottled Sculpin (*Cottus bairdi)* (1) Finescale Dace (10)
		September 21-22, 2010	minnow traps (2)	42 trap hrs.	Mottled Sculpin (1) Finescale Dace (8) Brook Stickleback (*Culaea inconstans)* (1)
		September 21-22, 2010	nordic net	20 hrs.	Iowa Darter (1) White Sucker (10) Mottled Sculpin (8) Fathead Minnow (2) Ninespine Stickleback (*Pungitius pungitius)* (5) Finescale Dace (2)
		September 21-22, 2010	gillnet - experimental mesh	19 hrs.	No catch
		September 21-22, 2010	gillnet - experimental mesh	15 hrs.	White Sucker (2)
		May 31-June 2, 2011	gillnet - experimental mesh	35 hrs.	No catch
		May 31-June 2, 2011	gillnet - experimental mesh	37 hrs.	White Sucker (2)
		June 1-2, 2011	gillnet - experimental mesh	19 hrs.	White Sucker (1)
		June 1-2, 2011	gillnet - experimental mesh	19 hrs.	White Sucker (2)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
	(March 2011 profile) Depth (m) / Temp (^{o}C) / D.O. (mg·l^{-1}) 1 0.0 11.3 2 1.6 10.1 3 2.5 9.4 4 2.8 8.9 5 3.1 8.1 6 3.3 7.6 7 3.3 6.9 8 3.4 4.6 9 3.5 3.4 10 .5 3.1 11 3.5 2.7 12 3.6 1.6 13 3.6 1.1 14 3.6 2.1 15 3.5 1.6 16 - - 17 - -	May 31- June 1, 2011	nordic net	48 hrs.	White Sucker (25) Brook Stickleback (1) Ninespine Stickleback (48) Fathead Minnow (1)
API 12 (Mitta Lake)		May 31 – June 2, 2011	nordic net	48.5 hrs.	White Sucker (9) Ninespine stickleback (20)
		June 1-2, 2011	nordic net	18.25 hrs.	Ninespine Stickleback (6) Sculpin sp. (1) White Sucker (7)
		June 1-2, 2011	nordic net	19 hrs.	Ninespine Stickleback (73) Sculpin sp. (2) Fathead Minnow (10) Brook Stickleback (1)
		June 1-2, 2011	minnow traps (5)	115 trap hrs.	Ninespine Stickleback (3) Brook Stickleback (1) Finescale Dace (10) Sculpin sp.(11) Fathead Minnow (4)
API 12 (outflow stream from Mitta Lake)		August 2-3, 2010	minnow traps (1)	20 trap hrs.	No catch
API 12 (outflow stream from Mitta Lake)		August 2-3, 2010	minnow traps (1)	21 trap hrs.	Finescale Dace (5)
API 12 (outflow stream from Mitta Lake)		August 2-3, 2010	minnow traps (1)	19 hrs.	Northern Redbelly Dace (141) Fathead Minnow (100) Finescale Dace (79)
API 32 (Mouth of stream, Marmion L)		August 26, 2010	boat electrofishing	600 m (538s)	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 13 (pond adjacent to pit)	S.A.=193,867m^2 Max. depth= 5.5m D.O.= 7.5-8.4 mgl^{-1} pH=6.9 substrate= detritus	September 26 – 27, 2010	gillnet - single panel (38 mm mesh)	16 hrs.	No catch
		September 26–27, 2010	gillnet - experimental mesh	16 hrs.	No catch
		August 2-3, 2010	minnow traps (2)	34 trap hrs.	No catch
		May 8-9, 2011	gillnet – experimental mesh	17 hrs.	No catch
		May 8-9, 2011	nordic net	16.5 hrs.	No catch
		May 8-9, 2011	minnow traps (4)	70 trap hrs.	No catch
		August 27-28, 2011	minnow traps (3)	48 trap hrs.	No catch
		August 27-28, 2011	broad-scale large mesh (3)	48 hrs	No catch
		August 27-28, 2011	broad-scale small mesh (1)	16 hrs	No catch
API 13 (outflow stream)		August 2, 2010	backpack electrofisher	100 m (275s)	No catch
API 13 (outflow stream)		August 2-3, 2010	minnow traps (2)	34 trap hrs.	No catch
API 13 (outflow stream)		May 8, 2011	backpack electrofisher	150 m (569s)	No catch
API 14	Pond appearing on topographic maps; does not exist; dry meadow				
API 14 (stream)		August 1, 2010	backpack electrofisher	75m (335s)	Finescale Dace (12) White Sucker (4)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
					Northern Redbelly Dace (2) Fathead Minnow (2)
API 14 (stream)		August 1, 2010	backpack electrofisher	60m (434s)	Finescale Dace (98) Northern Redbelly Dace (8) Fathead Minnow (12)
API 14 (stream)		May, 2011	backpack electrofisher	450m (2097s)	Finescale Dace (231) Brassy Minnow (3)
API 34 (mouth of stream; Sawbill Bay)		August 18-19, 2010	gillnet – experimental mesh	16 hrs.	Northern Pike (7) Walleye (7) Yellow Perch (1) Smallmouth Bass (2) White Sucker (4) Lake Whitefish (1)
API 34 (Sawbill Bay)		August 20, 2010	gillnet – experimental mesh	7 hrs.	Walleye (4) Smallmouth Bass (2) Northern Pike (1) White Sucker (1)
API 34 (Sawbill Bay)		August 27-29, 2010	gillnet – experimental mesh	24.5 hrs.	White Sucker (5) Northern Pike (5) Walleye (18) Yellow Perch (3) Smallmouth Bass (2) Lake Whitefish (3)
API 34 (Sawbill Bay)		August 28-29, 2010	gillnet – experimental mesh	21 hrs.	Walleye (22) Northern Pike (4) Smallmouth Bass (2) White Sucker (3)
API 34 (Sawbill Bay)		August 26, 2010	boat electrofisher	600m (625s)	Yellow Perch (131) Smallmouth Bass (4)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
Ore Stockpile					
API 11 (pond; adjacent to north boundary of ore stockpile)	S.A.=26,748m^2 Max. depth=5.5m D.O.=9.8-10.6 mgl^{-1} pH=7.6 Substrate=silt/boulder	September 28 – 29, 2010	minnow traps (1)	18 trap hrs.	Finescale Dace (29) Northern Redbelly Dace (11)
		September 28 – 29, 2010	minnow traps (1)	19 trap hrs.	Finescale Dace (36) Northern Redbelly Dace (1) Fathead Minnow (3)
		September 28 – 29, 2010	nordic net	18 hrs.	Finescale Dace (9) Fathead Minnow (2)
		September 28 – 29, 2010	gillnet - single panel (76 mm mesh)	18 hrs.	No catch
		August 27-28, 2011	broad –scale large mesh (3)	57 hrs.	No catch
		August 27-28, 2011	broad –scale small mesh (2)	39 hrs.	Finescale Dace (11) Fathead Minnow (4)
		August 27-28, 2011	minnow traps (3)	63 trap hrs.	Finescale Dace (57) Northern Redbelly Dace (1) Fathead Minnow (84)
API 11 (outflow stream)		September 23, 2010	backpack electrofisher	115m (415s)	Finescale Dace (56) Northern Redbelly Dace (2)
API 30 (Lynxhead Bay)		August 26, 2010	boat electrofisher	500m (484s)	Yellow Perch (10) Northern Pike (1)
TMF Base Case					
API 1 [beaver pond]		October 19-20, 2010	minnow traps (2)	47 trap hrs.	Finescale Dace (*Chrosomus neogaeus)* (52) Pearl Dace (*Semotilus margarita)* (22)
API 1 (beaver pond)		October 19-20, 2010	minnow traps (2)	46 trap hrs.	Pearl Dace (13) Finescale Dace (43)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 1 (stream to API 19)		August 28-29, 2011	backpack electrofisher	1100m (739s)	White sucker (48) Finescale Dace (96) Fathead Minnow (8)
API 1 (stream)		August 29, 2011	backpack electrofisher	300m (467s)	White Sucker (12) Finescale Dace (31) Fathead Minnow (1)
API 19 (beaver pond)		October 19-20, 2010	minnow traps (1)	23 trap hrs.	Finescale Dace (18) Fathead Minnow (*Pimephales promelas)* (17)
		October 19-20, 2010	minnow traps (1)	23 trap hrs.	Finescale Dace (28) Fathead Minnow (44)
		August 30, 2011	minnow traps (2)	4 trap hrs.	Finescale Dace (50) Fathead Minnow (43)
API 19 (stream)		August 30, 2011	Backpack electrofisher	216m (405s)	Finescale Dace (208) Fathead Minnow (6)
API 18 (beaver pond/stream)		October 19-20, 2010	minnow traps (1)	24 trap hrs.	Finescale Dace (2)
API 18 (beaver pond/stream)		October 19-20, 2010	minnow traps (1)	24 trap hrs.	No catch
API 18 (stream)		May, 2011	backpack electroshocker	250 m (2169s)	Finescale Dace (46) White Sucker (20)
API 18 (stream)		August 4, 2010	backpack electrofisher	200 m (758s)	Finescale Dace (76) White Sucker *(Catostomus commersoni)* (16) Burbot (*Lota lota)* (1)
API 37 (mouth of API 18; Sawbill Bay)		August 18, 2010	boat electrofisher	700 m (936s)	Northern Pike (*Esox lucius*) (8) Blacknose Shiner (*Notropis heterolepis*) (330) Yellow Perch (*Perca flavescens)* (20) White Sucker (1) Cyprinid sp. (~200)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 37 (Sawbill Bay)		August 21-22, 2010	minnow trap (1)	15 trap hrs.	No catch
API 37 (Sawbill Bay)		August 21-22, 2010	minnow trap (1)	15 trap hrs.	No catch
API 37 (Sawbill Bay)		August 21-22, 2010	minnow trap (1)	15 trap hrs.	No catch
API 37 (Sawbill Bay)		August 21-22, 2010	minnow trap (1)	15 trap hrs.	No catch
API 47 (lake; u/s of TMF base case)	S.A.= 60,016m^2 pH= 7.4-7.6 Substrate=silt/boulder (May 2011 profile) Depth (m) / Temp (^{o}C) / D.O. (mg·l^{-1}) 1 / 10.1 / 10.3 2 / 10.0 / 10.2 3 / 7.7 / 9.2 4 / 6.4 / 8.2 5 / 5.8 / 6.0 6 / 5.1 / 2.3 7 / 4.9 / 0.8 8 / 4.0 / 0.5 9 / 3.9 / 0.5 10 / - / -	9-10 May, 2011	nordic net	16 hrs.	Finescale Dace (503) Pearl Dace (5)
API 47		9-10 May, 2011	Nordic net	18 hrs.	Finescale Dace (423) Pearl Dace (13)
API 47		9-10 May, 2011	gillnet – experimental mesh	17 hrs.	No Catch
API 47		9-10 May, 2011	minnow traps (4)	68 trap hrs.	Finescale Dace (72) Pearl Dace (2)
API 48 (pond; u/s of TMF base case)	S.A.= 2,175m^2 pH= 6.9 Substrate=silt	May 29-30, 2011	minnow traps (3)	69 trap hrs.	No catch
		May 29-30, 2011	minnow traps (2)	48 trap hrs.	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
	(May 2011 profile) Depth (m) / Temp (^{o}C) / D.O. (mg·l^{-1}) 1 / 13.2 / 6.5 2 / 8.1 / 3.8 3 / 5.1 / 5.3 4 / 3.6 / 1.8 5 / 3.6 / 0.7 6 / 3.6 / 0.6	May 29-30, 2011	nordic net	24 hrs.	No catch
TMF Alternative #1					
API 2 (lake)	S.A.= 122,228m^{2} pH= 6.9 Substrate=silt (Sept. 2010 profile) Depth (m) / Temp (^{o}C) / D.O. (mg·l^{-1}) 1 / 10.7 / 10.2 2 / 10.7 / 10.3 3 / 10.7 / 10.2 4 / 10.7 / 10.2 5 / 10.4 / 10.0 6 / 10.4 / 9.6	October 15-16, 2010	minnow traps (1)	23 trap hrs.	No catch
		October 15-16, 2010	minnow traps (1)	23 trap hrs.	Pumpkinseed (*Lepomis gibbosus*) (4)
		October 15-16, 2010	nordic net	22 hrs.	Yellow Perch (5) Northern Pike (9) White Sucker (3)
		October 15-16, 2010	gillnet - experimental mesh	20 hrs.	White Sucker (*6*) Northern Pike (12)
		May 30-31, 2011	minnow traps (5)	90 trap hrs.	No catch
		May 30-June1, 2011	nordic net	41 hrs.	Yellow Perch (14) Northern Pike (6) Iowa Darter (*Etheostoma exile)* (2) Blacknose Shiner (1) White sucker (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
		May 30-June1, 2011	nordic net	40 hrs.	Yellow Perch (5) Northern Pike (3) White Sucker (2)
		May 30-June1, 2011	gillnet - experimental mesh	41.5 hrs.	Northern Pike (16) White Sucker (3)
		May 30-June1, 2011	gillnet - experimental mesh	41.5 hrs.	Northern Pike (8) White Sucker (9)
API 2 (stream)		25 August, 2011	Backpack electrofisher	540m (1497s)	No Catch, observed 1 Central Mudminnow and 1 unidentified fish.
API 3 (pond)	S.A.=6,059m^2 Max. depth= 1.0m D.O.= 6.1 mg·l^{-1} pH=6.7 substrate= detritus	October 15-16, 2010	minnow traps (1)	15.5 trap hrs.	Finescale Dace (35)
		October 15-16, 2010	minnow traps (1)	15.5 trap hrs.	Finescale Dace (42) Northern Redbelly Dace (*Chrosomus eos)* (5)
		October 15-16, 2010	gillnet - single panel (38 mm mesh)	16 hrs.	No catch
		August 23-24, 2011	minnow traps (3)	48 trap hrs.	Finescale dace (8)
		August 23-24, 2011	broad-scale large mesh (2)	32 hrs.	White Sucker (2)
		August 23-24, 2011	broad-scale small mesh (2)	32 hrs.	Finescale Dace (62) Northern Redbelly Dace (18) Northern Pike (1)
API 4 (pond)		October 14-15, 2010	minnow traps (1)	17 trap hrs.	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
	SA=5,102m^2 Max depth= 1.2m DO= 7.7 mg·l^{-1} pH=6.6 substrate= detritus/boulder	October 14-15, 2010	minnow traps (1)	17 trap hrs.	Finescale Dace (2)
		October 14-15, 2010	gillnet - single panel (38 mm mesh)	17 hrs.	No catch
		August 23-24, 2011	minnow traps (2)	46 trap hrs.	Finescale Dace (8) Northern Redbelly Dace (8)
		August 23-24, 2011	broad-scale large mesh (1)		No catch
		August 23-24, 2011	broad-scale small mesh (1)	23.25 hrs	Finescale Dace (20) Northern Redbelly Dace (21)
API 4 (stream)		August 30, 2011	backpack electrofishing	250m (526s)	Finescale Dace (38)
API 5 (pond)	S.A.=15,400m^2 Max. depth= 4.5m D.O.= 6.1-7.9 mg·l^{-1} pH=6.9 substrate= detritus/boulder	October 14-15, 2010	nordic net	23 hrs.	Northern Redbelly Dace (30) Finescale Dace (9)
		October 14-15, 2010	gillnet - single panel (76 mm mesh)	22 hrs.	No catch
		October 14-15, 2010	minnow traps (1)	22 trap hrs.	Finescale Dace (1)
		October 14-15, 2010	minnow traps (1)	22 trap hrs.	Northern Redbelly Dace (17) Finescale Dace (245)
		August 23-24, 2011	minnow traps (5)	132 trap hrs.	Finescale Dace (108) Northern redbelly Dace (9)
		August 23-24, 2011	broad-scale large mesh (3)	78 hrs.	no catch
		August 23-24, 2011	broad-scale small mesh (2)	54 hrs.	Finescale Dace (19) Northern redbelly Dace (12)
API 5 (in-flow Stream)		August 30, 2011	backpack electrofisher	150m (278s)	Finescale Dace (10)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 5 (out-flow Stream)		August 30, 2011	backpack electrofisher	300m (229s)	Finescale Dace (401) Northern Redbelly Dace (1)
API 6 (pond)	S.A.=5,572m^2 Max. depth= 1.2m D.O.= 6.7-9.6 mg·l^{-1} pH=6.8 substrate= detritus	October 16-17, 2010	minnow traps (1)	19.75 trap hrs.	No catch
		October 16-17, 2010	minnow traps (1)	20 trap hrs.	No catch
		May 8-9, 2011	nordic net	22.5 hrs.	No catch
		May 8-9, 2011	minnow traps (4)	92 trap hrs.	No catch
		August 25-26, 2011	minnow traps (3)	79.5 trap hrs.	No catch
		August 25-26, 2011	broad-scale large mesh (1)	14.75 hrs	No catch
		August 25-26, 2011	broad-scale large mesh (1)	14.75 hrs	No catch
API 6 (stream)		May 30, 2011	backpack electrofisher	250m (465s)	Iowa Darter (1)
API 6 (stream)		May 30, 2011	backpack electrofisher	200m (273s)	White Sucker (4)
API 6 (stream)		May 30-31, 2011	minnow traps (3)	60 trap hrs.	No catch
API 6 (stream)		May 30-31, 2011	minnow traps (3)	54 trap hrs.	No catch
API 7 (pond)	S.A.=10,319m^2 Max. depth= 1.0m D.O.= 6.7-9.6 mg·l^{-1}	October 16-17, 2010	nordic net	16 hrs.	No catch
		October 16-17, 2010	minnow traps (1)	16 trap hrs.	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
	pH=6.8 substrate= detritus	October 16-17, 2010	minnow traps (1)	16 trap hrs.	No catch
		May 8-9, 2011	nordic net	23 hrs.	No catch
		May 8-9, 2011	nordic net	23 hrs.	No catch
API 7 (pond)		August 25-26, 2011	minnow traps (2)	30 trap hrs.	No catch
		August 25-26, 2011	broad-scale small mesh (2)	30 hrs.	No catch
API 7 (stream between API's 6,7)		May 31, 2011	backpack electrofishing	200 m (974s)	No catch
API 8 (lake, d/s of TMF)	S.A.=180,619m^2 Max. depth= 7.0m pH=6.7 substrate= boulder/cobble/detritus (Oct. 2010 profile) Depth (m) / Temp (^{o}C) / D.O. (mg·l^{-1}) 1 / 9.9 / 9.1 2 / 9.9 / 8.9 3 / 9.9 / 8.9 4 / 9.8 / 8.6 5 / 9.7 / 8.6 6 / 9.5 / 8.6 7 / - / -	October 17-18, 2010	minnow traps (2)	44 trap hrs.	Pumpkinseed (3)
API 8 (pond)		October 17-18, 2010	minnow traps (1)	22 trap hrs.	No catch
		October 17-18, 2010	gillnet - experimental mesh	22 hrs	White Sucker (2) Northern Pike (2)
		October 17-18, 2010	gillnet - experimental mesh	21 hrs.	White Sucker (4) Northern Pike (4) Burbot (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 38 (Lizard Lake; d/s of API's 6 and 7)		August 2, 2010	boat electrofisher	1000 m (1709s)	Northern Pike (5) Smallmouth Bass (3) Blacknose Shiner (47) Yellow Perch (19) Pumpkinseed (2)
API 38 (stream)		October 19, 2010	backpack electrofisher	100 m (532s)	Northern Pike (1)
API 38 (Lizard Lake)		August 21-22, 2010	nordic net	20 hrs.	Smallmouth Bass (1) Yellow Perch (15)
API 39 (Lizard Lake; d/s of API 8)		August 21-22, 2010	gillnet – experimental mesh	17 hrs.	Walleye (10) White Sucker (5) Cisco (14) Yellow Perch (1)
API 39 (Lizard Lake)		August 22, 2010	gillnet – experimental mesh	3 hrs.	Cisco (1)
API 39 (Lizard Lake)		August 21, 2010	nordic net	2 hrs.	Smallmouth Bass (1) Yellow Perch (1)
API 39 (Lizard Lake)		August 22, 2010	minnow traps (3)	15 trap hrs.	No catch
API 39 (Lizard Lake)		August 21, 2010	gillnet – experimental mesh	8 hrs.	Northern Pike (1) White Sucker (*Catostomus commersoni)* (1) Cisco (1)
API 39 (Lizard Lake)		August 21, 2010	boat electrofisher	1000 m (919s)	Yellow Perch (246) Northern Pike (4) Smallmouth Bass (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
					Iowa Darter (1) Pumpkinseed (1) Spottail Shiner *(Notropis hudsonius*) (4)
API 39 (stream)		October 19, 2010	backpack electrofisher	400 m (1062s)	No catch
API 46 (lake u/s of TMF)	S.A.=43,329m^2 Max. depth= 9.0m D.O.= 10.3 mg·l^{-1} pH=8.1 substrate= detritus/boulder/bedrock	May 29-30, 2011	nordic net	20 hrs.	Finescale Dace (12)
		May 29-30, 2011	nordic net	21 hrs	Finescale Dace (25) Fathead Minnow (6)
		May 29-30, 2011	gillnet – experimental mesh (2)	20 hrs.	No catch
		May 29-30, 2011	gillnet – experimental mesh (2)	21 hrs.	No catch
		May 29-30, 2011	minnow traps (6)	120 trap hrs.	Finescale Dace (77) Fathead Minnow (54)
API 46 (stream)		May 30, 2011	backpack electrofisher	250 m (625s)	Finescale Dace (63) Pearl Dace (1)
TMF Alternative #2					
API 9 (Stream draining eastern portion of		October 18, 2010	backpack electrofisher	440 m (1184s)	Fathead Minnow (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
TMF)					
API 9 (Stream)		11 May, 2011	backpack electrofisher	800 m (1588s)	Central Mudminnow (*Umbra limi*) (21)
		August 31, 2011	backpack electrofisher	1385m (1016s)	Central Mudminnow (19)
API 40 (stream draining western portion of TMF)		October 20, 2010	backpack electrofisher	250 m (1102s)	White Sucker (1) Northern Pike (1)
API 40 (stream)		May 10, 2011	backpack electrofisher	850 m (3304s)	Northern Pike (1)
		September 01, 2011	backpack electrofisher	800m (2420s)	Northern Pike (2) White Sucker (1) Burbot (1)
API 40 (Turtle Bay)		August 25, 2010	boat electrofisher	600 m (689s)	Yellow Perch (72) Blacknose Shiner (54)
API 41 (Small bay adjacent to w. boundary of TMF/Turtle Bay)		August 25, 2010	boat electrofisher	600 m (574s)	Yellow Perch (27)
API 41 (Turtle Bay)		August 24, 2010	nordic net	25 hrs.	Smallmouth Bass (1) Northern Pike (5) Yellow Perch (8)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 41 (Turtle Bay)		August 23, 2010	nordic net	29 hr.	Yellow Perch (14)
API 41 (Turtle Bay)		September 24, 2010	gillnet – experimental mesh	23 hr.	Yellow Perch (10) White Sucker (6) Cisco (12) Walleye (14) Northern Pike (1) Lake Whitefish (2)
API 41 (stream)		October 20, 2010	backpack electrofishing	120 m (682s)	Northern Pike (1)
API 41 (stream)		May 11, 2011	backpack electrofisher	180 m (678s)	No catch
API 41 (stream)		August 31, 2011	backpack electrofisher	150m (281s)	No Catch
API 42 (Narrows between Lizard l. and Turtle Bay)		12 May, 2011	backpack electrofisher	300 m (973s)	Burbot (3) Longnose Dace (*Rhinichthys cataractae*)(40) Mottled Sculpin (1)
API 43 (pond u/s of pipeline crossing)	S.A.=__m^2 Max. depth= 6.0m pH=6.8 substrate=detritus	May 27-28, 2011	minnow traps (3)	56 trap hrs.	No catch
		May 27-28, 2011	nordic net	19 hrs.	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
	(May 2011 profile) Depth (m) / Temp (^{o}C) / D.O. (mg·l^{-1}) 1 / 15.0 / 9.3 2 / 14.8 / 9.3 3 / 8.1 / 10.1 4 / 5.3 / 5.4 5 / 4.5 / 4.7 6 / 4.3 / 2.5	May 27-28, 2011	gillnet – experimental mesh	19 hrs.	No catch
API 44 (stream, pipeline crossing)		May 11-12, 2011	backpack electrofisher	400 m (1374s)	Yellow Perch (3) Iowa Darter (2) White Sucker (1) Finescale Dace (5)
API 44 (pond u/s of pipeline crossing; mostly dried up)	S.A.=830m^{2} Max. depth= 1 .0m pH=6.7 substrate=detritus	May 27-28, 2011	minnow traps (4)	56 trap hrs.	No catch
		May 27-28, 2011	nordic net	16 hrs.	No catch
API 45 (lake, north of TMF)	S.A.=143,751m^{2} Max. depth=7.5m D.O.=8-9 mgl^{-1} pH=6.9 Substrate=detritus/boulder/cobble	May 28-29, 2011	nordic net	19 hrs.	Northern Pike (1) White Sucker (1)
		May 28-29, 2011	nordic net	18 hrs.	Northern Pike (1) Yellow Perch (4)
		May 28-29, 2011	nordic net	19 hrs.	White Sucker (1) Northern Pike (7)
		May 28-29, 2011	gillnet – experimental mesh	19 hrs.	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
		May 28-29, 2011	minnow traps (6)	108 trap hrs.	No catch
API 45 (lake, north of TMF)		August 25-26, 2011	minnow traps (5)	100 trap hrs.	Pumpkinseed (6) Yellow Perch (1)
		August 25-26, 2011	broad-scale large mesh (6)	123 hrs.	White Sucker (1) Northern Pike (12)
		August 25-26, 2011	broad-scale small mesh (2)	41 hrs	Yellow Perch (21) Northern Pike (1)
Waste Rock Option #1					
API 17 (pond)	S.A.=16,269m^2 Max. depth=7.0m D.O.=8.8-9 mgl^{-1} pH=6.5 Substrate=detritus/boulder	September 28 – 29, 2010	minnow trap (1)	24 trap hrs.	No catch
		September 28 - 29, 2010	minnow trap (1)	24 trap hrs.	Finescale Dace (144) Fathead Minnow (7)
		September 28 – 29, 2010	gillnet - experimental mesh	23 hrs.	No catch
		September 28 – 29, 2010	gillnet - single panel (38 mm mesh)	23 hrs.	No catch
		9-10 May, 2011	gillnet - experimental mesh	24 hrs.	No catch
		9-10 May, 2011	nordic net	24 hrs.	Finescale Dace (4)
		May 9-10, 2011	minnow traps (4)	79 trap hrs.	Finescale Dace (10) Northern Redbelly Dace (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 17 (pond)		August 26-27, 2011	minnow traps (3)	49.5 trap hrs.	Finescale Dace (172) Northern Redbelly Dace (38)
		August 26-27, 2011	broad-scale large mesh (3)	48 hrs.	No catch
		August 26-27, 2011	broad-scale small mesh (2)	33 hrs.	Finescale Dace (15) Northern Redbelly Dace (75) Fathead Minnow (4)
API 17 (stream)	Stream appearing on topographic maps does not exist; no defined channel				
API 49		May 12, 2011	backpack electrofisher	215 m (1814s)	Blacknose Shiner (158) White Sucker (12) Iowa Darter (1)
API 50		May 9, 2011	backpack electrofisher	260 m (969s)	White Sucker (4)
API 35 (Snail Bay)		August 18, 2010	boat electrofisher	800 m (974s)	Yellow Perch (48) Blacknose Shiner (250)
API 35 (Snail Bay)		Aug, 2010	backpack electroshocker	100 m (593s)	White sucker (1)
API 35 (Snail Bay)		May, 2011	backpack electroshocker	175 m (454s)	No catch
Waste Rock Option #2					
API 10 (pond)	S.A.=13,797m^2 Max. depth=10.0m D.O.=8.6-9 mgl^{-1} pH=6.1 Substrate=detritus	September 29-30, 2010	minnow traps (1)	18 trap hrs.	No catch
		September 29-30, 2010	minnow traps (1)	18 trap hrs.	No catch
		September 29-30, 2010	gillnet - experimental mesh	18.5 hrs.	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
		September 29-30, 2010	nordic net	18 hrs.	No catch
API 10 (pond)		August 26-27, 2011	broad-scale large mesh (2)	44 hrs.	No catch
		August 26-27, 2011	broad-scale small mesh (2)	44 hrs.	No catch
		August 26-27, 2011	minnow traps (3)	60 trap hrs.	No catch
API 10 (outflow stream)		September 25, 2010	backpack electrofisher	100 m (780s)	Yellow Perch (1) White Sucker (2)
API 10 (outflow stream)		May 11, 2011	backpack electrofisher	125 m (439s)	No catch
API 36 (Turtle Bay; mouth of stream)		August 24-25, 2010	gillnet – experimental mesh	23 hrs.	Yellow Perch (3) Walleye (3) Northern Pike (15) Lake Whitefish (4) Smallmouth Bass (2)
API 36 (Turtle Bay)		August 25-26, 2010	gillnet – experimental mesh	23 hrs.	Lake Whitefish (2) Northern Pike (1) White Sucker (1) Walleye (6) Yellow Perch (2) Smallmouth Bass (1)
API 36 (Turtle Bay)		August 23-24, 2010	gillnet – experimental mesh	25 hrs.	Smallmouth Bass (5) Northern Pike (14) Walleye (3) Lake Whitefish (3) Yellow Perch (13)
API 36 (Turtle Bay)		August 23-24, 2010	nordic net	22 hrs.	Yellow Perch (8) Northern Pike (3)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 36 (Turtle Bay)		September 24-25, 2010	gillnet – experimental mesh	23 hrs.	Yellow Perch (10) White Sucker (6) Cisco *(Coregonus artedi)* (12) Walleye (14) Northern Pike (1) Lake Whitefish (2)
API 36 (Turtle Bay)		August 25, 2010	boat electrofisher	800 m (721s)	Yellow Perch (12) Blacknose Shiner (103) Northern Pike (2)
API 36 (Turtle Bay)		August 26, 2010	boat electrofisher	1000 m (850s)	Northern Pike (4) Yellow Perch (14) Blacknose Shiner (55)
Other (no Longer within Project Footprint)					
API 15 (pond)	S.A.=4,237m^2 Max. depth=2.0m D.O.=6.8-10 mgl^{-1} pH=6.6 Substrate=detritus	August 2-3, 2010	minnow traps (3)	40 trap hrs.	No catch
		September 27-28, 2010	minnow traps (1)	20 trap hrs.	No catch
		September 27-28, 2010	minnow traps (1)	20 trap hrs.	No catch
		September 27-28, 2010	nordic net	20 hrs.	No catch
		August 27-28, 2011	minnow traps (3)	69 trap hrs.	No catch
		August 27-28, 2011	broad-scale large mesh (1)	22 hrs.	No catch
		August 27-28, 2011	broad-scale small mesh (2)	44 hrs.	No catch
API 16 (pond)	S.A.=6,151m^2 Max. depth=5.0m	September 26 – 27, 2010	minnow trap (1)	20 trap hrs.	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
	pH=7.3 Substrate=detritus (Sept 2010 profile) Depth (m) / Temp (^{o}C) / D.O. (mg·l^{-1}) 1 / 11.0 / 8.6 2 / 10.6 / 8.5 3 / 10.5 / 8.4 4 / 8.0 / 8.4 5 / - / -	September 26 – 27, 2010	nordic net	20.25 hrs.	No catch
API 16 (outflow stream)		July 3, 2010	backpack electrofisher	100 m (362s)	No catch
API 25 (west dam;south side)		August 29, 2010	boat electrofisher	300 m (391s)	Yellow Perch (6) Smallmouth Bass (*Micropterus dolomieu)* (2)
API 25 (west dam; north side)		August 28, 2010	boat electrofisher	350 m (525s)	Yellow Perch (50) Smallmouth Bass (3) Iowa Darter (1) Northern Pike (2) Walleye *(Sander vitreus)* (1)
API 26 (spillway dam; north side)		August 28, 2010	boat electrofisher	50 m (227s)	Yellow Perch (7) Smallmouth Bass (5)
API 26 (spillway dam; south side)		August 29, 2010	boat electrofisher	50 m (380s)	Yellow Perch (11) Smallmouth Bass (2)
API 27 (middle dam; north side)		August 28, 2010	boat electrofisher	250 m (554s)	Smallmouth Bass (8) Yellow Perch (14) Northern Pike (6)
API 27 (middle dam; south side)		August 29, 2010	boat electrofisher	200 m (519s)	Yellow Perch (2) Smallmouth Bass (2)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 28 (east dam; south side)		August 29, 2010	boat electrofisher	175 m (630s)	Yellow Perch (13) Smallmouth Bass (5) Walleye (1) Blacknose Shiner (1)
API 29 (Lynxhead Narrows)		August 29, 2010	boat electrofisher	200 m (523s)	Smallmouth Bass (5) Yellow Perch (13)
API 29 (Lynxhead Narrows)		August 26, 2010	boat electrofisher	400 m (1305s)	Smallmouth Bass (6) Yellow Perch (64) Northern Pike (3)
API 31 (Lynxhead Bay)		August 26, 2010	boat electrofisher	400 m 502 seconds	Yellow Perch (203) Northern Pike (1) Blacknose Shiner (3)
API 31 (Lynxhead Bay)		August 20, 2010	minnow traps (4)	96 trap hrs.	No catch
API 31 (Lynxhead Bay)		August 26-27, 2010	gillnet – experimental mesh	14 hrs.	Smallmouth Bass (2) Yellow Perch (2) Northern Pike (1) Walleye (10) White Sucker (1)
Steam Crossing Locations					
API 20 (stream)		August 5, 2010	backpack electrofisher	100 m (520s)	Central Mudminnow (9) White Sucker (1) Burbot (1)
API 21 (stream)		August 4, 2010	backpack electrofisher	100 m (417s)	Finescale Dace (46) Northern Redbelly Dace (6) Unknown Dace sp. (45) Iowa Darter (6)
API 22 (pond)		June 4-5, 2011	nordic net	21.25 hrs.	Pearl Dace (30) Blacknose Dace (*Rhinichthys atratulus*)(1) Yellow Perch (95) White Sucker (19)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 22 (pond)		June 4-5, 2011	nordic net	23.25 hrs.	Yellow Perch (388) White Sucker (2) Pearl Dace (7)
API 22 (pond)		June 4-5, 2011	gillnet - experimental mesh	22.5 hrs.	White Sucker (21) Yellow Perch (1)
API 22 (pond)		June 4-5, 2011	minnow traps (6)	24 hrs.	Yellow Perch (11) Pearl Dace (7) Finescale Dace (44) Fathead Minnow (1) Blacknose Shiner (2)
API 22		August 4-6, 2010	minnow trap (2)	78.5 trap hrs.	Finescale Dace (147) Northern Redbelly Dace (22)
API 23 (north side, pond)		June 4-5, 2011	nordic net	19 hours	Finescale Dace (1) White Sucker (34) Pearl Dace (14) Fathead Minnow (11)
API 23 (north side, pond)		June 4-5, 2011	nordic net	21.5 hours	Finescale Dace (1) White Sucker (24) Pearl Dace (6) Fathead Minnow (8)
API 23 (north side, pond)		June 4-5, 2011	gill net-experimental mesh	20 hours	White Sucker (13)
API 23 (north side, pond)		June 4-5, 2011	minnow traps (3)	60 trap hrs.	Finescale Dace (147) Fathead Minnow (71)
API 24		September 22-23, 2010	gillnet - single panel (38 mm mesh)	19.5 hrs.	Yellow Perch (2)
API 24		September 22-23, 2010	nordic net	17 hrs.	Northern Pike (4) Lake Whitefish (1) Yellow Perch (7)
API 24		September 22-23, 2010	gillnet - single panel (76 mm mesh)	19.25 hrs.	Lake Whitefish (*Coregonus clupeaformis)* (1) Northern Pike (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 24		September 22-23, 2010	minnow traps (1)	20.5 trap hrs.	No catch
API 24		September 22-23, 2010	minnow traps (2)	41 trap hrs.	No catch
API 33 (Marmion L)		August 26, 2010	boat electrofishing	400 m (397s)	Yellow Perch (8)
API 33 Marmion L)		August 19-20, 2010	gillnet – experimental mesh	16 hrs.	Walleye (12)
API 51 (stream)		3 May, 2011	backpack electrofisher	200 m (910s)	Central Mudminnow (52)
API 51 (lake)		5-6 May, 2011	gillnet – experimental mesh (2)	22 hrs.	White Sucker (1) Northern Pike (3)
API 51 (lake)		5-6 May, 2011	nordic net	22 hrs	Yellow Perch (14) Northern Pike (3)
API 51 (lake)		May 5-6, 2001	minnow traps (2)	42 trap hrs.	Blacknose Shiner (1)
API 51 (lake)		May 5-6, 2011	minnow traps (3)	63 trap hrs.	Blacknose Shiner (3)
API 52 (stream)		3 May, 2011	backpack electrofisher	200 m (601s)	No catch
API 53 (stream)		3 May, 2011	backpack electrofisher	200 m (1189s)	Finescale Dace (3) Dace sp (3)
API 53		May 3-4, 2011	minnow traps (3)	51 trap hrs.	No catch
API 54 (stream)		4 May, 2011	backpack electrofisher	60 m (373s)	Iowa Darter (8)
API 54 (lake/north)		26-27 May, 2011	nordic net	24 hours	Brook Stickleback (2) Iowa Darter (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
					Finescale Dace (16) Fathead Minnow (26) Pearl Dace (6)
API 54 (lake/north		26-27 May, 2011	gillnet – experimental mesh	23 hr	No catch
API 54 (lake/north		26-27 May, 2011	minnow traps (6)	144 trap hrs.	Finescale Dace (93) Fathead Minnow (363)
API 54 (lake/south)		26-27 May, 2011	nordic net	24 hours	No catch
API 54 (lake/south)		26-27 May, 2011	gillnet – experimental mesh	24 hr	No catch
API 54 (lake/south)		26-27 May, 2011	minnow traps (6)	114 trap hrs.	Iowa Darter (3) Finescale Dace (41) Fathead Minnow (49)
API 55 (stream)		4 May, 2011	backpack electrofisher	200 m (407s)	No catch
API 55 (lake)		May 4-5, 2011	minnow traps (3)	66 trap hrs.	No catch
API 55 (lake)		May 26-27, 2011	minnow traps (7)	161 trap hrs.	Blacknose shiner Iowa Darter
API 55 (lake)		May 26-27, 2011	gillnet – experimental mesh	25 hrs.	Yellow Perch (2)
API 55 (lake)		May 26-27, 2011	nordic net	23.5 hrs.	No catch
API 55 (lake)		May 26-27, 2011	nordic net	25 hrs.	Yellow Perch (15) Iowa Darter (1) Blacknose Shiner (3) Northern Pike (2) Sculpin sp. (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 56 (stream)		5 May, 2011	backpack electrofisher	195 m (517s)	Iowa Darter (39) Central Mudminnow (3)
API 56 (lake)		May 6-7, 2011	nordic net	21.9 hrs.	Central Mudminnow (2)
API 56 (lake)		May 6-7, 2011	minnow traps (3)	64 trap hrs.	Finescale Dace (129) Fathead Minnow (5)
API 56 (lake)		June 2-3, 2011	nordic net	17.25 hrs.	Walleye (4) Northern Pike (1) White Sucker (4)
API 56 (lake)		June 2-3, 2011	nordic net	18 hrs.	White Sucker (3) Walleye (1) Northern Pike (1) Yellow Perch (3) Central Mudminnow (1)
API 56 (lake)		June 2-3, 2011	gillnet – experimental mesh (2)	17.5 hrs.	White Sucker (18) Walleye (1) Northern Pike (1) Yellow Perch (1)
API 56 (lake)		June 2-3, 2011	gillnet – experimental mesh	19.25 hrs.	Walleye (12) White Sucker (13) Northern Pike (2)
API 58 (stream)		7 May, 2011	backpack electrofisher	150 m (713s)	Finescale Dace (29) Pearl Dace (3)
API 58 (lake)		May 27-28, 2011	nordic net	16.25 hrs.	Finescale Dace (73) Lake Chub *Couesius plumbeus* (7)
API 58 (lake)		May 27-28, 2011	nordic net	16.25 hrs.	Finescale Dace (16) Lake Chub (2)
API 58 (lake)		May 27-28, 2011	gillnet – experimental mesh	16.25 hrs.	No catch

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 58 (lake)		May 27-28, 2011	minnow traps	16.25 trap hrs.	Finescale Dace (155)
API 59 (lake)		June 3-4, 2011	gillnet – experimental mesh	22 hrs.	White Sucker (16) Lake Trout (*Salvelinus Namaycush*)(1) Northern Pike (3)
API 59 (lake)		June 3-4, 2011	gillnet – experimental mesh	21 hrs.	White Sucker (2) Northern Pike (2) Lake Trout (2)
API 59 (lake)		June 3-4, 2011	nordic net	21.5 hrs.	Northern Pike (2) Lake Trout (2) White Sucker (5)
API 59 (lake)		June 3-4, 2011	nordic net	21.9 hrs.	White Sucker (4) Blacknose Shiner (1)
API 60 (lake)		June 3-4, 2011	nordic net	22 hrs.	Fathead Minnow (23) Finescale Dace (20)
API 60 (lake)		June 3-4, 2011	minnow traps (6)	129 trap hrs.	Fathead Minnow (16) Finescale Dace (76)
API 60 (lake)		June 3-4, 2011	nordic net	21.75 hrs.	Finescale Dace (44)
API 60 (lake)		June 3-4, 2011	minnow traps (6)	123 trap hrs.	Finescale Dace (419) Fathead Minnow (14)
API 61 (stream)		7 May, 2011	backpack electrofisher	100 m (682s)	White Sucker (1) Longnose Dace (1)
API 61 (stream)		June 7, 2011	backpack electrofisher	100 m (1671s)	Longnose Dace (27) White Sucker (2) Iowa Darter (5)
API 61 (lake)		May 28-29, 2011	minnow traps (6)	111 trap hrs.	No catch
API 61 (lake)		May 28-29, 2011	gillnet – experimental mesh	22.5 hrs.	White Sucker (24) Northern Pike (3)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
					Walleye (1)
API 61 (lake)		May 28-29, 2011	nordic net	21 hrs.	Northern Pike Yellow Perch
API 61 (lake)		May 28-29, 2011	nordic net	23.5 hrs.	Iowa Darter (1) Northern Pike (2)
API 62 (stream)		May 6, 2011	backpack electrofisher	100 m (351s)	Finescale Dace (2)
API 62		May 5-6, 2011	minnow traps (6)	126 trap hrs.	No catch
API 62		May 5-6, 2011	minnow traps (6)	103.5 trap hrs.	Finescale Dace (4)
API 63		May 6, 2011	backpack electrofisher	200 m (2302s)	White Sucker (7) Finescale Dace (5) Iowa Darter (1)
API 64 (stream)		May 6-7, 2011	minnow traps (6)	147 trap hrs.	Finescale Dace (23) Fathead Minnow (6)
API 64 (lake)		May 6-7, 2011	minnow traps (6)	120 trap hrs.	No catch
API 64 (lake)		May 6-7, 2011	nordic net	17.5 hrs.	Northern Pike (5) Lake Whitefish (2) White Sucker (3) Yellow Perch (1)
API 64 (lake)		May 6-7, 2011	gillnet – experimental mesh	21 hrs.	Northern Pike (11) Lake Whitefish (7) White Sucker (1)
API 64 (lake)		May 6-7, 2011	nordic net	24.5 hrs	Fathead Minnow (1) Finescale Dace (1)

API Number (Description)	**Physical Attributes**	**Date Assessed**	**Gear**	**Total Effort**	**Catch (No.)**
API 64 (lake)		May 6-7, 2011	gillnet – experimental mesh	23 hrs.	No catch
API 65 (stream)		May 12, 2011	backpack electrofisher	200 m (1030s)	Longnose Dace (1) White Sucker (1)
API 66		2 May, 2011	backpack electrofisher	300 m (1419s)	Northern Pike (2) Longnose Dace (5) White Sucker (2) Dace sp. (1)
API 69		7 May, 2011	backpack electrofisher	200 m (1104s)	Central Mudminnow (62) Finescale Dace (125) Pearl Dace (9) Blacknose Shiner (6) White Sucker (6) Iowa Darter (2) Brassy Minnow (3)

Notes:
Gillnet experimental mesh (2) total length of 122 m consisting of 8 panels in mesh sizes 38 mm, 51 mm, 63 mm, 76 mm, 89 mm, 102 mm, 114 mm, 127 mm and a net depth of 1.8 m.
Nordic Net, net length of 30 m with 12 mesh sizes in the following configuration 43 mm, 19.5 mm, 6.25 mm, 10 mm, 55 mm, 8 mm, 12.5 mm 24 mm, 15.5 mm, 5 mm, 35 mm, 29 mm.
API = areas of potential impact
hrs = hours
s = seconds

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MINUTES
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NO NET LOSS PLAN WORKSHOP
FEBRUARY 29, 2012 – 9:00 AM – 4:00 PM
MAIN BOARDROOM – DFO

Attendees:

Osisko:	Alix Drapack, Mark Bowler
DFO:	Tom Kleinboeck, Neville Ward
MNR:	Brian Jackson, Amy Godwin, Kim Armstrong, Mark Sobchuk
CEAA:	Amy Liu (teleconference)
MNDM:	Patrick Barnes
Golder:	John Seyler

Handouts: Project Footprint & Aquatic APIs, Maps for Capture locations by Species, Catch data, Fish Habitat Preference Tables (for all 24 species).

Agenda:
Agenda accepted with the following addition: Discussion about compensation opportunities and how we are going to determine baseline on those potential opportunities.

Question: Is Serge Metikosh (Golder, Calgary) involved?
Answer: He reviewed the DRAFT. He will be involved informally and he can be brought in to participate/provide input as required. Ken Minns suggested that the Meliadine no net loss planning process would be a good template to work from. It has been discussed by DFO and was well received. Golder (Edmonton office) working on the NNLP so some of that expertise would be good. John will get in touch with team that did the Meladine project. Doris North is another project that was noted by Tom as worth looking at for reference. DFO's HATT (Habitat Alteration Assessment Tool) may be useful in calculation of habitat loss– Ken Minns developed it and it is used to assess infilling activities on the Great Lakes – may also be useful for inland waters. John is familiar with it from a Bruce Power project. Concern about the availability of the software but it is back on-line now. Dave Gibson (DFO Burlington) is the contact for HATT

Actions: John will get in touch with team working on the Meliadine project and look for aspects of this process that can assist in developing accounting procedures further. John will also explore utility of HATT and discuss further with the group.

Overview of Project:
Power Point Presentation (attached).
Q: How close will the pit be to Marmion?
A: Alix said as close as feasibly possible because the ore goes right up to and into Marmion however the intent is not to disturb Marmion. Tom suggested a visualization (viewscape anlysis) of what the operating mine would look like from the water might be a good tool for social analysis (e.g. public/angler perspective).

Alix indicated that the most recent iterations of the layout have the tailings in the options proposed in the PD but that the waste rock pile has moved to west of Trap Bay and the mill is north of the pit.

Neither of these iterations has been finalized but will be shared when they are. Condemnation drilling program is winding down.

Overview of Aquatic baseline program:
Power Point Presentation (attached).
Q: Are you overlaying your grab samples to your side scan sonar to make sure that there aren't discrepancies?
A? Yes. The aquatic crew did spot determinations (grab samples) of the bottom and will overlay this on geophysics figures.

Q: Are there any presence/absence concerns? Are there any lakes that are in question?
A: We revisited waterbodies based on DFO's concerns. We concentrated additional sampling on the footprint.
Comment: It is very important to be confident in results of 'zero catches' and classification of water bodies as non-fish bearing for purposes of MMER. Make sure there is sufficient effort on "fishless" waterbodies.

Comment: There may be a revised layout for the transmission line that could include additional water crossings along the corridor so we anticipate additional aquatic biology fieldwork this summer.

Comment: Make sure you consider MMER in your field work.

Q: Regarding stream crossings, are you considering stream simulation in culvert design?
A: Baseline data would support that kind of analysis.

Q: With respect to identifying water course crossings, are you including the pipeline routes from the mill to the tailings impoundment?
A: Yes; APIs 42-44 assessed specifically for this purpose.

Q: Regarding, potential impacts at each of the crossing sites, what did you see at each crossing?
A: There will be examples included in the interim baseline report. MNR wants to see what the affect of culverts would be etc.

Action: John to find out what software was used to generate geophysics (side scan) imagery and forward to MNR

Habitat accounting procedures discussion:
Power Point Presentation (attached).
MNR may provide additional comments on the Draft Habitat Accounting document (Kim). DFO has provided all the comments they have.

MMER vs. HADD discussion.
Q: Has geochemistry of wasterock determined whether or not it will be considered deleterious to fish?
A: Initial results suggest that rock is non-acid gernerating and not metal leaching.

Q: Have stream channel realignments that may be required for tailings/wastrock storage area been considered yet?
A: No; awaiting engineering analysis.

Q: Will habitat accounting be completed for every tailings management/wasterock storage alternative??? Or just for the final layout?
A: Can consider this once layouts finalized.

Discussion: 'Weighting' of fish species/habitats that may be impacted. Other plans have used fisheries (e.g. social) value and biomass to weight relative importance of habitats.

Discussion: How do the EA and MMER scheduling processes/timelines relate to one another (e.g. can the EA be finalized prior to the scheduling process being completed?)

Discussed characterization of aquatic features as ecotypes in habitat accounting

Comment: Osisko will need to identify and account for partially altered features (e.g. modified flows) as well as habitat that is destroyed

NNLP should include contingency options (e.g. if follow up monitoring should determine that compensation has not been successful, additional compensation measures that can be completed).

Discussion: Steep Rock Mine site rehabilitation as fish compensation. There may be some gains associated with site rehabilitation. MNR plan is not yet available. Compensation could take several forms; monetary (MNR or sub-contractor completes the work) or Osisko completes work, Off-site site rehabilitation cannot be the cornerstone for compensation of lost habitat; there must be some habitat replacement.

Actions: Amy Liu to provide a summary of the timing and sequence between MMER and EA permitting.

Tom/Neville to seek Regional opinion on how site rehabilitation might be evaluated (credited) with respect to habitat units lost/alterred

Habitat Guilds discussion:
Power Point Presentation (attached).

Guilds are an acceptable approach to lumping species (e.g. small bodied forage fish). May be able to use species assemblages (e.g. most commonly occurring assemblages) to help determine whether or not we missed a species during baseline assessments

Actions: Bathymetry data for Sawbill Bay (Marmion reservoir). Check with Steve Parker (Golder PM) regarding Snail Bay – was it dry when bathymetry was completed (e.g. low water elevation experienced during spring of 2010)??
Golder will derive the Suitability Index tables for each fish species using literature and expert opinion and bring back a draft for review by meeting attendees.

Habitat Suitability Relationships and Information Gaps:

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Experts to consider for review/comments:
Ken Minns
Paul Blanchford
Julie Dahl (DFO)
Serge Metikosh
Authors of Meliadine NNLP

Action: Neville to check with Julie to see if research paper she was involved with can be made available as a reference for HIS generation.

Next Steps

- Drill down on baseline and send to agencies and set up subsequent session on baseline for MNR to identify outstanding gaps and determine further baseline work (For MNR/DFO review in April). Timing and review of this information is critical before next field season begins.
- Golder to DRAFT Habitat Suitability reference tables – using expertise and additional references (June)
- MNR to provide list of Steep Rock projects that might qualify for compensation
- Response to how amenable is DFO/MNR to off-site (Steep Rock) options. What would be the process for gaining acceptance that it will suffice?
- What will the buffer zone look like by the pit? More socio-ec (e.g. visual) than aquatic biology.
- Amy to look into MMER process parallels the EA permitting process.
- Amy to look at habitat creation and how it is scoped in the project and if it would need to have a separate EA (e.g. would habitat creation occurring prior to the end of the EA trigger an additional EA process?).

HAMMOND REEF GOLD PROJECT MEETING NOTES

MINUTES OF MEETING
APRIL 13, 2011 (12 PM TO 3 PM)
THUNDER BAY, ONTARIO

Present:

In Person

Osisko	Alix Drapack (AD), Jean Sebastien David (JS), Cailey Anderson (CA)
Golder Associates	John Seyler (JS)
MNR	Rob Purdon (RP), Amy Godwin (AG), Sheldon Haw (SH), Alyson Dupuis (AD)
MOE	Sam Shippam (SS), Bryce Baker (BB), Shannon John (SJ)
DFO	Tom Kleinboeck (TK), Neville Ward (NW)

On Teleconference

Osisko	Anne Charland (AC)
MOE	Michelle Fromme-Marcellin
CEAA	Amy Liu (AL)

Regrets

MOE	Laurie Brownlee

CEAA and MOE PowerPoint Presentation provided to attendees (attached as Appendix A).

1. Introduction by Alix Drapack

- Overview since last project description was presented in December 2010
- Major changes; tailings management areas, location of waste rock piles, responses to requests of additional information from CEAA and government regulators.

2. Golder Aquatics Baseline Studies – John Seyler

- Overview of data collected thus far and how it will be presented in the environmental assessment
- Overview of the 2011 field program
- Four components to aquatics surveys 1. Fish communities, 2. Benthics, 3. Fish tissue analysis, 4. Habitat mapping
  - **ACTION:** Golder & Osisko would like to know if the baseline assessment meets government recommendation and if not what additional information and assessment is required.

Q: Neville Ward: were the fish tissue samples tested for mercury?
A: John Seyler: a total metal scan including mercury was done



HAMMOND REEF GOLD PROJECT MEETING NOTES

- Areas of Potential Impacts (Q&A's)

Amy Liu: in relation to the APIs are the locations the same as the ones provided back in January, specifically what about number 9.
John Seyler: We will be assigning and maintaining a specific API number to each aquatic feature throughout the baseline data collection and EA processes. Due to changes in the project description there may be API's that have not/will not be assessed (e.g. within tailings management facility alternatives that have been dropped)..

John reviewed fish tissue collection locations and explained that they were collected for different trophic levels (bethivores, planktivores, piscivores and small bodied fish species) from a number of different locations around the Hammond Penninsula, including Sawbill/Lynxhead bays, Turtle Bay and Lizard lake.

Tom K: What were the parameters that you used for measuring effort. Why did you complete so few net sets for only 1 or 2 nights?
John S: Many of the small ponds are less than 1ha, and extremely shallow (e.g. <1m deep). Physical conditions dictated what gears could be deployed. Field crews were instructed to maximize, fishing effort.

Neville W: Did you do electofishing in all of the sample locations?
John S: Not all, due to limited conductivity. Electrofishing was used at the mouths of potential receivers (e.g. in Marmion and Lizard lakes) and in all small watercourses assessed.

Neville Ward – noted that [stationary gear] net sets are hard because if fish aren't moving they won't get caught in a net. Active sampling with electrofishing is proven more useful.

- **ACTION:** Areas where fish weren't caught will require additional fishing effort and require more net sets to account for seasonal variability.

John – Fish Tissue Sampling in 3 different locations: Sabill Bay, Turtle Bay and Lizard Lake

Tom Kleinboeck: Are you going to complete bathymetry on Mitta Lake
John: It was completed by TBT Engineering (TBT 2009). Note: A standard bathymetric survey (GPS-depth, transect sampling design was completed by Golder in 2010). No additional surveys were planned for 2011 as of the April 13, meeting

Tom Kleinboeck: Transect surveys can potentially miss important habitat features (e.g. shoals). A more comprehensive assessment of habitat types will be required for habitat compensation planning.

Neville W: Does the outflow from Mitta Lake fit into the footprint for the open pit?
Alix: yes up to the 2nd beaver pond

Neville – how are you going to control the water that flows back into the pit?
Alix – we are currently installing hydro monitoring wells to monitor inflow to Mitta Lake to assist in determine if we require de-watering wells or if we need to pump water from the pit

Neville – will this water be pumped directly back into the creek or Marmion?
JS – we are currently looking at the pit slope design and water inflow to determine if we need to pump water from the pit into a sediment pond

Shannon – has water balance been calculated?

HAMMOND REEF GOLD PROJECT MEETING NOTES

Alix – it has been started and is outlined in Appendix H but it is not finalized. Osisko's goal is to reclaim water as much as possible. We will need approximately 3,200 cubic metres a day. This number is based on research taking from water usage at Canadian Malartic

Shannon – how deep are the pits?
Alix – 350m

Rob – is that depth or elevation
Alix – Depth



HAMMOND REEF GOLD PROJECT MEETING NOTES

Tom – was the electrofishing at the potential receiver sites done one time from a boat?
John – yes, it was completed in the fall of 2010

Amy – do you have a more detailed work plan for DFO and MNR to review regarding your field research in addition to the presentation?
John – Golder will provide a detailed work plan for the planned 2011 aquatic baseline assessment for MNR and DFO to review

Neville – How many people do you plan having in the field to complete the assessment
John – typically 2-person crews are deployed. Golder will deploy as many crews as necessary to complete the baseline assessment program in 2011

Neville – John, do you complete the sampling yourself?
John - not, involved directly in field assessment activities but I have been to the site and completed an aerial reconnaissance of all aquatic values so that the assessment program could be properly designed.

Tom – how are you calculating habitat loss based on one year of sampling in Mitta Lake?
John – We have quantified littoral habitat, completed temperature/oxygen profiles and will also rely on bathymetric data to quantify habitats present in Mitta Lake

Amy – the MNR has data for the upper and lower portions of Marmion Reservoir
John – Marmion Reservoir is indirectly related to the project

Tom – it appears that you are taking a shotgun approach to baseline assessment. More assessment needs to be completed to assess the types of species in Mitta Lake and to quantify their numbers.
John – We have fish presence/absence data collected in two different years. Are you suggesting we need to calculate absolute abundance or biomass of each fish species present ? This will require many years to complete.
Tom – You have incomplete lists for fish species. You need to assess habitat suitability based on species but first you need to determine species presence.
John – would DFO be more comfortable if Golder conducted an additional round of assessment on Mitta Lake?
Tom – yes, quantification of HADDs need to be based upon scientifically defensible data. Osisko and Golder need to meet MNRs expectations and ensure they are satisfied.
Neville – you need to determine the gaps in your sampling for the tailings option sites and go back and sample in multiple seasons. You will have a legal requirement to compensate for fish habitat loss. Has Osisko and Golder been thinking about this? And if so keep in mind that you may need to complete additional work to meet compensation [planning] requirements. I suggest that you speak with local stakeholders and First Nations communities to generate compensation ideas.
John – it is Osisko and Golder's intent to begin examining compensation opportunities in 2011.
JS – we are open to partnering with First Nations and with Lakehead Univeristy for compensation projects
Tom – you will need to know species presence and abundance to calculate compensation requirements
Neville – once the mine is running you will need to continue monitoring and satisfy Environment Canada's needs.
John – yes, monitoring will continue long term to meet Environment Canada's monitoring guidelines

- ACTION – (John) will provide a detailed work plan for MNR and DFO to comment on



HAMMOND REEF GOLD PROJECT MEETING NOTES

Neville – is it possible to have the sampling locations added to the aerial photo?

