Impact Assessment Agency of Canada | Agence d'évaluation d'impact du Canada

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August 31, 2021

Sent by E-mail

Tara Oak
Manager, Environmental Assessment
Marathon Gold Corporation
PO Box 4006, Pearlgate PO
Mount Pearl NL A1N 0A1
Email: toak@marathon-gold.com

Dear Ms. Oak,

SUBJECT: Outcome of the Technical Review of the response to Information Requirement #1 of the Valentine Gold Project Environmental Impact Statement

The Impact Assessment Agency of Canada (Agency) has completed the technical review of the responses to Information Requirements issued on February 10, 2021 for the Valentine Gold Project (the Project) and determined that additional information is required to proceed with the environmental assessment (EA).

To facilitate the EA, the Agency has prepared additional information requirements (IRs), contained in the attached table, in consultation with Environment and Climate Change Canada, Natural Resources Canada, Transport Canada, Fisheries and Oceans Canada, and Health Canada. As discussed, the Agency review of Marathon's response to IR-60 is ongoing. The Agency will advise you of the outcome of that review upon completion.

With the issuance of this second round of IRs, the federal timeline within which the Minister of Environment and Climate Change must make a decision is paused as of August 31, 2021. Once Marathon Gold Corporation has submitted responses, the Agency will determine if the information provided is complete and the timeline for the environmental assessment will resume. For further information, please consult the Agency document on Information Requests and Timelines: Information Requests and Timelines - Canada.ca

The responses to IRs may be in a format of your choice; however, the format must be such that the

responses to individual IRs can be easily identified. You may wish to discuss certain IRs with the Agency or other government experts, as necessary, to obtain clarification or additional information, prior to submission of the responses. Working directly with government experts in this manner will help to ensure that IRs are responded to satisfactorily. The Agency can assist in arranging meetings with government experts, at your request.

The IRs and your responses will be made public on the Canadian Impact Assessment Registry Internet site: Valentine Gold Project - Canada.ca (iaac-aeic.gc.ca).

Please confirm receipt of this message and contact me if you require further information.

Sincerely,
<Original signed by>

Brent Keeping
Project Manager, Impact Assessment Agency, Newfoundland and Labrador Satellite Office,
Atlantic Region

Cc: Jerry Pulchan - Environment and Climate Change Canada
Tonya Warren - Fisheries and Oceans Canada
Walker Smith - Natural Resources Canada
Jason Flanagan - Transport Canada
Beverly Ramos-Casey - Health Canada
Eric Watton – Environment, Climate Change and Municipal Affairs
Joanne Sweeney – Environment, Climate Change and Municipal Affairs
Blair Adams - Fisheries, Forestry and Agriculture
Kirsten Miller - Fisheries, Forestry and Agriculture

Attachment:

Attachment 1 – Round Two Information Requirements for the Valentine Gold Project.

Valentine Gold Project
Information Requirements – Round Two
August 31, 2021

INTRODUCTION

The Impact Assessment Agency of Canada (the Agency), with input from government experts, has completed its technical review of Marathon Gold Corporation's responses to Information Requirements issued on February 10, 2021 for the Valentine Gold Project. The Agency has determined that additional information is required, as per the table below.

ACRONYMS AND SHORT FORMS

Agency	Impact Assessment Agency of Canada
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
km	Kilometre
m	metre
MFN	Miawpukek First Nation
NRCan	Natural Resources Canada
Pub	Public
QFN	Qalipu First Nation

