

Kemess Underground Application Review - Issues Tracking Table (ITT) - August 12, 2016

Please refer to "Instructions" tab

ID #	Comment Date (i.e. 22-May-16)	Reviewer Name / Agency (i.e. Alex Kwang, MEM)	Subject (See "Instructions" tab)	For Working Group Use		For Proponent Use		For EAO & Proponent Use		
				Application Section (i.e. 7.1.2)	Category of Comment (See "Instructions" tab)	Comment (Include Memo reference as applicable)	Proponent Response (Include Memo reference as applicable)	Response Date	Status	Notes
HRFN-001	24-Jun-16	Halfway River First Nation	Wildlife and Habitat	Chapter 15	Comment	The Project will contribute to increased habitat fragmentation and loss of wildlife habitat (resulting in increased stress on wildlife populations, in particular, in already declining moose and caribou populations that we rely on for food and clothing accessories).	Section 15.5.1.1 of the Application identifies habitat loss and alteration as a potential effect of the Project on wildlife, which could occur as a result of vegetation clearing during construction and subsidence during operations. Project mitigation for habitat loss and alteration includes avoidance of important habitat (e.g. utilizing existing KS infrastructure wherever possible), avoiding wetlands during final Project infrastructure siting, and revegetation/reclamation beginning prior to closure. As described in Section 15.6.2.1, the total amount of habitat lost or altered for the Thutade caribou herd represents 0.01% to 0.4% of the assumed high-quality habitat that is available to caribou in the herd range. Given the negligible amount of habitat loss relative to what is available to caribou in a regional context, habitat loss and alteration is not predicted to result in a residual effect on caribou. As described in Section 15.6.3.1, the total amount of high-quality moose habitat lost or altered represents 2.0% of the total high-quality moose habitat available in the local study area (LSA) around the proposed project and 0.015% assumed to be available within the regional study area (RSA). Given the negligible amount of habitat loss relative to what is available to moose in a regional context, habitat loss and alteration is not predicted to result in a residual effect on moose. Section 15.5.1.3 identifies disruption of wildlife movement as a result of habitat fragmentation as a potential effect of the Project on wildlife, which could occur as a result of new roads and mine infrastructure. As described in Section 15.5.3.1, a number of mitigation strategies will be used to reduce the disruption to wildlife movement, including ramps, escape pathways, limiting vehicle encounters (e.g. employee bussing), road use policies (e.g. speed limits, convoys), and progressive reclamation. As described in Section 15.6.2.3, there is evidence that caribou use the lower elevation areas where the new features will occur; however, the effect is limited to the 1.3 km linear corridor of new development and it is reversible upon mine closure. Based on this assessment, the potential effect of disruption of movement on woodland caribou is determined to be not-significant. As described in Section 15.6.3.3, a residual effect was predicted for moose movement related to the use of existing roads within the Kemess Creek drainage, the conveyor, and the proposed KUG TSF Discharge Waterline. The effect is assessed as not significant, given the medium magnitude, local scale and reversibility of the effect. Section 20.6 of the Application assesses potential effects of the Project on Aboriginal peoples' Current Use of Lands and Resources for Traditional Purposes (CULRTP), including hunting and use of wildlife and other materials for food and materials. Potential effects on Halfway River First Nations' (HRFN) CULRTP was not assessed on the basis that available information does not indicate that HRFN currently uses the LSA or RSA for hunting/trapping, fishing, gathering, or use of culturally important areas. However, residual effects on hunting and trapping due reduced availability of wildlife resources were determined for other Aboriginal groups. As described in Section 20.6.2, this effect is rated as not significant due to the low magnitude, local extent, and reversibility of the effect.	5-Aug-16	With EAO	
HRFN-002	24-Jun-16	Halfway River First Nation	Wildlife and Habitat	Section 2.2.2	EA Information Requirement	Section 2.2.2 states that habitat models for the Project were not field tested, and thus may not accurately represent and reflect the conditions for local wildlife populations. A plan to conduct population surveying and monitoring during construction and operations phases should be implemented to better characterize wildlife populations and obtain more accurate data for future management decisions.	Wildlife habitat suitability modelling was conducted following RIC standards in every respect save for field-truthing the habitat models. However, models were based on ERM's professional expertise in the region and the results of habitat modelling that did incorporate field verification techniques. For example, ERM has conducted habitat suitability modelling incorporating animal observations collected by field inventories for the Kutcho, KSM, and Brucejack Projects. Habitat suitability models according to RIC (1999) standards identified 95% of caribou being observed in late winter habitat rated as high and moderately-high in the Kutcho Creek drainage (Rescan 2008). The ecosystem map based models developed to RIC standards for goat and moose habitat for KSM (Rescan 2010; http://bit.ly/29iCWo5) resulted in 78% of observations from inventory flights of moose occurring in mapped winter habitat of high to moderate suitability and 92% of summer and 90% of winter goat observations in habitat modelled as high to moderate suitability. For the Brucejack Project, (Rescan 2013; http://bit.ly/29nVGXd) 79% of moose observations were within moderate to high rated suitability habitat while 95% of winter goat were within habitat rated moderate to high and 89% in summer habitat. ERM drew on existing models produced for the Kutcho Project to develop habitat models for the Kemess Project, models that predicted wildlife habitat use well. Considering the above, the results of habitat suitability modelling are expected to represent the current conditions for local wildlife populations, and that additional population surveys are not warranted. Rescan. 2008. Kutcho Project Wildlife Habitat Suitability Baseline Report. Prepared for Kutcho Copper Corporation by Rescan Environmental Services Ltd. November 2008. Rescan. 2010. KSM Project: 2009 Wildlife Habitat Suitability Baseline Report. Prepared for Seabridge Gold Inc. by Rescan Environmental Services Ltd.: Vancouver, BC. Rescan. 2013. Brucejack Gold Mine Project: Wildlife Habitat Suitability Report. Prepared for Pretium Resources Inc. by Rescan Environmental Services Ltd.: Vancouver, BC. RIC. 1999. British Columbia Wildlife Habitat Ratings Standards, version 2.0. Prepared by Ministry of Environment, Lands and Parks, Resources Inventory Branch for Terrestrial Ecosystem Task Force, Resources Inventory Committee (RIC): 111. Victoria, BC.	5-Aug-16	With EAO	
HRFN-003	24-Jun-16	Halfway River First Nation	Wildlife and Habitat	Chapter 15	EA Information Requirement	Table 15.5.8 – "Proposed Mitigation Measures and their Effectiveness". The language is non-committal, often including phrases such as, "Where practical alternatives are available", "reclamation of some components", "where possible", "where practical", "where feasible." We request that AuRico commit to specific activities to be held accountable to. The statements are meaningless otherwise.	Table 15.5.8 Proposed Mitigation Measures and their Effectiveness is not meant to be an exhaustive list of all mitigation measures but rather the purpose of the table is to indicate the associated effectiveness with proposed mitigation. As such, some mitigation measures are stated in a generic format. More specific mitigation actions are provided in the proceeding section 15.5.3.1 Key Mitigation Approaches as well as in section 24.19 Wildlife Management and Monitoring Plan.	5-Aug-16	With EAO	
HRFN-004	24-Jun-16	Halfway River First Nation	Wildlife and Habitat	Chapter 15	EA Information Requirement	Section 15.6.1.2 states: "Given the negligible amount of habitat loss relative to what is available to caribou in a regional context, habitat loss and alteration is not predicted to result in a residual effect on caribou, and is not considered further." AuRico further states, "Based on this assessment, the potential effect of disruption of movement on woodland caribou is determined to be not-significant." Habitat loss continues to be one of the most significant contributing factors to reduced ungulate populations. Habitat loss from the Kemess Underground mine will contribute to habitat fragmentation and changes to movement patterns on a cumulative level.	The Project footprint area includes 487 ha, where < 100 ha is due to the infrastructure itself and the remaining area is due to buffers around infrastructure. The additional area was included in order to account for final siting changes as well as habitat alteration due to construction activities around the infrastructure. Therefore, all habitat loss and alteration estimates presented are highly conservative as it is anticipated that as little as 15% of the total Project footprint area will actually be affected. The percentage of seasonal high quality habitat lost and altered relative to the habitats available within the LSA was generally less than 10% for animals with large home ranges e.g., caribou, moose, and grizzly bear (except for caribou early winter habitat where up to 18% may be lost or altered), while habitat loss and alteration was generally 5% or less for species with smaller home ranges such as migratory birds (except for olive-sided flycatcher for which habitat loss and alteration was predicted to occur over 7% of the available habitat of the LSA). Since only 15% of the total Project footprint area will actually be affected, these habitat losses equal 1.5-2.8% within the LSA. This degree of habitat loss was considered negligible for all wildlife VECs that were assessed, and were not carried forward as residual cumulative effects.	5-Aug-16	With EAO	
