

June 22, 2021

Craig Hudson
Atlantic Mining NS Corp.
409 Billybell Way
Mooseland, NS
B0N 1X0

Dear Craig Hudson:

Subject: Fifteen Mile Stream Gold Project Round 1 Information Requirements

Nova Scotia Environment and Climate Change has completed the first technical review of the Fifteen Mile Stream Gold Project Registration Document. Provincial reviewers have identified additional information that is required to complete the review. Enclosed are the Information Requirements and Comments from provincial reviewers.

Should you have questions regarding this review or the information requirements, please do not hesitate to contact me at (902) 452-7891.

Sincerely,

<Original signed by>

Bridget Tutty, Environmental Assessment Officer
Environmental Assessment Branch
Nova Scotia Environment and Climate Change

Nova Scotia
Information Requirements and Comment Index Round 1
Fifteen Mile Stream: June 2021

NS Government

Number	Source
1	Nova Scotia Environment and Climate Change (ECC) Environmental Health
2	ECC Surface Water Quality Specialist
3	ECC Water Resources Engineer
4	ECC Hydrogeologist - Sustainability and Applied Science Division
5	ECC Wetland Specialist
6	ECC Inspection Compliance and Enforcement Division
7	ECC Resource Management Unit
8	ECC Air Quality Unit: Air Quality and Noise
9	ECC Climate Change Unit
10	ECC Protected Areas and Ecosystems
11	NS Department of Lands and Forestry
12	NS Office of L'nu Affairs
13	NS Department of Agriculture
14	NS Department of Fisheries and Aquaculture
15	NS Department of Municipal Affairs
16	NS Department of Community Culture and Heritage
17	NS Department of Energy and Mines
18	NS Department of Transit and Active Transportation
19	NS Department of Labour and Advanced Education

Environment

Date: April 30, 2021

To: Environmental Assessment Officer

From: Environmental Health Consultant, Sustainability and Applied Science

Subject: Fifteen Mile Stream Gold Project Environmental Assessment

Scope of review:

The focus of this Environmental Assessment review from the NSE Sustainability and Applied Science Division's Regional Environmental Health Consultant is potential impacts on human health. In general, the scope of this review includes the assessment of the potential for the proposed undertaking/project to adversely affect human health in all phases of the project. Any recommendations provided below are meant to supplement the actions that are outlined in the EA submission documents.

Documents reviewed:

The documents outlined below formed the basis for this EA review, and is referred to as the 'EA submission' through the rest of this memorandum:

- Environmental Assessment/Environmental Impact Statement Registration Document – Atlantic Gold, Fifteen Mile Stream Gold Project including Appendices A - L. Report Prepared by Atlantic Gold. Registered on March 16 2021, and accessed from <https://www.novascotia.ca/nse/ea/fifteen-mile-stream-gold-project.asp>

Comments re: EARD – Fifteen Mile Stream Gold Project:

General

Information provided in the submission is presented in a manner that challenges readers to navigate among many different documents to develop an understanding of the report's findings. This creates a time-consuming and cumbersome process for reviewers. The information contained in the EA submission is primarily comprised of general statements, with little supporting evidence, data, or rationale within the main document. The data and the detail are primarily contained within supporting documentation. Providing greater overlap of information among the various documents would make the review process less burdensome.

The review period was time-limited considering the volume of information presented in the EA submission and supporting documentation and the manner in which information is presented.

Exposures with the potential to impact human health including noise and air contaminants other than dust were not included with other potential human health exposures in the 'Evaluation of Potential Human Exposures and Risks Related to Emissions From the Fifteen Mile Stream Mine Project,' hereby referred to as Appendix C.

Section 2.6 of Appendix C discusses human receptors and references distance of some homes from the project area. Throughout the EA submission there are references to nearby seasonal structures such as camps or cottages, however it is unclear to the reviewer whether these are considered in the context of potential human receptors.

Recommendations:

ECC 1 Format report to ensure information regarding potential human exposures related to the project are addressed in one location.

ECC 2 The proponent should provide additional detail, including mapping, to justify claims made about human receptors in the area and to identify likely areas of transient interaction of the Mi'kmaq people through traditional activities such as hunting, fishing and gathering of country foods.

Drinking & Recreational Water Quality

Appendix C states in the executive summary *“There are no residences near the proposed Mine site, and the nearest residence with a groundwater well is approximately 8.7 km away from the Mine. Therefore consumption of groundwater was not considered an open exposure pathway.”* Similar claims are made throughout the submission to justify lack of further exploration of impacts to groundwater. It should be noted that there are several local undeveloped lots of private property and Crown Land nearby. The report fails to provide evidence that consideration has been given to whether future potential development of these properties requiring access to groundwater for drinking sources may be impacted.

Several watercourses are identified within and adjacent the project area. Table 7-1 in Appendix C predicts baseline exceedances of nutrients including nitrate during operations and post closure. Nitrogen based nutrients may contribute to the growth of cyanobacteria, which creates toxins that are averse to human health.

Recommendations:

ECC 3 The proponent should conduct further assessment to verify potential human health impacts related to consumption of groundwater within the area of influence of the project. Approval of the proposed undertaking should be contingent on the proponent developing a plan for the identification and mitigation of adverse impacts to future well water quality associated with the project.

The proponent should establish a process to address water quality complaints. The proponent should establish additional mitigation measures in the event complaints are received to ensure water quality issues are resolved in a manner that does not negatively impact human health.

The proponent should consider establishing a communication plan to inform recreational water users in the event of contamination caused by an accident/spill or cyanobacteria blooms.

Air

Section 4.2 of Appendix C indicates that some COPCs were excluded based on lack of data from analysis of waste rock. Before making assumptions that these COPCs are negligible, the proponent should attempt to fill in data gaps to justify the approach.

The proponent has identified in Section 6.2.9 of the EA Submission that a complaint process will be developed; however, no information is provided regarding action related to potential complaints.

Recommendations:

ECC 4 Provide justification for exclusion of COPCs where data on waste rock is currently unavailable.

The proponent should establish additional mitigation measures in the event complaints are received to ensure air quality issues are resolved in a manner that does not negatively impact human health.

Noise

Noise is addressed in section 6.1 of the EA Registration Document but was not addressed in Appendix C. The proponent discusses the potential for noise generation throughout the life of the project and references provincial legislation regulating noise, however, does not address the potential impact of noise on human health.

Section 6.1.6.1 identifies sensitive receptors to be local camps and residences, however, neglects to address the impact to other potential activities in the area such as hunting, fishing and harvesting of country foods.

Recommendations:

If noise complaints are received, the proponent should consider implementing additional mitigation, in addition to noise monitoring at receptor locations.

Given the location of the proposed undertaking is positioned in rural or semi-rural area, adopting noise guidelines that considers the degree to which noise exceeds normal levels would offer greater protection against negative noise impacts among residents. Health Canada has published such guidance titled Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. A link to the document is available below.

<https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-evaluating-human-health-impacts-noise.html>

Country Foods

The proponent has identified in Appendix C that the Mi'kmaq people may use the area to harvest country foods. References are made throughout the submission that habitat loss is expected through the project, therefore it can be reasonable expected that may negatively impact the availability of some country foods.

The submission indicates that there are elevated levels of contaminants such as arsenic in existing ground, and that existing ground may be redistributed to be used for fill, ground cover, and to build roads. The submission fails to acknowledge the potential contribution of compound effects of the mobilization of existing contaminants from repurposed ground material in addition to new contaminants contributed through the project; in the context of country foods, particularly through dust, soil and water.

Recommendations:

The proponent should consider monitoring organisms used as country foods on or near the site for elevated contaminants considering the proposed use and redistribution of existing ground which has elevated levels of contaminants such as arsenic.

The proponent should establish a process to address complaints related to country foods. If complaints are received, the proponent should consider establishing additional mitigation measures to ensure issues related to consumption of country foods are resolved in a manner that does not negatively impact human health.

The proponent should consider establishing a communication plan to inform recreational water users in the event of contamination caused by an accident/spill or cyanobacteria blooms.

**Environment and
Climate Change**

Date: April 30, 2021

To: Bridget Tutty, Nova Scotia Environment

From: Surface Water Quality Specialist, Water Resources Management Unit

Subject: Fifteen Mile Stream Gold Project

Scope of Review:

As Surface Water Quality Specialist with the Nova Scotia Environment and Climate Change (NSECC) Sustainability and Applied Science Division, the following review of the Environmental Assessment Registration Document and associated documents for the Fifteen Mile Stream Gold Project focuses on surface water quality, and the interaction of project activities with valued environmental attributes that impact surface water quality (e.g., ground water quality, surface water quantity, erosion, treatment activities, processes, etc.)

The following review considers whether the environmental concerns associated with the above subjects and the proposed mitigation measures have been adequately addressed in the EARD. The recommendations provided below are meant to supplement the actions outlined in the documents submitted by the proponent to the Impact Assessment Agency of Canada (IAAC).

Reviewed Documents

The following documents formed the basis for this review:

1. Environmental Assessment Registry Document.
2. Environmental Impact Statement Summary Document.
3. Appendices B5, C2, & L1 of the EARD.

Comments:

- The submission includes a substantial amount of content (~5,000 pages).
- The context of the proposed project is complicated, due to its proposed interaction with another ongoing project at a different site and the considerations of cumulative effects on both sites.
- As such, this review was required to be of much tighter scope – clearly marked sections specific to surface water quality were considered, but there was limited if any review of any other

sections and Appendices for surface water quality considerations (e.g., surface water quantity, groundwater quality and quantity, geology, soils, and sediment, aquatic habitat, wetlands).

- The sheer number of direct and indirect impacts and references to surface water quality, in the EARD and its Appendices, is of such a high number that it was impossible to review all materials in full, and to adequately synthesize the information in those that were reviewed, in full, within the time horizon afforded for the purposes of this (provincial) review process.
- The applicant, Atlantic Mining Nova Scotia (hereafter, “AMNS”) provided substantial information and interpretation to establish the baseline conditions against which to assess project impacts, for water quality and as well as other biophysical elements that impact water quality, including baseline arsenic and mercury and historic tailings and waste rock.

ECC 5 The characterization of the spatial extent of these contaminants within the principal downstream receptor, Anti-Dam Flowage, was limited in scope and should be expanded to enable a better baseline for the future assessment of the environmental impacts of project activities.

- AMNS has indicated that, for all facilities intended to hold water at the Fifteen Mile Stream (FMS) and Touquoy Mine Site (TMS), whether during the Construction, Operation, or Closure, there may or may not be a need to treat water quality prior to its discharge to the receiving environment. It has indicated that a Modular Effluent Treatment Facility (‘METF’) will be available to perform water treatment on-site, if required. The EARD does not identify or describe means by which the applicant will assess the adequacy of water quality for release, or in any way characterize the scope of possible treatment to be provided by the METF. As presented, there is insufficient information available to assess the adequacy of AMNS’ water quality assessment process, and the ability of the proposed METF to treat adequately for any or all contaminants of concern prior to discharge.

ECC 6 It is recommended that AMNS provide additional information that clearly identifies all possible contaminants that may need to be treated through the METF. These include, at minimum, As, Hg, Al, TSS, oils, lubricants, and various Nitrogen species. It is further recommended that AMNS fully characterize the treatment capacity of the METF, as defined by the contaminants that it is qualified / accredited to treat, as well as the treatment capacity (the contaminant loads that it is designed to handle), instantaneous and daily treatment capacity compared to anticipated treatment requirements, as well as the scalability of the proposed METF, as may be required. A more thorough examination of alternative options for water treatment provision, such as permanent wastewater treatment system, should also be provided to reduce the uncertainty inherent in the proposal as presented.

- The FMS TMF is designed to allow seepage to occur through its embankments and foundations, and the overall FMS facility water management plan explicitly accounts for this seepage through the design and installation of seepage collection ditches. AMNS’ proposal does not consider the alternative of designing the TMF not to leak, whether through the installation and maintenance of an impermeable liner and leachate collection / treatment system.

ECC 7 This alternative should be explored and assessed further. The selection of the preferred alternative should carefully consider the magnitude, duration, and significance of the protection of water quality and associated VCs of this alternative against the approach recommended in the proposal.

ECC 8 AGNS indicates that the FMS TMF is anticipated to operate under surplus water conditions and therefore will need to discharge excess water. The option of constructing a larger TMF, which would reduce the surplus water condition, was not explored in depth, and it is recommended that this alternative be further investigated.

- Once TMS mine operations end, AMNS proposes to deposit FMS tailings, generated at TMS through the processing of FMS gravity and flotation concentrates, within the exhausted pit, as it fills with water. It is NSECC's understanding that the federal MDMER regulations may not apply to the Touquoy TMF or open pit after Touquoy mine operations end, and that, if this is the case, that the Project will be subject solely to environmental monitoring requirements set by NSECC regarding discharge limits and downstream water quality.

ECC 9 It is recommended that AMNS submit adequate data, models, and model results to NSECC to confirm that any water discharged from the TMS open pit will meet all water quality guidelines. It is further recommended that, should AMNS propose to discharge water that does not meet all water quality guidelines, but deems the residual risk to the downstream environment (Moose River) to be low / insignificant, then AMNS should develop and submit a recommendation for an initial dilution zone (IDZ), also known as a mixing zone, and a monitoring strategy that can be effectively audited by NSECC personnel.

- AMNS proposed to cover potentially acid generating rock (PAG), within the designated stockpile, at the end of FMS mine operations with a clay cover, but did not provide the modelling cited as the justification for its assertion that this preferred alternative is the best alternative, or that the impacts would be similar to other alternatives.

ECC 10 It is recommended that AMNS provide the modelling performed to justify this approach to mitigate acid rock drainage and metal leaching.

- AMNS and its consultants have based their expectations of water quality contamination and the requirement for treatment before discharge on sophisticated modelling approach that include source terms from baseline water quality, contact water, non-contact water, groundwater quality and quantity, geology and soils. This modelling approach did not include predictions of sediment contamination during operation, closure, and post-closure. In the absence of these source terms, the mass balance equations used to predict water quality are incomplete, and the predictions presented in the EARD cannot be verified or relied upon.

ECC 11 It is recommended that the mass balance equations and associated water quality modelling be re-run once sediment contamination predictions for all project phases have been captured within the modelling process. The project's assertion that modular water treatment is adequate for treatment requirements is dependent upon the results of this modelling. That determination cannot be verified in the absence of the updated modeling; a re-assessment could conclude that permanent water treatment facilities are required.

- The modelling software used for this approach has been identified – Goldsim version 12.1 – but AMNS has not provided further information to verify that it is the best suited model for this purpose, or that this software is trusted and used widely in other jurisdictions. It is recommended that AMNS provide additional information to provide greater certainty in the appropriateness of this modelling software.
- Sediment contamination is a relevant pathway of effects and must be assessed to provide

adequate certainty to the prediction of effects on this VC and associated VCs (notably, groundwater quality, surface water quality, wetlands, and aquatic habitats).

ECC 12 Upon closure of the FMS TMF, it is recommended that AMNS provide adequate mitigation measures, such as installing adequately thick and compacted capping materials on tailings and runoff collection and erosion prevention / sedimentation control systems. In addition, AMNS should conduct an environmental monitoring program to test tailings within this facility for acid rock drainage. If test results indicate the presence of excess potential contaminants of concern, AMNS should develop and implement mitigation measures to reduce the likelihood of environmental impacts, such as but not limited to a leachate collection and treatment system.

- Ore processing steps proposed to be completed on the FMS site include a concentrate thickening step and the use of a filter press to remove surplus water from the concentrate prior to trucking to the TMS. The fate of this surplus process water generated through use of the filter press is uncertain. AMNS should clarify if it will be disposed of within the TMF or elsewhere.
- AMNS presented four options for the management of historic waste rock and tailings, as developed for AMNS by Stantec. AMNS indicates that it has not selected from among the four options.

ECC 13 It is recommended that AMNS specify the option(s) they intend to implement – whether one of those presented by Stantec or another, which regulators may further assess for completeness, adequacy, and reliability.

- AMNS has indicated that the aqueous submersion of PAG materials is internationally preferred option to limit ARD/ML. This assertion has not been corroborated by evidence to that effect, and some studies have concluded that aqueous submersion does not automatically ensure that acid generation is completely halted.

ECC 14 The applicant should provide further evidence to provide greater certainty that aqueous submersion of these materials at the FMS facility will result in complete disruption of acid generation.

- The applicant proposes to use predicted water quality concentrations, generated on the basis of baseline surface water quality conditions, as the basis for assessing change in water quality at monitoring stations over time as well as comparison to reference sites.

ECC 15 It is recommended that the modeling used to generate these predictions be continuously updated by the results of ongoing monitoring activities at TMS, such that the actual water quality condition of monitored Touquoy watercourses, at mine closure, form the baseline against which to measure the impacts of FMS tailings deposition within the Touquoy TMF and/or pit.

- The assessment of cumulative effects of FMS operations on the environment surrounding the Touquoy site should include 1) the effects of FMS on the Touquoy site, and 2) the effects of the Touquoy mine (all phases) on the Touquoy site (inclusive of the all designated receptors, ultimately but not exclusively, Moose River).
- AMNS proposes to develop a surface water and groundwater management and contingency plan, consistent with the EMS Framework Document, following the assessment of this EARD.

This approach, by design, prevents reviewers from assessing the scope, appropriateness, and adequacy of the proposed Plan to protect the environments of the Touquoy and FMS sites.

ECC 16 It is recommended that the applicant develop and submit this plan to the regulators (IAAC and NSECC) to enable an assessment. This Plan should specifically include far-field sediment and water quality monitoring for both the FMS and Touquoy sites because studies have shown that fine tailings may readily be transported downstream. The proposal is incomplete without this detailed plan.

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1 - ECC Water Resources Engineer

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 17	ECC Water Resources Reviewer	ECC		2.4.1.1.4 (27)	<p>The submission states: Flows collected in the ponds (including precipitation on the surface of the pond) will be pumped back to the TMF supernatant pond. The north seepage collection pond has a maximum volume of approximately 20,000 m3 and the east seepage collection pond has a maximum volume of approximately 15,000 m3.</p> <p>The submission states: Three water management ponds are designed to collect runoff from the stockpiles and open pit (Figure 2.1-5). The ponds were designed to store catchment runoff for the 1 in 10-year 24-hour storm event (116 mm) plus direct precipitation for the 1 in 200-year 24-hour storm event (184 mm)." It is then stated that "These water management ponds will be built prior to initial pit development and lined with a geosynthetic or clay liner in order to manage any potential contaminated water during construction from excavation of historic tails.</p>	<p>What is the design criteria of these ponds? The criteria for the other ponds on site are provided, but not for these. Are they sufficiently sized for storm events, and for which? What is the plan for storm events that exceed criteria?</p> <p>What is the justification for the design criteria, and what happens for storms where the design criteria is exceeded? Where will they discharge, and what are the risks?</p>
ECC 18	ECC Water Resources Reviewer	ECC		2.4.1.1.4 (27 – 28)	<p>Onsite ponds are outlined in a way that is confusing and are named in a way that is not consistent with the names on Figure 2.1-5, which is referenced in the section (e.g., plant site collection pond in text, water management pond in figure – these are the same, correct?). It is challenging to follow as a result.</p>	<p>Please make text and figure more clear.</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 19	ECC Water Resources Reviewer	ECC		6.6.5.2.5	The submission states: 1 in 20 year Annual Dry condition: Modelled to confirm flow conveyance is achieved under low flow conditions.	How was this completed? The driest 1 day, or was a standard 7-day or otherwise low flow metric used? Where can this information be found?
ECC 20	ECC Water Resources Reviewer	ECC		6.6.5.2.6	The submission states: The Realignment design, as revised by Wood, was not modelled, rather, the range of stream velocity estimated through the revised design (Wood 2020) was compared from those modelled using the KP (2020) design for applicability to this downstream hydraulic assessment.	<p>Through reading this sentence, it is not clear what has been completed and why. How were velocities compared for 'applicability to this downstream hydraulic assessment' – it is unclear to me what this means, please clarify.</p> <p>As more general feedback - at current, it is difficult to track the various flow design estimates, velocities, and other parameters related to assessments of the Seloam brook realignment. I drafted comments as a response to information reviewed in other Appendices (e.g., Appendix D.4) specific to the design that was put forward, but it is understood that the concepts in Appendix J.5 are the most current and relevant for review - please confirm this. There are at least three consultants completing assessments related to the realignment - it is difficult to understand how these assessments consider each other, the various models in play, and whether certain assessments are considerate of others or are using older information, etc. As such, it is</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						difficult to have a clear picture of what is being proposed and the assumptions and criteria that have led to it. As an example, Appendix J.5 outlines that 'The overall channel slope, based on Knight-Pieshold data, was assumed to be 0.5%'. Is this a reasonable assumption, considering the length of the channel has seemingly been increased from what Knight-Pieshold outlined in their concept (Figure 1 vs. the straight channel concept in Knight Pieshold)? There are many perspectives that must be considered for the proposed 'realignment' activity to be successful, and it is critical that these perspectives be effectively connected and that it is clear that this has occurred in review.
ECC 21	ECC Water Resources Reviewer	ECC		6.6.5.2.6	The submission states: In order to assess the North Channel and South Channel, the hydraulic model was simulated with the following conditions: <ul style="list-style-type: none"> • Baseline Conditions: An estimated existing discharge through the North Channel and South Channel. 	What calibration or validation was completed on the model? What is the level of uncertainty in the results, the range of expected results, and proposed next steps to refining the model?
ECC 22	ECC Water Resources Reviewer	ECC		6.6.8.1.2.2	The submission states: Hydrology was also evaluated at the outlet of the WC12 feature, upstream of the inflows from Seloam Lake / Reservoir, as a result of construction of site infrastructure, mainly the TMF and stockpiles.	How has the redirection of WC12 through WC14 through the alignment of Seloam Brook been considered in the current plans and designs? Pre-development, WC12 would enter Seloam Brook prior to the footprint of

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						the Open Pit - how will the flow direction of WC14 be reversed, and what impacts will this have on that stretch of watercourse prior to entering Seloam Brook? The potential impacts on WC42 and WC4 resulting from increased flows entering these reaches has been considered in the submission – do similar concerns not exist for WC13, and if not, why?
ECC 23	ECC Water Resources Reviewer	ECC		6.6.8.1.2.2	The submission states: Under mean discharge rates, simulated baseline water velocities through the North Channel ranged from 0.7 m/s to less than 0.1 m/s, with an average of approximately 0.2 m/s.	As outlined in other comments, it is currently unclear how much confidence can be had in these values. How do they compare to what has been measured on site? What has been done to support these results?
ECC 24	ECC Water Resources Reviewer	ECC		Appendix D.4	The submission states: Stream velocity estimated for within the revised realignment plan (as described in Appendix J.5) are in the same order of magnitude of the analysis completed herein. These estimates were for within the channel and not reflective of the plunge pool/dissipation basin incorporated in the KP realignment (as described in Appendix D.4). Therefore, it is likely that the conceptual placement and applicability of these downstream features remain consistent with this hydraulic modelling.	<p>This statement makes it unclear how relevant the values provided in the submission are. The last sentence also requires clarification, as currently it is not clear what it is trying to convey.</p> <p>To reiterate earlier comments, it is currently difficult to have a clear picture of the realignment between the various assessments provided.</p> <p>The statements in this section speak to the fact that there are many differing assessments and proposals for what will be done here, and it is unclear from reviewing</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						<p>the submission how and if these proposals interact and overlap, as is mentioned in other comments from other Sections of the submission.</p> <p>Further, the quality of the information being used as inputs in these various models is unclear – understanding this is conceptual, what is the level of uncertainty in the current results, and how will this be improved/mitigated as designs progress?</p>
ECC 25	ECC Water Resources Reviewer	ECC		Appendix D.4	The submission states: Six species of fish are noted to be present within the Fifteen Mile Stream (FMS) project area; Brook Trout, White Sucker, Lake Chub, Brown Bullhead, Banded Killfish, and Ninespine Stickleback.	This list of species does not align with those outlined in Table 6.8-21 of the submission
ECC 26	ECC Water Resources Reviewer	ECC		Appendix D.4	The submission states: In order to model the incoming tributaries and other waterbodies, a channel bed was manually cut into the terrain approximating the natural systems based on Google Earth imagery of the area.	It is not clear what was done through this sentence - how was channel geometry estimated through Google Earth imagery, if this is the correct interpretation of this statement?
ECC 27	ECC Water Resources Reviewer	ECC		Appendix J.5	The submission states: The modelled results show that flows as high as the 200-year event would easily be contained within the conceptual flood plain, and or within a combination of constructed channel and natural topography.	It is currently unclear how was the conceptual flood plain included within the model. Please clarify

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 28	ECC Water Resources Reviewer	ECC		Appendix J.7	The submission states: Each stream reach potentially affected by the Project has been identified using the existing project infrastructure layout and the existing aquatic habitat mapping (Figure 3).	I would disagree with the completeness of Figure 3, if the intent of the figure is to highlight all 'stream reaches potentially affected by the Project' as is currently written here. For example, reductions in flow as a result of the proposed project at WC12, and other questions found in this comment package
ECC 29	ECC Water Resources Reviewer	ECC		Appendix J.7	The submission states: While the construction of the Seloam Brook Realignment is a mitigation to limit project based HADD, the timing is important in achieving this objective. The timing of the realignment, and therefore the fish habitat design features, will occur as one of the initial project construction activities because it will effectively realign stream flows away from other required project areas. As a result, no delay or gap in fish habitat mitigation / offset and habitat loss is anticipated. In fact, the fish habitat within the realignment will be constructed and completed prior to the majority of HADD activities.	Further details surrounding the approach to construction and the initial redirection of flows through the realigned channel are necessary to have an adequate understanding of the potential downstream impacts related to this activity
ECC 30	ECC Water Resources Reviewer	ECC		2.4.3.2.2.2	The submission states: Based on the water balance report completed for the site (refer to Appendix D.2), the filling of the pit will take approximately three to four years...Once the pit fills with water and water quality is acceptable for discharge, a connection will be re-established between the newly formed pit lake and Seloam Brook. If necessary, water treatment will be implemented for effluent which does not meet	It is currently unclear if the impacts to water resources downstream during the time of pit filling have been assessed and where this information can be found. This represents a significant diversion of local water resources over these years to support the filling of the pit