ATTACHMENT 1: ROUND TWO INFORMATION REQUIREMENTS FOR THE VALENTINE GOLD PROJECT

Information Requirements

IR -1 Reference # (Original IR #)	IR #2 Number	Project Effects Link to CEAA 2012	Reference to EIS (including appendices)	Context and Rationale	Specific Question/ Proposed Follow-up Measure
IR-09	IR(2)-9	5(1)(a)(i) Fish and Fish Habitat	Baseline Study Appendix 3, Attachment 3D, Hydrogeology Baseline Report, Sections 4.2, 4.3, 4.4	Faulting can enhance hydraulic conductivity relative to surrounding bedrock. These faults can act as a conduit between surface water features and the open pits. Additional information on the implementation of the fault zones within the model is required to assess the applicability of the sensitivity analysis as it relates to the assessment of groundwater-surface water interactions. Updated testing presented in GEMTEC (2021a) in the response to IR-09 expands upon the limited testing of the fault zones provided in the EIS. However, it is noted that the hydraulic properties of the fault zones have been characterized based on tests completed within the modelled fault plane. Additional tests may have been conducted within the actual fault zone but were not included in the calculation of the mean hydraulic conductivity (based on the lithology presented in Table 1 of GEMTEC (2021a)). Inclusion of these additional tests would increase the representative hydraulic conductivity for the fault zones by half an order of magnitude for the Marathon Pit. While the data may support fault zones that are of a similar range in hydraulic conductivity to the host bedrock, complete evaluation is required. GEMTEC Consulting Engineers and Scientists Limited. 2021a. Summary of Pack Testing, 2020 FS-Level Geotechnical Pit Design Program, Marathon Valentine Gold Project, Central Newfoundland, Letter Report prepared for Marathon Gold Corporation, dated May 31, 2021.	a. Provide a map showing the surface expression of the simulated fault zone within the model used for the sensitivity analysis as it intersects the Marathon and Leprechaun pits. b. Provide details of the thickness and depth of the simulated fault zone as modelled within the sensitivity analysis. c. Confirm that the hydraulic conductivity of the fault zone was assigned as 10 times the hydraulic conductivity of the host hydrostratigraphic unit (HSU) for the higher permeability simulations, such that it may range from on the order of $9x10^{-8}$ m/s to $1x10^{-12}$ m/s as a function of the simulated depth and HSU.
NRCAN-04 No prior Agency number assigned	IR(2)-NRCAN04	5(1)(a)(i) Fish and Fish Habitat	Baseline Study Appendix 3, Attachment 3D, Hydrogeology Baseline Report, Sections 3.2, 4.3. Appendix 6A, Section 3.3	The relationship between geological units and hydraulic conductivity (the hydrostratigraphy) is key to understanding and forecasting groundwater flow quantities and direction. As stated in the response to IR-NRCAN-04, additional testing of the overburden and shallow bedrock was completed following the submission of the EIS and summarized in GEMTEC (2021b – not available) but the report was not provided for review. Tabular data that includes screen top and bottom elevation; ground surface elevation and inferred or observed bedrock top surface elevation is required.	a. Provide the referenced GEMTEC (2021b) report. If not included within the cited report, provide a table summarizing the analysis results for the single well response tests, including: screen top and bottom elevation; ground surface elevation; and, inferred or observed bedrock top surface elevation. b. Confirm whether any additional testing on MW4, MW6, and MW8 has been conducted, and if not, exclude them from the results and update the assessment.

