2.11 ASSESSMENT SUMMARY AND CONCLUSION

This section summarizes the overall findings of the EIS by providing a detailed scope of the assessment, characterization of Project-related environmental effects and cumulative environmental effects, a concise summary of potential effects and mitigation, and assessment of significance. The section also provides a summary of the alternatives assessment approach, previous panel conclusions, potential accident and malfunction scenarios, and the proponents overall conclusion with respect to significant adverse environmental effects. .

Environmental Effects Assessment Approach

The environmental effects assessment approach used in this assessment involves the following four steps.

5. Scoping of the overall assessment.
6. Characterization of Project-related Environmental Effects.
7. Characterization of Cumulative Environmental Effects.
8. Assessment of whether any Significant Adverse Effects are Likely.

Scope of Assessment

In his referral of the Project to a review panel, the Minister of the Environment instructed the Agency to design a process that would thoroughly assess whether the proposal addresses the environmental effects identified in the environmental assessment of the original Prosperity Gold-Copper Mine Project and to ensure that information obtained during the previous environmental assessment is used to the extent possible to ensure a timely decision.

To this end Taseko has scoped the project as including four elements (mine site, transmission line, access road and concentrate load-out), and the components, features and activities associated with the project description as described in Section 2.2.3. As stipulated in the EIS Guidelines this EIS assesses the potential environmental effects of the Project and identifies the significance of any adverse residual effects, the focus of the assessment is on environmental effects associated with those aspects of the Project that have changed or are new from the previous project proposal and on corresponding changes to the environmental effects previously predicted.

There are no new or changed components, features or activities associated with the Transmission Line, Access Road and Transportation Corridor and the Gibraltar Mines Concentrate Rail Load-Out Facility. For those Project elements, this EIS makes use of or references existing relevant information generated as part of the 2009/2010 review process to provide a rationale as to why the previously predicted environmental effects remain the same.

Only at the mine site does the Project contain new or changed components, features and activities compared to the previously assessed project. Fundamentally these changes were made to preserve Fish Lake and are limited to the relocation of the TSF to place the main embankment 2.5km upstream of Fish

Lake, the relocation of the ore and waste stockpiles to an area east of the open pit, and the implementation of water management infrastructure to protect the viability of Fish Lake.

In order to clearly demonstrate the changes in works associated with the project all of the mine site components, features and activities for all Project phases were reviewed and evaluated as to whether there was a change from the previously reviewed project in terms of the works or VEC-specific applicable regulatory changes related to the project activity.

For each of the components, features and activities for which there is a change indicated, interactions between key Project activities and the environment were ranked according to the potential for an activity to interact with one or more valued ecosystem components of the biophysical or human environment.

For those interactions likely to decrease or stay the same (i.e. no changes to the significance conclusion) where no changes to previously proposed mitigation measures are required or contemplated, no further assessment was warranted.

For those interactions likely to decrease or stay the same but where some re-evaluation of effect was required due to changes in project design or proposed mitigation measures, or for those interactions likely to increase, interactions are described and related information and assessment is presented in the EIS.

Characterization of Project-related Environmental Effects

Characterization of Project-related Environmental Effects were assessed, including descriptions of how an environmental effect might occur, mitigation and environmental protection measures proposed to reduce or eliminate the environmental effect, and evaluation and characterization of the residual environmental effects of the Project (i.e., environmental effects remaining after application of mitigation measures) on the environment for each development phase.

Where possible, threshold criteria or standards were identified for each VEC, beyond which a residual environmental effect would be considered adverse. In some cases, standards or thresholds were also defined for specific effects for a VEC or KI. For each threshold, criteria or standard used the authority or source of the standard or criteria used is cited.

Characterization of Cumulative Environmental Effects

Other projects and activities that could conceivably overlap with those of the Project were identified. All past, present and reasonably foreseeable projects (those that are likely to occur), activities and actions with potential residual environmental effects that could overlap spatially and temporally with the potential residual environmental project effects being assessed were identified in consultation with government agencies and industry representatives.

Cumulative effects were assessed for any adverse effects, in accordance with CEAA's policy; CEAA Cumulative Effects Assessment Practitioners Guide, Feb 1999. That required consideration of the three following factors:

- The Project will result in a measurable, demonstrable or reasonably-expected residual environmental effect on a component of the biophysical or human environment (i.e. is there an environmental effect that can be measured or that can reasonably be expected to occur?)
- The project-specific residual environmental effect on that component does, or is likely to, act in a cumulative fashion with the environmental effects of other past or future projects and activities that are likely to occur (i.e. is there overlap of environmental effects – i.e. a cumulative environmental effect?), and
- There is a reasonable expectation that the Project's contribution to cumulative environmental effects will affect the viability or sustainability of the resource or value.