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					acceptable criteria and discharged to Anti Dam Flowage via the existing pipeline alignment.	
ECC 31	ECC Water Resources Reviewer	ECC		2.4.3.4.1	The submission states: Water treatment will continue, as required, with discharge to Anti-Dam Flowage during the post-closure stage, and monitoring programs will be on-going until such time that discharge water quality meets appropriate confirmed criteria at the point of discharge. At that time, discharge will cease into Anti-Dam Flowage and will be re-directed to Seloam Brook.	How much water will be redirected to Seloam Brook, and what are the potential impacts to the watercourse as a result of this?
ECC 32	ECC Water Resources Reviewer	ECC		6.6.5.4.2	The submission states: TMF seepage that bypasses the seepage collection system will enter the adjacent surface water environment at the SW5 and SW15 catchments.	How much TMF seepage is expected to bypass the seepage collection system and where can details related to this be found?
ECC 33	ECC Water Resources Reviewer	ECC		6.6.5.4.2	The submission states: During the post-closure phase, the tailings beach will be covered with material sourced from the till and topsoil stockpiles. The TMF seepage collection system will remain in place. Contact water from the TMF seepage collection ponds and embankments, the open pit walls and seepage from the covered PAG stockpile will report to the open pit. Non-contact runoff from reclaimed former infrastructure areas (former plant site, former LGO stockpile, former till stockpile), runoff from the covered PAG stockpile, runoff from the NAG stockpile, pit catchment runoff, groundwater inflow and precipitation will also report to the open pit. The	To confirm, the open pit will discharge to Seloam Brook, and not Anti-dam flowage, correct? As previously mentioned, have the potential impacts of this planned scenario to downstream flows been assessed, and where can this information be found?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					surplus in the flooded open pit will be discharged to Anti-Dam Flowage.	
ECC 34	ECC Water Resources Reviewer	ECC		Appendix B.3 Section 5.2.2	The submission states: Low flow statistics based on the St. Mary's at Stillwater monitoring location	Please provide justification for using the St. Mary's at Stillwater monitoring location to infer low flow values for drainage areas that are 0.2% to 7% its size to support the validity of these values
ECC 35	ECC Water Resources Reviewer	ECC		Appendix B.4 Section 2.3.1	Table 1	A general note - the way that these are referred to is confusing - a watershed delineated at SW14 would include SW5 and SW2, as Seloam Brook enters Fifteen Mile Stream prior to SW14, but from review of the information in this table, I interpret that these 'watersheds' are just the contributing areas outlined on the map, and not the actual watersheds at the points outlined on Figure 2. This is confusing and could use some clarity in the text or naming convention
ECC 36	ECC Water Resources Reviewer	ECC		Appendix B.4 Section 2.5.7	The submission states: The stochastic sampling routine in GoldSim chronologically selected climate (P and ET) from each monthly distribution (i.e., a random January P and ET, a random February P and ET, etc.). Consequently, the model was capable of producing a variety of climate conditions within and outside of those recorded in the historical climate observations (Appendix B). Importantly, the model was limited to sampling climate parameters within each month; for	For clarity, do the random P and ET chosen for each month align? I.e., 1995 January P would be used with 1995 January ET? Or were P and ET both randomized for each month?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					example, a precipitation sampled for January was not concurrently sampled with an evaporation statistic assigned to July.	
ECC 37	ECC Water Resources Reviewer	ECC		Appendix B.4 Section 3.1	The submission states: The results of the existing conditions model were compared against the pro-rating of a regional WSC gauge (St. Mary's River) to the modelled watershed area.	As outlined in comments above, please provide justification for pro-rating a watershed of 1350 km ² to watersheds 0.2% to 7% its size to support this approach.
ECC 38	ECC Water Resources Reviewer	ECC		Appendix B.4 Section 4.0	The submission states: Through stochastic simulation, a wide range of climate conditions were simulated, and the results of the hydrological simulations are further interpreted in the accompanying EIS.	Please provide the location in the EIS where they are further interpreted
ECC 39	ECC Water Resources Reviewer	ECC		Appendix B.7 Section 4.1.1	The submission states: The predicted potential change in discharge is generally within the existing flow intra-annual flow regime of the waterway, with the exception of July, when average daily discharge was estimated to decrease to below the intra-annual variability by less than 10%.	Please provide an assessment of the results – for example, do the results outlined in Table 8 make sense upon review? For example, what is the justification for the lower limit of 900 m ³ /d that is observed consistently from May - October in that case?
ECC 40	ECC Water Resources Reviewer	ECC		Appendix B.7 Section 4.1.2	The submission states: Simulated water elevations for the Operations and Post-Closure Phases of the Project are provided in Appendix A. To provide a temporal context, these figures were developed for spring runoff (March) and dry season (July) flow conditions. Regardless of season, these simulations of the WC12/Seloam Brook show the influence of the realignment berms has the potential to create a backwatered effect (i.e., a raised water level, relative	It is unclear how hydraulic modelling was completed through what is discussed in this submission. What were the flow inputs into the model? I read this statement as confirming that the intent is to have flows within the reach identified as WC14 in other Figures provided in the submission reverse through raising the water level at the confluence of WC12 with Seloam Brook?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					to the Existing Conditions) that will facilitate the discharge of water along the natural gradient, along the northern boundary of the Open Pit.	Through my review of the main submission, this is never fully and clearly explained. How do the flooded extents illustrated in the Figures compare against Existing conditions? What, if any, considerations or mitigations are necessary to mitigate impacts of this reversal and addition of flow through WC14 and WC22? The potential for erosion and sedimentation is identified as a result of increasing flows in WC4 and WC42 elsewhere in the submission - why was this not similarly considered at the outlet of WC12?
ECC 41	ECC Water Resources Reviewer	ECC		Appendix B.9	The submission states: The Realignment design, as revised by Wood, was not modelled, rather, the range of stream velocity estimated through the revised design (Wood 2020) was compared from those modelled using the KP (2020) design for applicability to this downstream hydraulic assessment.	Why was this approach taken? What does 'applicability to this downstream hydraulic assessment' mean?
ECC 42	ECC Water Resources Reviewer	ECC		Appendix B.9	The submission states: For consistency with EIS hydrology documentation, the hydraulic model was simulated for the average annual and the 95th percentile stream discharge conditions.	Please clarify what the objective is of including the 95th percentile stream discharge? To confirm, this the 95th percentile discharge of all annual flows?
ECC 43	ECC Water Resources Reviewer	ECC		Appendix B.9	The submission states: Hydrological modelling completed for the EIS simulated flows at the outlet of Fifteen Mile Stream and, so, these flows were pro-rated by contributing upstream watershed size as	How was the split of flows between the North and South channels considered?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					inputs to the North Channel and South Channel from the Realignment.	
ECC 44	ECC Water Resources Reviewer	ECC		Appendix B.9	Table 4	Please clarify in the title of the table that these results include the addition of energy dissipation structures. Please also provide the results of these assessments without these structures in place
ECC 45	ECC Water Resources Reviewer	ECC		Appendix B.9	The submission states: Under the Operation Conditions, the flood extent was also simulated with the addition of the structures.	To clarify, this is saying that flood extends that are associated with the addition of structures under the annual mean average and 95th percentile discharge rates was simulated? Figures 10 and 11 look to be very similar, if not identical. What is the difference in flooded area between the events, and what are the discharge inputs into the model in both cases? This speaks to the earlier questions I had surrounding clarifying the timescale of the 95th percentile discharge being used - if the objective is to model a higher representative flow event, an averaged monthly or annual value is not appropriate in achieving this objective.
ECC 46	ECC Water Resources Reviewer	ECC		Appendix D.1	The submission states: Figure 4.9 and Figure 4.10 present the annual peak flows in the St. Mary's River and the Liscomb River, respectively. The St. Mary's peak flow data shows an increasing trend; however,	I disagree with this conclusion. Including Liscomb in this specific assessment requires further justification, as the station was discontinued 25 years ago.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					the trend is not statistically significant. The peak flow data for the Liscomb River shows a decrease of around 1.9 m3/s per year, at a 5% significance level. Given the differences observed between these two stations, no strong conclusions can be made about whether or not peak flows are changing with time within the Project area.	Considering the information provided in Table 4.1, considerations for climate change for structures with less than a 30 year design life looks to be a reasonable requirement.
ECC 47	ECC Water Resources Reviewer	ECC		Appendix D.1	The submission states: There is no compelling evidence to suggest that the climate is changing in a manner that will materially affect peak flows.	I feel this is a broader question than this EA and will refrain from commenting on the statement in detail here, but in general I disagree with this statement.
ECC 48	ECC Water Resources Reviewer	ECC		Appendix D.2	The submission states: In the event of a breach of the TMF embankment, tailings and supernatant water will flow north into Seloam Brook and subsequently into the open pit.	Would flows into East Lake not also be possible in the event of a TMF failure?
ECC 49	ECC Water Resources Reviewer	ECC		Appendix D.2	The submission states: Infrastructure and economic losses consider potential damage to transportation routes, commercial and recreational facilities, other infrastructure, services, and storage facilities. Minor highways and seasonal roads are located downstream of the TMF along potential breach flow paths to the south or the northeast.	What about the existing hydro dams downstream? Were these considered, and if not, why?
ECC 50	ECC Water Resources Reviewer	ECC		Appendix D.2	The submission states: Additional inflows due to consolidation of tailings were not considered in this iteration of the water balance model because consolidation modelling based on laboratory consolidation test results has not yet been completed.	Please provide further justification for this - what is the expected range and potential significance of this omission?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					Consolidation seepage will be incorporated into water balance model updates at later stages of design.	
ECC 51	ECC Water Resources Reviewer	ECC		Appendix D.2	The submission states: The mean receiving water seasonal flows were used to develop a hydrograph for discharge from the open pit during Post-Closure.	It is unclear exactly what is being put forward here. What is the 'receiving water' that is referenced here?
ECC 52	ECC Water Resources Reviewer	ECC		2.4.2.3.7	The submission states: The transition from the TMF to the open pit reclaim water system is expected to be smooth, requiring minimal downtime, and additional fresh water requirements beyond what is currently permitted from Scraggy Lake under Touquoy water withdrawal approvals may be required.	Has the feasibility of obtaining this additional water been assessed, and if yes, where?
ECC 53	ECC Water Resources Reviewer	ECC		6.6.3.1.2	The submission states: At SW-2, Moose River is a third order watercourse with an approximately 12.5 m bankfull width as measured in the 2017 hydrometric program.	Please provide the background information on the hydrometric program for review
ECC 54	ECC Water Resources Reviewer	ECC		6.6.2.3.2	The submission states: At each of these monitoring locations, a datalogging water level sensor and manual staff gauge have been installed to record changes to water level. Discharge measurements have been recorded approximately monthly beginning in 2018, using the mid-section stream current method, where stream velocity is recorded along segments of a cross section of the stream.	Please provide more information related to the stream gauging - for example, what equipment was used for determining velocity? What measures have been put in place to ensure consistency within measurements in water level over the period of record (e.g., surveying)? A standard operating procedure provided for water quality is listed as appendix G.11 - please provide a similar document for quantity.
ECC 55	ECC Water Resources Reviewer	ECC		6.6.2.4	The submission states: The flow conditions in Moose River are represented by a stage-discharge curve	Where can this information be found?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					derived based on an annual hydrometric monitoring program at stations SW-2 and SW-11. Baseline flow statistics on Moose River were generated based on a regional analysis of thirteen representative ECCC (ECCC 2018) hydrometric stations, prorated to the Moose River catchment area at SW-2. The record of daily average flow for each station was fitted to the Log Pearson Type III distribution and prorated to the site based on catchment area. The log relationship of catchment area and flow was graphically plotted to establish a relationship between the catchment area and the average spring flow (April), summer flow (June/July/August), and low flow (July).	
ECC 56	ECC Water Resources Reviewer	ECC		6.6.3.2.1.1	The submission states: The ECCC climate monitoring stations summarized in Table 6.6-1 were selected as potentially representative, with a period of record of at least three years and a maximum distance of 50 km from the Project (Appendix D.1)...The Halifax International Airport climate monitoring station was selected as representative of the Project (Appendix D.1).	To clarify, the Halifax International Airport station is over 80km away, contrary to what is documented here and in Appendix B.3
ECC 57	ECC Water Resources Reviewer	ECC		6.6.3.1.2	The submission states: The ECCC St. Mary's River at Stillwater hydrological monitoring station was selected as the most representative regional station for hydrology at the Project, based on proximity and record length (Table 6.6-10) (Appendix D.1).	As outlined in Table 9 of Appendix B.3, the largest local watershed is 97.4 km ² . As outlined in Table 2 of Appendix B.3, the drainage area of the St. Mary's River at Stillwater station is 1,350 km ² . From what is written in the submission, it appears that considerations for drainage area were not

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						<p>considered in the selection of a representative station. Please provide assessment from this perspective and justification if this station continues to be used as the most representative regional station, including discussion of the limitations of the use of this station associated with the significant differences in drainage areas that exist.</p>
ECC 58	ECC Water Resources Reviewer	ECC		6.6.9.1.1	<p>The submission states: As such, the existing hydrological monitoring program will continue during 2019/2020 and subsequently during each of the defined Project phases.</p>	<p>Please confirm that the monitoring program has continued past 2019/20.</p> <p>As previously mentioned, additional information surrounding the methodologies used is required to be provided. The availability of significant, high quality baseline data is critical to support this proposed project, and it is also critical that the monitoring plan (including locations, frequency, quality, etc) be completed and coordinated with those completing the various modelling exercises underway, including the Seloam realignment and water balance work. At current, it is unclear whether the current stations are sufficient to support the effective evaluation of impacts on site and as inputs to continue calibration/validation of the various models</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						in play. Please make a connection between the existing monitoring locations and their appropriateness for effective on-going evaluation of the potential impacts associated with the proposed project
ECC 59	ECC Water Resources Reviewer	ECC		6.6.3.1.1	The submission states: No upstream fish passage is present within this watershed.	This is incorrect - a fish ladder exists at Ruth Falls.
ECC 60	ECC Water Resources Reviewer	ECC		6.6.6.1	Table 6.6.-23	No reference to a supporting figure is provided - from a review through the figures thought to support this Table (e.g., Figures in the 6.6 package), there is no reference to the Open Water features outlined in the table, and as such this information cannot be assessed
ECC 61	ECC Water Resources Reviewer	ECC		6.6.6.1	The submission states: The realignment of Seloam Brook to support pit development will result in potential release of sediment, degraded surface water as a result of historical tailings and waste rock, flooding of wetlands and physical adjustments to fish habitat.	It is unclear whether the areas surrounding the realignment of Seloam Brook have been assessed for potential historic tailings and waste rock, and as a result the potential risks and impacts that realignment will have from this perspective.
ECC 62	ECC Water Resources Reviewer	ECC		6.6.8.1.1	The submission states: The initial withdrawal of water (300,000-500,000 m3) from Seloam Lake will be short in duration (approximately three months) and was considered not significant as an effect	It is unclear if/how this has been assessed as a potential impact, and the justification for this statement.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 63	ECC Water Resources Reviewer	ECC		6.6.8.1.1	The submission states: Discharge from the realignment will rejoin Seloam Brook upstream of its existing confluence to Fifteen Mile Stream, and the overall potential change for watershed flows is quantified in the operations phase assessment. Given these mitigating factors, the realignment of Seloam Brook is not likely to cause significant adverse effects in the context of surface water quantity.	What about the diversions of drainage areas and flows from Seloam brook associated with the various site activities (e.g., open pit, diversion berm, upstream site water management)? How have these been assessed, and have they been considered? It is not clear that this has been considered through what is presented in the submission – as mentioned in other comments, a drainage area reduction of 28% is outlined in the supporting information for the submission
ECC 64	ECC Water Resources Reviewer	ECC		6.6.8.1.1	The submission states, in justifying not significant determination for impacts to WC12 related to reduction in flow in LCA for WC12: The change in average discharge was predicted as a change that is outside of, but within 10% of, the existing simulated intra-annual variation of monthly flow in the month of July, which is considered a low magnitude change in hydrology for this system.	Why was the month of July the focus here? Through review, it appears to be the only month that meets the criteria mentioned. Based on the information found in Table 6.6-27, a monthly average of greater than a 20% decrease is expected for the Operations and Reclamation Phases, and greater than 15% for Post Closure. How were the impacts of this assessed?
ECC 65	ECC Water Resources Reviewer	ECC		6.6.8.1.1	The submission states: Furthermore, a conservative approach to determining the reduction in streamflow based on contributing drainage changes is to assume the ratio change will be equal to (i.e., percent change in local catchment area equals percent change in streamflow).	Please elaborate as to why this approach is felt to be conservative

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 66	ECC Water Resources Reviewer	ECC		6.7.6.1.1.1.4	The submission states: Alterations of hydrology within each LCA (reduced surface flow) may result in indirect impacts to wetlands.	<p>As per previous comments related to this in Section 6.6, this table appears to be incomplete. Other wetlands appear to be potentially impacted by reductions in contributing drainage area than those outlined in Table 6.7-18, including WL18 and the wetlands upstream of it, who's contributing area will be impacted by the alteration of upstream areas into the TMF and also the redirection of the Low Grade Ore Stockpile runoff to the TMF.</p> <p>Numbers and figures outlining the drainage area delineations are required to support the 'Percent of LCA flow reduction'. For example, from a review of Figure 6.7-1, it looks like near to 100% of the contributing area of WL49 will become the WRSA NAG Material stockpile, and thus be redirected to the TMF.</p> <p>In addition, why are the potential borrow pits not included within this determination? WL53, for example, appears to be at risk of indirect impacts associated with the planned borrow pit planned for the SW corner of the site.</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 67	ECC Water Resources Reviewer	ECC		6.7.6.1.1.1.4	The submission states: The LCAs for WC2 and WL12 all fall within the regional catchment area SW5 (Seloam Brook outlet). The outflow through the Seloam Brook was simulated to decrease as a result of the Project footprint and the upstream removal from Seloam Lake. The minimum monthly average flow in July was simulated to decrease by 5% in this month (i.e., low magnitude). Therefore, this reduction is not likely to cause significant adverse effects to associated wetlands.	I disagree with the approach taken to come to this conclusion. Using average modelled results from the outlet of the overall watershed from just one month to conclude that wetlands associated within that watershed are likely to not have adverse effects is not sufficient justification. It is also unclear what phase of the project this statement applies to.
ECC 68	ECC Water Resources Reviewer	ECC		6.8.6.1.2.2	The submission states: The LCA for WC26 is expected to experience an approximate 16% reduction in flow based on construction of diversion ditches and site water management.	Please provide figures that outline the watershed delineations and site surface water management features to support assessment of these statements.
ECC 69	ECC Water Resources Reviewer	ECC		Appendix D.1	The submission states: A flood frequency analysis was conducted using daily average discharge from the WSC streamflow record from the St. Mary's River station. Daily average flows were converted to equivalent instantaneous peak flow values by applying a conversion factor of 1.15 specific to the hydrology station.	Why was this done instead of using the peak instantaneous values provided by the WSC?
ECC 70	ECC Water Resources Reviewer	ECC		Appendix D.2	The submission states: The water inventory in the TMF was estimated to fluctuate between 270,000 m3 (minimum) and 800,000 m3 (maximum) under the water balance flow scenarios	A figure outlining water balance results for TMF would be helpful in visualizing this
ECC 71	ECC Water Resources Reviewer	ECC		Appendix D.2	The submission states: Groundwater inflow rates were based on the Touquoy Mine water balance, which	What is the rationale for using the Touquoy values here, and why the difference in

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					currently uses a groundwater inflow value of 450 m ³ /day. The groundwater inflow rate was assumed to be 500 m ³ /day for the FMS water balance for both operations and post-closure...	numbers (450 vs 500)?
ECC 72	ECC Water Resources Reviewer	ECC		Appendix D.2	The submission states: The following equation was used to calculate the surface runoff for each area. <i>Surface Runoff:</i> Surface Runoff = Area × Runoff Coefficient × Monthly Precipitation	How and where was PET and Evaporation from open water features considered in the water balance?
ECC 73	ECC Water Resources Reviewer	ECC		6.6.5.6.1	For surface water quantity, the following logic was applied to assess the magnitude of a predicted change in surface water flow:	What is the justification behind magnitude only looking at impacts on a monthly scale?
ECC 74	ECC Water Resources Reviewer	ECC		6.6.8.1.2	Table 6.6-29: Simulated Change in Surface Water Discharge, Operations Phase	Where can the details to support the values provided in this table be found? The values in this table do not align with other information provided within the assessment. For example, Table 1 within Appendix B.4 outlines a change in watershed area of 28% for SW5, which does not seem to align with the values provided here for SW5. Please clarify. In general, the submission is currently not clear in its assessment of the impacts on Seloam Brook resulting from the cumulative reduction in contributing area within its watershed.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						In addition, why are some values within SW14 less than SW5? These should at minimum be the same? How were the values for SW14 determined? Please include clear reference to where more information surrounding the approach to the information that populates this table.
ECC 75	ECC Water Resources Reviewer	ECC		6.6.8.1.3.2	Table 6.6-36: Simulated Change in Surface Water Discharge, Closure Phase Post-Closure Stage, as well as Table 6.6-37	Where can the details to support the values provided in this table be found? Please include clear reference to where more information surrounding the approach to the information that populates this table. For example, how has evaporation been considered in these values, considering two large open water features (reclaimed TMF, open pit) will now exist on site?
ECC 76	ECC Water Resources Reviewer	ECC		Appendix B.2	The submission states: Monthly total precipitation, rainfall, snowmelt, and evaporation were provided by ECCC for the 54-year period of 1961 to 2015	To confirm, evaporation was provided by ECCC? It is referred to as modelled throughout the submission
ECC 77	ECC Water Resources Reviewer	ECC		Appendix B.2	Storage change (ΔS) in Seloam Lake and the Anti Dam Flowage were estimated through the development of a stage-storage relationship estimated from bathymetric mapping. P was added, and PET was withdrawn from the water surface and combined with the net discharge ($QS_IN-QS_OUT+AnthIN-AnthOUT$) through the reservoir, to result in the predicted change in storage for each of these elements.	To confirm, how was PET considered for the TMF?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 78	ECC Water Resources Reviewer	ECC		Appendix D.2, Appendix D3	Table D3.2, D4.2, others	What happened with precip (and the other inputs that look to be connected to it) in Jan and Feb? From a look through the various tables, looks like something is off related to Jan and Feb calculations
ECC 79	ECC Water Resources Reviewer	ECC		6.6.8.1	Table 6.6-29	<p>Additional details surrounding the discharges from Seloam brook are required. What range of discharge scenarios from the operations of the Seloam Brook dam have been considered?</p> <p>Please provide a summary of the engagement that has taken place with Nova Scotia Power Incorporated (NSPI) related to the project. In particular, what discussions have taken place related to the proposed activity, including the proposed withdrawal from the NSPI-managed Seloam reservoir? Is NSPI aware of the potential hydrological changes associated with the proposed project?</p> <p>Please provide an assessment of the impacts of the proposed works on the existing Sheet Harbour hydro system approval conditions.</p>

General comments on the EIS:

- The comments provided are intended to represent some initial concerns and questions related to the Projects interaction with surface water quantity. Given the volume of the submission, the complexity, interactions, and number of assessments to support and the finite period available for review, additional comments may exist on the information provided within the submission that could be provided within any following submissions. While some comments have been provided from sections outside of Surface Water Quantity, the review of sections outside of those marked surface water quantity was high-level and could not be as thorough as likely warranted as a result of the volume of material presented and the time constraints for review.
 - Generally speaking, the submission makes many statements throughout its significant length that are not either not effectively supported with clear justification in the main body of text, or accompanied with clear references to where this justification can be found in the 54 appendices that exist. Please provide more clear references to where supporting analysis and assessments can be found to allow for the effective assessment of the statements made in the submission.
 - To note: responses to the comments made above and any changes to values likely will require revisiting and updating several sections (e.g., wetlands, fish and fish habitat) within the submission
-

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1: Hydrogeologist Groundwater- ECC Sustainability and Applied Science Division