- ACTION – Golder to put API locations on aerial photo in appendix I

Amy – additional sampling locations on the Hardtack Road and north of Lizard Lake should be added.

- ACTION – Amy to send preferred sampling locations to be added to John.
- ACTION (Alix) – Bathymetry will be collected on Mitta Lake
- ACTION (Alix) – arrange a separate meeting to discuss hydrogeology assessment work
- ACTION (Alix) – Arrange a separate meeting with MNR to discuss terrestrial assessment completed and proposed as well as species at risk

Amy – Provided a species at risk list for species in the project area and suggested that more assessment be done to rule out species presence. In addition MNR requires the physical data from research so they can determine if there are gaps as soon as possible.

Bryce – there was no mention of benthics assessment, was any done?
John – yes, benthic community sampling was completed in the lower reach of every potential receiver. The species identification has not been completed.

Neville – was the benthic sampling completed to monitor potential water quality changes?
John – yes; the sampling intensity was consistent with MMER requirements and will be useful in developing a first studt deign, if required.

Bryce – will aquatic assessment project summary be finalized – I have only received the draft copy?
Alix – Yes, I will send an adendum. Please consider Appendix G of the Project Desciption as the acutal submission not as a draft.

Alix – to clarify DFO is asking for a memo outlining the work plan for 2011, the gear types that will be used for sampling, the areas where bathymetry will be completed and an aerial photo with footprints of buildings, tailings options and waste rock piles outline on a 1:30 000 air photo with the API locations to accompany the existing aquatic summary
Neville – yes
Tom – yes, this will help answer specific questions and it will help to assess where habitat compensation may be required.
Rob –detailed assessment programs will also assist addressing the concerns that will be raised by NGO's
Amy – the same work plan should also be made for the terrestrial work
Alix – we will produce a work plan for the terrestrial research and send it out prior to arranging a meeting. I will advice Amy Liu and Peter Hinz for setting up meetings with all government agencies.

Neville – has any geochemical assessment been completed in regard to acide rock drainage
JS – yes, it is not acid generating – this research was completed by Brett Resources.
Neville – this informaiton needs to be obtained as acid generation applies to MMER with Environment Canada regarding waste rock piles placed on fish barring waters as heavy metals are considered a deleterious substance.

Alix – provided closing remarks and thanked the agencies for attending and providing feedback

Neville – will Osisko be having any open houses
Alix – yes, we are planning on holding one in May – date to be determined
Neville – using the air photos that you produce will be an asset in the public open houses



HAMMOND REEF GOLD PROJECT MEETING NOTES

Sam – If MOE has comments who should they be sent to?
Alix – they can be sent to me and I will share

Next Steps:

- Figure/table to CEAA?
- Work plans?

OSISKO MINING CORPORATION
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MEETING MINUTES
AQUATIC BASELINE REGULATOR MEETING
JUNE 4, 2012 9 AM – 2:30 PM
VALHALLA INN, THUNDER BAY

Attendees:

Alexandra Drapack	Osisko Hammond Reef Gold
Mark Bowler	Osisko Hammond Reef Gold
Brian Hindley	Golder Associates
John Seyler	Golder Associates
Tom Klienboeck	Fish Habitat Biologist, Fisheries and Oceans Canada
Neville Ward	Senior Habitat Biologist, Fisheries and Oceans Canada
Amy Liu	CEAA by phone (before lunch)
Brian Jackson	Biologist, MNR Atikokan
Amy Godwin	Biologist, Intern, MNR Atikokan
Kim Armstrong	Senior Aquatic Specialist, MNR, Thunder Bay
Jim Sutton	Surface Water Specialist, MOE, Thunder Bay
Patrick Barnes	Mineral Development Officer, MNDM
Steve Bobrowicz	Management Biologist, MNR, Upper Great Lakes Area

Introductions- Alix Drapack

Review of Actions from February 29th meeting:

- Outstanding item: Golder will circulate the revised habitat accounting paper- this is a priority.

Meeting Presentation 1: Revised Project Layout

- Introduction to the revised (2012) site layout presented by A. Drapack
- Presentation highlights – infrastructure changes:
  - processing plant location (north of pits);
  - transmission alignment (now crosses Sawbill Bay);
  - Waste rock location (near pits); and
  - ore and overburden stockpiles (temporary).
- Possible effluent discharge points are included in the site plans for discussion.
- Question: Could the emergency spill pond be converted post closure to a productive pond?
  - Answer possibly yes.

Meeting Presentation 2: Baseline Summary:

- Discussion of effects on shoreline habitat. The Marmion Reservoir shore and nearshore areas do not seem as detailed with respect to habitat classification as the areas studied in the project footprint. As the footprint nears the shore in areas such as Trap Bay, or the edge of Lizard Lake this habitat will need to be classified.
- In order to estimate effluent diffusion and dilution, more should be provided on the nature of the receiving waters (Marmion Reservoir) such as the bathymetry.
- Bathymetry of surrounding reservoir areas should be checked for its adequacy/accuracy.

- Discussion of using some Steep Rock rehabilitation projects for part of the compensation of habitat that will be required for this project. A draft report on Steep Rock has come out, but is currently unavailable. MNR (Brian and/or Amy) to arrange a meeting with the MNR Steep Rock team on this subject.
- Some characterization/baseline studies are currently underway (MNR Steep Rock biologist is Brittany Emms-Richards)
- Projects that involve Steep Rock should be defensible to third parties such as Mining Watch.
- They should be in accordance with the habitat models.

Financial Considerations versus Resources

- Least preferred 'cash in lieu of' – could be cash for specific project(s)
- Letter of credit approach may work
- Through a formal agreement with MNR, it may be possible to contribute to a plan for studies – then implementation – then monitoring.

This season's field work will include evaluation of compensation opportunities on site or near site.

- Shoreline surveys may help to identify more compensation options (i.e. where important shoreline habitats may periodically be exposed during low water conditions).
- Question- was shoreline area at Lizard Lake done? Bathymetry?

Discussion of the Study area

- Brian Jackson suggests that the regional study area (RSA) include all of the floodwaters to the Southeast of the site. – he provided a map at the conclusion of the meeting to BH showing his recommendation on the RSA.

Discussion of reference lakes or controls

- The discussion started with respect to contaminant sampling in fish.
- JS- Pointed out that the Baseline Studies 'are the before project or untouched' control for the project in this case. AD pointed out that the project is not expected to have any impact on Hg levels in the water.
- Question- What metals were tested for in the baseline?
- It is pointed out that the Broadscale program tests for mercury may serve as a control.

Discussion about the changes that have occurred since exploration began

- Beaver ponds and stream modifications: how will that be accounted for since the aquatic science surveys occurred after those changes?
- JS- A way to manage that would be to use the 2010 Lidar imagery to show what was the wetted area prior to disturbance for compensation purposes.

Discussion of the limitations of low water surveys that were done in spring around the Reservoir

- Spring may have 2 meter lower water in the reservoir. This may limit pike spawning habitat availability and if it is limited then it wouldn't be measured in the survey.
- BH noted that at low water levels fish access to lower portions of tributaries may be limited or obstructed and these rivermouth areas may be the only areas for spawning/nursery habitat in early spring
- JS- There would have to be assumptions about pike habitat use for the stream mouths.
- Discussion- How close can features such as the pit get to the water as in the case of Marmion Reservoir? Brian Jackson looked for Guidance from the Crown Land Use Policy Atlas (CLUPA). There was no specific setback for mining. Forestry had a 120 m setback. Where the project nears water bodies the habitat should be studied. For example, are there wetlands in the riparian that may be dried?
- Brian Jackson- High water level throughout the summer is 415,2 m unless a drought occurs.
- CLUPA has Lizard Lake designated as a Tourist Lake.

- AD- Emphasizes that the plan is to collect all the flows into one stream for effluent treatment prior to a discharge at a single point in Sawbill Bay.
- Question- What about fish population data?
    - As a measure for monitoring and follow-up, could results of the Broadscale Monitoring Program be used?
    - 2 levels of design (netting intensity)for Broadscale assessment
    - Broadscale Monitoring of Marmion Reservoir was completed in 2010 and is scheduled to be assessed again in 2015
    - Lizard lake has never been assessed and is not scheduled for assessment
    - 2010 Marmion results may provide an adequate baseline, to be confirmed by MNR
    - Currently population health indices for species other than walleye have yet to be worked out
    - Overall health of fish populations are compared to regional data set to determine if a given population meets expectations

- Question: Did terrestrial baseline studies include evaluation of wetland areas adjacent to all aquatic features? Answer: Erin Greenaway will have the wetland analysis available for MNR review in the next few weeks.

Lunch Break

Brian Hindley- Continues his presentation from slide 21.

The slides emphasize the potentially impacted areas and what types of impact or category of impact they may be placed into.

- Destruction due to MMER (tailings or waste rock);
- Destruction (HADD) required for operations; and
- Disturbance or Alteration (HADD) required for operations.

DFO- mentions that the permanence of the change to the water bodies will be important in the assessment and that a summary like the one provided will be needed for the authorization

Brian Jackson- Mentions that there are aerial imagery data sets from 1982, and 1995 as well as satellite imagery from 2005 available.

- This imagery may be useful to examine how pond surface areas may fluctuate over time, in order to come up with a final SA for habitat accounting

Discussion of the Ontario Broadscale Monitoring Program (BSM) and whether or not it contains data that might help in putting together a monitoring plan.
Habitat Guild approach- Does that still work for assessing habitat if there is a changed Fisheries Act? Yes.

Brian Hindley queries whether the bathymetry is necessary where we can show steep shoreline features and rock using lidar on parts of the areas that are of interest on the reservoir and lizard lake.

- Seems like a reasonable approach to narrow down the area.
- Detailed assessment within 200 m of stream mouths that was done will further narrow that area.

Comment- The data may be quite detailed for bathymetry in Sawbill Bay but it was presented in a 25 meter grid manner. Need additional detail regarding the intensity of the survey.

Actions from this meeting

1. DFO and MNR to provide written comments on the baseline study report by end of this week.

2. Golder to provide summarized information on specific receivers (Sawbill Bay and Lizard Lake) to show extent of habitat mapping and fishing effort grouped by receiver instead of by API and/or catchment.

3. Golder to provide an accurate summary of aquatic features which may be subject to MMER scheduling and those locations which will represent HADDs (i.e. and not require scheduling) to ensure that they are correct going forward.

4. MNR to set up a meeting with the Steep Rock team to discuss options

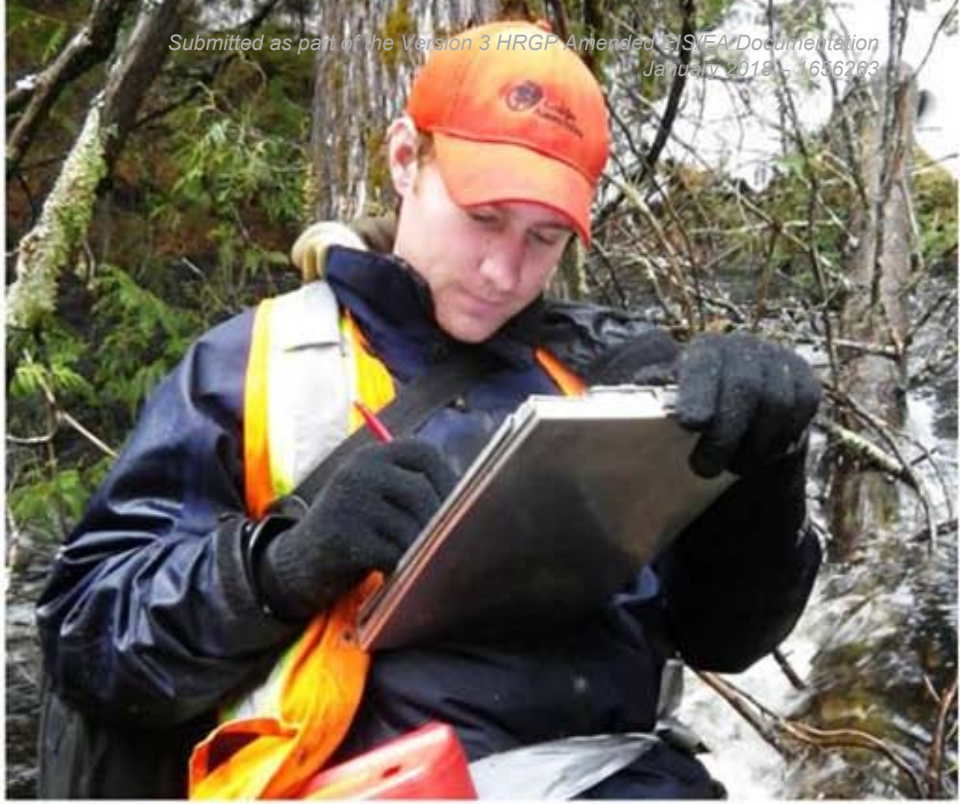
5. Brian Jackson to confirm his recommendation of the Regional Study Area boundaries. - provided

6. BH to discuss intensity of wetland assessment relative to aquatic features with Erin Greenaway (Golder terrestrial biologist).

Submitted as part of the Version 3 HRGP Amended EA/EA Documentation
January 2013 - 1656263

OSISKO

HAMMOND REEF GOLD





Golder Associates



HAMMOND REEF

Introduction – Welcome - Revised Project Layout

June 2012

Introductions & Welcome

Purpose of Meeting: For Osisko to present and discuss the revised project layout and baseline data, for the proposed Hammond Reef Gold Mine Project, with the government review team.

Outcome: To identify any data gaps that need to be addressed during the 2012 field season in order to fulfill the federal EIS guidelines and the Provincial Terms of Reference.

Agenda

	AGENDA ITEM	TIME	LEAD
1	**Welcome/Introductions**	9:00am – 9:15am	Alix Drapack
2	**Presentation of Revised Project Layout**	9:15am - 10:00am	Alix Drapack
3	**Update on February Compensation Workshop**	10:00 am - 11:00am	John Seyler
4	**Summary of Interim Aquatic Baseline Report**	11:00am - 12:00pm	Brian Hindley
5	**Lunch**	12:00pm - 1:00pm	
6	**Agency Comments on Baseline Reports**	1:00pm – 2:00pm	All
7	**Action Items / Wrap Up**	2:00pm – 2:15pm	Brian Hindley/John Seyler

Permitting Overview – Environmental Assessment Status

- Permitting is subject to both approvals: Federal: Canadian Environmental Assessment Agency (CEAA) and Provincial: Ministry of the Environment, Environmental Approvals Branch (MOE EAB).
- One (single) report will be prepared to meet both federal and provincial requirements.
- The Environmental Assessment / Environmental Impact Statement (EA/EIS) report will be prepared for internal (Osisko) review for December 1 2012

Permitting Overview – Environmental Assessment Status

- Federal Permitting Process:
  - Project Description document submitted April 8 2011 (formally accepted April 28 2011).
  - EA start date July 28 2011.
  - CEAA prepared DRAFT EIS guidelines for comment August 16 2011.
  - CEAA finalized EIS guidelines on October 21 2011.
  - CEAA sent out Aboriginal Consultation Plans December 23 2011.

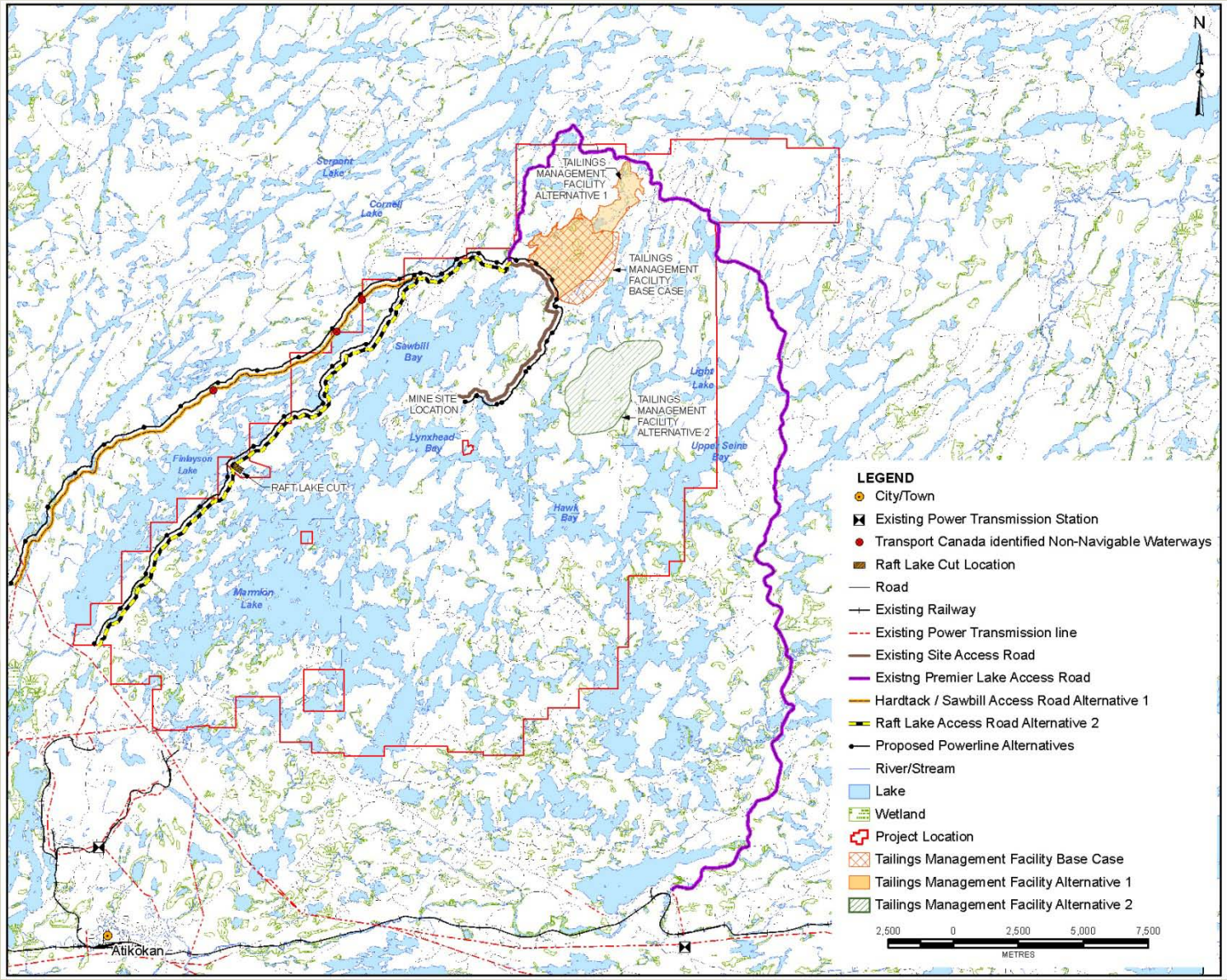
Permitting Overview – Environmental Assessment Status

- Provincial Permitting Process:
  - Osisko voluntarily committed to an Individual EA June 16 2011.
  - Osisko submitted a DRAFT Terms of Reference (ToR) on September 21 2011.
  - Following incorporation of comments from consultation, Osisko submitted a final ToR on January 23 2012.
  - Comments received on March 7 2012 from MOE EAB on the ToR dated January 23 2012.
  - Final Amended ToR was submitted to MOE EAB on April 4 2012. An errata letter was submitted to MOE EAB on April 26 2012. The Ministerial decision is expected on May 25 2012.

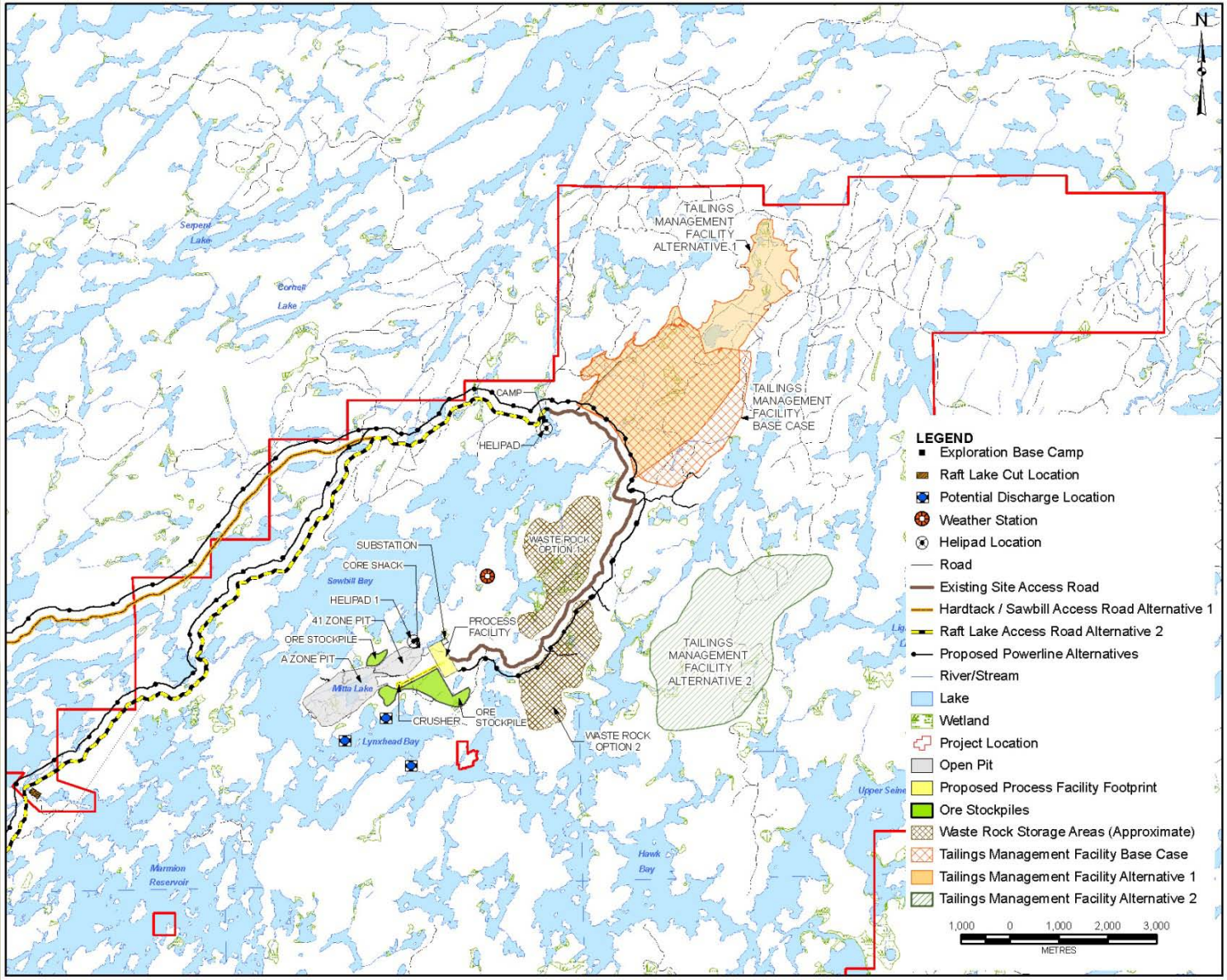
Project Layout

- Project Description (April 2011)
  - Figure 8
  - Figure 6
- Revised Layout (May 2012)
  - Figure 1
  - Figure 2
  - Figure 3

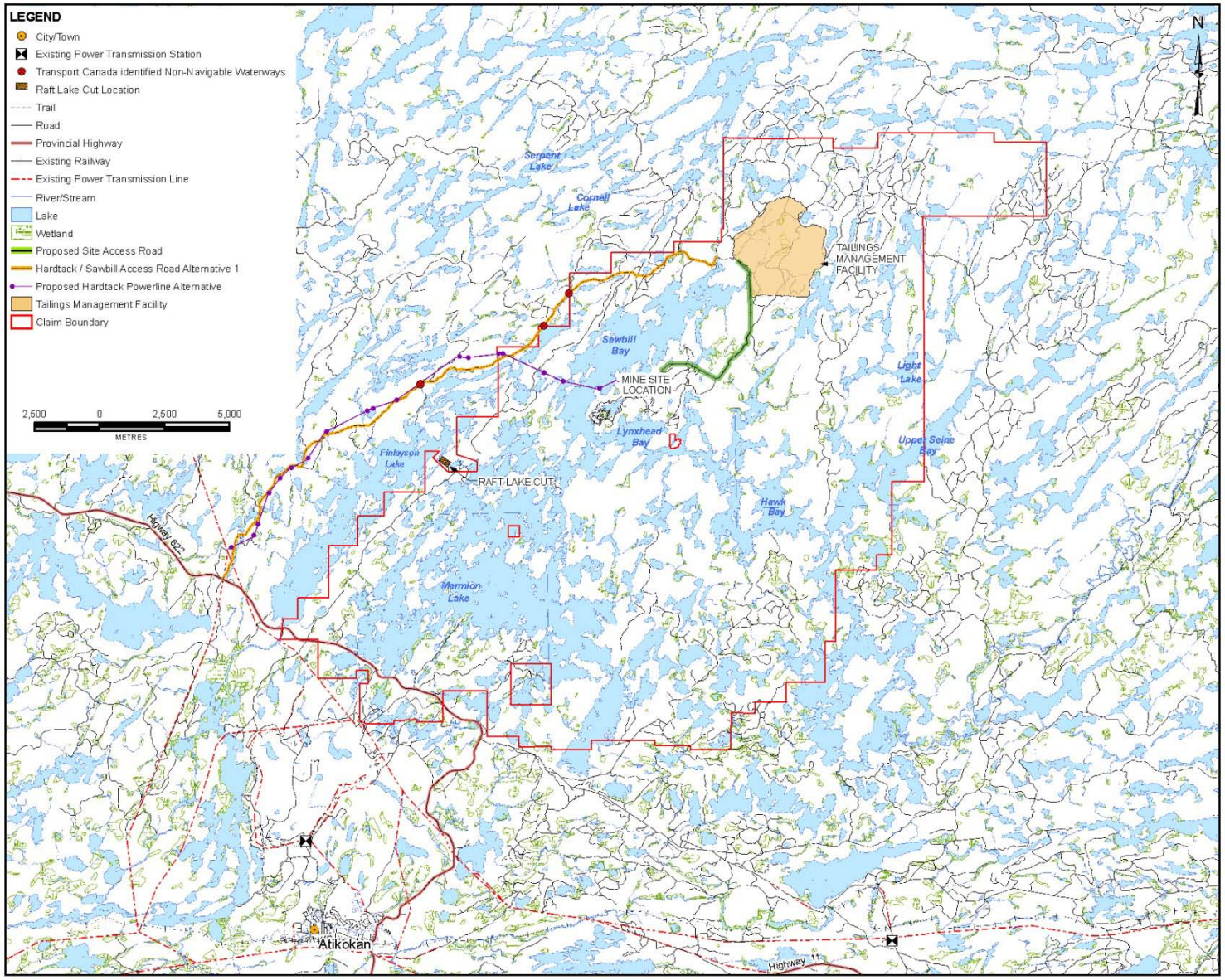
Infrastructure Corridors (April 2011)



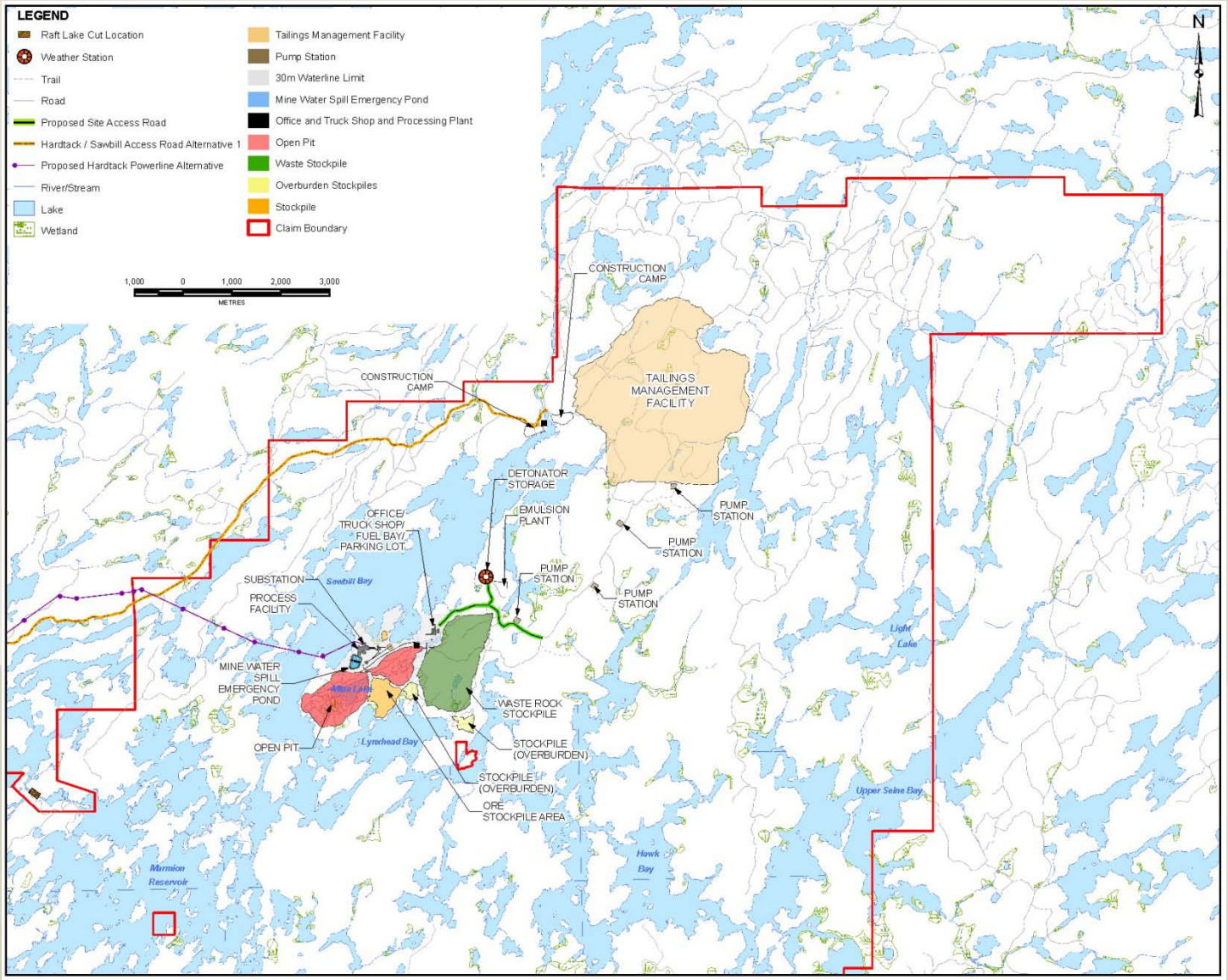
Site Layout (April 2011)



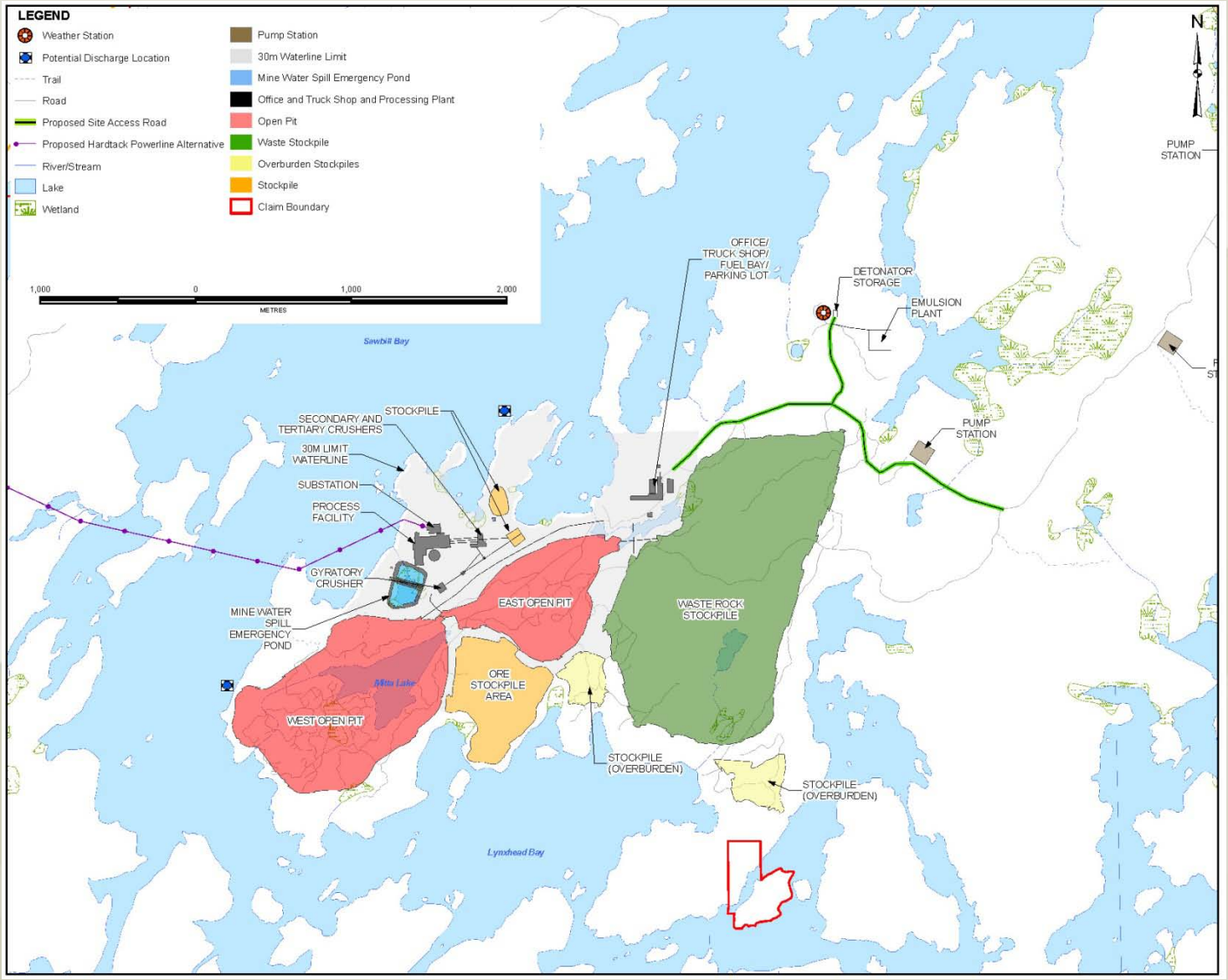
Infrastructure Corridors (2012)



Site Layout (2012)



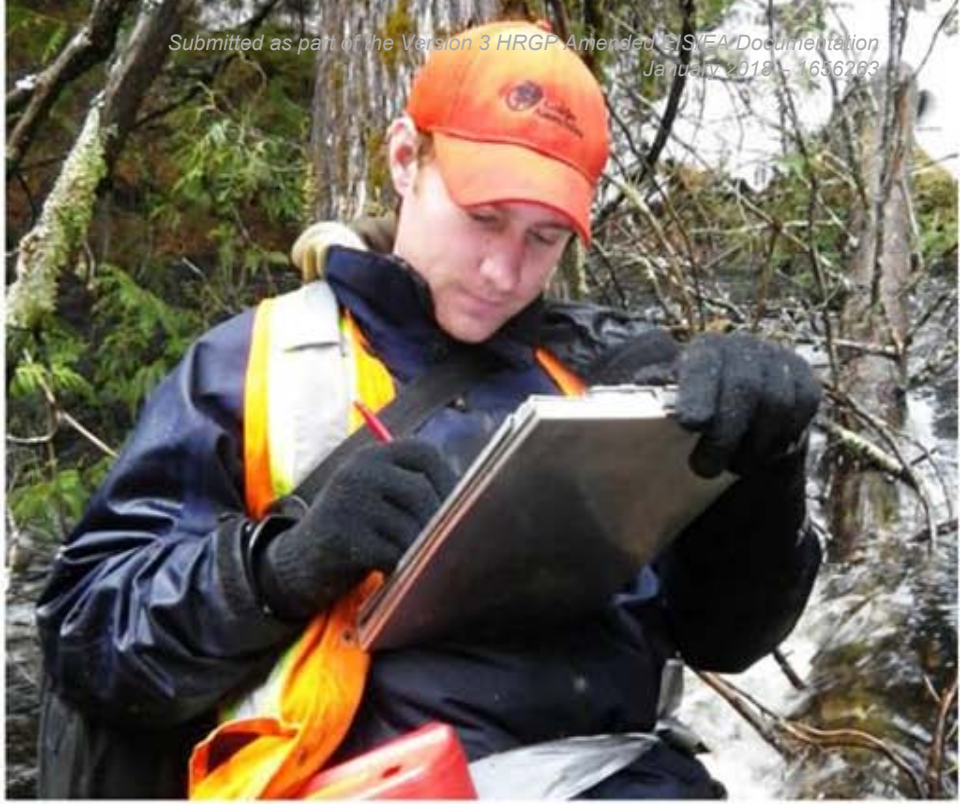
Close-up – Site Layout (2012)



Submitted as part of the Version 3 HRGP Amended EA/EA Documentation
January 2013 - 1656263

OSISKO

HAMMOND REEF GOLD





Golder Associates



HAMMOND REEF

Baseline Study Summary

May 28, 2012

BASELINE STUDIES – Characterizing Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- **Fish and Fish Habitat**

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

OSISKO-MNR-DFO MEETINGS

4 meetings to date:

- April 13, 2011
- July 12, 2011
- September 14, 2011
- February 29, 2012



FEBRUARY 29, 2012 NEXT STEPS

- Set up session on baseline for agencies to identify outstanding gaps and determine further baseline work (today)
- Golder to draft Habitat Suitability reference tables – using expertise and additional references (June)
- MNR to provide list of Steep Rock projects that might qualify for compensation
- Response to how amenable is DFO/MNR to off-site (Steep Rock) options
- Amy to look into MMER process parallels with the EA permitting process (March 22, 2012 letter)
- Amy to look at habitat creation and how it is scoped in the project and if it would need to have a separate EA

AQUATIC BASELINE INTERIM REPORT

FISH AND FISH HABITAT

Study Objective

Characterize local and regional aquatic resources (fish, fish habitat, benthos and sediment chemistry) to support an evaluation of potential effects of the proposed facility and infrastructure access routes, establish mitigation and compensatory measures to offset project effects and to meet federal and provincial regulatory requirements. Component investigations include:

- Fish community sampling – waterbodies and watercourses
- Fish habitat mapping – waterbodies and watercourses
- Benthic invertebrate community sampling
- Fish tissue sampling

FISH AND FISH HABITAT - METHODS

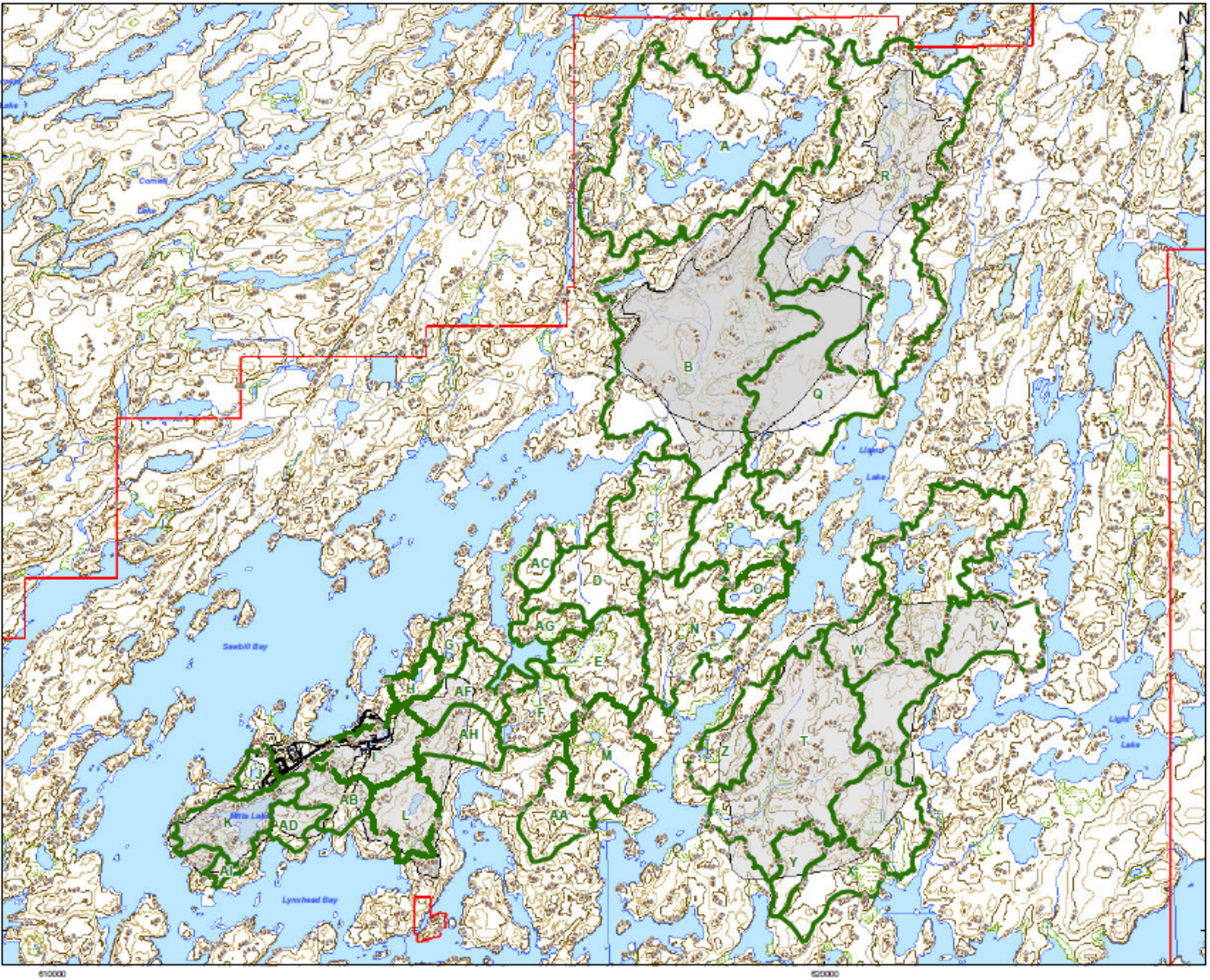
Characterization of aquatic resources included the following tasks:

- Background information review
- Consultation with MNR, DFO, Aboriginal Groups
  - Pre-field planning
  - Establishing a catchment-based sampling program to include all potential receptors
  - Coordinating sampling with other disciplines including hydrology, water quality, geochemistry
- Multi-season Field studies during 2010 and 2011 to sample
- Ongoing consultation with regulators to establish principles and approach to addressing aquatic impacts (i.e. habitat compensation)

FISH AND FISH HABITAT - SCOPE

Aquatic studies completed on a catchment and water feature basis

- Study area includes 34 small catchments (small watersheds)
- Approximately 55 aquatic features (APIs) and associated drainage features assessed
- Key potential receivers:
  - Sawmill Bay
  - Lynxhead Bay
  - Lizard Lake
  - Turtle Bay
- Transmission and access road corridors



LEGEND

- Trail
- Road
- Contour - 20m Interval
- Contour - 10m Interval
- River/Stream
- Lake
- Wetland
- Site Watershed Boundary
- Project Facilities
- Project Location

WATERSHED AREAS

Name	Area (ha)
A	590.00
AA	73.34
AB	51.99
AC	29.24
AD	29.91
AF	77.52
AG	34.18
AH	60.02
AI	10.17
B	609.82
C	134.96
D	104.31
E	122.80
F	78.00
G	30.53
H	27.27
I	85.24
J	25.56
K	89.03
L	70.53
M	111.72
N	158.55
O	38.76
P	124.90
Q	272.96
R	623.45
S	230.85
T	336.66
U	200.66
V	106.27
W	66.90
X	82.32
Y	45.66
Z	74.75

DRAFT

REFERENCE

Base Data - Provided by OSISKO Hammond Reef Gold Project Ltd.
Base Data - MNR NRVIS, obtained 2004, CANMAP v2006.4
Produced by Golder Associates Ltd under licence from
Ontario Ministry of Natural Resources, © Queens Printer 2008
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 15N

1,000 0 1,000 2,000
SCALE 1:50,000 METRES

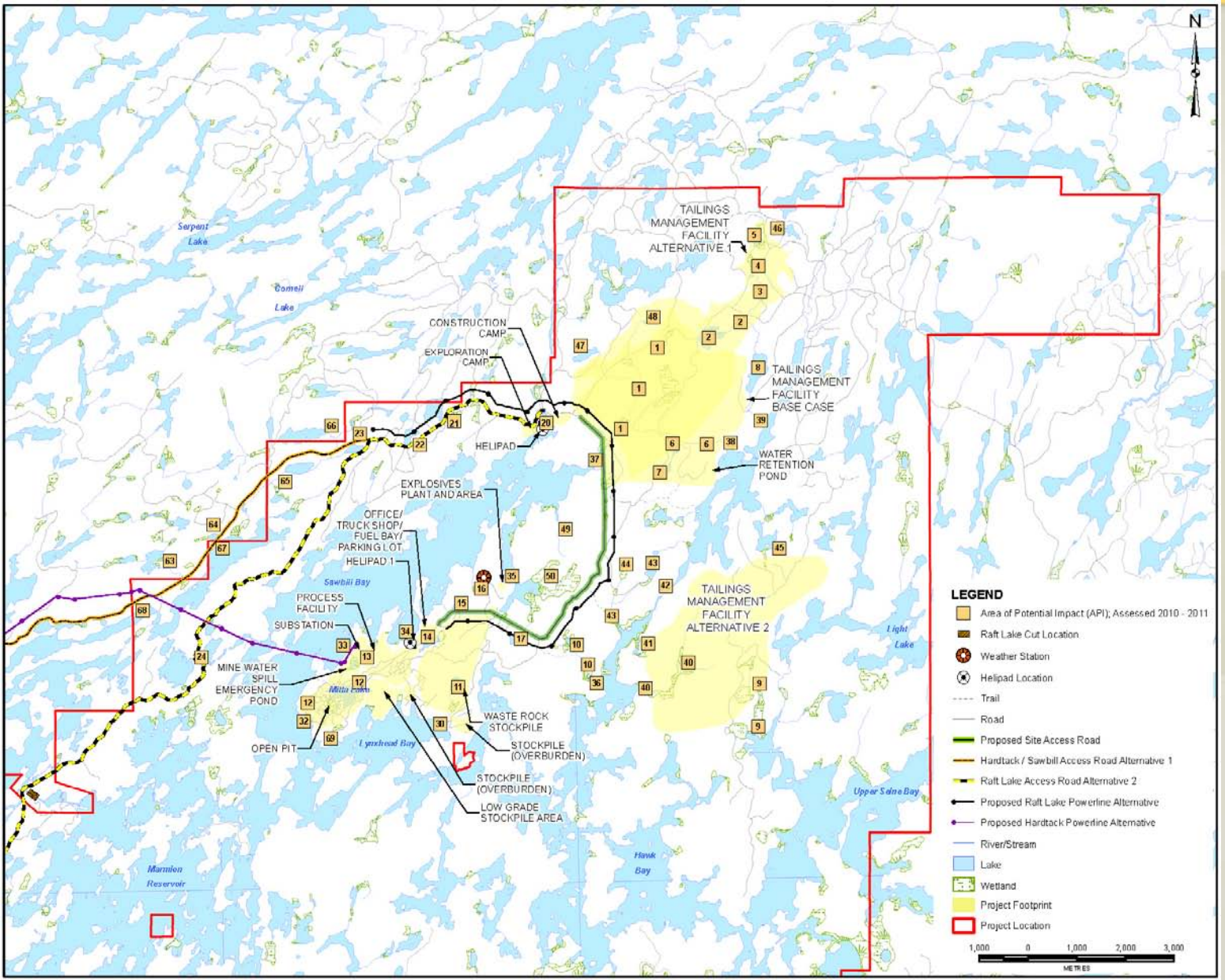
PROJECT
HAMMOND REEF GOLD PROJECT
ATIKOKAN, ONTARIO, CANADA

TITLE
SITE WATERSHED BOUNDARIES

Golder Associates Mississauga, Ontario

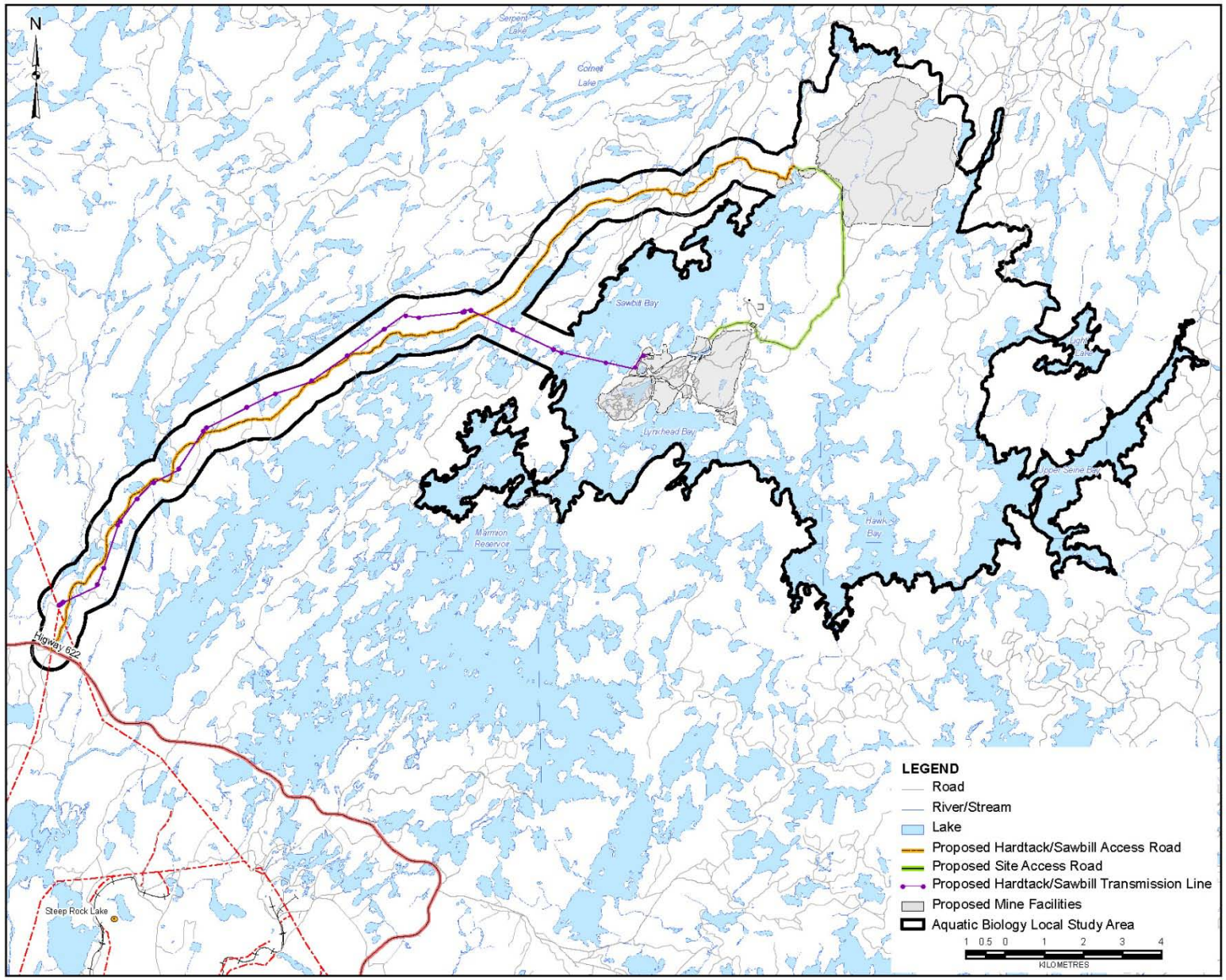
PROJECT NO. 13-1118-0020			SCALE AS SHOWN REV. 2.0
DESIGN	DGF	14 Nov 2008	
GIS	BRD	Mar 2012	
CHECK	JD	Mar 2012	
REVIEW	JD	Mar 2012	

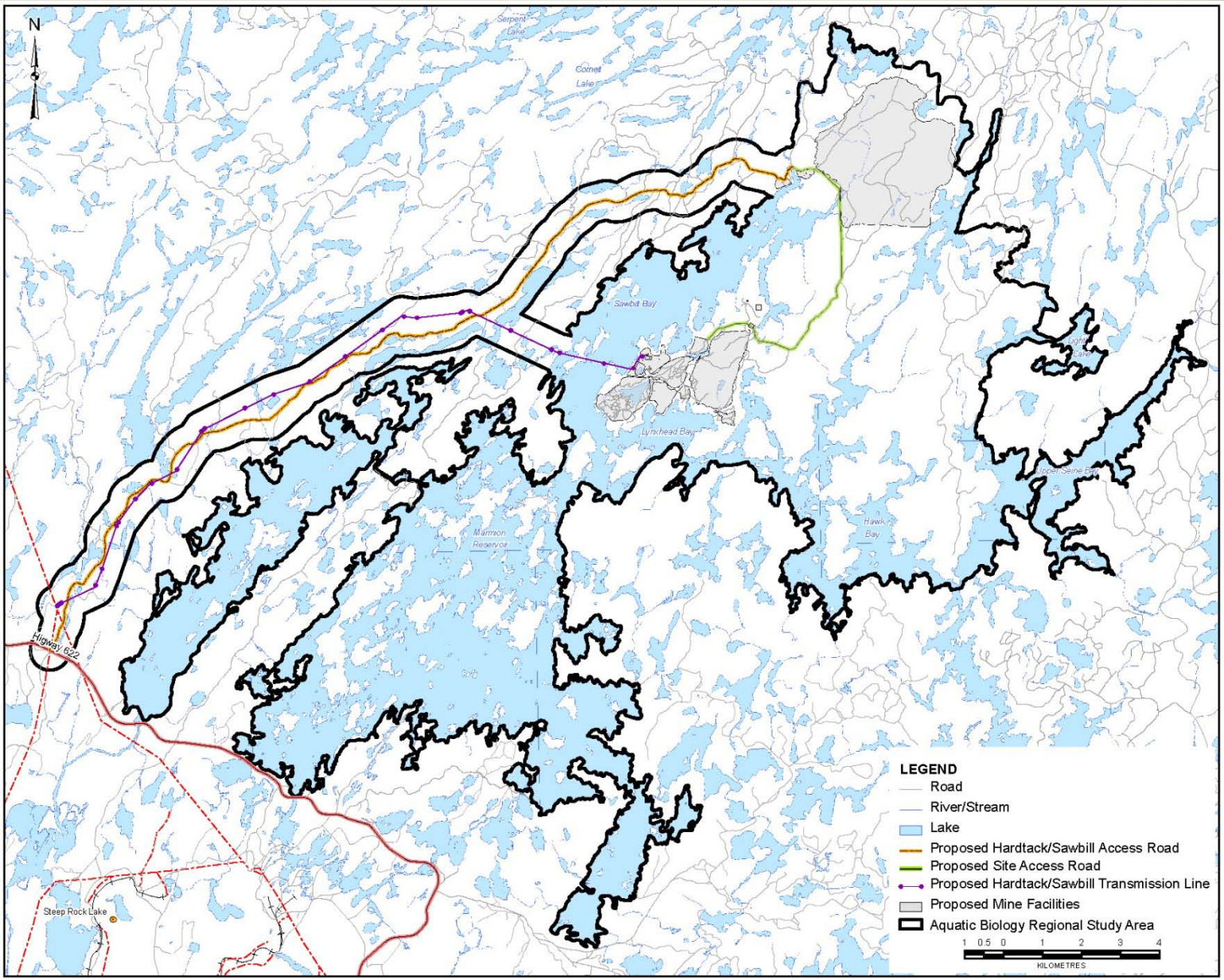
FIGURE: 3



Mine Site and Footprint

Local Study Area





Regional Study Area

FISH AND FISH HABITAT

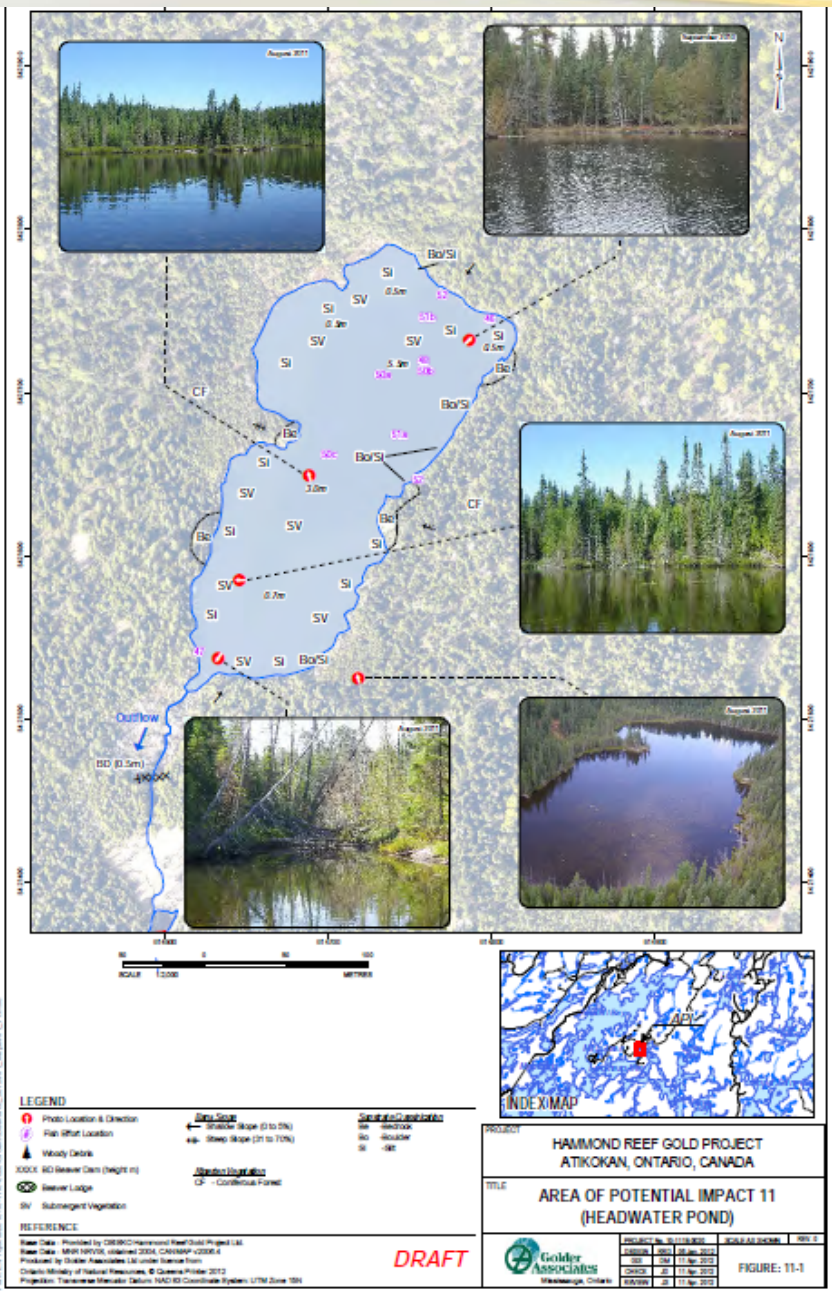
Example Results

FISH AND FISH HABITAT

API: Where the project footprint overlaps with, or is adjacent to an aquatic feature.