Assessment of whether any Significant Adverse Effects are Likely

In assessing whether any significant adverse effects are likely to occur, Taseko utilized CEAA's Reference Guide: Determining Whether A Project is Likely to Cause Significant Adverse Environmental Effects - The Requirements of the Canadian Environmental Assessment Act (http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=D213D286-1&offset=2&toc=show). This in turn required consideration of the following factors.

Direction: The ultimate long-term trend of the environmental effect (e.g., positive or adverse)

Magnitude: The amount of change in a measurable parameter or variable relative to baseline case (i.e., low, moderate, high)

Geographical Extent: The geographic area within which an environmental effect of a defined magnitude occurs (site-specific, local, regional, provincial, national, international)

Frequency: The number of times during a project or a specific project phase that an environmental effect may occur (i.e., once, sporadically, regular, continuous)

Duration: This is typically defined in terms of the period of time that is required until the VEC or KI returns to its baseline condition or the environmental effect can no longer be measured or otherwise perceived (i.e., short-term, medium-term, long-term, permanent)

Reversibility: The likelihood that a measurable parameter or KI will recover from an environmental effect (i.e., reversible, irreversible)

Ecological or Socio-economic Context: The general characteristics of the area in which the Project is located (i.e., undisturbed, disturbed, urban setting)

Likelihood: The likelihood or probability of occurrence of an environmental effect (e.g. high or low probability)

Table 2.11-1 Summary of Environmental Effects

VEC		Atmospheric Environment (Section 2.7.2.2)	Acoustic Environment (Section 2.7.2.3)
Potential Effect		Emissions at the mine site have the potential to generate dust and other airborne contaminants that could potentially affect human health, plant and animal health. Eight criteria air contaminants (CACs) and three greenhouse gas (GHG) parameters were measured and assessed for potential effects.	Noise emissions have the potential to disturb humans outside the mine site area and sensitive wildlife using the area. In the absence of specific regulatory guidance for mine development relating to noise, other provincial (BC Oil & Gas Commission Noise Control Best Practices Guideline) and federal (Health Canada Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise) guidance was used to assess potential changes to ambient sound levels.
Proposed Mitigation		Mitigation measures include: • using BATEA measures and best practices to reduce CAC emissions • meeting or exceeding relevant regulatory emissions standards for all mine equipment • installing covered conveyor belt ore transport systems • implementing effective dust suppression measures • following posted speed limits by all mine equipment • ensuring all mine equipment is properly tuned and maintained • reducing vehicle idling times • minimizing material transfers • covering of trucks used to transport concentrate Additional mitigation measures for the load-out facility, transmission line and access road are as outlined in the March 2009 EIS/Application.	Mitigation measures include: scheduling constructon activities during daytime hours where practical; maintain equipment and provide effective mufflers on equipment; turn equipment off when not in use; house noise generating equipment inside buildings where practical; enclose conveyors; and enforce speed limits. Additional mitigation measures for the load-out facility, transmission line and access road are as outlined in the March 2009 EIS/Application.
Potential Residual Effects		For construction and operation phases, the maximum predicted ground-level concentration of four parameters (NO_2, CO, SO_2 and Pb) are less than the applicable objective or standard and four (PM 2.5, PM 10, TSP and dustfall) are greater than the most stringent (24 hour) regulatory standard or objective. Exceedances are expected to be very rare, local, short in duration and reversible.	Conservative models (sound sources were assumed to be operating simultaneously and at peak power throughout) were used to predict sound levels and for much of the time and the majority of actual climate conditions are expected to result in less than predicted values. In the absence of applicable guidelines for mine sites in remote areas, conservative guidelines incorporating an assumption that there are receptors (permanent dwellings, structures) within 1.5 km of the maximum disturbance area (MDA), were used as the basis for measuring potential effects. For construction and operation phases, the maximum predicted sound levels 1.5 km from the MDA are predicted to be below the guideline permissible sound levels (PSL) throughout daytime and periodically rise slightly (5%) above the suggested PSL for nightime. When considering passive recreational use of Fish Lake during daytime, operational noise annoyance indicators were predicted to be below Health Canada targets.
Cumulative Effects		None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on the atmospheric environment.	None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on the acoustic environment.
Significance of Residual Effects	Direction	A conservatively developed and applied model predicts potential exceedance of applicable objectives or standards for four parameters. If exceedances occur they would be adverse in direction.	A conservatively developed and applied model predicts potential exceedance of permissable sound levels at nightime. If exceedances do occur and if there were receptors within 1.5 km of the MDA, they would be adverse in direction.
	Magnitude	If exceedances were to occur, they are predicted to be of low (environmental effect occurs that may or may not be measurable, but is within the range of natural variability) to moderate (a measurable environmental effect occurs, but is unlikely to pose a serious risk or present a management challenge) in magnitude.	During construction, predicted effects are low in magnitude (increase above ambient but within guidelines), During operations effects have the potential to be moderate in magnitude (occasional increases above permissible sound levels (PSL) at nightime and have the potential to effect receptors if they were to occur within 1.5 km of the MDA) and at closure are low in magnitude (within normal variability of ambient conditions).
	Geographical Extent	Predicted exceedances if they occur, are expected to be very rare, local (at or very near the mine site disturbance boundary), short in duration and reversible.	Potential increases above PSL at night time could occur up to 1.5 km from the MDA.
	Frequency	Predicted exceedances if they occur, are expected to be very rare and short in duration.	Potential increases above PSL could occur during operations on an infrequent basis during life of project.
	Duration	Predicted exceedances if they occur, are expected to be short in duration, but occuring over the operational life of the project.	During operations.
	Reversibility	Emissions will cease at mine closure	Emissions will cease at closure.
	Ecological/Socio-economic Context	Apart from logging activity the project area is relatively undisturbed and not adversely affected by human activity.	No known permanent or seasonally occupied dwellings within 1.5 km of the MDA.
Overall Significance		Potential effects are considered to be minor, localized and reversible and as a receptor (e.g. resident population, sensitive vegetation) capable of being negatively affected by the substance in question is not present at the location of the maximum predicted concentration. Potential effects are predicted to be NOT SIGNIFICANT.	Potential effects are considered to be minor, localized and reversible and in the absence of human dwellings within 1.5 km of the MDA and along the proposed access road, the potential effects are predicted to be NOT SIGNIFICANT.
Likelihood of Occurrence of Adverse Effects Found to be Significant		As no significant residual effects are predicted, there is no likelihood of occurrence.	As no significant residual effects are predicted, there is no likelihood of occurrence. There is the possibility that the prediction of significant adverse effects is incorrect, whereby an adverse effect deemed to be not significant may have an adverse effect. The likelihood of this remains low.