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 80	SAS-GW Reviewer 1	Environment and Climate Change		2.4 Project Activities p.26, 2.4.1.1.2 Management of historic waste rock and tailings p. 28, 2.4.1.1.4 Site Construction	<p><i>“There is elevated arsenic and potentially mercury within this development area documented in surface water and sediment. Water management ponds (lined with clay or geosynthetic liner) will be built for the proposed WRSA first and will be used to manage construction water from the pit development area.”</i></p> <p><i>“Water collected in the water management ponds will be pumped to the TMF supernatant pond, unless discharge to the receiving environment is appropriate based on water quality analysis and regulatory approval.”</i></p>	Due to the evidence of water quality contaminants presented in Section 2.4 and others, will the design of water management ponds be such as to eliminate seepage into groundwater? What other factors and information are needed in order to choose between the present options (clay or geosynthetic liner?)
ECC 81	SAS-GW Reviewer 1	Environment and Climate Change		2.5 Project Schedule p. 60, 2.5.3 Years 9 to 11 and Beyond	No mention of timeframes for continued recirculation/treatment of groundwater seepage from TMF.	What is the timeframe for treatment of TMF groundwater seepage in post-closure under the proposed scenario? Is this potentially a long time frame? What is the uncertainty in the estimates?
ECC 82	SAS-GW Reviewer 1	Environment and Climate Change		p. 69-71, 2.6.11.1 Water Supply Management	<p><i>“Water is an integral component of mining and milling operations at the Project, with a large quantity of water being required in the mill process. Sources of water include: raw water; contact and non-contact water from precipitation and snowmelt run-off; a mix of groundwater and surface water from open pit dewatering, and recycled process water from the TMF.</i></p> <p><i>The TMF will serve as the primary containment and storage facility for process water. Available process water will be recycled from the TMF, thus reducing requirements from the raw water source.</i></p> <p><i>The preferred approach for water supply is for raw water to be drawn from Seloam Lake and delivered to the raw water tank adjacent to the mill via a pumphouse and an approximate 2 km pipeline. Raw water requirements will be minimized by maximizing recycling of process water from the TMF and by supplementing the reclaim water quantities in the TMF with contact water pumped from water management ponds as determined by the site water balance. Potable water will be sourced either from wells drilled on-site, if feasible, or alternatively, raw water treated to potable conditions from Seloam Lake will be used for washing/showering, and bottled water will be brought into site drinking purposes.”</i></p>	What are the volumes of water required on a daily maximum, 30 day and annual basis? How does this compare to the capacity of the proposed sources (Seloam Lake and wells drilled on-site)? Any water withdrawals greater than 23 m3/day (23,000 litres/day) require a water withdrawal approval from NSECC with an appropriate supporting study.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 83	SAS-GW Reviewer 1	Environment and Climate Change		p. 72, 2.6.12.2.1-2 Open Pit and TMF Seepage	<p><i>“All ground and surface water reporting to the open pit will be directed to the sumps and mine sump pumps will pump it directly to the TMF. Seepage from the TMF will largely be controlled by the low-permeability embankment face constructed prior to the development of the tailings beach, by the deposited tailings mass itself, and by the underlying low-permeability foundation materials. Any seepage reporting through the embankment structure will be collected in the embankment filter and drain system before reporting to the seepage collection and recycle ponds. Seepage in the foundation would follow the natural topography to report to seepage collection ditches along the perimeter road. Water will be conveyed to a central seepage collection point downstream of the embankment and pumped back to the TMF during operations. During closure, this water will be directed to the pit, until water quality is suitable for direct release to the downstream receiving environment in the Seloam Brook drainage.”</i></p>	<p>a) The underlying materials planned for the TMF are not of sufficient low-permeability to eliminate or allow collection of all seepage to groundwater under the facility. Why is all TMF groundwater seepage not eliminated or collected for treatment?</p> <p>b) During and post-closure the plan seems to be to direct collected seepage water to the exhausted pit “until water quality is suitable for direct release”. What is the mechanism by which the open pit water is treated to allow direct release?</p>
ECC 84	SAS-GW Reviewer 1	Environment and Climate Change		<p>p. 79, 2.6.15 Tailings Storage Final Discharge Point</p> <p>p. 80</p>	<p><i>“Water balance calculations indicate the TMF at the FMS Mine Site will operate under surplus water conditions. The TMF will be designed to handle storm events, however, at some point, water will be required to be discharged. Discharge works will be designed and constructed to remove excess water from the TMF to prevent surplus water accumulation. Further work will be undertaken to determine the need for, and design of, any treatment works, to ensure the discharge meets environmental requirements.</i></p> <p><i>The assessment points are located 100 m downstream of the two proposed treated effluent discharge locations – that is, the effects assessment assumes a 100 m mixing zone located downstream of the effluent outfall (or ‘end-of-pipe’) location. Based on the results of the numerical modelling, the assimilative capacity is greater within the Anti Dam Flowage Reservoir than within Seloam Lake.”</i></p> <p>There appears to be evidence already that TMF water will contain some contaminants (including As and Al) – see comments NSECC-GW8,17,18,20,23,27,29 and 30. This is based on both limited FMS sampling/testing as well as current conditions at Touquoy. This item (treatment or no treatment due to contamination in tailings/waste rock and pit leachate waters) is of such importance that there should be no uncertainty</p>	<p>a) If excess water is discharged from the TMF during operations, will it be treated to meet water quality discharge criteria? When will treatment works be designed for such releases? What more water quality information is needed for the design?</p> <p>b) How does the potential for water contamination in the TMF, waste rock seepage and open pit waters affect the design of the facility?</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					related to it, prior to project commencement. The assumptions related to prevention of contamination should directly relate to the design of the facility, which again needs to be established prior to commencement of work.	
ECC 85	SAS-GW Reviewer 1	Environment and Climate Change		3.5 Key Issues Raised and Proponent Responses p. 97 Table 3.5-1 Managing water quality and water monitoring/water seepage	<p><i>"The Proponent provided a summary of all predictive water quality modelling work completed to support the EA and summarized for the Public that, if required during operations, water treatment will be completed. During the post-closure stage of Closure Phase, a water treatment system will be required, based on current modelling predictions. Aquatic effects assessment in Anti-Dam Flowage has demonstrated low risk to aquatic organisms as a result of Project discharge."</i></p> <p>Why is the proponent not stating right now that water treatment will be conducted and what type of treatment? They are using other comparisons to the Touquoy mine site, and if so comparable, the water treatment necessary for that site should also be considered.</p>	<p>a) What additional information does the proponent need to state their plans for water discharge treatment from the FMS site?</p> <p>b) Can the proponent provide actual TMF supernatant, porewater and subsurface groundwater leachate wells water quality results from the operating Touquoy site to assist in this evaluation/determination (based on similar operations and geology)?</p>
ECC 86	SAS-GW Reviewer 1	Environment and Climate Change		4.4 Key Issues Raised by the Mi'kmaq of Nova Scotia Table 4.4-1 p. 107 Legacy contamination issues. Long term storage and safety of tailings and other contamination	<p><i>"Containment and management of historical tailings within approved on-site storage facilities at the mine sites</i></p> <ul style="list-style-type: none"> <i>• Reclamation bonding to ensure long-term monitoring and remediation of mine sites"</i> <p>Any need for disposal/management of historical tailings arises from the presence of contamination in such tailings. The Proponent's preliminary plans include disposal of historical tailings with the TMF. See comment NSECC-GW26</p>	<p>a) If historical tailings are disposed of within the TMF as contaminated materials, what are the measures within the TMF to contain leachate and prevent unrecovered groundwater seepage from these and other contaminated materials?</p> <p>b) What levels of reclamation bonding are needed to ensure liabilities for remediation of any unrecovered contaminated groundwater due to seepage at the site?</p>
ECC 87	SAS-GW Reviewer 1	Environment and Climate Change		6.4 Geology, Soils and Sediment p. 193, 6.4.3.6.2 Tailings	<p><i>"The sulphide S contents, excluding the ore samples, range from 0.020% in a greywacke sample up to a maximum of 0.88% in an argillite sample, with median values falling between 0.18% (GW samples) and 0.35% (AR samples). In the ore samples, the sulphide S contents range from 0.12% to 1.0% (median: 0.42%)</i></p> <p><i>Elements of potential concern based on the solid phase elemental analysis include Ag, As, Cu, Pb, Sb, and Zn.</i></p>	<p>a) The NS Provincial regulations define "sulphide bearing" as sulphide sulphur content equal to or greater than 0.4% (12.51 kg H₂S₀₄/tonne). As results appear to be exceeding or borderline in a number of</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					<p>The shake flask extraction (SFE) results indicate that As and Al are potential parameters of concern in runoff from the mine rock. Modelling results suggest that the NP will be depleted from the FMS mine rock between approximately 6 and 15 years. A conservative estimate for time to NP depletion for the static test samples indicates that approximately 50% of the PAG samples will become acidic within 10 years. This estimate does not consider the slower sulphide oxidation rates in colder temperatures, which would be expected to delay the onset of acid generation</p> <p>The four tailings samples have variable but relatively low total S (0.085% to 0.25%), present dominantly as pyrrhotite. Using total S as a proxy to calculate acid potential, only one tailings sample is classified as potentially acid generating.</p> <p>11. Arsenic is the main parameter of concern in the tailings due to elevated concentrations in both the solid phase elemental analysis and in the SFE leachate. Arsenic concentrations increased over 18-week saturated column leachate test. The maximum As concentrations reached (0.35 mg/L) are 7x the CCME guideline.”</p>	<p>instances, will the test results provided for ore, tailings etc. be expanded upon and definitive management of materials be provided?</p> <p>b) If materials become acid generating in 10 yrs. time, should these not be managed accordingly upon exposure (now)?</p> <p>c) Arsenic is identified as the main parameter of concern. What is necessary to modify in the TMF design to prevent leaching of arsenic to groundwater and the creation of a groundwater arsenic plume under the facility? See also comment NSECC-GW9</p>
ECC 88	SAS-GW Reviewer 1	Environment and Climate Change		<p>6.4.6 Project Activities and Geology, Soils and Sediment Interactions and Effects 6.4.6.1 FMS Study Area</p> <p>p. 200</p> <p>p. 202, 6.4.7 Mitigation and Table 6.4-5</p>	<p>There is elevated arsenic and potentially mercury within this development area documented in surface water and sediment. Water management ponds (lined with geosynthetic liner) will be built for the proposed WRSA first and will be used to manage construction water from the pit development area. A modular treatment plant for water will be available during construction if required. This system can be adapted and utilized throughout the life of mine, as required based on site effluent quality.</p> <p>During construction, settling pond(s) with geosynthetic liners, will be constructed near the location of the WRSA in order to manage construction water during pit development.</p> <p>The proponent is stating that water management and settling ponds will be lined with geosynthetic liners to presumably to assist in management/treatment of arsenic, mercury and other water quality parameters likely to be of issue.</p>	<p>a) Since the site water is to be transferred to the TMF, does it not make sense to similarly line the TMF with a double geosynthetic or HDPE liner to prevent groundwater seepage of arsenic and other contaminants into the groundwater?</p> <p>b) Has the proponent considered this design option above to manage water quality impacts at the site?</p>
ECC 89	SAS-GW Reviewer 1	Environment and Climate Change		<p>6.5.3.1.8 Groundwater Quantity Conceptual Model p.220</p>	<p>“Groundwater can be expected to seep into the open pit developed at the FMS Mine Site through the surficial deposits and the upper(contact) bedrock unit. Within the deeper and less conductive bedrock units, groundwater flow to the open pit is through fractures and structures in the bedrock (which are not represented explicitly in</p>	<p>Can the Proponent define which water bodies/wetlands are predicted to lose substantial flow (to groundwater recharge) or go dry entirely? The degree of these impacts and the theoretical</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					<p>the numerical model). As dewatering progresses and groundwater levels in the vicinity of the open pit are lowered, some surface water bodies which are currently groundwater discharge areas may become areas of groundwater recharge.”</p> <p>Refer also to comment NSECC-GW14 for additional context.</p>	area affected should be clearly shown on a map.
ECC 90	SAS-GW Reviewer 1	Environment and Climate Change		6.5.3.1.9 Groundwater Quality Results p.221	<p>“Parameters exceeding the NSE PSS in groundwater for the September 2018, November 2018, March 2019, and June 2019 sampling events are presented in Table 6.5-7 Metals parameters exceeding the NSE PSS included total mercury and dissolved aluminum, arsenic, cadmium, cobalt, copper, iron, manganese, mercury, selenium, silver, and zinc.”</p>	Does enough data, and appropriate locations for the data, exist for baseline groundwater data statistical determinations of mean, 90 th or 95 th percentiles and so on for background groundwater quality parameters? See also comment NSECC-GW16
ECC 91	SAS-GW Reviewer 1	Environment and Climate Change		<p>6.5.8 Groundwater Effects FMS Mine Site (Post-Mitigation Modelling Results) p. 244 Operations</p> <p>p. 244 Post-closure</p> <p>p.245</p> <p>p.246</p>	<p>“Groundwater inflow to the open pit was 655 m³/day at steady state. The steady-state extent of drawdown due to dewatering of the open pit (based on the 1 m drawdown contour) extended a maximum of 830 m from the open pit. Increases in groundwater elevations associated with the TMF extended to a maximum of 100 m from the centerline of the berm, and 240 m to the south of the pond (in the area where the berm terminates) at steady state. Figure 6.5-16 shows the change in groundwater elevations associated with the TMF and open pit in operations.</p> <p>The rate of groundwater seepage from the TMF was 6 m³/day to the East Lake Catchment and 75 m³/day to the catchment to the north of the TMF.</p> <p>Groundwater inflow to the open pit was 270 m³/day at steady state. The steady-state extent of residual drawdown due to the flooded pit lake (based on the 1 m drawdown contour) extended a maximum of 140 m from the open pit. Increases in groundwater elevations associated with the TMF extended to a maximum of 100 m from the centerline of the berm, and 240 m to the south of the pond”</p> <p>“The rate of groundwater seepage from the TMF was 6 m³/day to the East Lake Catchment and 75 m³/day to the catchment to the north of the TMF. [same as operations]</p> <p>The rate of groundwater seepage from the WRSA to the flooded open pit was 175 m³/day (of which 90 m³/day originates from the PAG portion of the WRSA).</p> <p>The NSE well database shows that the nearest private well is 15 km northward and southward, and field surveys have identified the nearest seasonal dwelling with a potable well (dug) (Structure ID #3) 8.7km south of the FMS Study Area Therefore, no effect on groundwater</p>	<p>Based on the EIS sections noted here as well as those shown in comment NSECC-GW14, groundwater mounding within the TMF is predicted by the proponent of up to 16 m.</p> <p>a) Please clarify the degree of groundwater mounding and the extent the effects, if any, are predicted to occur outside of the TMF berm.</p> <p>b) Can the location at which of groundwater levels reach baseline levels away from the berm be shown on a map?</p> <p>c) Does the seepage collection system control groundwater levels from this predicted mounding or are there areas where groundwater level control is not present (south?)?</p> <p>d) Are any surface water features likely to be affected by the predicted rise in groundwater levels (including streams, ponds, wetlands etc.)?</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					<p>users is anticipated.</p> <p>Within the area of the cone of depression, groundwater levels have been predicted to be lowered by pit dewatering resulting in a potential reduction in some local streams and /or brooks and wetlands.”</p>	<p>e) Are the rates of groundwater seepage determined to the East Lake catchment and to the catchment north of the TMF predicted as steady state or transient conditions?</p>
ECC 92	SAS-GW Reviewer 1	Environment and Climate Change		6.5.8.1.3.1 Reclamation p. 247	<p>“Streams and wetlands adjacent to the pit will again receive base flow at least on a seasonal basis. Although the water table is expected to recover into the future, some of the groundwater dependent features such as wetlands, streams and rivers within the ROI may not fully recover to pre-mining conditions during reclamation.”</p>	<p>a) Is the Proponent stating there will be a permanent decline in groundwater levels relative to pre-mining conditions in some areas?</p> <p>b) If so, can the areas affected and the degree of impacts be shown? (refer also to NSECC-GW10 and NSECC-GW14)</p>
ECC 93	SAS-GW Reviewer 1	Environment and Climate Change		6.5.8.1.3.2 Post-Closure Effects Assessment p.247	<p>“Flooding to 109 m (CGVD28) means that the water recovery for at least 85% of the pit perimeter will be up to 5 m lower than baseline water table level. This lower water table may have an effect on groundwater receivers such as streams, rivers and wetlands which are assessed in Sections 6.6 and 6.7. It is noted that the model also showed a small rise in groundwater table within WRSA footprint in post-closure.</p> <p>During post-closure an increase in groundwater table due to placement of saturated tailings on surface during operations are anticipated to drain over a long period of time. The numerical modelling shows 85% of TMF seepage will be collected via gravity drain; however the 15% will be allowed to enter the groundwater flow system (i.e., bypass the collections system) and will discharge to East Lake southeast of the TMF and/or Watercourse 12 (tributary to Seloam Brook) north of the TMF.</p> <p>A water level rise of about 16 m is expected to be confined to within approximately 100 m from the centerline of the TMF berm and 240m from the southern extent of the tailings which is adjacent to berm termination. Water levels within this 100m are anticipated to be lowered from the rise of 16 m above baseline water table level during operations to a drop to near baseline groundwater level. The lowering</p>	<p>a) What is the estimated flow volume for unrecovered groundwater seepage from the flow system out of the TMF (15% of total seepage).</p> <p>b) See comment NSECC-GW12 a) for information requested concerning the predicted groundwater level rise, or mounding, as a result of the TMF water levels.</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					<i>of this water table may take more than 100 years and the groundwater level is anticipated to remain above baseline water levels.”</i>	
ECC 94	SAS-GW Reviewer 1	Environment and Climate Change		6.5.8.2 Groundwater Quality 6.5.8.2.3 Closure Phase p. 250, 6.5.8.2.4 Summary of groundwater quality effects	<i>“All anticipated changes in groundwater quality due to the Project operation and closure are not directly affecting any groundwater receptors therefore all indirect effects are assessed in the Surface Water, and Wetland Sections 6.6 and 6.7. Groundwater seepage modelling results from the WRSA and the TMF shows that seepage does not travel beyond the Project proposed site property boundary. Therefore, no groundwater quality effects remain for residual effects assessment and are not further assessed in Section 6.5.9 below.”</i>	Can the Proponent predict and show from the current groundwater modelling results the extents of the contaminated plume which would theoretically occur underlying the TMF, outside of the TMF footprint but within the site property boundary?
ECC 95	SAS-GW Reviewer 1	Environment and Climate Change		6.5.10 Proposed Compliance and Effects Monitoring Program p. 252	<i>“Since August 2018, groundwater level monitoring has been completed at least on a quarterly basis across the LAA. This baseline groundwater level monitoring program will continue during 2019 and during all Project phases. Since September 2018, groundwater quality monitoring has been completed on a quarterly basis across the FMS LAA. This baseline groundwater sampling program will include the newly drilled wells and will continue during 2019 and during all Project phases.”</i>	Does enough data, and appropriate locations for the data, exist for baseline groundwater data statistical determinations of mean, 90th or 95th percentiles and so on for background groundwater quality parameters? See also comment NSECC-GW11.
ECC 96	SAS-GW Reviewer 1	Environment and Climate Change		6.6.5.4 FMS Study Area Surface Water Quality Effects Assessment Methodology p. 301, 6.6.5.4.2 Project Site Components p. 302	<i>“TMF seepage that bypasses the seepage collection system will enter the adjacent surface water environment at the SW5 and SW15 catchments.”</i> <i>“The explosive residues contain nitrate and ammonia, which are soluble and can be mobilized upon contact with water. As such, the WRSA, LGO stockpile and open pit walls are sources of nitrogen species that may have effects on water quality.”</i>	a) What is the predicted groundwater quality seepage entering the adjacent surface water catchments? b) Are explosive residues expected to be transported into groundwater, and if so, to what extent? c) Will tailings (new or historical) contain any explosive residues?
ECC 97	SAS-GW Reviewer 1	Environment and Climate Change		6.6.5.5 Touquoy Mine Site Surface Water Quality Effects Assessment Methodology p. 304	<i>“As discussed in the source terms memo (Appendix F.1), the pore water quality in the tailings and pit walls/floor was based on geochemical source term predictions that were derived from upscaling of kinetic tests and Touquoy monitoring data. The kinetic test and Touquoy monitoring data are considered representative for FMS concentrate processing as the mined ore originates from the same geologic formation with similar sulphur content.”</i>	a) Is additional testing needed of FMS samples to determine FMS ore and tailings quality before determining design parameters?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						b) If Touquoy is similar, and the TMF discharge requires treatment, would not the FMS TMF also most likely require treatment?
ECC 98	SAS-GW Reviewer 1	Environment and Climate Change		6.17.7 Mitigation p. 836 Table 6.17-14: Mitigation for Accidents and Malfunctions and p. 839 Table 6.17-15: Characterization Criteria for Risk Rating Matrix	Potential Accident or Malfunction – The discussion on mitigation of accidents, malfunctions etc misses the potential for failure of collection of groundwater seepage with water quality exceedances from TMF. There is no provision in the design for monitoring of actual groundwater seepage quantity/quality under the TMF as a means to allow corrective mitigation actions.	Request is that the Proponent include in their water management design monitoring and mitigation plans, measures for monitoring and addressing groundwater seepage under the TMF for both quantity and water quality.
ECC 99	SAS-GW Reviewer 1	Environment and Climate Change		Appendix J.4 Fifteen Mile Stream Mine Site Conceptual Minewater Treatment Design p. 1 p. 2	<i>“The Golder report indicates that treatment may be required for the post-closure stage based on upper case (90% percentile) source terms and during low flow periods. During operations, surface water modelling does not predict water treatment to be necessary, and it is therefore being considered only as a contingency. It is noted that the current process at the Touquoy Mine utilizes Geotubes for the processing of minewater after mixing and co-precipitation. Although this system appears to be operating well under the current effluent quality management strategy, this technology may not be the best suited for the longer term mine drainage requirement after FMS mine closure. It is noted that for each phase, the characteristics of the minewater requiring treatment will be different.”</i> It seems unlikely that if the two sites Touquoy and FMS are being compared to each other, that FMS would not require water treatment during the operations phase, whereas the Touquoy site does. Reliance solely on surface water modelling results would need to logically include a safety factor and uncertainty analysis for this important factor and event then is simply a prediction and subject to error.	Given that the sites and mining processes are similar, the proponent should provide a detailed rationale for not providing operational water treatment at the FMS site.
ECC 100	SAS-GW Reviewer 1	Environment and Climate Change		Appendix D.2 Fifteen Mile Stream Project Preliminary Waste and Water Management Design Page II 4.0 TAILINGS MANAGEMENT	<i>“Surplus water will be removed by pumping water to a Water Treatment Plant (WTP) located near the Plant Site, if required to meet discharge criteria.”</i>	

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
				<p>FACILITY DESIGN 4.1 General P. 21</p> <p>p. 24-25</p> <p>p. 38-39 Figure 5.4, Figure 5.5 (Water Balance Flow Schematic) 4.10 Surplus Water Management System P. 28 p. 29 4.11 INSTRUMENTATION AND MONITORING 5.2 Water Management Plan p. 32</p> <p>p. 50 Reclamation and Closure p. 52 8.3 On-going Monitoring Requirements</p>	<p><i>“Control, collection, and removal of free draining liquids from the tailings during operations, for recycling as process water to the maximum practical extent”</i></p> <p>Based on App D2, Figure 4.2 and Figure 4.3, the extent inward of the “liner” in the TMF is “3X Height of Stage 1 Embankment”. The Stage 1 height shown in the drawing is about 18 m, so that would mean the “liner” extends 54 m inward from the inner toe. The TMF minimum inner width toe-to toe from Figure 4.2 would appear to be about 700 metres or so. So with 54 m on both side walls, that means about 700 m x 800 m of unlined TMF facility contributing seepage loss of “unrecovered seepage”. The “liner” itself only seems to be described as a non-woven geotextile overlying 1.5 metres of “select till” – so not a true engineered liner such as GCL or HDPE.</p> <p><i>“Surplus water will be removed by pumping water to a Water Treatment Plant (WTP) located near the Plant Site, if required to meet discharge criteria. Water will be discharged to Anti-Dam Flowage via a gravity discharge pipeline as shown on Figure 4.4. The SWMS includes a 1,000 m long HDPE pipeline for the surplus water removal from the TMF, with a skid-mounted centrifugal pump. Surplus water will be discharged, following treatment at the WTP if required, to Anti-Dam Flowage via a 2,000 m long HDPE gravity discharge pipeline.”</i></p> <p>Does not include leachate collection, instrumentation or monitoring (water quality or quantity)</p> <p><i>“Subsequent to the water balance model being developed, Golder Associates (Golder) refined the groundwater inflow estimates for the FMS open pit, and estimated groundwater inflows of approximately 655 m3/day during operations and 270 m3/day in post-closure (Golder, 2019).</i></p> <p><i>Removal of the seepage collection pump-back systems at such time that suitable water quality for direct release is achieved</i></p> <p><i>Post-closure requirements will also include an annual inspection of the TMF and an ongoing evaluation of water quality, flow rates, and instrumentation records to confirm the design assumptions for closure.”</i></p>	<p>a) Can the proponent provide a discussion of the necessary TMF liner design and steps to provide complete encapsulation of TMF tailings to prevent unrecoverable groundwater seepage? For example: a double geosynthetic or HDPE liner, capping, leachate monitoring, leachate collection and treatment.</p> <p>b) Does the Proponent not have enough site data now to determine the need for water treatment? What additional data would be needed?</p> <p>c) The TMF design plan should include provisions for leachate collection, instrumentation and monitoring (water quality and quantity).</p> <p>d) Reclamation and post-closure monitoring plans should include monitoring for groundwater seepage quality/quantity from the TMF</p> <p>e) What are post-closure factors that could result in increased or on-going groundwater seepage of contaminants from the TMF? (i.e. assess for AMD prediction over time, metals leaching over time, increases to climate precipitation above historical values (climate</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						change), failure of a TMF cap, if so designed etc.)
ECC 101	SAS-GW Reviewer 1	Environment and Climate Change		<p>Appendix D.3 Fifteen Mile Stream Project Tailings Management Plan p. 13, 3.3 Seepage Management</p> <p>p. 14, 3.6 Surplus Water Management</p> <p>p. 15, TMF Closure</p> <p>p. 17, 4.1 Monitoring</p>	<p><i>“Potential seepage from the TMF will be largely controlled by the low-permeability till liner and low permeability tailings mass. Two seepage collection ponds, the North Seepage Collection Pond, and the East Seepage Collection Pond, will be constructed at topographic low points downstream of the TMF embankment (Figure 2.1). Seepage collected in the Seepage Collection Ditches, constructed along the toe of the embankment, will convey collected seepage and embankment runoff to the respective ponds. Water collected in the ponds will be continuously monitored and returned to the TMF to ensure it does not adversely affect the receiving environment. Monitoring plans will be implemented to monitor TMF supernatant water quality to determine if water treatment will be required to be acceptable for discharge to the receiving environment at Anti-Dam Flowage.</i></p> <p><i>The seepage collection system will continue to operate for several additional years past this point until seepage has diminished to negligible quantities and/or is suitable for direct discharge to the environment. The seepage collection systems will be dismantled and removed, and the seepage collection ponds regraded and reclaimed once this has been achieved.</i></p> <p><i>Environmental monitoring will consist of regular monitoring of the quality of tailings supernatant, collected seepage, and downstream groundwater as described in the SWMP.”</i></p> <p>To alleviate major concerns about groundwater contamination resulting from seepage from various water management structures (TMF, collection/storage ponds etc.) across the site a more conservative design could be proposed. In addition, long-term closure liabilities and concerns for maintaining groundwater quality could be better addressed.</p>	<p>a) Why is not a more protective/conservative TMF design proposed that utilizes a double geosynthetic or HDPE liner, capping, leachate monitoring, leachate collection and treatment?</p> <p>b) What steps will be taken upon closure to assess the extent of groundwater contamination underlying the TMF facility, the movement of this contamination over time and the determination of potential mitigation measures?</p>
ECC 102	SAS-GW Reviewer 1	Environment and Climate Change		<p>Appendix B.1 Final - Hydrogeological Investigation Report p. ii</p>	<p><i>Groundwater Levels</i></p> <p><i>The groundwater levels measured were shallow, ranging from 0.13 to 4.95 mbgs (103.44 to 160.52 m relative to CGVD28). The groundwater elevations are similar, with less than 2 m difference, when comparing the bedrock (A) and bedrock-soil interface (B) wells at each location. Groundwater elevations at most borehole locations indicate slight</i></p>	

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
				<p>p. iii</p> <p>p. iv</p>	<p>downward or nearly neutral gradients.</p> <p>The results of the rising head SWRT estimated hydraulic conductivities of the 'A' wells installed into the bedrock ranged from 6×10^{-8} m/s to 1×10^{-5} m/s and estimated hydraulic conductivities of the 'B' wells installed across the overburden-bedrock interface ranged from 1×10^{-7} m/s to 4×10^{-5} m/s.</p> <p>Groundwater Quality</p> <p>Metals parameters exceeding the NSE PSS during the monitoring events included total mercury and dissolved aluminum, arsenic, cadmium, cobalt, copper, iron, manganese, mercury, selenium, silver, and zinc.</p> <p>As background groundwater quality is already near, or exceeding provincial criteria in several cases, any incremental increases from mine leaching to parameters may result in detrimental conditions.</p>	<p>a) How is the proponent proposing to manage elevated background water quality and the implications of it for the site?</p>
ECC 103	SAS-GW Reviewer 1	Environment and Climate Change		<p>Appendix B.2 Hydrogeological Modelling Assessment and Groundwater Modelling Conformity</p> <p>p. 11, 4.1 Groundwater Elevation Changes</p> <p>p. 12, 4.2 Seepage from Tailings Management Facility and WRSA</p> <p>p. 14, 5.0 Summary</p>	<p>"The simulated increase in groundwater elevations associated with the TMF during operations and post-closure is generally limited to the footprint of the TMF in the overburden - bedrock interface and extends to approximately 350 m from the toe of the berm in the deep bedrock."</p> <p>"Based on the simulated hydraulic gradients and an assumed porosity of 0.05 for the weathered bedrock, the transport rate from the facilities to the downgradient receivers ranges from 7 to 35 m per year for a conservative solute (the adsorption of non-conservative solutes including most metals in the groundwater flow pathway can be expected to reduce the rate of transport in groundwater by orders of magnitude). Given the distances between the WRSA/TMF to their downgradient receptors (100 to 380 m), the above rate of transport translates to a transport time of 3 to 54 years to the groundwater discharge location (excluding vertical transport times from the facilities to the water table).</p> <p>A slight (less than 0.5 m) increase in groundwater elevations in the bedrock-overburden interface occurred within the footprint of the WRSA representing the long-term potential for slight mounding of groundwater within the covered WRSA.</p> <p>The majority of seepage (85%) from the TMF discharges to the internal toe drain or perimeter drainage ditch of the TMF. Some groundwater seepage occurs at depth beyond these collection</p>	<p>Please clarify the statement "The simulated increase in groundwater elevations associated with the TMF during operations and post-closure is generally limited to the footprint of the TMF in the overburden - bedrock interface and extends to approximately 350 m from the toe of the berm in the deep bedrock."</p> <p>a) What were the simulated increases in groundwater elevation?</p> <p>b) Is the extent of the elevation impacts of 350 m measured in a horizontal sense out from the TMF berm, can this be shown on a map?</p> <p>c) What are the "downgradient receptors" referred to? Are these surface water features? If so, where are they? Would interlying wetlands be affected?</p> <p>d) What is needed to provide greater certainty in the estimate of transport time (3 to 54 years)?</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					systems, estimated by the groundwater model as follows: approximately 75 m ³ /day discharges northwards to a tributary of Seloam Brook, while approximately 6 m ³ /day discharges to the south within the headwaters of the East Lake catchment. The effect of this seepage is assessed in surface water quality modelling for the Project (Golder, 2019d)."	e) What is the predicted vertical transport time from the TMF facility to the water table and how does this alter over time as groundwater begins to mound up under the facility?
ECC 104	SAS-GW Reviewer 1	Environment and Climate Change		Appendix F.2 Fifteen Mile Stream Project - ML/ARD Assessment Report p. 5-2 Conclusions p. 5-3	"The SFE results indicate that As and Al are potential parameters of concern in runoff from the mine rock. The elevated As concentrations in the leachate are not correlated to the solid phase As content. An estimated time to NP depletion was determined from the average CMR and sulphate loading rate for stable conditions of the kinetic test. Calculations suggests that the carbonate will be depleted from the FMS mine rock between approximately 6 and 15 years. A conservative estimate for time to NP depletion for the static test samples indicates that approximately 50% of the PAG samples will become acidic within 10 years after exposure to the atmosphere. This estimate does not consider the slower sulphide oxidation rates in colder temperatures, which would be expected to delay the onset of acid generation. Using total S as the proxy to calculate AP, only the 2018 split circuit sample (Test 6) showed an NPR value below 2 and is therefore classified as PAG. Arsenic is the main parameter of concern in the tailings, due to elevated concentrations in both the solid phase elemental analysis and in the SFE leachate."	Based on the reported information it would seem that a reasonable, conservative approach would be to assume all PAG materials at the site to be acid-producing not just 10 yrs in the future, but beginning from the start of construction. Would this above assumption result in any changes to any FMS mine design parameters?
ECC 105	SAS-GW Reviewer 1	Environment and Climate Change		Appendix I.1 Fifteen Mile Stream Historical Tailings and Waste Rock Management Plan Page 3-4, 2.1.3 Determination of Suspected Tailings and Waste Rock Areas p. 7, 3.1.3 Long Term Storage	"Analytical results from the Limited Phase II ESA revealed concentrations of arsenic in soil exceeding the applicable Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for an Industrial Site in multiple test pit locations. The highest concentrations of arsenic, lead, and mercury were found to be localized to the southwestern portion of the proposed open pit, in the area of identified WR storage and probable tailings storage (Appendix A – Figures 2, 3, 4, respectively). Concentrations of aluminum, arsenic, cadmium, chromium, and iron exceeding the applicable NSE Tier 1 EQS were identified in one or more surface water samples analyzed. The highest concentration of arsenic was detected in the surface water sample collected immediately north of the WR storage area (Appendix A - Figure 5). It is currently proposed that a TMF will be constructed at FMS as part	a) What are the Proponent's plans for managing historical mine tailings throughout the site? b) What additional information is needed to make the determination between "direct disposal with the TMF" or "cell encapsulation", or other options?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					<p>of the mining operation. Placement of material within this facility with the regular tailings stream may be an appropriate remedial option if the HTWR from the Project site are chemically and physically consistent with the current design of the TMF.</p> <p>For tailings and WR material to be placed within the TMF, it must meet the following two criteria:</p> <ol style="list-style-type: none"> 1. The HTWR are chemically similar to the design tailings criteria for the TMF. 2. A geochemical study has shown that no adverse chemical reactions will occur between the HTWR and the geochemical conditions within the TMF. <p>If HTWR material are not appropriate for direct disposal within the TMF, cell encapsulation within the facility will be an option. Cell encapsulation involves the design and construction of a capped cell, either impermeable or semi-impermeable, within the footprint of the TMF at the Project site. The design goal of the cell is to increase the level of containment provided by the TMF, and limit the infiltration of water into the tailings and WR, and out into the environment. There are other potential technologies available including dry-stacking, or remedial technologies that would also require appropriate testing to ensure selected methods are cost effective and environmentally protective.”</p>	
ECC 106	SAS-GW Reviewer 1	Environment and Climate Change		Appendix I.3 Limited Phase II Environmental Site Assessment	<p>No groundwater quality samples from historic tailings sites are reported. Where historic tailings contain soil or sediment contaminants it may be assumed that groundwater contamination is also present.</p>	Does the Proponent plan to test, assess and address any instances of groundwater contamination related to historical tailings that may be disturbed?
ECC 108	SAS-GW Reviewer 1	Environment and Climate Change		Appendix I.5 Fifteen Mile Stream Gold Project Assimilative Capacity Study of Moose River – Touquoy Pit Discharge p. 1	<p>“The existing Touquoy pit is actively dewatered and pumped to the TMF. Water in the TMF is decanted to the effluent treatment plant for treatment.”</p>	What are the differences between the Touquoy and FMS sites that would result in possible different needs for water treatment?
ECC 109	SAS-GW Reviewer 1	Environment and Climate Change		Appendix I.5 Fifteen Mile Stream Gold Project Assimilative Capacity Study of Moose River – Touquoy Pit	<p>Two potential effluent water quantity and quality scenarios were considered. The Base Scenario characterizes the Touquoy pit effluent overflow to Moose River at mine closure after the tailings deposited to the pit from the FMS deposit only. The Cumulative Effects Scenario characterizes the Touquoy pit overflow after the tailings deposited in</p>	See comment for – NSECC-GW30

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
				Discharge Page 18-19, 11.0 Conclusions	<i>the pit from ore processing and from the FMS, Cochrane Hill, Beaver Dam, and Touquoy projects. For both scenarios, total aluminum, arsenic, cobalt, copper, and nitrite were identified to have exceedances of either the NSE Tier 1 EQS or CCME in the Touquoy pit effluent. Arsenic concentrations for both scenarios, and ammonia for the cumulative effects scenario exceed the MDMER limit for existing mines. Therefore, arsenic treatment will be required for both scenarios, and ammonia treatment for the cumulative effects scenario, prior to release of the effluent to environment.</i>	
ECC 110	SAS-GW Reviewer 1	Environment and Climate Change		Appendix I.7 Simulating the Cumulative Effects of Deposition of Tailings to the Touquoy Pit Page 1.3, 2.0 GROUNDWATER MODELLING Page 4.2, Table 4.1 Predicted Water Quality Concentrations to Moose River, Not Considering Water Treatment Page 5.1, 5.0 Conclusions	<i>"Modelling conducted for the FMS project simulates the filling of the Touquoy pit with tailings, which are assumed to have a hydraulic conductivity of 1×10-6 m/s (Stantec 2021a). Arsenic 0.84 mg/L discharge in year 11 Based on results of the assimilative capacity model (Stantec 2021c), once mixed with the background water quality in Moose River, the concentration 100 m downstream of SW-2 is predicted to be 0.0238 mg/L for arsenic and 0.184 for aluminum. Although the simulated arsenic concentration is above the NSE Tier 1 and CCME guidelines of 0.005 mg/L, the background levels at SW-2 also exceed the guidelines at 0.018 mg/L The changes result in pit filling times of about 10 years following the initial placement of tailings in the Touquoy open pit, and effluent concentrations that generally meet MDMER without treatment, with the exception of arsenic and ammonia. Therefore, it is predicted that some water treatment will continue to be required to meet MDMER discharge limits."</i>	The proponent notes that provincial (and CCME) water quality objectives may be exceeded in water discharges. In addition, arsenic and ammonia are predicted to exceed MDMER limits. For what length of time would Touquoy water treatment be necessary post-closure to mitigate the exceedances?