HRFN-005	24-Jun-16	Halfway River First Nation	Wildlife and Habitat	Chapter 15	EA Information Requirement	Section 15.6.2.4 states that while some early winter high quality habitat exists for woodland caribou in the area surrounding Waste Rock Creek (Figure 15.4-2 and Appendix 15-B), and caribou have been detected in the area during the spring (Figure 15.4-1), "home ranges of woodland caribou are large, ranging from 362 km ² to 5,073 km ² thus, caribou are not anticipated to spend much time drinking from any one water source. Therefore, the potential for uptake of molybdenum from Waste Rock Creek is anticipated to be minimal and concentrations of molybdenum in tissues of caribou are not anticipated to change relative to current tissue concentrations. The effect of the COPC, molybdenum, from Project-related activities on woodland caribou is anticipated to be negligible." This doesn't take into consideration other potential sources of polluted water that caribou may consume and therefore the conclusion of a negligible effect may not be accurate. It would be more accurate to state that the effect is unknown at this time.	The evaluation of effects of Chemical Hazards to wildlife was a multi-step process that identified Project environments (e.g., the TSF) and receiving environments where COPCs may be of risk to wildlife (p. 15-113 to 15-124). This assessment focused on Project-related effects, i.e., where the measured change in a COPC during any phase of the Project would be attributable to the Project. Hence, this assessment considered all sources of water affected by the Project where caribou may be at risk from ingestion; identifying such sources beyond the influence of the Project is out of the scope of the assessment. The results of the assessment is that Molybdenum is predicted to have concentrations higher than the BC water quality guidelines for wildlife in Waste Rock Creek in Post-closure during the month of May only. Concentrations (mean 0.06 mg/L, maximum 0.07 mg/L) are marginally higher than the guideline (0.05 mg/L) during this month. Considering the above, there is a reasonable amount of evidence to conclude that the effect of COPC Molybdenum due to the Project is negligible. Furthermore, once the intake of elevated concentration of molybdenum from diet or water ceases (e.g., the concentration goes from just above the guideline to below the guideline), short-term effects are reversed (MEND 2008). These factors decrease their probability and risk of exposure during the one month (May) per year in which molybdenum concentrations are elevated above the wildlife water quality guideline and residual effects are not expected. The Fish and Aquatic Effects Monitoring Plan (Chapter 24, Section 24.7, of the Application) will be implemented to monitor the concentrations of COPCs in environmental media and biota. Based on monitoring results, adaptive management and mitigation will be implemented where necessary. MEND. 2008. A review of environmental management criteria for selenium and molybdenum. MEND Report 10.1.1. Report Prepared for Mine Environment Neutral Drainage Program by EcoMetrix Incorporated, (Mississauga). February 2008.	5-Aug-16	With EAO	

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HRFN-006	24-Jun-16	Halfway River First Nation	Environmental Management Plan	Chapter 24	EA Information Requirement	EMP 24.19 states: "Results from on-site wildlife monitoring will be used to identify potential opportunities for adaptive management. In conjunction with the monitoring program results, the evaluation of mitigation measures applied to manage wildlife will help determine if prescribed measures are achieving performance objectives." HRFN requests information as to how AuRico will manage wildlife populations if performance objectives are not met.	If performance objectives of the Wildlife Management and Monitoring Plan are not met, then AuRico will identify and apply new best management practices to effectively avoid and minimize adverse effects to the integrity of wildlife and wildlife habitat. All measures, policies, and procedures will be reviewed periodically and updated when required to prevent wildlife incidents.	5-Aug-16	With EAO	
HRFN-007	24-Jun-16	Halfway River First Nation	Environmental Management Plan	Chapter 24	EA Information Requirement	There is little discussion on the roles and responsibilities of the Environmental Manager (EM). Will an EM be employed full time? Will the EM be given stop-work authority?	As described in Section 24.1.4.1, the Environmental Manager will have the functional responsibility for environmental management matters at the Project and will provide line-function accountability to the Mine Manager, Mine Supervisor and staff-function reporting to the Director, Environment. The Environmental Manager will interact and direct on-site Environmental Coordinators to fulfill environmental management responsibilities and tasks and audit contractors for compliance with SMS and EMP requirements. This includes ensuring programs and procedures to fulfill the EMPs are designed, implemented and reported on for internal sustainability and external permit or regulatory commitments. The Environmental Manager will be employed full-time and will be given stop-work authority.	5-Aug-16	With EAO	
HRFN-008	24-Jun-16	Halfway River First Nation	Social	Chapter 17	EA Information Requirement	Our ancestors have a history within the area, with known TUS sites, some as close as 60 km to the Project, yet, the Proponent has not engaged in consultation with our community throughout the process to date, nor presented discussions of opportunities for benefits to our people.	AuRico's level of engagement with HRFN has been based on guidance provided by the BC EAO and CEA Agency regarding consultation with Aboriginal groups listed on Schedule C of the Section 11 Order. AuRico initiated consultation with HRFN in March 2015 by providing a letter to HRFN to introduce the Project and describe the process by which AuRico would be collecting information and assessing potential effects in accordance with Section 5(1)(c) of CEEA 2012. At this time, AuRico proposed an approach for seeking HRFN input in the EA and asked for feedback from HRFN. In April 2015, AuRico provided the Halfway River First Nation Summary Report to HRFN. This report was based on publicly available information regarding HRFN use of lands and resources; non-public information (such as that could potentially be provided by HRFN) was not available to AuRico and therefore could not be included at this time. The report was used to inform the assessment of potential effects of the Project on HRFN. Feedback on the report, including any additional information for consideration in the assessment, was requested from HRFN. In August 2015, AuRico received comments from HRFN requesting a robust approach to tailings safety, in consideration of potential impacts to the Peace River Watershed in the case of a tailings storage facility breach. The HRFN also requested further contact regarding potential procurement and employment opportunities. In September 2015, AuRico provided the Halfway River First Nations Summary Report: Assessment of Potential Effects related to 5(1)(c) to HRFN. The report was used to inform the assessment of potential effects of the Project on HRFN (specifically health and socio-economic conditions, current use of lands and resources for traditional purposes, physical and cultural heritage, and any structure, site or thing of historical, archaeological, paleontological, or architectural significance). At this time (September 2015), AuRico also responded to the questions raised in HRFN's August 2015 letter. In November 2015, in response to an additional letter from HRFN (dated May 2015 and forwarded to AuRico by the EAO on October 30, 2015), AuRico provided additional background information regarding the approach to consultation with Aboriginal groups listed on Schedule C of the section 11 Order, as well as providing information on the guidance received by the BC EAO and CEA Agency to prepare an assessment of potential effect of the Project in accordance with Section 5(1)(c) of CEEA 2012. AuRico supported renewed efforts for consultation with HRFN to address comments and questions related to the Project and environmental assessment process. A summary of consultation with HRFN is described in Section 21.4.5 of the Application.	5-Aug-16	With EAO	
HRFN-009	24-Jun-16	Halfway River First Nation	Social	Chapter 17	EA Information Requirement	We emphasize that there has been a lack of consultation from the Proponent and the Province with our community. Most notably, a summary report on our Nation was prepared by ERM for AuRico with absolutely no consultation, request for information from anyone in our community, or approval to prepare the report. The Province should not consider information in the report to be accurate	AuRico's level of engagement with HRFN has been based on guidance provided by the BC EAO and CEA Agency regarding consultation with Aboriginal groups listed on Schedule C of the Section 11 Order. AuRico initiated consultation with HRFN in March 2015 by providing a letter to HRFN to introduce the Project and describe the process by which AuRico would be collecting information and assessing potential effects in accordance with Section 5(1)(c) of CEEA 2012, and proposing an approach for seeking HRFN input in the EA. As described in the letter, AuRico proposed to provide a preliminary baseline to HRFN for review and comment so comments provided by HRFN, and any additional information regarding HRFN use and potential impacts, could be incorporated into the EA Application. The letter also asked that if HRFN has relevant information relating to any of the factors identified in the letter, AuRico would appreciate receiving this information so that it can be considered as the report is being drafted. In April 2015, AuRico provided the Halfway River First Nation Summary Report to HRFN. This baseline summary report was based on publicly available information regarding HRFN use of lands and resources, and would be used to inform the assessment of potential effects of the Project on HRFN. At this time, AuRico requested that HRFN provide feedback on the report, including any additional information for consideration in the assessment. In August 2015, AuRico received comments from HRFN requesting a robust approach to tailings safety, in consideration of potential impacts to the Peace River Watershed in the case of a tailings storage facility breach. The HRFN also requested further contact regarding potential procurement and employment opportunities. In September 2015, AuRico provided the Halfway River First Nations Summary Report: Assessment of Potential Effects related to 5(1)(c) to HRFN. The report was used to inform the assessment of potential effects of the Project on HRFN (specifically health and socio-economic conditions, current use of lands and resources for traditional purposes, physical and cultural heritage, and any structure, site or thing of historical, archaeological, paleontological, or architectural significance). At this time (September 2015), AuRico also responded to the questions raised in HRFN's August 2015 letter. In November 2015, in response to an additional letter from HRFN (dated May 2015 and forwarded to AuRico by the EAO on October 30, 2015), AuRico provided additional background information regarding the approach to consultation with Aboriginal groups listed on Schedule C of the section 11 Order, as well as providing information on the guidance received by the BC EAO and CEA Agency to prepare an assessment of potential effect of the Project in accordance with Section 5(1)(c) of CEEA 2012. AuRico supported renewed efforts for consultation with HRFN to address comments and questions related to the Project and environmental assessment process. A summary of consultation with HRFN is described in Section 21.4.5 of the Application.	12-Aug-16	With EAO	