Includes;

- Headwater lakes/ponds
- Connecting watercourses
- Receiving bays/mouths of watercourses
- Access road crossings



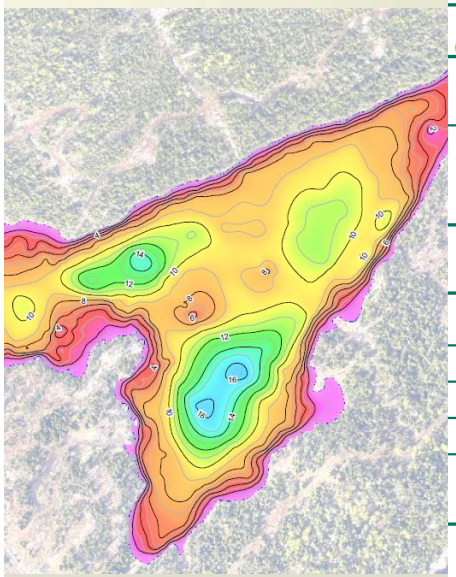


Table 1: API #11 (pond), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location (see Figure 11-1)	Date	Gear	Effort	Catch
46	September 28–29, 2010	minnow trap	18 hrs.	finescale dace (27 adult, 2 juvenile) northern redbelly dace (11 adult)
47	September 28–29, 2010	minnow trap	19 hrs.	finescale dace (36 adult) northern redbelly dace (1 adult) fathead minnow (3 adult)
48	September 28–29, 2010	nordic net	18 hrs.	finescale dace (9 adult) fathead minnow (2 adult)
49	September 28–29, 2010	gillnet - single panel (76 mm mesh)	18 hrs.	no catch
50a	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
50b	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
50c	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
51a	August 27-28, 2011	broad –scale small mesh	39 hrs.	finescale dace (7 adult) fathead minnow (1 adult)
51b	August 27-28, 2011	broad –scale small mesh	39 hrs	finescale dace (4 adult) fathead minnow (3 adult)
52	August 27-28, 2011	minnow traps (3)	63 trap hrs.	finescale dace (57 adult) northern redbelly dace (1 adult) fathead minnow (84 adult)

FISH AND FISH HABITAT

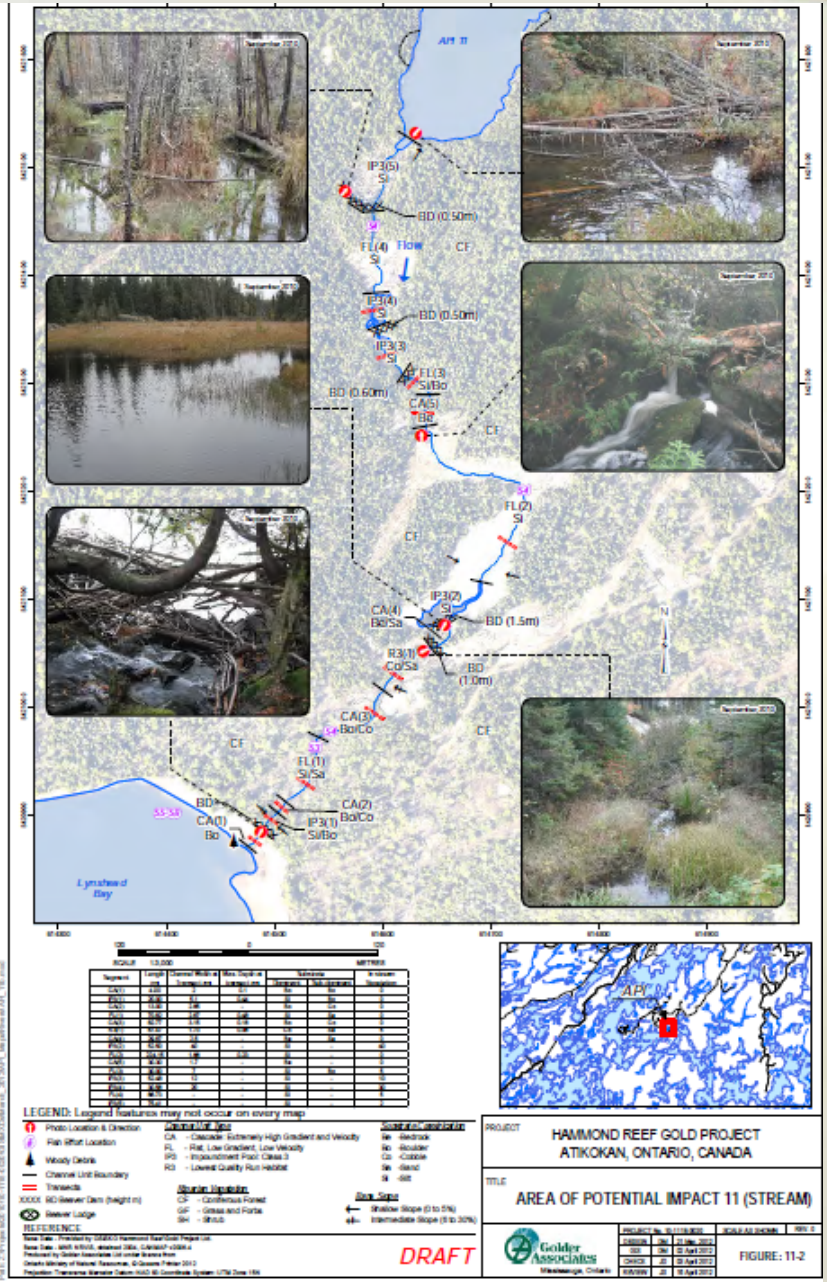


Table 1: API #11 (pond), Basic Water Chemistry Parameter Data

Date/Depth (m)	Temperature (°C)	pH	Conductivity (µmhos)	Dissolved Oxygen (mg/L)
September 28, 2010				
Surface	11.4	7.6	58	10.6
1	11.1	7.6	58	10.5
2	10.9	7.7	58	10.2
3	10.9	7.6	58	9.8
4	9.0	7.6	58	8.0
5	-	-	-	-
August 27, 2011	23.0	8.9	76	9.0

Table 1: API #11 (stream), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location (see Figure 11-2)	Date	Gear	Effort	Catch
53	September 23, 2010	backpack electrofisher	115 m	finescale dace (27 adult, 27 juvenile, 2 YOY) northern redbelly dace (2 adult)
54	September 24, 2011	backpack electrofisher	641 m	finescale dace (29 adult, 36 juvenile, 1 YOY) northern redbelly dace (5 adult, 5 juvenile) dace sp. (2 YOY unk.)

Table 1: API #11 (Lynxhead Bay), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location	Date	Gear	Effort	Catch
55	August 26, 2010	boat electrofisher	500 m	yellow perch (10 juvenile) northern pike (1 adult)
56	September 24, 2011	broad-scale small mesh gillnets (2)	17.5 hrs	walleye (2 juvenile) yellow perch (15 juvenile)
57	September 24, 2011	broad-scale small mesh gillnets (2)	17.5 hrs	walleye (1 juvenile) northern pike (1 unk.)
58	September 24, 2011	broad-scale large mesh gillnets (2)	17 hrs	lake whitefish (1 adult) white sucker (1 adult) northern pike (1 adult)

ACCESS CORRIDORS

- Two road corridor and hydro ROW alternatives
- Screening/prioritizing of watercourse crossings
- Habitat assessment
- Community assessment
- Field data collected on approximately 25 watercourse crossings

HABITAT PREFERENCE TABLES

Table 1: Habitat Preferences, Northern Pike (*Esox lucius*)

Spawning	Rearing/Nursery	Feeding	Migratory Corridor	Overwintering/Summer Refuge
General - Spring spawners, in colder areas, after ice break up at water temperatures between 4.4 to 12°C (8) Over flooded terrestrial vegetation in areas of calm, shallow water or weedy bays or backwaters (1) Optimum spawning habitat is a dense mat of flooded emergent vegetation such as sedges, cattails or grasses with a large basal coverage for egg adhesion (2) (3) Substrate preference for silt and sand although spawning-site preference is more related to adequate submergent vegetation (4) (7)	**General** - Shallow, vegetated areas such as flooded marshes, flooded terrestrial vegetation, or weedy bays (1) **Lentic** - Depth preference from 0-2 m in spring, 2-5 m in fall; over substrates of silt, clay or hardpan clay near submergent/emergent vegetation cover; specific preference by YOY for submerged vegetation versus other aquatic vegetation types (2) (5) (7) (8) Juveniles typically found along shorelines with adequate food and cover at depths of <2 m; same substrate preference as YOY, always in association with submergent vegetation (7)	**General** - Day active feeders with preference for ambush cover in the form of aquatic plants, tree stumps, fallen logs (1) YOY initial food preference for invertebrates such as Ephemeroptera, Isopoda, Cladocera with switch to vertebrate prey in fish ≥130 mm; habitat preference for submerged vegetation with rooted aquatic plants to offer cover and increased plankton and therefore the best food supply (2) (3)	**General** - From lakes and rivers up tributaries to flooded marshes, wetlands or shallow pools during spawning (1) **Lentic** - Adults usually found within shallow, vegetated regions of lakes in spring and fall, moving to deeper water as water temperature increases in summer and ice-cover forms in winter (7) (8) Movement by juveniles to areas of emergent vegetation in late summer where dissolved oxygen concentrations higher (3) **Lotic** - Avoidance for strong currents (>1.5 m/s) that can block spawning migrations (1)	**General** - Dissolved oxygen concentration important habitat variable affecting overwinter survival although NRPK more tolerant of low D.O. during winter than other temperate species; optimal temperature preference for adults between 19 and 21°C (1) (7) **Lotic** - Occur more frequently in lakes than rivers; summer habitat limited in some lakes by combination of high surface temperatures and low oxygen concentration in cooler, deeper strata (1) Adults at depths from 0-10 m throughout the year; along margins of vegetated areas or areas with in-situ materials (fallen logs, tree stumps, shoals, boulders) and substrates of mud, silt, or hardpan clay (6) (7)

FISH AND FISH HABITAT

Baseline Study Conclusions

FISH AND FISH HABITAT

- No coldwater fish species/ waterbodies
- Watercourses generally low gradient, highly influenced by beaver dams
- Flow in sections of many watercourses is seasonal or subsurface and highly variable (i.e. flashy)
- Lower portions of some tributaries are accessible to fish from major receivers – upper floodwaters area

Table 1: Fish Species Captured During Baseline Studies

Family/Subfamily	Species Common Name	Species Scientific Name
Coregoninae	lake whitefish cisco	*Coregonus clupeaformis* *Coregonus artedi*
Umbridae	central mudminnow	*Umbra limi*
Esocidae	northern pike	*Esox lucius*
Cyprinidae	longnose dace blacknose dace northern redbelly dace finescale dace pearl dace fathead minnow spottail shiner blacknose shiner brassy minnow	*Rhinichthys cataractae* *Rhinichthys atratulus* *Chrosomus eos* *Chrosomus neogaeus* *Semotilus margarita* *Pimephales promelas* *Notropis hudsonius* *Notropis heterolepis* *Hybognathus hankinsoni*
Catostomidae	common white sucker	*Catostomus commersoni*
Gadidae	burbot	*Lota lota*
Gasterosteidae	ninespine stickleback brook stickleback	*Pungitius pungitius* *Culaea inconstans*
Centrarchidae	smallmouth bass pumpkinseed	*Micropterus dolomieu* *Lepomis gibbosus*
Percidae	walleye yellow perch lowa darter	*Sander vitreus* *Perca flavescens* *Etheostoma exile*
Cottidae	mottled sculpin	*Cottus bairdi*

FISH AND FISH HABITAT

- Walleye and smallmouth bass absent from streams
- Yellow perch, northern pike, common sucker utilize lower stream reaches
- Water level management (i.e. low water conditions) affect habitat and accessibility of lower reaches
- Beaver ponds and headwater ponds provide winter refugia for stream fish
- A number of API's exhibit summer hypoxia and possible winter kill conditions
- Most waterbodies have simple communities dominated by cyprinids
- 9 ponds do not support fish communities

Discussion

- Data collection designed to address potential impacts:
  - MMER schedule 2 waterbodies – tailings and waste rock management areas
  - HADD (Destruction) – Mine footprint
  - HADD (Alteration, Disturbance) – Mine catchment area, access corridors, receiving waterbodies

Discussion (cont'd)

- Potential Schedule 2
  - API # 1, 6, 7, 11, 48
- Potential HADD (Destruction)
  - 12, 13, 14
- Potential HADD (Alteration, Disturbance)
  - API # 2, 3, 4, 5, 8, 15, 16, 30, 32, 33, 34, 37, 39, 69
  - Sawmill Bay, Lynxhead Bay, Lizard Lake, Turtle Bay

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
HABITAT ACCOUNTING DISCUSSION
OCTOBER 22, 2012 – 10:00AM – 3:00PM
DFO BOARDROOM – THUNDER BAY ON

Attendees:

Osisko:	Alix Drapack.
Golder:	Brian Hindley.
DFO:	Tom Kleinboeck, Neville Ward.
MNR:	Brian Jackson, Amy Godwin, Kim Armstrong, Steve Bobrowicz.
MOE:	Jim Sutton.
CEAA/MOE/MNDM:	Amy Liu (teleconference), Mark O'Brien (teleconference).

Purpose of Meeting: For Osisko to present and discuss the revised Habitat Accounting Methodology.

Objectives:

- To finalize the Fish Habitat Accounting Methodology for the OHRG project.
- To discuss status of changes to Fisheries Act
- To discuss Fish Compensation Opportunities.

Workshop Highlights

Habitat Accounting Methodology

- Generally DFO and MNR are supportive of the habitat accounting methodology, but would like some additional detail:
    - Rationale for HSI rankings – BH to provide. BH identified that the rankings gave equal weight to all fish life stages, but DFO indicated that they might want to see more weight given to spawning and nursery for example
    - DFO/MNR are interested in commenting on the species specific weights – thought northern pike should be ranked the same as walleye and smallmouth
    - DFO and MNR will provide written comments by November 3
    - DFO and MNR were pleased that the procedure had been reviewed by K. Minns and that many of his suggestions had been adopted
    - DFO/MNR interested in the details of the worked examples for habitat loss and habitat gain (Excel spreadsheet showing the details of the quantities for determining the HUs) to understand how it works
    - DFO and MNR are not in agreement that a 1:1 or 2:1 ratio of compensation to losses is reasonable – Osisko/Golder/DFO/MRN need to have more discussion on the appropriate ratio.
    - DFO/MNR will want to see "indirect" losses factored into the estimate of losses – ie water quality effects from the discharge, loss of catchment areas from the footprint and downstream hydrologic effects

- Steve (MNR) wanted to see a summary of sampling design, protocols, etc – expressed concern about amount of effort, choice of gear

Discussion on Changes to Fisheries Act

- Neville gave a brief overview of how proposed changes to Fisheries Act may affect DFO's application of the Act
    - Latest info he has indicates that the changes will come into effect in January
    - There are still some changes happening to wording, etc
    - The current hierarchy of compensation is likely changing to one that is more focused on "valued" fisheries, i.e. Commercial/Recreational/Aboriginal "CRA" fisheries
    - The current wording of "serious harm to fish" essentially means that the "disruption" part of HADD is no longer part of DFO's priorities – it always was considered a low priority concern
    - Generally the thinking is that DFO getting out of dealing with smaller projects and projects affecting drainage swales, etc.
    - In this regard, DFO is not fully onboard with MNR interest in application of money for remediation at Steep Rock
    - Also would prefer "onsite" measures that focus more on the fishery of Upper Floodwaters Area

Compensation ("Offset") Examples:

- MNR and DFO recognize that the examples presented by Osisko/Golder provide compensation ("offsets") but they are not overly keen:
    1. Need to be convinced that fishless lake can actually support a fish population
    2. Not keen on dams to create larger features – long term liability issue; permitting required under LRIA
    3. Want more emphasis on compensation ("offsets") that will benefit Upper Floodwaters Area
    4. Would also like to see measures that would improve/create habitat in Inflowing Streams to Upper Floodwaters and Lizard Lake
    5. DFO mentioned that at one point there was discussion about allocating compensation as 1/3 onsite:1/3 future projects: 1/3 Steep Rock
    6. DFO and MNR are not keen on post closure projects as they are too far in the future
    7. DFO mentioned Stewardship councils and existing projects to address agricultural impacts in the Rainy River area

Overall Compensation Strategy:

- DFO and MNR support the concept of a monetary contribution by Osisko to remediation efforts at Steep Rock.
- DFO and MNR understand that reclamation of Steep Rock is important to the public, Aboriginal groups and local (local MNR/municipal) government.
- DFO wants to see an approach presented that develops alternatives:

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1. The approach should demonstrate that all compensation ("offset) options on site are more or less exhausted and that such measures may not represent the best use of money to support/enhance CRA fisheries
2. A compensation alternative that considers onsite measures, as well as some other measures that would benefit the Upper Floodwaters Area Fishery, Lizard Lake and other CRA fisheries in the Area/District/Region be developed to show that losses can be offset. The monetary value of these offsets would be determined and translated into a dollars per HU.
3. An approach that provides a rationale based on public/aboriginal consultation results that envisions compensation money to be spent at Steep Rock. This would not entail trying to quantify the habitat gains that might be realized at Steep Rock but should identify the general linkages between money being spent on Steep Rock site reclamation and tying those expenditures into benefit to existing/future downstream fisheries (perhaps through water quality improvements at Steep Rock).
4. Osisko and MNR to continue discussions on specific compensation alternatives in Upper Marmion and reclamation projects at Steep Rock at a future meeting in Atikokan.

Fish rescue/salvage protocols:

- There was a quick discussion to present the approach to draining and fishing out Mitta Lake. The general approach is acceptable, however DFO wants to ensure that sufficient effort goes into enumeration, sampling of fish – generally acknowledge that the permitting for fish salvage would flow through MNR, but would be part of the Fisheries Act Authorization

Action Item	**Lead**
Provide a summary of sampling design, protocols and procedures to support the rationale for gear and catch effort	Golder
MNR and DFO to respond with written comments on the Habitat Accounting Methodology.	MNR/DFO
Provide rationale for HSI rankings – how each life stage rated for the habitat area	Golder
Golder to finalize Habitat Accounting Methodology	Golder
Golder to finalize fish habitat gains and losses utilizing the finalized accounting methodology. Golder to provide the spreadsheets showing the details of the evaluations.	Golder
Financial estimate of costs of habitat compensation opportunities (off-sets). Development of a $/HU (dollar per habitat unit).	Golder
Plan to meet with MNR Atikokan to discuss compensation options in Upper Marmion and reclamation projects at Steep Rock.	Golder/Osisko/MNR

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Agency Workshop # 5

October 22, 2012

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Agenda

- Welcome/Introductions: 10:00 – 10:10 am
- Fish Habitat Accounting Procedure: 10:10 – 11:15 am
- Break: 11:15 – 11:30 am
- Worked Examples: Habitat Losses/Gains 11:30 – 12:30 pm
- Lunch: 12:30 – 1:00 pm
- Fish Habitat Compensation Opportunities: 1:00 – 1:45 pm
  - Onsite, Offsite, Steep Rock
- Fisheries Act Update: 1:45 – 2:15 pm
- Fish Rescue/Salvage program: 2:15 – 2:45 pm
- Wrap Up: 2:45 – 3:00 pm

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Habitat Accounting Procedure

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Fish Habitat Accounting Procedure

- Primary tool to develop NNLP for Osisko project
- Emphasis on direct effects but also indirect effects
- Build on existing procedures/NNLP's used in other EA's familiar/supported by DFO
  - HEP methodology
  - Meliadine Project (Golder 2011)
- Increase confidence in model through peer review by Dr. C.K. Minns

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Fish Habitat Accounting Procedure

- HEP procedure
  - Habitat Area calculated as the surface area of a unit of habitat
  - For each species, a Habitat Suitability Index score (0 – 1) is calculated for each life stage (spawning, juvenile, adult, summer/winter refugia, migration) and averaged
  - A species specific rank or Habitat Unit score is product of HA and HIS
  - Total habitat for the habitat unit is the sum of the individual species HU scores
  - Resultant score is linked to actual habitat area but generally considered to be a dimensionless value

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Fish Habitat Accounting Procedure

- HSI scores based on habitat descriptions of fish species' life stages (see Appendix B)
  - life stage habitat preference descriptions based on literature, localized to the area where possible
  - Introduces subjectivity into the evaluation of habitat – professional judgement
  - Has the advantage of utilizing as much of the data collected on habitat as possible
  - Fish inventory data – species present, relative abundance can be used to provide some insight into habitat suitability

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Fish Habitat Accounting Procedure

- Minns et al (2001) and Minns (2010) developed habitat accounting models for lakes (HATT) and streams
  - Used basic HEP approach with the objective of reducing subjectivity of the analysis
  - Developed using Great Lakes and southern Ontario stream data (OSAP)
  - Simplified habitat into 4 key units:
    - Depth
    - Substrate
    - Cover
    - Discharge (streams)

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Fish Habitat Accounting Procedure

- Minns model (continued)
  - Used several methods to develop species, life history, habitat relationships
    - Literature review of species, habitat relationships
    - Statistical analyses of species, habitat relationships
    - Use of Habitat Guilds – grouping of species according to thermal preference, reproductive strategy, “trophic” level
    - Creating (more or less) homogenous habitat units
    - Weighting species based on habitat guilds
    - Introduced key terms: Weighted Useable Area, Productive Capacity index
    - Linking overall habitat score more directly to habitat area

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Fish Habitat Accounting Procedure

- Draft procedure developed based on HEP approach
- Peer reviewed by Dr. Minns
- Procedure revised
- Meeting with Dr. Minns to review comments and revisions
- Second revision of Procedure

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Fish Habitat Accounting Procedure

- New document is more in line with Minns' recommendations and incorporates many concepts in habitat assessment protocols developed by Minns

- Changes based on Minns' recommendations:
  - Adopted key terms – Weighted Useable Area, Productive Capacity Index, Ecotypes
  - Separated stream and lake ecotypes and established common habitat units for each type
  - Organized fish species present into "habitat guilds" based on Minn's models – thermal preference, reproductive strategy, "trophic" level
  - Applied a common species weighting based on guilds to each habitat/ecotype in the study area
  - Weighted Useable Habitat Area considers all species but estimates habitat based on species present

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Fish Habitat Accounting Procedure

- Changes based on Minn's recommendations (cont'd):
  - Eliminated weighting based on "environmental sensitivity"
  - Applied the same Productive Capacity Index to lake and stream ecotypes as Minns
  - Eliminated the weighting of fish strictly according to DFO habitat policy priorities or VEC's, but fish species weighting adopted from Minns reflects this priority to a degree, while including all species
  - Have retained the use of the HSI life stage rating of habitat which is less objective than Minns approach but considers more aspects of habitat
  - The same model is used for calculating both habitat losses and gains (from compensation projects)
  - Provide compensation on a 1:1 basis; 2:1 if significant lag time exists between loss and compensation

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Fish Habitat Accounting Procedure

List of fish species captured

Family/Subfamily	Species Common Name	Species Scientific Name
Coregoninae	lake whitefish[1] cisco[1]	*Coregonus clupeaformis* *Coregonus artedi*
Umbridae	central mudminnow	*Umbra limi*
Esocidae	northern pike	*Esox lucius*
Cyprinidae	longnose dace[1] northern redbelly dace finescale dace pearl dace fathead minnow spottail shiner[1] blacknose shiner golden shiner[1]. brassy minnow golden shiner	*Rhinichthys cataractae* *Chrosomus eos* *Chrosomus neogaeus* *Semotilus margarita* *Pimephales promelas* *Notropis hudsonius* *Notropis heterolepis* *Notemigonis crysoleucas* *Hybognathus hankinsoni* *Notemigonus crysoleucas*
Catostomidae	common white sucker	*Catostomus commersoni*
Gadidae	burbot	*Lota lota*
Gasterosteidae	ninespine stickleback brook stickleback	*Pungitius pungitius* *Culaea inconstans*
Centrarchidae	smallmouth bass[1] pumpkinseed	*Micropterus dolomieu* *Lepomis gibbosus*
Percidae	walleye[1] yellow perch Iowa darter	*Sander vitreus* *Perca flavescens* *Etheostoma exile*
Cottidae	mottled sculpin	*Cottus bairdi*

([1] Receiving Waters only)

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Fish Habitat Accounting Procedure

Fish habitat Guilds

Habitat Group	Description	Piscivore	Non-Piscivore
Cold + A1 (lake)[1]	lake stenotherms		**Group 1**: lake whitefish, ciscoe
Cold + A1 (stream)[1]	stream stenotherms	**Group 3**: burbot	**Group 2**: pearl dace
Cold +A2	stream salmon, lamprey	N/a	N/a
Cold + B	sculpins, sticklebacks		**Group 4**: brook stickleback, ninespine stickleback
Cool + A1	percids, redhorses, darters, dace	**Group 6**: northern pike, walleye	**Group 5**: blacknose dace, longnose dace, brassy minnow, finescale dace, redbelly dace, golden shiner, iowa darter, yellow perch, white sucker
Cool + A2	nonguarding darters, chubs, lamprey	N/a	N/a
Cool + B	guarding darters, pomoxids	N/a	N/a
Warm + A	shiners,moronids, gars, suckers		**Group 7**: blacknose shiner, central mudminnow, emerald shiner, spottail shiner
Warm + B	centrarchids, minnows, bullhead	**Group 9**: smallmouth bass	**Group 8**: fathead minnow, pumpkinseed

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Fish Habitat Accounting Procedure

Species Weighting

Group	Species	Weight
Group 1: Cold+A1-Lake: Non-Piscivore	lake whitefish	0.050
	lake ciscoe	0.050
Group 2: Cold+A1-Stream: Non-Piscivore	pearl dace	0.030
Group 3: Cold+A1-Stream: Piscivore	burot	0.015
Group 4: Cold+B: Non-Piscivore	ninespine stickleback	0.015
	brook stickleback	0.015
	mottled sculpin	0.015
Group 5: Cool+A1: Non-Piscivore	blacknose dace	0.015
	brassy minnow	0.015
	finescale dace	0.030
	redbelly dace	0.030
	golden shiner	0.015
	longnose dace	0.015
	white sucker	0.015
	lowa darter	0.015
	yellow perch	0.030
Group 6: Cool+A1: Piscivore	yellow walleye	0.200
	northern pike	0.100
Group 7: Warm+B: Non-Piscivore	blacknose shiner	0.015
	emerald shiner	0.030
	spottail shiner	0.030
	central mudminnow	0.015
Group 8: Warm+B: Non-Piscivore	fathead minnow	0.030
	pumpkinseed	0.030
Group 9: Warm+B: Piscivore	smallmouth bass	0.200
Total		1.020

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Fish Habitat Accounting Procedure

Six Ecotypes:

- Lake Ecotype (e.g. Mitta Lake and API #2);
- Headwater Ponds Ecotype: including their inflows and outflows (e.g. API #6, #7, #11, #13 #69);
- Warm Water Stream Ecotype: shallow to steep gradient channels with interspersed beaver impoundments (e.g. API #1, #14, #47, #48), excluding lower reaches;
- Seasonal or Intermittent Stream Ecotype: portions of some streams have no defined channels.;
- Inflows to Receiving Waters Ecotype:; and
- Receiving Waters Ecotype: Upper Flood Waters (including Sawbill Bay, Lynxhead Bay and Turtle Bay); Lizard Lake and API #8.

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Fish Habitat Accounting Procedure

The quantification of WUAs will take into account:

- fish habitat mapping data;
- a general description of habitat conditions, the qualitative assessment of habitat use potential and the documented fish use;
- fish species presence and distribution data; and
- species guild associations.

$$WUA = (HA * (SUM_{1-24} (SHW_1 * HU_1) + (SHW_2 * HU_2) + ... + (SHW_{24} * HU_{24}))$$

$$EWUA = WUA * EPCI$$

Where:
WUA = Weighted Useable Area
HA= Available Habitat Area
SHW= Species Habitat Weight
HU = Average Habitat Suitability score
EWUA = Ecotype Weighted Useable Area
EPCI = Ecotype Productive Capacity Index

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Fish Habitat Accounting Procedure

Steps in the accounting procedure:

- the quantification of habitat areas (m^2) for each aquatic feature (API) in each Ecotype affected by the Project;
- characterization of affected habitat within each ecotype into homogenous habitat patches;
- the application of species valuation (HSI and species weightings) to each habitat patch and calculation of total Useable Weighted Area for each API and each ecotype;
- the determination of each habitat class in each aquatic feature, based on species guilds and life cycle stages;
- the assignment of HSI values for each of the species or guilds present;
- the calculation of the Weighted Useable Area for each Ecotype Habitat unit; and
- the application of productive capacity index (CPI) to each API within each Ecotype sum all HU values of aquatic features affected by the Project by Ecotype and sum these to determine total habitat losses (HADD) due to the Project.
- Same steps used to estimate habitat gains to offset losses to produce final balance sheet

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Summary of Habitat Accounting Procedure

- Procedure and spreadsheet model builds upon existing, proven approaches for other EA's (Meliadine) and supported by DFO
- Substantial improvements made based on peer review by Dr. Minns
- Results strengthened by use of fish guilds, standardized habitat units, species weighting based on ecological criteria, habitat weighting based on productive capacity indexing
- Still allows for Habitat Suitability scoring using all field data
- Allows for a more objective comparison of habitat losses/gains and evaluation of compensation opportunities
- Provide compensation on a 1:1 basis; 2:1 if significant lag time exists between loss and compensation

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Worked Examples

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Mitta Lake and API # 2

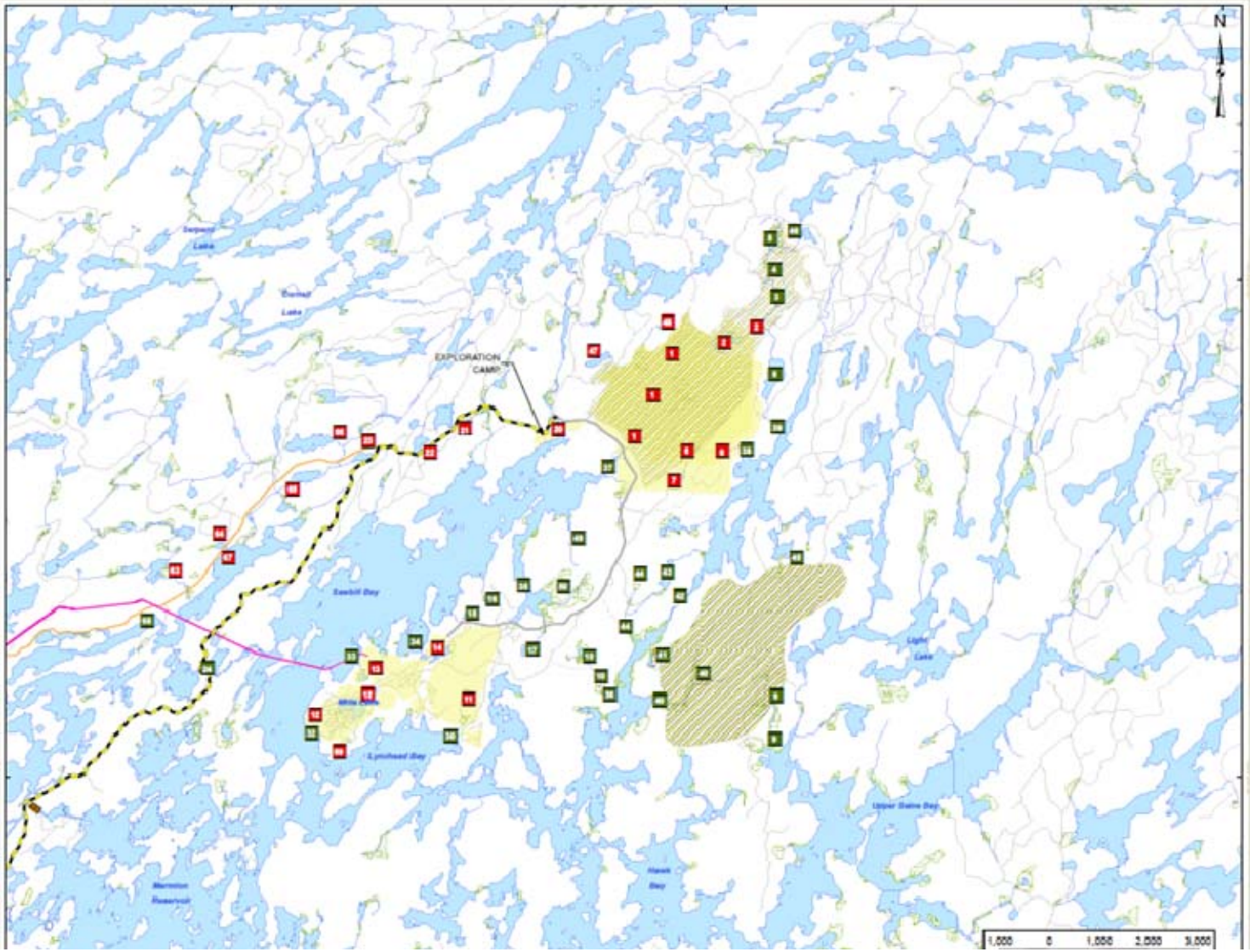
Total Area	Available Habitat Area (HA)	Number of Species Present	Total Weighted Useable Area (WUA)	Ecotype Weighted Useable Area (EWUA)
API # 12 122,000 m^2				
Littoral	17,567 m^2	8	1,145 m^2	1,145 m^2
Open Water	99,548 m^2	8	6,491 m^2	6,491 m^2
API # 2 117,000 m^2				
Littoral	97,782 m^2	5	10,322 m^2	10,322 m^2
Open Water	24,446 m^2	5	1,957 m^2	1,957 m^2
Total			19,915 m^2	

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APIs Potentially Impacted



LEGEND

- API's Potentially Impacted by the Projec
- API's Not Impacted by the Project

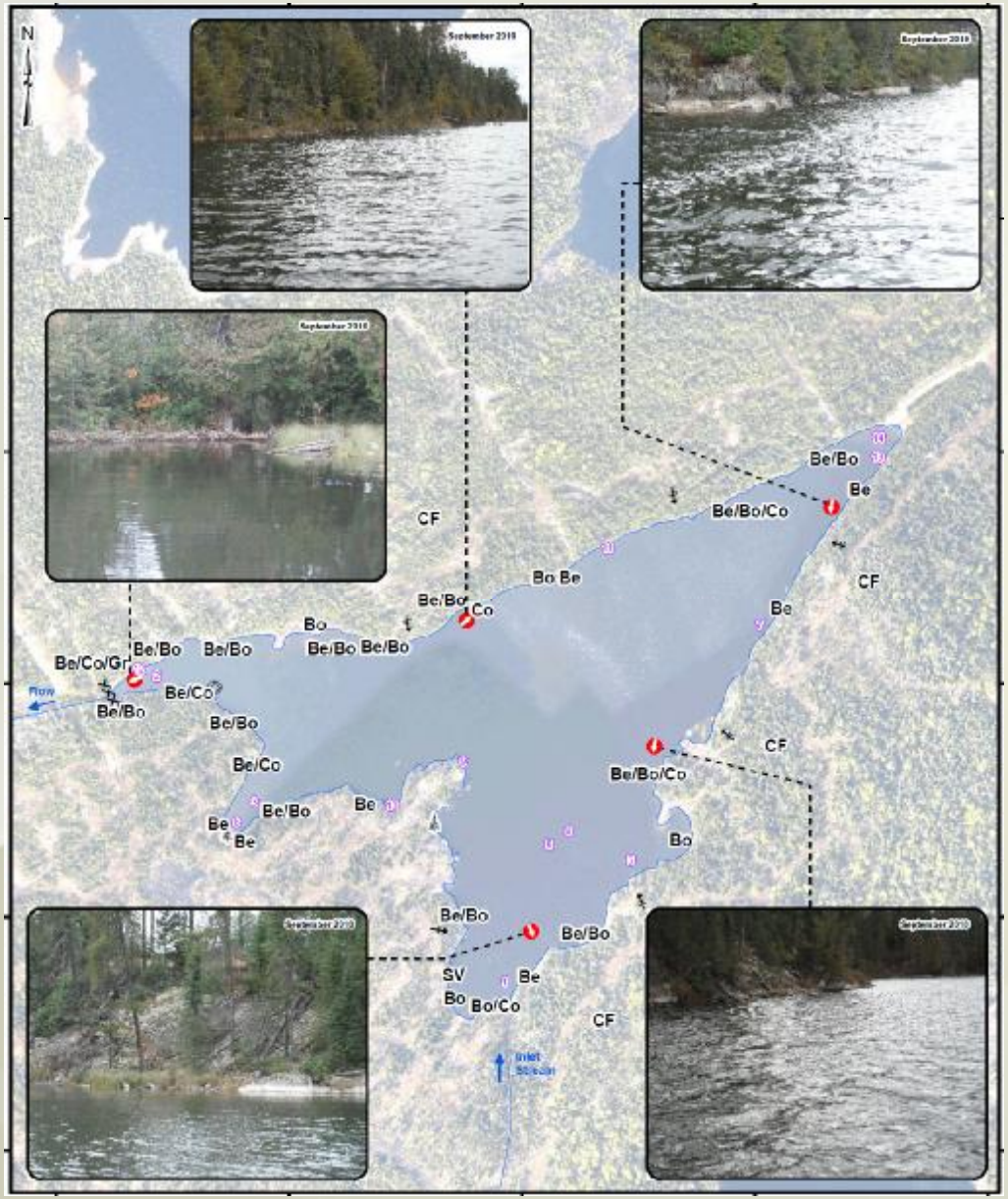
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Mitta Lake and API # 2

The key differences between API #12 and API #2 that contribute to the habitat scores are as follows:

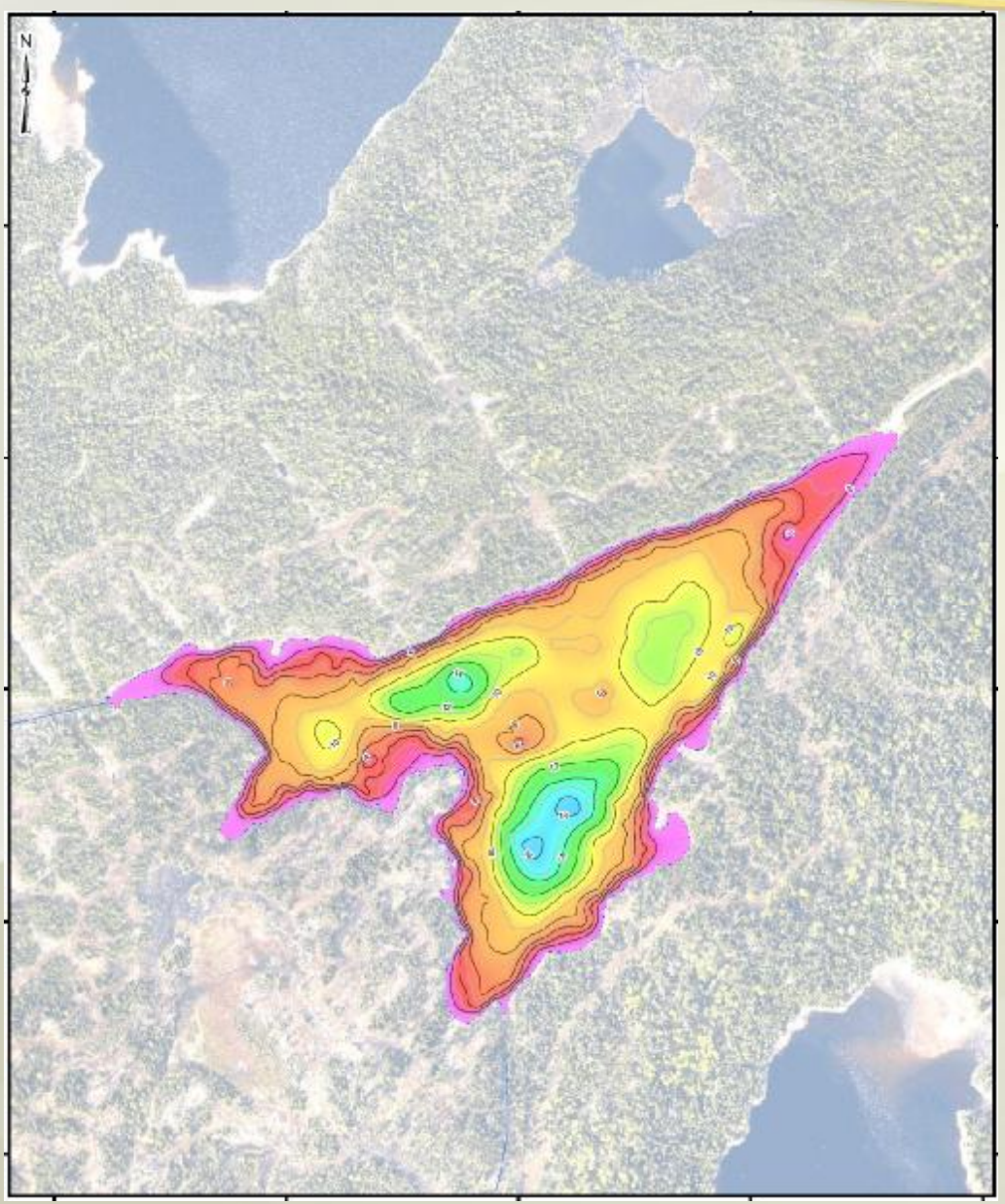
- API #2 has a much larger littoral Habitat Unit than API #2; and a much smaller open water habitat patch.
- API #2 has fewer species, however more predators and sports fish present than API #12.
- The productive capacity index for lake ecotypes is 1; therefore, there is no difference between the WUA and the EWUA.
- The destruction of Mitta Lake results in the loss of 1,145 m^2 of littoral habitat and 6,491 m^2 of open water habitat, compared to the loss of 10,322 m^2 of littoral habitat and 1,957 m^2 of open water habitat for API #2, even though they have similar total areas.

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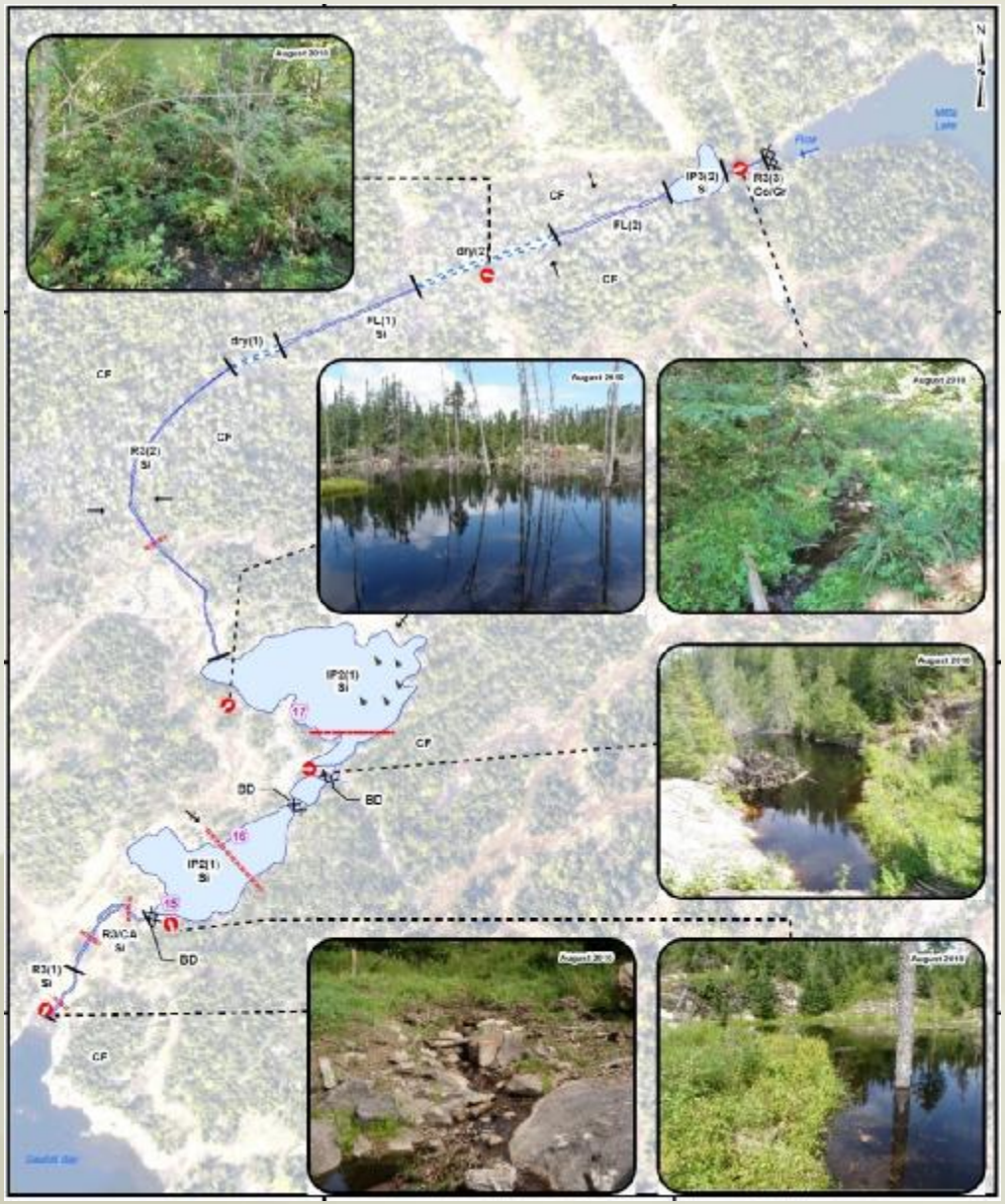
Mitta Lake

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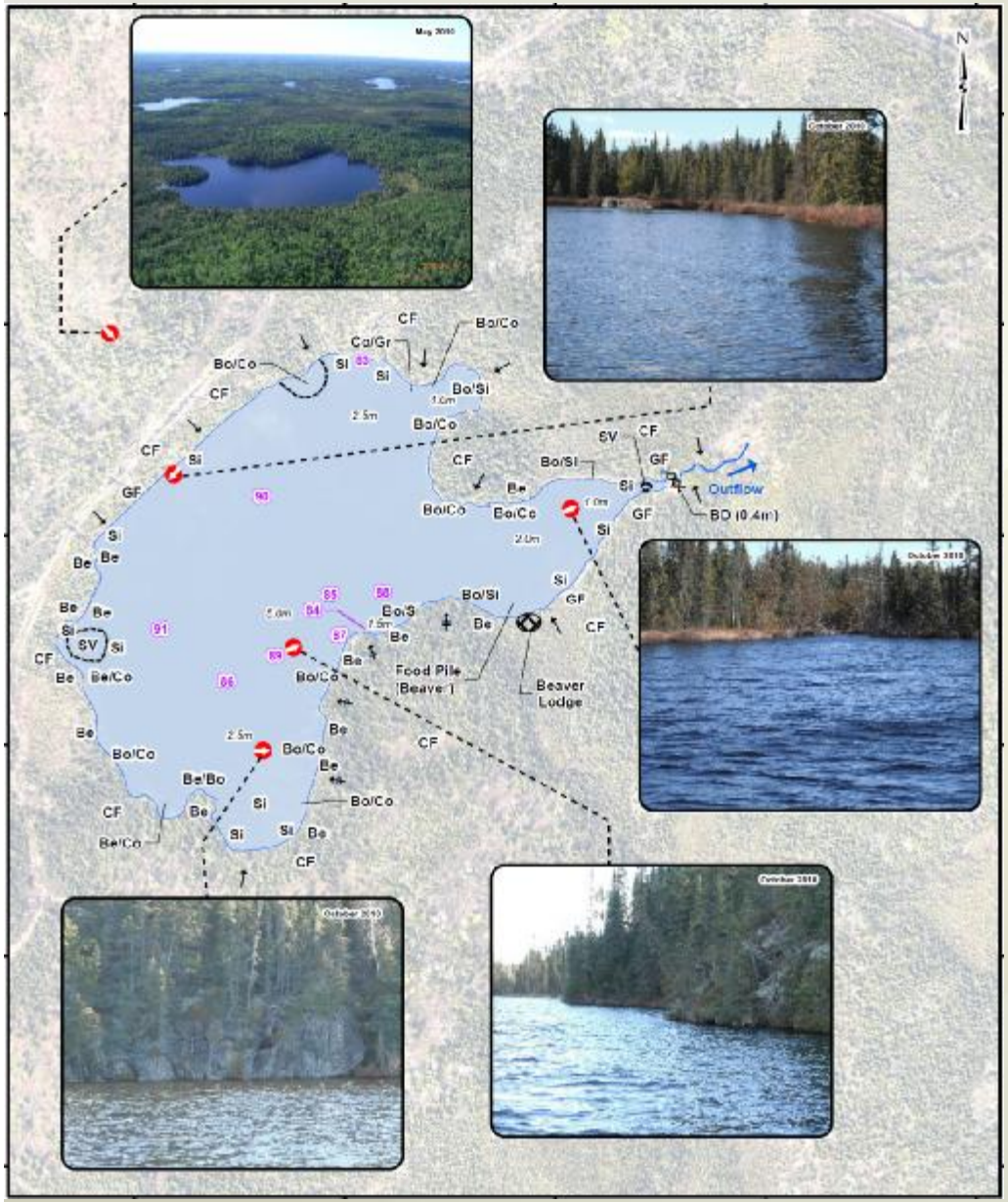
Mitta Lake

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Mitta Lake

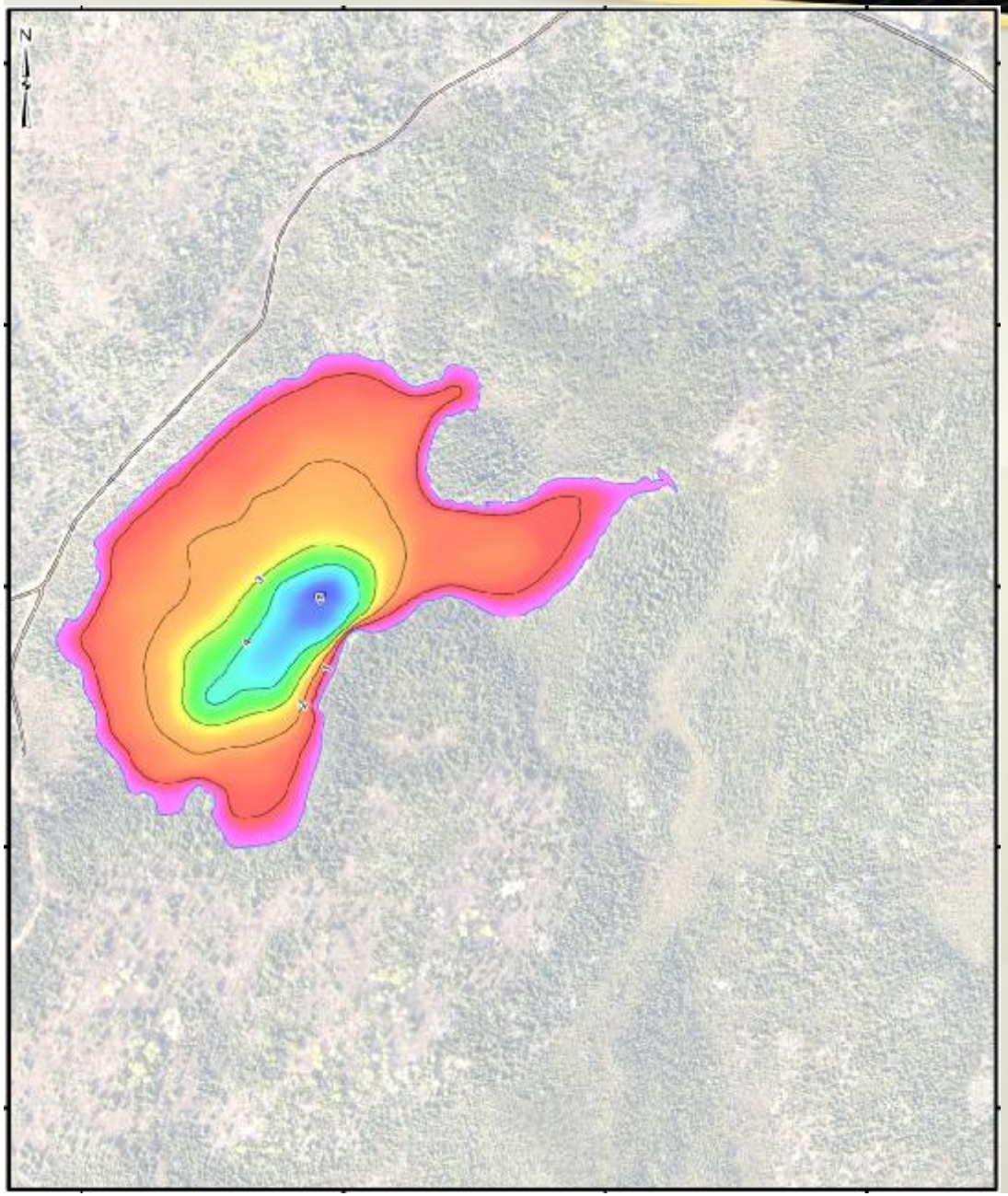
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API # 2

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API # 2

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Habitat Compensation Opportunities

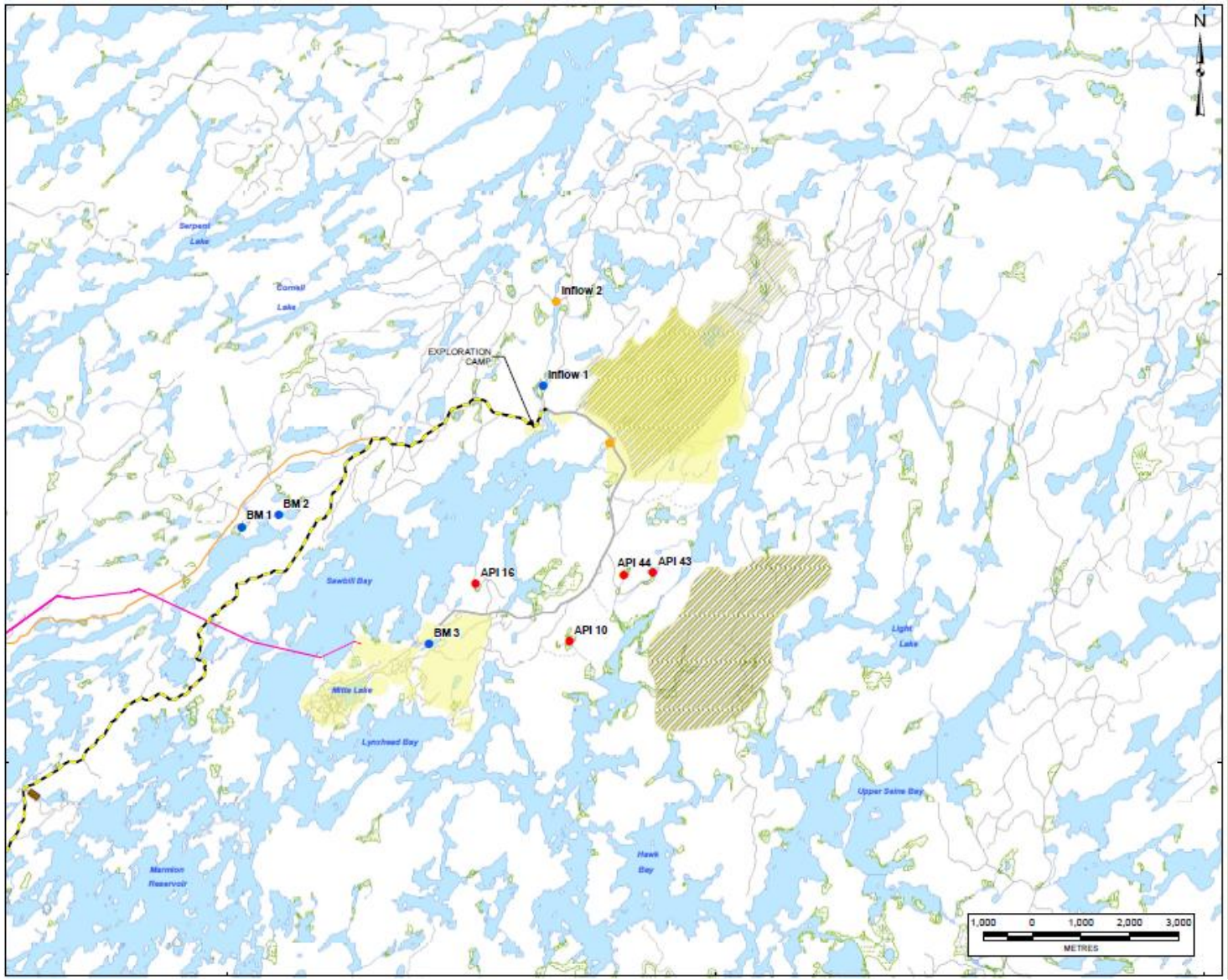
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Total Area	Available Habitat Area (HA)	Number of Species Present	Total Weighted Useable Area (WUA)	Ecotype Weighted Useable Area (EWUA)
API # 10 13,881 m^2				
Littoral	6763 m^2	7	936 m^2	936 m^2
Open Water	7118 m^2	7	537 m^2	537 m^2
API # 16 6,142 m^2				
Littoral	5032 m^2	7	696 m^2	696 m^2
Open Water	1109 m^2	7	84 m^2	84 m^2
API # 44 8,039 m^2				
Littoral	3652 m^2	7	505 m^2	505 m^2
Open Water	4387 m^2	7	331 m^2	331 m^2
API # 43 28,954 m^2				
Littoral	13826 m^2	7	1,913 m^2	1,913 m^2
Open Water	15125 m^2	7	1,140 m^2	1,140 m^2
API # 14 33,163 m^2				
Littoral	17263 m^2	7	2,389 m^2	2,389 m^2
Open Water	15900 m^2	7	1,198 m^2	1,198 m^2
BM #2 75,125				
Littoral	38,120 m^2	7	5,275 m^2	5,275 m^2
Open Water	37,000 m^2	7	2789 m^2	2789 m^2
BM # 1 48,176				
Littoral	24,176 m^2	7	3,345 m^2	3,345 m^2
Open Water	24,000 m^2	7	1,809 m^2	1,809 m^2
Total			22,947 m^2	