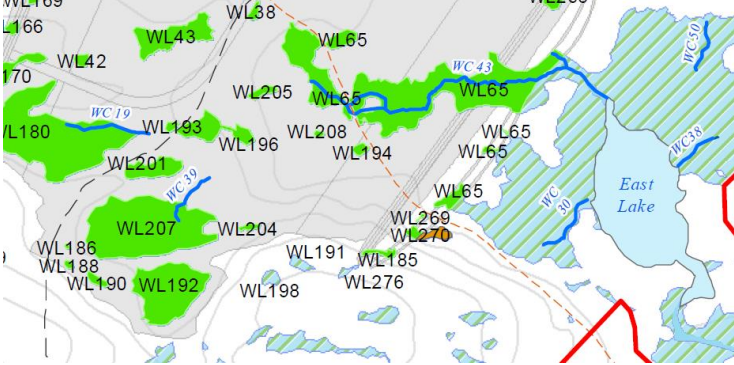
General comments on the EIS:

The following must be noted in consideration of these comments/request for information and the related review that took place:

- The Fifteen Mile Stream EIS submission includes a substantial amount of content document pages, figures, tables and maps in the Registration Document, Map Book and Appendices.
- The timelines provided for this provincial review and comment were limited
- Focus for this review was regarding aspects that may be of most relevance to groundwater, which has a very broad scope in this case

- The objective of these comments was not for a full and comprehensive technical review. Rather, the purpose is an identification of potential groundwater issues of note requiring additional information, from both a provincial regulatory and technical perspective.

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1: ECC Wetland Specialist

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 111	Wetland Specialist	NS-ECC Wetlands		Map Book – Various Figures, Wetlands and Watercourses	<p>Hydrologic connectivity between wetlands appears to be under-represented in the submission in general. In particular, there is a noted discontinuity between WC42 (tributary to East Lake), and WC19 and WC39. Review of LiDAR topographic data for the Project area suggests that WC19 and WC39 should confluence at WL193, proceed eastward through WL205, and ultimately connect with WC43 where it passes through WL65.</p> <p>While it may be possible that subterranean flows exist within the Project area, this has not been well explained in the EIS submission.</p> 	<p>The proponent shall provide information related to the unmapped section of watercourses. This mapping should not be limited to perennial watercourse, but also include intermittent and ephemeral features – all of which are important for maintenance of wetland hydrologic connectivity.</p>
ECC 112	Wetland Specialist	NS-ECC Wetlands		Appendix G3	General Comment	<p>It is unclear whether the lack of connectivity indicated in the previous comment is affecting the results of the WESP-AC functional assessment. Wetlands that are indicated as having no inflow/outflow within the WESP-AC responses will potentially have very different functional value in a number of hydrology related functions, versus the same wetlands with inflows/outflows. WESP-AC responses and results shall be re-evaluated based upon the updated mapping referenced above.</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						WESP-AC Results are provided in a non-standard format. Results shall be resubmitted in standard format, per the 'Scores' tab of the WESP-AC excel calculator.
ECC 113	Wetland Specialist	NS-ECC Wetlands		6.7.3.2 Wetlands of Special Significance, Table 6.7-5 P400-402	WSS Designation based on SAR <ul style="list-style-type: none"> - WL27: Blue Felt Lichen - WL65: Blue Felt Lichen - WL159: Blue Felt Lichen - WL240: Blue Felt Lichen 	WL27, WL65 and WL159 have been indicated for removal from the FMS Project landscape. This is contrary to other sections of the submission (6.7.8) saying that no WSS will be altered. Management considerations for WSS as it relates to blue felt lichen shall be conducted per the requirements of NS L&F Wildlife Division.
ECC 114	Wetland Specialist	NS-ECC Wetlands		6.7.3.2 Wetlands of Special Significance P402	"Blue felt lichen was observed in four wetlands (WL27, 65, 159 and 240), typically found in swamps or on the edges of wetland complexes growing on mature red maple. Given the size and habitat complexity of WL65, which is a lacustrine fen surrounding East Lake, this wetland has been subdivided into an eastern and western lobe, with the convergence of the inlet watercourse (WC43) into East Lake dividing WL65 into its respective eastern and western lobes. This division into separate lobes is based on landscape position and water source contribution to each portion of the wetland. Blue felt lichen was observed within the eastern lobe only; as such, the western lobe has not been defined as a WSS. The blue felt lichen is ranked as special concern by SARA and COSEWIC, and vulnerable by the NSESA. Due to the presence of blue felt lichen, wetlands 27, 159, 240 and the eastern lobe of WL65 are determined to be WSS, as shown on Figure 6.7-2.	There is insufficient data provided to rationalize the proposed subdivision of the identified WSS at WL65. As such, the entirety of WL65 shall be considered a WSS for the purposes of this submission and all subsequent applications.
ECC 115	Wetland Specialist	NS-ECC Wetlands		6.7.3.3 Functional Assessment Results P403	"For the purposes of the EIS, a subsample of wetlands was evaluated for wetland functions using WESP-AC. A proportional representation of wetland types was selected, for a total of 24 wetlands, representing 9% of all wetlands. While these wetlands represent 9% of the total number of wetlands, they represent 53% of the total area of wetlands present within the FMS Study Area (See Figure 6.7-1). Functional evaluation data was collected for all wetlands	It is not clear why only a 9% subset of data has been presented. No rationale has been provided for the separation of the identified wetlands from all others. The proponent shall provide all WESP-AC data for evaluation.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					within the FMS Study Area, to support wetland alteration permitting, as necessary. Detailed WESP-AC analysis is available for all wetlands, if requested."	
ECC 116	Wetland Specialist	NS-ECC Wetlands		6.7.3.3 Functional Assessment Results P403-405	Water Quality Group – Majority of wetlands in HIGH/HIGH category Terrestrial Habitat Group – Majority of wetlands in HIGH/HIGH category	The proponent should be aware that additional wetlands may meet the criteria for 'Functional WSS', per the NS Wetlands Conservation Policy.
ECC 117	Wetland Specialist	NS-ECC Wetlands		6.7.3.3 Functional Assessment Results P407	"Diving further into these results and examining the individual wetland scores (see Appendix G.3), the wetland with the most high/highs is WL18 followed by WL2. These two wetlands scored high/high, high/moderate, or moderate/high in all function groups except for the hydrologic function group. WL2 and WL18 both had observations of SAR and SOCI avifauna. From analyzing the WESP-AC results, it is evident that WL2 and WL18 are the highest functioning wetlands and were therefore considered further during the mitigation process."	No rationale is provided for how many high/high, high/moderate or moderate/high scores must present for a given wetland before it received escalated consideration within the mitigation process. Based upon the information provided, some of these wetlands may be categorized as WSS on the basis of high functional significance, as per the NS <i>Wetlands Conservation Policy</i> .
ECC 118	Wetland Specialist	NS-ECC Wetlands		6.7.5.2 Wetland Cumulative Effects Modelling P409	No clear rationale is provided for the usage of the identified metrics within the cumulative wetland effects assessment.	As it relates to wetlands, the Cumulative Effects Model appears to be a black box. Clarification is required as to the input data sources, the determination of metrics, and the overall analytical techniques used to arrive at the conclusions presented in this submission.
ECC 119	Wetland Specialist	NS-ECC Wetlands		6.7.5.2 Wetland Cumulative Effects Modelling P409	METRIC: Loss of Wetland Habitat Function including: Mainland moose, Canada warbler, olive-sided flycatcher, and rusty blackbird	If loss of wetland habitat function is being chosen as a metric for cumulative impact assessment, why then are WESP-AC results not being considered as valid baseline values? For example, the following WESP-AC habitat functions have been disregarded: <ul style="list-style-type: none"> - Aquatic Invertebrate Habitat - Amphibian and Turtle Habitat - Waterbird Feeding Habitat - Waterbird Nesting Habitat - Songbird, Raptor and Mammal Habitat - Pollinator Habitat

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						- Native Plant Habitat
ECC 120	Wetland Specialist	NS-ECC Wetlands		6.7.5.2.2 Wetland Cumulative Effects Methods P409	METRIC: Loss of Wetland Habitat Function "It should be noted that while the NSL&F forestry GIS layer does contain information on Canada warbler habitat (i.e., habitat layers denoting dense, deciduous shrub), it is derived from 1:12,500 aerial photographs and lacks the ability to appropriately distinguish reasonable abundance of suitable habitat for this species."	Despite the identified shortcomings of the NSL&F data, other public-level data is available to support a more accurate determination – namely, LiDAR canopy height models. https://nsgj.novascotia.ca/datalocator/elevation/
ECC 121	Wetland Specialist	NS-ECC Wetlands		6.7.5.2.2 Wetland Cumulative Effects Methods	METRIC: Other	Given the magnitude of wetland impacts proposed for the Project Area, why has loss of wetland hydrological function not been considered?
ECC 122	Wetland Specialist	NS-ECC Wetlands		6.7.5.2 .2 Wetland Cumulative Effects Methods P413	Mapping "Once compiled, the datasets listed in Table 6.7-13 were arithmetically overlaid, superimposing multiple datasets in order to combine geometry and attributes from different layers, for each wetland function metric using ArcGIS (ArcMap version 10.4.1). This created a habitat suitability layer at Year 0 at each geographic scale. The FMS Study Area was also analyzed at Year 8. Habitat suitability layers were clipped to the infrastructure footprint in order to identify direct impacts and calculate predicted losses."	The outputs from the described mapping method were not provided. Please provide a more detailed account of the processing methods, including weighting of input variables (if used). Output data layers from this exercise shall be provided for review.
ECC 123	Wetland Specialist	NS-ECC Wetlands		6.7.5.2 .2 Wetland Cumulative Effects Methods P413	"By modeling the impact of the Project and its associated infrastructure on wetland area and the predicted suitable wetland habitat for moose and birds, the extent of impact was determined, and potential loss of these wetland function metrics could be assessed."	Provide mapping depicting the extent of impacts.
ECC 124	Wetland Specialist	NS-ECC Wetlands		6.7.5.2.3 Modelling Limitations and Assumptions P 413	"Limitations were observed when it came to compilation of available data, for example, Canada warbler, which use a dense, deciduous shrub layer, was not able to be modeled given the lack of available data."	See previous comment re: LiDAR Canopy Height models
ECC 125	Wetland Specialist	NS-ECC Wetlands		6.7.7 Mitigation P 438	"Mitigation measures will be confirmed through monitoring requirements, as described at the permitting stage through the Industrial Approval."	Unclear – does this mean that the success of mitigation measures will be confirmed through monitoring?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 126	Wetland Specialist	NS-ECC Wetlands		6.7.7 Mitigation P 439	"The Proponent will consider inclusion of a conservation allowance in the wetland compensation plan to address restoration of equivalent habitat for wildlife SAR."	Details on conservation allowance not provided in the main submission, nor in the Preliminary Wetland Compensation Plan (Appendix G4). What form does this take?
ECC 127	Wetland Specialist	NS-ECC Wetlands		6.7.7 Mitigation P 439	"Complete detailed design and micro-siting of Project Infrastructure to avoid or minimize wetland impact"	How has this been demonstrated in the current submission? In particular, it seems no effort has been made to avoid impacts to the identified WSS.
ECC 128	Wetland Specialist	NS-ECC Wetlands		6.7.7 Mitigation P 439	"Maintain pre-construction hydrological flows through wetland habitats and partially altered wetlands, wherever practicable"	A suitable baseline for hydrological flows within and between wetlands has not been demonstrated in this submission. Provide more detailed evaluation of wetland hydrology. Baseline assessment of wetland hydrology will be a requirement for post-construction monitoring, and associated plans.
ECC 129	Wetland Specialist	NS-ECC Wetlands		6.7.8 Residual Effects and Significance P 440	"The predicted residual environmental effects of Project development and production on wetlands are assessed to be adverse, but not significant (Table 6.7-23). The overall residual effect of the Project on wetlands is assessed as not significant after mitigation measures have been implemented."	This statement is fundamentally flawed - no compensation projects have been identified in the Preliminary Compensation Plan that would indicate that the wetland losses (67 ha direct, ~10 ha indirect) proposed for the FMS Project can be suitably offset.
ECC 130	Wetland Specialist	NS-ECC Wetlands		6.7.8 Residual Effects and Significance P 442	"The majority of wetlands proposed for alteration are common type (swamp habitat), and no loss of wetlands of special significance are proposed."	This statement is contrary to what is shown on the mapping, whereby multiple WSS are depicted within the Project footprint. This should be clarified. Although a common type, swamps provide important habitat function to SAR species.
ECC 131	Wetland Specialist	NS-ECC Wetlands		6.7.9 Proposed Compliance and Effects Monitoring Program P 442	"A detailed Wetland Monitoring Plan will be established through the life cycle of the permitting process and will commit to monitoring during baseline/pre-construction to establish baseline conditions, and through the operational phase, reclamation and post closure (as determined to be required)."	An initial wetland monitoring plan shall be developed in alignment with NS ECC requirements and provided for review as part of the EIS process. The monitoring plan shall include a far-field monitoring component for those WSS within the Toadfish Lakes Wilderness Area that are hydrologically connected to the outflow from East Lake.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 132	Wetland Specialist	NS-ECC Wetlands		6.7.9 Proposed Compliance and Effects Monitoring Program P 442-443	<p>“Wetland monitoring will be completed for the Project on selected representative wetlands that have been predicted to have direct or indirect effects from project development. Based on predictions presented in this section, the following wetlands are recommended for monitoring, with additional wetlands to be added through the development of the detailed Wetland Monitoring Plan, which will be informed by on-going Project design, detailed permitting, and regulatory consultation:</p> <ul style="list-style-type: none"> - Flooding associated with the Seloam Brook Realignment: WL2, WL64 and WL173; - LCA adjustments: WL1, WL47, WL49, WL263 and WL270; - SW15 regional catchment: WL65; and, <p>A representative sub-group of partially altered and avoided wetlands.”</p>	<p>Wetland monitoring shall be conducted for <u>all</u> partially altered wetlands. A hierarchy of monitoring approaches may be warranted, in consideration of the magnitude of individual wetland impacts. Similarly, appropriate consideration will be made for the far-field monitoring of those WSS within the Toadfish Lakes Wilderness Area that are hydrologically connected to the outflow from East Lake.</p>
ECC 133	Wetland Specialist	NS-ECC Wetlands		6.7.9 Proposed Compliance and Effects Monitoring Program P 443	<p>“Wetlands altered by the Project will be compensated at the ratio determined in the Preliminary Wetland Compensation Plan (Appendix G.4) in consultation with NSE.”</p>	<p>The Proponent will make no assumption as to the compensation ratio that will be applied, in the event that (a) the undertaking is approved and (b) that wetland approvals are sought and granted. NS ECC will provide determination on this matter, based upon the data provided.</p>
ECC 134	Wetland Specialist	NS-ECC Wetlands		6.7.9 Proposed Compliance and Effects Monitoring Program P 445	<p>“A Preliminary Wetland Compensation Plan (Appendix G.4) has been developed in order to satisfy the Nova Scotia Wetland Conservation Policy’s (NSE 2019) objective of preventing no net loss of wetland habitat and function. Wetland compensation will be initiated within three years of wetland alteration.”</p>	<p>The plan provides only generalities around the process of locating suitable compensation projects. No primary compensation sites (i.e., on-the-ground) are provided for evaluation. Furthermore, no secondary compensation measures (e.g., studies) are provided for evaluation. In light of this, there is no indication that the <i>Wetland Conservation Policy</i> objectives are being (or will be) satisfied by the proponent. Provide an updated plan, with any initial compensation considerations have been made to date.</p>

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 135	Wetland Specialist	NS-ECC Wetlands		General Comment	Protected Areas downstream of FMS Project area	It should be noted by the proponent that all wetlands within the Toadfish Lakes Wilderness Area (located <500 m south of FMS Project Area) are considered Wetlands of Special Significance. Any Project activities that influence either quality or quantity of the hydrologic outputs from the East Lake contributing area could be in turn influence the conditions in these WSS. An adverse effect to downstream WSS could be considered a wetland alteration and would not be permitted. Maintenance of water quality and quantity shall be considered by the proponent in their Project design, and addressed in their wetland monitoring plans (as mentioned in previous comments).

General comments on the EIS:

Limitations of Review: The comments provided are intended to represent some initial concerns related to the Projects interaction with wetlands. The comments provided do not entail a comprehensive review of the submission, given the volume of the submission, and finite period available for review.

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1: Inspection, Compliance and Enforcement Division

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 136	ECC Reviewer 1	ECC	Part 2, Section 3.2.1 Site preparation and construction	1.1.3 Project Overview Page 2 2.2.1.5 Overburden Till Stockpile 2 nd page 9 <i>Please note, the document starts at Page 1 again at Section 2.0.</i>	<p>Tailings produced at the FMS Mine Site will be stored in an approved TMF. The containment dams will be constructed with rock aggregate material sourced from mine waste rock or nearby quarries with upstream clay blanket and seepage cut off constructed using local till material.</p> <p>A separate stockpile will be constructed to the northeast of the WRSA to contain unconsolidated overburden as indicated on Figure 2.1-5. Total capacity of the Till stockpile will be approximately 1.5 Mt.</p>	<p>Given the lack of construction materials for the Touquoy TMF:</p> <ol style="list-style-type: none"> 1. How much Greywacke is required to construct the TMF at FMS? <ol style="list-style-type: none"> a. Is there enough Greywacke material from the proposed pit for the TMF construction at FMS? 2. How much till is required to construction the TMF at FMS? <ol style="list-style-type: none"> a. Figure 1.1-2 illustrates three “Potential Borrow Pit” locations. Is this enough to complete the TMF construction at FMS? 3. What is the backup plan if there are quality control issues with the Open Pit Material and the Borrow Pits?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 137	ECC Reviewer 1	ECC	Part 2, Section 3.2.1 Site preparation and construction	2.2.1.2 Mine Site Roads 2nd Page 8 <i>Please note, the document starts at Page 1 again at Section 2.0.</i> Part 2, Section 7.2.2 Changes to groundwater and surface water.	There are five to ten watercourses that will require crossings along the mine site roads including a bridge upgrade at the crossing of Fifteen Mile Stream on Seloam Lake Road. Significant residual effects on sediment quality are not anticipated since erosion and sediment control, along with stormwater management best practices, are standard, proven techniques that have long been used in mining and construction contexts.	To date, Touquoy has reported 31 silt releases with most of the releases occurring at the Haul Road Crossing at Watercourse 4 (the only watercourse crossing). This is not under control at Touquoy. What is the planned sediment and erosion control measures for each of the 5-10 watercourse crossings at FMS? What is the design for the haul road? Will bridges be utilized? If so, where. The sediment and erosion control plan presented is for the Touquoy Site, not FMS. Submit a sediment and erosion control plan for FMS.
ECC 138	ECC Reviewer 1	ECC	Part 2, Section 7.1.5. Groundwater and surface water	2.4.3.3.1 Tailings Management Page 56	Until water quality meets discharge criteria, the water level in the pit lake will be maintained at or below elevation 104 masl (i.e., corresponding to the shallow permeable zone), thus reducing seepage to Moose River and normalizing treatment rates to the extent feasible.	Please present the supporting documentation that concludes connection of Touquoy Pit to Moose River at the 104 masl.
ECC 139	ECC Reviewer 1	ECC	Part 2, Section 1.2 Project overview	2.4.1.1 FMS Mine Site Page 24	The following activities will be undertaken to prepare the FMS Mine Site for construction activities: <ul style="list-style-type: none"> • clearing, grubbing, and grading; • drilling and rock blasting; • establishment of topsoil, organic material (saturated topsoil/peat), till, and waste rock stockpiles; and • Seloam Brook Realignment construction and pit site dewatering. 	Please explain what "pit site dewatering" is required prior to construction activities.
ECC 140	ECC Reviewer 1	ECC	Part 2, Section 1.2 Project overview	2.4.1.1 FMS Mine Site Page 25	The FMS Mine Site will have a total disturbed area of approximately 400 ha, consisting of the pit (27 ha); WRSA (53 ha); TMF (123 ha); low grade ore stockpile (15 ha); till	Inconsistency identified: The total disturbed areas sum to 375 ha (not 400 ha). Please review and confirm the final number.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					stockpile (12 ha); topsoil stockpiles (5 ha); organic material stockpile (19 ha); operational facilities (40 ha); Seloam Brook diversion berm (6 ha); water management ponds and structures (16 ha); potential borrow pit areas (30 ha); access road (6 ha); local road bypasses (5 ha); powerline (2 ha) and mine site roads (16 ha). Ore, till, topsoil, and organic material stockpiles will comprise approximately 51 ha during operations but are not anticipated to remain at the completion of the Project.	
ECC 141	ECC Reviewer 1	ECC	Part 2, Section 1.2 Project overview	2.4.1.1.4 Site Construction Page 27 2.6.13 Mine Waste Storage (Tailings) Page 73	<p>The configuration of the Stage 1 TMF embankment may be modified to avoid waters frequented by fish (in the event that an amendment to Schedule 2 under MDMER is required and not obtained at the time of commencement of construction) to allow for ongoing construction and operation during the period prior to receiving the Schedule 2 amendment.</p> <p>The Proponent presented its preferred tailings storage option (conventional tailings slurry at the location shown on Figure 2.1-5) to DFO and ECCC, which have determined that a regulatory amendment to Schedule 2 of the Metal and Diamond Mining Effluent Regulations (MDMER) will be required.</p>	Commencement of construction shall not occur prior to receiving amendment to Schedule of the MDMER.
ECC 142	ECC Reviewer 1	ECC	Part 2, Section 1.2 Project overview	2.2.2 Concentrate Transport 2 nd Page 18 <i>Please note, the document starts at Page 1 again at Section 2.0.</i> 2.6.9.2 Haulage Means Page 68	<p>The 8 axle, 58,500 kg B Train is a standard across Canada. Based on the requirement to haul 300 t/d and a maximum payload of 41 t, 8-11 return trips per day will be required.</p> <p>Highway haul trucks with trailers in a C Train configuration will be used to haul concentrate. The 8 axle, 58,500 kg C Train configuration is a standard used across Canada. Truck payloads will be consistent with the limits applied by the Nova Scotia Highways department to comply with the proposed route segments. Based on the requirement to haul 300 t/d and a maximum payload of 28.5 t, 8-11 return trips per day will be required.</p>	Inconsistency identified: please provide clarification if B Train or C Train will be used to transport the concentrate.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 143	ECC Reviewer 1	ECC	Part 2, Section 3.2.2 Operation	6.2.6.1 Air Pollutants and Metals in Fugitive Dust Page 159		Where are the proposed compliance points for measuring air pollutants and metals in fugitive dust?
ECC 144	ECC Reviewer 1	ECC	Part 2, Section 3.2.2 Operation	6.2.7 Mitigation Page 164		What are the mitigation measures for dust generation from the potential dried tailings at the FMS?
ECC 145	ECC Reviewer 1	ECC	Part 2, Section 7.1 Project setting and baseline conditions	6.4.3.6.2 Tailings Page 193	8. The shake flask extraction (SFE) results indicate that As and Al are potential parameters of concern in runoff from the mine rock. Other parameters highlighted in the solid phase analyses were not above the federal water quality guidelines in the SFE leachate.	How will the potential leaching of As and Al be controlled for the waste rock used around site for construction? (haul roads, TMF embankment, etc)
ECC 146	ECC Reviewer 1	ECC	Part 2, Section 7.1 Project setting and baseline conditions	6.4.3.6.2 Tailings Page 193	9. Modelling results suggest that the NP will be depleted from the FMS mine rock between approximately 6 and 15 years. A conservative estimate for time to NP depletion for the static test samples indicates that approximately 50% of the PAG samples will become acidic within 10 years. This estimate does not consider the slower sulphide oxidation rates in colder temperatures, which would be expected to delay the onset of acid generation.	What is the plan to minimize ARD at closure? EMP 19 Reclamation and Closure Plan was not submitted.
ECC 147	ECC Reviewer 1	ECC	Part 2, Section 7.1.5 Groundwater and surface water	6.5.10 Proposed Compliance and Effects Monitoring Program Page 252	Based upon the predicted groundwater effects, the Proponent has committed to install additional monitoring wells in two areas within the FMS LAA (see Figure 6.5-18): 1. Two additional monitoring well nests will be located adjacent to the open pit to confirm the predicted groundwater radius of influence towards the south of the open pit. 2. Several additional monitoring well nests will be placed around the TMF to monitoring groundwater levels.	There are no proposed wells around the Open Pit, the Diversion Channel, the Organics Material Stockpile, PAG Stockpile, NAG Stockpile and the Till Stockpile. Please note that the following wells will no longer exist once construction starts: Open Pit: 18-05, itSu 18-06 and 18-07 (depending on road location) TMF: 18-10, 18-13 Please submit all proposed well locations.
ECC 148	ECC Reviewer 1	ECC	Part 2, Section 7.1.5 Groundwater and surface water	6.6.9.3 Project Monitoring Program Details Page 378	Table 6.6-45: Long-Term Surface Water Monitoring Locations	Many of the locations are TBD. Please select proposed monitoring locations.
ECC 149	ECC Reviewer 1	ECC	Part 2, Section 7.6.1 Effects of	6.17 Accidents and Malfunctions		Tables 6.17-2 to 6.17-14 lists the ranking for Potential for Adverse Effects (Low/High) but the supporting documentation for the environmental