				While it is understood that a calibrated groundwater model is a best fit to limited field data and informed by expert opinion, it is essential that the conceptualization of the hydrostratigraphy matches the available data to the extent possible to ensure that forecasted results have limited uncertainty which in turn can affect predicted effects on fish and fish habitat. GEMTEC Consulting Engineers and Scientists Limited. 2020. Hydrogeology Baseline Report, Marathon Valentine Gold Project, March, 2020. GEMTEC Consulting Engineers and Scientists Limited. 2021b. Feasibility-Level Site-Wide Geotechnical and Hydrogeological Investigations, Valentine Gold Project, Marathon Gold Corporation, draft report.	
IR-11	IR(2)-11	5(1)(a)(i) Fish and Fish Habitat	Appendix 6A, Sections 4.3.3, 4.3.4, Tables 5-1, 5-2, and 5-3, and Figures 4.1, 5.2 and 5.4	Boundary conditions within the groundwater flow model are user specified, and control the degree to which groundwater may interact with surface water that could impact fish and fish habitat. In proximity to open pits that are actively dewatered these boundary conditions can control the extent to which drawdown is propagated. It is important that small lakes, ponds, streams, and rivers that may dry during pit dewatering are specified as boundaries that do not contribute water to the groundwater flow system. Section 5.2.1 of Appendix 6, states that boundaries in the vicinity of the open pits were switched to drains for the end of operations simulation, as is expected. However, results shown on Figure 5-2 in Appendix 6 show drawdown associated with pit dewatering being limited by the West Pond, Middle Pond, NT3, and ST4. These boundaries all appear to continue to have net flux from the groundwater flow system to the boundary during operations suggesting that they do not dry. However, in response to IR-13, Table IR-13-1 of Appendix IR-13.A shows that EP1 (Middle Pond and East Tributaries) and WP1 (West Pond and Tributaries) have a net flux from the boundaries to the groundwater flow system under the high permeability fault scenario, suggesting that these boundaries are not drains. Maps of depth to groundwater, and groundwater model water balances, are needed to assess forecasted groundwater effects.	a. Confirm that EP1, WP1, NT3, and ST4 were specified as drain boundaries for all of the operations simulations for which results have been presented. b. Using the zone budget functionality of MODFLOW break down the net groundwater flux into and out of the model for these boundaries under baseline, end of operations and post-closure conditions. c. Provide maps at the scale of Figure 5-2 in Appendix 6 showing the depth to the water table relative to original ground surface for baseline, end of operations, and post-closure conditions. This set of maps is also needed to satisfy IR(2)-12, IR(2)-14, and IR(2)15. d. In the event that these boundaries are not specified as drains, provide updated model results. Otherwise, provide a rationale for the effect of these boundaries on the propagation of drawdown associated with pit dewatering.
IR-12	IR(2)-12	5(1)(a)(i) Fish and Fish Habitat	Appendix 6A, Section 4.4, Tables 4-2 and 4-3, and Figures 4-3 and 4-4	Groundwater model calibration is the measure of the ability of the groundwater model to replicate the interpreted conceptual model of groundwater flow. Without a reasonable calibration any forecasted changes to groundwater quantity, or groundwater-surface interaction are not reliable. The response to IR-12 states that the calibrated recharge value of 381 mm/year results in a model that matches observed groundwater elevations and baseflow values. To support the applied recharge value, AMEC (2013) is cited, which states that baseflow in Central Newfoundland ranges from 9.4 to	a. Provide maps as per IR(2)-11c b. Provide a summary of model surface area, and the total flux into the model from recharge based on zone budgeting under baseline, end of operations, and post-closure conditions. This information is also needed to satisfy IR(2)-15. c. Based on the site specific runoff and baseflow data provided in Chapter 7 of the EIS, provide rationale for the calibrated recharge value.

				38.4% of total precipitation. With the Site's total precipitation value of 1236 mm/yr (EIS Chapter 7) baseflow should range from approximately 180 to 425 mm/year. With a baseflow index calculated for the Site of 35% (EIS Chapter 7), and the average mean annual flow calculated for the site of approximately 790 mm/year (estimated from Table 7.18 of EIS Chapter 7, Section 7.5) the site specific baseflow may be on the order of 280 mm/year, consistent with AMEC (2013). A recharge rate of 381 mm/year is more than 20% higher than the value supported by the Site-specific baseflow data. It is understood that the calibrated recharge value did produce a model that acceptably matches groundwater elevation data and baseflow data from the site. However, this calibration was achieved with an overburden hydraulic conductivity that is an order of magnitude higher than the stated range. Similar calibration statistics could feasibly be obtained with recharge and overburden hydraulic conductivity within their respective inferred ranges. Resulting in different forecast results relative to those presented. Additional information is needed (including maps, and water balances) to verify the groundwater model results and calibration.	
IR-14	IR(2)-14	5(1)(a)(i) Fish and Fish Habitat	Appendix 6A, Sections 5.2.2 and 5.3.2, Tables 5-3 and 5-6 and Figures 5-2 and 5-4	Baseflow can be the main sustaining flow for surface water bodies during periods of low precipitation. Changes to baseflow, is one of the key outputs from the groundwater model for the assessment of impacts to valued components. The response provided for IR-14 does not provide an acceptable rationale for the increase in groundwater discharge to surface water during operations for NT1 and NT2. A change from a river boundary to a drain boundary does have the potential to result in increased net flux from groundwater to surface water if a portion of the boundary is contributing water to the groundwater water flow system. However, by visual comparison between the topography (EIS Chapter 7, Figure 7-46) and the baseline groundwater table elevation (EIS Appendix 6, Figure 5-1) it appears that the water table is at or above the ground surface along the majority of NT1, indicating that flux from the boundary to groundwater under baseline conditions is likely minimal.	a. Provide maps as per IR(2)-11c. b. Using the zone budget functionality of MODFLOW break down the net groundwater flux into and out of the model for NT1 and NT2 under baseline, end of operations and post-closure conditions.
IR-15	IR(2)-15	5(1)(a)(i) Fish and Fish Habitat	Appendix 6A, Sections 5.2.1.3 and 5.3.1.2, Tables 5-4, 5-6, and 5-7.	The quantity of groundwater seepage that originates from waste rock storage facilities and discharges to surface water bodies is used to assess water quality within these water bodies. Implementation of these facilities and their seepage collection infrastructure within the groundwater model has implications on these assessment results.	a. Provide maps as per IR(2)-11c. b. Provide information as per IR(2)-12b.