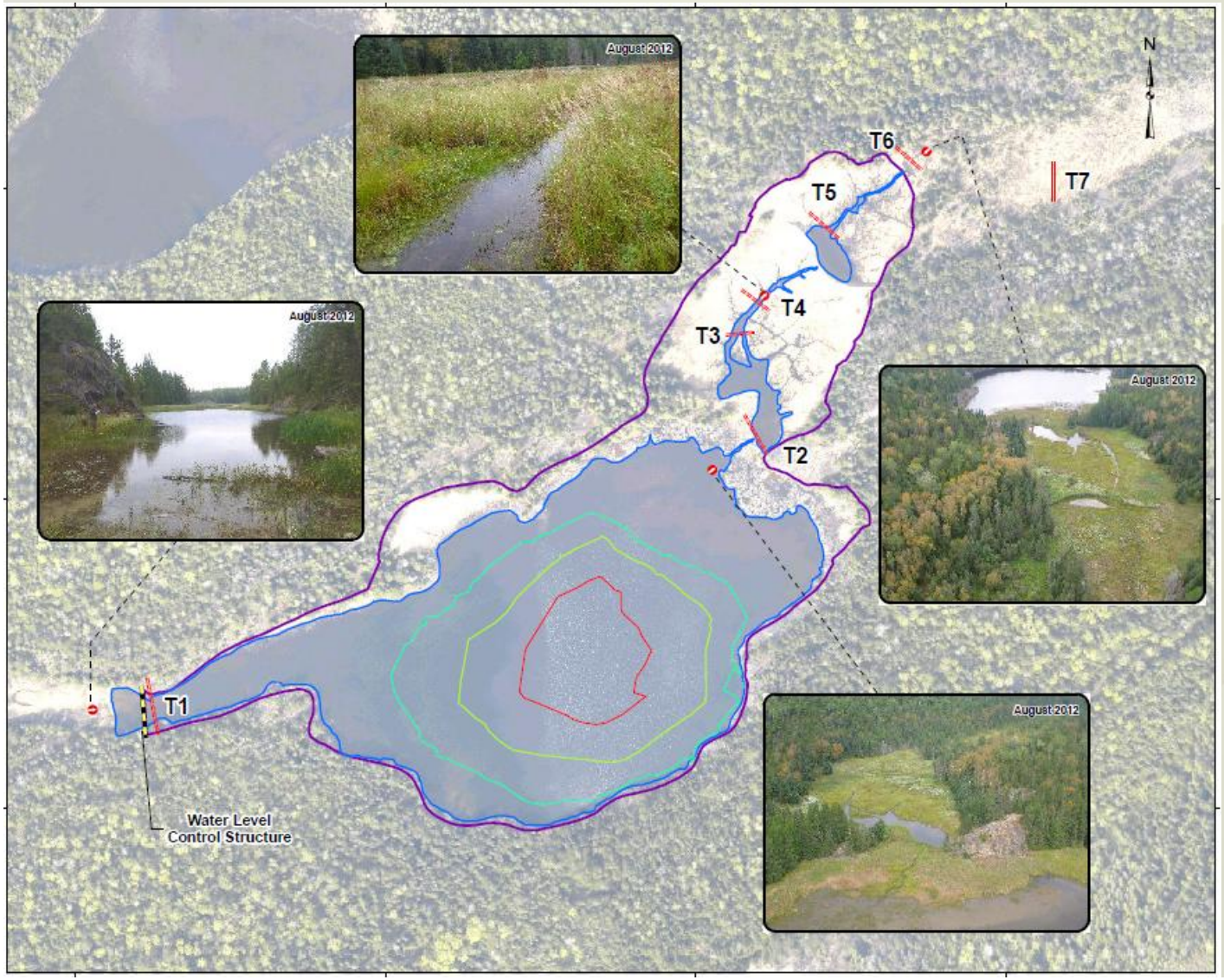
Habitat Compensation Opportunities (Onsite)

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Habitat Compensation Examples



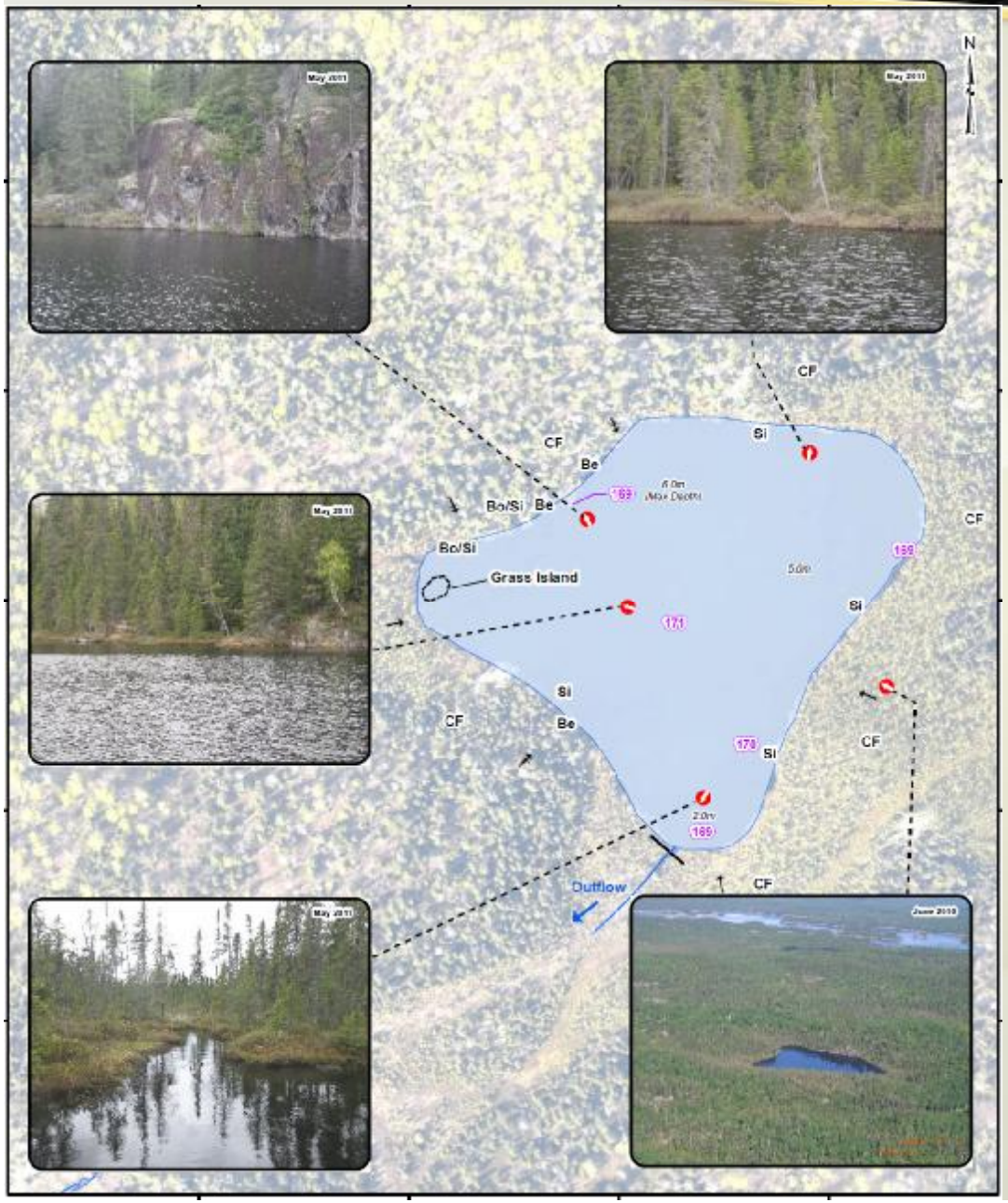
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BM # 2

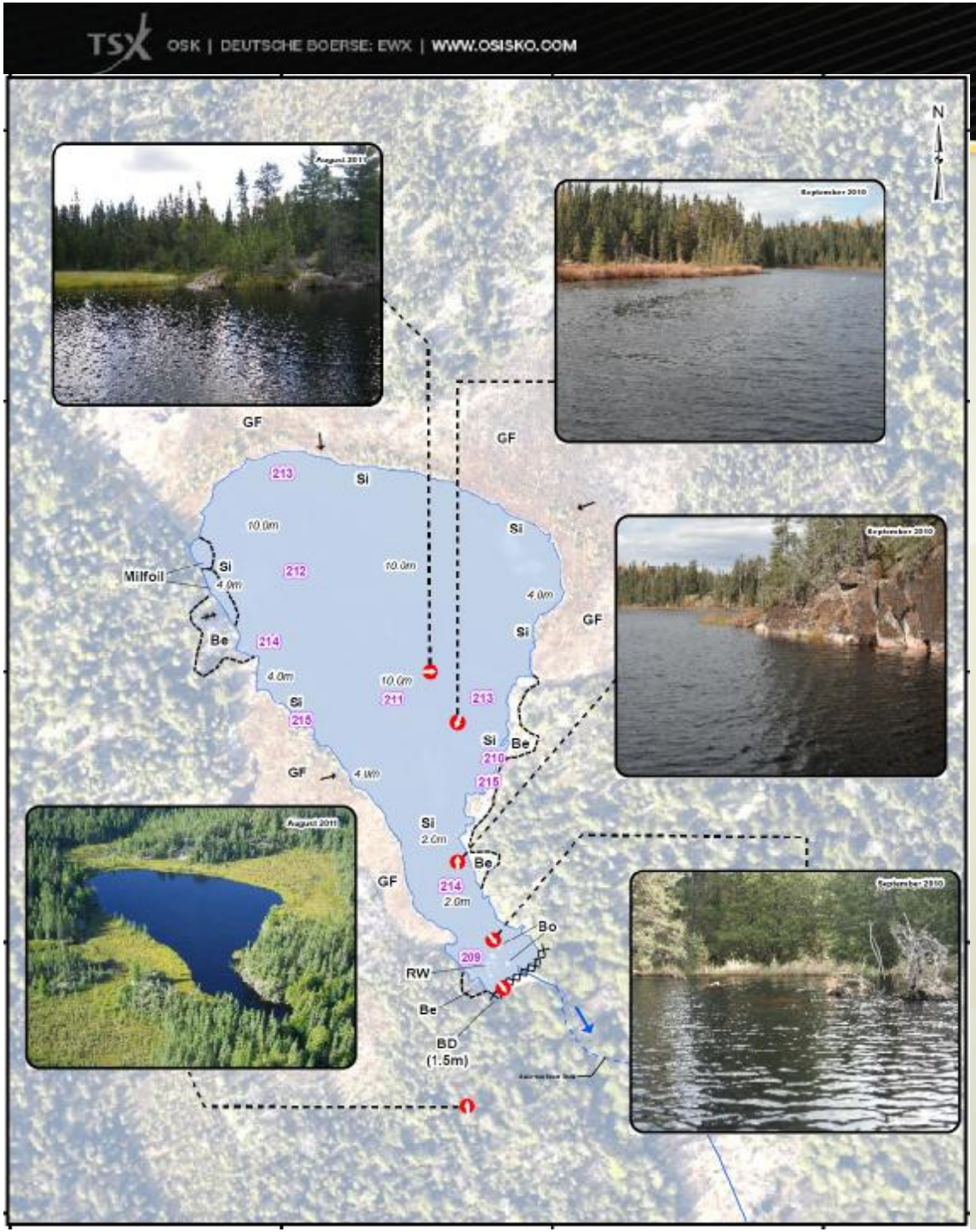
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API # 43

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API # 10

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Other Compensation Opportunities

- Stream Crossings
  - Remove barriers
  - Remediate existing culverts
  - Increase channel length
  - Post closure opportunities
- Offsite
  - Steep Rock
  - Others?

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Fisheries Act Changes

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Fisheries Act Changes

- Does the definition of the term “serious harm to fish” include the destruction of fish habitat?
- Does the definition of fish habitat still include waters upon which fish directly and indirectly depend…
- Does the definition of commercial, recreational and aboriginal fishery, include the fish that support them – what does this mean
- Does the term fishery refer only to the fish or to the waterbody or tract of land in which the fish are located
- Does the definition of commercial, recreational and aboriginal fishery include only licenced fisheries? If not then what?
- What is a commercial fishery?

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Fisheries Act Changes

Infrastructure Feature	Aquatic API	Description	Commercial, Recreational or Aboriginal Fisheries?	Will require fish salvage and habitat compensation
Open Pit	■ Mitta Lake (API#12) and its outlet stream	■ 171,115 m^2 lake; approximately 840 m of stream; empties into Sawbill Bay; supports common white sucker (*Catostomus commersoni)*, ninespine stickleback (*Pungitius pungitius)*, fathead minnow (*Pimephales promelas)*, Iowa darter (*Etheostoma exile)*, mottled sculpin (*Cottus bairdi*)and finescale dace (*Chrosomus neogaeus)*.	■ Recreational? ■ Commercial? ■ Aboriginal?	■ Yes/No?
	■ API #14	■ Upper portions of approximately 846 m stream; empties into Sawbill Bay; supports finescale dace, northern redbelly dace (*Chrosomus eos)*, fathead minnow; juvenile common white sucker captured in lower reach.	■ ?	■ ?
	■ API #69	■ 9,871 m^2 pond; supports finescale dace and northern redbelly dace	■ ?	■ ?
Mine Water Spill Emergency Pond	■ API#13	■ 19,375 m^2 headwater pond; approximately 160 m of stream consisting of beaver impoundments; both pond and stream are fishless. Empties into Lynxhead Bay.	■ N/A?	■ N/A?
Overburden Stockpile	■ No APIs			
Waste rock Stockpile	■ API#11	■ 26,748m^2 head water pond; approximately 840 m of stream including several beaver impoundments; empties into Lynxhead Bay; supports finescale dace, northern redbelly dace, fathead minnow.	■ ?	■ ?
Process Facility	■ No APIs			

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Fisheries Act Changes

Infrastructure Feature	Aquatic API	Description	Commercial, Recreational or Aboriginal Fisheries?	Will require fish salvage and habitat compensation
Tailings Management Facility	■ API #47	■ Approximately 483 m of stream including two beaver impoundments; supports finescale dace and pearl dace (*Semotilus margarita*).	■ Recreational? ■ Commercial? ■ Aboriginal?	■ Yes/No?
	■ API #48	■ Approximately 610 m of ephemeral/seasonal stream and several beaver ponds; no hydraulic connection to downstream aquatic features. Finescale dace captured in one of the beaver ponds	■ N/A?	■ N/A?
	■ API #1	■ Approximately 2,334 m of stream, including five beaver impoundments; empties into Sawbill Bay; upper sections support finescale dace and fathead minnows; juvenile and young-of-the-year (YOY) common white suckers captured in lower sections.	■ ?	■ ?
	■ API#7	■ 10,319 m^2 headwater pond; partially infilled; fishless; connected to API #6 by a series of small beaver ponds.	■ N/A?	■ ?
	■ API#6	■ 5,572 m^2 pond and ephemeral stream; empties into Lizard Lake; pond and ephemeral stream are fishless; juvenile northern pike (*Esox lucius*) and common white sucker, and lowa dater captured in lower segment of stream.	■ Upper Segment? ■ Lower Segment?	■ N/A? ■ ?
	■ API#2	■ 122,228 m^2 lake and upper 200 m of stream; supports pumpkinseed (*Lepomis gibbosus*), northern pike, yellow perch (*Perca flavescens*), common white sucker, blacknose shiner (*Notropis heterolepis*).	■ ?	■ ?

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Fish Rescue/Salvage

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Mitta Lake Fish Salvage Plan

- Water transfer to Sawbill Bay
- Preliminary water quality conditions indicate Mitta Lake and Sawbill Bay very similar
- Over 1 million cubic metres of water
- Preliminary estimates suggest dewatering schedule between 1.5 – 6 months
- Regular monitoring of sediment; use of process water storage pond as temporary sediment control
- Screening of pump intakes to preclude fish

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Mitta Lake Fish Salvage Plan

- DFO General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut (2011) – reviewed
- Determine involvement of Aboriginal Groups in Fish Salvage
- General process:
  - Obtain necessary approvals from MNR/DFO for relocation of fish
  - Relocation site to be the fishless lakes
  - Fish collection, handling, transfer protocols
  - Timing of drawdown to avoid temperature extremes
  - Drawdown process:
    - Phase 1: drawdown until lake separates into 3 pools – net each pool; monitor for stranded fish
    - Phase 2: excavate/siphon to link pools and empty 2 pools – net pools
    - Phase 3: empty final pool – complete final fishout
  - Disposal of dead fish

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Fish Salvage Rescue during Construction

- 30 month construction period
- Determine involvement of Aboriginal Groups in Fish Salvage
- Follow Mitta Lake protocol for lakes
- For other water bodies:
  - Ponded waterbodies:
    - Breach and slowly drain
    - Capture and relocate fish
  - Channel features with permanent flow:
    - Drain/dam upstream ponds first
    - Walk the feature, removing fish
    - Relocate fish

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Wrap Up

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OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
AQUATIC BIOLOGY DISCUSSION
OCTOBER 31, 2012 – 9:00AM – 11:30AM
DFO BOARDROOM – BURLINGTON ON

Attendees:

Osisko:	Alix Drapack.
Golder:	Brian Hindley.
DFO:	Lisa Fowler.
CEAA:	Amy Liu.

Purpose of Meeting: For Osisko to present an overview of the work completed and next steps on the Osisko Hammond Reef Gold Project.

Objectives:

- To present an overview of the meetings with DFO/MNR to date
- To present the baseline aquatic biology information
- To present the Fish Habitat Accounting Methodology for the OHRG project.
- To discuss Fish Compensation Opportunities.

Presentation of Overview of Meetings with DFO/MNR (attached)

- Copies of the Minutes from Previous Meetings were given to Lisa Fowler in hard copy.

Presentation of Project Overview (attached) and Project Video

- Project video can be accessed via link: http://www.youtube.com/watch?v=LrFnP15-Pvw&feature=youtu.be

Presentation of Aquatic Biology Baseline Report (attached)

- The Aquatic Baseline Interim Report was provided to Lisa Fowler in hard copy.
- Lisa suggested setting up a meeting with EC to discuss MMER Schedule 2 issues.

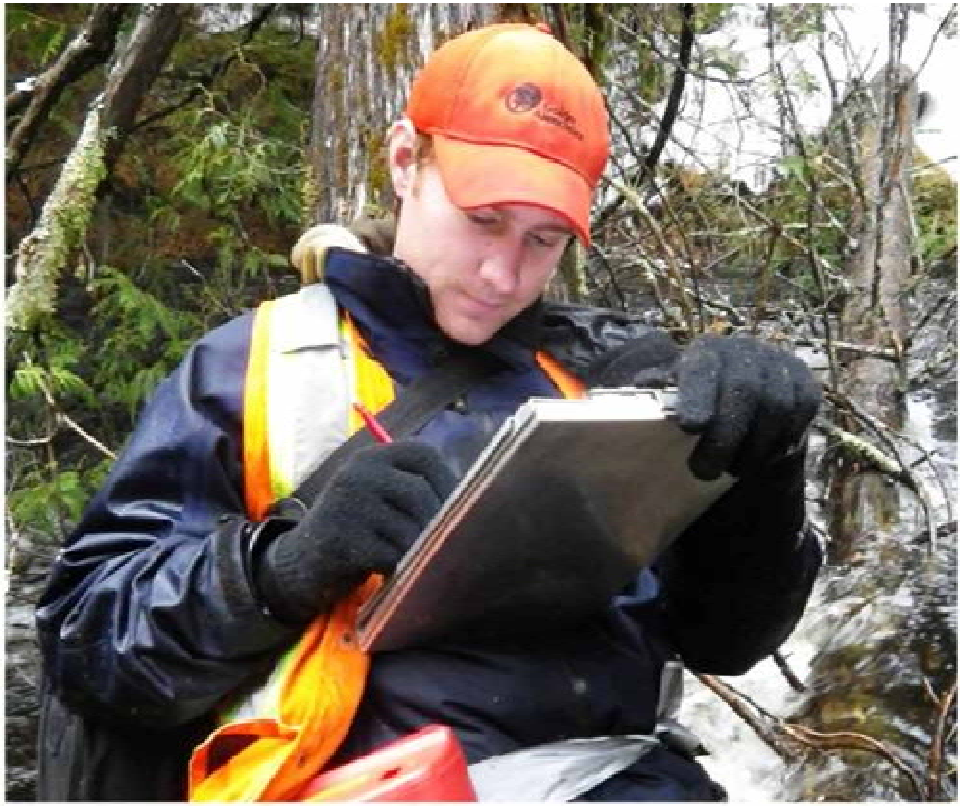
Presentation of Revised Habitat Accounting Methodology (attached)

- The Habitat Accounting Methodology Report was provided to Lisa Fowler in hard copy.

Discussion of Fish Compensation Opportunities (including Steep Rock)

- Lisa and Amy agreed that the fish compensation (offset) plan level of detail required to fulfill EA requirements is at a “conceptual” level. This means that if we have presented a habitat accounting method and used it to calculate the loss of habitat and have provided examples of on-site offsets using the same method, we can say that the final determination of offsets will be dealt with through the regulatory process with DFO. A conceptual offset plan should be presented in the EA to demonstrate that losses can be balanced by offsets.
- Osisko should draft a letter to DFO proposing the option of having our off-sets be fulfilled by providing funding in the form of an Agreement and letter of credit with MNR to be used towards rehabilitation of the Steep Rock Site.

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Overview of Meetings

October 31, 2012

Osisko-MNR-DFO Meetings

6 meetings to date:

- April 13, 2011
- July 12, 2011
- September 14, 2011
- February 29, 2012
- June 4, 2012
- October 22, 2012

April 13, 2011

- Initial Meeting to Present Project Overview
- Presented data collected to date (2010)
- Attendees:

Osisko	Alix Drapack, Jean Sebastien David, Cailey Anderson Anne Charland (TC)
Golder Associates	John Seyler
MNR	Rob Purdon, Amy Godwin, Sheldon Haw, Alyson Dupuis
MOE	Sam Shippam, Bryce Baker, Shannon John, Michelle Whitmore (TC)
DFO	Tom Kleinboeck, Neville Ward
CEAA	Amy Liu (TC)

- TC = Teleconference

July 12, 2011

- Discussion of Proposed Work Plan for 2011 baseline collection
- Discussion of Collection Methods and Summary of info collected to date
- Attendees:

Golder Associates	John Seyler
MNR	Brian Jackson, Amy Godwin
DFO	Tom Kleinboeck, Lauren Nelson

September 14, 2011

- Site Visit & Helicopter Tour
- Presented data collected to date
- Attendees:

Osisko	Alix Drapack, Cailey Anderson
Golder Associates	John Seyler
MNR	Brian Jackson, Sheldon Haw
DFO	Tom Kleinboeck, Lauren Nelson
CEAA	Amy Liu (TC)

- TC = Teleconference

February 29, 2012

- No Net Loss Planning Workshop
- Attendees:

Osisko	Alix Drapack, Mark Bowler
Golder Associates	John Seyler
MNR	Brian Jackson, Amy Godwin, Kim Armstrong, Mark Sobchuk
DFO	Tom Kleinboeck, Neville Ward
MNDM	Pat Barnes
CEAA	Amy Liu (TC)

- TC = Teleconference

June 4, 2012

- Meeting to Present Aquatic Baseline Data
- Attendees:

Osisko	Alix Drapack, Mark Bowler
Golder Associates	Brian Hindley, John Seyler
MNR	Brian Jackson, Amy Godwin, Kim Armstrong, Steve Bobrowicz
DFO	Tom Kleinboeck, Neville Ward
MOE	Jim Sutton
MNDM	Pat Barnes
CEAA	Amy Liu (TC)

- TC = Teleconference

October 22, 2012

- Meeting to Finalize Habitat Accounting Methodology
- Discussions regarding Compensation Opportunities
- Attendees:

Osisko	Alix Drapack
Golder Associates	Brian Hindley
MNR	Brian Jackson, Amy Godwin, Kim Armstrong, Steve Bobrowicz
DFO	Tom Kleinboeck, Neville Ward
MOE	Jim Sutton
MNDM	Mark O'Brien (TC)
CEAA	Amy Liu (TC)

- TC = Teleconference

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A Fresh Outlook on Mining.



Project Components

The Project consists of several major components that are associated with open pit gold mining including:

- An open pit mine with 2 pits, a waste rock stockpile and overburden stockpiles;
- An Ore Processing Facility and ore stockpiles;
- A Tailings Management Facility;
- An Access Road;.
- A Transmission Line; and
- On-site worker accommodations.

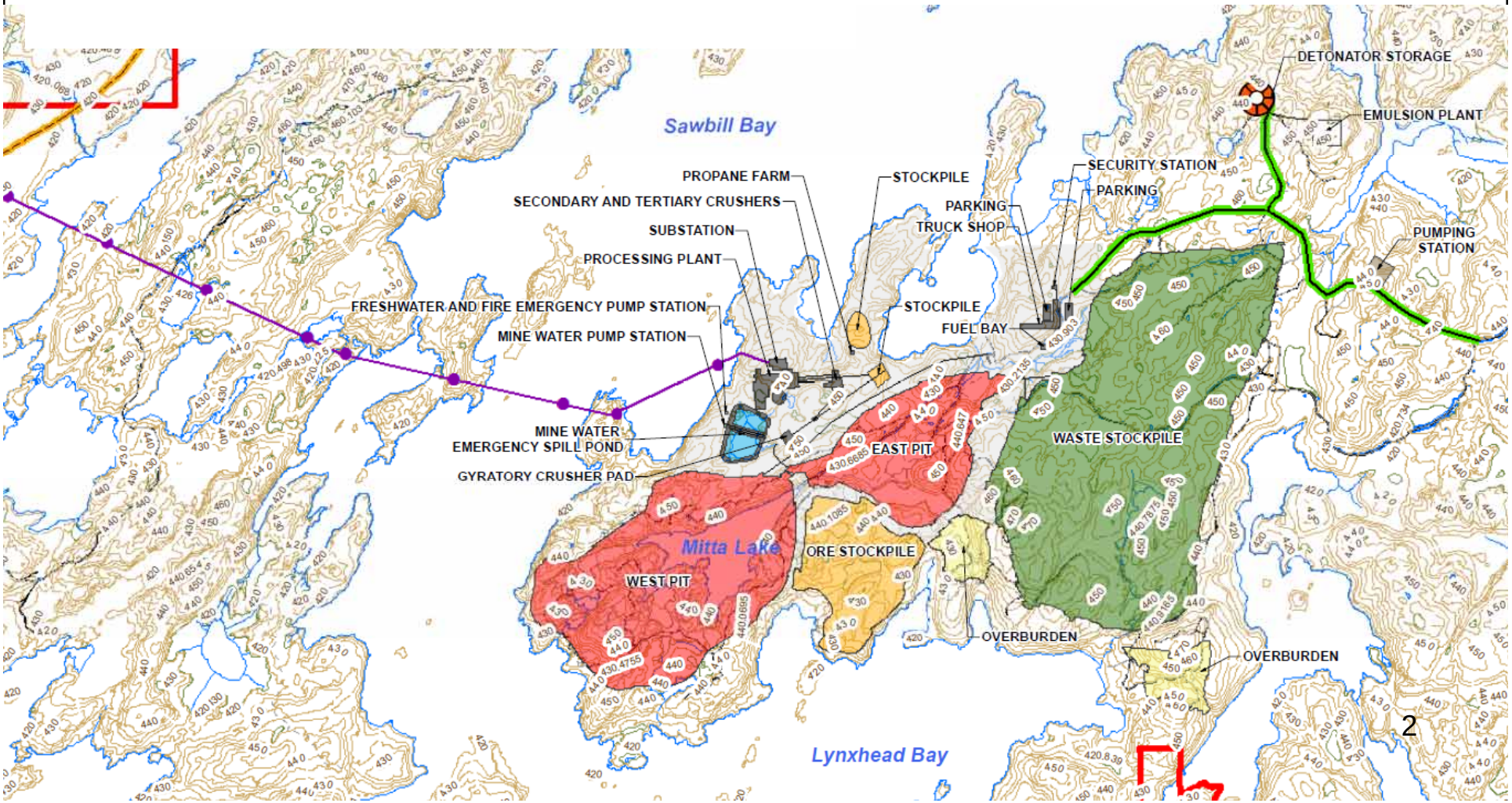
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Project Components

- The Project Facility Footprint = 14 km^2



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Open Pit Mine

- Two open pits will be developed
- Will require the draining of Mitta Lake
- The waste rock will be piled 1 km from the mine, some waste rock will be put back into the first pit.
- Ore will be stockpiled in three piles close to the processing plant.



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A Fresh Outlook on Mining.



Ore Processing Facility

- Designed for an ore throughput of 60,000 tonnes/day
- Includes crushing, grinding, flotation, cyanide leaching, electrowinning and final refining using furnaces.
- Will require approximately 82,000 m^3/day of process water.
- The water balance has not been completed for the Project.
- Water will be reclaimed as much water as possible.
- 3,200 m^3/day of fresh water will be sourced from Marmion Lake





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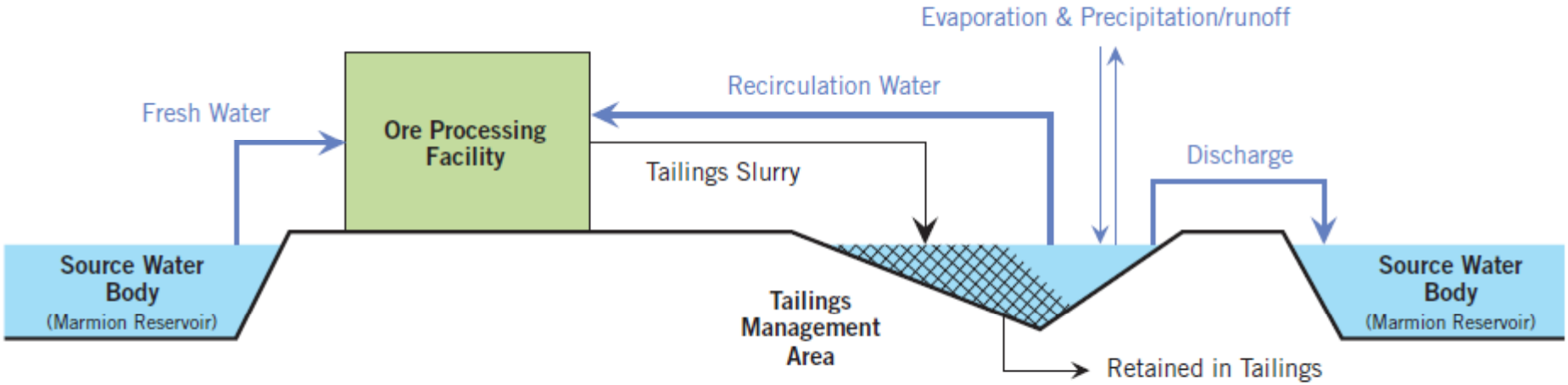
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Tailings Management Area

- Avoid (where possible) impacts to fish-bearing waterways.
- Mitigate negative impacts to fish and fish habitat.
- Where harm cannot be mitigated, compensate for negative impacts on fish habitat.
- Timely permitting (try to avoid requirement for scheduling of fish-bearing waterbodies under the MMER).

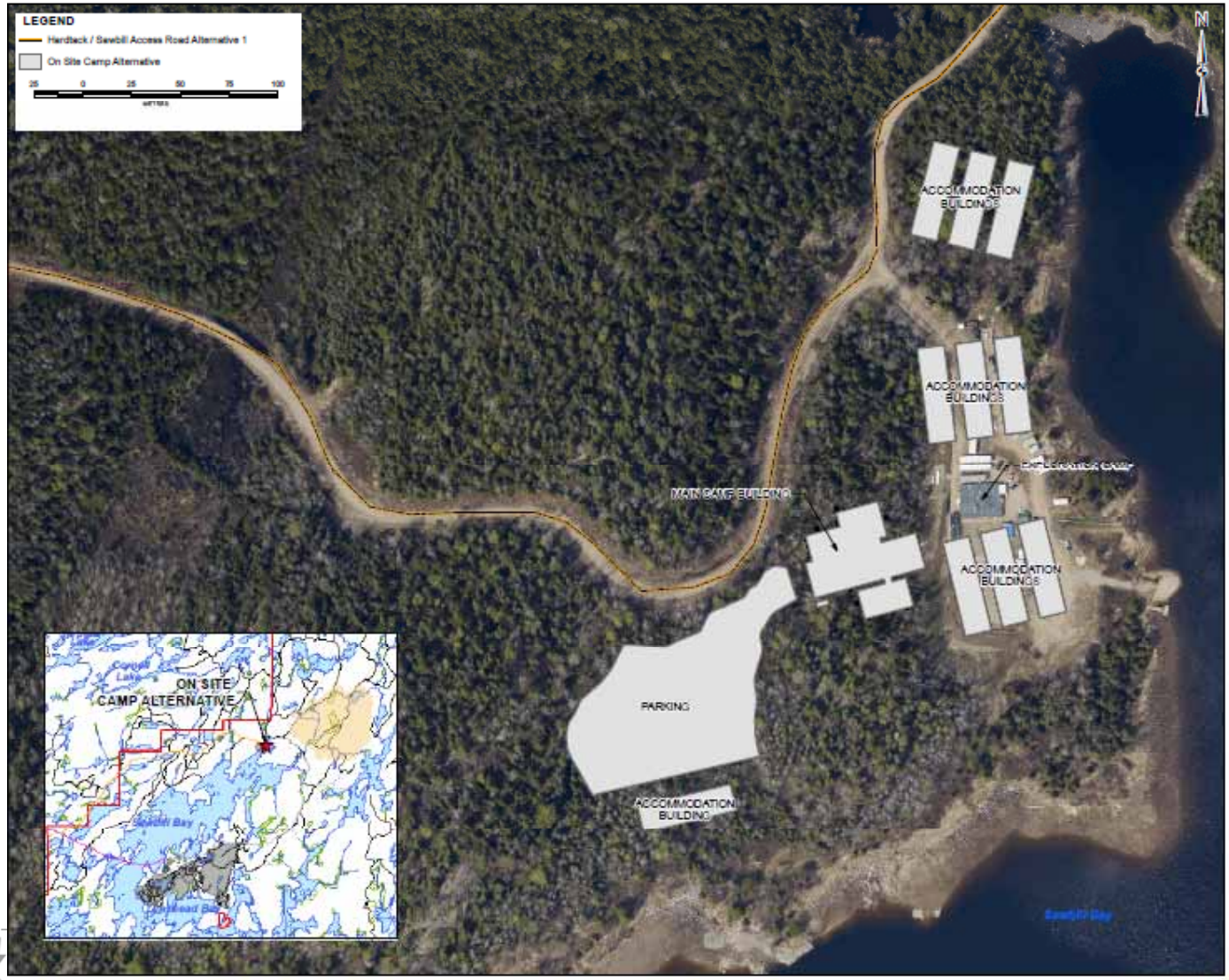


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Camp Layout (2012)



TSX

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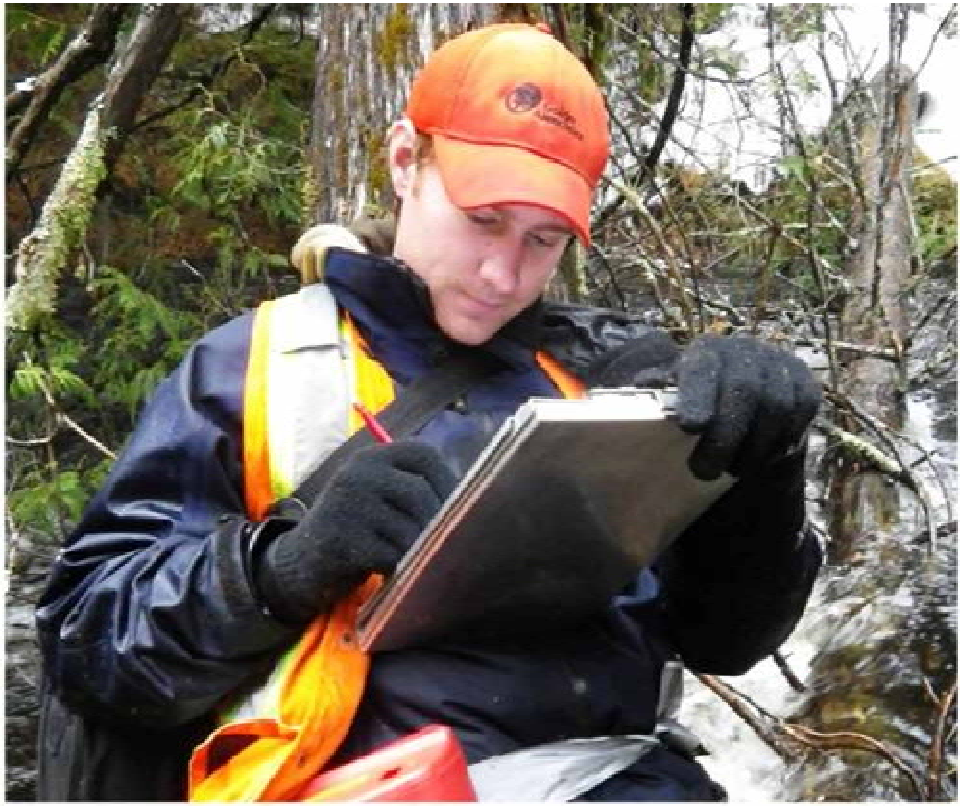
A Fresh Outlook on Mining.



Project timeline

	2010	2011	2012	2013	2014	2015	2016	…	2028	2029	2030	2031	2032
Pre-feasibility													
EA and Permitting					All Approvals Received								
Feasibility													
Construction													
Operations													
Decommissioning and Closure													

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Golder Associates



HAMMOND REEF

Baseline Study Summary

May 28, 2012

Baseline Studies – Characterizing Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- **Fish and Fish Habitat**

Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

Osisko-MNR-DFO Meetings

4 meetings to date:

- April 13, 2011
- July 12, 2011
- September 14, 2011
- February 29, 2012

February 29, 2012 Next Steps

- Set up session on baseline for agencies to identify outstanding gaps and determine further baseline work (today)
- Golder to draft Habitat Suitability reference tables – using expertise and additional references (June)
- MNR to provide list of Steep Rock projects that might qualify for compensation
- Response to how amenable is DFO/MNR to off-site (Steep Rock) options.
- Amy to look into MMER process parallels with the EA permitting process (March 22, 2012 letter)
- Amy to look at habitat creation and how it is scoped in the project and if it would need to have a separate EA

Aquatic Baseline Interim Report

FISH AND FISH HABITAT

Study Objective

Characterize local and regional aquatic resources (fish, fish habitat, benthos and sediment chemistry) to support an evaluation of potential effects of the proposed facility and infrastructure access routes, establish mitigation and compensatory measures to offset project effects and to meet federal and provincial regulatory requirements. Component investigations include:

- Fish community sampling – waterbodies and watercourses
- Fish habitat mapping – waterbodies and watercourses
- Benthic invertebrate community sampling
- Fish tissue sampling

FISH AND FISH HABITAT - METHODS

Characterization of aquatic resources included the following tasks:

- Background information review
- Consultation with MNR, DFO, Aboriginal Groups
  - Pre-field planning
  - Establishing a catchment-based sampling program to include all potential receptors
  - Coordinating sampling with other disciplines including hydrology, water quality, geochemistry
- Multi-season Field studies during 2010 and 2011 to sample
- Ongoing consultation with regulators to establish principles and approach to addressing aquatic impacts (i.e. habitat compensation)

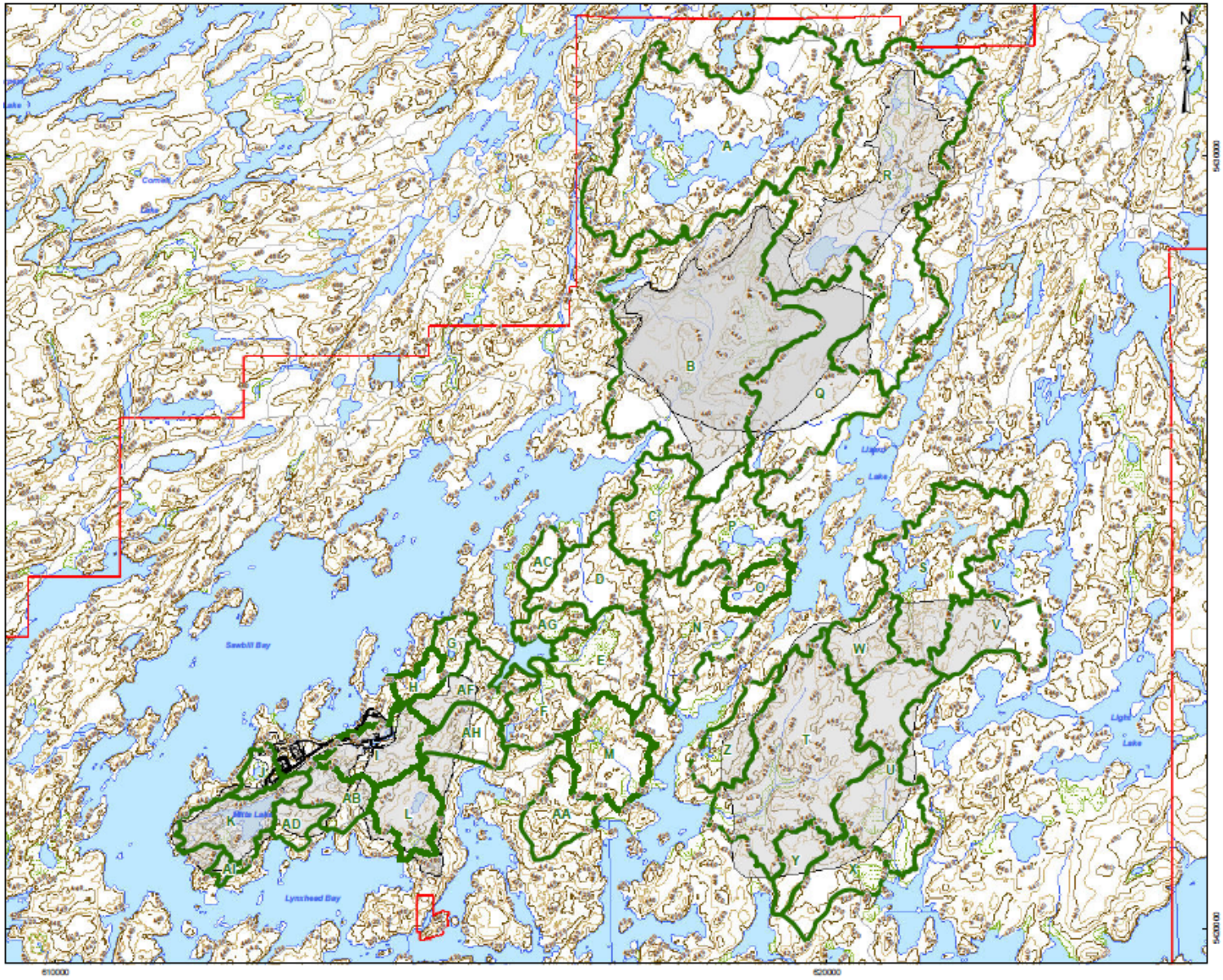
FISH AND FISH HABITAT - SCOPE

Aquatic studies completed on a catchment and water feature basis

- Study area includes 34 small catchments (small watersheds)
- Approximately 55 aquatic features (APIs) and associated drainage features assessed
- Key potential receivers:
  - Sawmill Bay
  - Lynxhead Bay
  - Lizard Lake
  - Turtle Bay
- Transmission and access road corridors

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LEGEND

- Trail
- Road
- Contour - 20m Interval
- Contour - 10m Interval
- River/Stream
- Lake
- Wetland
- Site Watershed Boundary
- Project Facilities
- Project Location

WATERSHED AREAS

Name	Area (ha)
A	590.00
AA	73.34
AB	51.99
AC	29.24
AD	29.91
AE	77.52
AG	34.18
AH	60.02
AI	10.17
B	609.82
C	134.96
D	104.31
E	122.80
F	78.00
G	30.53
H	27.27
I	85.24
J	25.56
K	89.03
L	70.53
M	111.72
N	158.55
O	38.75
P	124.90
Q	272.96
R	623.45
S	230.85
T	336.68
U	200.68
V	106.27
W	66.90
X	82.32
Y	45.66
Z	74.75

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REFERENCE

Base Data - Provided by OSISKO Hammond Reef Gold Project Ltd.
Base Data - MNR NRVIS, obtained 2004, CANMAP v2006.4
Produced by Golder Associates Ltd under licence from
Ontario Ministry of Natural Resources, © Queens Printer 2006
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 15N

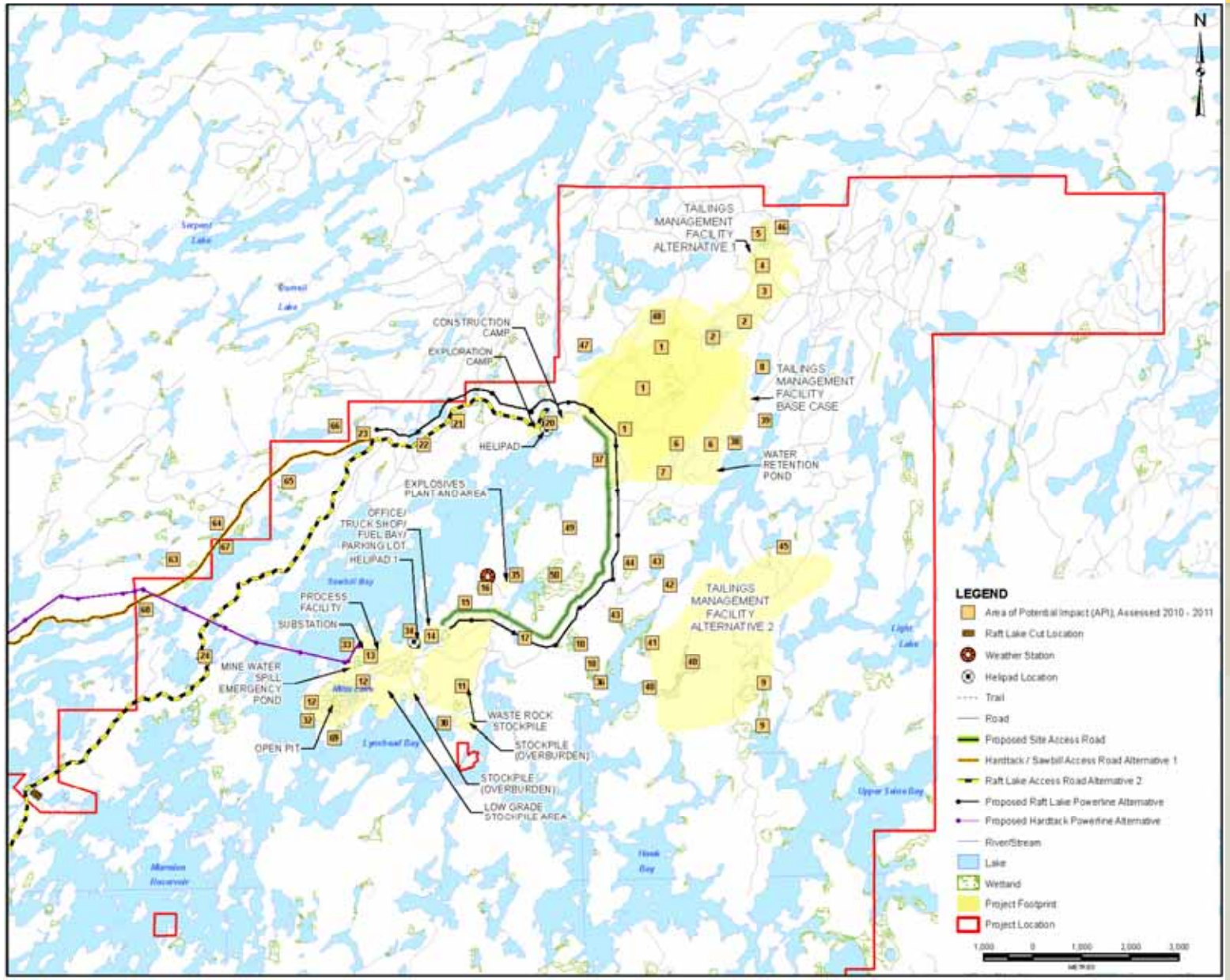
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SCALE METRES

PROJECT
HAMMOND REEF GOLD PROJECT
ATIKOKAN, ONTARIO, CANADA

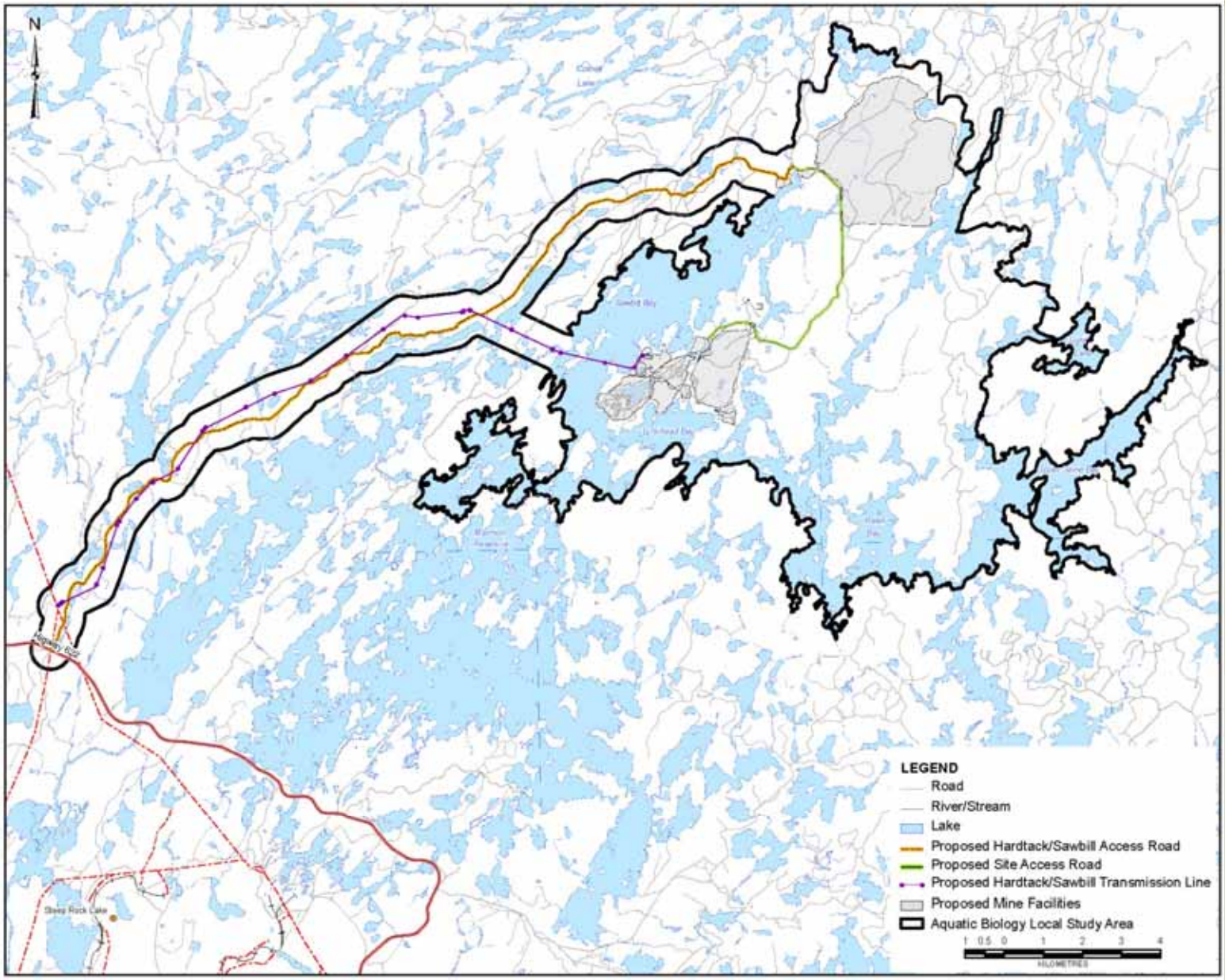
TITLE
SITE WATERSHED BOUNDARIES

Golder Associates
Mississauga, Ontario

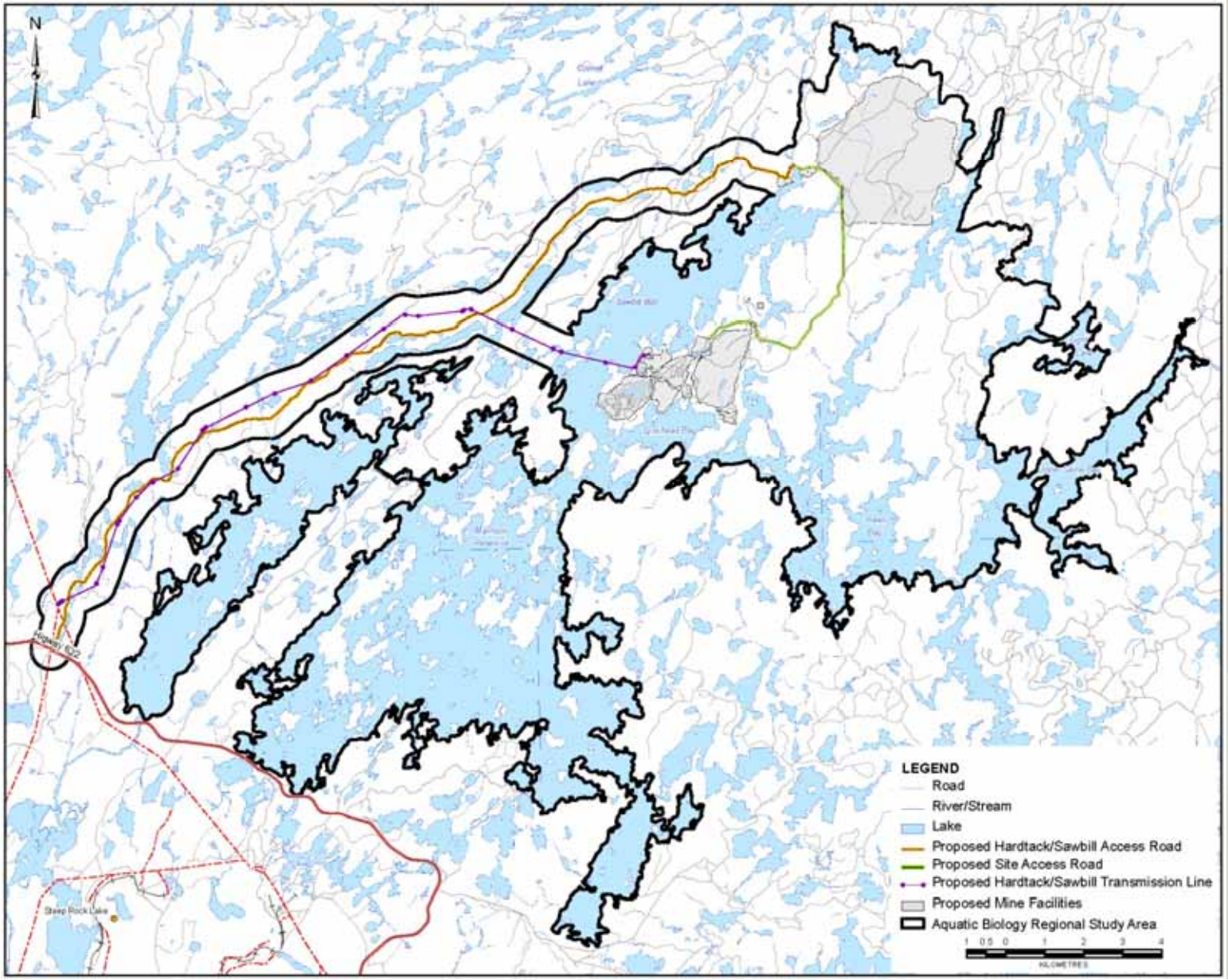
PROJECT NO. 10-1118-0020			SCALE AS SHOWN	REV. 2.0
DESIGN	CSC	14 Nov 2008	
GIS	RRD	Mar 2012	FIGURE: 3
CHECK	JD	Mar 2012	
REVIEW	JR	Mar 2012	



Mine Site and Footprint



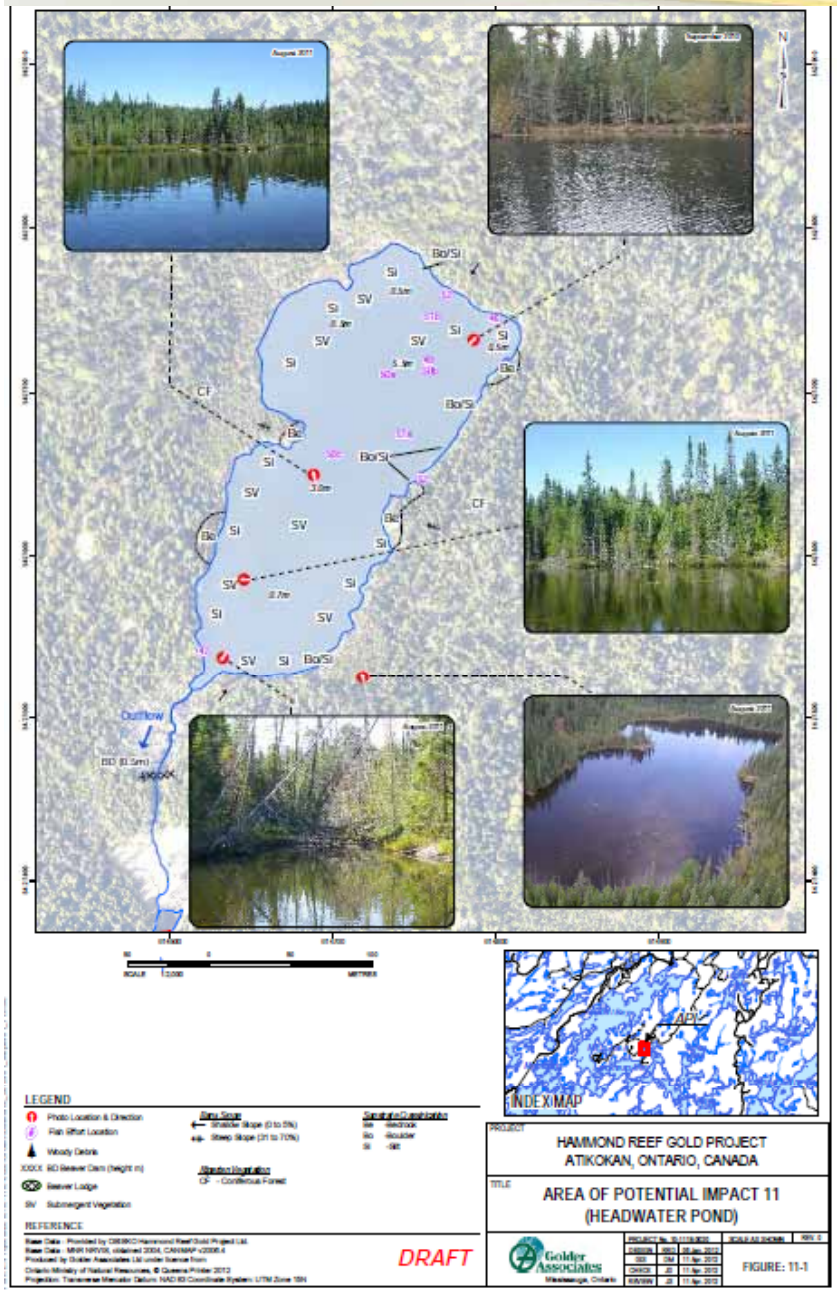
Local Study Area



Regional Study Area

FISH AND FISH HABITAT

Example Results



FISH AND FISH HABITAT

API: Where the project footprint overlaps with, or is adjacent to an aquatic feature.