VEC		Water Quality (Section 2.7.2.4.B)	Aquatic Ecology (Section 2.7.2.4.B)
Potential Effect		Potential effects arising from interactions between the proposed Project activities and surface water quality considered in this assessment include: • Changes in nutrient, metal and sulphate concentrations in waterbodies; • Changes in suspended sediment concentrations and water temperature in waterbodies. Consistent with the requirements outlined in the EIS Guidelines, predictive mass balance water quality modelling was used for this assessment. Potential effects were initially identified by using the generic water quality guidelines with toxicological concerns assessed under prevailing site-specific conditions. In situations where no guideline concentrations exist, predicted values were compared against the observed baseline concentrations (i.e., plus or minus). The results achieved from this modelling were used for two primary functions: Firstly, they represent quantitative predictions that provide the basis for the assessment of the potential effects on water quality and aquatic ecology. Secondly, they were used as a guidance tool to develop and inform the proposed monitoring plan. The parameters investigated included a range of ions and metals and metalloids that could potentially exceed guidelines and the parameter concentrations predicted in the model were compared to both federal and provincial guidelines, using the Canadian Environmental Quality Guidelines (CEQG) and the British Columbian Water Quality Guidelines (BCWQG).	Potential effects arising from interactions between the proposed Project activities and acquatic ecology considered in this assessment include: • Changes in phytoplankton and zooplankton productivity and community composition. The key environmental effects of potential concern considered in detail in the phytoplankton and zooplankton assessment include: • Altered productivity of phytoplankton and zooplankton in Fish Lake resulting from decreased natural inflow and altered water chemistry; • Altered productivity of phytoplankton and zooplankton in Fish Lake as a result of sediment loading from construction works; and, • Altered productivity of phytoplankton and zooplankton in Fish Lake resulting from uncaptured TSF seepage (altered water and sediment chemistry).
Proposed Mitigation		As the Project proceeds, monitoring programs will be in place to gauge the accuracy of the predictions, and based on the results of the monitoring, implement precautionary planning and/or mitigation where required. Proposed mitigation includes a variety of environmental management and best management plans that are common to many natural resource development projects and as a result have been clearly described and codified. These measures are clearly described in Section 2.8.1. In regard to water quality, some of the plans that will be developed include: • Vegetation management strategy to minimize the disturbance to riparian habitat • Sediment and Erosion Control strategy that will deal with the overall Project and specific tasks • Air Quality and Dust Control management strategy • Explosive and Blasting management strategy • Instream Work practices and management strategies specific to all instream works • Concrete management plans for all works in or close to water (adherence to Code of Practice for Concrete Batch plants if such plants will be used) • Acid Rock Drainage and Metal Leaching management and monitoring programs • Dangerous and hazardous material storage and handling procedures • Water Quality, Sediment Quality, and Aquatic Ecology monitoring framework In addition to the standard best management practices that will be employed as a part of the New Prosperity Project, several Project-specific strategies will be employed	Mitigation measures recommended for the protection of water and sediment quality equally apply to Fish Lake productivity. Detailed descriptions of proposed mitigation measures and the adaptive management plan for Fish Lake and adjacent upper Fish Creek are described elsewhere. They include, amongst others the commitment by Taseko that prior to discharge, tailings pore water seepage and post-closure discharge to Upper Fish Creek and Fish Lake will meet either generic WQG or site-specific water quality objectives through natural attenuation and, if needed, water treatment options.
Potential Residual Effects		The modelled water quality data for the mine site and mixing points were evaluated without consideration for mitigation measures like water treatment and strategic flow diversions (as needed to protect or maintain water quality) – reflecting a conservative approach to identifying potential effects.Water quality guidelines were used as a first step to identify potential effects on water quality, followed by a more in depth review using published toxicity data, ecological risk assessment values (TRV / ESV) and the Biotic Ligand Model (BLM) for cadmium, copper and silver specifically. Results indicate: Pit and Wasp lakes show the widest range of parameters and predicted exceedances for the modeled waterbodies, with the Pit Lake showing the highest average concentrations above selected toxicity values overall • Aluminum exceeds the guideline values in almost all of the modeled waterbodies (either as a 30 day average or maximum). However, exceedances of selected aluminum toxicity data were