HRFN-010	24-Jun-16	Halfway River First Nation	Economics	Chapter 16	EA Information Requirement	The chapter lists communities considered to be Potentially Affected Communities (PAC). First Nation communities listed include Kwadacha, Tsay Keh Dene and Takla Lake First Nation, and other communities listed include Prince George, Mackenzie, Smithers, and Terrace. HRFN was not listed as a PAC, yet the community is closer to the proposed Project than Prince George, HRFN and Prince George being 300 km and 424 km away, respectively. The rationale for not including HRFN as a PAC should be included in the Application. HRFN should be added to the PAC list and provided with economic opportunities if requested. Furthermore, a request for interest from the HRFN community for discussions surrounding Impact Benefit Agreements should be made	As described in Section 16.3.2.1 of the Application, the PACs are the communities most likely to be affected by the Project due to proximity, labour, supplies/services, land use or other factors. The Aboriginal PACs are closest to the community and the Project is located within or adjacent to the traditional territories of these First Nations. Prince George, Smithers, and Terrace are regional service centres in terms of business, transportation, and mining supplies and services, and thus may be affected in these ways. There are a number of communities in the RSA that are not identified as PACs. The rationale for determining the PACs is described in Chapters 16 and 17 of the Application. As described for comments HRFN-008 and HRFN-009, AuRico has attempted to engage HRFN regarding the Project, and is available to discuss the Project and its potential impacts with the First Nation and community.	12-Aug-16	With EAO	
HRFN-011	24-Jun-16	Halfway River First Nation	Economics	Chapter 16	EA Information Requirement	Information used to define the characteristic of the provincial economy are from 2013 Canadian statistics. This information is outdated and should be updated to include current statistics.	As described in Section 16.4.2.1 of the Application, information used to define characteristics of the provincial economy were drawn from a variety of sources, including the 2011 Census of Canada and the 2011 National Household Survey (released in 2013). Many other data sources and government reports are based on the 2011 census data. The Census of Canada (and related National Household Survey in 2011), is administered every 5 years. The 2011 data is the most recent information available.	12-Aug-16	With EAO	

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HRFN-012	24-Jun-16	Halfway River First Nation	Social	Chapter 17	EA Information Requirement	HRFN strongly requests that meaningful consultation be carried out for the following reasons: Commercial Land Use: There is one unconfirmed trapline (TR739T006), the user being unknown at this time. If the user is confirmed to be a member of the HRFN community, he or she must be consulted with. Traditional Land Use: The traditional land use (TUS) information presented in the Application is based on three First Nations only, not including HRFN, who was not consulted. There may be additional TUS data from various First Nations unknown to the Proponent due to a lack of consultation to date. HRFN is aware of TUS sites as close as 60 km from the mine and is concerned with potential impacts to these sites. Consultation and accommodation must be a priority with specific emphasis on TUS sites, to help guide development decisions. Education, Skills and Training: Although the Project will require skilled labour, there has been no consultation with HRFN to discuss Interim Measures Agreements or an Interim Benefit Agreement. This must be completed to allow for equal opportunities within the traditional territory of all First Nations involved. Recreational Land Use: Although the assessment states that there will be no expected effects on public recreation, given that two parks fall within the RSA, increased traffic from the mine may potentially affect park users.	AuRico has engaged (or attempted to contact) affected tenure holders including trapline licence holders. The ownership of trapline TR739T006 is not unconfirmed; as described in Section 4.4.3 of the Non-Traditional Land Use Baseline Report, this trapline is registered to 13 members of the Takla Lake First Nation. These trapline owners have been interviewed and have signed an agreement with AuRico regarding the Project. As described in the preliminary report <i>Kemess Underground Project: Halfway River First Nation Summary Report</i> provided to HRFN for review and comment in April 2015, review of available information did not identify current HRFN hunting, trapping, fishing, plant gathering, spiritual or ceremonial sites, or habitations and trails within the Land Use and Heritage Local Study Area or Regional Study Area. AuRico will consider additional traditional land use information if/when provided by HRFN, and is available to discuss the Project and its potential impacts with the First Nation and community. As described in Section 17.3.1.2, baseline studies did not identify recreational land users or activities in the vicinity of the Project. Effects on recreation are not expected. Baseline information is documented in Appendix 17-A (Non-traditional Land Use Baseline Report). The two provincial parks in the RSA are not accessed via the Omineca Resource Access Road, and are not accessible from the mine site. Tatlatui Provincial Park does not have road access. Finlay-Russel Provincial Park and Protected area has limited road access from Ft. Ware. AuRico's engagement with HRFN, and related information regarding traditional land use, is further described for comments HRFN-008 and HRFN-009.	12-Aug-16	With EAO	
HRFN-013	24-Jun-16	Halfway River First Nation	Heritage Resources	Chapter 19	EA Information Requirement	This assessment was conducted using both a desktop review of materials and field visits with First Nations that AuRico designated as "local First Nations". HRFN was not part of this process. The only reference to HRFN is one reference made with regards to the Treaty 8 disputed area.	AuRico's engagement with HRFN, and related attempts to gather information regarding HRFN traditional land use, is described for comments HRFN-008 and HRFN-009. Further information about potential effects on HRFN is provided in Chapters 20 and 21 of the Application.	12-Aug-16	With EAO	
HRFN-014	24-Jun-16	Halfway River First Nation	Heritage Resources	Chapter 19	EA Information Requirement	Current digital TUS information that we have suggests that HRFN members traditionally occupied the area surrounding the proposed Project. More consultation needs to be undertaken to identify culturally or spiritually significant sites within the RSA or the LSA of the proposed Project.	AuRico's engagement with HRFN, and related attempts to gather information regarding HRFN traditional land use, is described for comments HRFN-008 and HRFN-009. AuRico will consider information regarding culturally or spiritually significant sites within the RSA or the LSA if/when provided by HRFN, and is available to discuss the Project and its potential impacts with the First Nation and community.	12-Aug-16	With EAO	
HRFN-015	24-Jun-16	Halfway River First Nation	Heritage Resources	Appendix 19B	EA Information Requirement	Appendix 19B - Heritage Inspection Permit Final Report 2014-0275 We have no specific comments on the methodology for the report but it should be documented that HRFN was not included in the review or present for any of the field work or desktop review.	Comment acknowledged.	12-Aug-16	With EAO	
HRFN-016	24-Jun-16	Halfway River First Nation	General		Comment	The Project's operational phase will release contaminants (increased levels of selenium, copper and nitrogen) to surrounding surface waters and groundwater aquifers, resulting in adverse impacts to fish and wildlife and potentially contributing to increased contamination of the Williston Reservoir and Peace River.	Potential water quality effects related to the Project has been a key consideration in Project planning and effects assessment. AuRico has looked closely at potential impacts and has proposed project design features (including water treatment facilities) and management plans (including Fish and Aquatic Effects Monitoring Plan; Mine Waste, Tailings, and ML/ARD Management Plan; and Water Treatment Plan among others) to mitigate the potential effects to water quality. Potential residual effects on water quality in the receiving environment were identified through the screening of predicted concentrations of modelled water quality parameters (total and dissolved metals, anions, and nutrients) against existing concentrations and applicable BC MOE water quality guidelines (working and approved). No Contaminants of Potential Concern (COPCs; parameters that are predicted to increase by more than 10% above background and exceed receiving environment guidelines) are predicted using base case water quality model scenario to occur within Kemess Creek, Attichika Creek, Amazy Lake, Attycelley Creek, Finlay River, and Thutade Lake. As water quality guidelines are determined by the BC MOE to be protective of freshwater biological receptors, no residual effects due to changes in water quality are expected in these waterbodies. COPCs were identified in East Cirque Creek and Central Cirque creeks during post-closure when the underground mine is allowed to flood and water from the subsidence zone begins to interact with surface waters. However, the creeks are naturally highly mineralized and barren of fish. Effects are predicted to remain within the range of natural variation, and no residual effects are predicted at outflows into Attycelley Creek or Amazy Lake. COPCs are also predicted in Waste Rock Creek during closure and post-closure phases and within upper case model results during construction in Attichika Creek. The predicted changes in water quality are expected to have a residual effect on fish and fish habitat within Attichika Creek and Waste Rock Creek, but these are expected to be local in geographic extent and thus are considered to be not-significant. As described in Section 15.6.2.4 of the Application, wildlife effects related to project-effects on water quality are considered to be negligible based on the limited predicted impacts to surface water bodies (limited to East Cirque Creek and Waste Rock Creek) and limited interaction of wildlife species with those waterbodies. The Project is not anticipated to interact with the Williston Reservoir or the Peace River due to the distance between the project area and these waterbodies. Any water quality effects are expected to be limited to tributaries of Attichika Creek (480 km2) and Attycelley Creek (133 km2), both tributaries of the Finlay River. The combined drainage area of Attichika and Attycelley Creeks form 1.4% of the drainage area of the Finlay River (43,000 km2) at its point of discharge to the Williston Reservoir and less than 1% of the drainage area of the Williston Reservoir (70,000 km2).	5-Aug-16	With EAO	