Includes;

- Headwater lakes/ponds
- Connecting watercourses
- Receiving bays/mouths of watercourses
- Access road crossings

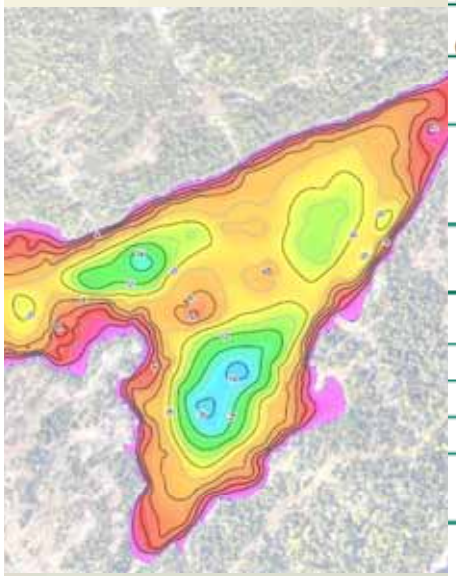


Table 1: API #11 (pond), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location (see Figure 11-1)	Date	Gear	Effort	Catch
46	September 28–29, 2010	minnow trap	18 hrs.	finescale dace (27 adult, 2 juvenile) northern redbelly dace (11 adult)
47	September 28–29, 2010	minnow trap	19 hrs.	finescale dace (36 adult) northern redbelly dace (1 adult) fathead minnow (3 adult)
48	September 28–29, 2010	nordic net	18 hrs.	finescale dace (9 adult) fathead minnow (2 adult)
49	September 28–29, 2010	gillnet - single panel (76 mm mesh)	18 hrs.	no catch
50a	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
50b	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
50c	August 27-28, 2011	broad –scale large mesh	57 hrs.	no catch
51a	August 27-28, 2011	broad –scale small mesh	39 hrs.	finescale dace (7 adult) fathead minnow (1 adult)
51b	August 27-28, 2011	broad –scale small mesh	39 hrs	finescale dace (4 adult) fathead minnow (3 adult)
52	August 27-28, 2011	minnow traps (3)	63 trap hrs.	finescale dace (57 adult) northern redbelly dace (1 adult) fathead minnow (84 adult)

FISH AND FISH HABITAT

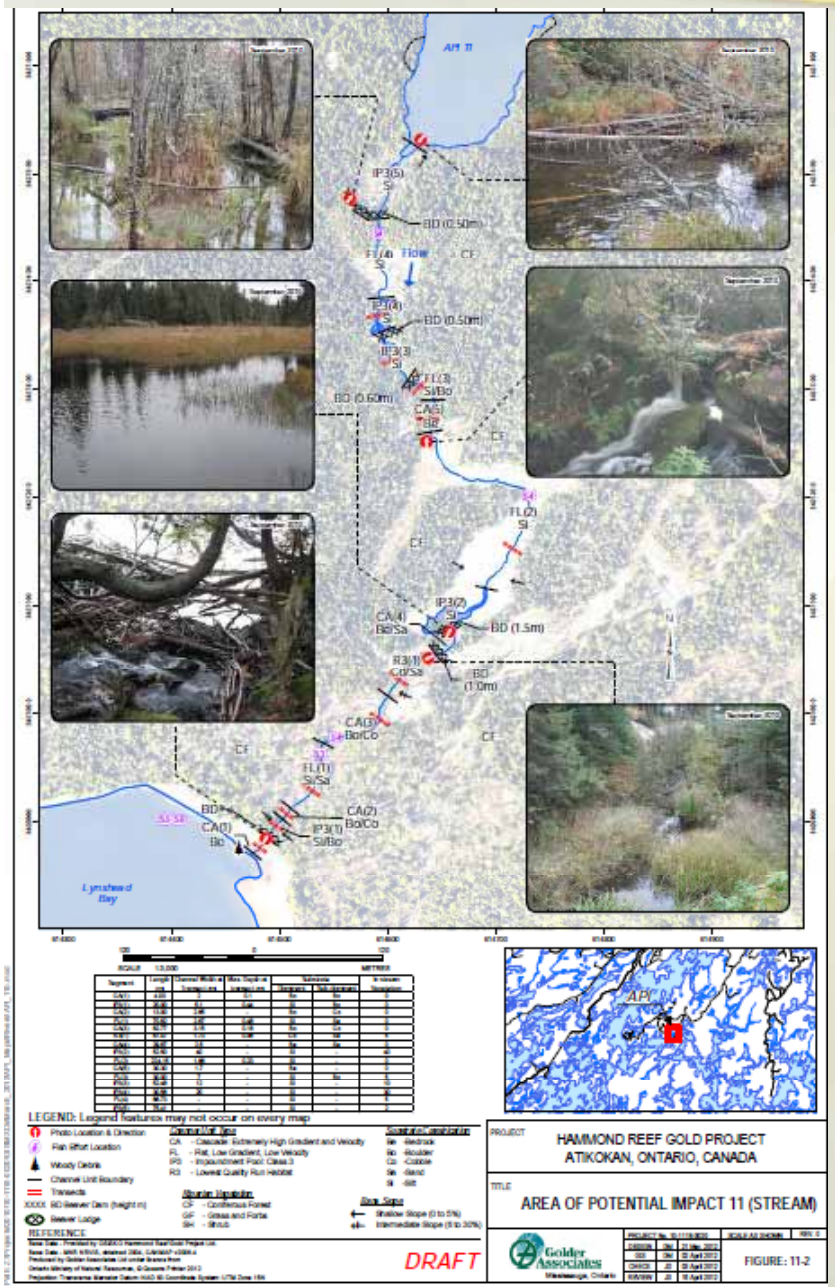


Table 1: API #11 (pond), Basic Water Chemistry Parameter Data

Date/Depth (m)	Temperature (°C)	pH	Conductivity (µmhos)	Dissolved Oxygen (mg/L)
September 28, 2010				
Surface	11.4	7.6	58	10.6
1	11.1	7.6	58	10.5
2	10.9	7.7	58	10.2
3	10.9	7.6	58	9.8
4	9.0	7.6	58	8.0
5	-	-	-	-
August 27, 2011	23.0	8.9	76	9.0

Table 1: API #11 (stream), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location (see Figure 11-2)	Date	Gear	Effort	Catch
53	September 23, 2010	backpack electrofisher	115 m	finescale dace (27 adult, 27 juvenile, 2 YOY) northern redbelly dace (2 adult)
54	September 24, 2011	backpack electrofisher	641 m	finescale dace (29 adult, 36 juvenile, 1 YOY) northern redbelly dace (5 adult, 5 juvenile) dace sp. (2 YOY unk.)

Table 1: API #11 (Lynxhead Bay), Fish Community Assessment (Effort, Gear and Catch Summaries)

Fish Effort Location	Date	Gear	Effort	Catch
55	August 26, 2010	boat electrofisher	500 m	yellow perch (10 juvenile) northern pike (1 adult)
56	September 24, 2011	broad-scale small mesh gillnets (2)	17.5 hrs	walleye (2 juvenile) yellow perch (15 juvenile)
57	September 24, 2011	broad-scale small mesh gillnets (2)	17.5 hrs	walleye (1 juvenile) northern pike (1 unk.)
58	September 24, 2011	broad-scale large mesh gillnets (2)	17 hrs	lake whitefish (1 adult) white sucker (1 adult) northern pike (1 adult)

Access Corridors

- Two road corridor and hydro ROW alternatives
- Screening/prioritizing of watercourse crossings
- Habitat assessment
- Community assessment
- Field data collected on approximately 25 watercourse crossings

Habitat Preference Tables

Table 1: Habitat Preferences, Northern Pike (*Esox lucius*)

Spawning	Rearing/Nursery	Feeding	Migratory Corridor	Overwintering/Summer Refuge
General - Spring spawners, in colder areas, after ice break up at water temperatures between 4.4 to 12°C (8) Over flooded terrestrial vegetation in areas of calm, shallow water or weedy bays or backwaters (1) Optimum spawning habitat is a dense mat of flooded emergent vegetation such as sedges, cattails or grasses with a large basal coverage for egg adhesion (2) (3) Substrate preference for silt and sand although spawning-site preference is more related to adequate submergent vegetation (4) (7)	**General** - Shallow, vegetated areas such as flooded marshes, flooded terrestrial vegetation, or weedy bays (1) **Lentic** - Depth preference from 0-2 m in spring, 2-5 m in fall; over substrates of silt, clay or hardpan clay near submergent/emergent vegetation cover; specific preference by YOY for submerged vegetation versus other aquatic vegetation types (2) (5) (7) (8) Juveniles typically found along shorelines with adequate food and cover at depths of <2 m; same substrate preference as YOY, always in association with submergent vegetation (7)	**General** - Day active feeders with preference for ambush cover in the form of aquatic plants, tree stumps, fallen logs (1) YOY initial food preference for invertebrates such as Ephemeroptera, Isopoda, Cladocera with switch to vertebrate prey in fish ≥130 mm; habitat preference for submerged vegetation with rooted aquatic plants to offer cover and increased plankton and therefore the best food supply (2) (3)	**General** - From lakes and rivers up tributaries to flooded marshes, wetlands or shallow pools during spawning (1) **Lentic** - Adults usually found within shallow, vegetated regions of lakes in spring and fall, moving to deeper water as water temperature increases in summer and ice-cover forms in winter (7) (8) Movement by juveniles to areas of emergent vegetation in late summer where dissolved oxygen concentrations higher (3) **Lotic** - Avoidance for strong currents (>1.5 m/s) that can block spawning migrations (1)	**General** - Dissolved oxygen concentration important habitat variable affecting overwinter survival although NRPK more tolerant of low D.O. during winter than other temperate species; optimal temperature preference for adults between 19 and 21°C (1) (7) **Lotic** - Occur more frequently in lakes than rivers; summer habitat limited in some lakes by combination of high surface temperatures and low oxygen concentration in cooler, deeper strata (1) Adults at depths from 0-10 m throughout the year; along margins of vegetated areas or areas with in-situ materials (fallen logs, tree stumps, shoals, boulders) and substrates of mud, silt, or hardpan clay (6) (7)

FISH AND FISH HABITAT

Baseline Study Conclusions

FISH AND FISH HABITAT

- No coldwater fish species / waterbodies
- Watercourses generally low gradient, highly influenced by beaver dams
- Flow in sections of many watercourses is seasonal or subsurface and highly variable (i.e. flashy)
- Lower portions of some tributaries are accessible to fish from major receivers – upper floodwaters area

Table 1: Fish Species Captured During Baseline Studies

Family/Subfamily	Species Common Name	Species Scientific Name
Coregoninae	lake whitefish cisco	*Coregonus clupeaformis* *Coregonus artedi*
Umbridae	central mudminnow	*Umbra limi*
Esocidae	northern pike	*Esox lucius*
Cyprinidae	longnose dace blacknose dace northern redbelly dace finescale dace pearl dace fathead minnow spottail shiner blacknose shiner brassy minnow	*Rhinichthys cataractae* *Rhinichthys atratulus* *Chrosomus eos* *Chrosomus neogaeus* *Semotilus margarita* *Pimephales promelas* *Notropis hudsonius* *Notropis heterolepis* *Hybognathus hankinsoni*
Catostomidae	common white sucker	*Catostomus commersoni*
Gadidae	burbot	*Lota lota*
Gasterosteidae	ninespine stickleback brook stickleback	*Pungitius pungitius* *Culaea inconstans*
Centrarchidae	smallmouth bass pumpkinseed	*Micropterus dolomieu* *Lepomis gibbosus*
Percidae	walleye yellow perch lowa darter	*Sander vitreus* *Perca flavescens* *Etheostoma exile*
Cottidae	mottled sculpin	*Cottus bairdi*

FISH AND FISH HABITAT

- Walleye and smallmouth bass absent from streams
- Yellow perch, northern pike, common sucker utilize lower stream reaches
- Water level management (i.e. low water conditions) affect habitat and accessibility of lower reaches
- Beaver ponds and headwater ponds provide winter refugia for stream fish
- A number of API's exhibit summer hypoxia and possible winter kill conditions
- Most waterbodies have simple communities dominated by cyprinids
- 9 ponds do not support fish communities

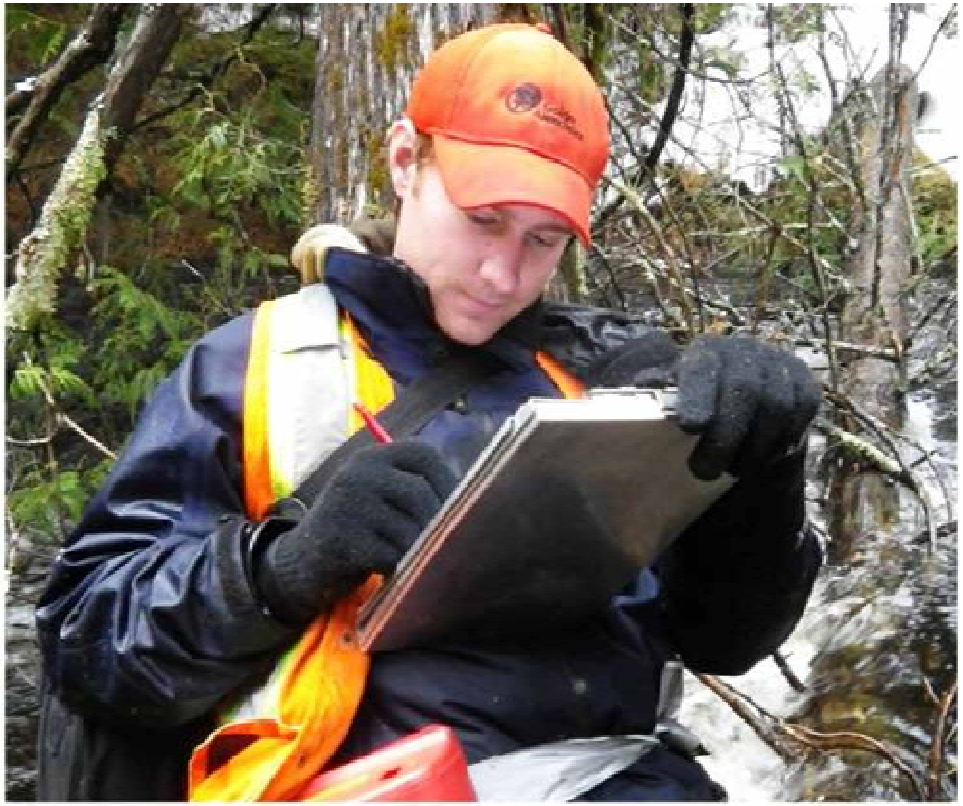
Discussion

- Data collection designed to address potential impacts:
  - MMER schedule 2 waterbodies – tailings and waste rock management areas
  - HADD (Destruction) – Mine footprint
  - HADD (Alteration, Disturbance) – Mine catchment area, access corridors, receiving waterbodies

Discussion (cont'd)

- Potential Schedule 2
  - API # 1, 6, 7, 11, 48
- Potential HADD (Destruction)
  - 12, 13, 14
- Potential HADD (Alteration, Disturbance)
  - API # 2, 3, 4, 5, 8, 15, 16, 30, 32, 33, 34, 37, 39, 69
  - Sawmill Bay, Lynxhead Bay, Lizard Lake, Turtle Bay

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Golder Associates



HAMMOND REEF

Agency Workshop # 5

October 22, 2012

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HAMMOND REEF

Golder Associates

Agency Workshop # 5

October 22, 2012

Agenda

- Welcome/Introductions: 10:00 – 10:10 am
- Fish Habitat Accounting Procedure: 10:10 – 11:15 am
- Break: 11:15 – 11:30 am
- Worked Examples: Habitat Losses/Gains 11:30 – 12:30 pm
- Lunch: 12:30 – 1:00 pm
- Fish Habitat Compensation Opportunities: 1:00 – 1:45 pm
  - Onsite, Offsite, Steep Rock
- Fisheries Act Update: 1:45 – 2:15 pm
- Fish Rescue/Salvage program: 2:15 – 2:45 pm
- Wrap Up: 2:45 – 3:00 pm

Habitat Accounting Procedure

Primary tool to develop NNLP for Osisko project

Fish Habitat Accounting Procedure

- **Primary tool to develop NNLP for Osisko project**
- Emphasis on direct effects but also indirect effects
- Build on existing procedures/NNLP's used in other EA's familiar/supported by DFO
  - HEP methodology
  - Meliadine Project (Golder 2011)
- Increase confidence in model through peer review by Dr. C.K. Minns

Fish Habitat Accounting Procedure

- HEP procedure
  - Habitat Area calculated as the surface area of a unit of habitat
  - For each species, a Habitat Suitability Index score (0 – 1) is calculated for each life stage (spawning, juvenile, adult, summer/winter refugia, migration) and averaged
  - A species specific rank or Habitat Unit score is product of HA and HIS
  - Total habitat for the habitat unit is the sum of the individual species HU scores
  - Resultant score is linked to actual habitat area but generally considered to be a dimensionless value

Fish Habitat Accounting Procedure

- HSI scores based on habitat descriptions of fish species' life stages (see Appendix B)
  - life stage habitat preference descriptions based on literature, localized to the area where possible
  - Introduces subjectivity into the evaluation of habitat – professional judgement
  - Has the advantage of utilizing as much of the data collected on habitat as possible
  - Fish inventory data – species present, relative abundance can be used to provide some insight into habitat suitability

Example of Habitat Preference Table for HSI Rankings

Table 2: Habitat Preferences, Lake Whitefish (*Coregonus clupeaformis*)

Spawning	Rearing/Nursery	Feeding	Migratory Corridor	Overwintering/Summer Refuge
General - Fall broadcast spawner with ideal water temperature range of 0.5 to 7.8 °C; flowing water not required for spawning (7) (11) **Lentic -** Spawning in shallow water over gravel, cobble, boulder and sometimes sand; infrequently over silt and clay substrate with emergent vegetation if slight current present (7) (8) (11) **Lotic -** Spawning from 0-5+m to 30 m over coarse substrates of boulder, cobble, rubble, gravel, sand (4) (7) (8) (11) (13)	**Lotic -** YOY with depth preference of 0-2 m in spring , no seasonal preference from 2-5 m, low association with emergent or submergent vegetation or over in-situ cover (5) (7) Juveniles associated with depths to 10 m with boulder, cobble, rubble and gravel substrate in association with vegetation and woody debris or in pelagic areas (7) (12)	**General -** YOY are initially limnetic feeders, switching to benthic feeding as fish learn local food availability (8) Adults benthic feeders on snails, clams, chironomid larvae and small fish (12)	**Lotic -** In summer, YOY in lotic environments leave shallow inshore waters as water temperature warms and move to deeper pelagic waters at depths of 5-10 m with substrate preference for boulder, cobble, gravel and sand (7) (12) Adults move into shallow waters in the fall to spawn on shoals or rocky ledges and return to deepwater habitat to overwinter (7) (12) Marked onshore movements into shallow water habitats at night, possibly to feed (12)	**General -** Late winter dissolved oxygen levels from 4 to >7 mg/L preferred (13) **Lentic -** associated with low velocity/pool habitat (10) **Lotic -** Typically associated throughout the year with depths of 5+m, below thermocline (6)

Fish Habitat Accounting Procedure

- Minns et al (2001) and Minns (2010) developed habitat accounting models for lakes (HATT) and streams
  - Used basic HEP approach with the objective of reducing subjectivity of the analysis
  - Developed using Great Lakes and southern Ontario stream data (OSAP)
  - Simplified habitat into 4 key units:
    - Depth
    - Substrate
    - Cover
    - Discharge (streams)

Fish Habitat Accounting Procedure

- Minns model (continued)
  - Used several methods to develop species, life history, habitat relationships
    - Literature review of species, habitat relationships
    - Statistical analyses of species, habitat relationships
    - Use of Habitat Guilds – grouping of species according to thermal preference, reproductive strategy, “trophic” level
    - Creating (more or less) homogenous habitat units
    - Weighting species based on habitat guilds
    - Introduced key terms: Weighted Useable Area, Productive Capacity index
    - Linking overall habitat score more directly to habitat area

Fish Habitat Accounting Procedure

- Draft procedure developed based on HEP approach
- Peer reviewed by Dr. Minns
- Procedure revised
- Meeting with Dr. Minns to review comments and revisions
- Second revision of Procedure

Fish Habitat Accounting Procedure

- New document is more in line with Minns' recommendations and incorporates many concepts in habitat assessment protocols developed by Minns

- Changes based on Minns' recommendations:
  - Adopted key terms – Weighted Useable Area, Productive Capacity Index, Ecotypes
  - Separated stream and lake ecotypes and established common habitat units for each type
  - Organized fish species present into "habitat guilds" based on Minn's models – thermal preference, reproductive strategy, "trophic" level
  - Applied a common species weighting based on guilds to each habitat/ecotype in the study area
  - Weighted Useable Habitat Area considers all species but estimates habitat based on species present

Fish Habitat Accounting Procedure

- Changes based on Minn's recommendations (cont'd):
  - Eliminated weighting based on "environmental sensitivity"
  - Applied the same Productive Capacity Index to lake and stream ecotypes as Minns
  - Eliminated the weighting of fish strictly according to DFO habitat policy priorities or VEC's, but fish species weighting adopted from Minns reflects this priority to a degree, while including all species
  - Have retained the use of the HSI life stage rating of habitat which is less objective than Minns approach but considers more aspects of habitat
  - The same model is used for calculating both habitat losses and gains (from compensation projects)
  - Provide compensation on a 1:1 basis; 2:1 if significant lag time exists between loss and compensation

Fish Habitat Accounting Procedure

List of fish species captured

Family/Subfamily	Species Common Name	Species Scientific Name
Coregoninae	lake whitefish[1] cisco[1]	*Coregonus clupeaformis* *Coregonus artedi*
Umbridae	central mudminnow	*Umbra limi*
Esocidae	northern pike	*Esox lucius*
Cyprinidae	longnose dace[1] northern redbelly dace finescale dace pearl dace fathead minnow spottail shiner[1] blacknose shiner golden shiner[1]. brassy minnow golden shiner	*Rhinichthys cataractae* *Chrosomus eos* *Chrosomus neogaeus* *Semotilus margarita* *Pimephales promelas* *Notropis hudsonius* *Notropis heterolepis* *Notemigonis crysoleucas* *Hybognathus hankinsoni* *Notemigonus crysoleucas*
Catostomidae	common white sucker	*Catostomus commersoni*
Gadidae	burbot	*Lota lota*
Gasterosteidae	ninespine stickleback brook stickleback	*Pungitius pungitius* *Culaea inconstans*
Centrarchidae	smallmouth bass[1] pumpkinseed	*Micropterus dolomieu* *Lepomis gibbosus*
Percidae	walleye[1] yellow perch Iowa darter	*Sander vitreus* *Perca flavescens* *Etheostoma exile*
Cottidae	mottled sculpin	*Cottus bairdi*

([1] Receiving Waters only)

Fish Habitat Accounting Procedure

Fish habitat Guilds

Habitat Group	Description	Piscivore	Non-Piscivore
Cold + A1 (lake)[1]	lake stenotherms		**Group 1**: lake whitefish, ciscoe
Cold + A1 (stream)[1]	stream stenotherms	**Group 3**: burbot	**Group 2**: pearl dace
Cold +A2	stream salmon, lamprey	N/a	N/a
Cold + B	sculpins, sticklebacks		**Group 4**: brook stickleback, ninespine stickleback
Cool + A1	percids, redhorses, darters, dace	**Group 6**: northern pike, walleye	**Group 5**: blacknose dace, longnose dace, brassy minnow, finescale dace, redbelly dace, golden shiner, iowa darter, yellow perch, white sucker
Cool + A2	nonguarding darters, chubs, lamprey	N/a	N/a
Cool + B	guarding darters, pomoxids	N/a	N/a
Warm + A	shiners,moronids, gars, suckers		**Group 7**: blacknose shiner, central mudminnow, emerald shiner, spottail shiner
Warm + B	centrarchids, minnows, bullhead	**Group 9**: smallmouth bass	**Group 8**: fathead minnow, pumpkinseed

Fish Habitat Accounting Procedure

Species Weighting

Group	Species	Weight
Group 1: Cold+A1-Lake: Non-Piscivore	lake whitefish	0.050
	lake ciscoe	0.050
Group 2: Cold+A1-Stream: Non-Piscivore	pearl dace	0.030
Group 3: Cold+A1-Stream: Piscivore	burot	0.015
Group 4: Cold+B: Non-Piscivore	ninespine stickleback	0.015
	brook stickleback	0.015
	mottled sculpin	0.015
Group 5: Cool+A1: Non-Piscivore	blacknose dace	0.015
	brassy minnow	0.015
	finescale dace	0.030
	redbelly dace	0.030
	golden shiner	0.015
	longnose dace	0.015
	white sucker	0.015
	Iowa darter	0.015
	yellow perch	0.030
Group 6: Cool+A1: Piscivore	yellow walleye	0.200
	northern pike	0.100
Group 7: Warm+B: Non-Piscivore	blacknose shiner	0.015
	emerald shiner	0.030
	spottail shiner	0.030
	central mudminnow	0.015
Group 8: Warm+B: Non-Piscivore	fathead minnow	0.030
	pumpkinseed	0.030
Group 9: Warm+B: Piscivore	smallmouth bass	0.200
Total		1.020

Fish Habitat Accounting Procedure

Six Ecotypes:

- Lake Ecotype (e.g. Mitta Lake and API #2);
- Headwater Ponds Ecotype: including their inflows and outflows (e.g. API #6, #7, #11, #13 #69);
- Warm Water Stream Ecotype: shallow to steep gradient channels with interspersed beaver impoundments (e.g. API #1, #14, #47, #48), excluding lower reaches;
- Seasonal or Intermittent Stream Ecotype: portions of some streams have no defined channels.;
- Inflows to Receiving Waters Ecotype:; and
- Receiving Waters Ecotype: Upper Flood Waters (including Sawbill Bay, Lynxhead Bay and Turtle Bay); Lizard Lake and API #8.

Fish Habitat Accounting Procedure

The quantification of WUAs will take into account:

- fish habitat mapping data;
- a general description of habitat conditions, the qualitative assessment of habitat use potential and the documented fish use;
- fish species presence and distribution data; and
- species guild associations.

$$WUA = (HA * (SUM_{1\text{-}24} (SHW_1 * HU_1) + (SHW_2 * HU_2) + \ldots\ldots + (SHW_{24} * HU_{24}))$$

$$EWUA = WUA * EPCI$$

Where:
WUA = Weighted Useable Area
HA= Available Habitat Area
SHW= Species Habitat Weight
HU = Average Habitat Suitability score
EWUA = Ecotype Weighted Useable Area
EPCI = Ecotype Productive Capacity Index

Fish Habitat Accounting Procedure

Steps in the accounting procedure:

- the quantification of habitat areas (m^2) for each aquatic feature (API) in each Ecotype affected by the Project;
- characterization of affected habitat within each ecotype into homogenous habitat patches;
- the determination of each habitat class in each aquatic feature, based on species guilds and life cycle stages;
- the assignment of HSI values for each of the species or guilds present;
- the calculation of the Weighted Useable Area for each Ecotype Habitat unit; and
- the application of productive capacity index (CPI) to each API within each Ecotype sum all WUA values of aquatic features affected by the Project by Ecotype and sum these to determine total habitat losses (HADD) due to the Project.
- Same steps used to estimate habitat gains to offset losses to produce final balance sheet

Summary of Habitat Accounting Procedure

- Procedure and spreadsheet model builds upon existing, proven approaches for other EA's (Meliadine) and supported by DFO
- Substantial improvements made based on peer review by Dr. Minns
- Results strengthened by use of fish guilds, standardized habitat units, species weighting based on ecological criteria, habitat weighting based on productive capacity indexing
- Still allows for Habitat Suitability scoring using all field data
- Allows for a more objective comparison of habitat losses/gains and evaluation of compensation opportunities
- Provide compensation on a 1:1 basis; 2:1 if significant lag time exists between loss and compensation

Worked Examples

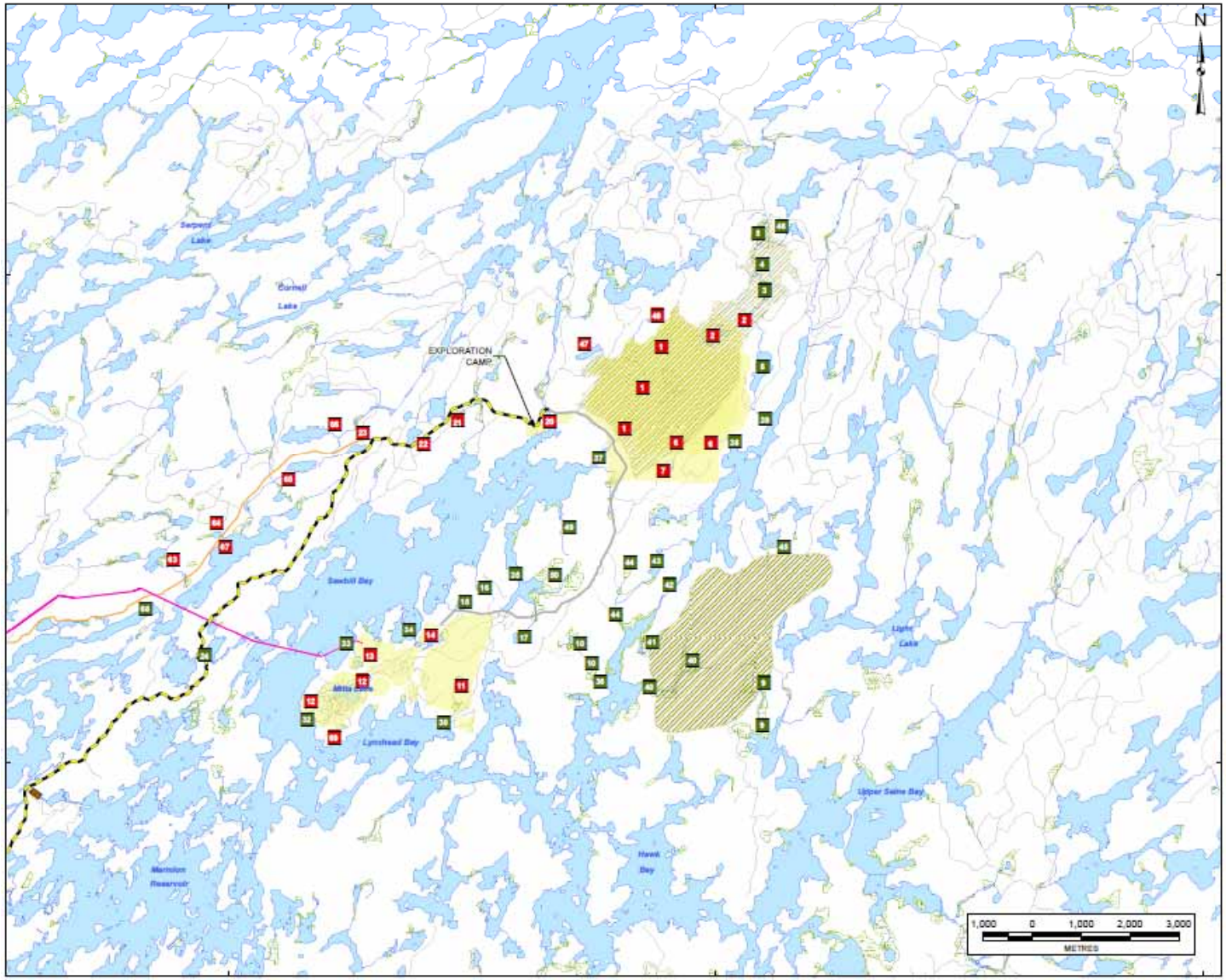
Key point here is that the purpose of the model is to provide a tool for developing a NNLP

Mitta Lake and API # 2

Total Area	Available Habitat Area (HA)	Number of Species Present	Total Weighted Useable Area (WUA)	Ecotype Weighted Useable Area (EWUA)
API # 12 122,000 m^2				
Littoral	17,567 m^2	8	1,145 m^2	1,145 m^2
Open Water	99,548 m^2	8	6,491 m^2	6,491 m^2
API # 2 117,000 m^2				
Littoral	97,782 m^2	5	10,322 m^2	10,322 m^2
Open Water	24,446 m^2	5	1,957 m^2	1,957 m^2
Total			19,915 m^2	

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APIs Potentially Impacted



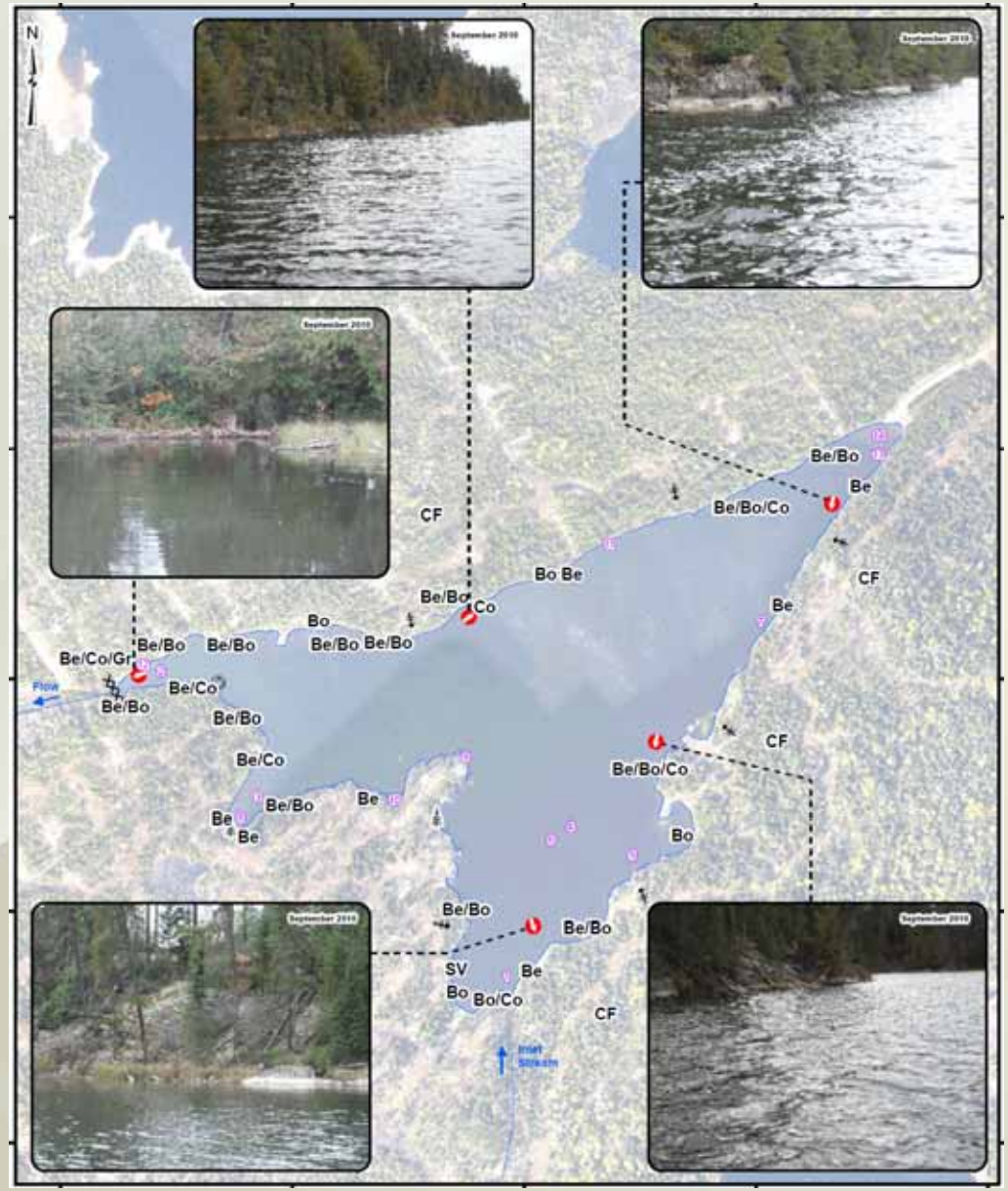
LEGEND

- API's Potentially Impacted by the Project
- API's Not Impacted by the Project

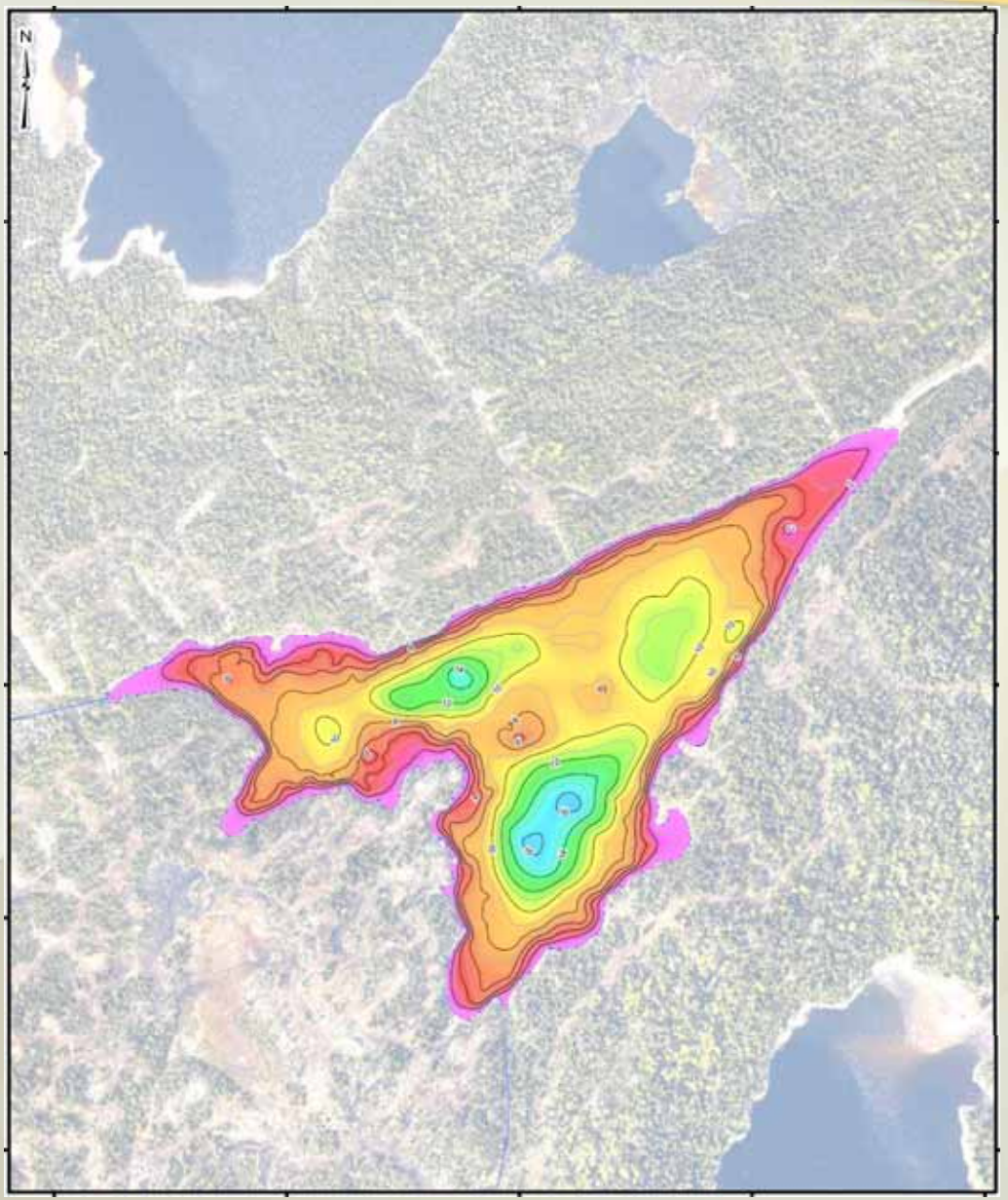
Mitta Lake and API # 2

The key differences between API #12 and API #2 that contribute to the habitat scores are as follows:

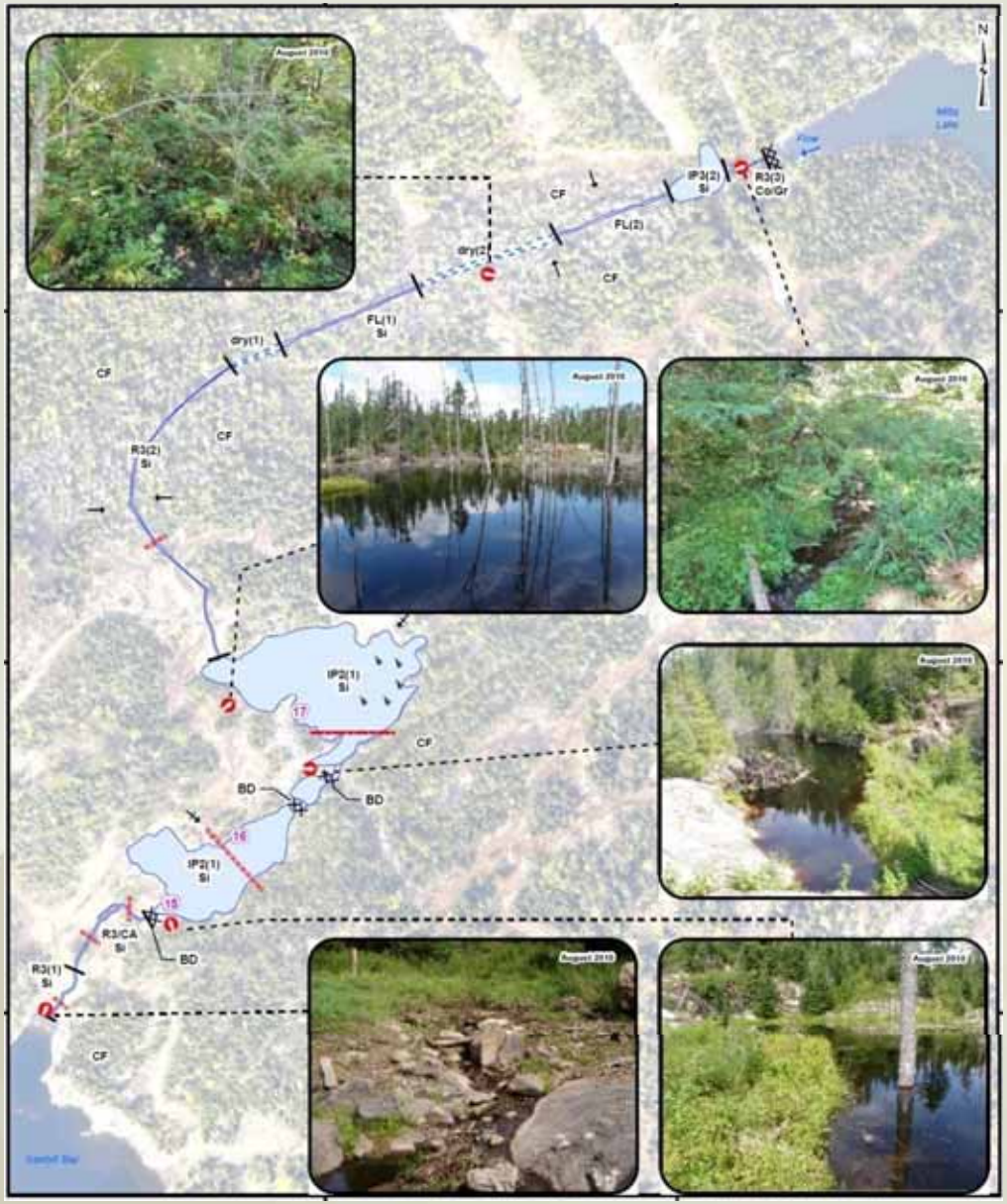
- API #2 has a much larger littoral Habitat Unit than API #2; and a much smaller open water habitat patch.
- API #2 has fewer species, however more predators and sports fish present than API #12.
- The productive capacity index for lake ecotypes is 1; therefore, there is no difference between the WUA and the EWUA.
- The destruction of Mitta Lake results in the loss of 1,145 m^2 of littoral habitat and 6,491 m^2 of open water habitat, compared to the loss of 10,322 m^2 of littoral habitat and 1,957 m^2 of open water habitat for API #2, even though they have similar total areas.


N
CF
Be/Bo
Be
Be/Bo/Co
CF
Bo Be
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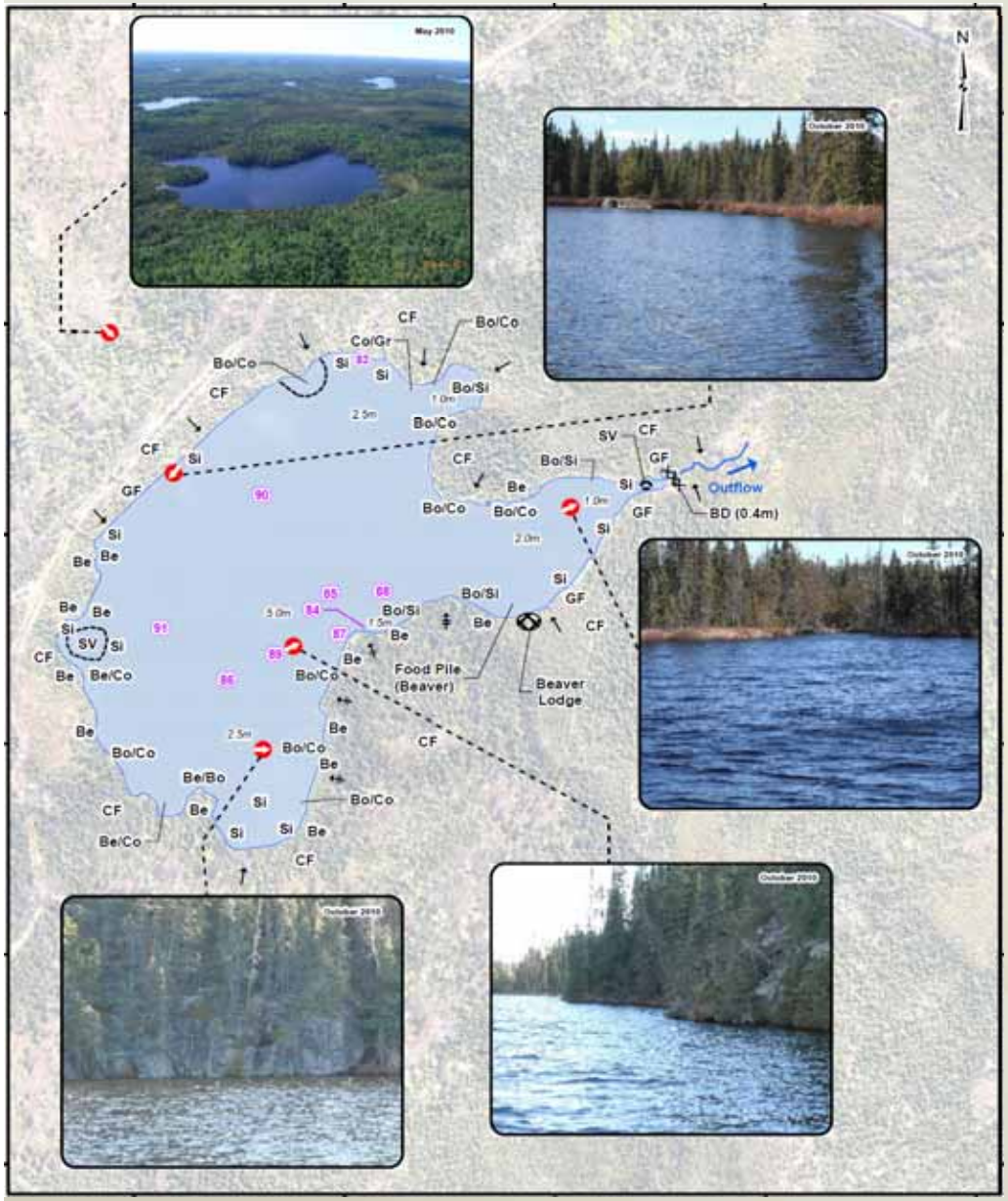
Mitta Lake



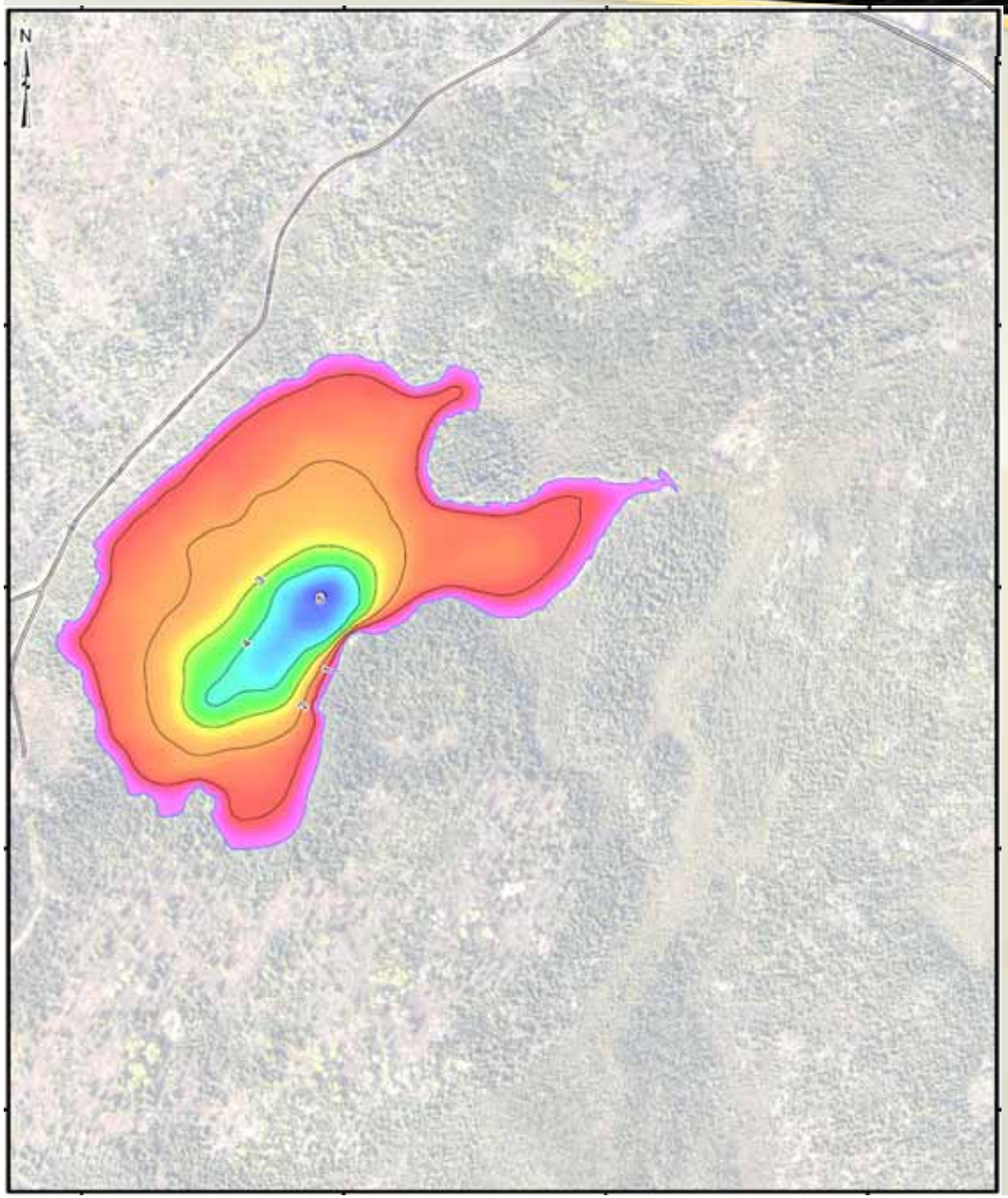
Mitta Lake


N
IP3(2)
Si
R3(3)
Co/Gr
CF
FL(2)
dry(2)
CF
FL(1)
Si
dry(1)
CF
CF
R3(2)
Si
IP2(1)
Si
17
CF
BD
BD
16
IP2(1)
Si
15
R3/CA
Si
BD
R3(1)
Si
CF