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
			potential accidents or malfunctions			<p>effects of each potential accident/malfunction in this section are not presented.</p> <p>For example: <i>6.17.4.3.2 Potential Interactions and Effects, page 803, The maximum effect of a water management pond failure as it relates to VCs above would be heavy siltation of wetlands and Seloam Brook and subsequent stresses on fish and other aquatic species.</i></p> <ol style="list-style-type: none"> 1. What are the effects of the pond failures around each stockpile? 2. What is the predicted water quality of these ponds if such failures occur? <p><i>6.17.4.4.3 Mitigation and Emergency Response, page 808. In addition to the detailed dam design, the Design Engineer/Engineer of Record will undertake a Dam Breach Inundation Study for incorporation into an Emergency Response Plan, which will be developed in accordance with the EMS Framework Document.</i></p> <p>Present the simulation of the tailings breach and what the environmental effects are.</p> <p>The following EMPs are missing from Appendix L.1:</p> <ul style="list-style-type: none"> • EMP 3: Acid Rock Drainage Prediction and Mine Rock Management Plan • EMP 8: TMF Operation, Monitoring and Surveillance Manual • EMP 9: Surface Water and Groundwater Management and Contingency Plans • EMP 10: Health and Safety Plan • EMP 11: Emergency Response Plan

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						<ul style="list-style-type: none"> • EMP 13: Archaeological and Cultural Heritage Resources Management Plan • EMP 18: Explosives Management Plan • EMP 19: Reclamation and Closure Plan • EMP 20: Recovery Plan • EMP 21: Stakeholder Engagement Plan • EMP 22: Indigenous Peoples Engagement Plan
ECC 150	ECC Reviewer 1	ECC	Part 2, Section 3.2.1 Site preparation and construction	8.5.4.2.2.4 Touquoy Gold Project, Beaver Dam Mine Project and Cochrane Hill Gold Project- deposition of tailings in Touquoy exhausted pit Page 912 Appendix I.6: Touquoy Pit Integrated Water and Tailings Management Plan. Section 3.0 Conceptual Tailings Deposition Plan Page 8	<p>The total capacity of the expanded Touquoy pit at the proposed spillway elevation of 108.0 m is 11.83 million cubic metres (Mm³). This is sufficient to store tailings using subaqueous deposition. Considering subaqueous deposition, the exhausted Touquoy pit can accommodate the estimated total deposited volume of 7.91 Mm³ based on an average tailings density of 1.3 tonnes per cubic metre (t/m³) from the four projects (Appendix I.7).</p> <p>The total capacity of the exhausted Touquoy pit at the proposed spillway elevation of 108.0 m is of 8.962 million cubic metres (Mm³) is sufficient to store tailings FMS ore processing using subaqueous (i.e., in water) deposition. Considering subaqueous deposition, the exhausted Touquoy pit can accommodate the estimated total deposited volume of 0.411 Mm³ from FMS ore concentrate processing.</p>	Inconsistency identified: Two numbers were presented for the exhausted Touquoy Open Pit at 108 masl. Please review and confirm the final number.
ECC 151	ECC Reviewer 1	ECC	Part 2, Section 3.2.2 Operation	Appendix I.7: Simulating the Cumulative Effects of Deposition of Tailings to the Touquoy Pit, Section 3.0 Water Balance Modelling Page 3.1 Appendix L.1 EMP 7: Section 4.2 Model	<p>Tailings will be deposited in the exhausted Touquoy pit for a total of 44 months reaching an elevation in the pit of 91.9 m CGVD2013. As presented in the Touquoy Gold Mine Project Reclamation Plan (Stantec 2017), the inflow of groundwater, surface runoff and precipitation into the pit will naturally create a lake upon closure of the site. The water balance model simulated that it would take an additional 63 months or a total of 107 months from commencement of tailings deposition in the exhausted Touquoy pit to fill the pit to the spillway invert elevation.</p>	Inconsistency identified: Two numbers were presented for timing of tailings deposition. Please review and confirm the final number.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
				Results Page 13,	Tailings will be deposited in the exhausted Touquoy pit for a total of 83 months including a five-month pre-processing period to allow the water level in the open pit to reach an elevation in the pit of 17.6 m CGVD2013. As originally planned in the approved Touquoy Gold Mine Project Reclamation Plan (Stantec 2017b), the inflow of groundwater, surface runoff and precipitation into the pit will naturally create a lake upon closure of the site. The water balance model simulated that it would take an additional 88 months or a total of 165 months from commencement of tailings deposition in the exhausted Touquoy pit to fill the pit to the spillway invert elevation.	
ECC 152	ECC Reviewer 1	ECC	Part 2, Section 3.2.1 Site preparation and construction	Appendix I.1: Fifteen Mile Stream Historical Tailings and Waste Rock Management Plan		The Figures in Appendix A only show delineation within the Open Pit Mine except for FMTP10, FMTP14, FMTP17, FMTP18 and FMTP21. The “Historical Mine Workings and Associated Waste Rock Piles (Trenches/Test Pits)” listed on the legend is illustrated in green for the site. It appears that both the PAG and NAG stockpiles and the road and/or the Low Grade Ore Stockpile(s) may be located within the “Historical Mine Workings and Associated Waste Rock Piles (Trenches/Test Pits)” but these areas have not been sampled. No information was presented about the on-site historic stockpiles. Please present this information. Please updated all figures to include all the proposed site infrastructure. Please note that disturbance of the planned stockpile areas are required to prepare the base and therefore these areas shall be included in the delineation process.
ECC 153	ECC Reviewer 1	ECC	Part 2, Section 3.2.2 Operation	Section 2.4.3.3.1 Tailings Management – Closure	Until water quality meets discharge criteria, the water level in the pit lake will be maintained at or below elevation 104 masl (i.e., corresponding to the shallow permeable zone), thus	Inconsistency identified: Two numbers were presented for maintaining the water level in the Touquoy Pit.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
				Page 56 2.1.2 FMS Project Phase – Reclamation Page 7	reducing seepage to Moose River and normalizing treatment rates to the extent feasible. Until water quality meets discharge criteria, the water level in the pit lake will be maintained at or below elevation 108 m (i.e., corresponding to the spillway elevation) thus reducing seepage to Moose River and normalizing treatment rates to the extent feasible.	Please review and confirm the final number.
ECC 155	ECC Reviewer 1	ECC	Part 2, Section 7.6.1 Effects of potential accidents or malfunctions	Appendix L.1: Fifteen Mile Stream Gold Project Environmental Management System (EMS) Framework Document EMP 1: Environmental Protection Plan EMP 17: Spill Contingency Plan		“The Project” is defined as Touquoy Gold Mine. This EMP does not include the FMS Site. For example, Section 2.17 Road Traffic Management discusses roads at Touquoy only and all Figures reference Touquoy only.
ECC 156	ECC Reviewer 1	ECC	Part 2, Section 7.6.1 Effects of potential accidents or malfunctions	Appendix L.1: Fifteen Mile Stream Gold Project Environmental Management System (EMS) Framework Document EMP 2: Erosion Prevention and Sediment Control Plan		To date, Touquoy has reported 31 silt releases with most of the releases occurring at the Haul Road Crossing at Watercourse 4 (the only watercourse crossing). The applicant shall submit a Sediment and Erosion Plan for the FMS Site that includes the plans for the Haul Road. Stating that a similar approach will be taken as Touquoy and presenting the Touquoy Sediment and Erosion Control Plan is not sufficient.
ECC 157	ECC Reviewer 1	ECC	Part 2, Section 7.6.1 Effects of potential accidents or malfunctions	Appendix L.1: Fifteen Mile Stream Gold Project Environmental Management System (EMS) Framework Document EMP 17: Spill Contingency Plan		This EMP does not include the FMS Site, it is for Touquoy only.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 159	ECC Reviewer 1	ECC	Part 2, Section 3.2.2 Operation	Appendix D.2: Fifteen Mile Stream Project Preliminary Waste and Water Management Design for Submission of the Environmental Impact Statement 5.2.4 Open Pit Water Management page 32	The pit dewatering system will pump water from the pit to the Ore Stockpile Collection Pond (OSCP) where it will be combined with runoff from the Ore Stockpile.	Why is the pit water being pumped to the Ore Stockpile Collection Pond (OSCP) and not directly to the TMF? Is the OSCP volume large enough to accept water from the Open Pit? The volume is not larger in comparison to the other ponds.

ECC 160

I compiled the tailings numbers that AMNS is proposing to deposit in the exhausted Touquoy Pit in the following table:

Site	Tailings Tonnes (Mt)	Tailings Volume (Mm ³)	Reference
Touquoy	6.5	4.629 ¹	Jim Millard from April 13, 2021 EA Scoping Meeting
Beaver Dam	7.25	5.577	Beaver Dam EIS Document, Appendix G.2
FMS	0.534	0.411	FMS EIS Document, Appendix I.6
Total Tailings	14.284	10.617	
Total Water		8.589	FMS EIS Document, Appendix I.6 (Figure 4.5)
Total Water + Tailings		19.206	

¹ Density of 1.404 t/m³ reported in the Water Balance Revision #14 dated December 23, 2020.

² Total number does not include concentrate from the Cochrane Hill project which is also planned to be deposited into the Touquoy exhausted pit.

The FMS EIS Document states the following volumes (please note they presented two different capacities for the Touquoy exhausted pit, I have this as one of

comments):

- Exhausted Touquoy Pit Capacity 1: **11.83 Mm³** (at the spillway elevation of 108 masl), EIS Document Section 8.5.4.2.2.4
- Exhausted Touquoy Pit Capacity 2: **8.962 Mm³** (at the spillway elevation of 108 masl), EIS Document, Appendix L.1
- Estimated total deposited tailings from all sites into exhausted Touquoy Pit: 7.91 Mm³, EIS Document Section 8.5.4.2.2.4

The numbers are not adding up, the exhausted pit will either be:

a) Almost at capacity with tailings only (not including any water) or

b) Cannot accommodate the total estimated tailings to be deposited in the exhausted Touquoy Pit (again, not including water and concentrate from Cochrane Hill)

I suggest requesting the Touquoy exhausted pit water balance for all 4 projects (Touquoy stockpile processing, FMS, BD and CH) because the numbers submitted separately are not adding up.

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1: ECC Resource Management Unit

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 161	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 26; Section 2.4.1.1.2; Management of historic waste rock and tailings	The EIS states that the proponent is committed to responsibly managing historical tailings and waste rock that are encountered during the construction of the Project <u>within the proposed disturbance footprint.</u>	Under supervision of a Site Professional, as defined by the Contaminated Sites Regulations, conduct baseline studies as necessary to determine natural background conditions (i.e. not including tailings/waste rock) of relevant environmental media (e.g., soil, surface water, sediment, groundwater, etc.). Under supervision of a Site Professional, conduct a Phase 2 Environmental Site Assessment, as defined by the Contaminated Sites Regulations that provides a baseline for “ all areas within the project lease boundary which are known or suspected to have contamination resulting from historical mining activities (including tailings and waste rock) which are likely to or potentially could be disturbed during the construction, operation or reclamation of the facility”. Any areas within the lease boundary with confirmed soil, sediment, groundwater or surface water impacts above the applicable criteria must be delineated and managed in accordance with the Nova Scotia Contaminated Sites Regulations, including historic tailings and waste rock which could potentially be impacted by the Project, either directly or indirectly.
ECC 162	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource	Part 2, Section 7.1	Registration Document; Page 26; Section 2.4.1.1.3; Seloam Brook realignment Registration Document; Page 309; Section 6.6.6.1; FMS Study Area Registration Document; Page 202; Section 6.4.7;	The EIS states that Seloam Brook will be realigned through the construction of a raised perimeter berm along the east, north and west of the open pit and a constructed 800 m channel, which will divert flows from Seloam Brook, and its main tributary, Watercourse 12, around the open pit to the north of the pit. The realignment of Seloam Brook to support pit development will result in potential release of sediment, degraded surface water as a result of historical tailings	In the assessment of potential effects, include the potential for changes in surface water drainage and of effluent discharge which could expose or remobilize existing contaminated material (historic tailings and/or waste rock). Under supervision of a Site Professional, as defined by the Contaminated Sites Regulations, conduct baseline studies as necessary to determine natural background conditions (i.e. not

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Management Unit)		Mitigation	and waste rock The quality of potentially contaminated sediments in Seloam Brook, and the volume of contaminated sediments, will be further assessed through additional sampling prior to beginning the Seloam Brook Realignment.	including tailings/waste rock) of relevant environmental media (e.g., soil, surface water, sediment, groundwater, etc.). Under supervision of a Site Professional, conduct a Phase 2 Environmental Site Assessment, as defined by the Contaminated Sites Regulations that provides a baseline for “all areas within the project lease boundary which are known or suspected to have contamination resulting from historical mining activities (including tailings and waste rock) which are likely to or potentially could be disturbed during the construction, operation or reclamation of the facility”. Any areas within the lease boundary with confirmed soil, sediment, groundwater or surface water impacts above the applicable criteria must be delineated and managed in accordance with the Nova Scotia Contaminated Sites Regulations, including historic tailings and waste rock which could potentially be impacted by the Project, either directly or indirectly.
ECC 163	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 50; Section 2.4.3	The EIS states that post closure stage encompasses pit filling, water treatment as required, on-going TMF reclamation, and all monitoring programs. This stage is complete once the pit lake has filled and monitoring has been completed to confirm structural and environmental stability for the long term (steady state) for the pit and across the site.	Provide a Remedial Action Plan as defined by the Contaminated Sites Regulations. Include a performance monitoring plan and if appropriate, requirements for long term risk management. Where it is anticipated that regulatory closure in accordance with Contaminated Sites Regulations will be conditional, long term risk management should be included for as long as exposure conditions remain in place (i.e. in perpetuity for encapsulated TMF).
ECC 164	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change –	Part 2, Section 7.1	Registration Document; Page 57; Section 2.4..3.4; Post Closure Stage	The EIS states that Water treatment will continue, as required, in the existing water treatment facility, and monitoring programs will be on-going until such time that discharge water quality meets appropriate confirmed	Provide a Remedial Action Plan in accordance with the Nova Scotia Contaminated Sites Regulations. Include a performance monitoring plan and if appropriate, requirements for long

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Sustainability and Applied Science Division (Resource Management Unit)			criteria. At this time, discharge will cease through the existing water treatment facility, and will be re-directed to Seloam Brook/Moose River. Groundwater and surface water models will be revised periodically based on revisions to source terms and other parameters in an effort to better predict post closure water quality and to identify the planned extent and duration of any necessary treatment requirements	term risk management.
ECC 165	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 179; Section 6.4.2.1; FMS Study Area Baseline Program Methodology Registration Document; Page 184; Section 6.4.3.4; Historic Tailings, Waste Rock and Current Sediment Quality	The EIS states that baseline sediment quality data will be used for comparison with samples obtained during the routine sediment sampling program to be undertaken during construction and operation. The data will be used in assessing sediment quality variations resulting from construction, operation and closure. The EIS states that Stantec completed a comprehensive historical review of past mine workings through a series of Phase I and Phase II Environmental Site Assessments and issued management options and recommendations to further delineate and control waste rock and tailings	Under supervision of a Site Professional, as defined by the Contaminated Sites Regulations, conduct baseline studies as necessary to determine natural background conditions (i.e. not including tailings/waste rock) of relevant environmental media (e.g., soil, surface water, sediment, groundwater, etc.). Under supervision of a Site Professional, conduct a Phase 2 Environmental Site Assessment, as defined by the Contaminated Sites Regulations that provides a baseline for “ all areas within the project lease boundary which are known or suspected to have contamination resulting from historical mining activities (including tailings and waste rock) which are likely to or potentially could be disturbed during the construction, operation or reclamation of the facility”. Any areas within the lease boundary with confirmed soil, sediment, groundwater or surface water impacts above the applicable criteria must be delineated and managed in accordance with the Nova Scotia Contaminated Sites Regulations, including historic tailings and waste rock which could potentially be impacted by the Project, either directly or indirectly.
ECC 166	RMU – Contaminated	Nova Scotia Environment & Climate	Part 2, Section 7.1	Registration Document; Page 182; Section 6.4.3.1; Topography and Soils	The EIS refers to provincial Tier 1 Environmental Quality Standards (EQS) for an industrial site with non-potable groundwater use and coarse-grained soil.	In accordance with Contaminated Sites Regulations (Protocol PRO-100), Tier 1 EQS (potable site classification) should be referenced.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
	Sites Specialist	Change – Sustainability and Applied Science Division (Resource Management Unit)		Appendix I.3 Limited Phase II ESA; Page 4; Section 1.5; Regulatory Framework Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 9; Section 4.4; Monitoring and Remedial Verification	The EIS appendices document states that analytical results for soil and surface water have been compared to the applicable Tier 1 EQS for an industrial site with non-potable groundwater use and coarse-grained soil. The EIS appendices document states that all confirmatory samples should be sent to an accredited laboratory and tested for, at minimum, total metals in soil. These samples should be compared to the Tier 1 EQS for an industrial site.	While it may be applicable to compare the developed portions of the site to Industrial land use criteria during the operational phase, provide clarification on land use classification for other areas of the project lease boundary (beyond developed portions during the operational phase). Provide clarification on post closure land use classification for the entire project lease boundary.
ECC 167	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 185; Section 6.4.3.4; Historic Tailings, Waste Rock and Current Sediment Quality	The EIS states that elevated arsenic concentrations are expected to be present across the FMS Study Area since the gold is associated with the mineral arsenopyrite. Concentrations of arsenic detected in soil samples collected from certain test pits only marginally exceeded the Tier 1 EQS and are potentially indicative of background (pre-mining) soil concentrations (i.e., 40-200 mg/kg). Soils near an ore body would be expected to be mineral-enriched relative to the soils described in the previous section that are more distant from the mineralized zone.	Under supervision of a Site Professional, as defined by the Contaminated Sites Regulations, conduct baseline studies as necessary to determine natural background conditions (i.e. not including tailings/waste rock) of relevant environmental media (e.g., soil, surface water, sediment, groundwater, etc.)
ECC 168	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 199; Section 6.4.6.1; FMS Study Area	The EIS states that all historical tailings and waste rock, <u>in locations where mining infrastructure is planned</u> , will be delineated and characterized in accordance with the methodologies provided in the Historical Tailings and Waste Rock Management Plan (Appendix I.1). This would include tailings identified in soil and also within linear watercourses and waterbody sediments, where applicable	Under supervision of a Site Professional, conduct a Phase 2 Environmental Site Assessment, as defined by the Contaminated Sites Regulations that provides a baseline for “ all areas within the project lease boundary which are known or suspected to have contamination resulting from historical mining activities (including tailings and waste rock) which are likely to or potentially could be disturbed during the construction, operation or reclamation of the facility”. Any areas within the lease boundary with confirmed soil, sediment, groundwater or surface water impacts above the applicable criteria must be delineated and managed in accordance with the Nova Scotia Contaminated Sites Regulations, including historic tailings and waste rock which could

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						potentially be impacted by the Project, either directly or indirectly.
ECC 169	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 231; Section 6.5.5.1.4; Administrative Boundaries	The EIS states that groundwater quality will be compared to Nova Scotia Environment Pathway Specific Standards for Groundwater (NSE PSS) for groundwater discharging to surface water (0-10 m from a freshwater body).	Groundwater data should also be compared to Nova Scotia Environment Tier 1 Environmental Quality Standards for groundwater at a potable site.
ECC 170	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 235; Section 6.5.5.4.2; Groundwater Quality	The EIS states that the existing baseline condition for some parameters (arsenic, aluminum and iron) is greater than the guideline for these parameters therefore a predicted concentration greater than the guideline is not considered a significant residual effect.	Under supervision of a Site Professional, as defined by the Contaminated Sites Regulations, conduct baseline studies as necessary to determine natural background conditions (i.e. not including tailings/waste rock) of relevant environmental media (e.g., soil, surface water, sediment, groundwater, etc.).
ECC 171	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 236; Section 6.5.6.1; FMS Study Area Groundwater Interactions	The EIS states that with respect to existing contaminated soils, the extent of the existing historical mine tailings <u>in the FMS Study Area</u> has been delineated by Stantec. Supporting information referenced does not demonstrate delineation to have been achieved in accordance with Contaminated Sites Regulations.	Under supervision of a Site Professional, conduct a Phase 2 Environmental Site Assessment, as defined by the Contaminated Sites Regulations that provides a baseline for “ all areas within the project lease boundary which are known or suspected to have contamination resulting from historical mining activities (including tailings and waste rock) which are likely to or potentially could be disturbed during the construction, operation or reclamation of the facility”. Any areas within the lease boundary with confirmed soil, sediment, groundwater or surface water impacts above the

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						applicable criteria must be delineated and managed in accordance with the Nova Scotia Contaminated Sites Regulations, including historic tailings and waste rock which could potentially be impacted by the Project, either directly or indirectly.
ECC 172	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 236; Section 6.5.6.1; FMS Study Area Groundwater Interactions	The EIS states that the Proponent is committed to removing the historical tailings that may be disturbed as a part of site construction and operation. This tailings removal will be conducted during the construction phase. Therefore, a change in groundwater quality due to the inadvertent disturbance of existing historical mine tailings is not anticipated and therefore not assessed as a potential impact to groundwater quality.	In the assessment of potential environmental effects, include the potential for changes in surface water drainage, groundwater and effluent discharge which could expose or mobilize contaminants (including historic tailings and/or waste rock) during pre-construction, construction, operation, care and maintenance, or reclamation of the facility.
ECC 173	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 282; Section 6.6.3.3.1; FMS Study Area	The EIS states that baseline concentrations of arsenic were observed to be greater than the CCME CWQG and NSEQS (0.005 mg/L) at locations directly adjacent to or downstream from the ore deposit (SW4, SW5, SW6, SW13 and SW14). Naturally occurring concentrations of arsenic greater than the CCME CWQG and NSEQS can be attributed to naturally occurring processes associated with surface water/groundwater interactions with weathered bedrock containing arsenic-bearing sulphides (e.g., arsenopyrite). The presence of historical mine tailings and waste rock along Seloam Brook may also affect the baseline concentrations at monitoring stations along this watercourse. A SSWQO for arsenic of 0.03 mg/L has been developed for the Project (Appendix C.2), which is a risk-based benchmark that is protective of fish and other aquatic life. Baseline arsenic concentrations greater than the SSWQO have been observed at SW4, SW5 and SW14.	Under supervision of a Site Professional, as defined by the Contaminated Sites Regulations, conduct baseline studies as necessary to determine natural background conditions (i.e. not including tailings/waste rock) of relevant environmental media (e.g., soil, surface water, sediment, groundwater, etc.). Provide clarification that surface water impacts above applicable criteria (Tier I EQS or established natural background) within the lease boundary will be managed in accordance with the Nova Scotia Contaminated Sites Regulations, whereby SSWQO might be applied as part of Remedial Action Plan.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 174	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 301; Section 6.6.5.4.2; Project Site Components	The EIS states that non-contact water (i.e., natural runoff from undisturbed catchments) will be diverted directly to the environment; where required this natural runoff will be directed north of the open pit and west through Seloam Brook.	In the assessment of potential environmental effects, include the potential for changes in surface water drainage, groundwater and effluent discharge which could expose or mobilize contaminants (including historic tailings) during pre-construction, construction, operation, care and maintenance, or reclamation of the facility
ECC 175	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Registration Document; Page 483; Section 6.8.3.1.5; Sediment Quality	The EIS states that ongoing exploratory work is being completed by Stantec Consulting to support Phase I and Phase II Environmental Site Assessments. Sediment quality results obtained by Stantec are provided herein as well (Sites FMS-SS001-SS012). Results for FIA sediment quality are provided in Appendix G.9, and results obtained by Stantec for FMS-SS001 through FMS-SS012 are provided in Appendix I.3. Sample locations for FMS-SS001 through FMS-SS012 are documented in Appendix I.3.	Under supervision of a Site Professional, conduct a Phase 2 Environmental Site Assessment, as defined by the Contaminated Sites Regulations that provides a baseline for “ all areas within the project lease boundary which are known or suspected to have contamination resulting from historical mining activities (including tailings and waste rock) which are likely to or potentially could be disturbed during the construction, operation or reclamation of the facility”. Any areas within the lease boundary with confirmed soil, sediment, groundwater or surface water impacts above the applicable criteria must be delineated and managed in accordance with the Nova Scotia Contaminated Sites Regulations, including historic tailings and waste rock which could potentially be impacted by the Project, either directly or indirectly.
ECC 176	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science	Part 2, Section 7.1	Appendix I.3 Limited Phase II ESA; Page 6; Section 2.1; Rationale Appendix I.3 Limited Phase II ESA; Page 9; Section	The EIS appendices document states that test pit and surface water sampling locations <u>were limited to the area of the proposed open pit and immediate area</u> , with the exception of test pit location FMTP17 and surface water location FMSW5 which are located approximately 400 m south and 450 m east of the proposed open pit, respectively	Under supervision of a Site Professional, conduct a Phase 2 Environmental Site Assessment, as defined by the Contaminated Sites Regulations that provides a baseline for “ all areas within the project lease boundary which are known or suspected to have contamination resulting from historical mining activities (including tailings and

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Division (Resource Management Unit)		3.3.3; Summary of Exceedances	The EIS appendices document states that concentrations of arsenic, lead, and mercury in soil samples exceeding the applicable guidelines and the distribution of arsenic, lead, and mercury concentrations in soil <u>in the area of the proposed open pit</u> are shown on Figures 2 to 4, Appendix A, respectively.	waste rock) which are likely to or potentially could be disturbed during the construction, operation or reclamation of the facility”. Any areas within the lease boundary with confirmed soil, sediment, groundwater or surface water impacts above the applicable criteria must be delineated and managed in accordance with the Nova Scotia Contaminated Sites Regulations, including historic tailings and waste rock which could potentially be impacted by the Project, either directly or indirectly.
ECC 177	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 1; Section 1.2; Goals and purpose of the plan Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 10; Section 4.5.2; External reporting	The EIS appendices document states that one of the objectives is to Define responsibilities for the notification and reporting for issues related to HTWR management The EIS appendices document states that the external reporting requirements to NSE will be outlined in the future Industrial Approval and approved HTWR Management Plans.	Provide a Remedial Action Plan as defined by the Contaminated Sites Regulations. Include a performance monitoring plan and if appropriate, requirements for long term risk management. The Remedial Action Plan should include a timeline for all reporting prior to commencement of project construction to ensure that all contamination which may be disturbed or mobilized by site activities is managed in accordance with Contaminated Sites Regulations
ECC 178	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 10; Section 5; Closure Registration Document; Page 236; Section 6.5.6.1; FMS Study Area Groundwater Interactions Appendix I.3 Limited Phase II ESA	The EIS appendices document (dated September 2019) states that tailings and WR identification and delineation are on-going. The EIS (dated February 2021) states that with respect to existing contaminated soils, the extent of the existing historical mine tailings in the FMS Study Area has been delineated by Stantec. Supporting information referenced (Phase II ESA, dated February 2019) does not demonstrate delineation to have been achieved in accordance with Contaminated Sites Regulations.	Under supervision of a Site Professional, conduct a Phase 2 Environmental Site Assessment, as defined by the Contaminated Sites Regulations that provides a baseline for “ all areas within the project lease boundary which are known or suspected to have contamination resulting from historical mining activities (including tailings and waste rock) which are likely to or potentially could be disturbed during the construction, operation or reclamation of the facility”. Any areas within the lease boundary with confirmed soil, sediment, groundwater or surface water impacts above the applicable criteria must be delineated and

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
						managed in accordance with the Nova Scotia Contaminated Sites Regulations, including historic tailings and waste rock which could potentially be impacted by the Project, either directly or indirectly.
ECC 179	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 10; Section 5; Closure	The EIS appendices document states that this Management Plan describes the understanding, proposed procedures and methodologies on how HTWR material at the Project site may be managed, assessed, delineated, and remediated.	According to the Contaminated Sites Regulations, concentrations of contaminants above the Tier 1 Environmental Quality Standards (or established background), that are ineligible for an exemption, require notification, assessment and remediation/management under the Contaminated Sites Regulations. The historical tailings and waste rock management plan should demonstrate adherence to the Contaminated Sites Regulations in the assessment and remediation/risk management of historic tailings and waste rock within the lease boundary; Albeit, alternate timelines than those prescribed in the Regulations may be applied under Environmental and/or Industrial approval, as warranted.
ECC 180	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 8; Section 4.1; Tailings and waste rock excavation	The EIS appendices document states that sufficient samples should be taken to be representative of the soil remaining in place.	Provide clarification that confirmatory soil sampling will be in accordance with Confirmation of Remediation Protocol (PRO-700).
ECC 181	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change –	Part 2, Section 7.1	Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 7;	The EIS appendices document states that if tailings and/or WR are tested and are confirmed to be below applicable provincial or site-based criteria, the tailings and WR material could be used as site overburden	While it may be applicable to compare the developed portions of the site to Industrial land use criteria during the operational phase, provide clarification on land use classification for other