noted for the mine site and the Taseko River but not in Beece Creek, Little Onion or Big Onion Lake • Although the predicted averages often exceed the cadmium and copper guidelines, exccedances of relevant toxicity data were only noted for the Pit Lake, Lower Fish Creek and Wasp Lake • Mercury exceeded guideline values and selected toxicity data / ecological screening values at Lower Fish Creek, Wasp Lake and Big Onion Lake • Examples of average sulphate concentrations in excess of guidelines and selected toxicity data (specifically the Frahm (1975) value of 100 mg/L) were noted for all of the mine site waterbodies (Fish Lake, Upper Fish Creek, Trib 1 and the Pit Lake) as well as Lower Fish Creek and Wasp Lake • Predicted selenium concentrations are highest for Wasp Lake and Lower Fish Creek and exceed the toxicity data used to develop the provincial guideline • Average silver exceeds selected toxicity data and screening values at Wasp Lake only • Average zinc exceeds selected toxicity data and screening values at Pit Lake only Concerning the assessment of potential changes to the productivity of Fish Lake, results indicate that over time the trophic state of Fish Lake may shift from meso-trophic to a more productive eutrophic state.	Given the commitment by Taseko that prior to discharge, tailings pore water seepage and post-closure discharge to Upper Fish Creek and Fish Lake will meet either generic WQG or site-specific water quality objectives through natural attenuation and, if needed, water treatment options, residual Project effects are not expected to have significant ecological effects.
Cumulative Effects		None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on water quality.	None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on sediment quality and benthos.
Significance of Residual Effects	Direction	Conservatively developed and applied models predict potential exceedance of applicable objectives or standards for a number of parameters. If exceedances occur they would be adverse in direction.	
	Magnitude	For predicted changes to nutrients the magnitude is high (Modelled predictions indicate an increase of approximately 28% through all phases. This is anticipated to lead to an increase in productivity and trophic status.). For predicted changes to metal concentrations and sulphate levels the magnitude is moderate (For metals, - Modelled predictions indicate an increase of many elements above guidelines. Literature and biotic ligand modelling suggest all increase will remain at least 5.3 times LC50 values) and for sulphate levels modelled predictions indicate an increase of approximately 28% through all phases. This is anticipated to lead to an increase in productivity and trophic status and modelled predictions indicate an increase above reported lowest observed effects levels. This is believed to be overly conservative based upon differences between experimental and site conditions.) For temperature the magnitude is predicted to be low (seasonal differences are predicted but they are within the range of natural variability .)	
	Geographical Extent	The effects are local and site specific in extent.	The effects are local and site specific in extent.
	Frequency	Project effects if they occur would likely occur continuously during operations thru to closure and occur only once in any given location.	Project effects would likely occur during operations thru to closure and occur only once in any given location.
	Duration	Project effects, if they occur to water quality would be long term.	Effects to aquatic ecology, if they occur would be long term.
	Reversibility	Effects are site specific and reversible.	Effects are site specific and reversible.
	Ecological/Socio-economic Context	Apart from logging, grazing, hunting and recreation related activity, the project area is relatively undisturbed and not adversely affected by human activity.	Apart from logging activity the project area is relatively undisturbed and not adversely affected by human activity.
Overall Significance		Predicted effects to water quality are gradual and would occur over a number of years (allowing effective monitoring and the application of adaptive management). The magnitude is moderate, and potential effects will be site specific and reversible consequently the environmental effects will be NOT SIGNIFICANT.	For changes in aquatic ecology (phytoplankton and zooplankton), the anticipated magnitude of effect is moderate. These effects are anticipated to occur continuously over the long-term timeframe. However, with the effective implementation of the proposed mitigation and adaptive management plan, and considering that any effects will be site-specific and reversible, the effects are anticipated to be NOT SIGNIFICANT.
Likelihood of Occurrence of Adverse Effects Found to be Significant		The likelihood of the occurence of a significant adverse effect is low because the predicted effects are gradual in nature so that monitoring and the application of readily available and appropriate mitigation would allow the propent to reduce the source of any observed adverse effects.	The likelihood of the occurence of a significant adverse effect is low because the predicted effect is gradual in nature so that monitoring and the application of appropriate mitigation would allow the propent to reduce the source of any observed adverse effects.