Mitta Lake



API # 2



API # 2

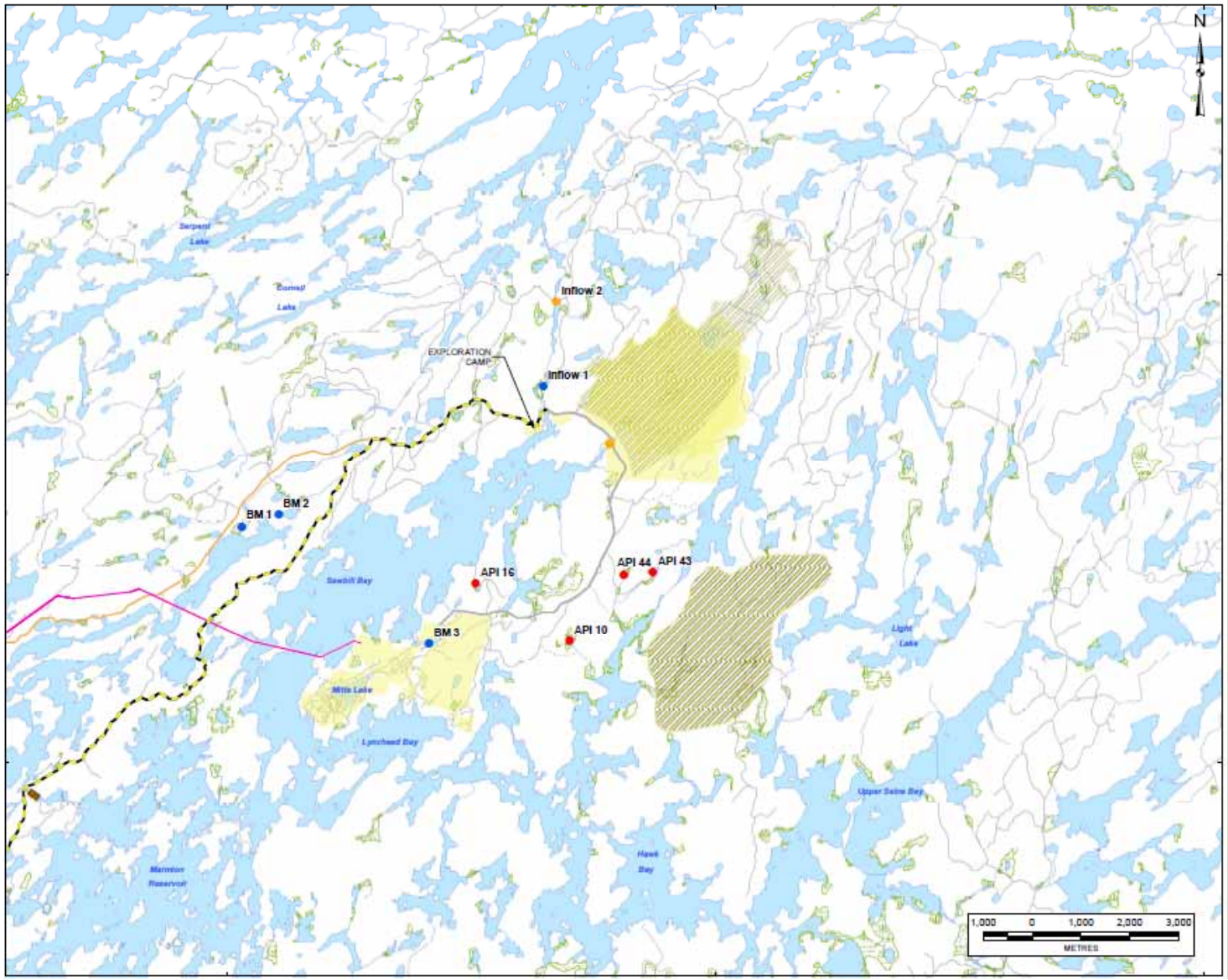
Habitat Compensation Opportunities

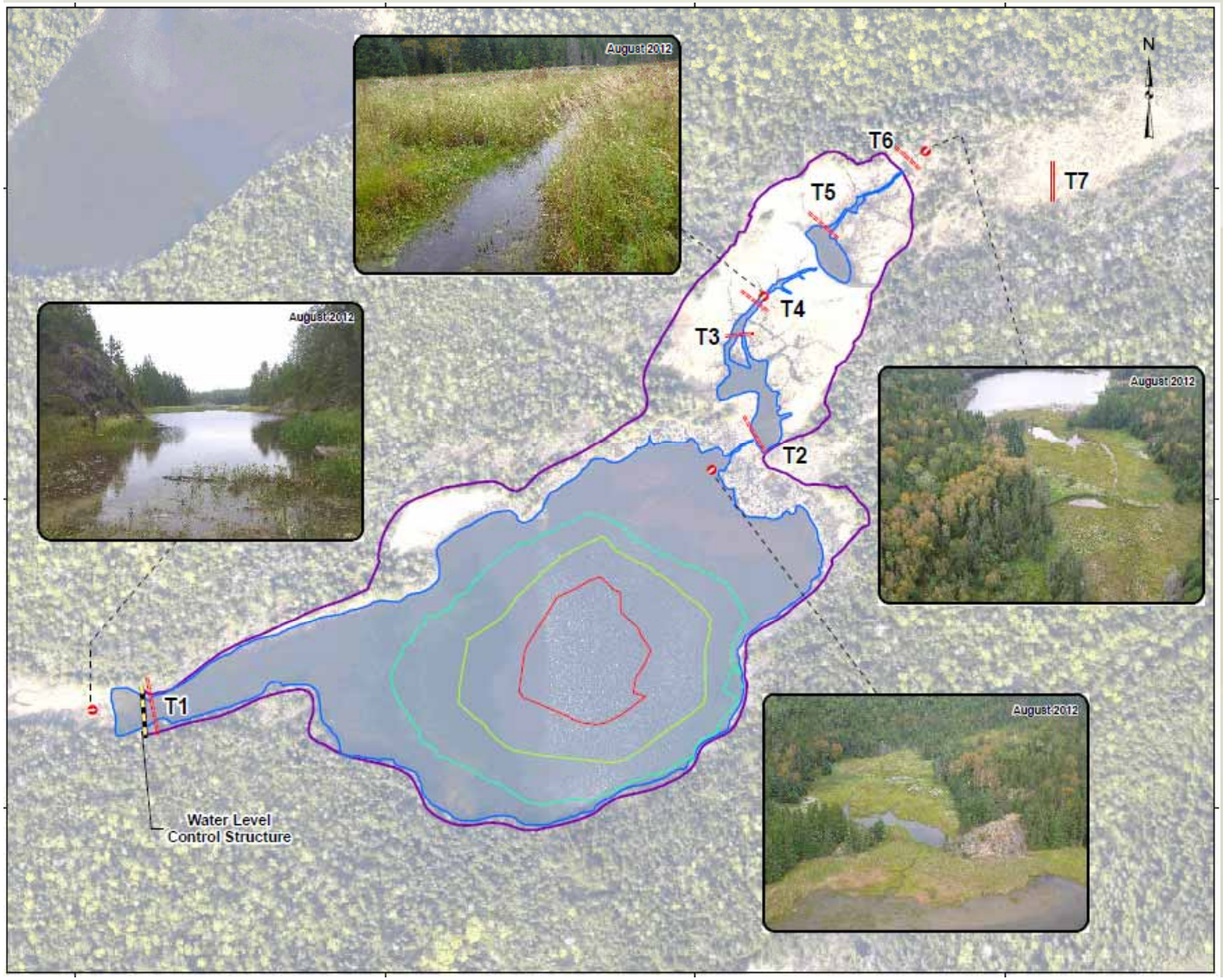
Total Area	Available Habitat Area (HA)	Number of Species Present	Total Weighted Useable Area (WUA)	Ecotype Weighted Useable Area (EWUA)
API # 10 13,881 m^2				
Littoral	6763 m^2	7	936 m^2	936 m^2
Open Water	7118 m^2	7	537 m^2	537 m^2
API # 16 6,142 m^2				
Littoral	5032 m^2	7	696 m^2	696 m^2
Open Water	1109 m^2	7	84 m^2	84 m^2
API # 44 8,039 m^2				
Littoral	3652 m^2	7	505 m^2	505 m^2
Open Water	4387 m^2	7	331 m^2	331 m^2
API # 43 28,954 m^2				
Littoral	13826 m^2	7	1,913 m^2	1,913 m^2
Open Water	15125 m^2	7	1,140 m^2	1,140 m^2
API # 14 33,163 m^2				
Littoral	17263 m^2	7	2,389 m^2	2,389 m^2
Open Water	15900 m^2	7	1,198 m^2	1,198 m^2
BM #2 75,125				
Littoral	38,120 m^2	7	5,275 m^2	5,275 m^2
Open Water	37,000 m^2	7	2789 m^2	2789 m^2
BM # 1 48,176				
Littoral	24,176 m^2	7	3,345 m^2	3,345 m^2
Open Water	24,000 m^2	7	1,809 m^2	1,809 m^2
Total			22,947 m^2	

Habitat Compensation Opportunities (Onsite)

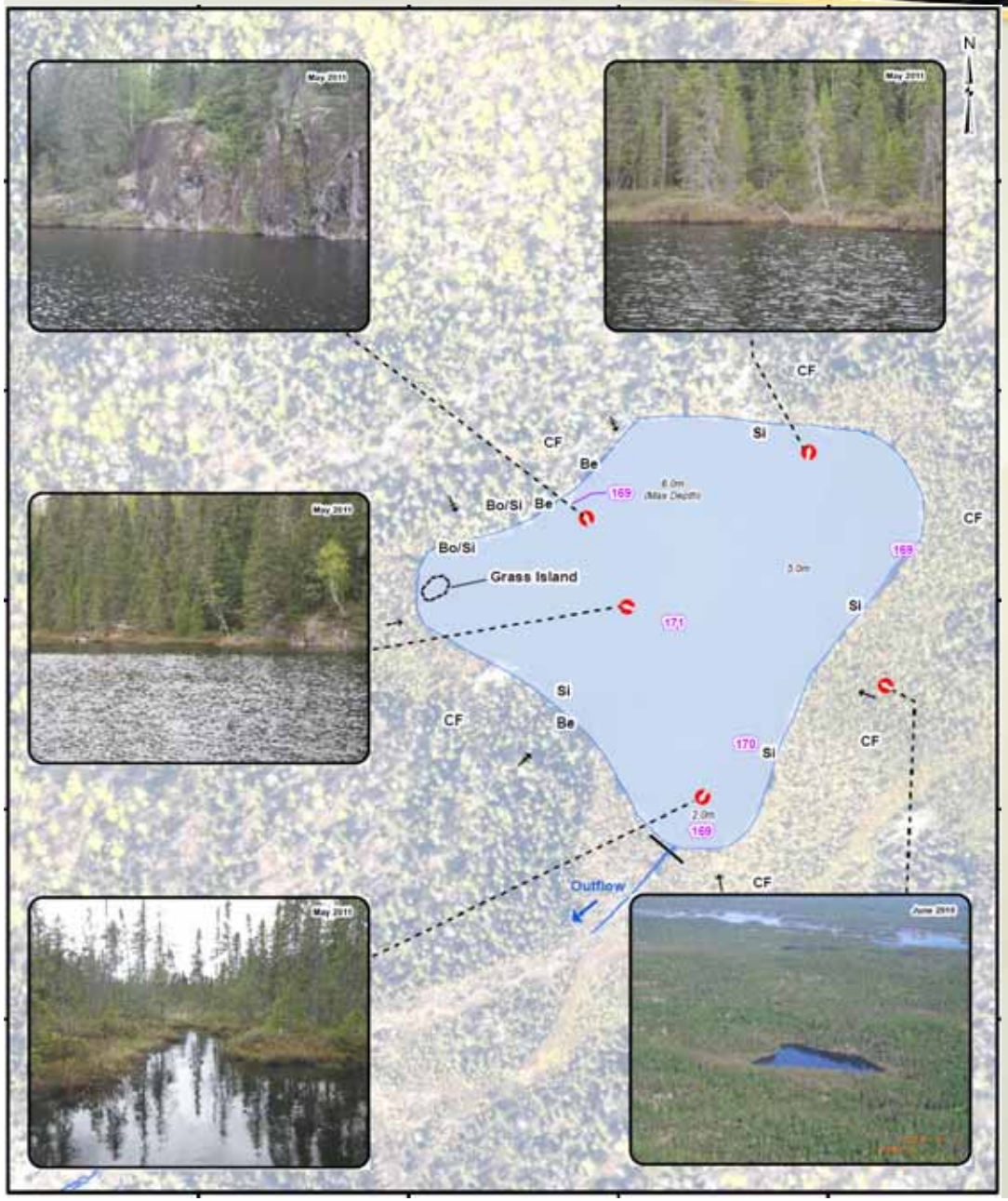
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Habitat Compensation Examples



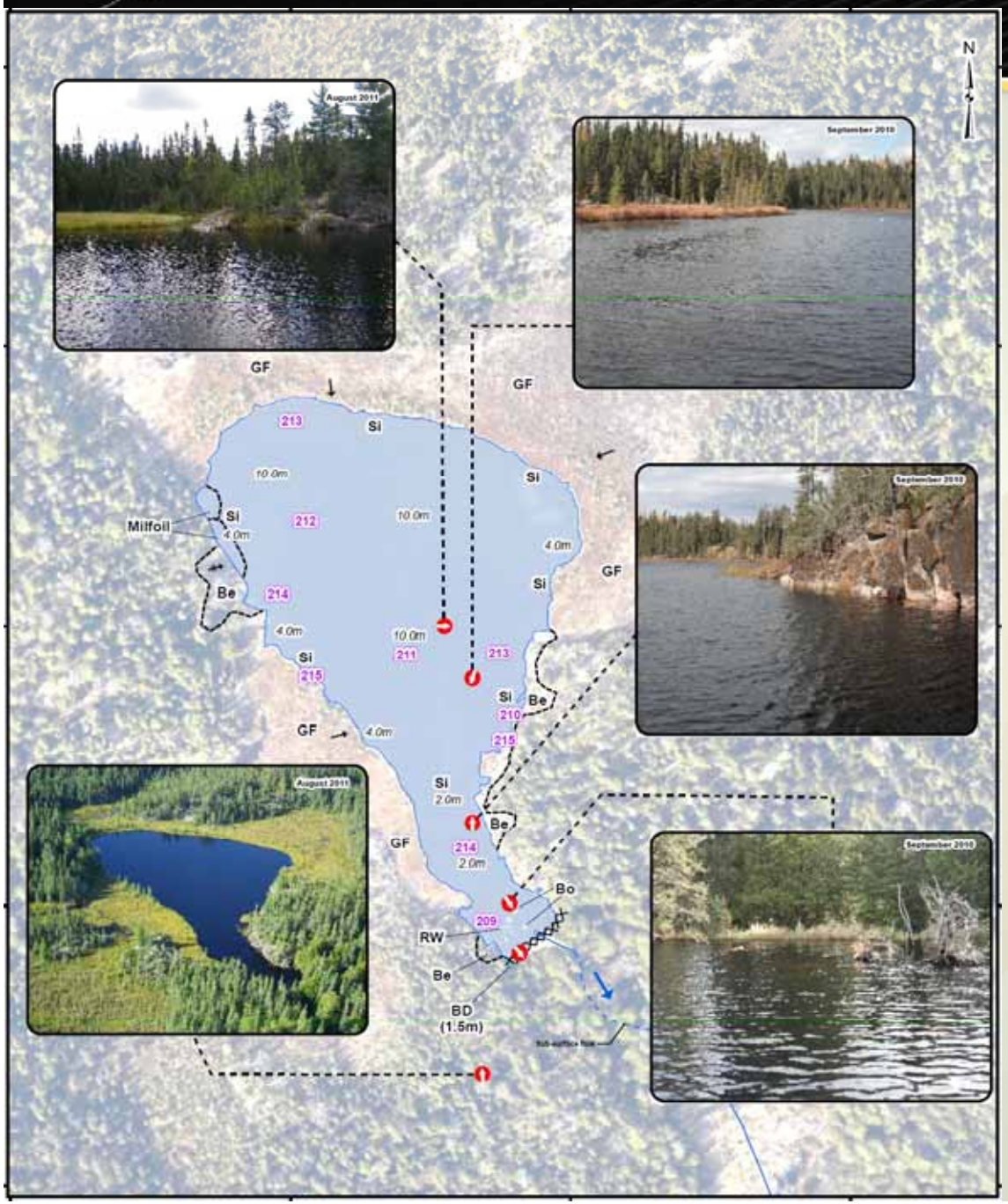

August 2012
August 2012
August 2012
August 2012
N
T1
T2
T3
T4
T5
T6
T7
Water Level
Control Structure

BM # 2


N
CF
Si
Be
Bo/Si
169
Grass Island
171
170
Outflow
2.0m
5.0m
6.0m
(Max Depth)

API # 43

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API # 10

Other Compensation Opportunities

- Stream Crossings
  - Remove barriers
  - Remediate existing culverts
  - Increase channel length
  - Post closure opportunities
- Offsite
  - Steep Rock
  - Others?

Fisheries Act Changes

Fisheries Act Changes

- Does the definition of the term “serious harm to fish” include the destruction of fish habitat?
- Does the definition of fish habitat still include waters upon which fish directly and indirectly depend…
- Does the definition of commercial, recreational and aboriginal fishery, include the fish that support them – what does this mean
- Does the term fishery refer only to the fish or to the waterbody or tract of land in which the fish are located
- Does the definition of commercial, recreational and aboriginal fishery include only licenced fisheries? If not then what?
- What is a commercial fishery?

Fisheries Act Changes

Infrastructure Feature	Aquatic API	Description	Commercial, Recreational or Aboriginal Fisheries?	Will require fish salvage and habitat compensation
Open Pit	■ Mitta Lake (API#12) and its outlet stream	■ 171,115 m^2 lake; approximately 840 m of stream; empties into Sawbill Bay; supports common white sucker (*Catostomus commersoni)*, ninespine stickleback (*Pungitius pungitius)*, fathead minnow (*Pimephales promelas)*, Iowa darter (*Etheostoma exile)*, mottled sculpin (*Cottus bairdi*)and finescale dace (*Chrosomus neogaeus)*.	■ Recreational? ■ Commercial? ■ Aboriginal?	■ Yes/No?
	■ API #14	■ Upper portions of approximately 846 m stream; empties into Sawbill Bay; supports finescale dace, northern redbelly dace (*Chrosomus eos)*, fathead minnow; juvenile common white sucker captured in lower reach.	■ ?	■ ?
	■ API #69	■ 9,871 m^2 pond; supports finescale dace and northern redbelly dace	■ ?	■ ?
Mine Water Spill Emergency Pond	■ API#13	■ 19,375 m^2 headwater pond; approximately 160 m of stream consisting of beaver impoundments; both pond and stream are fishless. Empties into Lynxhead Bay.	■ N/A?	■ N/A?
Overburden Stockpile	■ No APIs			
Waste rock Stockpile	■ API#11	■ 26,748m^2 head water pond; approximately 840 m of stream including several beaver impoundments; empties into Lynxhead Bay; supports finescale dace, northern redbelly dace, fathead minnow.	■ ?	■ ?
Process Facility	■ No APIs			

DRAFT

Fisheries Act Changes

Infrastructure Feature	Aquatic API	Description	Commercial, Recreational or Aboriginal Fisheries?	Will require fish salvage and habitat compensation
Tailings Management Facility	■ API #47	■ Approximately 483 m of stream including two beaver impoundments; supports finescale dace and pearl dace (*Semotilus margarita*).	■ Recreational? ■ Commercial? ■ Aboriginal?	■ Yes/No?
	■ API #48	■ Approximately 610 m of ephemeral/seasonal stream and several beaver ponds; no hydraulic connection to downstream aquatic features. Finescale dace captured in one of the beaver ponds	■ N/A?	■ N/A?
	■ API #1	■ Approximately 2,334 m of stream, including five beaver impoundments; empties into Sawbill Bay; upper sections support finescale dace and fathead minnows; juvenile and young-of-the-year (YOY) common white suckers captured in lower sections.	■ ?	■ ?
	■ API#7	■ 10,319 m^2 headwater pond; partially infilled; fishless; connected to API #6 by a series of small beaver ponds.	■ N/A?	■ ?
	■ API#6	■ 5,572 m^2 pond and ephemeral stream; empties into Lizard Lake; pond and ephemeral stream are fishless; juvenile northern pike (*Esox lucius*) and common white sucker, and lowa dater captured in lower segment of stream.	■ Upper Segment? ■ Lower Segment?	■ N/A? ■ ?
	■ API#2	■ 122,228 m^2 lake and upper 200 m of stream; supports pumpkinseed (*Lepomis gibbosus*), northern pike, yellow perch (*Perca flavescens*), common white sucker, blacknose shiner (*Notropis heterolepis*).	■ ?	■ ?

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Fish Rescue/Salvage

Mitta Lake Fish Salvage Plan

- Water transfer to Sawbill Bay
- Preliminary water quality conditions indicate Mitta Lake and Sawbill Bay very similar
- Over 1 million cubic metres of water
- Preliminary estimates suggest dewatering schedule between 1.5 – 6 months
- Regular monitoring of sediment; use of process water storage pond as temporary sediment control
- Screening of pump intakes to preclude fish

Mitta Lake Fish Salvage Plan

- DFO General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut (2011) – reviewed
- Determine involvement of Aboriginal Groups in Fish Salvage
- General process:
  - Obtain necessary approvals from MNR/DFO for relocation of fish
  - Relocation site to be the fishless lakes
  - Fish collection, handling, transfer protocols
  - Timing of drawdown to avoid temperature extremes
  - Drawdown process:
    - Phase 1: drawdown until lake separates into 3 pools – net each pool; monitor for stranded fish
    - Phase 2: excavate/siphon to link pools and empty 2 pools – net pools
    - Phase 3: empty final pool – complete final fishout
  - Disposal of dead fish

Fish Salvage Rescue during Construction

- 30 month construction period
- Determine involvement of Aboriginal Groups in Fish Salvage
- Follow Mitta Lake protocol for lakes
- For other water bodies:
  - Ponded waterbodies:
    - Breach and slowly drain
    - Capture and relocate fish
  - Channel features with permanent flow:
    - Drain/dam upstream ponds first
    - Walk the feature, removing fish
    - Relocate fish

Wrap Up

Handout for Session on Fisheries Act

New Proposed Wording:

Serious harm to fish : (2) For the purposes of this Act, serious harm to fish is the death of fish or any permanent alteration to, or destruction of, fish habitat.

35. (1) No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery.

37. (1) If a person carries on or proposes to carry on any work, undertaking or activity that results or is likely to result in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery, or in the deposit of a deleterious substance in water frequented by fish or in any place under any conditions where that deleterious substance or any other deleterious substance that results from the deposit of that deleterious substance may enter any such waters, the person shall, on the request of the Minister — or without request in the manner and circumstances prescribed by regulations made under paragraph (3)(*a*) — provide the Minister with any plans, specifications, studies, procedures, schedules, analyses, samples, evaluations and other information relating to the work, undertaking or activity, or to the water, place or fish habitat that is or is likely to be affected by the work, undertaking or activity, that will enable the Minister to determine (*a*) whether the work, undertaking or activity results or is likely to result in any serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery, that constitutes or would constitute an offence under subsection 40 (1) and what measures, if any, would prevent that result or mitigate its effects; or (*b*) whether there is or is likely to be a deposit of a deleterious substance by reason of the work, undertaking or activity that constitutes or would constitute an offence under subsection 40(2) and what measures, if any, would prevent that deposit or mitigate its effects.

Ecologically significant areas
(1.1) If a person proposes to carry on any work, undertaking or activity in any ecologically significant area, the person shall, on the request of the minister — or without request in the manner and circumstances prescribed by regulations made under paragraph (3)(*a*) — provide the Minister with any prescribed material and other information relating to the work, undertaking or activity, or to the water, place or fish habitat that is or is likely to be affected by the work, undertaking or activity.

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Current Wording

35. (1) No person shall carry on any work, undertaking or activity that results in the harmful alteration or disruption, or the destruction, of fish habitat.

37. (1) If a person carries on or proposes to carry on any work, undertaking or activity that results or is likely to result in the alteration, disruption or destruction of fish habitat, or in the deposit of a deleterious substance in water frequented by fish or in any place under any conditions where that deleterious substance or any other deleterious substance that results from the deposit of that deleterious substance may enter any such waters, the person shall, on the request of the Minister — or without request in the manner and circumstances prescribed by regulations made under paragraph (3)(*a*) — provide the Minister with any plans, specifications, studies, procedures, schedules, analyses, samples, evaluations and other information relating to the work, undertaking or activity, or to the water, place or fish habitat that is or is likely to be affected by the work, undertaking or activity, that will enable the Minister to determine (*a*) whether the work, undertaking or activity results or is likely to result in any alteration, disruption or destruction of fish habitat that constitutes or would constitute an offence under subsection 40(1) and what measures, if any, would prevent that result or mitigate its effects; or (*b*) whether there is or is likely to be a deposit of a deleterious substance by reason of the work, undertaking or activity that constitutes or would constitute an offence under subsection 40(2) and what measures, if any, would prevent that deposit or mitigate its effects.

Extra Slides

BASELINE STUDIES – Characterizing Existing Environment

Physical Components

- Geology and Geochemistry
- Atmospheric and Acoustic
- Surface Water and Sediment Quality
- Surface Water Quantity (Hydrology)
- Groundwater Quality and Quantity (Hydrogeology)

Biological Components

- Vegetation and Wildlife
- **Fish and Fish Habitat**

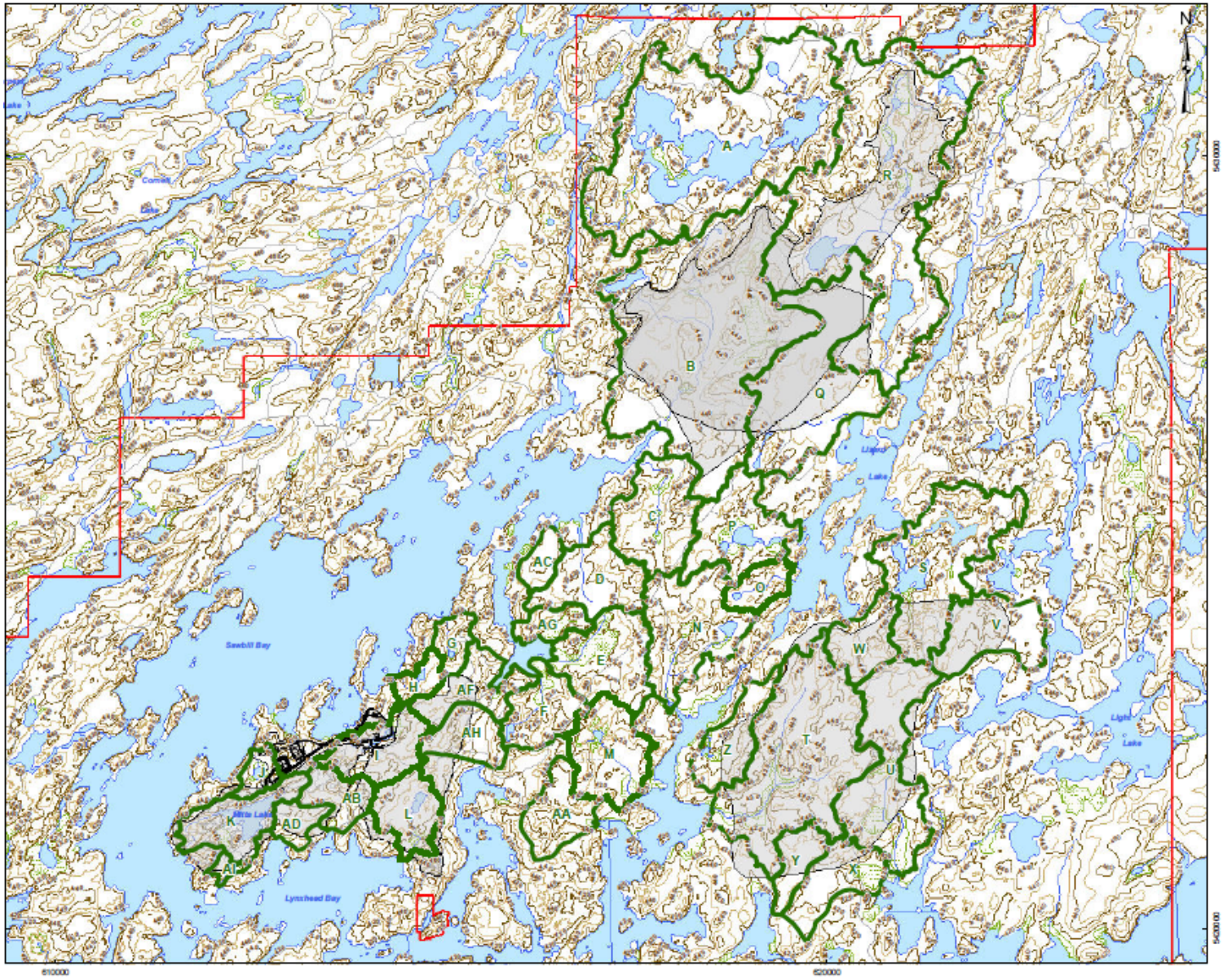
Social Components

- Socio-Economics
- Cultural Heritage
- Aboriginal Land Use

Federal EIS Guidelines and Provincial ToR set out requirements for what type of existing information must be presented in the EA Report.

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LEGEND

- Trail
- Road
- Contour - 20m Interval
- Contour - 10m Interval
- River/Stream
- Lake
- Wetland
- Site Watershed Boundary
- Project Facilities
- Project Location

WATERSHED AREAS

Name	Area (ha)
A	590.00
AA	73.34
AB	51.99
AC	29.24
AD	29.91
AF	77.52
AG	34.18
AH	60.02
AI	10.17
B	609.82
C	134.96
D	104.31
E	122.80
F	78.00
G	30.53
H	27.27
I	85.24
J	25.56
K	89.03
L	70.53
M	111.72
N	158.55
O	38.75
P	124.90
Q	272.96
R	623.45
S	230.85
T	336.68
U	200.68
V	106.27
W	66.90
X	82.32
Y	45.66
Z	74.75

DRAFT

REFERENCE

Base Data - Provided by OSISKO Hammond Reef Gold Project Ltd.
Base Data - MNR NRVIS, obtained 2004, CANMAP v2006.4
Produced by Golder Associates Ltd under licence from
Ontario Ministry of Natural Resources, © Queens Printer 2006
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 15N

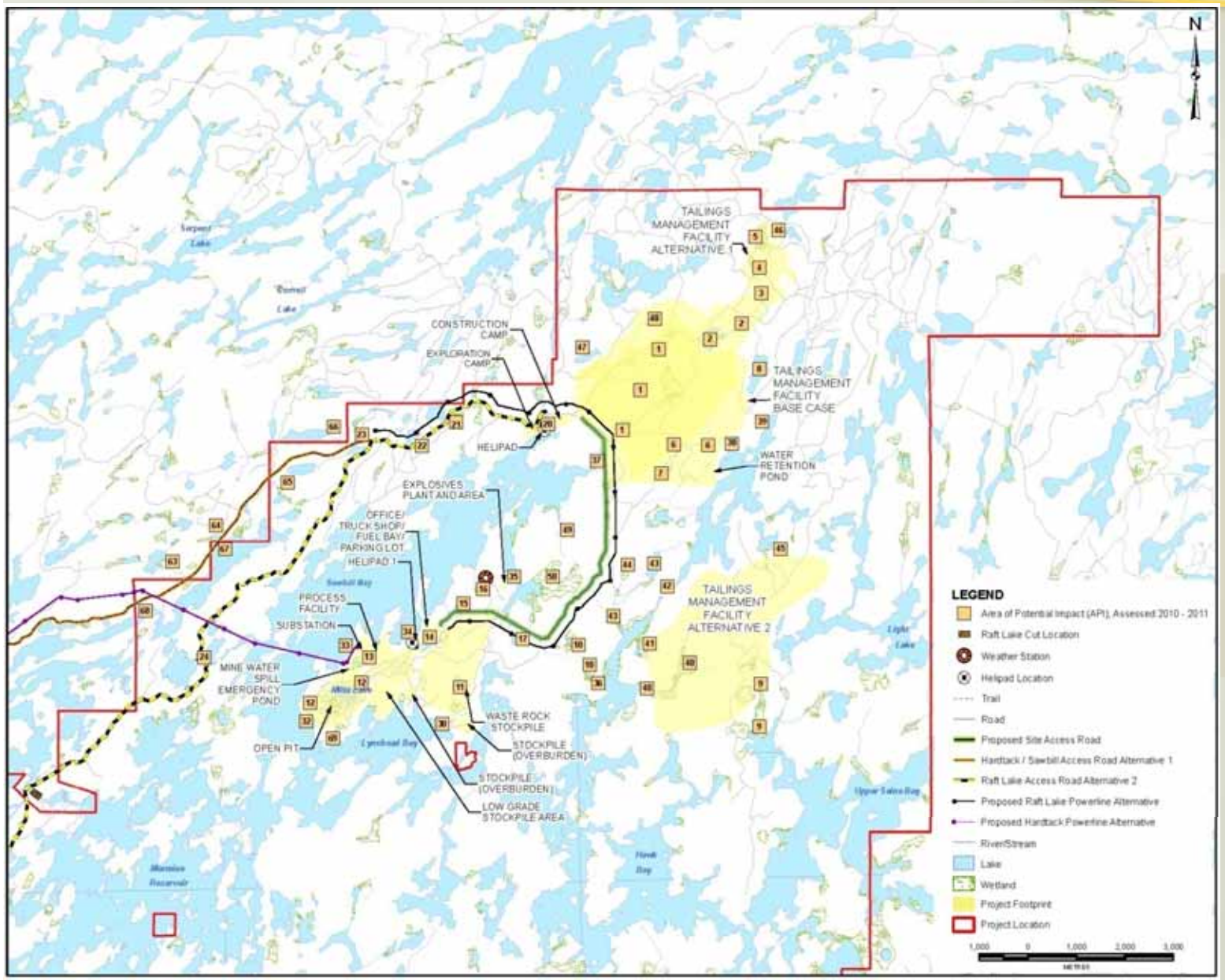
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SCALE METRES

PROJECT
HAMMOND REEF GOLD PROJECT
ATIKOKAN, ONTARIO, CANADA

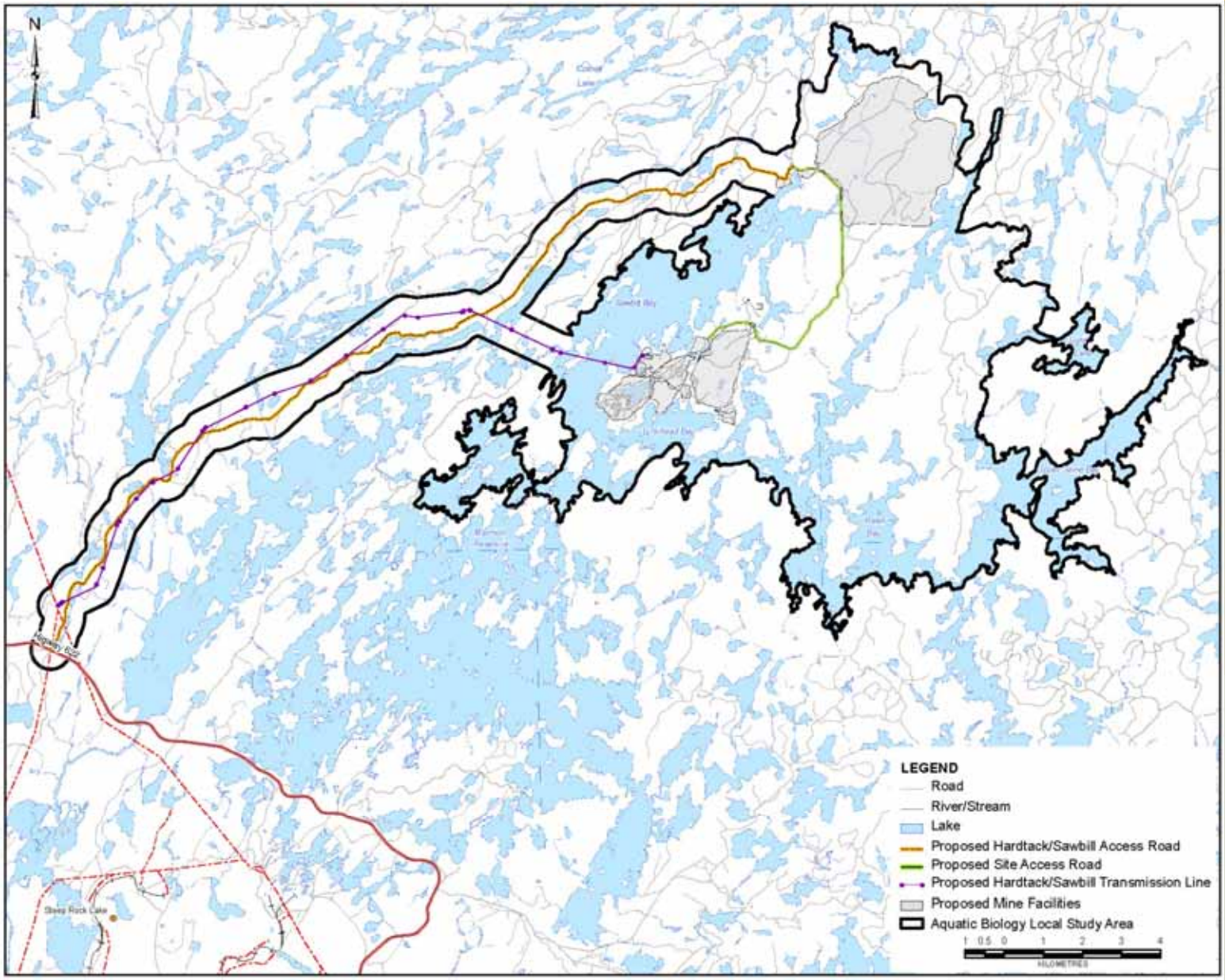
TITLE
SITE WATERSHED BOUNDARIES

Golder Associates Mississauga, Ontario

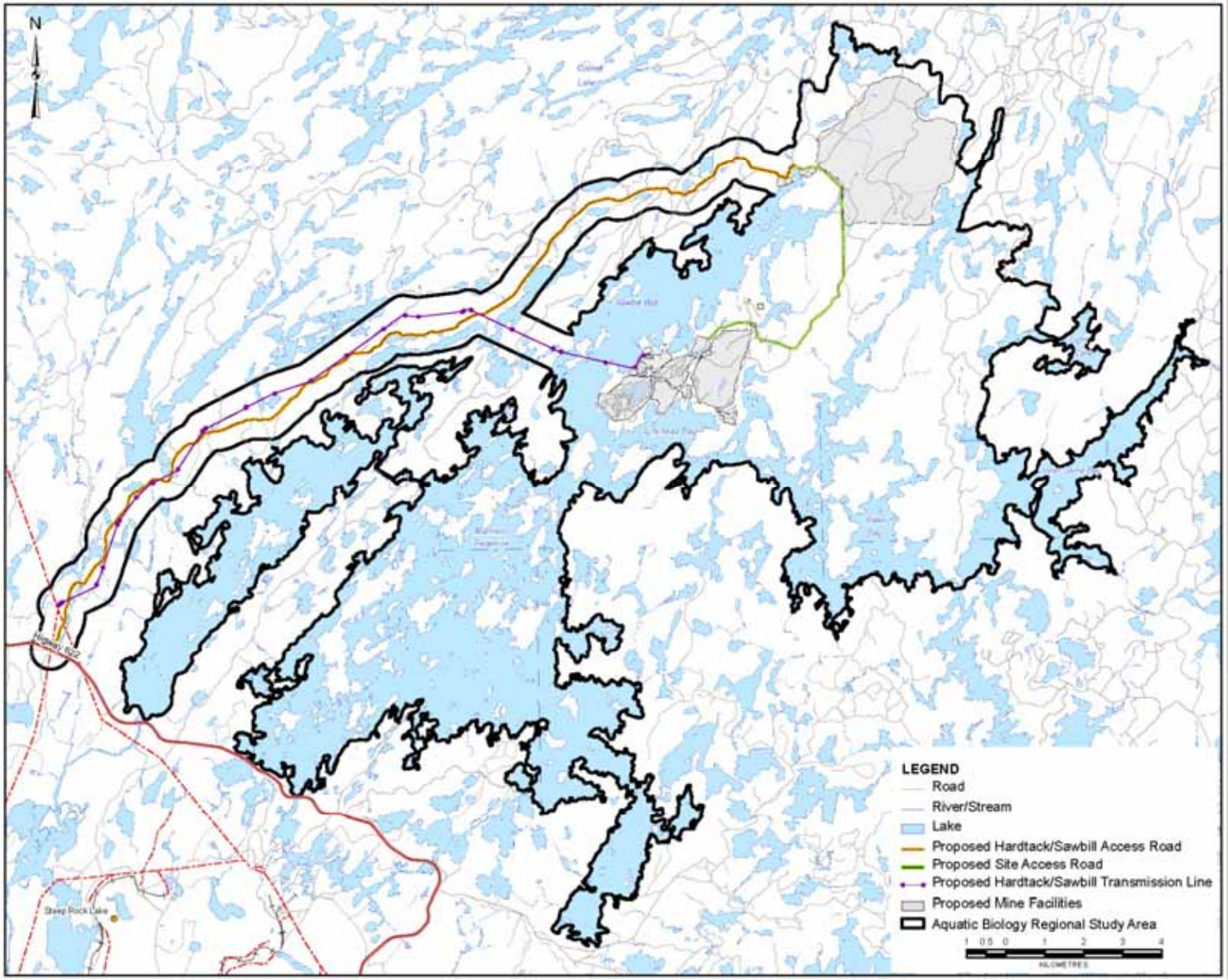
PROJECT NO. 10-1118-0020			SCALE AS SHOWN REV. 2.0
DESIGN	GSE	14 Nov 2008	
GIS	RRD	Mar 2012	FIGURE: 3
CHECK	JD	Mar 2012	
REVIEW	JR	Mar 2012	



Mine Site and Footprint



Local Study Area



Regional Study Area

From: Alexandra Drapack
Sent: February 25, 2013 1:49 PM
To: Ward, Neville; Jackson, Brian (MNR); Seyler, John; Hindley, Brian
Cc: Cathryn Moffett
Subject: FW: Osisko Compensation Plan(s)

Follow Up Flag: Follow up
Flag Status: Flagged

Neville/Brian/John/Brian,

Last week I had a series of consultation events to provide an overview of the DRAFT EIS/EA report to:

- The Town of Atikokan (Feb. 20)
- Fort Frances Chiefs Secretariat (Feb. 21)
- Osisko's Resource Sharing Committees (Feb. 22)
- The Métis Nation of Ontario (Feb. 23)

At each of these meetings, when I was presenting the Aquatics overview, I mentioned the options of on-site and off-site compensation. I stressed that if they were interested in the option of remediation of Steep Rock as an off-site alternative for the OHRG fish compensation (offsets), I would like to have formal letters to support the alternative.

I was VERY surprised that there was mixed acceptance for the off-site alternative. People appeared to be either passionately "for" the remediation of Steep Rock as an alternative or strongly "against" this option.

The Chiefs are interested in off-site alternatives but wanted to have different ones tabled, including the reintroduction and/or increase in number of sturgeon.

I am going on vacation March 1-17.

I think we should have a teleconference to discuss. I think Neville is out of the office until March 1.

I intend to set up a teleconference for the week of March 18 to further discuss. Please let me know if you need further information prior to my departure on Thursday.

Thanks
Alix

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From: Seyler, John
Sent: Wednesday, February 06, 2013 4:48 PM
To: Hindley, Brian

Cc: Parker, Steven
Subject: RE: Osisko Compensation Plan(s)

Just got off the phone with Neville Ward and he is pretty sure that Osisko will still be required to submit 2 compensation plans, 1 for non-MMER HADDs and 1 in support of Scheduling process. He is still looking for letters of support from the Town of Atikokan and from FN communities, reflecting their wishes to get the Steep Rock Mine 'cleaned up'. He wants to use these as ammunition with his Snr managers for consideration of the Steep Rock option as an offset. Awaiting same kind of letter from Atikokan MNR. Maybe you can remind Alix to get these letters. I think the sooner, the better.

We won't know who the new case worker for Osisko comp plan is going to be until the new DFO org. chart is revealed. Unfortunately Neville thinks this may not be until March. DFO is a mess right now with folks running for the door rather then get reassigned. Neville is the only warm body left in T-Bay office…and only until June.

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MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
FISH COMPENSATION DISCUSSION
MARCH 19 – 3:00PM – 4:30PM
TELECONFERENCE

Attendees:

Osisko:	Alix Drapack
Golder:	Brian Hindley, John Seyler
Government Review Team:	Neville Ward (DFO), Brian Jackson (MNR)

MEETING MINUTES

Osisko Update on off-site compensation received during the Feb. 20-26 meetings with stakeholders:

- Osisko highlighted that at the meetings with the Town of Atikokan and the FFCS, there was reluctance to provide letters of support for reclamation projects related to the Steep Rock Mine Site as an off-site alternative for fish compensation for the OHRG project.
- The FFCS indicated that they were opposed to letters of credit going toward Steep Rock and preferred that the money be directed to projects related to sturgeon.

MNR Provided the following update on the meeting with Town of Atikokan – March 18 2013:

- The Town wanted clarification on the reclamation projects related to the Steep Rock Mine Site as an off-site alternative for fish compensation for the OHRG project.
- MNR presented the on-site options and explained that some of the proposed on-site options were not as beneficial to improving the valued fishery in the region and that better opportunities exist through specific reclamation projects at the Steep Rock Mine site.
- MNR indicated that the Town asked “doesn’t MNR already have money to pay for reclamation of Steep Rock?”
- The Town asked “Will the money available from Osisko’s letters of credit to fix the problem at Steep Rock?” MNR responded that there will not be enough money in the letters of credit to reclaim the Steep Rock site but that the money would be helpful to start some projects at Steep Rock.
- The Town asked “If Osisko provides money in a letter of credit, does that mean if something else goes wrong (for example a spill that negatively affects water quality), will Osisko be “off the hook” because they have given the letter of credit? MNR explained that the letter of credit is to offset specific HADDs. The letter of credit only applies to the HADDs that are authorized.
- The Town said they would be willing to provide a letter of support.

Other Discussion:

- Osisko acknowledged that the letter of credit is to offset specific HADDs but also noted that the Agreement with MNR and the provision of the letter of credit will only be an option if Osisko is not liable in any way for the success of the reclamation works at Steep Rock Mine Site. MNR understands and acknowledges this condition.
- MNR sent a letter from the Resource Management Advisory Committee to DFO indicating that the off-site alternative at Steep Rock was preferred over some of the proposed on-site opportunities. Garry McKinnon is on the committee.



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Fish Compensation Options

- DFO reiterated that there will be a need for 2 NNLPs: 1) for MMER Schedule 2 waterbodies and 2) all other waterbodies that will be impacted. The MMER waterbodies will require a letter of credit.
- Sturgeon (suggestion made by FFCS) :
  - Is this realistic?
  - There aren't any sturgeon in the Upper Marmion Reservoir. Was the suggestion to expand the sturgeon habitat into the Upper Marmion?
  - There are some challenges related to the fact that sturgeon is listed as a SAR. They can't be touched without an ESA permit.
  - Rainy River First Nation has a sturgeon hatchery.
  - Sturgeon are present in lower Seine River below the first Hydro power dam and there is about 10 km of potential habitat between there and the second dam where they may exist/may have existed.
- On-site alternatives: fishless lakes and creation of littoral zones and shoals in the open pit. DFO and MNR need to know whether the fishless lakes can support fish. Osisko is doing some DO readings to determine if there are anoxic conditions in the winter. If the fishless lakes can support fish, this option can be part of the on-site compensation. DFO confirmed that pit lakes have been used in other NNLPs.
- If certain activities are required by MNDM in the closure plan, then Osisko does not get credit for those improvements because we have to do them anyway. There aren't any requirements for creating a littoral zone in the pits in the MNDM closure plan so if we create fish habitat upon closure, that can be considered an on-site offset.
- MNR noted that in addition to the MNDM closure plan, the ToR required a Rehabilitation Plan. The ToR makes no specific mention of any rehabilitation of the open pits, only reference to removal of facilities and revegation of areas.
- What would be the optimal ratio of on-site to off-site projects? DFO said that there is no optimal ratio – if we do the fishless lakes and Mitta Lake (open pit) – that would probably suffice.
- MNR asked if there are other on-site options being proposed. Golder indicated that there several options proposed in the Aquatics TSD – some relating to enhancing pike spawning and creating fish passage. Golder was also considering proposing the extension of rocky shoals into deeper water but MNR felt that they would be silted up all summer – not enough wave action.
- Other comments:
  - MNR indicated that walleye don't appear to be impacted by reservoir levels – spawning occurs in Lynxhead narrows and Island falls.
  - Bass is also robust and doesn't seem to be impacted by fluctuations in Marmion levels.
  - Focus on pike and lake whitefish. Pike density seems lower and lake whitefish spawning areas are likely affected by winter drawdown.
- The proposed on-site and off-site opportunities need to be ranked in order of valued fisheries.
- DFO commented that in considering specific Steep Rock projects, ones that create fish habitat in the long term are preferred to those that are based on improving water quality. For example, if by moving a pile of ARD material, littoral zone could be created when the pits fill, that would be good. MNR said that could be hard at this time because there are different approaches for reclamation of the Site that vary from the final site being at 386 masl to 402 masl.

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Next Steps

- Brian Jackson and Alix to meet with FFCS to clarify the reclamation projects related to the Steep Rock Mine Site as an off-site alternative for fish compensation for the OHRG project and to better understand the suggestion for improving sturgeon. Next meeting is April 15. Alix will arrange with Tammy Ryll. Golder to provide input as necessary into the presentation
- Golder will prepare a description of each on-site and off-site opportunities to be presented in a workshop with DFO and MNR during the week of April 15 (after the FFCS meeting). The goal of the workshop will be to rank the opportunities.
- Osisko to undertake DO monitoring of the fishless lakes
- Osisko will estimate a very preliminary ballpark of the estimated cost for fish compensation to MNR so that MNR can identify specific projects at the Steep Rock Site.

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MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
NO NET LOSS PLAN WORKSHOP
APRIL 16, 2013 – 10:30AM – 3:00PM
DFO BOARDROOM – THUNDER BAY ON

Attendees:

Osisko:	Alix Drapack.
Golder:	Brian Hindley.
DFO:	Neville Ward.
MNR:	Brian Jackson
CEAA/MOE/MNDM:	**Telconference:** Amy Liu, Michelle Whitmore, Pat Barnes.

Purpose of Meeting: To discuss and prioritize on-site and off-site offset projects for the OHRG project.

Objectives:

- Summarize changes to the Habitat Accounting/No Net Loss model
- Summarize habitat losses – 2 categories: MMER and other
- Present/discuss of projects developed as “onsite” compensation
- Prioritize of projects
- Discuss compensation ratio
- Discuss overall timing for approvals – MMER versus Fisheries Act Authorization
- Discuss off-site (Steep Rock) projects
- Discuss comments received on EIS/EA report from DFO and MNR (on fisheries)

Presentation Attached

Workshop Highlights

Q: Habitat Accounting Methodology: Has Ken Minns reviewed the revised version?

A: No. He reviewed the previous version and his comments were incorporated or the reason for not incorporating the comment was discussed with him. We are confident that the changes are consistent with his earlier review.

C: Gary Ash (Golder) is now part of the Golder team working on the OHRG No Net Loss Plan. He was involved in the Meliadine project and the NNLP which was submitted in January 2013

C: Referring to the worked example: The example is conservative in scoring. All life stages were considered.

Q: What are the two categories of habitat type?

A: Littoral zone and open water.

C: MMER is aimed at pollution prevention and refers to “fin fish” not commercial, recreational, aboriginal (CRA) fisheries. It hasn’t changed. The MMER is legal whereas the fisheries authorization is currently a policy. The new Fisheries Act will refer to “off-setting” and will be legal.

Slide 9: The total includes 0.8 ha of the area between the high and low water mark near Sawbill Bay.

Q: Where is the 0.8 ha area? How did you determine the area (what elevation)? Why do you need to do this? Why does it not include walleye in the habitat accounting?

A: Area was shown on map. It is needed to allow for drainage around the proposed processing plant, otherwise a 25 m retaining wall would be needed. This area does not represent walleye habitat.

Q: Regarding habitat loss at API #37: API #1 is physically lost. How do you compensate for downstream loss? How is the habitat loss addressed? Referring to Figure 16, how much habitat is lost in the spring?

A: the habitat lost is included in the calculations for direct habitat losses. The habitat lost in terms of stream habitat below the high water mark is also included down to the normal summer lake elevation.

C: Referring to Water Crossings:

MNR doesn't think OHRG should get credit for fixing badly installed water crossings that were created by Brett and upgrading during the road upgrades (i.e. perched culverts). However, if you will be replacing a legitimately functioning circular culvert with an arch (open bottomed) culvert and see an enhancement in fish habitat, that should count.

Slide 11:

C: Dissolved oxygen measurements are being taken this week on potential fishless lakes and other waterbodies in the area that have similar fish species to determine if there are differences between the waterbodies. MNR is not confident that the DO results will be very accurate at low dissolved oxygen concentrations.

Slide 12: This envisions building a 2m dam across to make a beaver meadow into a waterbody.

Slide 13: Pike spawning at elevation of 415. MNR would like to see a lake whitefish spawning shoal.

Slide 14: How will you get vegetation to grow? That is the largest problem.

A: The plan would be to transplant it from other habitat in the vicinity that will be removed by infrastructure.

DFO commented that it may not be possible for pike spawning but the habitat might be used by other fish. It may become full of minnows. You will need sedges growing there or vegetation that drys out. It could provide potential fish nursery habitat

Another option could be dredging in Snail Bay.

MNR comments that unless you can create a wetland that holds water with enough stream flow for pike to get up there, you might as well instead try to aim for wetland improvement.

Slide 18: Downstream of Lynxhead Narrows walleye spawning area.

DFO commented that it is hard to duplicate or replicate a spawning area. The advantage of adding cobbles is that it will be full of small fish which creates a feeding are for walleye. Rather

than aiming at creating or enhancing spawning areas, you might want to focus on creating a feeding area. The goal should be to enhance productivity of the fishery – don't worry specifically about creating pike spawning habitat.

With respect to the effluent discharge point: It can be tricky because the discharge can attract fish but people don't like to eat fish that have been in the area of effluent discharge.

Slide 19 – See p. 71 in Habitat Accounting Methodology

Have you checked how far walleye are getting up the creek? MNR feels that some of the existing barriers in Sawbill Bay may in fact be passable.

Slide 20 – Open Pits. In addition to the perimeter, there may be opportunities to enhance the saddle area between the 2 pits which will provide more area for littoral zone. The outflow channel from the pits is an opportunity for enhancing habitat as is the drainage cut from the TMF to Sawbill Bay. Have you considered adding a channel at an elevation that would allow back flow into the pits during flooding conditions to accelerate pit flooding?

Slide 24:

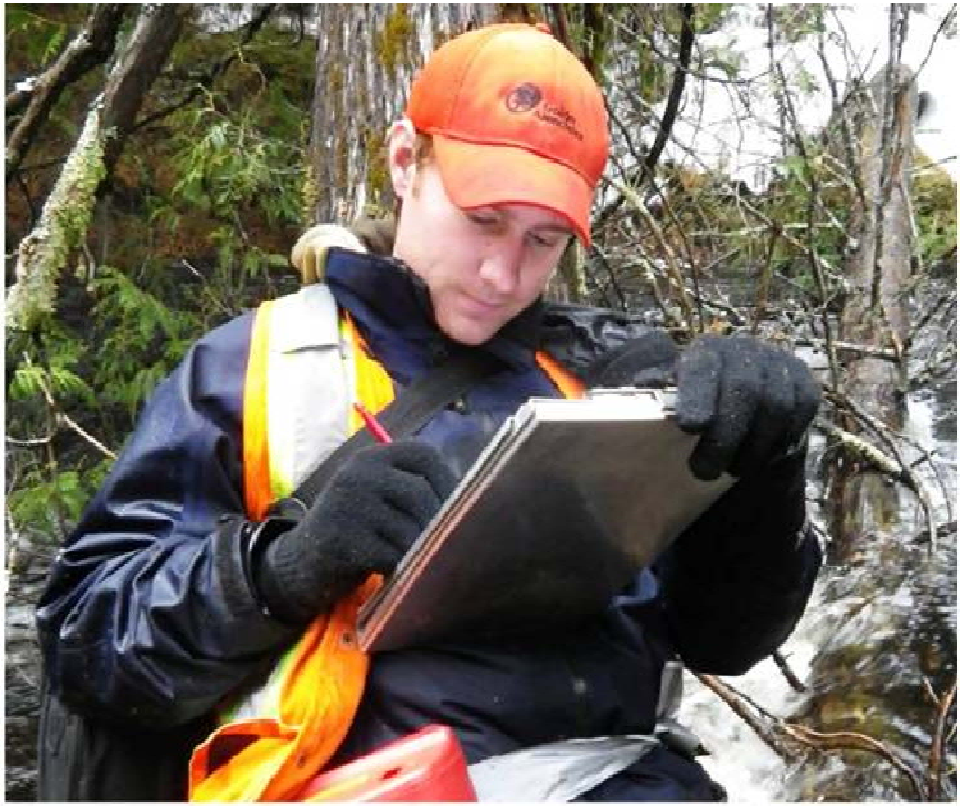
DFO's prioritization:

- Steep Rock – won't see benefit for many years into the future and there is a process to deal with the issue.
- DFO's hierarchy of projects would be to enhance productivity of Marmion and to focus on on-site projects by creating nursery habitat. The open pits are an opportunity to gain recreational fishery out of a water body that was historically a bait fish fishery. DFO like the idea of stocking the fishless lakes, if it is successful. DFO likes the idea of open bottom structures for water crossings.
- The fish compensation ratio will be more than 1:1 – due to dealing with the lag affect – possibly 1.5:1 or 2:1 will be required.
- DFO Fisheries Act authorizations have new time lines. With an approved NNLP, the authorization would take 60-90 days.
- Regarding the timelines, CEAA suggested looking at the Project Agreement (MPMO) – it has timelines for the regulatory phase.
- OHRG should be sending any letters of support to DFO & MNR. Likewise, OHRG Ltd. would like to be copied on any letters of support. MNR believes a letter was sent by the Resource Management Advisory Committe in November 2012 to DFO in support of the Steep Rock option.

Next Steps:

- Golder and MNR to further discuss specific projects that have been identified to move toward more detailed planning.
- Neville Ward – last day with DFO – June 3 2013.