				As stated in the response to IR-15, recharge on the waste rock facilities was applied at a rate of 243 mm/year for the end of operations and post-closure simulations. This recharge rate is less than 64% of the recharge applied under the baseline simulation, yet groundwater elevation increases under the Leprechaun facility during operations and post-closure, and under the Marathon Facility during operations. These changes appear to indicate that the increased hydraulic conductivity of the waste rock added to the upper layers of the model permit more recharge to enter the system under operations and closure relative to baseline conditions. While water table mounding associated with waste rock facilities is not conceptually unexpected following wetting of the materials, the response of the model given the applied boundary conditions is not as expected, resulting in lower certainty in model results.	c. Provide a rationale for the presence of a water table mound below the Marathon waste rock facility under operations (despite pit dewatering) that is not present during post-closure (with a flooded pit).
IR-02 IR-50 IR-53	IR(2)-02	5(1)(a)(iii) Migratory Birds	Chapter 5 – Atmospheric Emissions Section 5.5.3 – Atmospheric Emissions, Noise Section 10.2 – Existing Conditions for Avifauna Section 10.2.3.1 – Forest Breeding Bird Survey Results: Passerines, Raptors, and SAR	The proponent has not included adequate mitigation that will reduce the effects on migratory birds and species at risk for example there are no mitigations on potential effects of blasting. The discrepancies in the 2014 and 2019 baseline surveys and standard protocols emphasizes the need for additional pre-construction surveys (which are currently underway this summer 2021). ECCC has been in discussions with the proponent regarding the survey protocols/methods for the 2021 baseline survey, in an effort to improve survey design. The 2021 survey results will assist in the determination of effects on migratory birds and species at risk, such as Olive-sided Flycatcher. This information should be used to enable appropriate mitigation measures and assist the proponent with the development of a strong, scientifically sound EEM program. Nest searches are not recommended as a mitigation measure to reduce the impacts of migratory birds and species at risk, given the fact that the ability to detect nests is very low while the risk of disturbing or damaging nests is high, which is a violation of the Migratory Bird Regulations. ECCC recommends that the proponent avoid certain activities, such as clearing and other activities that may cause disturbance, during the nesting period for most migratory birds. The breeding season for most birds within the Project Area occurs between April 15th and August 15th, however some species protected under the Migratory Birds Convention Act nest outside of this time period. It is recommended that applicable information from ECCC's "Guidelines to reduce the risk to migratory birds" (see	Provide an updated list of mitigation measures that incorporates the findings of the 2021 pre-construction surveys to reduce the effects of the project, including blasting, on migratory birds.