VEC		Sediment Quality and Benthos (Section 2.7.2.4.C)	Fish and Fish Habitat (Section 2.7.2.5)
Potential Effect		Project construction and operation activities have the potential to effect sediment quality and benthic invertebrate community composition, abundance and productivity in Fish Lake. A quantitative approach to predicting future sediment conditions resulting from the Project was developed using baseline data and the predicted dustfall values. Benthic invertebrate abundance, taxonomic composition, and derived indices were used to assess changes in aquatic ecosystems in Fish Lake. Additionally, a qualitative assessment was prepared based upon the baseline conditions, the modified hydrological regime (i.e., flow diversions or additions), and altered water chemistry that would induce any changes. Four measurable parameters (nutient concentration, metal concentration, change in sediment rate and change in invertebrate community structure) were identified for use in the assessment. Several approaches including comparing baseline sediment characteristics and water chemistry predictions to applicable guidelines, evaluating the potential effects of reduced flow to Fish Lake on sediment quality and the Fish Lake productivity model were adopted to identify potential adverse effects on sediment quality and benthic invertebrates.	Project operation and activities have the potential to impact fish and fish habitat (stream, lake and riparian), the productive capacity of the Fish Creek drainage, metal levels in fish tissues and the Fish Lake recreational fishery.
Proposed Mitigation		Mitigation measures designed to protect water quality in Fish Lake will also protect sediment quality and aquatic communities, including fish. The proposed mitigation measures include but will not necessarily be limited to the following: • Recirculating water from the Fish Lake outlet back into lake via Upper Fish Creek and Tributary 1; • Comprehensive erosion and sediment control planning for all phases of the Project; • Dust management planning and control for all phases of the Project; • Managing expected or potentially acid generating waste rock during operations; and • Ongoing re-vegetation of disturbed areas during operations and according to the closure and reclamation plan. To limit the export of sediment to Upper Fish Creek and Fish Lake during construction and operation, a Sediment Control and Surface Erosion Protection Plan will be developed and implemented to manage the potential for sediment generation associated with construction work. Mitigation measures to reduce metals generated in TSF water are built into the Project design and include management of acid generating and potentially acid generating waste rock during operations (Section 2.7.2.1.). Taseko will put in place water, plankton, sediment quality, and fish abundance and tissue chemistry monitoring programs. Adaptive management will be implemented as a means of monitoring project effects and to provide the basis for making changes to operations should they be considered necessary for minimizing or avoiding effects on Fish Lake water quality and upper Fish Creek drainage (described earlier in Section 2.7.2.4.B). Additional mitigation measures for the load-out facility, transmission line and access road are as outlined in the March 2009 EIS/Application.	During the Construction and Commissioning phase, prior to any direct effects or flow reductions, a comprehensive fish salvage plan which incorporates best practices will be implemented. This will mitigate the effects of Project construction on fish in Middle and Upper Fish Creek. Mitigative flow augmentation in Fish Creek Reach 8 and Fish Lake Tributary 1 will be adaptively managed to ensure that appropriate water depth, temperature, and dissolved oxygen levels during operational and closure phases are present. For metals in fish tissue an adaptive management program to monitor fish tissue uptake in relation to water and sediment metal concentrations and apply corrective actions if needed will be implemented.
Potential Residual Effects		Baseline values for chromium, copper, mercury, and nickel exceed Interim Sediment Quality Guidelines (ISQG). Predicted maximum values for chromium increase by less than 2% over baseline. The predicted maximum values for copper and mercury fall between the ISQG and Predicted Effect Level (PEL), indicating a 38% chance of an adverse effect. Nickel is not predicted to change relative to baseline. The predicted maximum value for arsenic falls between the ISQG and PEL, indicating a 38% chance of an adverse effect. Model predictions indicate that it is at closure phase II, when the TSF would be allowed to flow naturally into Fish Lake, that the greatest aqueous elemental concentrations and therefore the greatest potential effect to sediment quality are predicted to occur. The design for New Prosperity includes water management infrastructure that allows the the actual timing of closure phase II, and subsequent release of water from the TSF Lake into Fish Lake, to occur when water quality is deemed suitable through monitoring as part of the adaptive management program planned for the Project. Given the commitment by Taseko that prior to discharge, tailings pore water seepage and post-closure discharge to Upper Fish Creek and Fish Lake will meet either generic WQG or site-specific WQG through natural attenuation and, if needed, treatment options, the residual Project effects on sediment quality and benthos are expected to be minimal.	