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Agency Workshop # 6

April 15, 2013

Agenda

	AGENDA ITEM	TIME
1	Summarize changes to the Habitat Accounting/No Net Loss model	10:30am – 10:45am
2	Summary of habitat losses – 2 categories: MMER and other	10:45am - 11:00 am
3	Presentation/discussion of projects developed as “onsite” compensation	11:00 am – 12:00 pm
4	Prioritization of projects	12:00pm – 12:30pm
5	Discussion of compensation ratio	12:30 am – 12:45
6	Discussion on overall timing for approvals – MMER versus Fisheries Act Authorization	12:45pm – 1:00pm
7	Discussion of off-site (Steep Rock) projects	1:00pm – 1:15pm
8	Discussion of comments received on EIS/EA report from DFO and MNR (on fisheries)	1:15pm - 1:30pm

Model Changes

- Incorporated comments from:
  - October 22, 2012 meeting
  - Agency comments – DFO and MNR
- Included indirect effects
- More details on gear selection
- Added additional species, adjusted weighting
- Expanded section on worked example
- Added additional projects – Upper Marmion Lake
- Provided “factsheets” with more detail on projects
- Added discussion of pit lake restoration opportunities

Model Changes

- Species Weighting
  - Primary CRA species – Walleye, northern pike, smallmouth bass
    0.49
  - Secondary CRA species – baitfish (8 species)
    0.24
  - Secondary CRA species – lake whitefish, burbot, cisco, yellow perch
    0.11
  - Remaining species - 8 species
    0.16
  - Total
    1.00

Model Changes

Group	Species	Weighting
Group 1: Cold+A1-Lake: Non-Piscivore	lake whitefish	0.04
	cisco	0.04
Group 2: Cold+A1-Stream: Non-Piscivore	pearl dace	0.03
Group 3: Cold+A1-Stream: Piscivore	burbot	0.03
Group 4: Cold+B: Non-Piscivore	ninespine stickleback	0.013
	brook stickleback	0.013
	mottled sculpin	0.013
	finescale dace	0.03
	redbelly dace	0.03
	golden shiner	0.03
	longnose dace	0.013
	white sucker	0.03
	Iowa darter	0.013
	yellow perch	0.04
Group 6: Cool+A1: Piscivore	walleye	0.17
	northern pike	0.17
Group 7: Warm+B: Non-Piscivore	blacknose shiner	0.013
	emerald shiner	0.03
	spottail shiner	0.03
	central mudminnow	0.013
Group 8: Warm+B: Non-Piscivore	fathead minnow	0.03
	pumpkinseed	0.013
Group 9: Warm+B: Piscivore	smallmouth bass	0.17
Total		**1.00**

Worked Example

Mitta Lake – HSI ratings

Species	Habitat Type	Species Weight	Spawning	Nursery	Feeding	Over-wintering	Migration	Mean HSI
nine spine stickleback	Littoral[1]	0.013	0.5	0.5	0.25	0.5	na	0.438
	Op/prof.[1]	0.013	0.5	0.5	0.25	0.5	na	0.438
brook stickleback	Littoral	0.013	0.5	0.5	0.25	0.5	na	0.438
	Op/prof.	0.013	0.5	0.5	0.25	0.5	na	0.438
mottled sculpin	Littoral	0.013	0.5	0.5	0.25	0.5	na	0.438
	Op/prof.	0.013	0.5	0.5	0.25	0.5	na	0.438
finescale dace	Littoral	0.03	0.25	0.25	0.25	0.25	na	0.25
	Op/prof.	0.03	0.25	0.25	0.25	0.25	na	0.25
redbelly dace	Littoral	0.03	0.25	0.25	0.25	0.25	0.5	0.3
	Op/prof.	0.03	0.25	0.25	0.25	0.25	0.5	0.3
white sucker	Littoral	0.03	0.05	0.25	0.5	0.5	0	0.35
	Op/prof.	0.03	0.05	0.25	0.5	0.5	0	0.35
iowa darter	Littoral	0.013	0.25	0.25	0.5	0.25	na	0.313
	Op/prof.	0.013	0.25	0.25	0.5	0.25	na	0.313
fathead minnow	Littoral	0.03	0.25	0.25	0.25	0.25	na	0.25
	Op/prof.	0.03	0.25	0.25	0.25	0.25	na	0.25

Worked Example

API #2 – HSI ratings

Species	Habitat Type	Species Weight	Spawning	Nursery	Feeding	Over-wintering	Migration	Mean HSI
white sucker	Littoral[1]	0.03	0.5	0.25	0.5	0.5	0	0.35
	Op/prof.[1]	0.03	0.5	0.5	0.5	0.5	0	0.4
Iowa darter	Littoral	0.013	0.25	0.25	0.5	0.25	na	0.313
	Op/prof.	0.013	0.25	0.25	0.5	0.25	na	0.313
yellow perch	Littoral	0.04	0.5	0.25	0.5	0.5	na	0.438
	Op/prof.	0.04	0.5	0.25	0.5	0.5	na	0.438
northern pike	Littoral	0.17	0.5	0.75	0.75	0.5	0.5	0.6
	Op/prof.	0.17	0	0.5	0.75	0.5	0.5	0.45
blacknose shiner	Littoral	0.013	0.5	0.5	0.5	0.5	na	0.5
	Op/prof.	0.013	0	0	0	0	na	0
pumpkinseed	Littoral	0.013	0.5	0.5	0.5	0.5	na	0.5
	Op/prof.	0.13	0	0	0	0	na	0

Worked Example

Habitat Units

Total Area	Available Habitat Area (HA)	Number of Species Present	Total Weighted Useable Area (WUA)	Ecotype Weighted Useable Area (EWUA)
API # 12 (Mitta Lake) 172,737 m^2				
Littoral	8,891 m^2	8	494 HU	494 HU
Open Water	163,846 m^2	8	9,114 HU	9,114 HU
API # 2 124,351 m^2				
Littoral	5990 m^2	6	881 HU	881 HU
Open Water	118,361 m^2	5	13,604 HU	13,604 HU
Total			24,093 HU	

Contribution to Habitat Units

Valued Fishery	Mitta Lake	API #2
Primary CRA fishery[1]	0% (0 species)	69.4% (1 species)
Secondary CRA fishery[1]	62.2% (4 species)	22.5% (2 species)
Other species[1]	37.8% (4 species)	8.1% (3 species)

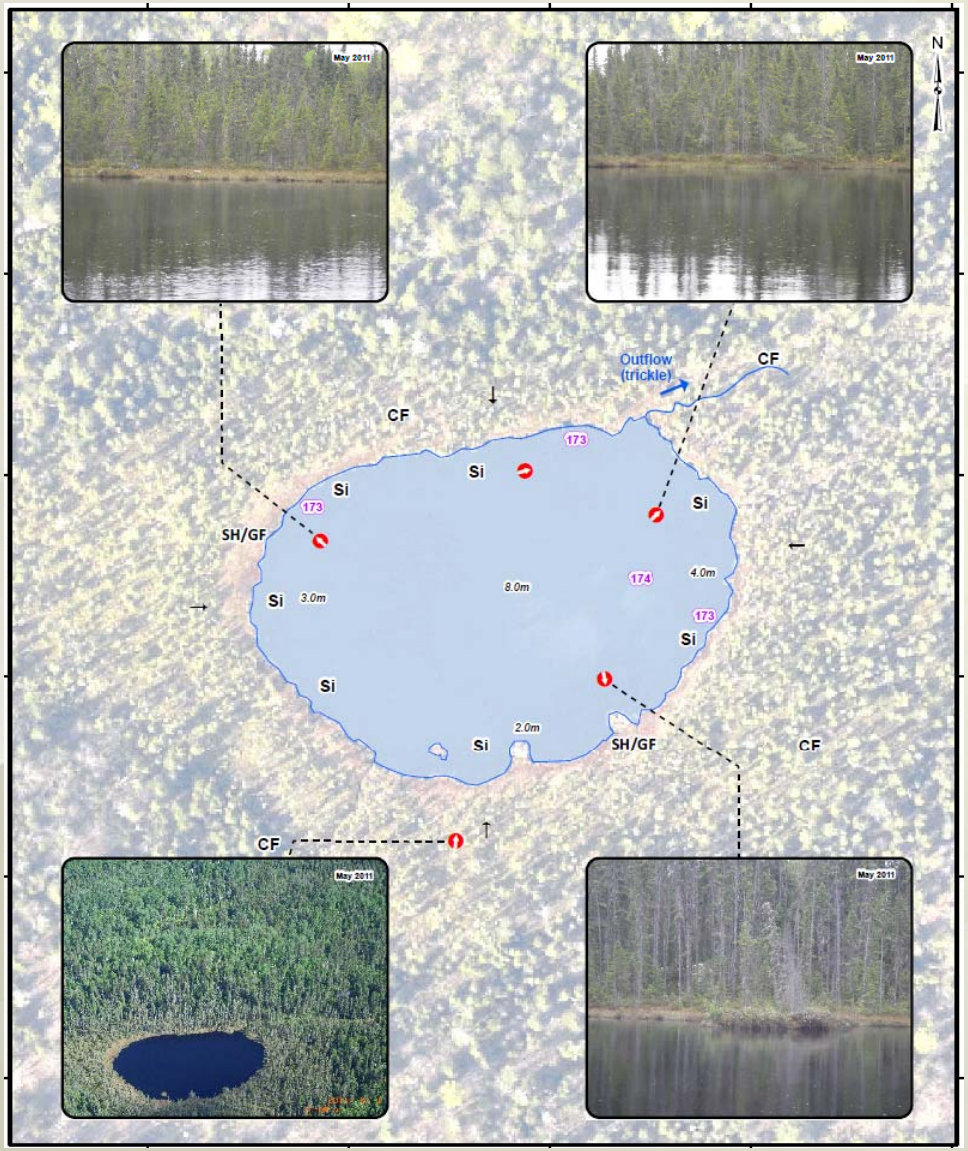
Summary of Habitat Losses

- Habitat losses: approximately 34,000 HUs
  - MMER:
    - WRMF: 5 features 1,977 HU
    - TMF: 10 features 20,211 HU
  - Other: 7 features 11,989 HU
- Water Crossings – “at site” compensation
  - culvert modification
  - Remediate local barriers
  - Undertake channel restoration

Compensation Projects

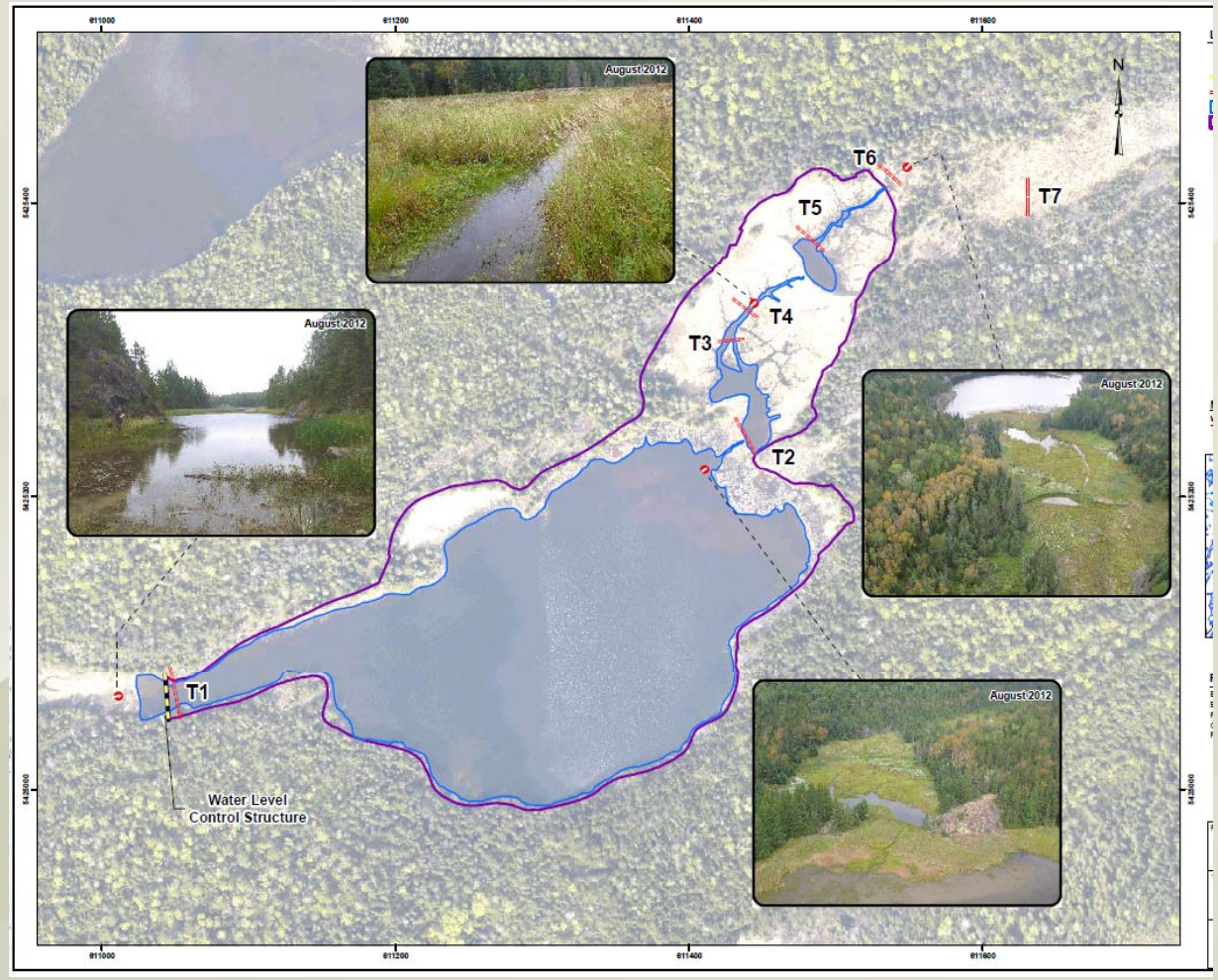
- Habitat Compensation Projects:
  - Fishless Lakes
  - Small Impoundments
  - Pike Spawning Habitat
  - Walleye Passage
  - Lake Whitefish Spawning Shoals
  - Pit Lake Restoration

Compensation Projects



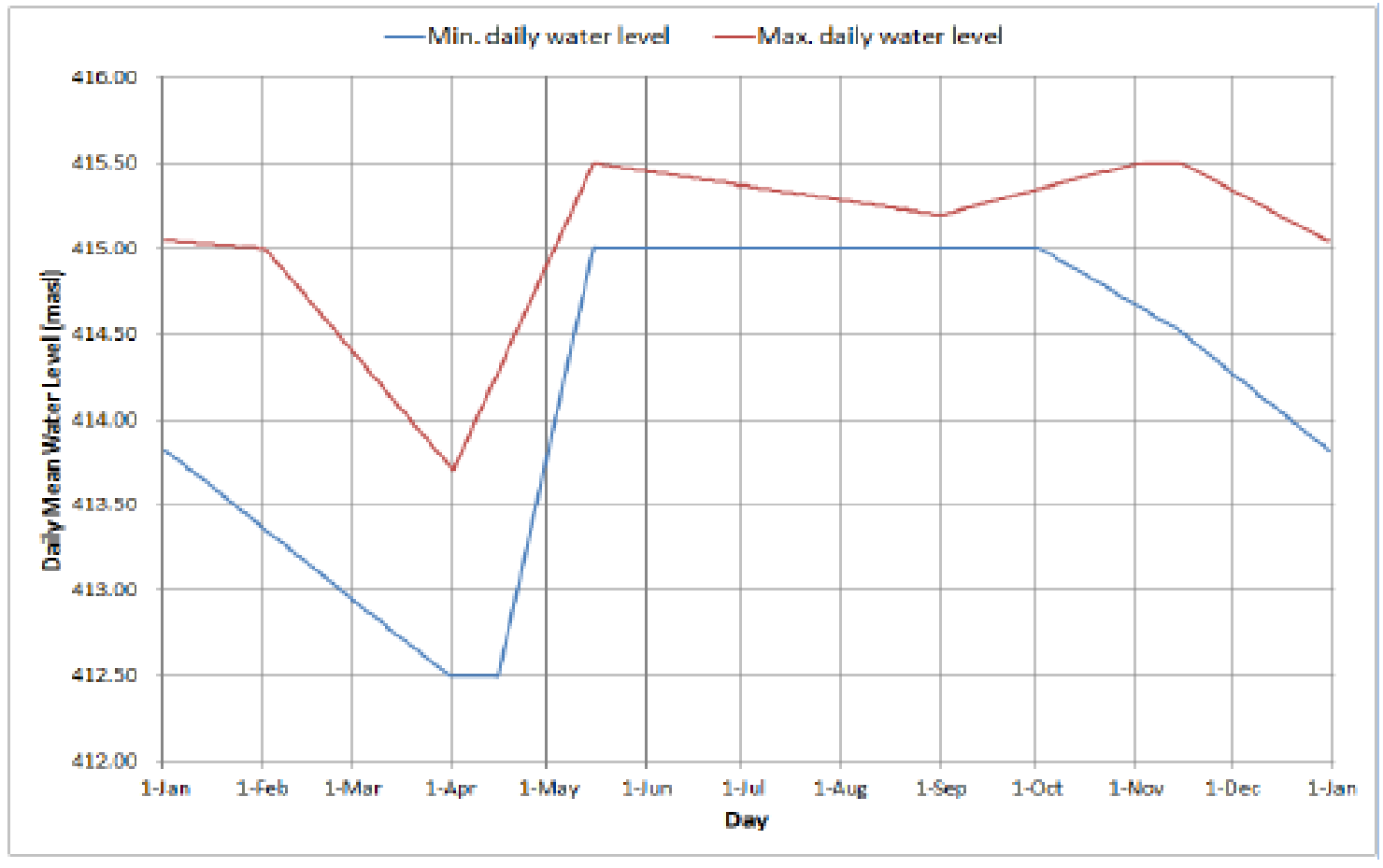
Pond Stocking

Compensation Projects



Pond Creation

Compensation Projects



Upper Marmion Lake Water Level Rule Curve

Compensation Projects



Hammond Peninsula Embayment

Photos showing lower water levels



Snail Bay

Compensation Projects

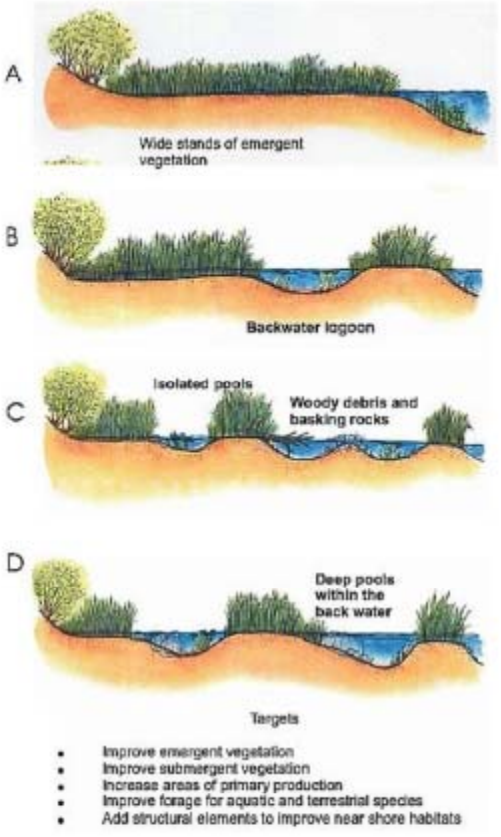


Location of Pike Spawning Habitat Creation

- 1.5 ha
- Excavation of exposed drawdown zone to 413 masl (approx)
- Provision of some deeper channels
- Mounds of wetand material as seed source
- Benefits to other species

Compensation Projects

RESTORATION TECHNIQUE: Contour Modification Vegetated Shoreline Cross Sections
HABITAT TYPE : Sheltered Embayments and Coastal Wetlands

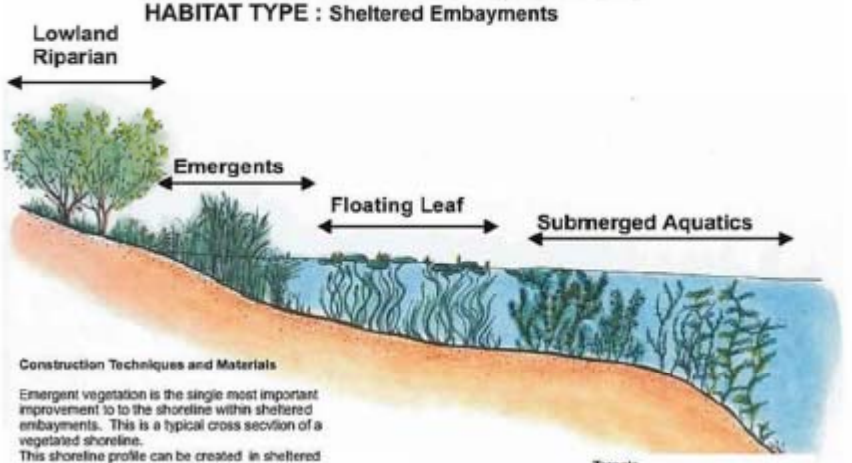


Targets

- Improve emergent vegetation
- Improve submergent vegetation
- Increase areas of primary production
- Improve forage for aquatic and terrestrial species
- Add structural elements to improve near shore habitats

Illustration of Pike Spawning Habitat Creation

RESTORATION TECHNIQUE: Vegetation Zones
HABITAT TYPE : Sheltered Embayments



Construction Techniques and Materials

Emergent vegetation is the single most important improvement to to the shoreline within sheltered embayments. This is a typical cross secvtion of a vegetated shoreline.
This shoreline profile can be created in sheltered embayments when:

- The location fetch is low
- Waves are attenuated
- Proper substrates are in place
- Elevations are graded to the specific water levels and corresponding water levels.
- Construction can focus on creating substrate elevations favourable to various wetland

Targets

- Improve emergent vegetation
- Improve submergent vegetation
- Increase high quality riparian vegetation
- Reduce carp biomass
- Increase areas of primary production
- Improve forage for aquatic and terrestrial species
- Add structural elements to improve near shore habitats

Compensation Projects

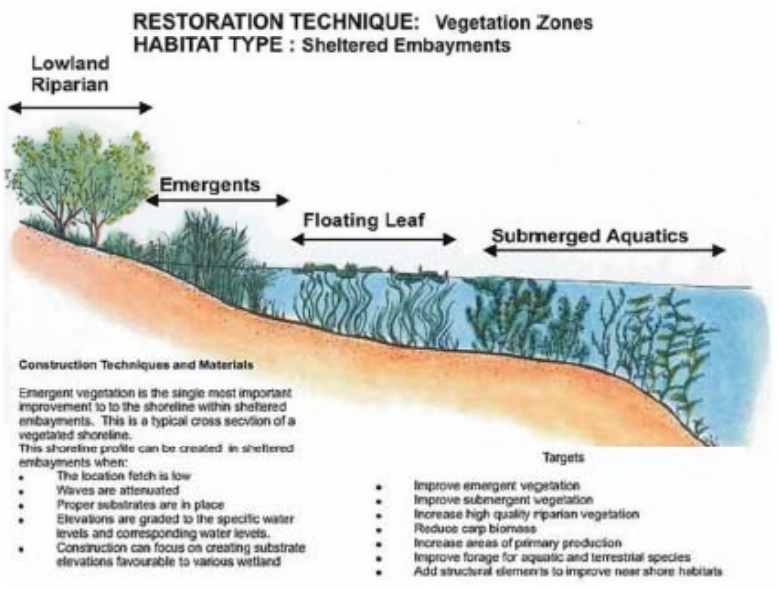
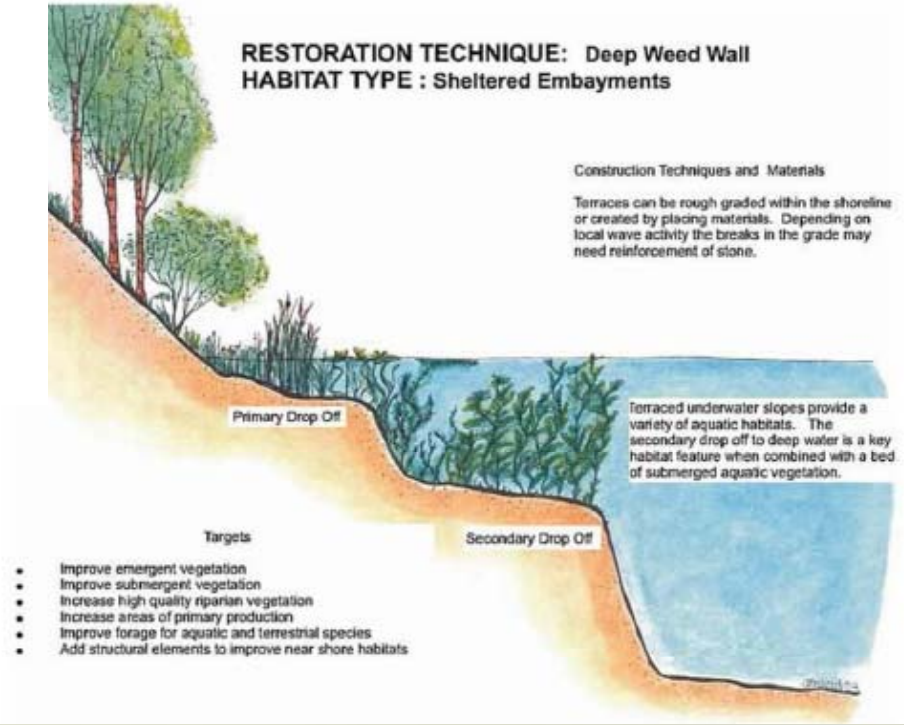
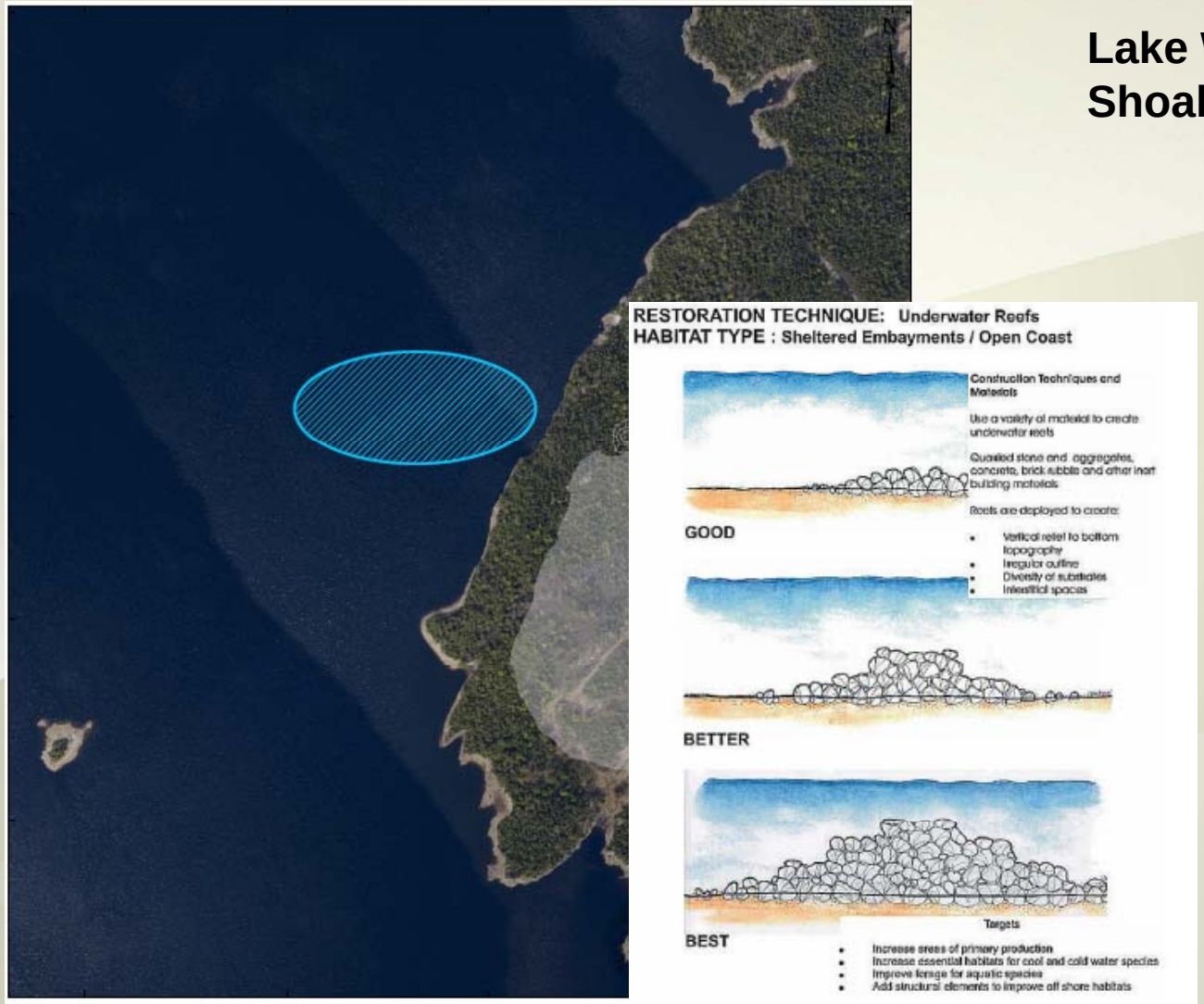


Illustration of Re-Contouring of Exposed Shoreline



Compensation Projects



Lake Whitefish Spawning Shoal

- Exposed, high energy location
- Depths below 413 masl (approx
- Cobble to small boulder
- benefits to other species

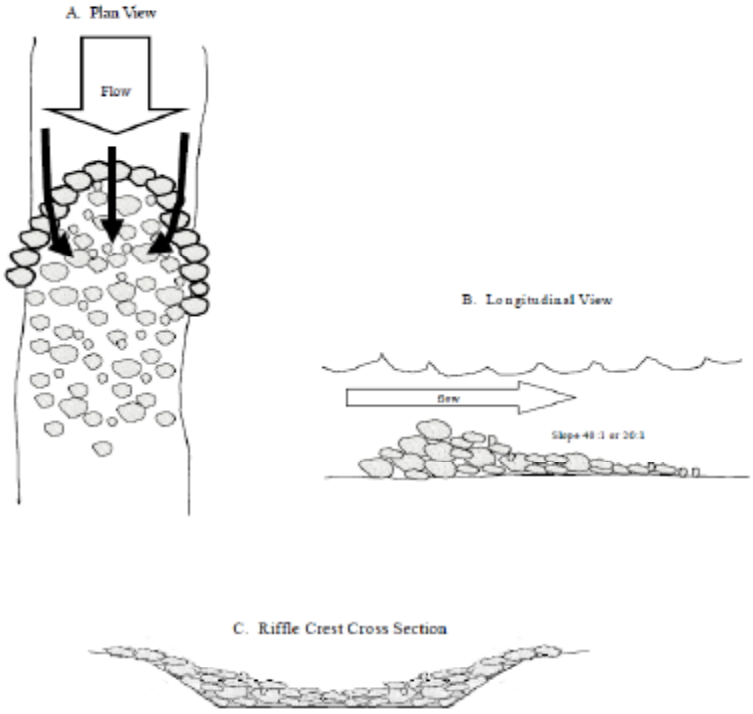
Compensation Projects



Location: Rapid City, Manatoba, Canada
River: Little Saskatchewan
Type: step-pool bypass channel
Fish Passed: walleye, northern pike
white sucker, shorthead redhorse sucker
Picture Source: Chris Katopodis

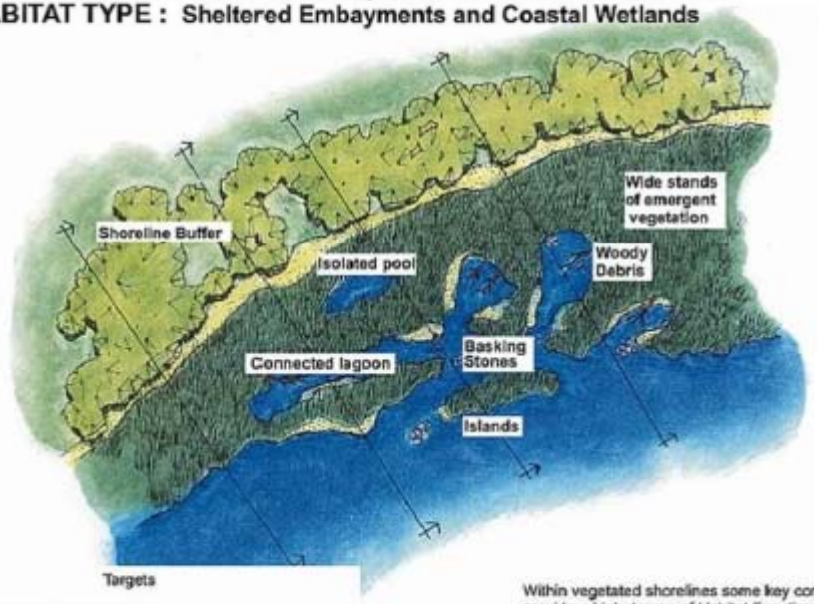
- Modification of existing barriers
- Existing channel or new bipass channel
- Access to upstream habitat

Walleye Passage – Sawbill Creek



Compensation Projects

RESTORATION TECHNIQUE: Vegetated Shorelines Components
HABITAT TYPE : Sheltered Embayments and Coastal Wetlands



Targets

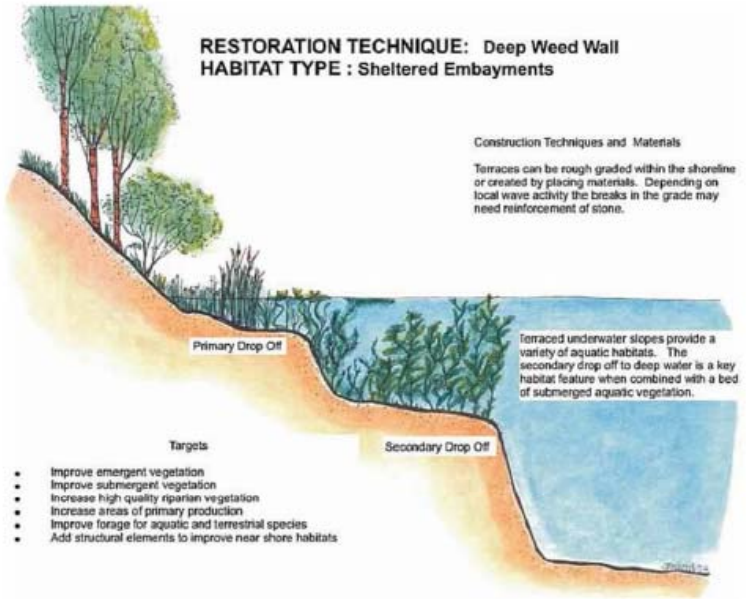
- Improve emergent vegetation
- Improve submergent vegetation
- Increase high quality riparian vegetation
- Reduce carp biomass
- Increase areas of primary production
- Improve forage for aquatic and terrestrial species
- Add structural elements to improve near shore habitats

Within vegetated shorelines some key co
provide a high degree of Habitat Function

- Broad stands of emergent vegetati
- Lagoons
- Isolated openings
- Islands and backshore areas

Open Pit Littoral Zone Creation

RESTORATION TECHNIQUE: Deep Weed Wall
HABITAT TYPE : Sheltered Embayments



Targets

- Improve emergent vegetation
- Improve submergent vegetation
- Increase high quality riparian vegetation
- Increase areas of primary production
- Improve forage for aquatic and terrestrial species
- Add structural elements to improve near shore habitats

Compensation Project Habitat Benefits

- Fishless ponds and Pond Creation: 8,500 Hus
- Northern pike spawning habitat creation at the mouth of Sawbill Bay, Snail Bay and Hammond Peninsula bay: 24,000 Hus
- Walleye spawning habitat enhancements in Sawbill Creek: 1,000 Hus
- Lake Whitefish Shoals: 800 HUs

Summary of Compensation Projects

- Proposed Plan:
  - Fishless ponds and Pond Creation: 8,500 HUs
  - Northern pike spawning habitat creation at the mouth of Sawbill Bay, Snail Bay and Hammond Peninsula bay: 24,000 HUs
  - Walleye spawning habitat enhancements in Sawbill Creek: 1,000 HUs
  - Watercourse Crossings, fish salvage and rescue operations.

Summary of Projects

- Proposed plan represents ratio of about 1:1 losses:gains
- Habitat quality of gains is higher
  - Focus on valued fisheries
  - Creation of spawning and nursery habitat
  - Construction will occur at the same time or shortly after losses (during construction and early operations phase of project)

Discussion Items

- Prioritization of Projects
- Compensation Ratio
- Steep Rock Projects
- Timing of Approvals – MMER, Fisheries Act Authorization
- Agency Comments

OSISKO MINING CORPORATION
HAMMOND REEF GOLD PROJECT LTD.

MEETING MINUTES
OSISKO HAMMOND REEF GOLD LTD. MEETING
FISH COMPENSATION DISCUSSION
MAY 9 – 9:00AM – 2:00PM
DFO THUNDER BAY BOARDROOM

Attendees:

Golder: Brian Hindley
Government Review Team: Neville Ward (DFO), Brian Jackson (MNR)

MEETING OBJECTIVE: This meeting was arranged to follow-up on the workshop on April 16 2013. A number of Upper Marmion Lake littoral zone projects (aka Pike spawning habitat) as well as the pit lake restoration option were presented. At the April 16 meeting, MNR/DFO indicated that they liked the concepts, but felt that there may be better locations.

MEETING MINUTES

- Through discussions, primarily with MNR, a number of locations were agreed upon, and there was more discussion of how the habitat might be created.
- Further discussion occurred on the pit restoration option, however there is still uncertainty on what the compensation ratio might be. There was agreement that if the filling time could be substantially shortened, then a ratio closer to 1:1 would likely be appropriate.
- MNR/DFO agreed that the NNLP plan could still include some fishless lakes and “maybe” a pond creation, but not as a priority.
- DFO provided some background on splitting up the compensation for the MMER and the Fisheries Act (section 35) measures – the approach should be to package the immediate/tried and true measures into the MMER compensation and leave the pit lake creation, the fishless lakes, etc to the Fisheries Act (Section 35).

Summary

- The total habitat losses for the project were calculated to be 34,000 HU that consisted primarily of habitat for baitfish and other small bodied fish, with some northern pike habitat.
- Based on the discussion at the meeting on May 9, 2013 a number of projects were discussed as follows:
  - Littoral zone habitat creation by a combination of excavation along the shoreline of Upper Marmion Lake and creation of a series of shallow channels within the excavation to promote access by fish to these areas (these projects were referred to as northern pike spawning habitat creation in the NNLP):
    a. A floodplain area at the mouth of Sawbill Creek
    b. An area at the mouth of API#1
    c. The upper part of Trap Bay
    d. An area at the mouth of Lumby Creek
    e. Snail Bay

- Each of the above areas was selected based primarily on discussion with MNR and reviewed by DFO. It was also agreed that the fishless lakes could generally be considered as part of the offset plan, however MNR still has reservations regarding the 2 pond creation projects (one of the original pond creation projects is no longer feasible).

- Each of the above littoral zone habitat creation projects has the potential to create 8,000 HUs of offsetting habitat, based on an excavation area of about 1.5 ha. The pond creation and fishless ponds result in about 7,000 Hus of habitat.

- Together, these projects will result in a habitat offset of 47,000 Hus, if all were to be constructed. In addition, all of these projects could be constructed during the construction and operation phase of the project, resulting in little or no lag time between habitat loss and gain.

Based on a preliminary review of constraints associated with creating fish habitat within the flooded pits, Golder is recommending that habitat creation within the pits should not be part of the NNLP at this time.

From: Alexandra Drapack
Sent: May 29, 2013 12:10 PM
To: Cathryn Moffett; Hélène Cartier; Luc Lessard
Subject: Fw: NNLP list of Habitat Offsets

Good news! As you can see, DFO has confirmed in writing that "This should be enough direction as to what habitat gains will be created to offset the losses for the EIS phase".

Note that all the off-set projects are "on-site" - Steep Rock is no longer part of the proposed fish compensation projects.

Alix

From: Ward, Neville [mailto:Neville.Ward@dfo-mpo.gc.ca]
Sent: Wednesday, May 29, 2013 12:04 PM Eastern Standard Time
To: Hindley, Brian <Brian_Hindley@golder.com>; Brian.W.Jackson@ontario.ca <Brian.W.Jackson@ontario.ca>
Cc: Alexandra Drapack; Auckland, Adam <Adam_Auckland@golder.com>; Bingley, Michelle <Michelle_Bingley@golder.com>; Liu,Amy [CEAA] <Amy.Liu@ceaa-acee.gc.ca>; Fowler, Lisa <Lisa.Fowler@dfo-mpo.gc.ca>
Subject: RE: NNLP list of Habitat Offsets

Brian - I think you did a good job capturing our discussion on Monday. This should be enough direction as to what habitat gains will be created to offset the losses for the EIS phase.

As you mentioned, further discussion between Osisko, MNR and DFO will have to take place at the permitting stage. The information and documentation that DFO requires for a Fisheries Act authorization is outlined in the recently proposed fisheries regulations (of which you have a copy). The two offset plans (one for sec.35 and one for schedule 2 MMERs) will require some more detail - in particular what fishless ponds will be stocked with fish (you mentioned one pond had very low oxygen this past March) and further discussion will be required with Osisko's mining engineers about the feasibility of creating habitat features in the two pits.

cheers Neville

Neville Ward

Senior Habitat Biologist/ Biologiste principal de l'habitat
Northern Ontario District/*District du nord de l'Ontario*
Ontario - Great Lakes Area / *Secteur de l'Ontario et des Grands Lacs*
Central and Arctic Region / *Région du Centre et de l'Arctique*
Fisheries and Oceans Canada / *Pêches et Océans Canada*
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100 Main Street, Suite 425 / *100, rue Main, Pièce 425*
Thunder Bay, Ontario P7B 6R9 / *Thunder Bay (Ontario) P7B 6R9*
E-Mail / *Courrier électronique*: Neville.Ward@dfo-mpo.gc.ca

From: Hindley, Brian [mailto:Brian_Hindley@golder.com]
Sent: 2013–May-29 6:39 AM
To: Ward, Neville; Jackson, Brian (MNR) (Brian.W.Jackson@ontario.ca)
Cc: Alexandra Drapack (adrapack@osisko.com); Auckland, Adam; Bingley, Michelle
Subject: FW: NNLP list of Habitat Offsets

Hi Neville:

Based on our discussion yesterday, here is a summary of the basic elements of our Habitat Offset Plan that we generally agreed would address predicted habitat losses as a result of the construction and operation of the Osisko mine.

Habitat Losses

Using the Habitat Accounting Model developed for the project, habitat losses were as follows:

- Total Habitat losses: approximately 34,000 Habitat Units
- Habitat Losses requiring MMER listing (approximately 22 000 HUs):
    - Losses associated with the Waste Rock Management Facility: 5 features representing 1,977 HUs
    - Losses associated with the Tailings Management Facility: 10 features representing 20,211 HUs
- Habitat Losses requiring Section 35 Fisheries Act Authorization: 7 features representing 11,989 HUs

MMER Listed Habitat Offsets

While the majority of the habitat losses are habitat for baitfish and other small bodied fish, there is one waterbody (API#2) that supports northern pike and there are the lower reaches of two headwater drainage features that provide some spawning/nursery habitat for northern pike in the receiving waterbodies (Upper Marmion Lake and API#8).

The following habitat offset projects are proposed to address these MMER Listed losses (totaling 24,000 HUs):

- A floodplain area at the mouth of Sawbill Creek
- An area at the mouth of API#1
- Snail Bay

Each of these projects will involve a shallow excavation of an area of about 1.5 ha to establish littoral habitat within the current drawdown zone of Upper Marmion Lake. The existing area will be excavated to an elevation of about 413.2 masl which will ensure that the substrates are flooded in early spring, prior to reservoir filling. A series of shallow, branching trenches will be cut into the excavation to provide additional access to the area for fish and wetland materials will be placed in "mounds" throughout the excavated area to promote wetland development. These areas will provide spawning and nursery habitat for a variety of species including important recreational fisheries of Upper Marmion Lake

Section 35 Listed Habitat Offsets

While the majority of the habitat losses are habitat for baitfish and other small bodied fish, there is one waterbody (Mitta Lake) that is considered to have potential as a baitfish resource and there are the lower reaches of several headwater drainage features that provide some spawning/nursery habitat for northern pike in the receiving waterbodies (Upper Marmion Lake).

The following habitat offset projects are proposed to address these Section 35 listed losses (totaling approximately 12,000 HUs):

- Stocking of several headwater waterbodies that are currently fishless
- The upper part of Trap Bay
- An area at the mouth of Lumby Creek
- Microhabitat features adjacent to an area of filling of a portion of the drawdown zone of Upper Marmion Lake
- Microhabitat features associated with the construction of the minewater discharge

Several fishless ponds will be stocked with fish from Mitta Lake and API#2 to create a potential baitfish resource and also to preserve a remnant fish community representative of Mitta Lake, which will preserve an opportunity to restock these fish in the flooded pits post closure. The Trap Bay and Lumby Creek projects will involve a shallow excavation of an area of about 1.5 ha to establish littoral habitat within the current drawdown zone of Upper Marmion Lake. The existing area will be excavated

to an elevation of about 413.2 masl which will ensure that the substrates are flooded in early spring, prior to reservoir filling. A series of shallow, branching trenches will be cut into the excavation to provide additional access to the area for fish and wetland materials will be placed in "mounds" throughout the excavated area to promote wetland development. These areas will provide spawning and nursery habitat for a variety of species including important recreational fisheries of Upper Marmion Lake. The Microhabitat features will include installation of partially submerged logs and felled cedar trees, rocky shoals and other features that will provide shallow water cover for fish species in Upper Marmion Lake.

In addition to the habitat offset projects identified above, it is anticipated that with some minor modifications to the configuration of the bench elevations of the initial lifts around the pit perimeters during operations and construction of a broad shallow channel at approximately elevation 418 masl that the flooded pits will offer potential fish habitat (both littoral and open water habitat) and will contribute to the productive capacity of the Upper Marmion Lake, replacing some of the habitat lost in Mitta Lake. While this is not currently reflected in the habitat offset plan, further discussion with MNR, DFO and Osisko is proposed prior to the final submission of the Section 35 Authorization application.

Let me know if you have any questions regarding the above. Also please forward to me the phone number and email/web address for the DFO Triage you were mentioning..

Cheers

Bh

Ps. Its been a pleasure working with you and I am sure we will be in touch over the coming months!!

Brian Hindley (MSc) | Environmental Studies Specialist / Project Manager | **Golder Associates Ltd.**
210 Sheldon Drive, Cambridge, Ontario, Canada N1T 1A8
T: +1 (519) 620 1222 | **D:** +1 (519) 620 8182 Ext. 6526 | **F:** +1 (519) 620 9878 | **C:** +1 (226) 971-1406 | **E:** Brian_Hindley@golder.com | **www.golder.com**

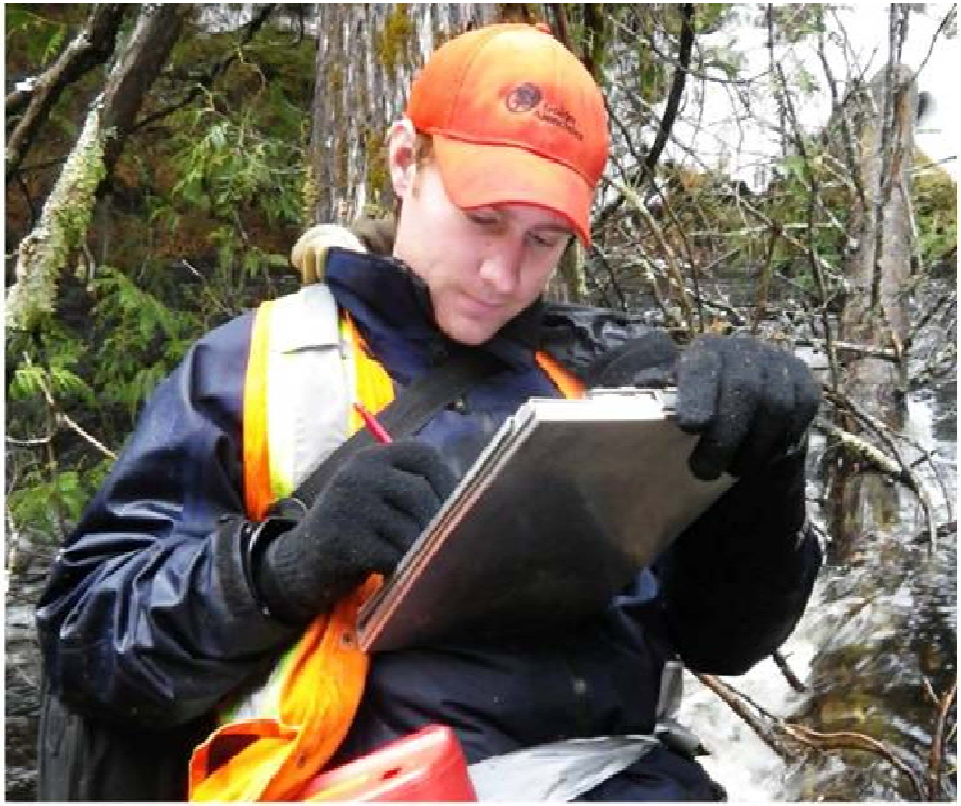
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Overview of OHRG Aquatic Biology

June 20, 2013

Presentation Overview

- Summary of Aquatic Biology Meetings
- Overview of Project
- Overview of Aquatic Biology Section of DRAFT EIS/EA report
- Summary of Offset Plan
- Conclusion

Osisko-MNR-DFO Meetings

11 meetings/teleconferences to date:

- April 13, 2011
- July 12, 2011
- September 14, 2011
- February 29, 2012
- June 4, 2012
- October 22, 2012
- October 31, 2012
- November 20, 2012
- April 16, 2013
- May 9, 2013
- May 27, 2013

Meeting Summary

Date	Agency/Staff Invited/*Attended*	Consultation
April 13, 2011(Thunder Bay)	*DFO/T. Kleinboeck*, DFO/N. Ward, *MNR/B. Jackson, MNR/A. Godwin*, MNR/K. Armstrong, MNR/ Sobchuk, *CEAA/A. Lui*, ENE/M. Whitmore, ENE, T. Kondrat, MOE/J. Sutton, MNDM/M. O'Brien	■ Overview of 2010 baseline work ■ Summary of key results ■ Presentation of 2011 field program
July 12, 2011 (Atikoken)	*DFO/T. Kleinboeck*, DFO/N. Ward, *MNR/B. Jackson, MNR/A. Godwin*, MNR/K. Armstrong, MNR/ Sobchek, CEAA/A. Lui, ENE/M. Whitmore, ENE, T. Kondrat, MOE/J. Sutton, MNDM/M. O'Brien	■ Overview of 2011 baseline work ■ Review of data collection methods ■ Initiate discussion on compensation ■ Discuss potential compensation opportunities
September 14, 2011 (Atikoken)	*DFO/T. Kleinboeck*, DFO/N. Ward, *MNR/B. Jackson, MNR/A. Godwin*, MNR/K. Armstrong, MNR/ Sobchek, CEAA/A. Lui, ENE/M. Whitmore, ENE, T. Kondrat, MOE/J. Sutton, MNDM/M. O'Brien	■ Discussion on sampling effort and treatment of wetlands ■ Review of approach to habitat accounting ■ Discuss collection of additional data to fill gaps ■ Helicopter tour of APIs/project site

Meeting Summary

Date	Agency/Staff Invited/*Attended*	Consultation
February 29, 2012 (Thunder Bay)	*DFO/T. Kleinboeck, DFO/N. Ward, MNR/B. Jackson, MNR/A. Godwin, MNR/K. Armstrong, MNR/Sobchuk*, *CEAA/A. Lui*, ENE/M. Whitmore, ENE, T. Kondrat, MOE/J. Sutton, *MNDM/M.* O'Brien*/P. Barnes*	■ Present habitat preference tables ■ Discussion of compensation opportunities ■ Discussion of alternative habitat accounting methods – HATT/HEP/Meliadine ■ Discussion of baseline results and 2012 field program suggestions
June 4, 2012 (Thunder Bay)	DFO/T. Kleinboeck, DFO/N. Ward, MNR/B. Jackson, MNR/A. Godwin, MNR/K. Armstrong, MNR/S. Bobrowicz, CEAA/A. Lui, ENE/M. Whitmore, ENE, T. Kondrat, MOE/J. Sutton, MNDM/M. O'Brien	■ Presentation and discussion of Interim Baseline Report ■ Discussion of potential data gaps and 2012 field sampling program ■ Presentation and discussion of Baseline Report conclusions
June 19, 2012 (Atikoken)	MNR/B. Jackson, MNR/A. Godwin, MNR Steep Rock Project Staff	■ Tour and discussion of Steep Rock Site and Project

Meeting Summary

Date	Agency/Staff Invited/*Attended*	Consultation
April 16, 2013 (Thunder Bay)	*DFO/N. Ward, MNR/B. Jackson, MNR/A. Godwin,* MNR/K. Armstrong, MNR/S. *Bobrowicz, CEAA/A. Lui, ENE/M.* Whitmore, ENE, T. Kondrat, *MOE/J. Sutton, MNDM/M. O'Brien*	■ Presentation of fish habitat accounting procedure and NNLP approach ■ Discussion of preliminary calculations of habitat losses and gains ■ Review proposed Fisheries Act changes ■ Presentation of fish salvage and rescue plan
October 31, 2012 (Toronto)	*DFO/L. Fowler, CEAA/A. Lui,*	■ Presentation on overview of the Project ■ Presentation of fish habitat accounting procedure and NNLP approach ■ Discussion of preliminary calculations of habitat losses and gains ■ Review proposed Fisheries Act changes ■ Presentation of fish salvage and rescue plan
November 20, 2012 (Toronto)	*CEAA/A. Blajchman, MOE/S. Hysenaj, MOE/D. Laverdiere, NCR/C. Dumaresq, NCR/P. Billau, EC/F.Beaudet, NRC/A. Magee, EC/R. Dobos, DFO/N.Ward, DFO/L. Fowler*, DFO/T. Kleinboeck, MNDM/P. *Barnes, CEAA/A. Lui*, ENE/M. Whitmore	■ Presented and discussed approach to evaluating TMF alternatives ■ Reviewed "dry land" TMF alternative ■ Discussion of Detour Lake Project Agency review letters ■ Preliminary discussion of MMER Schedule 2 requirements and listed waterbodies

Meeting Summary

Date	Agency/Staff Invited/*Attended*	Consultation
April 16, 2013 (Thunder Bay)	*DFO/N. Ward, MNR/B. Jackson,CEAA/A. Lui, ENE/*M. Whitmore, *MNDM/P. Barnes*	■ Summarize changes to the Habitat Accounting/No Net Loss model ■ Summarize habitat losses – 2 categories: MMER and other ■ Present/discuss of projects developed as "onsite" compensation ■ Prioritize of projects ■ Discuss compensation ratio ■ Discuss overall timing for approvals – MMER versus Fisheries Act Authorization ■ Discuss off-site (Steep Rock) projects ■ Discuss comments received on EIS/EA report from DFO and MNR (on fisheries)

Meeting Summary

Date	Agency/Staff Invited/*Attended*	Consultation
May 9, 2013 (Thunder Bay)	*DFO/N. Ward, MNR/B. Jackson*	■ Presented a number of Upper Marmion Lake littoral zone projects (aka Pike spawning habitat) as well as the pit lake restoration option ■ Discussion to determine if there were any better locations. ■ Finalization of conceptual NNLP
May 27 2013 (Teleconference)	*DFO/N. Ward, MNR/B. Jackson*	■ Summarized the basic elements of the OHRG Habitat Offset Plan and reached agreement that it could address predicted habitat losses as a result of the construction and operation ofthe Osisko mine.

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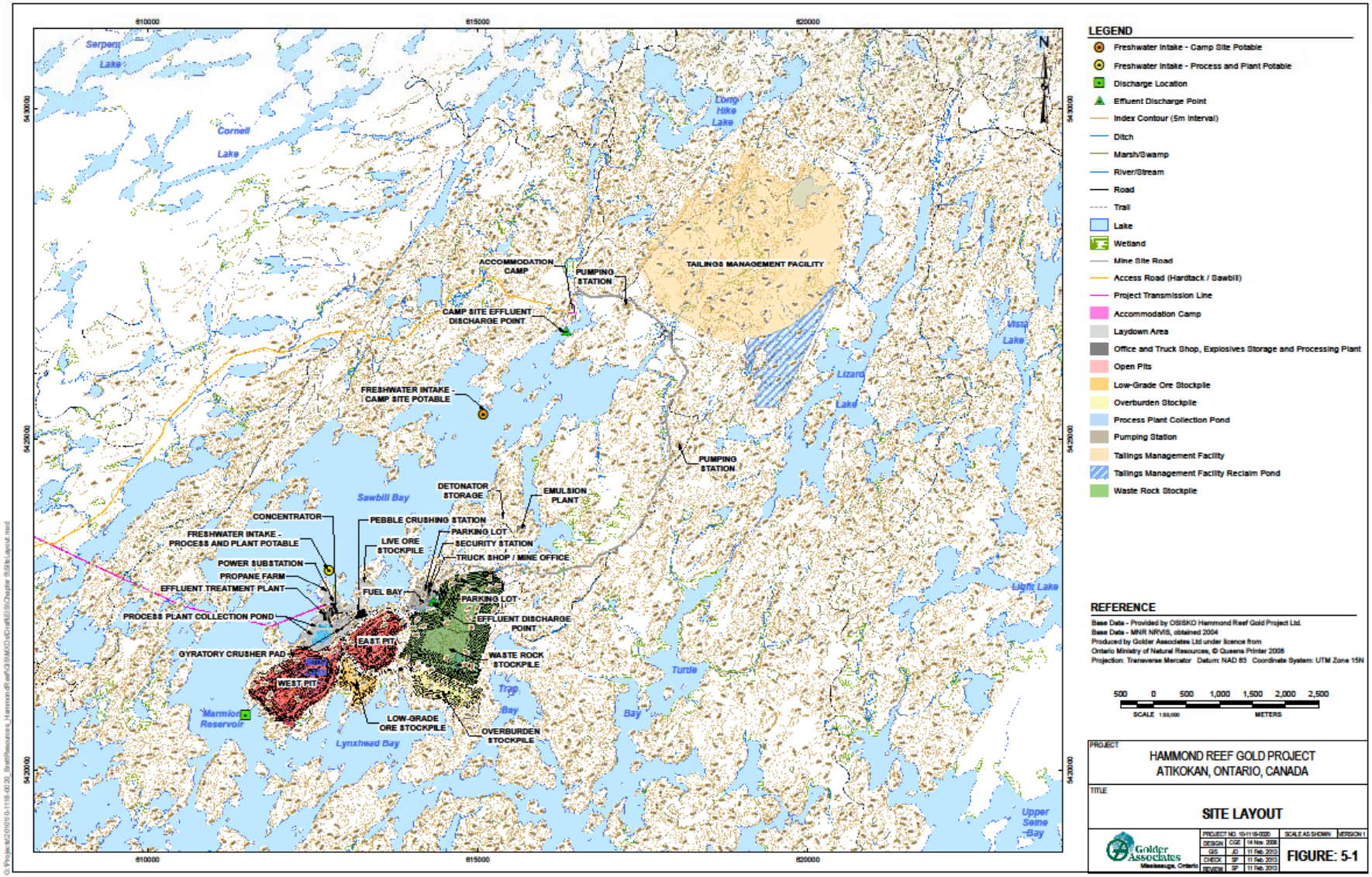
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Project Description

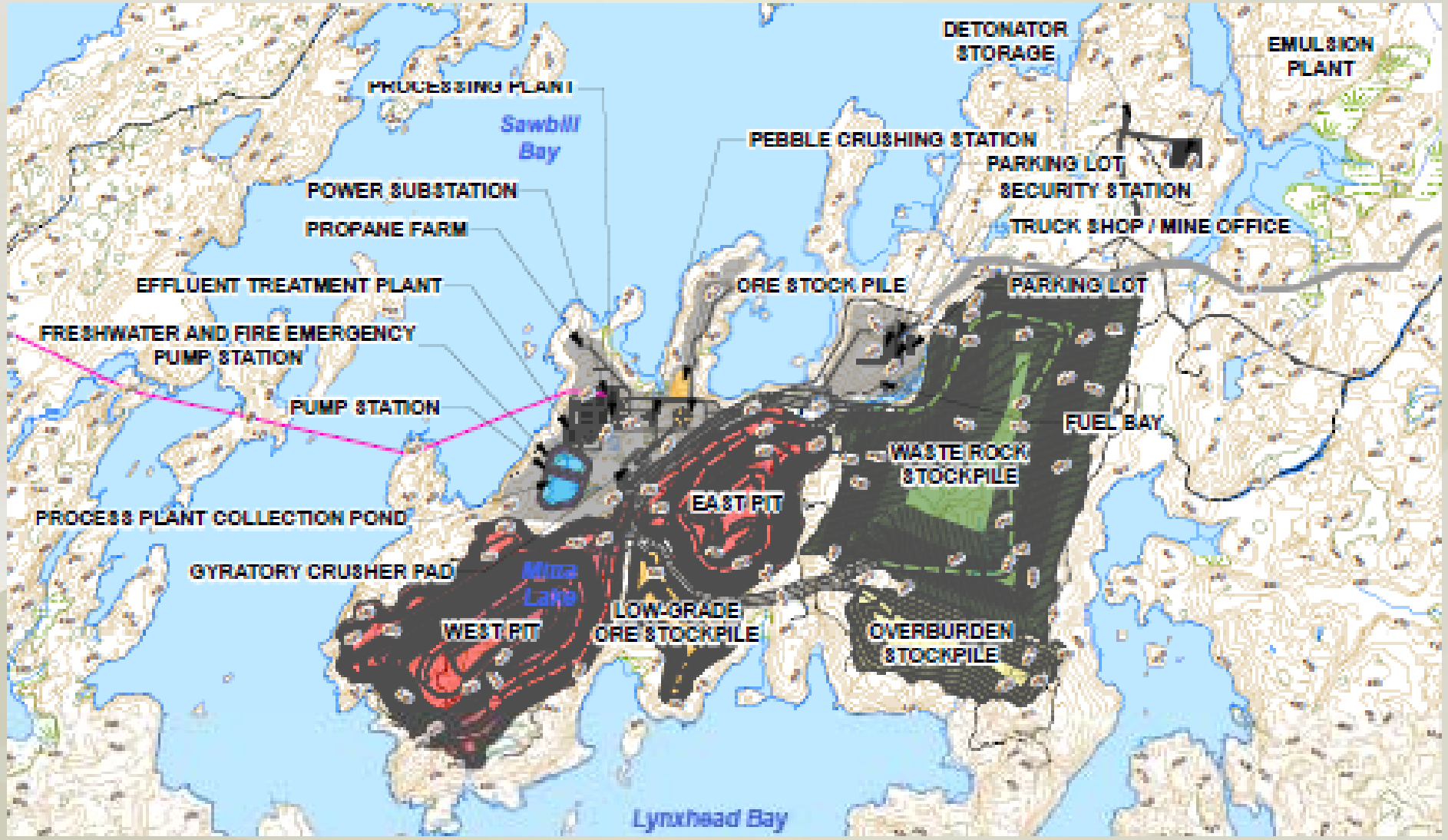


Golder Associates

Preferred Site Layout



Site Infrastructure



Project Components

Project Components:

- Mine, including two open pits (i.e., east pit and west pit).
- Waste Rock Management Facility (WRMF).
- Ore Processing Facility.
- Tailings Management Facility (TMF).
- Support and Ancillary Infrastructure.
- Water Management System.
- Linear Infrastructure.
- Borrow Sites.