				https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html.) be considered in the development of mitigations.	
IR-53 IR-57	IR(2)-53	5(1)(a)(iii) Migratory Birds	Section 10.2 – Existing Conditions for Avifauna Section 10.3 – Assessment Criteria and Methods Section 10.4 – Mitigation and Management Measures Section 10.5 – Assessment of Environmental Effects on Avifauna	Olive-sided Flycatcher (OSFL) have relatively large territories for landbirds and beyond "forested wetland" habitat type, OSFL have other habitat requirements that may include access to snags or tall isolated trees, high insect abundance (or specific insect types) from local wetlands, good quality natural edge, proximity to burn areas, etc. As such, OSFL habitat is not easily modeled by landcover/Ecological Land Classification of forest type methods alone, and the assertion that OSFL will successfully move elsewhere is not sufficiently supported with scientific evidence. The following is a useful reference: Norris, A.R., L. Fird, C. Debyser, K.L. De Groot, J. Thomas, A. Lee, K.M. Dohms, A. Robinson, W. Easton, K. Martin, and K.L. Cockle. (2021). Forecasting the cumulative effects of multiple stressors on breeding habitat for a steeply declining aerial insectivorous songbird, the Olive-sided Flycatcher (*Contopus cooperi*). *Frontiers in Ecology and Evolution.* https://doi.org/10.3389/fevo.2021.635872 The Proponent's response to IR-57 states that "*The statement that displaced birds are likely to find habitat elsewhere is relevant for rare species and is based on the presumption that, given their status, rare species are not at their carrying capacity in Newfoundland and Labrador"* This statement assumes that the limiting factor for species in Newfoundland and Labrador is not on the breeding ground but elsewhere, which is not supported by published scientific literature. It cannot be assumed that the decline of species in NL is not linked to loss of habitat without evidence to support this statement.	Include additional rationale to support the assertion that OSFL and other migratory birds will successfully move to other habitat(s) in response to disturbance. In addition, provide mitigation measures if there is insufficient rationale to support your assertion. Norris et al. (2021) may provide useful guidance to support this request.
IR-54 And IR-70	IR(2)-54	5(1)(a)(iii) Migratory Birds	Section 10.4 – Avifauna Mitigation and Management Measures Section 10.5 – Assessment of Environmental Effects on Avifauna	The Proponent states that settling ponds will contain sediment, dissolved metals and other constituents like ammonia at low concentrations and that if birds were present and were to ingest water and nearby vegetation, that there would be no added mortality risk. The Proponent references the Metal and Diamond Mining Effluent Regulations (MDMER) as the basis for this assessment. However, the MDMER guidelines do not consider avian toxicity. It is also not known if the water in the settling ponds will need time to settle before it meets the guidelines or presents a lower risk. The proponent does acknowledge that the tailings in the Tailings Management Facility (TMF) could pose a threat to birds. It is understood the tailings in the	a. Provide an avian risk assessment based on a comparison of modelled contaminant values to toxicity reference guidelines for birds for all project surface-water components. b. Provide a comprehensive description of proactive mitigation measures that will be used to deter birds from coming into contact with project surface-water components.

			Section 10.9 – Follow-up and Monitoring Section 21.5.4.4	TMF will have been treated for cyanide, but not for other potential contaminants of concern. The Proponent should compare water quality data/worst-case scenario predicted modelled values with constituents present in any surface water components of the project with existing toxicity reference guidelines available for birds (an avian risk assessment) to substantiate that there is no added mortality risk to avian species. The proponent has provided some mitigation measures to deter birds from the tailings ponds in Section 10.4, and it states that embankments around ponds will be maintained free of vegetation and that the ponds will be monitored. The response further states that if problematic bird use occurs, mitigation measures will be implemented and subsequently adapted if necessary. It is unclear what other proactive mitigation measures will be implemented to limit wildlife interactions with tailings. A variety of potential solutions and measures used at other sites to deter birds are identified but it is not clear if any of these measures are being considered until avifauna interactions with tailings are occurring. More detail is required on preventative (not just reactive/adaptive) means of deterring birds and ensuring that they do not come in contact with the tailings facility. This information is needed for a complete assessment of effects on migratory birds including species at risk (SAR).	
IR-61	IR(2)-61a	5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes	3.4.2 Indigenous Engagement: Methodology and Approach 3.4.4.4 Land and Resource Use Information Exchange 17.2.1 Existing Conditions for Indigenous Groups - Methods 17.2.3.3 MFN Current Use of	Plans to develop mitigation measures from monitoring/follow-up programs incorporating Miawpukek First Nation (MFN) Indigenous Knowledge provided contain insufficient detail to determine their adequacy. The Proponent states that results of a traditional knowledge and land resource use study will be used in the development and implementation of mitigation measures and monitoring programs for Project impacts on air, water quality, and country foods. In addition, a grievance mechanism process will be developed to address grievances on the part of Indigenous groups and persons. However, sufficient detail was not provided for how MFN's Indigenous Knowledge relevant to the human health concerns of the Project will be incorporated into the development and implementation of mitigation measures, follow-up, and monitoring activities for all project phases (e.g., construction, operation, decommissioning, rehabilitation, and closure). For instance, the functionality of the processes and mechanisms were not described for the receipt of grievances from Indigenous community members	Describe how the results of the monitoring program of potential effects on country foods will inform proactive mitigation measures to address potential grievances from Miapukek and Qalipu First Nations.