HRFN-017	24-Jun-16	Halfway River First Nation	Surface Water Quality	Chapter 11	EA Information Requirement	The conclusions of predictive studies and associated appendices are unclear. Do the predicted increased levels of aquatic contaminants result solely from the proposed Project, or are predicted constituent levels based on a combination of increased levels from the proposed Project and existing levels, which are already higher than acceptable limits for some parameters?	The water quality predictions used to inform the environmental assessment for the proposed project consider (i) effects specific to the proposed project, (ii) current background water quality in the receiving environment, and (iii) the influence from the existing Kemess South facilities.	12-Aug-16	With EAO	
HRFN-018	24-Jun-16	Halfway River First Nation	Surface Water Quality	Chapter 11	EA Information Requirement	HRFN is concerned about water quality impacts to the Peace River. The community is concerned with increased contamination resulting from mining operations into local surface and groundwater systems flowing into Williston Lake and eventually into the Peace River. What commitments will AuRico make to reduce adverse impacts to water quality?	Potential water quality effects related to the project has been a key consideration in project planning and effects assessment. AuRico has looked closely at potential impacts and has proposed project design features (including water treatment facilities) and management plans (including Fish and Aquatic Effects Monitoring Plan; Mine Waste, Tailings, and ML/ARD Management Plan; and Water Treatment Plan among others) to mitigate the potential effects to water quality. The project will need to remain in compliance with stringent federal and provincial water quality limits throughout the mine life; these limits will be set during the permitting phase of the project and will be established to be protective of aquatic life within the near-field receiving environment. The project is not anticipated to interact with the Williston Reservoir or the Peace River due to the distance between the project area and these waterbodies. Any water quality effects are expected to be limited to tributaries of Attichika Creek (480 km2) and Attycelley Creek (133 km2), both tributaries of the Finlay River. The combined drainage area of Attichika and Attycelley Creeks form 1.4% of the drainage area of the Finlay River (43,000 km2) at its point of discharge to the Williston Reservoir and less than 1% of the drainage area of the Williston Reservoir (70,000 km2).	12-Aug-16	With EAO	

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HRFN-019	24-Jun-16	Halfway River First Nation	Fish and Aquatic Habitat	Chapter 14 and Appendix 14A	EA Information Requirement	The baseline report (Appendix 14A) discusses fish densities and indicates that 20 years of data exists for several watercourses/lakes. No discussion of population trends is offered, nor is it stated that the available data do not allow for analyses of population trends. We request that an explanation of why population trend information has not been presented.	Detailed information outlining the abundance of adult bull trout using redd counts and juvenile bull trout (using fish densities) have been conducted in the Kemess Watershed since 1994. Similar surveys have been conducted in some other bull trout tributaries of the Thutade Watershed. Annual adult bull trout redd counts conducted in the watershed are subject to trend analyses. Juvenile bull trout densities have been assessed using a linear mixed effect model to examine change over time since the TSF development. The results of the assessments are reported annually by Aurico Metals with copies of the monitoring report submitted to MOE, FLNRO, DFO, MEM and First Nations. As well the results are submitted to Ecocat (BC Government Ecological Reports Catalogue) making them available to any member of the public. The adult bull trout trend analyses indicate an increasing trend of bull trout redds in the Kemess Watershed (p<0.01) while the juvenile modelling results indicate there is high variability amongst sites and over time with no significant trend over time for fry and juvenile densities to this point (Bustard D. 2015 Kemess South Project Fish Monitoring Studies 2015. Prepared for Aurico Metals Inc.). There is so much fish information available for Kemess South, that decisions as to what is included in the EA Appendices and Chapters were made and more detailed information that is available was referenced.	5-Aug-16	With EAO	
HRFN-020	24-Jun-16	Halfway River First Nation	Fish and Aquatic Habitat	Chapter 14 and Appendix 14A	EA Information Requirement	Section 14.5.2.2 – "Sedimentation and Erosion Potential Effects" - contains the statement, "Due to the very limited additional surface disturbance expected from development of the Project, most changes to sediment and erosion will be of limited extent..." However, Table 14.5-1 ("Screening of Project Effects on Fish and Aquatic Habitat Valued Components") outlines numerous activities that may increase levels of erosion and sedimentation. HRFN requests that this statement be revised to state that there are numerous Project-related activities that may increase rates of erosion and sedimentation and that adequate mitigation measures will be implemented to reduce or eliminate these impacts.	Project-related activities may increase rates of erosion and sedimentation; however, these changes will be of limited extent, and confined mainly to the construction and operation of water management infrastructure around the new access roads, borrow pits and tunnel portals. Adequate mitigation measures will be implemented to reduce or eliminate these impacts.	5-Aug-16	With EAO	
HRFN-021	24-Jun-16	Halfway River First Nation	Fish and Aquatic Habitat	Chapter 14 and Appendix 14A	EA Information Requirement	Table 14.5-2 – "Proposed Mitigation Measures and their Effectiveness" – includes a determination of the effectiveness of various mitigation measures. However, no explanation is provided as to how these determinations were made. An accurate determination of residual effects depends on an accurate assessment of the efficacy of mitigation measures to be implemented. We request that detailed documentation be provided to justify determinations of effectiveness	Construction of the KUG TSF discharge pipe will follow all applicable permit requirements and provincial technical guidance for conducting works within a stream. Any riparian clearing and aquatic habitat disturbance associated with instream works will be minimal and of short duration (i.e., once works are complete, restoration/replanting of the disturbed areas will be conducted). With respect to the possible use of "larger rock material to protect the integrity of the pipe", this will be designed in a way that provides additional cover habitat and habitat heterogeneity to the crossing area, while maintaining adequate water passage during peak flows. The effect resulting from clearing the riparian section at the entrance of the pipeline to Attichika Creek and the road structure across the floodplain is minor and we suggest is dealt with through mitigation measures. At the design stage, all efforts will be made to keep the pipeline access corridor at least 30 m back from the active streambanks of the Attichika Creek, except at the point of entry to the creek where disturbance would be kept to a minimum needed to do the project.	5-Aug-16	With EAO	
HRFN-022	24-Jun-16	Halfway River First Nation	Fish and Aquatic Habitat	Chapter 14 and Appendix 14A	EA Information Requirement	Section 14.5.3.4 – "Mitigation and Management Measures for Changes in Water Quality - Nutrient Loading and Atmospheric Deposition" - makes no mention of nitrogen deposition, which is noted as a potential effect in Chapter 13 and 15 under potential project effects. We request that the potential effects of nitrogen deposition on water quality, fish, and aquatic life be provided.	The Terrestrial Ecology assessment (Chapter 13) examines nitrogen deposition (originating from engine exhaust) in quantitative detail, and predicts no significant residual effects. Effects of nitrogen deposition on fish and aquatic habitats is considered to be negligible, given the very small area (near the conveyor portals and mine camp, see Table 13.5-4 of the Application) where increased nitrogen deposition is predicted relative to the size of downstream watersheds occupied by fish, and the lack of fish presence in the vicinity of the portal area.	5-Aug-16	With EAO	
HRFN-023	24-Jun-16	Halfway River First Nation	Fish and Aquatic Habitat	Chapter 14 and Appendix 14A	EA Information Requirement	Table 14.6-6 - "Characterization of Changes in Water Quantity on Fish and Aquatic Habitat" – indicates that increased flows within Waste Rock Creek during mine closure and post-closure phases will have a low effect on local fish populations. However, as Waste Rock Creek was in part designed as compensation for impacts to fisheries, the failure to establish a healthy fish population within the creek requires that additional compensation measures to improve fish habitat and local fisheries are required. We request that potential compensation efforts be detailed in light of the failure of Waste Rock Creek to support healthy fish populations.	As outlined in Chapter 14 Section 14.4.3.3 (Pages 14-57 and 14-58) upper WRC was impacted by the establishment of the Waste Rock Dump. Fish habitat was compensated for with a salvage and transplant of the upper Waste Rock Creek fish population to a previously barren inlet stream to Thutade Lake called Diagonal Mountain Creek. Habitat compensation did not rely on habitat measures undertaken in Waste Rock Creek itself. The transplant was successful and all of WRC upstream from the ORAR was considered compensated for by the Kemess South Mine as of a final regulatory agency assessment in 2010. The remaining 250 m of WRC is still considered potential fish habitat and has a small and declining population of Dolly Varden affected by past mine operations and other factors including impassable beaver dams. Kemess Mine conducts extensive monitoring of lower WRC, and is attempting to remedy issues associated with water quality and quantity in the lowermost section of this creek. However, it is not clear that this lower section of creek has all of the habitat components necessary to support a self-sustaining population of Dolly Varden. Even though small numbers of Dolly Varden spawners may be present in lower WRC, and some sections appear suitable for spawning based on water velocity, depth and bed material characteristics, Dolly Varden spawners may not successfully spawn in this section. The lack of fry and juvenile Dolly Varden recruitment into lower WRC could reflect unsuitable spawning conditions (i.e., lack of groundwater seepages) needed for Dolly Varden to successfully spawn. Studies throughout the Attichika and Attycelley watersheds indicate that groundwater seepage habitats are core to successful Dolly Varden spawning. Nearly all of the groundwater seepage habitats in WRC considered the core spawning habitats were located upstream from the ORAR and were impacted with the establishment of the Waste Rock Dump. Dolly Varden fry derived from spawning in the headwater seepages of WRC may have been a source of recruitment into the lowermost reach of WRC prior to South Kemess Mine.	5-Aug-16	With EAO	