The Fish and Fish Habitat Compensation Plans and mitigation measures will ensure that there are no residual environmental effects on fish and fish habitat. Methodologies used to predict metal concentrations in fish have resulted in a range of results, for example, depending on the method used, the predicted concentrations for selenium, lead and mercury fall both below and above the guidelines for those metals. There is also a wide range of predicted concentrations for the metals that do not have guidelines. It will be important to develop and implement a fish monitoring program from the onset of operations at New Prosperity.
Cumulative Effects		None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on sediment quality and benthos.	The environmental effects of the Project on instream habitat in Lower, Middle, and Upper Fish Creek are not anticipated to act in a cumulative manner with similar environmental effects from other projects or activities in the RSA.
Significance of Residual Effects	Direction	Predicted changes to sediment quality and benthos would be adverse in direction.	With implementation of the described mitigation and compensation measures, the environmental effects on instream habitat, lake habitat and riparian habitat are neutral in direction.
	Magnitude	Magnitude is moderate (environmental effect occurs, but is unlikely to pose a serious risk or present a management challenge) for predicted changes to sediment quality and benthic invertebrate community structure.	For loss/alteration of instream habitat the magnitude is low (no residual effect is predicted; environmental effect occurs that may or may not be measurable, but is within the range of natural variability and does not pose a serious risk to the sustainability of the Fish Creek Watershed fish populations). For loss/alteration of lake habitat the magnitude is low with implementation of the described mitigation and compensation measures. For loss/alteration of riparian habitat, the magnitude is high. For metals in fish tissue the magnitude is low (any residual effects would be adaptively managed and would not pose a serious risk to the sustainability of the Fish Creek Watershed fish populations)
	Geographical Extent	The effects are local and site specific in extent.	The effects are local and site specific in extent.
	Frequency	Project effects would likely occur during operations thru to closure and occur only once in any given location.	Effects would occur during construction and continue thru to closure and occur only once in any given location.
	Duration	Effects to sediment quality and benthos would be long term.	Effects are long term (effects are measureable for longer than 2 years but not permanent) in duration.
	Reversibility	Effects are site specific and reversible.	The loss/alteration of portions of stream and riparian habitat is irreversible while the remainder is reversible. The unavoidable loss of Little Fish Lake is irreversible but compensation will offset the effects.
	Ecological/Socio-economic Context	Apart from logging activity the project area is relatively undisturbed and not adversely affected by human activity.	Apart from logging activity the project area is relatively undisturbed and not adversely affected by human activity.
Overall Significance		Predicted effects to sediment quality and benthic invertebrates are gradual and would occur over a number of years (allowing effective monitoring and the application of adaptive management). The magnitude is moderate, and potential effects will be site specific and reversible consequently the environmental effects will be NOT SIGNIFICANT.	Potential effects are considered to be minor, localized and although irreversible with implementation of the prescribed mitigation and compensation elements are predicted to be NOT SIGNIFICANT.
Likelihood of Occurrence of Adverse Effects Found to be Significant		The likelihood of the occurence of a significant adverse effect is low because the predicted effect is gradual in nature so that monitoring and the application of appropriate mitigation would allow the propent to reduce the source of any observed adverse effects.	As no significant residual effects are predicted, there is no likelihood of occurrence. Any adverse effects will be gradual in nature allowing monitoring and the application of additional mitigation measures if required.