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Sustainability and Applied Science Division (Resource Management Unit)		Section 3.1.2; Short term storage Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 9; Section 4.4; Monitoring and remedial verification	and/or for construction purposes. All confirmatory samples should be sent to an accredited laboratory and tested for, at minimum, total metals in soil. These samples should be compared to the Tier 1 EQS for an industrial site, and any site specific (i.e., background) criteria developed	areas of the project lease boundary (beyond developed portions during the operational phase). Provide clarification on post closure land use classification for the entire project lease boundary.
ECC 182	RMU – Contaminated Sites Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2, Section 7.1	Appendix I.1 fifteen-mile stream historical tailings and waste rock management plan; Page 9; Section 4.4; Monitoring and remedial verification	The EIS appendices document states that installation of groundwater wells will be required in areas of HTWR and sampled prior to removal of the bulk of the HTWR material. Groundwater wells will be monitored in order to assess whether source removal and/or dewatering of the open pit mine have an impact on downgradient groundwater quality.	Provide clarification that confirmatory groundwater sampling will be in accordance with Confirmation of Remediation Protocol (PRO-700).
ECC 183	RMU -Senior Science Advisor	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 1.4	Page 8; Section 1.3; Regulatory Framework and Role of Government	The EIS discusses applicable legislation and regulations.	The EIS does not reference many applicable NS Environment & Climate Change Regulations including Petroleum Management Regulations, Dangerous Goods Management Regulations, Environmental Emergency Regulations and On-Site Sewage Disposal Regulations. Many of these will require the proponent to submit additional information and obtain specific approvals before beginning the proposed activity.
ECC 184	RMU – Senior Science Advisor	Nova Scotia Environment & Climate Change – Sustainability and Applied	Part 2; Section 7.6	Page 37; Section 2.4.2.1; Operations (Years 2 to 9); FMS Mine Site	The EIS discusses in passing many of the chemical additives that may be used for processing and water treatment.	Provide data sheets on the chemical additives that are proposed to be used or their potential quantities, storage or handling measures.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Science Division (Resource Management Unit)				
ECC 185	RMU – Hazardous Material Regulatory Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 1.4	Page 8; Section 1.3; Regulatory Framework and Role of Government	Regarding hazardous materials management the EA did not reference or list NSECC's Dangerous Goods Management Regulations.	The provisions of NSECC's Dangerous Goods Management Regulations must be considered for the handling of dangerous and waste dangerous goods.
ECC 186	RMU – Hazardous Material Regulatory Specialist	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7	Appendix L1; Fifteen Mile Stream Gold Project Environmental Management System Framework Document; Page 15; Section 3.14 and attachment; Hazardous Material Management Plan (EMP 14)	Hazardous Materials Management Plan states that containers that contained hazardous materials would be managed as nonhazardous without cleaning or decontamination. <i>Containers or liners that previously held hazardous material will be subject to hazardous waste disposal, unless the containers are classified as empty. To be classified as empty the containers or liners must:</i> <ul style="list-style-type: none"> • Have all waste removed by typical methods including pouring, pumping, or aspirating; and • Have less than 2.5 cm of residue in the bottom; or • Contain less than 3% of the residue by weight if the container has a volume of less than 400 L; or • Contains less than 0.3% of the residue by weight if the container is greater than 400 L in volume. 	This is not adequate; provide additional information on how these waste dangerous goods containers will be managed to ensure they are decontaminated prior to managing as solid waste.
ECC 187	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability	Part 2; Section 7.6	Page 815, section 6.17.5.1.1.1 Threshold for Determination of Significance	Contamination is defined as the following: Fifteen Mile Stream Gold Project Environmental Impact Statement – February 2021 ATLANTIC MINING NS INC PAGE 815 • Soil o when concentrations of any contaminant exceed the guidelines provided in the Nova Scotia Contaminated Sites Regulations –	Contamination definition should reference Tier 1 EQS for soil and groundwater with respect to potable water requirements.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		and Applied Science Division (Resource Management Unit)			Tier 1 Environmental Quality Standards for Soil at a Non-potable Site, Section 1, Table 1B; • Surface Water o when concentrations of any contaminant exceed the guidelines provided in the Nova Scotia Contaminated Sites Regulations – Tier 1 Environmental Quality Standards for the Protection of Freshwater Aquatic Life in Surface Water, Section 1, Table 3; • Groundwater o when concentrations of any contaminant exceed the guidelines provided in the Nova Scotia Contaminated Sites Regulations – Tier 1 Environmental Quality Standards for Groundwater at a Non-potable Site, Section 1, Table 4.	
ECC 188	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 821, section 6.17.5.1.3.1 Threshold for Determination of Significance	Should a mobile equipment accident result in the loss of any quantity of fuel, oil, lubricant, or other Project-related raw materials to the environment such that a measurable contamination of soil, surface water, or groundwater results, the event will be considered significant. Contamination is defined as the following: • Soil o concentrations of any contaminant exceeding the guidelines provided in the Nova Scotia Contaminated Sites Regulations – Tier 1 Environmental Quality Standards for Soil at a Non-potable Site, Section 1, Table 1B; • Surface Water o concentrations of any contaminant exceeding the guidelines provided in the Nova Scotia Contaminated Sites Regulations – Tier 1 Environmental Quality Standards for the Protection of Freshwater Aquatic Life in Surface Water, Section 1, Table 3; • Groundwater o concentrations of any contaminant exceeding the guidelines provided in the Nova Scotia Contaminated Sites Regulations – Tier 1 Environmental Quality Standards for Groundwater at a Non-potable Site, Section 1, Table 4	Contamination definition should reference Tier 1 EQS for soil and groundwater with respect to potable water requirements.
ECC 189	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change –	Part 2; Section 7.6	Page 26, Section 2.7.3 Forms; Appendix L1	AGC-ENV FRM - 001 Spill Reports Heads Up Form & AGC-ENV FRM - 002 Environmental Incident Report	According to the Contaminated Sites Regulations, concentrations of contaminants above the Tier 1 Environmental Quality Standards (or established background), that are ineligible for an exemption,

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Sustainability and Applied Science Division (Resource Management Unit)				require notification, assessment and remediation/management under the Contaminated Sites Regulations. Reference should be made to notification in the context of the Contaminated Sites Regulations and reporting in the context of other areas of the Environment Act (i.e. the Emergency Spill Regulations).
ECC 190	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 26, Section 2.7.4 Related Documents ; Appendix L1	OES 2.16 – Hazardous Materials and Hazardous Waste Management, OES 2.23 – Spill Control Measures and Reporting, AMNS Spill Contingency Plan, AMNS Emergency Response Plan, AGC – PRO – ENV – 013 Refueling Mobile Equipment and Light Vehicles, & Nova Scotia Standards for Construction and Installation for Petroleum Storage Tank Systems (novascotia.ca/nse/petroleum-regulated/)	Reference should be made to notification in the context of the Contaminated Sites Regulations and reporting in the context of other areas of the Environment Act (i.e. the Emergency Spill Regulations).
ECC 191	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 39, section 2.14.4 ; Appendix L1	OES 2.9 – Wildlife Sightings, OES 2.16 – Hazardous Materials and Hazardous Waste Management, & AMNS Wildlife Management Plan	Reference should be made to notification in the context of the Contaminated Sites Regulations and reporting in the context of other areas of the Environment Act (i.e. the Emergency Spill Regulations).
ECC 192	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied	Part 2; Section 7.6	Page 44, section 2.16.3 Forms; Appendix L1	AGC-ENV FRM - 001 Spill Reports Heads Up Form & AGC-ENV FRM - 002 Environmental Incident Report	Reference should be made to notification in the context of the Contaminated Sites Regulations and reporting in the context of other areas of the Environment Act (i.e. the Emergency Spill Regulations).

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Science Division (Resource Management Unit)				
ECC 193	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 44, section 2.16.4 Related Documents ; Appendix L1	OES 2.23 Spill Control Measures and Reporting, AMNS Spill Contingency Plan, AMNS Emergency Response Plan, AMNS Emergency Response Plan – Propane, Guidelines for the Storage of Used Oil, August 26, 2003 (novascotia.ca/nse/dept/docs.policy/Guidelines-Storage.of.Used.Oil.pdf	Reference should be made to notification in the context of the Contaminated Sites Regulations and reporting in the context of other areas of the Environment Act (i.e. the Emergency Spill Regulations).
ECC 194	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 46, section 2.17.3 Forms; Appendix L1	AGC-ENV FRM - 001 Spill Reports Heads Up Form & AGC-ENV FRM - 002 Environmental Incident Report	Reference should be made to notification in the context of the Contaminated Sites Regulations and reporting in the context of other areas of the Environment Act (i.e. the Emergency Spill Regulations).
ECC 195	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource	Part 2; Section 7.6	Page 61, section 2.23.4 Forms; Appendix L1	AGC-ENV FRM - 001 Spill Reports Heads Up Form & AGC-ENV FRM - 002 Environmental Incident Report	Reference should be made to notification in the context of the Contaminated Sites Regulations and reporting in the context of other areas of the Environment Act (i.e. the Emergency Spill Regulations).

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Management Unit)				
ECC 196	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 61, section 2.23.5 Related Documents ; Appendix L1	OES 2.7 Fuel Storage and Handling, OES 2.16 Hazardous Material and Hazardous Waste Management, AMNS Spill Contingency Plan, & AMNS Emergency Response Plan	Reference should be made to notification in the context of the Contaminated Sites Regulations and reporting in the context of other areas of the Environment Act (i.e. the Emergency Spill Regulations).
ECC 197	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 5, EMP 14, section 3.1 Materials Inventory ; Appendix L1 ; EMP14	Other hazardous material waste that will be stored at the FMS Mine Site in relatively small quantities may include but are not necessarily limited to the following: Fluorescent mercury and sodium lights; Laboratory reagents; Scraps of treated lumber; Bottled gases (acetylene and oxygen); and Solvents.	Treated timber is not considered a hazardous waste. This should be removed from this list.
ECC 198	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 5, EMP 14, section 3.3 Storage; Appendix L1	The storage areas will be designed to adequately and safely store the required quantity over a prescribed period;	Generic statement regarding storage site, unable to provide comment as to whether it is adequate for environmental protection.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 199	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 6, EMP 14, section 3.3 Storage; Appendix L1	Containers or liners that previously held hazardous material will be subject to hazardous waste disposal, unless the containers are classified as empty. To be classified as empty the containers or liners must: Have all waste removed by typical methods including pouring, pumping, or aspirating; and Have less than 2.5 cm of residue in the bottom; or Contain less than 3% of the residue by weight if the container has a volume of less than 400 L; or Contains less than 0.3% of the residue by weight if the container is greater than 400 L in volume.	Can the proponent identify from where the criteria for determining whether a container is empty originates?
ECC 200	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 7, EMP 14, section 3.6 Hazardous Waste Treatment; Appendix L1	Hazardous material waste will be re-used, recycled, or disposed of in accordance with the Waste Management Hierarchy. The following wastes will be re-used when practical: Paint; Paper and corrugated cardboard; Plastics; Tires and conveyor belts; Vehicles; and Electrical equipment.	The list of hazardous materials should be revised as most of these materials would not be considered hazardous waste.
ECC 201	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page # missing, EMP 15, section 3.2 Reuse ; Appendix L1	Salvage soils, logs, and vegetation removed during clearing, where practical, for reuse during restoration activities;	These materials would be classified as topsoil and organic matter, not as solid waste. Please revise.
ECC 202	RMU – Environmental Engineer	Nova Scotia Environment & Climate	Part 2; Section 7.6	Page # missing, EMP 15, section 3.2 Reuse ; Appendix L1	Worn haul truck tires will be used on site to act as berms, vehicle protection barriers, and material storage platforms, when possible	How will used tires be managed at end of project life, when the site is reclaimed?

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Change – Sustainability and Applied Science Division (Resource Management Unit)				
ECC 203	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page # missing, EMP 15, 3.6 Specific Waste Material Handling Practices and Procedures; Appendix L1	Domestic waste will include putrescible food waste, recyclable containers (cans and bottles), packaging, inert non-combustible domestic waste, and paper products. Food waste will be collected in clearly labelled compost bins for removal offsite for proper facility for composting.	How will putrescible food waste be stored to reduce potential for attracting wildlife and vermin?
ECC 204	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied Science Division (Resource Management Unit)	Part 2; Section 7.6	Page 3, EMP 16, section 1.1 Overview; Appendix L1	A diesel storage and distribution facility (50,000 - 75,000 L) will be located adjacent to the workshop/warehouse. Diesel will be delivered to site in tanker trucks and will be available for use by vehicles using a bowser arrangement with cardlock. There may be a smaller diesel tank (5,000 L) at the TMF for use by contractors during construction. Gasoline usage is expected to be minor, as required for light vehicles use only, and will be satisfied by one gasoline tank (5,000 L) located in the ancillary building area.	Generic statement regarding fuel storage system, unable to provide comment as to whether it is adequate for environmental protection.
ECC 205	RMU – Environmental Engineer	Nova Scotia Environment & Climate Change – Sustainability and Applied	Part 2; Section 7.6	Page 815, section 6.17.5.1.1.1 Threshold for Determination of Significance	Contamination is defined as the following: Fifteen Mile Stream Gold Project Environmental Impact Statement – February 2021 ATLANTIC MINING NS INC PAGE 815 • Soil o when concentrations of any contaminant exceed the guidelines provided in the Nova Scotia Contaminated Sites Regulations – Tier 1 Environmental Quality	Contamination definition should reference Tier 1 EQS for soil and groundwater with respect to potable water requirements.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		Science Division (Resource Management Unit)			Standards for Soil at a Non-potable Site, Section 1, Table 1B; • Surface Water o when concentrations of any contaminant exceed the guidelines provided in the Nova Scotia Contaminated Sites Regulations – Tier 1 Environmental Quality Standards for the Protection of Freshwater Aquatic Life in Surface Water, Section 1, Table 3; • Groundwater o when concentrations of any contaminant exceed the guidelines provided in the Nova Scotia Contaminated Sites Regulations – Tier 1 Environmental Quality Standards for Groundwater at a Non-potable Site, Section 1, Table 4.	

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1 ECC Air Quality Unit – Air Quality

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 206	AQPA	Air Quality Unit	7.1.1 Atmospheric Environment	Appendix J.2 Attachment A Table 1a	The silt content used in the calculations will have a significant impact on the calculated emission factors for haul roads. It is central to the assessment that it is representative of the site conditions. Using an unrepresentative %silt content could result in an under- or over-estimate of impacts. The %silt content is referenced to the Beaver Dam EA.	Please provide a primary reference for the silt content used in the Fifteen Mile Stream EA so that its applicability to this site can be assessed.
ECC 207	AQPA	Air Quality Unit	7.1.1 Atmospheric Environment	Appendix J.2 p.33	In AERMOD, when deposition is modelled along with ambient concentrations, it is possible to set the model to allow plume depletion. In order to assess worst case ambient concentrations, it would be preferable if deposition (with plume depletion) was assessed during a separate model run i.e. ambient concentrations should be the only output of the model run when considering ambient concentrations.	Was deposition (with plume depletion) modelled concurrently with ambient concentrations? If so, please provide an assessment of ambient concentrations without plume depletion for all particle standards.
ECC 208	AQPA	Air Quality Unit	7.6.3 Cumulative Effects Assessment	EIS Registration Document p.939	It is noted that the IAAC agreed that offsite haulage routes would not be included in this study. An offsite haul route that is proposed to be used by the FMS site and the Beaver Dam site is reported to have been assessed and reported in the Beaver Dam EA. Ideally, all impacts from an activity should be available for assessment in the corresponding EA.	What are the impacts on air quality along routes that will be used by the FMS site and other activities (e.g. the Beaver Dam site)?
ECC 209	AQPA	Air Quality Unit	7.6.3 Cumulative Effects Assessment	EIS Registration Document p.966	Cumulative impacts on air quality at Touquoy resulting from processing ore from the FMS site are not presented. It is not clear whether the throughput at Touquoy will remain constant or whether the activity at FMS and other sites will increase the throughput. If the latter is likely to happen, cumulative impacts on air quality at Touquoy should be quantitatively assessed and presented in the FMS EA.	Will the processing of ore from the Fifteen Mile Stream site at Touquoy overlap with processing of ore from Touquoy or other sites? What are the impacts of processing ore from the Fifteen Mile Stream site at Touquoy?
ECC 210	AQPA	Air Quality Unit	7.1.1 Atmospheric Environment	Appendix J.2 p.32	It is preferable to introduce as few chemicals to the natural environment as possible. Extensive use of magnesium chloride as a dust suppressant may have an impact on surface water. The mitigation on TSP and PM ₁₀ concentrations from using water was not presented in the assessment.	What is the mitigation of ambient TSP and PM ₁₀ concentrations when using only water?
ECC 211	AQPA	Air Quality Unit	7.1.1 Atmospheric	Appendix J.2 p.32 EMP 5 p.11	The modelling suggests that the TSP AAQS will be exceeded on three days per year, and the PM ₁₀ AAQS will be exceeded	Will the use of magnesium chloride be permitted on more than three days per year? How will it be

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
			Environment		on two days per year without using any mitigation measures. No details were provided in EMP 5 regarding the measures that will be employed to identify potential exceedances of any AAQS – only reactionary measures were stated.	determined that its use is required?
ECC 212	AQPA	Air Quality Unit	7.1.1 Atmospheric Environment	Appendix J.2 pp.13-14	Airborne pollutant concentrations are highly variable depending on wind speed and direction, and meteorological conditions that determine the dryness of surface materials. When reporting background measurements, it is necessary to report the prevailing wind direction, or ideally, a wind rose, observed during the collection period along with temperature and precipitation. This becomes increasingly important when limited samples are collected over a short timescale. In the FMS study, one sample was collected over a 24 hour period at each of two sites.	What direction was the wind blowing in when particle samples were collected in November 2017? What was the temperature and relative humidity? Was there any precipitation?
ECC 213	AQPA	Air Quality Unit	7.1.1 Atmospheric Environment	Appendix J.2 pp.36-37	Cumulative (additive effects) annual concentrations (background concentrations derived from sampling + predicted concentrations) were reported but short term concentrations were not. Short term concentrations may be more reliable, as fewer assumptions are required to determine background concentrations. Reported annual additive effects for TSP and PM ₁₀ are the sum of the average 24 hour sampled concentrations plus the highest annual ground level concentration predicted by the model after mitigation has been applied. The reliability of these figures is highly dependent on the wind direction during monitoring.	Were these background concentrations included in the modelled scenarios? What are the short term cumulative concentrations (additive effects) (background + predicted concentrations)?
ECC 214	AQPA	Air Quality Unit	7.1.1 Atmospheric Environment	Appendix J.2 pp.28-29	Arsenic is a highly toxic metal that can impact human health through ingestion. Consequently, the assessment of arsenic concentration in dust samples is significant and the efficiency of the quantitative method should be understood.	How was the arsenic concentration determined? What is the efficiency of the quantification method used?

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1: ECC Air Quality Unit - Noise

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 215	AQPA	Air Quality Unit	7.6.3 Cumulative Effects Assessment	EIS Registration Document pp.891-894	When considering impacts from a proposed activity, it is necessary to consider all of the impacts from the activity, whether they are on or off site.	Please provide a summary of the quantitative assessment of cumulative noise impacts from the Beaver Dam haul road and at the Touquoy site, for transporting and processing of ore from the Fifteen Mile Stream site.
ECC 216	AQPA	Air Quality Unit	7.1.1 Atmospheric Environment	Appendix J.1 p.7	In order to assess impacts on sensitive receptors, baseline measurements should be collected at the location of sensitive receptors. For this study, one measurement was collected over 24 hours from each of two sites between 20 th and 22 nd November 2017. Both sampling locations were within the proposed Fifteen Mile Stream project boundary.	What are the baseline noise levels at the property boundary of the nearest residential property? What are the baseline noise levels at the boundary of protected areas?
ECC 217	AQPA	Air Quality Unit	7.1.1 Atmospheric Environment	Appendix J.1 Figure 5-1	The Nova Scotia Pit and Quarries Guidelines state noise levels that should be achieved at the site boundary for any given part of the day. The Fifteen Mile Stream site will operate 24 hours each day, so it is necessary to demonstrate that the 55 dB(A) noise limit can be achieved. Current modelling predicts an exceedance of this noise limit to the north of the site.	Provide additional modelling demonstrating compliance with the 55 dB(A) noise limit, clearly showing what mitigation was used to achieve this limit. Consider further mitigation to reduce noise levels to the background level at the boundary of protected areas.

General comments on the EIS:

It is noted that a baseline assessment was undertaken in November 2017, comprising one 24 hour period at each of two locations. Activities were modelled and assessed against the Nova Scotia Pit and Quarry Guidelines. The 55 dB(A) contour (the maximum permitted night time noise level experienced at the site boundary) largely falls within the site boundary but does extend beyond the site boundary to the north. It will be necessary to ensure that mitigation measures that attenuate sound are in place to prevent this exceedance. Monitoring may be requested by the Nova Scotia Department of Environment and Climate Change to ensure that noise levels at the site boundary do not exceed the limits stated in the Guidelines.

Given the rural nature of this site with the nearest residential property (seasonal) reported to be 4.9km from the site, the potential impact of noise on birds, wildlife and the current traditional practices of the Mi'kmaq of Nova Scotia may be of greater concern than the impact to local residents. Figure 5-1 of Appendix J.1 illustrates the predicted noise levels from site activities without mitigation. Mitigation measures will be required to achieve the 55 dB(A) limit at the site boundary required by the Nova Scotia Pit and Quarry Guidelines. Further use of mitigation measures would result in greater attenuation of the noise levels. Ideally, noise levels at the boundary of protected areas should not exceed background levels, in order to limit impacts on the fauna that is present in these areas.

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1: ECC Climate Change Unit

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
ECC 218	CCD- reviewer 1	ECC	EIS Guide: 4.4 Presentation and Organization of the Environment Impact Statement, Page 12	Not available	The EIS includes an outline to ensure that the information in the report is easy to find and understand for experts from a variety of fields and the public.	It is recommended that the proponent include a glossary defining technical words, acronyms, and abbreviations.
ECC 219	CCD-Reviewer 1	ECC	EIS Guide: 4.3 Study Strategy and Methodology, Pages 9-11 7.6.2 Effects of the Environment on the Project, page 39-40 NS Climate Change Guide: 1.3 Why is Climate Change Important to a Project? Page 4 3.0 Adaptation, pages 10-26	7.1.1 Flood and Drought Conditions, page 181 7.1.2 Extreme Temperatures, Storms and Wind, page 182 7.1.3 Climate Change, page 182	Climate Change adaptation should consider how extreme weather events and slower accumulative effects will change the proposed site and interact with the project. While the proponent stated that climate change data was included in the analysis, it was unclear how and to what extent it was used.	It is recommended that the proponent: <ul style="list-style-type: none"> • Include all the citations in Section 7.1.3 Climate Change in the reference list at the end of the document. • Clarify how climate change data was used to assess the risk to value components throughout the report. • Clarify how climate change data was used to assess the risk of extreme weather events, beyond changes in precipitation. • Use up-to-date climate change data and projections (climatedata.ca). For advice on which climate projections to use for this context, please contact the Canadian Centre for Climate Services at Environment and Climate Change Canada. https://www.canada.ca/en/environment-climate-change/services/climate-change/canadian-centre-climate-services.html
ECC 220	CCD-Reviewer 1	ECC	EIS Guide: 7.1.1 Atmospheric Environment, page 23	1) Section 6.2.2.3 Greenhouse Gas Emissions, page 71	1) As noted in the guides, the proponent should conduct a full assessment of the project's	The proponent should consider re-calculating the projects carbon footprint to include the following:

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
			<p>7.2.1 Changes to Atmospheric Conditions, page 31</p> <p>7.6.1 Effects of the Environment on the Project, pages 39-40</p> <p>NS climate change guide</p> <p>2.0 Greenhouse Gas Emissions and Mitigation, Pages 6-10</p>	<p>2) Table 6.2-2: Greenhouse Gas Emissions: Nova Scotia</p> <p>3) Appendix J-3.2.2 estimate of GHG emissions.</p>	<p>carbon footprint. Specifically, the NS guide recommends calculating direct GHG emissions, indirect GHG emissions, and the loss or addition of carbon sinks over the life the project. This should include GHGs emissions and sinks during the construction, operation, and closure phases.</p> <p>2) Why is 2015 GHG data being used? 2019 data is available and should be used as part of the baseline.</p> <p>3) Total estimate: 35,015.4 in appendix. Total estimate in EA registration document: 24.2 kilotonnes CO2e (section 2.4.2). Why are these estimates different?</p> <p>The EA registration document identifies that “The Project is also driven by guidelines, policies and standards that may be applicable during design, construction, operation, and reclamation”. The Guide to Considering Climate Change in Project Development in Nova Scotia is included as having been reviewed, yet very little of the guidance included in the document was followed. In particular:</p> <p>a. There is no information about how the estimates were arrived at. This is not good GHG accounting practice and</p>	<ul style="list-style-type: none"> • All phases of the project • Indirect GHGs • Loss of / or addition to carbon sinks • Additional processing that will occur at the Touquoy mine site

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					<p>makes it impossible to validate the accuracy of the estimates.</p> <p>b. The guide suggests that “direct emissions, indirect emissions, and sinks” should be quantified. Only direct emissions are included.</p> <p>c. GHG emissions should be calculated for each greenhouse gas, during each phase of the project (construction, operation and decommissioning).</p> <p>4) Because there is so little information available regarding the GHG emissions estimates, it is also impossible to consider mitigation options and alternatives to approaches that could deliver GHG reductions.</p>	

General comments on the EIS:

Because the estimate provided is close to the thresholds for participation in the NS Cap-and-trade program and not enough information is provided to validate GHG estimates provided, NSECC-Climate Change Unit requests additional information, including:

- 1) All GHG sources and sinks by project phase (either construction, operation and decommissioning- or annual GHG for the life of the project)
 - a. GHG emissions associated with land-use changes (i.e land clearing) are a source and should be included in the assessment scope.
- 2) All Global warming potentials and emissions factors used in calculations.
- 3) Activity data used to perform calculations, including energy consumption (diesel, electricity, etc) by source (i.e mobile equipment).

Further guidance and information on how to prepare a GHG Inventory is available here:

GHG Protocol: https://ghgprotocol.org/sites/default/files/standards/ghg_project_accounting.pdf

NS Quantification, Reporting and Verification Standard: <https://climatechange.novascotia.ca/cap-trade-regulations>

MEMORANDUM

To: Bridget Tutty, Environmental Assessment Officer
From: Peter Labor, Director, Protected Areas and Ecosystems
Date: May 3, 2021
Subject: Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1

Protected Areas and Ecosystems Branch has reviewed the Environmental Impact Statement (EIS) for the Fifteen Mile Stream Gold Project proposed by Atlantic Mining NS Corporation and prepared the comments below.

The fieldwork component appears to be thorough and extensive. The VOC component is comprehensive and inclusive. Documentation of ecosystems and species including species of conservation concern and species at risk is thorough.

However, the analysis component is incomplete. There is a lack of analysis of the effects of the proposal on adjacent protected areas and on the larger set of nearby protected areas, which are intended to function as an ecological network. Although protected areas were identified early in the document as an important value and identification of their close proximity to the project, there is very little mention of protected areas beyond that initial recognition and limited indication of the effects of the project on these areas.

The Fifteen Mile Stream (FMS) project area is situated in the center of five provincial protected areas. Toadfish Lakes Wilderness Area is within 500 m, Boggy Lake Wilderness Area is within 1km, and the 3 other protected areas are within 5km of the site.

The analysis does not assess the ecological connectivity degradation that is likely to occur among nearby protected areas as a result of the project. This is of particular concern for wide-ranging species such as the endangered mainland moose.

The EIS clearly indicates noise, light, surface water and air quality impacts to Toadfish Lakes and Boggy Lake wilderness areas. According to the results of the Noise Impact Assessment (Appendix J.1), noise measured at 45 dBA is predicted to travel up to 1.5 km from the FMS project property boundary during operations. Light propagation from the project has been determined to extend up to 2km from the FMS project.