HRFN-024	24-Jun-16	Halfway River First Nation	Wildlife	Chapter 15 and Appendix 15A	EA Information Requirement	Section 15.5.2 indicates that exceedances of water quality guidelines for western toads are predicted to occur for several chemicals of potential concern (COPCs) in Waste Rock Creek. Exceedances of guidelines for nitrate are predicted to occur in May during the closure phase, and for copper in May during the post-closure phase. The elevated copper concentrations are attributed to the first flush of pit overflow post-winter in post-closure, and this could affect western toads during the month of May. In addition, exceedance of water quality guidelines for selenium will occur for several months during the closure and post-closure phases. All of these COPCs were above median background concentrations plus 10% in Waste Rock Creek. Thus, these COPCs were considered as potential residual effects for western toads. The Application states that residual effects on western toads are not expected. We disagree with this statement and requests that Aurico reconsider the timing of activities that will result in reduced water quality. May overlaps the breeding period for western toad, a period where toads spend more time in aquatic environments than terrestrial environments.	The seasonal timing of the predicted exceedances were specifically considered in Section 15.6.12.5 of the Application. The concentrations of nitrate in May of Closure in Waste Rock Creek were predicted to be slightly above the aquatic life guideline of 3.00 mg/L. The freshwater guideline for the protection of aquatic life for nitrate was based on the Pacific treefrog (Pseudacris regilla) as this species was one of the most sensitive species to the chronic effects of nitrate in freshwater systems. The tadpole stage is the most sensitive life stage of the Pacific treefrog to nitrate (30.1 mg/L nitrate (as N) resulted in a 15% reduction in body weight). As nitrate is only anticipated to exceed water quality guidelines during the month of May only in Closure and is within the existing variability of water quality measured in Waste Rock Creek, this COPC is not anticipated to result in a residual effect on western toad. Copper concentrations in May of Post-closure in Waste Rock Creek were predicted to be slightly above the aquatic life guideline of 0.00464 mg/L. Based on toxicity of copper to developmental stages of fish and amphibians, the recommended limits for copper should be established within ranges of 0.002 to 0.005 mg/L in soft or medium hard water, and 0.005 to 0.008 mg/L in hard water (BC MOE 1987). Exposure of embryo-larval stage of some amphibians to copper levels of 0.005 to 0.010 mg/L in water with a hardness of 100 mg/L (CaCO3) exhibited an appreciable increased frequency of mortality (BC MOE 1987). Predicted concentrations of copper in Waste Rock Creek are only anticipated to exceed aquatic life guidelines in May of Post-Closure and concentrations are predicted to be slightly below 0.005 mg/L. The hardness of water in Waste Rock Creek in May is anticipated to be >100 mg/L (CaCO3) and is considered hard water. Thus, this COPC is not anticipated to result in a residual effect on western toad. While there are exceedances of water quality guidelines for selenium during Post-closure, exceedances during this phase of the Project occurred outside of the time period when western toad are anticipated to have an aquatic life stage. Selenium was within the range of concentrations measured in Waste Rock Creek; thus residual Project effects from selenium on western toad are not expected. The current existing variation of selenium concentrations in Waste Rock Creek was determined from summary statistics of existing baseline data and provided in Chapter 15, Table 15.5-6 and Chapter 11, Table 11.6-5. In addition to the above statements, the habitat suitability of Waste Rock Creek for toads is very low and it is unlikely that toads would choose the creek as a breeding site and thereby be exposed to any COPC further supporting the conclusion of no residual effects due to COPCs on this species. Toads prefer waterbodies with shallow open water, open canopy, and emergent vegetation (Wind and Dupuis 2002). Ponds can be rainwater or groundwater fed (no flow) or have low flow. Toads typically do not choose channelized rivers or creeks with running water. References BC MOE. 1987. Water Quality Criteria for Copper Technical Appendix. British Columbia Ministry of the Environment: Victoria, BC. Wind, E. I. and L. A. Dupuis. 2002. COSEWIC status report on the western toad Bufo boreas in Canada. Committee on the Status of Endangered Wildlife in Canada. Committee on the Status of Endangered Wildlife in Canada: 31.	12-Aug-16	With EAO	
HRFN-025	24-Jun-16	Halfway River First Nation	Wildlife	Chapter 15 and Appendix 15A	EA Information Requirement	Exceedances of water quality guidelines for terrestrial wildlife (other than western toad) will occur for molybdenum during May of post-closure and for selenium during the closure and post-closure phases. Predicted concentrations of both molybdenum and selenium are more than 10% higher than median background levels. Therefore, these two COPCs were considered for potential residual effects for terrestrial wildlife.	That is correct. Potential residual effects related to these COPCs were considered in relation to woodland caribou and mosse specific to molybdenum (sections 15.6.2.4 and 15.6.3.6), raptors specific to selenium (15.6.9.5) and migratory waterbirds specific to molybdenum and selenium (15.6.10.4).	12-Aug-16	With EAO	

Kemess Underground Application Review - Issues Tracking Table (ITT) - August 12, 2016

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HRFN-026	24-Jun-16	Halfway River First Nation	Wildlife	Chapter 15 and Appendix 15A	EA Information Requirement	Section 15.6.12.5 states, "Increases in accumulation of selenium into the lower levels of the food web and biotransformation to organic forms which are more toxic to egg-laying vertebrates is not anticipated to increase relative to current conditions, and thus, bioaccumulation of selenium in amphibians is not anticipated to result from Project-related activities." We disagree with this statement, given that baseline levels already exceed the guidelines for aquatic life by up to 40 times.	<p>Predicted selenium concentrations are within the range of existing variation in Waste Rock Creek, thus residual Project effects on egg-laying vertebrates are not expected. The current existing variation of selenium concentrations in Waste Rock Creek is determined from summary statistics of existing baseline data and provided in Chapter 15, Table 15.5-6 and Chapter 11, Table 11.6-5.</p> <p>Section 15.6.10.4 identifies that water quality in the TSF and collection ponds will be monitored as part of the Surface Water Management Plan and compared to wildlife guidelines, if water quality exceeds guidelines mitigation measures will be applied to the areas to deter wildlife from the ponds, as detailed in the Wildlife Management and Monitoring Plan. Under these monitoring and mitigation conditions, no residual effects due to chemical hazards (such as selenium) in water storage ponds are predicted for the Project.</p> <p>Environmental media concentrations related to existing disturbances (i.e., baseline levels of selenium already exceed the guidelines for aquatic life by up to 40 times) is not a Project-related effect and out of scope with the assessment of effects from the proposed Project. The AIR identifies that changes in chemical hazards from current conditions will be assessed in the wildlife effects assessment chapter (Chapter 15 of the Application). Current conditions will form the basis of the effects assessment, and incremental change from the current conditions will be assessed as part of the residual effects assessment (AIR, Sections 5.4.2 and 5.5.5). The incremental change between existing and proposed Project conditions is what is focused on in the wildlife effects assessment.</p>	12-Aug-16	With EAO	
HRFN-027	24-Jun-16	Halfway River First Nation	Environmental Management Plan	Chapter 24	EA Information Requirement	The list of environmental management plans (EMPs) included in the Application (Table 24-1) includes a Wetland Monitoring Plan, but this plan was not included in the Application. We request this plan be made available for review and comment.	There is no Wetland Monitoring Plan as there were no residual effects to wetlands (Section 13.6). Residual effects to wetland were considered negligible because of limited area expected to be either lost or altered and application mitigation measures. In addition to mitigation measures, Project design considered the location of wetlands and used avoidance to minimize Project effects to wetlands (the route for the Discharge Line for example was re-designed to avoid most wetlands). The loss of wetlands and affects to wetland function due to the Project were considered not residual because of the very small area of loss (0.2 ha) and limited alteration of wetland functions.	5-Aug-16	With EAO	
HRFN-028	24-Jun-16	Halfway River First Nation	Environmental Management Plan	Chapter 24	EA Information Requirement	We are concerned about the potential for an abrupt closure due to bankruptcy or other reason prior to adequately decommissioning the site. For example, Walter Energy recently abandoned a mine site without reclaiming it to acceptable environmental standards. We strongly encourage the province to require a commitment from the Proponent that reclamation of the site to today's standards, even due to a potential unexpected closure, will be guaranteed.	AuRico acknowledges the request made by HRFN of the Provincial Government. However, we expect our Reclamation and Liability Security Bond will be of a sufficient amount to reclaim the site at any given time during its operation.	5-Aug-16	With EAO	
HRFN-029	24-Jun-16	Halfway River First Nation	Cumulative Effects Assessment		EA Information Requirement	The project, together with existing and proposed developments will likely result in cumulative adverse residual impacts to a wide range of values of concern to us, - most notably fish, moose, caribou, and water quality. We disagree with the Proponent's conclusion of no residual impacts to wildlife.	<p>The Kemess Underground Project will contribute to cumulative effects associated with the past-producing Kemess South mine. The Kemess South facilities were incorporated in the water balance and water quality models used to inform the effects assessment of hydrology, water quality. Thus all residual effects associated with this Valued Components and other Valued Components that interact with hydrology and water quality are cumulative in nature with respect to Kemess South. The Project is otherwise distant from other projects and activities in the region. Table 8.7-1 identifies two additional past projects (Lawyers Mine, Baker and Shasta Mine) and two reasonably foreseeable projects (Sustut Copper Project and Aley Niobium Project) that may interact with the Project. Table 8.7-2 identifies past, present, and reasonably foreseeable future activities that have the potential to cumulatively interact with the project (including mineral exploration, forestry, guide outfitting, trapping, public recreation, water use, and grazing). No potential interactions leading to cumulative effects are anticipated to surface water quantity, surface water quantity, or fish and fish habitat. As described in Section 17.4.2, no cumulative effects are predicted for Project-related changes in streamflow and any possible changes related to forestry and mineral exploration are expected to be mitigated.</p> <p>As described in Section 15.7, Project-related disruption of wildlife movement was considered to have a potential cumulative effect on woodland caribou and moose. This residual effect could interact with disruption of movement caused by habitat loss and alteration from past projects and activities (e.g. forestry), as well as due to habitat loss and alteration and sensory disturbance from current activities (e.g. mineral exploration) to result in an additive cumulative effect. As described in Section 15.8.1, there is a low density of linear features at a regional scale and therefore disruption to movement is not predicted to result in a residual cumulative effect on woodland caribou. As described in Section 15.8.2, disruption of movement due to habitat loss and alteration from other projects and activities in the region would be minimal as habitat loss of 3,943 ha represents 0.27% of the RSA and habitat alteration of 59,158 ha represents 4% of the RSA. As such disruption of movement is not considered a cumulative effect.</p>	5-Aug-16	With EAO	