VEC	Terrain (Section 2.7.2.6)	Soil (Section 2.7.2.6)
Potential Effect	Project activities such as site clearing and contouring, road construction, trenching and blasting, and development of infrastructure components have the potential to change or alter terrain stability which in turn could potentially result in increased incidence of mass wasting events (such as debris flows, slumps, earth flows, and other forms of slope instability).	Project operations and activities such as site clearing and contouring, road construction, trenching and blasting, and development and use of infrastructure components have the potential to change or alter soil physical and/or chemical properties (i.e. quality). Mining and removal of soils from site clearing and grubbing, may result in admixing, compaction and rutting, erosion and soil loss Changes in drainage patterns and groundwater changes related to mining activities may result in soil moisture changes. Naturally occuring metals in dust generated during construction and operation, may result in soil contamination. Assessment of effects on soil focusses on the direct effects of the Project on soil distribution, quantity and quality. For the mine site, reclamation suitability of soil is used as the key indicator of environmental effect. Soil measureable parameters are estimated through ratings for admixing, compaction, rutting, erosion and soil loss. Soil chemical changes are estimated through predictions of soil contamination and an assessment of the effects of long-term stockpiling which can alter the fertility of soils.
Proposed Mitigation	Mitigation measures include: • if necessary, completing a detailed on-site terrain stability assessment in any areas identified as potentially unstable so that appropriate planning and mitigation measures can be undertaken prior to the commencement of construction activities. • If necessary, conducting further studies on potentially unstable areas with slopes greater than 60% in gradient. • Minimizing the effect of construction and operations by locating the transmission line and access roads on stable terrain, wherever possible. Additional mitigation measures for the load-out facility, transmission line and access road are as outlined in the March 2009 EIS/Application.	Mitigation measures include: • traffic flow will be restricted until soils have been salvaged. • areas where no salvage is to occur and no proposed mine facilities will be developed, will be avoided. • Environmental supervisor overseeing soil salvage efforts at construction will be aware of ground conditions and be able to provide guidance on stripping depths. • Control vehicle traffic by use of designated roads and trails. • Additional mitigation has been identified in the erosion and sediment control plan. • Ensuring skilled operators are on the ground that are able to identify topsoil from subsoil. • Salvaging soils within the mine site disturbance area and removing them from Project activities associated with high deposition rates. • Locating soil stockpiles in areas that are removed from Project activities that result in metal deposition. During closure, re-establishment of drainages during re-contouring is important to reduce erosion. Additional mitigation measures for the load-out facility, transmission line and access road are as outlined in the March 2009 EIS/Application.
Potential Residual Effects	The majority of the project area consists of low gradient, stable terrain with a low likelihood of mass wasting. Where groundwater levels are predicted to rise during operations thru to post-closure the risk of failure for areas of potentially unstable terrain may marginally increase. The total area exhibiting evidence of potential instability is approximately 13.0 ha or 0.4% of the total mine site. The total area with slopes greater than 60% is approximately 1.3 ha or 0.04% of the total mine site area. These areas are concentrated in locations that will be eventually encompassed by the pit or are located in terrain in the vicinity of the west embankment or below the main embankment.	An estimated 22% of the volume of topsoil estimated to exist in areas that will have surface disturbance will not be salvaged. This includes areas of topsoil that exist on steep slopes and areas where topsoil is rated as unsuitable for reclamation. In the immediate vicinity of the mine site, for operations through post-closure the water table in areas of wetlands and peat soil is predicted to decrease 30 cm to 1 m. The location and exact extent of areas where the level of the water table will change cannot be quantified. For the operations through post-closure phases of the Project, during pit dewatering and subsequent 50 year recharge, the potential exists for water table decreases in undisturbed soils east and west of the pit. There will be no residual effect from ore extraction and processing on soil chemical properties. Using a 2.5 micron model, with the exception of cadmium, predicted changes in the metal concentrations in soils were not predicted to exceed the lowest of CCME or BC CSR guidelines. Cadmium levels already exceed guidelines at baseline and these levels are predicted to not change or increase with the Project.
Cumulative Effects	None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on terrain.	None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on soils.
Significance of Residual Effects – **Direction**	If mass wasting events were to occur they would be adverse in direction.	If anticipated changes to effects occur on one or more soil properties that results in a decrease in reclamation suitability rating (Table 2.7.2.6-15) for a soil map unit they would be adverse in direction.
Magnitude	During operations thru to post-closure effects are moderate in magnitude (predicted changes in groundwater levels will not result in increased areas of unstable terrain although it may increase the probability of a mass wasting event.)	Each of the measurable parameters of soil reclamation suitability was assessed separately for residual effects characterization, but the significant rating was applied only to the key indicator of reclamation suitability. When placed into context of the goals to achieve equivalent land capability on the post-closure mine site, the physical changes due to losses of topsoil and the terrestrial land base are considered low in magnitude as reclamation is expected to restore baseline land use.
Geographical Extent	Mass wasting events, if they were to occur, would occur within the immediate vicinity of the project area.	Loss of terrestrial area and predicted changes to soil moisture would occur within the immediate vicinity of the project area(i.e. local in extent).
Frequency	If mass wasting events were to occur they would likely occur during operations thru to closure and occur only once in any given location.	Construction of facilities on topsoil not stockpiled would occur once in any given area. If predicted changes to soil moisture were to occur they would likely occur during operations thru to post-closure.
Duration	A one time, permanent event.	Topsoil not stockpiled would be a one time, permanent event. Changes to soil moisture would likely occur during operations thru to post-closure.
Reversibility	If a mass wasting event were to occur any effects are irreversible.	Topsoil not stockpiled will remain in place and not be available for reclamation. Effects of changes to soil moisture are reversible after post-closure.
Ecological/Socio-economic Context	Apart from logging activity the project area is relatively undisturbed and not adversely affected by human activity. There are no human habitations, or infrastructure at risk within the areas identified for potential groundwater changes or with recorded mass movements and these areas are away from important features such as Fish Lake.	There are no human habitations, or infrastructure at risk within the areas identified for potential loss of topsoil or changes to soil moisture and these areas are away from important features such as Fish Lake.
Overall Significance	Potential effects are considered to be minor, localized and although irreversible will not affect human habitation, infrastructure or sensitive environments and are thus predicted to be NOT SIGNIFICANT.	Potential effects are considered to be minor and localized. Effects on soil properties would not decrease a reclamation suitability rating level and are thus predicted to be NOT SIGNIFICANT.
Likelihood of Occurrence of Adverse Effects Found to be Significant	No adverse effects on mass wasting were found to be significant; therefore there is no likelihood of occurrence.	Adverse effects on the soil resource were found to be not significant; therefore there is no likelihood of occurrence.