Construction Phase (30 months)

- Upgrading access roads.
- Construction of transmission lines and communication lines.
- Construction of workers accommodation.
- Site Grading and construction of laydown areas.
- Transport of equipment to the Project Site.
- Preparation of site components and facilities.
- Construction of infrastructure.
- Construction of initial containment structures for the Tailings Management Facility (TMF).

Operations Phase (11 years)

- Maintaining site Access Roads, transmission lines and communication.
- Maintaining accommodation camp.
- Operation of the Mine.
- Storage and production of explosives.
- Operation of Process Facilities including ore stockpiles.
- Operation of mine waste facilities (waste rock stockpile, overburden stockpiles, TMF, and pipelines).
- Transport of equipment and supplies to and from the Project Site.
- Transport of workforce to and from the Project Site.
- Transport of gold doré bars off-site.

Closure (2 years) & Post-closure Phases (10 years)

- Stabilization of tailings surface and revegetation.
- Cessation of pit dewatering operations.
- Pumping of water from various seepage collection ponds to the open pits until water quality is acceptable for direct discharge to the environment.
- Grading of the surface of the waste rock stockpile and overburden stockpile.
- To the extent practical, using overburden stockpile materials as cover to promote vegetation growth in various site areas.
- Decommissioning of site Infrastructure.
- Establishment of open pit “safe lines” based on a rock mechanics evaluation.

In-design Mitigation

- Relocation of Infrastructure to avoid fish-bearing water bodies.
- Discussion with Aboriginal groups to avoid “special sites” that have been identified in the vicinity of the project.
- Adherence to set-back criteria and adjustments to the pit shell to maintain a buffer zone between the pit and the lake.
- Using west pit to store some of the waste rock from east pit in order to reduce the size of the waste rock stockpile.
- Avoidance of Lynxhead Narrows as an effluent discharge point due to identification of walleye spawning area.
- Inclusion of a contingency for treatment of suspended solids if necessary.
- Inclusion of a cyanide destruction circuit within the process.
- Use of existing transportation corridors where possible to minimize requirements for additional environmental disturbance.

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Aquatic Biology



Golder Associates

Overview of Aquatic Environment TSD

The Aquatic Environment was described and evaluated at three spatial scales, representing the following drainage basins

Regional

- Seine River Watershed

Local:

- Upper Marmion Lake (Sawbill Bay and Lynxhead Bay),
- Lizard Lake
- Corridors

Site:

- 25 tributary catchments draining to Upper Marmion and Lizard Lake

The study was focused on Valued Ecosystem Components, represented by the following fish species and aquatic indicators:

- Lower Reaches & Receivers
- Small-bodied fish - baitfish
- Sport fish – walleye, northern pike, smallmouth bass
- Benthic invertebrates

Table 2-1: Summary of Field Program Dates

Overview of Aquatic Biology Field Work

- 55 APIs were investigated over multiple seasons
- 24 species of fish were found
- Not all APIs supported fish

Field Data Collected	2010	2011	2012
Fish and Aquatic Habitat	May 8 -15, August 1-6, 18-29, September 23-30, October 14-20	May 3-10, May 27 - June 5, August 26-30, September 23-29	August 22-31, September 13-22
Fish Tissue	August 18-29	September 23-29	
Benthic Invertebrates	October 14-20		
Aquatic Sediments	October 14-20		

Aquatic Biology Baseline Field Survey Locations

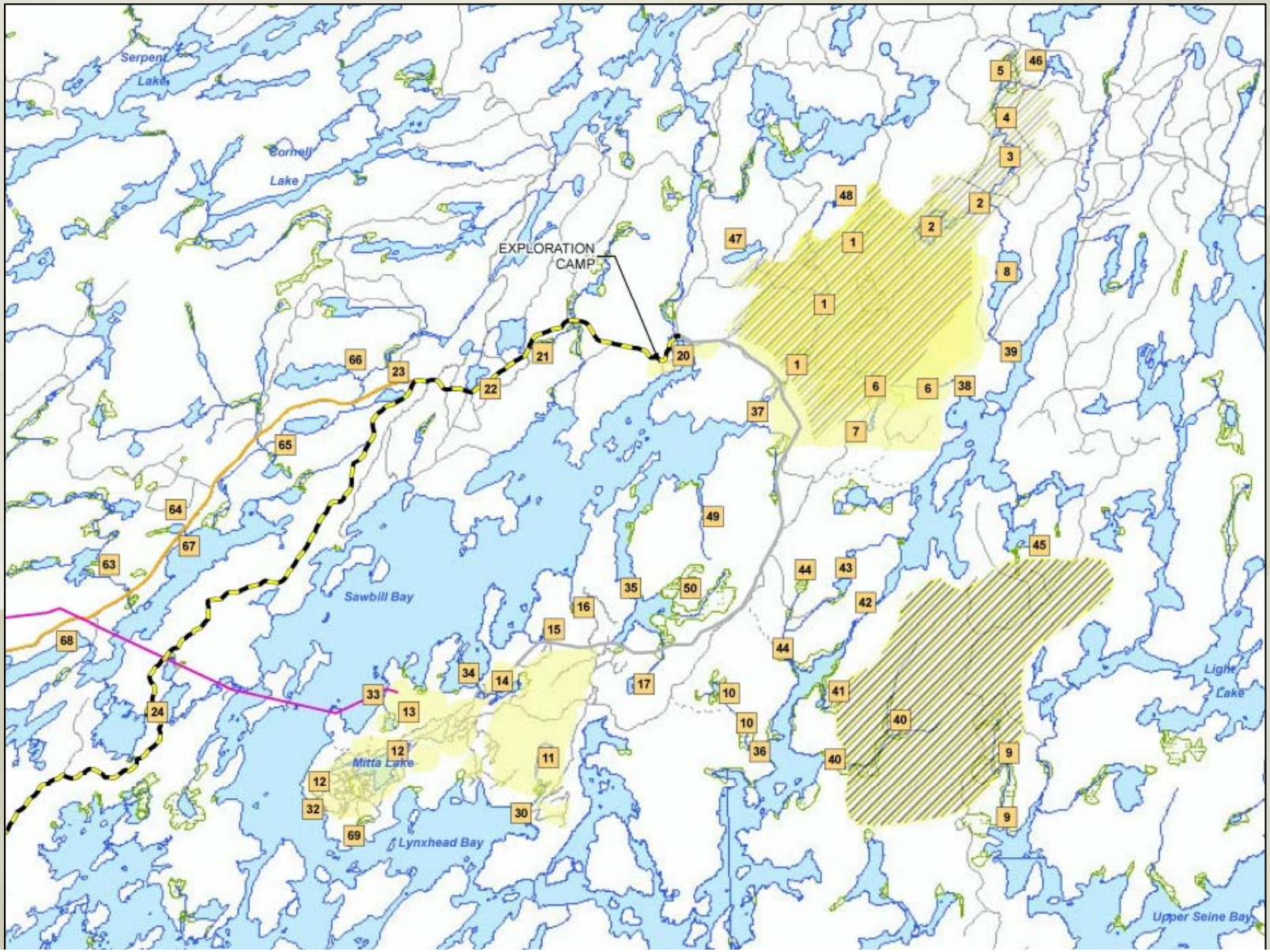


Table 2-1: Summary of Field Program Dates

No Net Loss Planning

- A series of meetings took place to development approved Habitat Accounting Methodology which will be implemented in the no net loss planning for the Project.
- No net loss planning includes both habitat compensation and offsets

Date	Topic	Agency Attendees
4/1/2011	Initial Meeting to Present Project Overview; Presented data collected to date (2010).	DFO, MNR, MOE, CEAA
7/12/2011	Discussion of Proposed Work Plan for 2011 baseline collection; Discussion of Collection Methods and Summary of info collected to date.	DFO, MNR
9/14/2011	Site Visit & Helicopter Tour; Presented data collected to date.	DFO, MNR, CEAA
2/29/2012	No Net Loss Planning Workshop	DFO, MNR, CEAA, MNDM
6/4/2012	Meeting to Present Aquatic Baseline Data	DFO, MNR, CEAA, MOE, MNDM
6/19/2012	Site Visit to Tour Steep Rock regarding Compensation Opportunities	MNR
10/22/2012	Meeting to Finalize Habitat Accounting Methodology; Discussions regarding Compensation Opportunities	DFO, MNR, CEAA, MOE, MNDM
10/31/2012	Meeting to present Project Overview and Update on Habitat Accounting Methodology to new DFO representative	DFO, CEAA

Project Design Influences

- Infrastructure placement & road crossings & in-water structures (water intake structures, effluent discharge structures)
  - Potential loss of habitat
- Water takings = flow and water level changes
  - Potential loss of habitat
- Drainage area interception = flow and water level changes
  - Potential loss of habitat
- Treated wastewater discharge
  - Potential toxicity effects

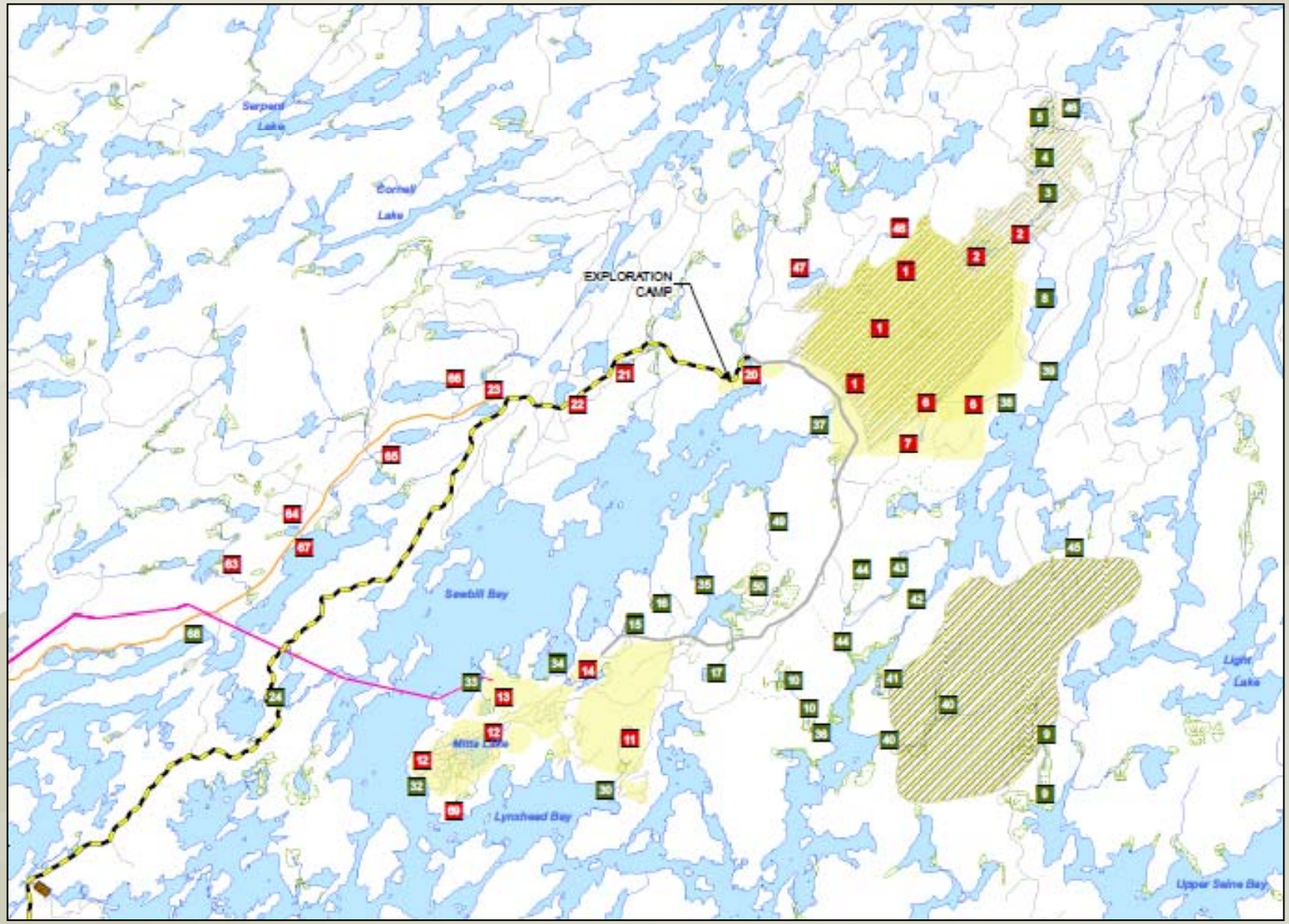
Project Impacts to the Aquatic Environment

- Changes in lake levels of receivers under predicted model are less than 5 cm and result in negligible impacts.
- Discharges as currently modeled meet receiving water criteria and do not result in impacts to aquatic life.
- No predicted impacts from water level changes or discharges predicted downstream of Upper Marmion Reservoir in the Seine River.
- Infrastructure and road crossings resulted in loss of aquatic habitat
  - limited to the mine footprint and road crossings but can be offset by habitat compensation using the agreed upon Habitat Accounting Methodology

Project Impacts to the Aquatic Environment (cont.)

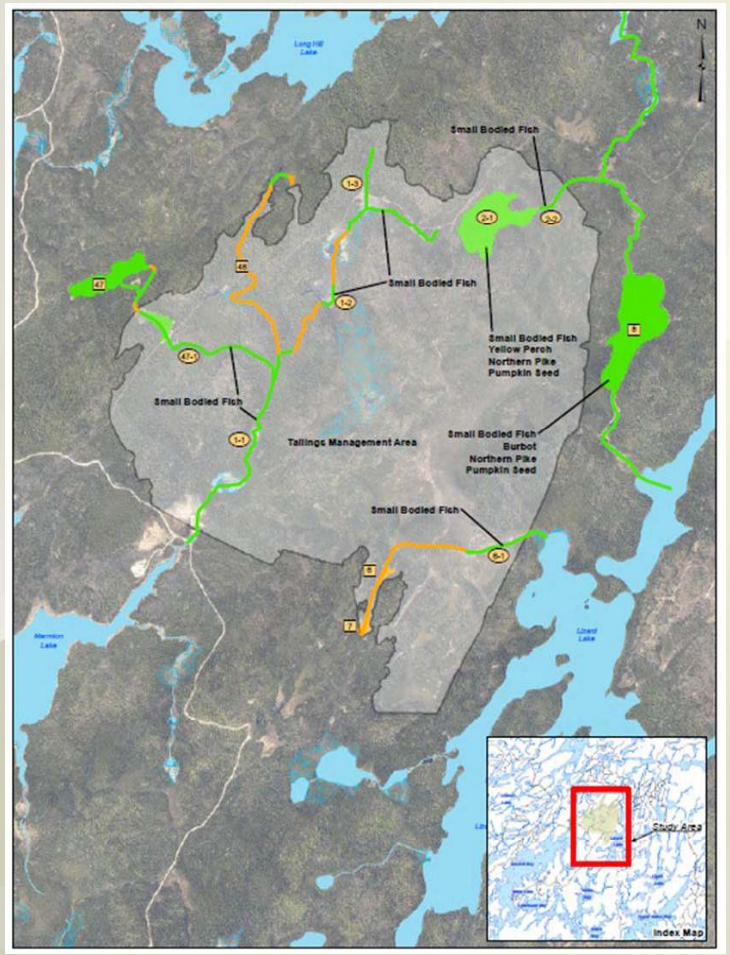
- Roughly 40 ha of aquatic habitat, representing about 11 water bodies (streams, ponds, lakes) will be lost within the mine footprint
  - Open Pit: API #12:Mitta Lake; API #14: stream; and API #69: headwater pond & stream.
  - PPCP: API #13: headwater pond & stream (fishless)
  - Waste Rock Stockpile: API #11: headwater pond & stream
  - TMF: API #47: stream; API #48 stream & headwater pond;API #1 stream & beaver impoundments; API #7; API #6; API #2.
- 14 watercourse crossings will be upgraded/constructed for the access road and mine road with onsite compensation to offset habitat losses
- Aquatic habitats slated for MMER Schedule 2 listing (API #2, APIs #1/47,API #11, API #14) are small water bodies (less than 12 ha) or headwater tributaries
  - MMER Schedule 2 process can take 2 years following the EA approval (required for operations not construction)
- An onsite compensation plan has been developed to offsite habitat losses, that focuses on enhancing habitat for the valued fishery in Upper Marmion Lake and small water bodies connected to it

Affected Waterbodies

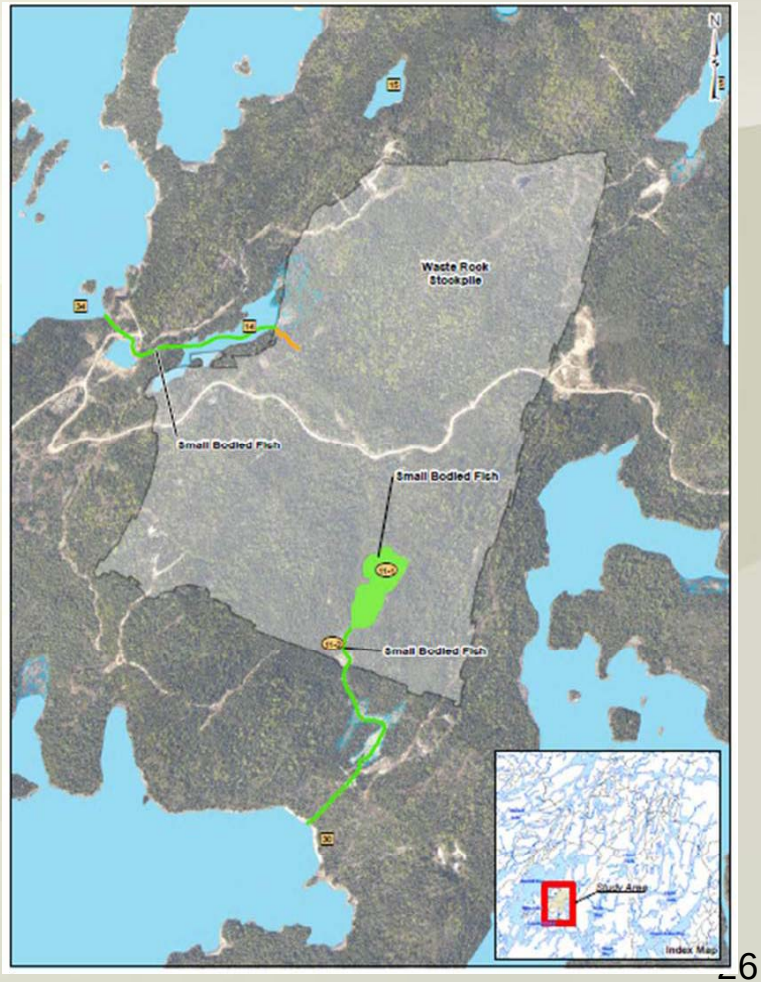


MMER Waterbodies

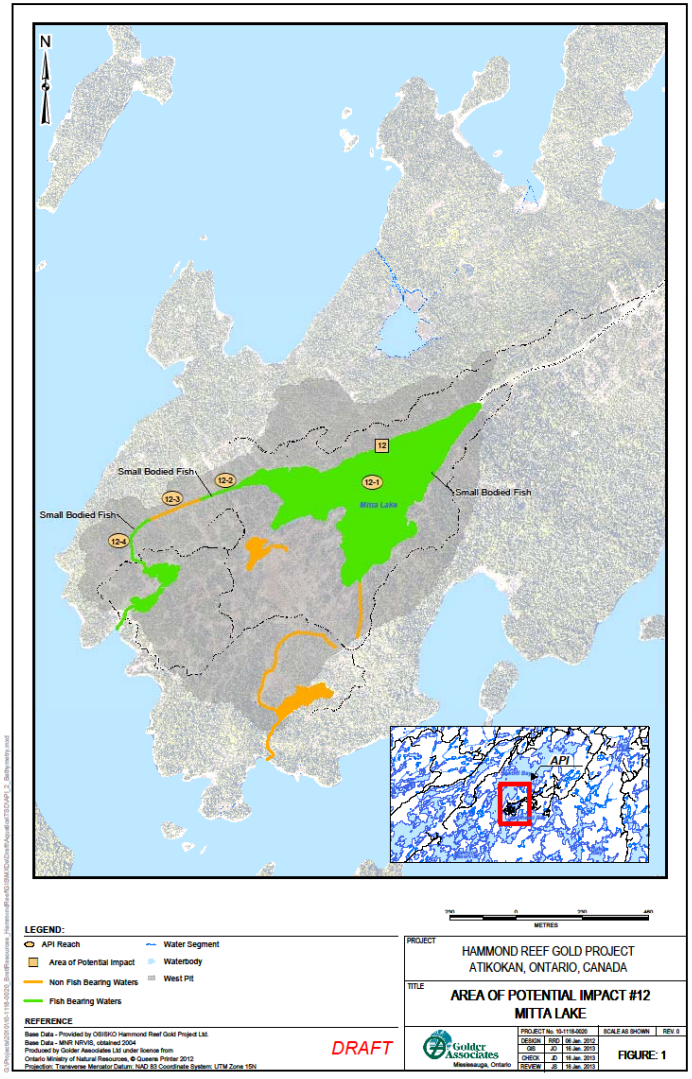
Tailings Management Facility



Waste Rock Stockpile



Waterbodies affected by the Open Pit



Fish Habitat Compensation (As stated in EIS/EA report)

- Onsite compensation plan to address valued fishery:
  - Stock 4 fishless ponds and create 3 headwater ponds
  - Create fish passage (walleye, pike) in lower Sawbill and Lumby Creeks
  - Create pike spawning habitat in Sawbill Bay in 3 locations
  - Create stream habitat/remove fish barriers at 14 stream crossings (along access and mine road)
- Complete compensation measures during the construction phase of project and monitor during operations phase
- Consider Steep Rock remediation efforts in lieu of some onsite work
  - MNR, public and Aboriginal groups have shown interest in Steep Rock alternative. (NOTE: Follow-up Consultation has indicated that the public and Aboriginal groups are NOT in favour of this option).
- Implement biannual Monitoring program (5 surveys over 10 years) to assess compensation success

Mitigation Measures

- Develop and implement Fish Compensation Plan
- Develop and implement Fish Salvage Plan
- Intake structures will be set at an appropriate height above the lake bottom and will be designed to minimize inflow velocities to minimize entrainment of aquatic organisms.
- Implement standard in-design mitigation erosion control measures
- Maintain sufficient flows in streams during construction of stream crossings and avoid sensitive periods for fish.
- Develop a policy to restrict fishing by Osisko employees while living at the accommodation camp
- Conduct test blast and adjust blasting operations to meet DFO guidelines

Follow Up Program

- Monitor lake levels
  - Adjust water taking if levels fall below minimum to maintain fish habitat downstream in the Seine River.
- Monitor discharge water quality
  - Implement additional treatment if water quality exceeds predicted concentrations of metals, sulphate and cyanide.
- Monitor seepage from TMF to Lizard Lake
  - Implement control measures if water quality exceeds worst case predictions.
- Monitor water quality post-closure
  - Implement additional treatment if water quality exceeds predicted concentrations for metals.
- Additional Environmental Monitoring to confirm
  - Compensation Success
  - Construction Compliance
  - Environmental Effects Monitoring (EEM)

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Summary of Offset Plan

Golder Associates

Habitat Losses

Using the Habitat Accounting Model developed for the project, habitat losses were as follows:

Total Habitat losses: approximately 34,000 Habitat Units

- Habitat Losses requiring MMER listing (approximately 22 000 HUs):
- Losses associated with the Waste Rock Management Facility: 5 features representing 1,977 HUs
- Losses associated with the Tailings Management Facility: 10 features representing 20,211 HUs
- Habitat Losses requiring Section 35 Fisheries Act Authorization: 7 features representing 11,989 HUs

MMER Listed Habitat Offsets

While the majority of the habitat losses are habitat for baitfish and other small bodied fish, there is one waterbody (API#2) that supports northern pike and there are the lower reaches of two headwater drainage features that provide some spawning/nursery habitat for northern pike in the receiving waterbodies (Upper Marmion Lake and API#8).

The following habitat offset projects are proposed to address these MMER Listed losses (totaling 24,000 HUs):

- A floodplain area at the mouth of Sawbill Creek
- An area at the mouth of API#1
- Snail Bay

MMER Listed Habitat Offsets

Each of these projects will involve a shallow excavation of an area of about 1.5 ha to establish littoral habitat within the current drawdown zone of Upper Marmion Lake. The existing area will be excavated to an elevation of about 413.2 masl which will ensure that the substrates are flooded in early spring, prior to reservoir filling. A series of shallow, branching trenches will be cut into the excavation to provide additional access to the area for fish and wetland materials will be placed in “mounds” throughout the excavated area to promote wetland development. These areas will provide spawning and nursery habitat for a variety of species including important recreational fisheries of Upper Marmion Lake.

Section 35 Listed Habitat Offsets

While the majority of the habitat losses are habitat for baitfish and other small bodied fish, there is one waterbody (Mitta Lake) that is considered to have potential as a baitfish resource and there are the lower reaches of several headwater drainage features that provide some spawning/nursery habitat for northern pike in the receiving waterbodies (Upper Marmion Lake).

The following habitat offset projects are proposed to address these Section 35 listed losses (totaling approximately 12,000 HUs):

- Stocking of several fishless headwater waterbodies
- The upper part of Trap Bay
- An area at the mouth of Lumby Creek
- Microhabitat features adjacent to an area of filling of a portion of the drawdown zone of Upper Marmion Lake
- Microhabitat features associated with the construction of the minewater discharge

Section 35 Listed Habitat Offsets

Several fishless ponds will be stocked with fish from Mitta Lake and API#2 to create a potential baitfish resource and also to preserve a remnant fish community representative of Mitta Lake, which will preserve an opportunity to restock these fish in the flooded pits post closure. The Trap Bay and Lumby Creek projects will involve a shallow excavation of an area of about 1.5 ha to establish littoral habitat within the current drawdown zone of Upper Marmion Lake. The existing area will be excavated to an elevation of about 413.2 masl which will ensure that the substrates are flooded in early spring, prior to reservoir filling. A series of shallow, branching trenches will be cut into the excavation to provide additional access to the area for fish and wetland materials will be placed in “mounds” throughout the excavated area to promote wetland development. These areas will provide spawning and nursery habitat for a variety of species including important recreational fisheries of Upper Marmion Lake. The Microhabitat features will include installation of partially submerged logs and felled cedar trees, rocky shoals and other features that will provide shallow water cover for fish species in Upper Marmion Lake.

Section 35 Listed Habitat Offsets

In addition to the habitat offset projects identified above, it is anticipated that with some minor modifications to the configuration of the bench elevations of the initial lifts around the pit perimeters during operations and construction of a broad shallow channel at approximately elevation 418 masl that the flooded pits will offer potential fish habitat (both littoral and open water habitat) and will contribute to the productive capacity of the Upper Marmion Lake, replacing some of the habitat lost in Mitta Lake. While this is not currently reflected in the habitat offset plan, further discussion with MNR, DFO and Osisko is proposed prior to the final submission of the Section 35 Authorization application.

Conclusion – Final Email from Neville

- Brian - I think you did a good job capturing our discussion on Monday. **This should be enough direction as to what habitat gains will be created to offset the losses for the EIS phase.**
- As you mentioned, further discussion between Osisko, MNR and DFO will have to take place at the permitting stage. The information and documentation that DFO requires for a Fisheries Act authorization is outlined in the recently proposed fisheries regulations (of which you have a copy). The two offset plans (one for sec.35 and one for schedule 2 MMERs) will require some more detail - in particular what fishless ponds will be stocked with fish (you mentioned one pond had very low oxygen this past March) and further discussion will be required with Osisko's mining engineers about the feasibility of creating habitat features in the two pits.

8 – Post-V2 EIS-EA Consultation

MINE
CANADIAN
MALARTIC

AGNICO EAGLE YAMANAGOLD

Hammond Reef Gold Project

Regulator Update

June 2015







Presentation Overview

- Canadian Malartic Corporation
- Hammond Reef Gold Project Overview
- EA Process to Date
- Comments on Final EIS/EA Report
- Key tasks undertaken in 2014/2015
- Aboriginal Update

Canadian Malartic Corporation

- In June 2014, Agnico Eagle and Yamana Gold formed a 50/50 partnership

- The new partnership acquired 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

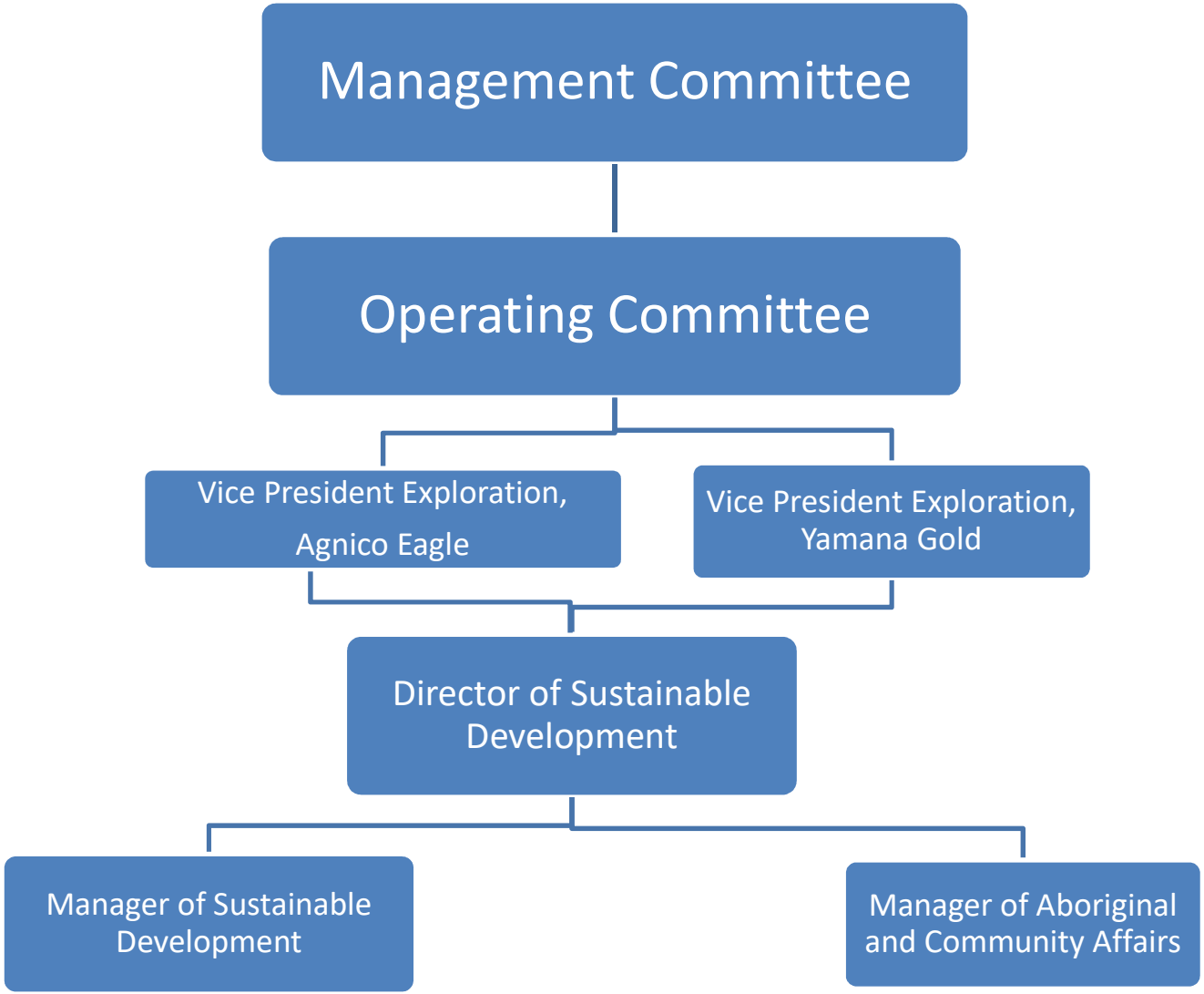
- All agreements and commitments made by Osisko have been transferred to Canadian Malartic Corporation (CMC)

Canadian Malartic Corporation

Our Team

- Canadian Malartic Corporation (CMC) is governed by a Management Committee, which is made up of three senior executives each from Agnico Eagle and Yamana Gold
- An operating committee reports to the Management Committee on a quarterly basis
- The corporation is divided into an operations team and an exploration team, each of which have two Vice Presidents – one from Yamana and one from Agnico.
- These Vice Presidents are directly responsible to the operating committee
- Hammond Reef Gold falls under the exploration team

Canadian Malartic Corporation



Hammond Reef Gold Project

MINE CANADIAN MALARTIC

- Northwestern Ontario, between Thunder Bay and Fort Frances
- Located approximately 25 km north of Town of Atikokan (pop. 3,000)

- Open pit gold mine

- Includes:
  - Ore processing facility
  - Tailings management facility
  - Widening of existing road
  - Construction of overhead transmission line

- Will require the draining of a small lake

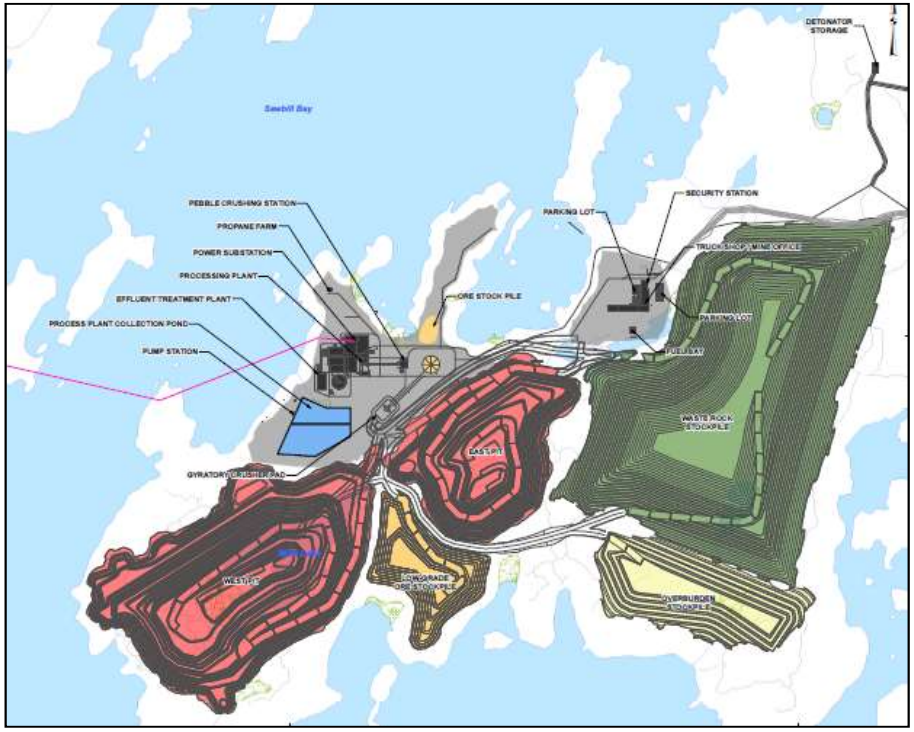


Hammond Reef Gold Project

MINE CANADIAN MALARTIC

- Exploration project complete in 2012
- Mine construction planned for 2016 (pending approval)
- Two year construction phase

- Eleven year operations phase
  - Designed for an ore throughput of 60,000 tonnes/day
  - Includes crushing, grinding, flotation, cyanide leaching, electrowinning and final refining using furnaces.
  - Fresh water will be sourced from Marmion Reservoir
  - Water will be recycled as much as possible
  - Intermittent effluent discharge from the Site.

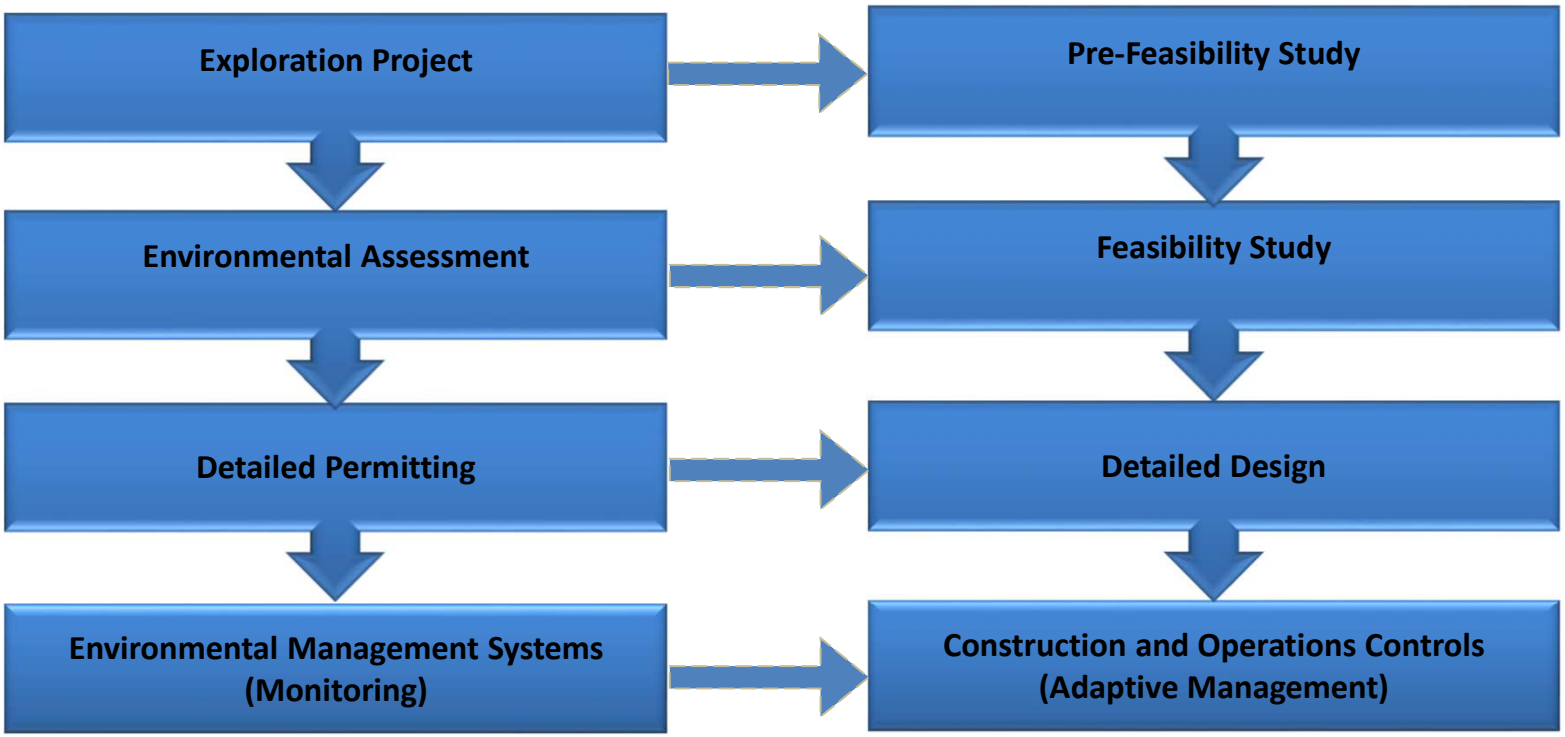


- Two year closure phase

Hammond Reef Gold Project

MINE CANADIAN MALARTIC

Project planning and design is a long term process that is directly linked to permitting



EA Process to Date

MINE CANADIAN MALARTIC

- December 2011 - EIS Guidelines
- July 2012 - Terms of Reference Approval

- February 2013 – Draft EIS/EA Report
  - ~700 comments received
  - Follow up meetings May – October 2013

- January 2014 – Final EIS/EA Report
  - ~200 comments received
  - Follow up meetings May – July 2014

- June 2015 - Final EIS/EA Report Addendum with comment responses

- Meetings with public and Aboriginal planned for coming weeks

- Anticipate receiving EA decision February 2016

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Key Comment Topics

- Alternatives Assessment
- Aboriginal Interests
- Air Quality
- Closure Planning
- Cultural Heritage
- Geochemistry
- Groundwater
- Hydrology
- Human Health
- Noise
- Project Description
- Socio-Economics
- Terrestrial Ecology
- Water Quality

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Alternatives Assessment

Mine waste alternatives process questions
Concern when alternatives evaluated equally

- Mine waste alternatives details changed over time
  - Naming was revised
  - Detailed engineering refined measurements

- Meetings and correspondence took place to finalize indicators

- Evaluation of alternatives do not always result in distinguishing outcomes
- Potential for difference does not mean a difference is found

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Alternatives Assessment

Concern the alternatives assessment is not detailed enough
Concerned that aspects of the Project do not have alternatives

- The alternatives assessment is both a section in the EIS/EA Report and a Technical Supporting Document
- It is true that not all aspects of the Project have alternatives
- The Alternatives Assessment Report was revised significantly based on comments received on the Draft EIS/EA Report.
- Additional work on alternatives and refinement of the Project design has taken place due to further comments by MNR
- Further design details will be provided to regulators as part of the detailed permitting required for the Project

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Air Quality
Concern about air quality effects during construction
Request clarity on planned air quality monitoring program

- CMC has committed to air quality monitoring during construction and operations

- Air quality effects during operations will bound those potential effects during construction

Parameter	Construction Phase	Operations Phase
No. of trucks greater 2,000 HP	10	20
Total distance travelled (VKT/day) (indicator for dust emissions)	4,332	8,248
Diesel fuel consumption (L/yr) mobile sources (indicator for exhaust gases emissions)	12,849,208	61,773,535
Diesel fuel consumption (L/yr) stationary sources (indicator for electricity exhaust gases emissions)	7,078,080	Emergency testing only
Total diesel fuel consumption (L/yr)	19,927,288	61,773,535

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Air Quality

Request including mobile sources and AGS in modelling

- Modelling was completed for all mobile exhaust emissions
- Mobile sources are not included in Ontario Compliance Assessment
- Passed on to be assessed in the HHERA
- Additional tables provided as addendums to MOE-Air 2

- Atikokan Generating Station (AGS) was not considered in the Cumulative Effects Assessment
- The AGS is now a biomass-fuelled plant
- Distance between the AGS and the Project results in limited interaction
- Air quality predictions were provided at the Town of Atikokan
- Results showed that limited changes would occur

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Air Quality
Request for AERMOD isopleths
Concern about traceability and clarity on emissions results

New information on emissions inventory and model inputs has been provided as an Addendum to EMRB-1 which includes:

- Emission source description
- Emission source type
- Modelling source ID
- Emissions data

The AERMOD isopleths are included in the following figures:

- T-12-1 Acrolein Concentration Contours
- T-12-2 DPM Concentration Contours
- T-12-3 PM10 Concentration Contours
- T-12-4 PM2.5 Concentration Contours
- T-12-5 NO2 Concentration Contours

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Closure Planning

Recommend use of overburden for reclamation

- Overburden will be separated from the waste rock
- Overburden stockpiled on site will be used to achieve the overall objectives of Part 9 of the mine rehabilitation code

Concerned that financial assurance for 218 years is difficult

- Financial Assurance for a minimum of 10 years post-closure water quality monitoring
- Contingency for long term monitoring throughout pit filling if required

Comments on Final EIS/EA Report

Closure Planning

Concern that Closure Plan is not detailed enough
Seek commitment for ongoing consultation throughout closure

- Certified Closure Plan will be develop and maintained
- Ongoing consultation with the MNDM, as well as Aboriginal groups and public stakeholders will take place prior to submission of a Certified Closure Plan

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Geochemistry

Question use of dissolved concentrations instead of aging test results

- The predicted concentrations presented consider the removal of Total Suspended Sediment to a discharge concentration of 0.0149 g/L based on a maximum permitted MISA TSS discharge of 0.015 g/L

Use of waste rock leach guidelines for tailings results

- The tailings are comprised of the various rock types within the deposit.
- A comparison of rock types in the waste rock samples provides context with respect to how consistent the tailings leachate values are

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Geochemistry

Concerned with Selenium flask test results

- Age test results for selenium indicate that all concentrations are at or below detection limits.
- 41 short term leach tests results show 3 samples above the detection limit of 0.001 mg/L, one with a concentration of 0.016 mg/L.
- When evaluating overall leachate potential of the mine rock each of these samples is considered and used to develop an overall leachate concentration for the pile
- Neither CCME or any receiving water guidelines are directly applicable to short term leach test results

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Geochemistry

Use of single tailings sample may not be representative

- The geochemical characterization work takes place early in the mine planning process, resulting in some variability.
- The production of tailings samples from metallurgical testing used all available information to develop appropriate samples
- The size of tailings samples were 1 to 5 kg, however these were split from samples that were from 10 to 100 kg
- The composite tailings sample rock proportions are similar to the proportions of rock types in the ore that is to be milled
- Metallurgical composite samples were subjected to whole rock and trace metal elemental analysis.
- Based on the information available on tailings, and waste rock sample rock types that make up those tailings, it is considered that the tailings samples produced are reasonable.

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Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Geochemistry
Potential for metal leaching of overburden

- Given the glacial history of the region the discontinuous, overburden will be similar to surface soils
- Test results from these materials show consistent, low solid phase metal concentrations over the local study area.
- Additional testing of overburden will be undertaken prior to construction or operations
- Sampling of overburden in the vicinity of the pit will be included in the Geochemical Characterization Plan for the site to be undertaken during operations
- The conceptual current mine design is robust in that seepage from the overburden stockpile is currently captured and can be treated if necessary prior to discharge from the site.

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Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Groundwater

Explain why only Lizard Lake is considered to be effected by seepage

- Lizard Lake was identified based on primary drainage pathways towards Lizard Lake to the east, and Marmion Basin to the southwest.
- Other nearby waterbodies are primarily located outside of the TMF watershed and are bounded by high ground, which consists of substantial bedrock outcrop.
- There is only one location (AP#8) which is within the upstream catchment of Lizard Lake.
- All waters, including those from Lizard Lake and upstream locations are already considered within the total discharge applied to Marmion Basin.
- The direct discharge of these concentrations into a water body is not expected to have negative aquatic impacts.

Regional Groundwater Group Leader for MOE's Northern Region stated on May 15, 2014 that upon further clarification he is "satisfied at this time with the estimates of seepage to Lizard Lake."

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Groundwater

Describe mitigation measures to collect seepage

- Measures to limit, prevent and collect seepage from the TMF, WRMF, ore, low-grade ore, and overburden stockpiles consist of a series of collection ditches, and pumping stations.
- During the detailed design stage for the Project additional drilling will be undertaken along the dam alignments, ditch alignments and near the edges of proposed stockpiles
- Considerations during detailed design will include bedrock and depth of overburden conditions, and the use of pumping as required to meet appropriate design objectives.

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Groundwater

Additional modelling of seepage for TMF, WRMA and stockpiles

- Additional 3D groundwater modelling efforts were undertaken for the eastern portion of the TMF.
- The preliminary 3D groundwater model showed that capture of greater than 90% of seepage could be achieved by the proposed control system
- Further details of this modelling evaluation are provided in the memorandum entitled ‘Tailings Management Facility, 3D Groundwater Modelling’

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Water Quality

Concern regarding use of runoff values from vegetated areas

- Stockpiles and the surface of the TMF are non-acid generating with limited potential for metal leaching.
- Given the geochemical characteristics, it is expected that the resulting runoff will also have similar characteristics.
- Runoff will be monitored during operations and at closure to verify prediction and adjust predictions if necessary.
- An allowance for treatment has been included should the monitoring data differ from the predicted values.

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Water Quality
Question precipitation values

- For Waste rock, Ore Stockpile, and Overburden the total annual precipitation is assigned a value of 758 mm.
- Mass load values are assigned to 85 % of the precipitation
- Remaining 15 % is assumed to be lost to the system due to evaporation and reduction in snow accumulation due to the height of the pile.
- Measured evaporation rates from rock piles at other Canadian Shield mine sites indicate that evaporation from the top of the pile can be as high as 60% of rainfall
- Evaporation in other natural areas of the Canadian Shield is several hundred mm (>20 % of rainfall)

Comments on Final EIS/EA Report

MINE CANADIAN MALARTIC

Water Quality
Water quality effects from draining Mitta Lake into Sawbill Bay

- The draining of Mitta Lake will be carried out to meet DFO fish relocation guidelines and MOE water discharge permits.
- Water will be used as part of mine commissioning/operation where possible.
- Water will be pumped to the PPCP and allowed to settle until the TSS is suitable for discharge to the Marmion Reservoir.
- Sediment and overburden will be stored in the overburden stockpile.
- The NNLP considers stocking of four fishless headwater lakes/ponds as part of the offset projects.
- Timing of the draining of Mitta Lake will be scheduled based on fish sensitivity.
- Water intake screening guidelines will identify the appropriate screen size and intake velocity.
- A staged drawdown for the lake will include rapid drawdown of the lake to create smaller pools
- Slow drawn down of pools to allow for fish capture will be the second stage
- Fish acclimation needs will be considered
- A protocol for fish handling and treatment will be developed.
- Discussions with Aboriginal groups and local baitfish license holders will be undertaken

Key Tasks Undertaken

MINE CANADIAN MALARTIC

Part 1: Responses to Federal Comments
Part 2: Responses to Provincial Comments
Part 3: Responses to Aboriginal Comments
Part 4: Respones to Public Comments

Part 5: Supporting Documentation

- New Air Quality Tables and Figures
- Water Quality Background Information
- 3D Groundwater Modelling Memo
- Assessment of Alternative Camp Locations Memo
- Site Access Road and Tailings Pipeline Alignment Memo
- Heritage Impact Assessment Report

Key Tasks Undertaken

MINE CANADIAN MALARTIC

Aquatic Study

- Study conducted in August and September 2014
- Additional fish tissue samples were taken
- This work was done in response to comments from Atikokan Sportsman Club
- Team include staff from Golder Associates, CMC and Seine River FN
- Study area included Sawbill Bay, Trap Bay, Lizard Lake, and Sapawe Lake
- Samples are currently at the government lab for analysis





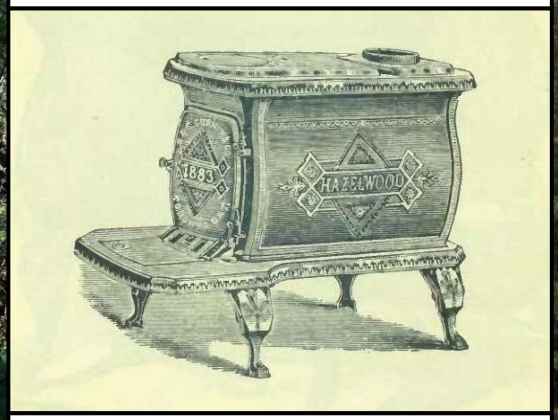
Key Tasks Undertaken

MINE CANADIAN MALARTIC

Heritage Impact Assessment

- Field work took place in September 2014
- Team included heritage specialists from Golder and CMC staff
- Documentation of old mine workings was undertaken
- This work was done in response to comments from government
- Meeting and discussion with Atikokan Museum Board
- Final report will be placed at the Atikokan Museum







Key Tasks Undertaken

MINE CANADIAN MALARTIC

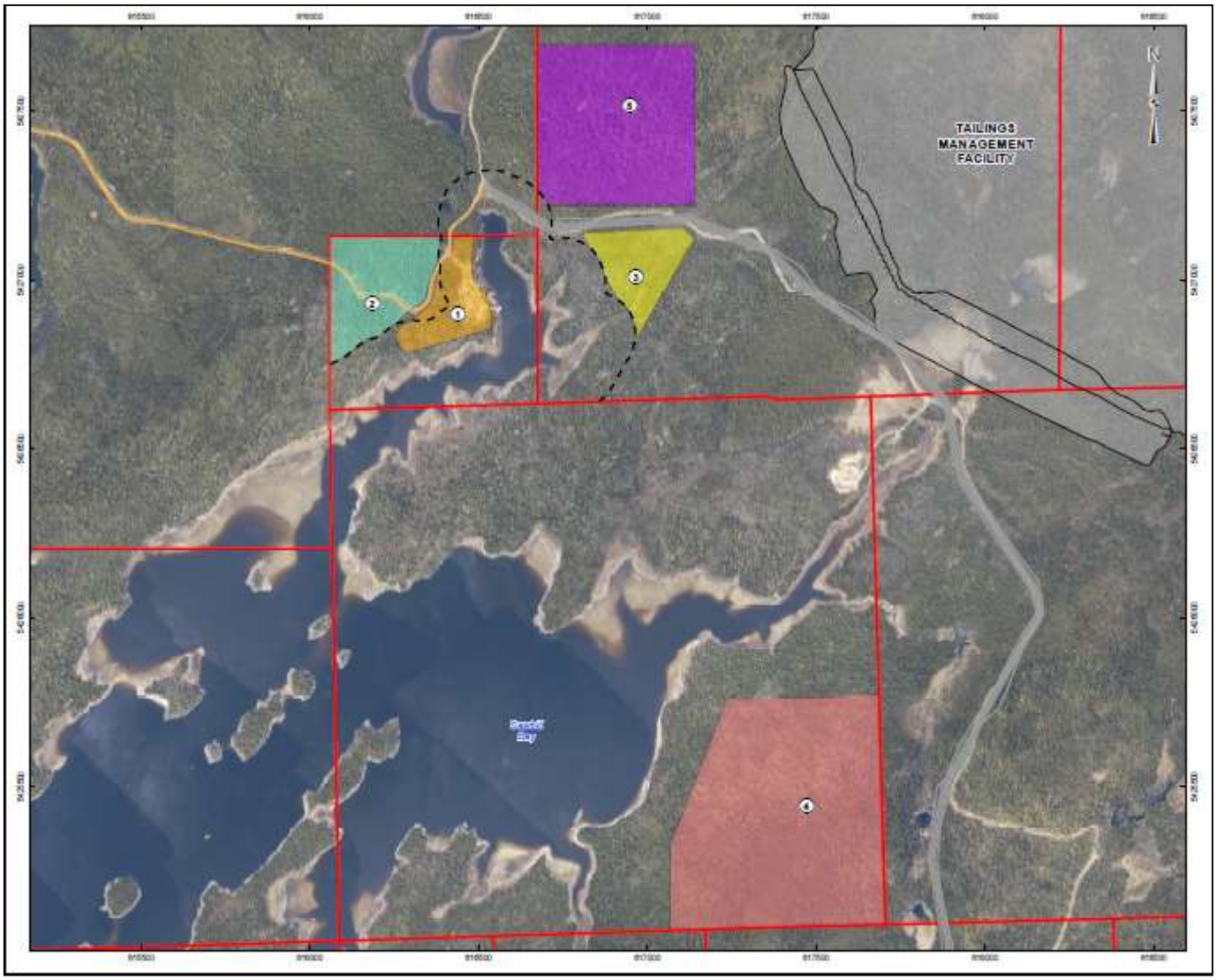
Workers Accommodation Camp

- Alternatives assessment of 5 different possible locations was undertaken
- Evaluation of each alternative based on:
  - Environment
  - Social
  - Technical
  - Economic
- This work was done in response to comments from government
- Goal was to locate the camp away from the shoreline
- New location was chosen which is within the Project footprint
- Change considered minor due to lack of new impacts

Key Tasks Undertaken

MINE CANADIAN MALARTIC

Workers Accommodation Camp



- Evaluation of 5 potential locations
- Selected Alternative 5
- Within Project footprint
- Respects the buffer zone from shoreline
- Off the public road
- Allows for a combined camp and mine water effluent discharge

Aboriginal Update

MINE CANADIAN MALARTIC

First Nations

- Fall Ceremony – Lac La Croix October 2014
- Spring Ceremony – Lac de Mille Lacs April 2015
- Project Update Meeting - March 2015
- Ongoing sponsorship of community events

Métis Nation of Ontario

- Meetings and negotiations throughout past 18 months
- Shared Interests Agreement signed June 2015
- Provided letters of support for the Project
- Signing ceremony and press release scheduled for June 26, 2015
- Sponsorship of Annual General Meeting



MINE CANADIAN MALARTIC

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