			Lands and Resources for Traditional Purposes 17.9 Follow up and monitoring Appendix IR-61.A	during all project phases. This additional detail would demonstrate how the Proponent intends to collaborate with local Indigenous groups to mitigate unanticipated effects of the Project on Indigenous Peoples health and use of lands and resources, including for harvesting country foods. Furthermore, it is unclear if the need for monitoring of noise levels was considered. Health Canada encourages the monitoring of contaminants in environmental media to validate that predictions are accurate (in particular when risk estimates approach acceptable levels in the original assessment and there is concern that they may have underestimated risks) and/or determine the effectiveness of the mitigation measures. Monitoring is also advisable when there are Indigenous Peoples present.	
IR-75: ECCC-06	IR(2)-75	Effects of the Environment on the Project.	Chapter 22	The Proponent did not respond fully to the request to describe the climate change information and methods used to apply climate projections to project designs. In particular, it remains unclear how (or if) the design choices identified as inclusive of climate change considerations differ (or not) from the design choices that would have been made without consideration of potential climate change.	Describe the methods or approach used to apply climate projections to the relevant project design considerations. This response should demonstrate how climate change information was considered or used in the proponent's designs (as indicated in the EIS) such that the approach can be evaluated.
IR-30	IR(2)-30	5(1)(a)(i) Fish and Fish Habitat	EIS Chapter 8: Fish and Fish Habitat Page 8.72	The response to the IR states that "*the Leprechaun and Marathon pit lakes were modeled as being fully mixed from top to bottom for a worst-case scenario for trace elements*". It is unclear whether the modelled scenario includes all project phases (including post-closure) and all parameters (to verify what parameters "trace elements" includes). If it does not, then a re-evaluation of the modelling may be required.	Confirm that the Leprechaun and Marathon pit lakes were modelled as being fully mixed (i.e. worst-case scenario) for all water quality parameters for the post closure period or provide the rationale for not including it.
IR-41	IR(2)-41	5(1)(a)(ii) Aquatic Species	Chapter 4: Assessment of Effects to Surface WaterAppendix 7C – Assimilative Capacity Assessment Report	The response states that "*Table IR-41.5 presents modeling results of sediment chemistry from contact water using the geochemical model. No exceedances of [Canadian Environmental Quality Guidelines Interim Sediment Quality Guidelines] CEQG ISQG and CEQG [Probable Effects Levels] PEL are predicted for sediment in contact water leaving the sedimentation ponds.*" The timeframe associated with table IR-41.5 is not clear and there may be a misunderstanding of the goals of regulatory sampling compared to the goals of sampling to support an assessment of effects under environmental assessment.	Provide the timeframe represented by the sediment quality predictions in table IR-41.5.
IR-42	IR(2)-42	5(1)(a)(ii) Aquatic Species	Appendix 7C – Assimilative Capacity Assessment Report (page 1.2)	The response states that "*These parameters are not considered bioaccumulative, with the exception of arsenic which may have the potential to be bioaccumulative (EC 2012)*" but there is no further discussion of potential levels of arsenic, their effects on fish and human health, or mitigations.	Provide information on the potential for arsenic to bioaccumulate and the potential effects on fish and fish habitat and human health. In addition, provide mitigations to address possible effects.