HRFN-030	24-Jun-16	Halfway River First Nation	Aboriginal Groups Rights & Interests		EA Information Requirement	Our traditional territory has been subject to an extensive level of industrial development over the past 50 years, with rapidly escalating changes in the environment and decreases in the abundance of wildlife and other resources resulting from the convergence of multiple industrial interests. By the late 1970s, the cumulative impact of industrial development had negatively impacted our Nation to the extent that our ability to carry on our traditional mode of life and harvesting practices became a matter of major concern to our people. A spatial analysis of cumulative impacts, conducted in September 2013 within our traditional territory, assessed the extent of oil and gas development, coal and mineral development, forestry development and Crown land tenures and applications, including those associated with agriculture, grazing and utilities (including wind power). As of the analysis date, there are thousands of active well sites, coal and mineral tenures, and forestry cutblocks. There are thousands of kilometres of seismic lines and tens of thousands of kilometres of forest access roads. In addition to seven major proposed oil and gas pipeline projects, there are hundreds of wind power tenures or tenure applications, large scale mining operations, and two existing large hydroelectric projects (W.A.C. Bennett and Peace Canyon dams). A third major hydroelectric development on the Peace River, the Site C Clean Energy Project, is now under construction. We are also suffering from the incidental impacts of development, such as the creation of access roads and the corresponding use of these road and trail networks by non-native hunters and recreational land users. This has resulted in increased competition for resources, in addition the ability to engage in our cultural practices when harvesting resources in our territory. It is therefore imperative that a thorough cumulative effects assessment be conducted to effectively address and manage for impacts to the ecosystem as a whole.	As described in Section 21.8.7, HRFN's Treaty 8 rights pertain to the Treaty 8 area that overlaps with the Project and its potential areas of influence (e.g. LSA and RSA). The cumulative effects assessment is likewise limited to the area that could be affected by the Project. The present-day HRFN settlement is located approximately 830 km by road east of the Project on the other side of the Rocky Mountains. A review of available materials and consultation efforts to date has not identified historic or current HRFN use of the LSA or RSA. As described in Chapter 21 of the Application, the Project is anticipated to result in negligible effects on HRFN's Treaty 8 rights. Consequently, although other developments may affect HRFN rights, the effects of the Kemess Underground Project are not anticipated to contribute to cumulative effects on HRFN's Treaty 8 rights.	12-Aug-16	With EAO	
HRFN-031	24-Jun-16	Halfway River First Nation	Wildlife	Chapter 15	EA Information Requirement	Section 15.6.13 Summary of the Assessment of Residual Effects for Wildlife: Five effects - habitat loss and alteration, sensory disturbance, disruption of movement, mortality, and attractants - were identified as residual effects (Table 15.6-22). All residual effects were characterized as Not Significant. Habitat loss and alteration was identified as a residual effect for hoary marmot and the migratory landbird species, olive-sided flycatcher. Sensory disturbance was also identified as a residual effect for olive-sided flycatcher. Disruption of movement was identified as a residual effect for woodland caribou, moose, grizzly bear, furbearers (American marten and wolverine), and western toad. Mortality was identified as a residual effect for hoary marmot. Attractants were identified as a residual effect for grizzly bears and wolverine. Mitigation actions to minimize the effects of the Project are summarized in Table 15.6-23.	It is unclear what the comment or question is related to this text.	5-Aug-16	With EAO	

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HRFN-032	24-Jun-16	Halfway River First Nation	Wildlife	Chapter 15	EA Information Requirement	Table 15.9-1 – "Summary of Mitigation Measures, Residual and Cumulative Effects for Wildlife and Wildlife Habitat" - states that all effects are not significant. HRFN disagrees with this conclusion. We feel the baseline information was lacking and assessments were incomplete. In particular, the cumulative effects assessment was not thorough enough to confidently conclude that all effects will not be significant.	The Project footprint area includes 487 ha, where < 100 ha is due to the infrastructure itself and the remaining area is due to buffers around infrastructure. The additional area was included in order to account for final siting changes as well as habitat alteration due to construction activities around the infrastructure. Therefore, all habitat loss and alteration estimates presented are highly conservative as it is anticipated that as little as 15% of the total Project footprint area will actually be affected. The percentage of seasonal high quality habitat lost and altered relative to the habitats available within the LSA was generally less than 10% for animals with large home ranges e.g., caribou, moose, and grizzly bear (except for caribou early winter habitat where up to 18% may be lost or altered), while habitat loss and alteration was generally 5% or less for species with smaller home ranges such as migratory birds (except for olive-sided flycatcher for which habitat loss and alteration was predicted to occur over 7% of the available habitat of the LSA). Since only 15% of the total Project footprint area will actually be affected, these habitat losses equal 1.5-2.8% within the LSA. This degree of habitat loss was considered negligible for all wildlife VECs that were assessed, and were not carried forward as residual cumulative effects. For species and/or wildlife group e.g. migratory waterbirds that may not have had exhaustive field surveys conducted throughout the LSA, habitat mapping exercises were undertaken to identify areas where species were presumed to be present i.e. habitat suitability modelling for woodland caribou, moose, mountain goat, grizzly bear, American marten, hoary marmot as well as identification of highly suitable habitat for bat hibernaculum, northern goshawk, short-eared owl, migratory waterbirds, migratory landbirds, and western toad. This was a conservative approach that considered all suitable habitat areas and not only the ones where species had been observed during baseline studies.	5-Aug-16	With EAO	
HRFN-033	24-Jun-16	Halfway River First Nation	Wildlife	Chapter 15	EA Information Requirement	Section 15.6.11.2 – "Likelihood of Habitat Loss and Alteration on Olive-sided Flycatcher": The effect of habitat loss and alteration on the olive-sided flycatcher is assessed as not significant as only 7.6% of the high quality habitat within the LSA and 0.087% of the RSA will be affected. Given that a high likelihood of habitat loss due to clearing for mining infrastructure was identified, if it had been assessed cumulatively with other project impacts, the significance rating may have been greater.	The Project footprint area includes 487 ha, where < 100 ha is due to the infrastructure itself and the remaining area is due to buffers around infrastructure. The additional area was included in order to account for final siting changes as well as habitat alteration due to construction activities around the infrastructure. Therefore, all habitat loss and alteration estimates presented are highly conservative as it is anticipated that as little as 15% of the total Project footprint area will actually be affected. The percentage of seasonal high quality habitat lost and altered relative to the habitats available within the LSA was generally less than 10% for animals with large home ranges e.g., caribou, moose, and grizzly bear (except for caribou early winter habitat where up to 18% may be lost or altered), while habitat loss and alteration was generally 5% or less for species with smaller home ranges such as migratory birds (except for olive-sided flycatcher for which habitat loss and alteration was predicted to occur over 7% of the available habitat of the LSA). Since only 15% of the total Project footprint area will actually be affected, these habitat losses equal 1.5-2.8% within the LSA. This degree of habitat loss was considered negligible for all wildlife VECs that were assessed and were not carried forward as residual cumulative effects.	5-Aug-16	With EAO	
HRFN-034	24-Jun-16	Halfway River First Nation	General		Comment	The Project will contribute to loss of vegetation and forested communities that support wildlife across a region and within ecosystems that we rely on heavily for hunting and gathering food and medicinal plants.	As described in Chapter 13, the Project is not expected to have a significant effect on terrestrial ecology including vegetation and forested ecosystems. Potential effects on terrestrial ecology are all of low magnitude. Similarly, significant effects on wildlife are not anticipated, as described in Chapter 15. The effects assessed in relation to vegetation and wildlife (as well as fish, water quality, and other topics) are assessed in the context of Aboriginal Groups, including HRFN, in Chapter 20 (Effects of Changes to the Environment on Aboriginal Peoples) and 21 (Assessment of Aboriginal and Treaty Rights). Based on the available information about HRFN traditional and current land use activities, including activities such as hunting and gathering food and medicinal plants, these sections conclude that the Project will not adversely affect the ability of HRFN to pursue these activities.	5-Aug-16	With EAO	