There is projected to be a change in surface water quantity in East Lake which is upstream of

Toadfish Lakes Wilderness Area. The flow through East Lake will be decreased as a result of the footprint of the tailings management facility (TMF); the overall effect of this flow change is an approximate 5 cm decrease in water level within the lake itself. The outflow from East Lake is predicted to see a reduction in flow of 45%. This means a 45% reduction of surface water flow to Toadfish Lakes Wilderness Area which may adversely impact on aquatic diversity.

Seepage from the tailings management facility into East Lake will cause surface water quality changes downstream into Toadfish Lakes Wilderness Area. For example, at SW15 (Northern Boundary of Toadfish Lakes Wilderness Area), average concentrations of molybdenum and uranium are predicted to be greater than the 95th percentile baseline concentration. Average concentrations of aluminum and iron are predicted to be greater than the CCME CWQGs and NSEQs at SW15.

Potential changes to air quality are also possible and could affect adjacent or nearby protected areas. Off-site particulate exceedances to the south of the FMS project are up to 500 m from the site boundary. TSP (g/m²) will be 7 for the life of the project at 1 km from the project site. The Arsenic (g/m²) will be 0.825×10^{-3} for the life of the project at 1 km from the project site (75% of Table 6.2-12). If dust control measures are inadequate or poorly implemented at any time during the project the TSP exceedance (334 µg/m³) could be above the Nova Scotia 24-hour objective of 120 µg/m³; the PM_{2.5} exceedance (98.8 µg/m³) could be above the OMECP criterion of 50 µg/m³ for a 24-hour averaging period.

The habitat fragment analysis is not comprehensive or complete. The use of a universal 200 m edge effect is inadequate to account for edge effects. Edge effects will vary depending on variables (e.g., microclimate, forest structure) or groups of species examined. For some plants (e.g., Michels et al. 2017), and some birds (e.g., Hannon et al. 2002, Reynolds 1983) edge effect is up to 200 m, but it can be up to 500m for some plants (e.g., Michels et al 2017), birds (Dalley et al 2009), lichens (Cameron et al. 2013) and amphibians (Herrmann et al 2005), and 600 m to 1 km for larger mammals such as black bear. Thus, the estimate loss of 275 ha loss of interior forest habitat, which accounts for 12% of predicted interior forest is too low when considering species that have a >200m edge tolerance.

Toadfish Lakes and Boggy Lake Wilderness Areas will be impacted by edge effects. This is not discussed or analyzed in the document. Further, with loss of interior habitat, connectivity for wildlife species will decrease in the landscape and between these protected areas. There will be decreased movement of species between these 5 protected areas potentially impacting populations.

Conclusion and Recommendations:

From the initial assessment presented in this document there are likely to be significant direct and indirect impacts to adjacent protected areas, other terrestrial and aquatic ecosystems, habitats of high conservation value, and to the ecological connectivity of the protected areas system. Model projections for potential effects in the surrounding landscape are incomplete -

e.g., air contaminants, ground water. Not all data is presented in the report but should be. A clearer explanation should be included of how modeling was done including any sensitivity testing and/or confidence intervals.

Despite these uncertainties, degradation of aquatic habitats within the northern section of Toadfish Lakes wilderness area appears likely through both direct (reduced flows and increase in pollutants) and indirect impacts (secondary ecological effects) at the scale of ~12km of watercourses, ~47 ha of lakes and ponds, and additional hectareage of wetlands (which within protected areas are Wetlands of Special Significance and which may have implications for the project's proposal to discharge effluents into East Lake). The objective for these aquatic ecosystems within the wilderness area is for a high level of ecological integrity – essentially functioning in accordance with natural processes.

The magnitude of predicted impacts generally appears to be under-estimated; avoidance, mitigation, and compensation measures are under-prescribed, and residual impacts are understated. Should the project be approved with the avoidance and mitigation measures as proposed, it is estimated there will still be residual direct and indirect impacts equivalent to net loss of 3000 ha of terrestrial habitat, and direct and indirect degradation of 12 km of watercourses, 47 ha of lakes and ponds, and additional hectares of wetlands within protected areas. These impacts represent net losses to biodiversity and protected area ecological integrity which should be compensated for if the project proceeds. Compensation requirements could be reduced if the project were re-designed to avoid effluent discharges into East Lake and Toadfish Lakes wilderness area.

ECC 222 It is recommended that additional analysis is conducted in relation to:

- Expectations and mitigations for terrestrial ecosystems expected to be altered or impacted with particular reference to ecosystems valued for protection or conservation.
- Landscape movement patterns of animals or potential patterns between protected areas and within the landscape and detail about how the project will affects these patterns.

ECC 223 As well, there needs to be detailed examination of how each impact (noise, light, ground water and surface water quantity and quality, air quality) will affect values associated with adjacent protected areas. This will require further analyses and modeling. The following protected areas values need to be included in the impact assessment, as a minimum:

- Interior habitat
- Wetlands of Special Significance
- Species at risk
- Old growth forest
- Rare or valued ecosystems
- Gathering areas or concentration areas of wildlife
- Ground water

- Surface water
- Connectivity



Lands and Forestry

MEMORANDUM

TO: Bridget Tutty, NS Department of Environment
FROM: Department of Lands and Forestry
DATE: April 30, 2021
RE: Fifteen Mile Stream Gold Project EA Comments

The Department of Lands and Forestry (herein the Department) provides the following comments on the above project:

Crown Lands:

The Department of Lands and Forestry recommends that the proponent secure the following approvals, permits and leases from the Department's Land Administration Division before starting work on the project:

- The proposed project will encompass Crown lands (PIDs 40202038, 40750796, 40750788, 40744120; portion of PIDs 40750812, 40751216, 40750861, 40750622). The proponent will be required to apply to the Department's Land Administration Division to obtain a Crown land lease.
- Any modifications to the Touquoy site (currently under lease) including changes to the reclamation plan may require approvals/permits/lease amendment from the Department.
- The construction of mine haul roads/access roads/and local traffic bypass roads located on Crown lands and not within the proposed lease area may require approvals/permits from the Department or a transfer of administration and control to the Department of Transportation and Active Transit.
- The power line along Hwy 374 will supply power to the spur line (5.3 km) and a sub-station. If the proponent plans to erect any new poles/transmission wires/sub-station on Crown lands, they/or Nova Scotia Power Incorporated will be required to apply for a license from the Department's Land Administration Division to obtain the necessary authority.
- If the proponent leases Crown land that has been designated as a recreational trail through a Letter of Authority (LOA) to a trail association then the trail may require relocation which would require additional approvals/LOA amendments from the Department.

Wildlife, Wildlife Habitat and Species-at-Risk:

The Department has the following concerns:

1. The proponent's Wildlife Management and Monitoring Plan does not adequately address species at risk concerns nor does it provide mitigation measures or monitoring necessary to satisfy the proponent's responsibilities under the *Wildlife Act* or *Nova Scotia Endangered Species Act* (NSESA).
2. The EIS does not adequately address invasive species management and monitoring to reduce risk of spread of invasives.
3. The EIS presents confusing information as to who has oversight or responsibility with respect to wildlife and species at risk (SAR). A communication plan is required by the proponent in order to ensure proper communication with appropriate regulatory bodies in the event of wildlife (especially SAR) observations and encounters.

Specific comments are presented in the table below. It is recommended that the proponent address the Department's concerns in the next EIS submission.

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 1	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, 1.4. Regulatory framework and the role of government	Page 15, 1.3.2 Provincial Regulatory Framework	The Nova Scotia <i>Wildlife Act</i> provides protection for vertebrate wildlife species and should be identified here as part of the provincial regulatory framework. For example, bird species and their nests are protected under this Act.	Add the provincial <i>Wildlife Act</i> to the regulatory framework and add appropriate mitigation measures to the EIS.
L&F 2	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, 1.4. Regulatory framework and the role of government	Page 16, 1.3.2.2 Nova Scotia Endangered Species Act (NSES), 1999	Description of the NSES prohibitions for species at risk and habitat is simplistic and does not properly capture the full suite of conditions. The statement “authorization in accordance with the NSES” requires clarification. It does not provide sufficient explanation of the full suite of conditions required.	Clarify what the proponent means by “authorization in accordance with the NSES” and provide the full suite of conditions that apply to this project.
L&F 3	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.3. Predicted effects on valued components	Page 128, Table 5.7-1: Potential Valued Components Interactions with Project Activities at FMS	Potential interactions of “Culvert and bridge upgrades and construction” could also occur for Avifauna and species-at risk (SAR), depending on timing and activity type (repair or replacement). Barn Swallow were identified in the priority species list in Appendix G.6	Update the Valued Components Interactions as required for Avifauna and SAR depending on timing and activity type. Barn Swallows were identified in the EIS. Potential interactions for this species should be addressed.
L&F 4	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.3. Predicted effects on valued components	Page 130, Table 5.7-1: Potential Valued Components Interactions with Project Activities at FMS	Environmental monitoring for post-closure stage is provided for Touquoy but not Fifteen Mile Stream.	Provide explanation for decision to not provide monitoring for terrestrial fauna, avifauna, and SAR at Fifteen Mile Stream.
L&F 5	Species at Risk Biologist	Biodiversity Program, Department	Part 1, section 4.3 Study strategy and methodology	Page 572, 6.9.2.1.2 Habitat Survey	Insufficient information has been provided to determine validity of surveys and assess results.	Provide additional information on survey methodology.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		of Lands and Forestry				
L&F 6	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 1, section 4.3 Study strategy and methodology	Page 573, 6.9.2.1.3 Vascular Plant Surveys	Insufficient information has been provided to determine validity of surveys and assess results. Where were the transects located on the study area? Where the same transects surveyed in spring and fall seasons, and in subsequent years, or did transect locations vary? What is considered a “major” habitat type? How many habitat types were surveyed and in what frequency?	Provide additional information on survey methodology including maps showing survey transects.
L&F 7	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 1, section 4.3 Study strategy and methodology	Page 574, 6.9.2.1.4 Lichen Surveys	Insufficient information has been provided to determine validity of surveys and assess results.	Provide additional information on survey methodology including maps showing survey transects.
L&F 8	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 1, section 4.3 Study strategy and methodology	Page 574, 6.9.2.1.4 Lichen Surveys	<i>“Lichens were also recorded incidentally during the vascular plant and other biophysical surveys conducted throughout 2017-2019.”</i> The Province requires lichen surveys to be conducted by approved lichenologists. It is unknown if the surveyors during other biophysical surveys were approved lichenologists.	Provide information on the credentials of lichenologists contracted to conduct surveys.
L&F 9	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 3.2.3. Decommissioning and abandonment	Page 592, Table 6.9-5: Potential Flora and habitat Interactions with Project Activities in the FMS Study Area	Closure phase: reclamation stage of 2-3 years is likely an insufficient length of time for proper monitoring and adjustments needed to support return to pre-existing conditions.	Provide supporting information on the closure and reclamation timing window to ensure sufficient time for proper monitoring and support to return to pre-existing conditions

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 10	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 596, Table 6.9-7: Mitigation for Habitat and Flora	Mitigation measures identified in Table 6.9-7 are poorly described and insufficient for management of invasives. For example, cleaning and inspection of vehicles for invasives should occur prior to entering on site, and away from any wetlands/watercourses to minimize spread of invasives.	Provide addition details on managing spread of invasive species including cleaning and inspection protocols.
L&F 11	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 596, Table 6.9-7: Mitigation for Habitat and Flora	Hydroseeding and reclamation work should be with local, native species to avoid spread of invasives.	Provide addition details on erosion control measures and vegetation community re-establishment to address and minimize potential spread of invasive species.
L&F 12	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8. Species at Risk	Page 602, Table 6.10-3. Desktop and Field Results of Butterfly Surveys completed within the FMS Study Area.	Previous paragraph indicated Monarch and associated host milkweed plants were discovered on site and during survey work. Species was not identified in the accompanying table. On page 603 it was stated that " <i>No suitable host plant communities for monarch butterflies were observed during biophysical surveys completed within the FMS Study Area from 2017-2019.</i> "	Provide clarification on Monarch and milkweed observations on site and reconcile information so that it is consistent.
L&F 13	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 3.2.3. Decommissioning and abandonment	Page 607, Table 6.10-5. Potential Terrestrial Fauna Interactions with Project Activities at FMS Study Area	Closure phase: reclamation stage of 2-3 years is likely an insufficient length of time for proper monitoring and adjustments needed to support return to pre-existing conditions.	Provide supporting information on the closure and reclamation timing window to ensure sufficient time for proper monitoring and support to return to pre-existing conditions.
L&F 14	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 3.2.3. Decommissioning and abandonment	Page 611, Table 6.10-6: Potential Terrestrial Fauna Interactions with Project Activities at the Touquoy Mine Site	Closure phase: reclamation stage of 2-3 years is likely an insufficient length of time for proper monitoring and adjustments needed to support return to pre-existing conditions.	Provide supporting information on the closure and reclamation timing window to ensure sufficient time for proper monitoring and support to return to pre-existing conditions

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 15	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.4. Riparian, wetland and terrestrial environments	Page 612, Table 6.10-7: Impacts of the Project on Fauna	Habitat integrity	Proponent should address indirect impacts of habitat fragmentation that results in loss of connectivity, and potential isolation.
L&F 16	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 613, 6.10.7 Mitigation	<i>"Clearing and construction will be limited within wetlands that could support snapping turtles during winter hibernation period;"</i> .	Further details are required on type of clearing/construction, timing, and what is allowable.
L&F 17	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 613, 6.10.7 Mitigation	<i>"Mainland moose monitoring program is to be implemented to determine moose activity surrounding the active FMS Mine Site."</i>	Provide details of the Mainland moose monitoring program. This should be developed in consultation with Nova Scotia Department of Lands and Forestry (the Department).
L&F 18	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 614, Table 6.10-8: Mitigation for Terrestrial Fauna	<i>"Implement speed limits within the FMS and Touquoy Mine Sites of 40 km/hr to reduce potential collisions with fauna"</i> .	Include other measures which include reducing speeds further during encounters or key activity windows for wildlife (nesting season for turtles, for example).
L&F 19	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.5. Significance of residual effects	Page 615, Table 6.10-9: Terrestrial Fauna Residual Effects	Project VC Interactions – Habitat loss and fragmentation. Duration should be changed to P, as the direct loss of habitat is permanent, and it has been indicated in the table that return to baseline conditions is not guaranteed. Loss of habitat would not be considered "not significant".	Provide further explanation/details for values derived within the table.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 20	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 616, 6.10.9 Proposed Compliance and Effects Monitoring Program	During operation, both noise <i>and light</i> would be above baseline conditions.	Address disturbance to fauna for both noise and light.
L&F 21	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 616, 6.10.9 Proposed Compliance and Effects Monitoring Program	A WMMP will be developed in accordance with the EMS Framework Document (Appendix L.1), outlining wildlife mitigation and specific protocols for monitoring mainland moose during baseline/pre-construction to establish baseline conditions, and through the operational phase, reclamation and post closure (as determined to be required).	The WMMP provided in Appendix L.1 is inadequate to address SOCI and SAR. No mitigation measures have been proposed for SAR; monitoring for mitigation measures has not been provided as under section 9.2 of the Guidance document. The WMMP should be developed in consultation with the Department of Lands and Forestry and only implemented following approval of the plan.
L&F 22	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 1, section 4.3 Study strategy and methodology	Page 635, 6.11.3.2.7 Summary of Field Surveys	Discrepancy between Table 6.11-5 and description on page 635.	Clarify how many species were observed during field programs.
L&F 23	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.3.3. Migratory birds	Page 643, Table 6.11-9: Impacts of the Project on Avifauna	<i>"Potential long-term exposure to low levels of contaminants in tailings"</i> facilities.	Provide further information on the impacts of long-term exposure and mitigation measures.
L&F 24	Species at Risk Biologist	Biodiversity Program, Department	Part 2, section 7.4 Mitigation measures	Page 644, Table 6.11-10. Mitigation for Avifauna	Nest Mitigation Plan should be developed in consultation with ECCC and the Department of Lands and Forestry.	Provide details of communication plan with regulatory bodies with respect to avifauna.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		of Lands and Forestry				
L&F 25	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 644, Table 6.11-10. Mitigation for Avifauna	Should any ground- or burrow-nesting species initiate breeding activities on stockpiles or exposed areas, work should halt immediately until species is confirmed and discussion with ECCC and the Department of Lands and Forestry.	Provide plan details for work stoppage and communication in the event of SAR or SOCI concerns.
L&F 26	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 644, Table 6.11-10. Mitigation for Avifauna	Communication with Department of Lands and Forestry is also required in the event of avifauna mortality.	Provide communication plan details that specify that the Department of Lands and Forestry and ECCC will be contacted with respect to avifauna mortality and species at risk birds.
L&F 27	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.5. Significance of residual effects	Page 646, Table 6.11-11. Residual Environmental Effects for Avifauna	Project VC Interactions – Habitat loss and fragmentation. Duration should be changed to P, as the direct loss of habitat is permanent, and it has been indicated in the table that return to baseline conditions is not guaranteed. Loss of habitat would not be considered “not significant”.	Provide further explanation/details for values derived within the table.
L&F 28	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 647, 6.11.8 Residual Effects and Significance	<i>“Construction noise and light will be limited to a 12-month window.”</i>	Explain what is meant by a 12-month window and how that will mitigation noise and light effects.
L&F 29	Species at Risk Biologist	Biodiversity Program, Department	Part 1, section 4.3 Study strategy and methodology	Page 653, 6.12.2.2.4.3 Priority Herpetofauna Survey Methodology	Description of methodology is insufficient to validate results.	Provide methodology details, including survey location points, transects, and field data, including temperature at the time of surveys.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		of Lands and Forestry				
L&F 30	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 1, section 4.3 Study strategy and methodology	Page 654, 6.12.2.2.5 Priority Avifauna Survey Methodology	Description of Common Nighthawk methodology is insufficient to validate results. Were all point locations surveyed four times (once each survey night)? What were weather/temperature conditions at the time of surveys?	Provide methodology details and field data, including weather/temperature conditions at the time of surveys.
L&F 31	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 1, section 4.3 Study strategy and methodology	Page 663, 6.12.3.2.3 FMS Study Area Priority Lichen Baseline Conditions	Confusion as lichens are also referred to under section 6.10. Survey details were provided in the previous section that are not provided here.	Address any discrepancies between the two sections.
L&F 32	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8 Species at Risk	Page 663, 6.12.3.2.3 FMS Study Area Priority Lichen Baseline Conditions	<i>"This SMP is applicable to all lichens located on Crown lands, however other activities, such as those subject to an EA process may use this SMP for guidance."</i>	Statement is unclear. If the activity occurs on Crown Land, the SMP applies without exception; if the activity occurs on private land, it is recommended the SMP be applied.
L&F 33	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8 Species at Risk	Page 669, 6.12.3.3.1.1 Mainland Moose	<i>"While moose habitat preferences can change as the abundance of available habitat changes".</i> This is an extremely generalized statement of moose habitat needs that is not reflective of the species biological requirements in NS.	Further clarification of the statement is required.
L&F 34	Species at Risk Biologist	Biodiversity Program, Department	Part 2, section 7.1.8 Species at Risk	Page 670, 6.12.3.3.1.1 Mainland Moose	Use of the term "critical habitat" is misleading.	Provide clarification on what the term "critical habitat" means for Mainland moose in the context of the project.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		of Lands and Forestry				
L&F 35	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8 Species at Risk	Page 672, Table 6.12-8: Mainland Moose Observations within the FMS Study Area and Adjacent Lands	Observations of Mainland moose have been observed within the study area spanning multiple years and differing habitat types, indicating some habitual use of the area. Mainland moose is listed on the NSESA as Endangered; section 13(1) No person shall (c) destroy, disturb or interfere with or attempt to destroy, disturb or interfere with the specific dwelling place or area occupied or habitually occupied by one or more individuals or populations of an endangered or threatened species, including the nest, nest shelter, hibernaculum or den of an endangered or threatened species;	Describe how the project will not contravene NSESA section 13(1) .
L&F 36	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8 Species at Risk	Page 677, 6.12.3.3.5 FMS Study Area Priority Invertebrate Baseline Conditions	<i>"...no opportunistic observations of priority invertebrate species were recorded."</i> This is contradictory to what was presented in section 6.10.3.1.3 Invertebrates	Provide clarification on the apparent discrepancy between the sections.
L&F 37	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 681, Table 6.12-12 Priority avifauna species observed within the FMS Study Area	It is not readily apparent when looking at results how these translate to mapped locations.	Provide additional information (mapped products) which support the information presented in the table.
L&F 38	Species at Risk Biologist	Biodiversity Program, Department	Part 2, section 7.1.8 Species at Risk	Page 684, 6.12.3.4.1.1 Common Nighthawk	<i>"No common nighthawk were observed within this wetland during the biophysical surveys in 2017-2018,..."</i> Which biophysical surveys are these referring to? Common nighthawks are crepuscular species, hence the need for species-specific survey requirements. Lack of evidence from	Further details on surveys are required.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		of Lands and Forestry			other biophysical surveys not targeted for this species should not preclude their presence.	
L&F 39	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8 Species at Risk	Page 687, 6.12.3.4.1.7 Avifauna SAR and SOCI Summary	6.12.3.4.1.2 Canada Warbler <i>“Within FMS Study Area, confirmed (i.e., breeding pair, building nest) behavior and breeding behavior (i.e., agitated behavior and anxiety calls of an adult) was observed in the 2017 and 2018 surveys.”</i> This contradicts 6.12.3.4.1.7 Avifauna SAR and SOCI Summary which identified Canada Warbler as a “probable breeder”. The definition as provided by MBBA and the information from the previous section suggests confirmation of breeding (breeding pair and nest building).	Explain discrepancy between breeding definitions for Canada Warbler between the different sections.
L&F 40	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 3.2.3. Decommissioning and abandonment	Page 691, Table 6.12-14: Potential Interactions between Project Activities and SAR and SOCI at FMS Study Area	Closure phase: reclamation stage of 2-3 years is likely an insufficient length of time for proper monitoring and adjustments needed to support return to pre-existing conditions.	Provide supporting information on the closure and reclamation timing window to ensure sufficient time for proper monitoring and support to return to pre-existing conditions.
L&F 41	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 3.2.3. Decommissioning and abandonment	Page 692, Table 6.12-15: Potential Interactions between Project Activities and SAR and SOCI at the Touquoy Mine Site	Closure phase: reclamation stage of 2-3 years is likely an insufficient length of time for proper monitoring and adjustments needed to support return to pre-existing conditions.	Provide supporting information on the closure and reclamation timing window to ensure sufficient time for proper monitoring and support to return to pre-existing conditions.
L&F 42	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 693, 6.12.6.2 Priority Vascular Flora and Lichens	<i>“Where maintenance of the 100 m SMP buffer surrounding blue felt lichen is not practicable, the Proponent will consider inclusion of affected individuals in a Blue Felt Lichen Translocation Plan to be prepared in consultation with NSL&F.”</i> Translocation should only be considered as a last resort where loss is unavoidable, not merely for disturbance. This should not	Provide additional information and details on lichen locations, buffer distances, and relation to project infrastructure. Discussion with the Department of Lands and Forestry is required to determine the appropriate steps and requirements.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
					be considered for all situations where the 100m buffer is compromised.	
L&F 43			Part 2, section 7.3.4. Species at risk	Page 694, 6.12.6.3 Priority Terrestrial Fauna	<i>“Mainland moose are not particularly affected by habitat fragmentation based on habitat preference; however, increased access into a site (construction of new roads) may increase direct interaction with the species, including potential accidents. As such, low-level habitat fragmentation can indirectly affect mainland moose.”</i> This statement does not accurately state the direct and indirect impact of habitat fragmentation. Roads contribute to disturbance, and indirectly allow incursion of both disease and poaching, which will remain after mine closure. This statement is also contradictory to what was stated about fragmentation further on in this section.	Provide a re-assessment of habitat fragmentation to include all direct and indirect impacts of the project on wildlife habitat including the disturbance created by roads. Address discrepancies in this section.
L&F 44	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.3.4. Species at risk	Page 694, 6.12.6.3 Priority Terrestrial Fauna	<i>“The number of moose sign observed within this wetland is likely reflective of the dense understory consisting of shrubs which provides suitable foraging habitat in the winter months, yet it is unclear whether this was a single individual or multiple.”</i> Whether there are multiple moose or a single individual using the wetland is irrelevant with respect to requirements under the NSESA.	Provide an explanation for how use by multiple individuals may impact proposed mitigations. Clarify that one SAR is sufficient to receive protection under NSESA and will require mitigation.
L&F 45	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.3.4. Species at risk	Page 699, 6.12.7.4 Priority Avifauna	Protection measures for avifauna are not just restricted to the MBCA but also include the <i>NS Wildlife Act</i> , and SAR avifauna, are protected under SARA and NSESA.	Provide and explanation on how other relevant acts will protect avifauna and SAR.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 46	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 700, Table 6.12-16: Mitigation for SAR	Details on how monitoring will occur (type, frequency, etc.) are not provided.	Provide details on monitoring programs to assess efficacy of mitigation measures.
L&F 47	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 700, Table 6.12-16: Mitigation for SAR	Potential adverse effects on Mainland moose include long-term impacts habitat change and access which increase deer density and disease transmission.	Provide details on adverse effects on Mainland moose including long term impacts on habitat change and access. Provide details on how these effects will be mitigated.
L&F 48	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 701, Table 6.12-16: Mitigation for SAR	<i>"If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation"</i> Department of Lands and Forestry has specific requirements for surveys if vegetation clearings cannot occur outside of the breeding bird window (April 15 th -August 31 st). This is applicable for all bird SAR identified in Table 6.12-16.	Provide communication plan to Department of Lands and Forestry in the event clearing cannot occur outside of the breeding bird window.
L&F 49	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 701, Table 6.12-16: Mitigation for SAR	Communication with Department of Lands and Forestry is also required in the event of avifauna mortality. This is applicable for all bird SAR identified in Table 6.12-16.	Provide communication plan details that specify that the Department of Lands and Forestry and ECCC will be contacted with respect to avifauna mortality and species at risk birds.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 50	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 701, Table 6.12-16: Mitigation for SAR	With respect to bird SAR, workers must also be compliant with the <i>NS Wildlife Act</i> , NSESA, and SARA. This is applicable for all bird SAR identified in Table 6.12-16.	Provide details in mitigations on how other relevant acts will protect bird SAR.
L&F 51	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.5. Significance of residual effects	Page 706, Table 6.12-17: Residual Environmental Effects for Terrestrial Fauna and Avifauna SAR	Project VC Interactions – Habitat loss and fragmentation. Duration should be changed to P, as the direct loss of habitat is permanent, and it has been indicated in the table that return to baseline conditions is not guaranteed. Loss of habitat would not be considered “not significant”. Reclamation phase – Magnitude is classified as Low, however, as it is not possible to return to baseline conditions, it is also not realistic to classify the magnitude of change with any certainty at this time.	Provide further explanation/details for values derived within the table to ensure accuracy
L&F 52	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 2, Appendix G.6	<i>“In Nova Scotia, the Canada warbler has only been found sparsely on Cape Breton Island and in the extreme southwest of the province.”</i> This is incorrect. Refer to the 2 nd Maritime Breeding Bird Atlas for further information.	Provide clarification/correction of the statement and specify whether this will inform the decision to conduct a survey or whether it will inform management decisions
L&F 53	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8. Species at Risk	Page 4, Appendix G.6	Evening Grosbeak was assessed by COSEWIC as Special Concern in 2016 and listed by SARA as Special Concern in 2019.	Update of species list is required.
L&F 54	Species at Risk Biologist	Biodiversity Program, Department	Part 2, section 7.1.8. Species at Risk	Page 14, Appendix G.6	Black Ash was assessed by COSEWIC as Threatened (2018).	Update of species list is required.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		of Lands and Forestry				
L&F 55	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8. Species at Risk	Page 17, Appendix G.6	Redroot was listed by SARA as Special Concern (2003).	Update of species list is required.
L&F 56	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8. Species at Risk	Page 19, Appendix G.6	Black-foam lichen was listed by SARA as Threatened (2019).	Update of species list is required.
L&F 57	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.1.8. Species at Risk	Page 21, Appendix G.6	Wrinkled-shingle lichen was listed by SARA as Threatened (2019).	Update of species list is required.
L&F 58	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, 1.4. Regulatory framework and the role of government	Page 8, Appendix L.1 EMS Framework Document, 1.3 Regulatory Context	Federal Recovery Strategies and Management Plans, and Provincial Recovery Plans and Management, provide guidance and framework for protection on SAR within the regulatory framework.	Add federal and provincial recovery documents that address requirements for protection, conservation, and mitigation of SAR.
L&F 59	Species at Risk Biologist	Biodiversity Program, Department	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.10 BLACK BEAR ENCOUNTERS 2.10.2	No information provided on how waste will be stored/disposed of to prevent wildlife access.	Provide information on appropriate waste storage and disposal to prevent wildlife access.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
		of Lands and Forestry		Environmental Protection Measures		
L&F 60	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.11 MOOSE PROTECTION MEASURES	Incorrect departmental name used in the section.	Replace references of NSDNR with NS Department of Lands and Forestry (NSDLF).
L&F 61	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.11 MOOSE PROTECTION MEASURES	Speed limit of 50km/hr contradicts speed limit provided on Page 614, Table 6.10-8: Mitigation for Terrestrial Fauna	Correct discrepancy and include other measures which include reducing speeds further during encounters or key activity windows for wildlife.
L&F 62	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.11 MOOSE PROTECTION MEASURES	Responsibility of wildlife, and especially SAR, fall under NSDLF. Encounters of Mainland moose, observations, or tracks or scat within the project infrastructure (e.g., road) should be immediately reported to NSDLF, not NSE.	Address communication concerns with respect to wildlife observation and encounters.
L&F 63	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.12 SNAPPING TURTLE PROTECTION MEASURES 2.12.2 Environmental Protection Measures	Reports of turtles should be provided to NSDLF, not NSE.	Provide plan to communicate wildlife reports/encounters to Department of Lands and Forestry.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 64	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.12 SNAPPING TURTLE PROTECTION MEASURES 2.12.2 Environmental Protection Measures	<i>"If a nest, or nest in progress has been identified, the Environment Department will place a predator excluder on the nest. The predator excluder is a simple wooden frame (approximately 2' square), covered with wire mesh."</i> NSDLF is the agency responsible for wildlife issues. Predator excluders are not recommended for Snapping Turtle.	Proponent should provide a communication plan to Department of Lands and Forestry on wildlife issues. The plan should include how to address nest protection for Snapping Turtles that does not include use of predator excluders.
L&F 65	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, 1.4. Regulatory framework and the role of government	Appendix L.1, Environmental Protection Plan 2.13 BIRD PROTECTION MEASURES 2.13.2 Environmental Protection Measures	The provincial <i>Wildlife Act</i> also provides protection for birds, eggs, and nests in the province.	Proponent should acknowledge responsibilities under appropriate Acts as necessary.
L&F 66	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.13 BIRD PROTECTION MEASURES 2.13.2 Environmental Protection Measures	<i>"Clearing and grubbing activities should be completed outside the accepted breeding bird window (generally between May 1 and September 30)."</i> This is not the accepted breeding bird window for provincial regulators.	Breeding bird window should be changed to April 15 th – August 31 st inclusive.
L&F 67	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.13 BIRD PROTECTION MEASURES 2.13.2 Environmental Protection Measures	<i>"A nesting survey is to be performed by a qualified Environmental Professional if clearing or grubbing is performed inside of the breeding bird window. Clearing and grubbing should only be performed if there are no confirmed signs of breeding."</i> The province has specific requirements for surveys if clearing cannot occur outside the breeding bird window. Consultation on appropriate measures is required.	Proponent should provide a statement that consultation on survey requirements with Department of Lands and Forestry is required.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 68	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.17 ROAD TRAFFIC MANAGEMENT 2.17.2 Environmental Protection Measures	Wildlife and snapping turtle sightings/encounters must be reported to NSDLF.	Provide a communication plan for wildlife observations and encounters (including SAR and SOCI) that engages required agencies.
L&F 69	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Environmental Protection Plan 2.22 WETLAND CROSSINGS, ALTERATIONS AND MANAGEMENT 2.22.2 Environmental Protection Measures	<i>“The provincial wetland alteration permits require nesting surveys be completed for clearing activities within a wetland between the period of May 1 to September 30.”</i> Wildlife issues fall under the mandate of NSDLF. Surveys would be recommended if the work occurs during the breeding bird period of April 15 th – August 31 st inclusive. The province has specific requirements for surveys if clearing cannot occur outside the breeding bird window. Consultation on appropriate measures is required.	Breeding bird window should be changed to April 15 th – August 31 st inclusive. Proponent should provide a statement that consultation on survey requirements with Department of Lands and Forestry is required.
L&F 70	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Appendix L.1, Fifteen Mile Stream Gold Project Environmental Management System EMP 12 Wildlife Monitoring and Management Plan	The Wildlife Monitoring and Management Plan is inadequate as it fails to address key issues relating to the identified SAR or SOCI found on site during field surveys as well as invasive species management. Although some measures are provided in <i>Table 6.12-16: Mitigation for SAR</i> , further details, methodologies, and communications strategies are required here.	Provide a detailed Wildlife Monitoring and Management Plan that addresses all SAR and SOCI found on site, as well as invasive species management.
L&F 71	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 1, Appendix L.1, Fifteen Mile Stream Gold Project Environmental Management System EMP 12 Wildlife	<i>“Noise and vibration are provincially regulated via the Workplace Health and Safety Regulations and the Pit and Quarry Guidelines, which protect the health of site workers and the public at Project boundaries, respectively.”</i>	Clarification on how this statement addresses concerns of noise and vibrations on wildlife.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
				Monitoring and Management Plan		
L&F 72	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, 1.4. Regulatory framework and the role of government	Page 4, Appendix L.1, Fifteen Mile Stream Gold Project Environmental Management System EMP 12 Wildlife Monitoring and Management Plan	Bird and their nests are also protected under the provincial <i>Wildlife Act</i> .	Proponent should acknowledge responsibilities under appropriate Acts as necessary.
L&F 73	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 4, Appendix L.1, Fifteen Mile Stream Gold Project Environmental Management System EMP 12 Wildlife Monitoring and Management Plan 2.2 Birds	Unclear why Barn Swallow, Bank Swallow, and Belted Kingfisher are the focus of mitigation measures. Common Nighthawk, for example, would be of concern due to their habitat requirements and overlap with construction and project infrastructure.	Provide justification or reasoning why these species the focus of mitigation measures and not other SOCI found during survey work.
L&F 74	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 4, Appendix L.1, Fifteen Mile Stream Gold Project Environmental Management System EMP 12 Wildlife Monitoring and Management Plan	Lack of communication plan for reporting occurrences to NSDLF and ECCC.	Provide communication plan for wildlife and SAR occurrences to NSDLF and ECCC