IR-39	IR(2)-39	5(1)(a)(i) Fish and Fish Habitat	EIS Chapter 7 Response to IR-39	Environmental flows, sometimes calculated as 30% or 50% Mean Annual Flow (MAF), are minimum flows that would maintain pre-existing habitats in a stream. As such, they should be based solely on baseline conditions. In Tables 39-1 to 39-3 in the response to IR-39, the environmental flows listed are not consistent with environmental flows that may be calculated from baseline MAF values (Table 7-18 in EIS, PDF p.37). Estimation of effects to fish habitat may not be accurate if the baseline to assess changes is not correct; there is a risk of missing important effects.	a. Provide a rationale on why the value of the baseline environmental flows differ from the expected project flows for the associated months (winter: October to March and summer: April to September) for all watersheds or update the tables as necessary. b. Discuss any potential effects to fish habitat, particularly in winter months.
IR-62	IR(2)-62	5(1)(a)(i) Fish and Fish Habitat	Ch. 21 Accidental Effects. 21.5.1.2	The response to the IR indicated that the Environmental Design Flood (EDF) value has been updated to be the larger of the 30-day, 100-year rainfall plus snowmelt event (occurring during the freshet) or the 7-day, 100-year rainfall event (during the non-winter months). Data for the Buchans station was used, and for each stage of deposition and dam raising, the 7-day, 100-year rainfall occurring over the maximum operating water level was found to be the critical EDF event (190 mm over 7 days). However, the results and methods were not provided.	a. Provide the updated Environmental Design Flood value and describe the sources or methods used to determine the 30-day, 100-year rainfall plus snowmelt EDF event (occurring during the freshet). b. Describe how the choice of the critical EDF event (including the relevant number of days for multi-day rain events) was determined.
NEW	IR(2)-100	5(1)(b) (iii) a change that may be caused to the environment that would occur outside Canada	Section 5.5.2.1 Project Pathways Section 9.5.1.2 Residual Effects	Section 7.2.1 of the EIS Guidelines require an estimate of the direct greenhouse gas (GHG) emissions associated with all phases of the project. Environment and Climate Change Canada's guidance document Strategic Assessment of Climate Change (Revised October 2020) identifies emissions from land use change (e.g., land clearing including deforestation, biomass decay, etc.) as an example of direct GHG emissions. The Agency notes that SACC is applicable for IAA projects only but is meant in this instance to be used as a reference on direct versus indirect GHG emissions. Section 5.5.2.1 of the EIS states that GHG emissions from land clearing were quantified only for grubbing, as tree clearing is expected to be completed prior to the peak construction year. It further notes that emissions from grubbing were estimated using diesel combustion emission factors for off-road equipment, and the predicted diesel consumption. The EIS also states that GHG emissions from decommissioning, rehabilitation and closure activities were not quantified as they would be expected to be lower than those released during construction and operation. Section 5.5.1.2 of the EIS indicates the GHG emissions estimate assumed a grubbed area of 14 km^2. However, the Agency notes that Section 9.5.1.2 of the EIS states that construction activities such as mine site preparation and earthworks activities are expected to result in the loss or change of up to 32.0 km^2, with an additional approximately 2.8 km^2 of vegetated areas changed or lost within the access road upgrade footprint. This is a considerable difference	a. Clarify or revise the area of land to be cleared and provide an estimate of the resultant greenhouse gas emissions from Project construction, decommissioning, rehabilitation and closure. Ensure estimates consider Environment and Climate Change Canada's guidance on direct emissions from land use change. b. Update the effects assessment, mitigation measures and conclusions, as applicable, to incorporate this additional information.

				from the area estimated for the purposes of quantifying greenhouse gas emissions. The EIS does not provide a rationale for not including tree clearing and post-operation activities in the proponent's estimate of Project-related GHG emissions. It is unclear why the estimated area of cleared vegetation is considerably lower than presented elsewhere in the EIS. Quantitative emission estimates that are inclusive of all Project activities are required to determine project effects.	