HRFN-035	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	The Valued Components (VCs) selected for the Application do not include old growth forests (Table 13.3-2). Old growth forests are often identified as a separate VC in environmental assessments, due to their special habitat function and rarity. As well, old growth forests are valued by First Nations, as this ecosystem type often supports the growth of medicinal plants, as stated on Page1-6 of Appendix 13-A - Baseline Ecosystems and Vegetation Baseline Report). What specific mitigation measures are in place to protect and reduce impacts to old growth forests in proximity to the mine?	Old growth forests were identified in the TEM produced for the Project; old growth forests are considered to be structural stage 7 forests (i.e., old forests, see Figure 2.4-2 of Appendix 13-A). A total of 72.4 ha of old growth forest was mapped within the LSA (22.5 ha within the BI – Scrub birch – Crowberry (FL) Ecosystem Type and 49.9 ha in the FM BI - Huckleberry - Feathermoss (FM) Ecosystem Type, Table 2.4-4 of Appendix 13-A). None of this old growth forest occurred in areas that will be lost and altered by the Project; only forests of structural stage 6 or less will be lost or altered by the Project (Table 13.5-2). Considering that there will be no interaction between the Project and old growth forests, no additional mitigation measures for this ecosystem are warranted.	5-Aug-16	With EAO	
HRFN-036	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Terrestrial ecosystem mapping (TEM) has been produced as a basis for baseline evaluation of terrestrial ecosystems present in the project area. However, given that there has been no evaluation of the thematic accuracy of this mapping, we have no means to assess the quality of the mapping undertaken. A protocol exists to provide assessment of TEM accuracy (Protocol for accuracy assessment of ecosystem maps. D. Meidinger. 2003. Res. Br., B.C. Min. For., Victoria, B.C. Tech. Rep. http://www.for.gov.bc.ca/hfd/pubs/Docs/Tr/T011.htm) We request that the TEM be subject to quality assessment according to the above-mentioned protocol to assess thematic accuracy of the TEM.	There have been three iterations of the terrestrial ecosystem mapping (2003, 2009 and 2014) and refinement of the mapping has occurred within the polygons as additional ground plots were completed and different areas of development interest were assessed. In 2014, based on the additional SIVI and visual plots completed within the proposed development areas for the KUG project, approximately 10 polygons were updated to reflect the new information obtained. The high number of plots and number of visits to polygons within and near the proposed KUG infrastructure development areas provides a high degree of confidence that the ecosystems have been identified correctly and there is limited potential for errors at the scale used for the Environmental Assessment Application. If the project is approved, more detailed mapping of soils and ecosystems would be required for permitting of development and at that point a QA/QC process could be completed to assess the 1:20K TEM and the more detailed permitting mapping. If required, the information obtained from the QA/QC process could be used to further update the 1:20K TEM and adjust any management requirements.	5-Aug-16	With EAO	
HRFN-037	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 13-13. The methodology for wetland ecosystem surveys undertaken does not specify that wetland condition or function were assessed. Within the VC description, it is stated that function will be assessed where appropriate. The baseline report (Appendix 13-A) states that wetland function will be evaluated after the environmental impact assessment phase is completed. It is unclear how this phase can be properly conducted without an assessment of wetland function. We request that a clear rationale be presented as to why wetland function and condition was not assessed during baseline studies.	Residual effects to wetland were considered negligible because of limited area expected to be either lost or altered and application mitigation measures. In addition to mitigation measures, Project design considered the location of wetlands and used avoidance to minimize Project effects to wetlands (the route for the Discharge Line for example was re-designed to avoid most wetlands). The loss of wetlands and affects to wetland function due to the Project were considered not residual because of the very small area of loss (0.2 ha) and limited alteration of wetland functions. Loss will be of willow-sedge fen which is the most common wetland type in the LSA (Table 13.4-5). A description of the hydrological, biogeochemical, and habitat functions of fens can be found in Appendix 2 of Hanson et al. 2008 available at http://publications.gc.ca/collections/collection_2010/ec/CW69-5-497-eng.pdf .	5-Aug-16	With EAO	
HRFN-038	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Numerous methodologies that were used are not described within the documents provided, but simply referenced in literature that is not readily available to parties evaluating the reports. For example, the baseline report (Page 3-5) states that wetland values were evaluated, but associated methods are not explicitly provided and methods to assess wetland function were only referenced. We request that methods employed be explicitly outlined in project documents and provided as a response to these comments.	The methods used to determine wetland values (Bond et al. 1992) can be found online at http://www.env.gov.bc.ca/wld/documents/WEG_Oct2002_s.pdf and the results of the evaluation are provided in Appendix 2 - Wetland Ecosystems of Appendix 13-A Ecosystems and Vegetation Baseline Report. More recent methods to assess wetland function (Hanson et al. 2008) are available at http://publications.gc.ca/collections/collection_2010/ec/CW69-5-497-eng.pdf .	5-Aug-16	With EAO	
HRFN-039	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 2.2.2.3 of Appendix 13-A – "Completion of Additional TEM for Proposed Discharge Pipeline" - does not provide information as to whether the survey intensity level of this additional area met that of the other TEM project. HRFN requests that the quality of this mapping (survey intensity level) be reported in the baseline document rather than through reference to a document not readily available.	The reference in Section 2.2.2.3 of Appendix 13-A to ERM 2015a should actually have been to Appendix 13-B which was included in the Application. Appendix 13-B gives the results of the field work carried out along the Thutade Lake Discharge Option, however, this was not the final water discharge route that was chosen. Instead, it will be via the Attichika Creek discharge route (Section 5.12.7).	5-Aug-16	With EAO	
HRFN-040	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 3.3 of the baseline report – "Limitations and Assumptions" - outlines potential conditions that may affect map reliability or accuracy. However, factors that may have affected the reliability or accuracy of mapping undertaken for the proposed Project have not been identified, e.g., photo quality and age are cited as potential problems, but whether this was a concern regarding the proposed Project is not stated. Other limitations and assumptions sections of the Application are similarly general in their discussion. We request that specifics of the Kemess TEM, and study limitations, be clearly detailed.	Section 3.3 of the baseline report provides information on the precision of the mapping. Due to the scale of the photography that was used (1:20,000), polygons cannot be created smaller than the resolution of the photos allow. For the Project this resulted in boundaries of the polygons that are +/- 10 to 20 m in accuracy and a minimum size of approximately 1 ha. This is considered to be sufficient accuracy to support the EA. The accuracy of the mapping is dependent on how well actual ecosystem boundaries were identified. AuRico is confident that for the area mapped around the proposed development and where ground-truthing has been completed, the ecosystems are mapped accurately.	12-Aug-16	With EAO	
HRFN-041	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 3.2.2.2 of the baseline report – "Evaluation of RSA Level Mapping" - does not provide a conclusion as to what data source would be used to map wetlands in the Regional Study Area (RSA). We request that a decision and supporting evidence be provided as to what data source would be used to map wetlands in the RSA.	Residual effects to wetland were considered negligible because of limited area expected to be either lost or altered and application mitigation measures. In addition to mitigation measures, Project design considered the location of wetlands and used avoidance to minimize Project effects to wetlands (the route for the Discharge Line for example was re-designed to avoid most wetlands). The loss of wetlands and affects to wetland function due to the Project were considered not residual because of the very small area of loss (0.2 ha) and limited alteration of wetland functions. Loss will be of willow-sedge fen which is the most common wetland type in the LSA (Table 13.4-5). As such, additional mapping of wetlands in the RSA is not proposed.	5-Aug-16	With EAO	

Kemess Underground Application Review - Issues Tracking Table (ITT) - August 12, 2016

Please refer to "Instructions" tab

ID #	Comment Date (i.e. 22-May-16)	Reviewer Name / Agency (i.e. Alex Kwang, MEM)	Subject (See "Instructions" tab)	For Working Group Use		Comment (Include Memo reference as applicable)	For Proponent Use		For EAO & Proponent Use	
				Application Section (i.e. 7.1.2)	Category of Comment (See "Instructions" tab)		Proponent Response (Include Memo reference as applicable)	Response Date	Status	Notes
HRFN-042	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 4.2.4 of Appendix 13-A of the baseline report – "Alpine Assessments and Sampling" – does not indicate the relative importance of various alpine ecosystems in terms of habitat value; therefore, the conclusions of Section 4.5 ("Conclusions") are weak. We request that alpine ecosystem habitat value be identified to allow interpretation of the alpine mapping conducted and an assessment of potential impacts to alpine habitat resulting from the proposed Project.	The value of alpine and parkland ecosystems was identified during the VC selection process (Section 13.3.1). These values were that Alpine and Parkland Ecosystems are sensitive to disturbance, contain habitat for rare plant and lichen species and culturally important harvestable plants, and contain important habitat for highly valued wildlife species including woodland caribou, mountain goat, grizzly bear, and marmot. Additionally, wildlife habitat suitability modelling has been conducted for wildlife indicators and can be found in Appendix 15-B.	5-Aug-16	With EAO	