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
L&F 75	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 5, Appendix L.1, Fifteen Mile Stream Gold Project Environmental Management System EMP 12 Wildlife Monitoring and Management Plan 2.5 Mainland moose	Encounters of Mainland moose, observations, or tracks or scat within the project infrastructure (e.g., road) should be immediately reported to NSDLF.	Provide communication plan for wildlife and SAR occurrences to NSDLF
L&F 76	Species at Risk Biologist	Biodiversity Program, Department of Lands and Forestry	Part 2, section 7.4 Mitigation measures	Page 6, Appendix L.1, Fifteen Mile Stream Gold Project Environmental Management System EMP 12 Wildlife Monitoring and Management Plan 2.5 Mainland moose	<i>“The transects are to be established through the diversity of habitat types present within the Project and surrounding landscape, including undisturbed habitat, trails, and site roads. Furthermore, transects have been placed in areas of higher elevation wherever possible, to identify any potential altitudinal separation between Mainland Moose habitat and White-tailed Deer habitat.”</i>	Proponent should clarify if these are the transects already established as part of baseline surveys, or new transects to be established in consultation with Department of Lands and Forestry.

Fifteen Mile Stream Gold Project – Joint Impact Assessment Technical Review 1 Office of L’nu Affairs

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
OLA 1	Consultation Advisor	Office of L’nu Affairs	Section 7.3.5 Mi’kmaq of Nova Scotia Section 10 Nova Scotia Environment Requirements	Appendix H-1 Research Methodology, Pages 9-10	The MEKS notes community-based research on current Mi’kmaq land and resources use was undertaken with Paqtnkek, Sipekne’katik and Eskasoni community members.	Pictou Landing, Potlotek, We’koqma’q, and Millbrook are identified as close to the project area. Provide rationale for why Pictou Landing, Potlotek, We’koqma’q, and Millbrook did not participate in community-based research. Does the proponent plan to gather information on land/resource use by members of Pictou Landing, Potlotek, We’koqma’q, and Millbrook First Nations?
OLA 2	Consultation Advisor	Office of L’nu Affairs	Section 7.3.5 Mi’kmaq of Nova Scotia Section 10 Nova Scotia Environment Requirements	Appendix H-1, Section III: Contemporary Mi’kmaq Land and Resource Uses, Page 27	The MEKS identifies three areas of concentrated Mi’kmaq traditional land use within or overlapping with the defined study area including: (1) between Lower Rocky Lake, Seloam Lake and Antidam Flowage (at the centre of the project area) (2) western haul road towards Beaver Dam (3) eastern haul road towards Cochrane Hill	It is noted that the proponent has expressed that obtaining specific details from the Mi’kmaq regarding the practice of rights in these concentrated areas has been limited. Describe how the proponent further intends to identify specific details related to the nature and scope of the practice of rights in the concentrated areas identified so that accommodation measures proportionate to the degree of adverse impacts to Aboriginal and treaty rights can be developed.
OLA 3	Consultation Advisor	Office of L’nu Affairs	Section 7.3.5 Mi’kmaq of Nova Scotia Section 10 Nova Scotia Environment Requirements	Appendix H-1, Section III: Contemporary Mi’kmaq Land and Resource Uses, Page 29	The MEKS identifies animals and plants of special significance to the Mi’kmaq of Nova Scotia located within the study area including moose, salmon, eel, black ash and medicinal plants.	It is noted that the proponent has expressed that obtaining specific details from the Mi’kmaq regarding the animals and plants of special significance has been limited. Describe how the proponent further intends to identify specific details related to the harvesting and use of plants/wildlife of special significance to the Mi’kmaq of Nova Scotia within the project area so that mitigation measures proportionate to the degree of impact can be developed.
OLA 4	Consultation Advisor	Office of L’nu Affairs	Section 7.3.5 Mi’kmaq of Nova Scotia Section 10 Nova Scotia Environment Requirements	Appendix H-1, Section III: Contemporary Mi’kmaq Land and Resource Uses, Page 30	The MEKS indicates that the most direct impact from development will be the loss of wildlife habitat and resources within the project footprint and buffer areas. Additional impacts include increased noise and dust generated by the industrial activities associated with construction, mining, and transportation.	Mitigations outlined by the proponent are noted. Recommend that commitment by proponent to involve Mi’kmaq organizations in the continued monitoring of dust and noise impacts on wildlife and plants become a term/condition of EA approval.

Comment #	Reviewer	Department	Reference to EIS Guidelines	EIS Section and Page	Context and Rationale	Specific Question/ Request for Information
OLA 5	Consultation Advisor	Office of L'nu Affairs	Section 7.3.5 Mi'kmaq of Nova Scotia Section 10 Nova Scotia Environment Requirements	Appendix H-1, Section III: Contemporary Mi'kmaq Land and Resource Uses, Page 30-31	The MEKS notes that effluents containing arsenic, mercury and other chemicals used in ore processing could enter surface water and potentially local aquifers. Dispersion of effluents is also of significant concern to downstream flora and fauna.	Mitigations outlined by the proponent are noted. Recommend that commitment by proponent to involve Mi'kmaq organizations in the continued monitoring of effluent and ground/surface water conditions become a term/condition of EA approval.
OLA 6	Consultation Advisor	Office of L'nu Affairs	Section 7.6.3 Cumulative Effects Assessment	Section 8.5 Cumulative Effects, Page 855-947	<p>Section 8.3.3 states that key issues raised during public and Mi'kmaq engagement related to the Mi'kmaq of Nova Scotia include potential habitat loss and access, and effects on individual flora and fauna used in traditional hunting, fishing and trapping activities and medicinal food and plants.</p> <p>Section 8.5.7.2.3 states that the cumulative effects assessment on the Mi'kmaq of Nova Scotia of all projects within the RAA combined result in a loss of potential access to lands for traditional and spiritual purposes.</p> <p>Section 8.5.7.4 further states that assuming that the proposed mitigation and compensation measures are applied for the Project, and that they achieve their objectives, the predicted residual cumulative effects on the Mi'kmaq of Nova Scotia are assessed to be adverse, but not significant.</p>	<p>The proposed mitigation and compensation measures outlined in Table 6.13-8 are noted.</p> <p>Recommend that the commitment by the proponent to involve the Mi'kmaq in monitoring and compensation programs, specifically in the development of Reclamation and Closure Plans for the Project, identifying wetland restoration/compensation opportunities and fisheries offsetting plans should become a term/condition of EA Approval.</p>



60 Research Drive
Suite A
Bible Hill, Nova Scotia
B6L 2R2

Agriculture

Date: April 30, 2021

To: Bridget Tutty, Nova Scotia Environment

From: Executive Director, Policy and Corporate Services,
Nova Scotia Department of Agriculture

Subject: Fifteen Mile Stream Gold Mine – Environmental Assessment

Thank you for the opportunity to review the Fifteen Mile Stream Gold Mine documents.

Given that there is no active agriculture production within 10 km of the proposed site, the Department of Agriculture has no concerns with the proposal.

Date: April 30, 2021

To: Bridget Tutty, Nova Scotia Environment

From: Executive Director, Policy and Corporate Services
Nova Scotia Department of Fisheries and Aquaculture

Subject: Fifteen Mile Stream Gold Mine – Environmental Assessment

Thank you for the opportunity to review the Fifteen Mile Stream Gold Mine documents.

The Department of Fisheries and Aquaculture has the following comments:

- There are no commercial fish harvesting operations, processing facilities, or buying stations near the proposed project site.
- There are no aquaculture sites and one Rockweed lease within 25km of the proposed project site.
- The proposed project will cause erosion, sedimentation, and reduced stream flow rates resulting in direct losses of 9.3 hectares (22.9 acres) of freshwater fish habitat. The Department supports efforts to compensate for habitat loss and minimize impacts of the proposed project.

April 28, 2021

To: NS Department of Environment and Climate Change

From: Department of Municipal Affairs

Subject: FIFTEEN MILE STREAM GOLD PROJECT

As requested, the Department of Municipal Affairs has reviewed the Environmental Assessment Registration Documents for the proposed Fifteen Mile Stream Gold Project. Although we have found nothing of concern respecting the Department's areas of mandate, we would like to remind the proponent to ensure that they have undertaken adequate consultation with the Municipality in order to confirm conditions for compliance with municipal planning policies and by-law provisions.

Thank you for the opportunity to review the Registration Documents for the above-noted project.

Date: April 30, 2021

To: Bridget Tutty, Nova Scotia Environment

From: Coordinator Special Places, Culture and Heritage Development

Subject: Fifteen Mile Stream Gold Project

Staff of the Department of Communities, Culture and Heritage has reviewed the Fifteen Mile Stream Gold Project EA documents and have provided the following comments:

Archaeology

Staff reviewed the sections of the EA document pertaining to archaeology and note that it covers the ARIA reports by CRM Group and provides a table of archaeology mitigative measures that will be carried out (Table 6.14.3).

Botany

Staff reviewed the sections of the EA document pertaining to botany and provided the following comments:

Section 5.0: environmental effects assessment methodology

- No recognition of the impacts of the project on the loss of carbon-sequestration functions of forests and wetlands

Section 6.2.5.5: thresholds for determination of significance

- The threshold selected for determining the impacts of greenhouse gas emissions to be significant is inappropriately high. The proponents wrote:
 - o “For GHGs an effect is considered significant when the emissions of greenhouse gases in CO₂e would threaten the currently achieved 2020 reduction goal set by Nova Scotia, defined in this assessment as an increase of (+8%) of the 2015 provincial emissions;”
- While the context of the province’s GHG reduction goals is important to consider, it would be virtually impossible for any single project to cause an increase of 8% in provincial GHG emissions. This is an inappropriately high threshold for significance that essentially gives the project a free pass on GHG emissions. It would be more appropriate

to consider this impact relative to the mining sector in the province, or relative to the company's overall operations. Consider the following:

- An increase in 8% of Nova Scotia's GHG emissions is equivalent to nearly 1.3 million tonnes of CO₂
- Projects that generate more than 1,000,000 tonnes of CO₂ were considered by a recent review to be of the highest severity impact on a 5-point qualitative scale (Murphy and Gillam 2013). There are 4 more categories (negligible through medium severity) that could be considered as thresholds of significance.
- Other agencies have suggested that **any project** which removes natural carbon sequestering functions from the landscape, and adds carbon emissions to the atmosphere, is significant, and should be appropriately mitigated (Nova Scotia Environment 2011, IEMA 2017).

Section 6.2.6.2

- Expected GHG emissions are quantified and presented here (approx. 35 kt /year), but there is no consideration of the impacts of lost carbon storage and GHG sequestration functions from forests and wetlands that will be removed from the landscape. Considering that the project footprint is over 400 ha (with ~210 ha of wetlands), the impacts of the project on greenhouse gases are underestimated.
 - Research suggests that carbon storage in full-rotation forests of northeastern North America could range from 40 to 140 tonnes/ha in the tree layer alone, with an average of 87 tonnes/ha, and with effective management, sequestration can reach 1 tonne/ha annually (Puhlick et al. 2020). Other research suggests a carbon sequestration capacity ranging from 5 tonnes/ha in Nova Scotian wetlands (Gallant et al. 2020) to 1 tonne/ha in forested wetlands (Kendall et al. 2021).
 - Using these mean values, the carbon storage of the proposed footprint could be 16,530 tonnes in trees alone, and considerably more given the abundance of peat and wetlands in the area. The carbon sequestration of the proposed footprint could be about 400-1200 tonnes/year under optimal management. These estimates are very coarse but could easily be refined based on forest inventory and wetland classification data.

Section 6.2.8

- The impacts of the project on GHG emissions are stated to be "not significant", based on the thresholds of significance described in previous sections. See above previous comments for criticisms of those thresholds.
- According to the qualitative GHG-generation severity scale proposed by Murphy and Gillam (2013), this project has a "low", but not insignificant, impact, and should require both quantification and mitigation.

Section 6.9

- Several rare plant and lichen species and species of conservation interest were encountered during surveys.
 - *Carex argyrantha*, *Carex wiegandii*, *Neottia bifolia*

- Pectenium plumbea, Ahtiana aurescens, Heterodermia neglecta, Scytinium subtile, Collema nigrescens, Fuscopannaria cf. ahlneri, Fuscopannaria cf. soreliata, Collema leptaleum, Pseudevernia Cladonia

Section 6.12.7.2

- Proposed mitigation measures for plants and lichens are acceptable.

Section 6.12.7.3 (and appendix L.1):

- Although “core habitat” has not been defined for the mainland moose by NS L&F, there is clearly a concentration of moose signs within the project footprint, possibly representing the winter home range of one or more individuals. As the proponent pointed out, this was expected based on NS L&F’s documentation of three shelter patches in the footprint, within an area that is known to be a Mainland Moose Concentration Area.
- Part of the reason that core habitat is difficult to define for mainland moose is that they are highly mobile animals, and the extent to which they can use alternative shelter patches or relocate their winter habitats after disturbance is unknown. However, evidence suggests that Mainland Moose in NS have high site-fidelity, especially in the winter, and that development of this habitat will lead to displacement of the moose to suboptimal habitat.
- Consequently, this project should be regarded as having a **high certainty of leading to reduced health and increased mortality of mainland moose.**
- Given the long time-scales associated with recovering this habitat to a pre-development state, and the short generation times of mainland moose combined with the high likelihood of invasion by white tailed deer in the intervening time, this development should be regarded as **causing a permanent loss of moose habitat.**
- The proposed mitigation measures are minimalistic; they do not mitigate the declines in health, populations, or habitat. Additional opportunities to mitigate should be considered.
 - Compensation of the loss of habitat could be achieved, to some extent, by reclaiming or protecting other known areas of moose winter range.
 - Control programs for white tailed deer in the disturbed areas should be considered.
 - Monitoring methods leave too much in the hands of non-experts for reporting and documenting. This project presents an opportunity to track the impacts of mine development on moose winter habitat use through directly supporting a research program that tracks moose found within the project footprint (e.g., using GPS or radio collared animals). Understanding (1) how flexible mainland moose are in the selection of winter home ranges, (2) how mine development interacts with other threats like brainworm and poaching, and (3) how mine reclamation (after the project is done) can be optimized for improved moose habitat is important, given the proponent’s plans to develop additional mines in the province, and the public interest in recovering mainland moose populations.

Literature cited:

- Gallant, K., Withey, P., Risk, D., van Kooten, G.C., and Spafford, L. 2020. Measurement and economic valuation of carbon sequestration in Nova Scotian wetlands. *Ecol. Econ.* **171**(February). doi:10.1016/j.ecolecon.2020.106619.
- IEMA. 2017. Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance. Lincoln, UK. Available from https://www.iema.net/assets/uploads/EIA_Guide_GHG_Assessment_and_Significance_IEMA_16May17.pdf.
- Kendall, R.A., Harper, K.A., Burton, D., and Hamdan, K. 2021. The role of temperate treed swamps as a carbon sink in southwestern nova scotia. *Can. J. For. Res.* **51**(1): 78–88. doi:10.1139/cjfr-2019-0311.
- Murphy, M.R., and Gillam, K.M. 2013. Greenhouse Gases and Climate in Environmental Impact Assessment – Practical Guidance. *In* 33rd Annual Conference of the International Association for Impact Assessment. International Association for Impact Assessment, Calgary, AB, Canada. Available from https://conferences.iaia.org/2013/pdf/Final_papers_review_process_13/Greenhouse_Gases_and_Climate_in_Environmental_Impact_Assessment_-_Practical_Guidance.pdf.
- Nova Scotia Environment. 2011. Guide to Considering Climate Change in Environmental Assessments in Nova Scotia. Nova Scotia Department of Environment, Halifax, NS, Canada. Available from <https://novascotia.ca/nse/ea/docs/EA.Climate.Change.Guide.pdf>.
- Puhlick, J.J., Weiskittel, A.R., Kenefic, L.S., Woodall, C.W., and Fernandez, I.J. 2020. Strategies for enhancing long-term carbon sequestration in mixed-species, naturally regenerated Northern temperate forests. *Carbon Manag.* **0**(0): 1–17. Taylor & Francis. doi:10.1080/17583004.2020.1795599.

Palaeontology

Staff have reviewed the sections of the EA document pertaining to palaeontology and geology and consulted the surficial geology map for the region impacted by the project. There do not appear to be any bedrock (Goldenville Formation) or surficial geology units that are likely to produce significant fossils. There do not appear to be any issues related to

MEMORANDUM

To: Bridget Tutty
Environmental Assessment Officer

From: George MacPherson
Director, Mineral Management

Date: April 29, 2021

Subject: *Comments on the Environmental Assessment Registration Document/EIS
Fifteen Mile Stream Gold Project
Atlantic Mining NS Inc.
Trafalgar, Nova Scotia*

Staff of the Geoscience and Mines Branch have reviewed selected sections of the Environmental Assessment Registration Document/Environmental Impact Statement submitted by Atlantic Mining NS Inc., dated February 2021, for the proposed Fifteen Mile Stream Gold Project. The following comments are provided regarding the project:

- 1) The Geoscience and Mines Branch confirms the project will develop mineral resources for the Province, providing economic benefits to the Province through direct and indirect employment, as well as associated operating expenditures and capital investment from exploration to construction to development and remediation. Over its life, the project is also forecast to generate a total of \$150 million of tax and royalty revenue to governments, including \$83 million to the province, \$58 million to the federal government and \$9 million to municipalities.
- 2) The project will contribute significantly to the Province's mineral industry, creating approximately 666 jobs during construction and 220 jobs in rural Nova Scotia during operation. As well, typically two to three indirect and induced jobs are generated for each position created during mine operation. Therefore, the project would generate a total of 660 to 880 jobs during operation. We also note that exploration and project development have already employed about 100 people (person-years) and contributed \$3 million to municipal, provincial, and federal government revenues.

- 3) The proposed undertaking will provide environmental and safety benefits for the Province by eliminating hazardous conditions which exist on the site, including about 100 documented abandoned mine openings and pits.
- 4) The project will require a Mineral Lease, pursuant to the *Mineral Resources Act*.
- 5) The Geoscience and Mines Branch supports the plan to place Fifteen Mile Stream tailings in the mined out Touquoy Open Pit. Once the economic mineralization has been extracted from the deposit, such sub-aqueous disposal of tailings is an optimum approach for tailings disposal.
- 6) Additional information on reclamation planning and post-reclamation monitoring for the Fifteen Mile Stream property will be required at later stages of the permitting and approval process. Some components in the reclamation approach outlined in the Registration Document will need to be reviewed before acceptance by the Department of Energy and Mines (DEM). Submission of an acceptable reclamation plan will be required to support the application for a Mineral Lease.

For clarity, DEM suggests an EA condition be included which states (suggested draft wording), *“The reclamation plans and reclamation of the sites must meet the requirements of the Department of Energy and Mines and the Mineral Resources Act. Reclamation measures are not limited to the conceptual reclamation approaches outlined in the Registration Document.”*

- 7) The design and expectations for the Fifteen Mile Stream tailings management facility and tailings dams can be expected to change upon the final design and may possibly require a larger footprint. We are also concerned that the tailings will be potentially acid generating, and if so, will require an appropriate reclamation approach.
- 8) DEM is not supportive of deferring reclamation of the Touquoy tailings management facility in order to maintain its availability for effluent treatment after the Touquoy open pit floods to its final elevation. We would like to see an EA condition clarify that reclamation of the Touquoy tailings management facility must be carried out promptly after its use for deposition of tailings from the Touquoy deposit has ended. Perhaps a statement along these lines: *“Reclamation of the Touquoy TMF must be commenced within six months of the end of Touquoy tailings placement in the TMF and completed within three years of that date.”*

The Geoscience and Mines Branch reiterates that the DEM supports the development of the Province’s mineral resources. The proponent has demonstrated that the project will provide substantial and tangible benefits to Nova Scotia.

These comments are provided to assist in the evaluation of this project. Should you have any questions on our comments, please feel free to contact me.

Regards,

<Original signed by>

George MacPherson

Director, Mineral Management

cc D. T. James (by pdf)
D. Webber
T. Moss
T. Lamb
S. d'Apollonia

April 30, 2021

NS Environment

Attn: Bridget Tutty, Environmental Assessment Officer
Nova Scotia Environment
Suite 2085 1903 Barrington St
Halifax, NS

RE: NSTAT Comments on the Fifteen Mile Stream Gold Project

Nova Scotia Transportation and Active Transit (NSTAT) staff have completed a technical review of the Atlantic Mining NS Corp, Fifteen Mile Stream Gold Project and prepared the following:

Section 1.1 Proposed Project:

1. The proponent has identified the transportation route from the Fifteen Mile Stream project to the Touquoy site via Route 372, Trunk 7 and Mooseland Road. This route will be used (until the Beaver Dam Haul Road is completed), then using the Beaver Dam Haul Road after that. The types of trucks that will be used are identified, with Spring Weight restrictions being adhered to. However, on page 4; the proponent indicates that there will be “*minimal upgrades to existing road infrastructure*” once this process begins. If any upgrades are expected because of this project, any Traffic Control required must be in compliance with the relevant section of the Nova Scotia Temporary Workplace Traffic Control Manual if there are impacts on any provincially owned roads.

2. Truck volumes have been identified and are low and should not have any substantial impact on any provincially owned roads from a volume perspective.

Section 2.3.1.4 Site Construction

3. On page 13 of the summary document (and expanded upon in the larger main document), there is a planned traffic diversion on Seloam Lake Road, along with road upgrades and a planned speed limit of 40 km/h. These are referenced in the document as being on Crown Lands owned by NS Lands and Forests, so there should be no impact. However; in looking at the mapping supplied, it appears that this may be on Cameron Settlement Road, which is listed as owned by NSTAT as a Local Gravel Road. There is also a reference to the Route 374 intersection as well. Any work on a provincially owned road will require a Working Within A Highway Right of Way Permit. This should be confirmed by the proponent.

Sincerely,

Environmental Services
Nova Scotia Transportation and Infrastructure Renewal

From: [Tutty, Bridget R](#)
To: [Tutty, Bridget R](#)
Subject: FW: Fifteen Mile Stream Gold Project 45 day technical review
Date: June 18, 2021 7:10:13 PM

From: Cooper, Clyde <Clyde.Cooper@novascotia.ca>
Sent: April 30, 2021 9:50 AM
To: Tutty, Bridget R <Bridget.Tutty@novascotia.ca>
Subject: RE: Fifteen Mile Stream Gold Project 45 day technical review

Thank you Bridget for including the OHS Division in this EA technical review.

I have no comments on the proposed Fifteen Mine Stream Gold Project as it relates to Occupational Health and Safety at this time.

Have a good day,

Clyde Cooper
902-943-0569