HRFN-043	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Neither Section 7.4.2 ("Vegetation Trace Metal Results") nor Section 7.5 ("Conclusions") of Appendix 13 provides background information on levels of trace metals that may be considered toxic to wildlife or humans. Therefore, potential impacts to wildlife or humans from trace metal uptake has not been adequately described in the Application.	The Canadian Council of Ministers of the Environment (CCME) does not provide environmental quality guidelines for vegetation (CCME 2015), thus Chapter 13 of the Application (Terrestrial Ecology Effects Assessment) does not compare metal concentrations in vegetation tissues to toxicity guidelines or thresholds. Chapter 13 of the Application does not include an assessment of wildlife or human health. Chapter 18 of the Application contains the human health effects assessment, which includes evaluation of potential impacts of trace metal uptake from all exposure pathways (i.e., inhalation of air, ingestion of soil, dermal contact with soil, ingestion of drinking water, and ingestion of country foods) under baseline conditions and during the Construction and Operations phases of the Project. The human health effects assessment concluded that there were no residual effects to human health from exposure to Project-related emissions (including trace metals). Chapter 15 of the Application contains the wildlife effects assessment. Metal concentrations in wildlife tissue were not quantitatively calculated in Chapter 15. However, as part of the human health country foods assessment in Chapter 18, baseline tissue metal concentrations were measured in berries (crowberry and soapberry) and fish (Bull Trout, Dolly Varden, Mountain Whitefish, and Rainbow Trout), while baseline tissue metal concentrations for moose, snowshoe hare, ruffed grouse were calculated using a food chain model (see Table 5.6-1 in Appendix 18-A of the Application). Tissue metal concentrations in berries, fish, moose, snowshoe hare, and ruffed grouse were modelled for the Project Construction and Operations phases (see Tables 4.6-3 and 4.6-4 in Appendix 18-B of the Application). These calculations support the conclusion that changes in country food tissue metal concentrations are expected to be negligible between existing and proposed Project conditions. The incremental change between existing and proposed Project conditions is considered in the wildlife effects assessment, which concludes that there are no anticipated adverse effects on wildlife health from exposure to Project-related emissions (including trace metals). CCME. 2015. Canadian Environmental Quality Guidelines - Summary Table. Canadian Council of Ministers of the Environment. http://st-ts.ccme.ca/en/index.html (accessed August 2015).	5-Aug-16	With EAO	
HRFN-044	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 13.4.3.6 – "Harvestable Plant Species" – gives a cursory overview of which harvestable plants are found within the LSA. Given the number of ground plots assessed and reference to the biogeoclimatic ecosystem classification (BEC) guides for the subzones in question, it should be possible to give a better accounting of the occurrence and abundance of harvestable plants within the LSA. All species in the aforementioned Table should be assessed. A more thorough assessment of abundance and distribution of harvestable plants should be provided.	The ecosystems that support harvestable plant species from the list provided in Table 13.4-6 were identified in the assessment in Table 13.5-5; available ecosystem descriptions and information gathered during field surveys were used to identify the harvestable plants that could occur in each ecosystem. Table 13.5-5 presents a list of the ecosystems that contain harvestable plants in relation to habitat loss and alteration due to the Project; the assessment concluded that 39.6 ha of ecosystems containing harvestable plants will be lost and 170.8 ha will be altered. It is acknowledged that the complete and comprehensive list of harvestable plants in the LSA was not available at the time of the writing of the Application/EIS (p. 13-36). However, the assessment considered the potential effects of the Project to multiple ecosystem VCs, including alpine and parkland ecosystem, forested ecosystems, and wetlands, ecosystems that likely contain harvestable plant species that were not identified in Table 13.4-6. Residual effects were predicted to occur for alpine and parkland ecosystem and forested ecosystem as a result of habitat loss and alteration, these residual effects were considered to be Not Significant (moderate). Therefore, the effects to additional ecosystems containing harvestable plants that were not identified in the current assessment are captured under the assessments to alpine and parkland ecosystem and forested ecosystems. The Assessment of Aboriginal and Treaty Rights and Other Aboriginal Interests (Section 21) considered potential effects relating to resource harvesting, including access to harvesting areas and environmental effects on plants and vegetation. This assessment concluded that there are no residual effects on harvestable plants after the application of mitigation measures, including measures to avoid and minimize dust, erosion, spread of invasive plants, and changes to hydrology. In addition, no residual effects on human health related to the consumption of harvestable plants (or other country foods) are anticipated.	5-Aug-16	With EAO	
HRFN-045	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 13.5.1.1 – "Construction" – identifies a wide range of potential levels of nitrogen deposition (0.1 and 8.7 kg/ha/year). According to the literature cited, deposition of the higher levels indicated could result in changes to local oligotrophic ecosystems. We request that areas where higher levels of nitrogen could be deposited be identified, and that these areas be indicated on a map. Potential impacts of nitrogen deposition on these areas should be identified.	The predicted levels of nitrogen deposition during construction are presented on Figure 13.5-5; these include ranges of 1 - 3, 3 - 5, 5 - 7, and > 7 kg/ha/year. The areas where annual nitrogen deposition was predicted to exceed 5 kg/ha/year were identified in the assessment; elevated deposition rates was only expected to affect the VC Alpine and Parkland Ecosystems (specifically alpine ecosystems; p. 13-60). The use of 5 kg/ha/year as a critical load was informed by Weber (1978), which suggested that 5 to 10 kg N/ha/year was the critical load for ombrotrophic bogs and alpine heath ecosystems. Hence, the assessment used the lower value to be conservative. Webber, P. J. 1978. Spatial and temporal variation of the vegetation and its production, Barrow, Alaska. 37-112. Quoted in L. L. Tieszen, Vegetation and production ecology of an Alaskan Arctic tundra (New York, NY).	5-Aug-16	With EAO	
HRFN-046	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Table 13.5-7 – "Proposed Mitigation Measures and their Effectiveness" – lists "Alteration of alpine and parkland ecosystem extent and function" as a potential effect, but does not reference a monitoring plan to track changes in extent and function. Without monitoring, changes in alpine and parkland ecosystems will be difficult or impossible to document. We request that a monitoring program to document changes in the extent, health and composition of alpine ecosystems be provided to HRFN for review.	Section 24.4.5 in the Ecosystems Management Plan indicates that the total disturbance area will be monitored, this will track changes in the extent of alpine ecosystems affected by the Project. Only 1.5 ha of alpine habitat is anticipated to be lost and 42.7 ha altered (Table 13.5-2. Loss and Alteration of Terrestrial Ecology Valued Components). This represents a total of 2% of the alpine habitat available within the LSA but is a conservative estimate as the total Project footprint in previously undisturbed areas, including the buffer areas around proposed infrastructure is 487 ha of which less than 100 ha is specific to planned infrastructure.	5-Aug-16	With EAO	
HRFN-047	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 13.6.3 – "Residual Effects on Forested Ecosystems" – states that the magnitude of effects is low because only 1.9% of all forest ecosystems within the LSA will be affected. However, all forested ecosystems cannot substitute for one another as they have different habitat and functional properties. A forested ecosystem of significance that has not been analysed is old growth forest. Effects of the proposed Project on old growth forest may be of far greater than on other ecosystem types; therefore, we request that the Project effects on old growth forests be identified.	Old growth forests were identified in the TEM produced for the Project; old growth forests are considered to be structural stage 7 forests (i.e., old forests, see Figure 2.4-2 of Appendix 13-A). A total of 72.4 ha of old growth forest was mapped within the LSA (22.5 ha within the BI – Scrub birch – Crowberry (FL) Ecosystem Type and 49.9 ha in the FM BI - Huckleberry - Feathermoss (FM) Ecosystem Type, Table 2.4-4 of Appendix 13-A). None of this old growth forest occurred in areas that will be lost and altered by the Project; only forests of structural stage 6 or less will be lost or altered by the Project (Table 13.5-2).	5-Aug-16	With EAO	
HRFN-048	24-Jun-16	Halfway River First Nation	Terrestrial	Chapter 13	EA Information Requirement	Section 13.7.2.3 ("The Forested Ecosystems") of the cumulative effects assessment does not identify some of the means whereby forested ecosystems may be altered, including forest fire and landslides. The amount of alteration projected in the cumulative effects analysis should be compared to rates of naturally expected disturbance. If projected rates of disturbance from the Project significantly exceed natural rates, a cumulative effect can be surmised. We request that cumulative effects modeling take into account natural disturbance rates.	The Application was completed in accordance with regulatory framework for undertaking EAs in BC. Within this framework, the scope, procedures, and methods of each assessment are tailored specifically to the circumstances of the proposed project. This approach allows for each assessment to focus on key issues relevant to the project when determining whether or not the project should proceed. When conducting the assessment, AuRico relied on the Guideline for Selection of Valued Components and Assessment of Potential Effects (BC EAO, 2013) and Application Information Requirements (AIR). The BC EAO (BC EAO 2013) states that in BC, the assessment of cumulative effects for reviewable projects should consider other past, present, and reasonably foreseeable projects and activities. Projects and activities are intended to be those driven by human involvement rather than natural phenomena or events. Thus, incorporation of naturally occurring events such as forest fires and landslides in the cumulative effects assessment for forested ecosystems is considered to be outside the scope of the assessment. References: BC EAO. 2016. Application Information Requirements for the Kemess Underground Project. Published by the British Columbia Environmental Assessment Office: Victoria, BC. AuRico Metals Inc. 2016. Kemess Underground Project: Application for an Environmental Assessment Certificate. Assembled for AuRico Metals Inc. by ERM Consultants Canada Ltd.: Vancouver, British Columbia. BC EAO. 2013c. Guideline for the Selection of Valued Components and Assessment of Potential Effects. British Columbia Environmental Assessment Office: Victoria, BC.	12-Aug-16	With EAO	