VEC	Vegetation (Section 2.7.2.7)	Wildlife (Section 2.7.2.8)
Potential Effect	Project operations and activities have the potential to: cause direct and indirect loss of vegetation; change abiotic conditions necessary for vegetation development; and change the plant community structure and composition, and wetland function. Potential project effects on the spatial extent and distribution of eight key indicators (old forest, wetlands, riparian and grassland ecosystems, rare plants, ecological communities of conservation concern, forest capability and country food plants) were measured and assessed. Assessment of risks to human health from consumption of country foods, including plants is discussed in the HHERA section.	Project operations and activities have the potential to: cause direct or indirect loss or alteration of wildlife habitat; disrupt movement patterns; increase the direct mortality risk; and, cause a reduction in wildlife health. Potential project effects on the loss or alteration of habitat were assessed for twenty species and one group (amphibians) of wildlife. The potential for disruption of movement patterns was not considered further as this was considered not to be of concern with the previous project and the potential for disruption of movement patterns is reduced relative to the previous project. Risk of direct mortality risk was assessed for Grizzly Bear using both a core secure habitat and a linear feature density analysis. A qualitative wildlife health assessment of six wildlife groups, consisting of eleven species was undertaken for parameters of potential concern. The previous Panel concluded that the Prosperity Project, in combination with past, present and reasonably foreseeable future projects (particularly logging) would result in a significant adverse cumulative effect on grizzly bears in the South Chilcotin region. In recognition of this concern, a detailed cumulative effects assessment that considered the multiple threats to recovery of this population unit (GBPU) was completed. Two key issues (mortality risk and habitat loss, alteration, fragmentation and alienation) and nine key issue parameters (habitat availability, core secure habitat, linear feature density, hunter access, traffic volume, road-killed ungulates, hunter kill, livestock conflict, and human-bear conflict) were identified for use in the assessment.
Proposed Mitigation	Mitigation measures include: • minimizing disturbance, avoiding vegetation loss, and maintaining natural drainage patterns. •implementing an invasive plant management plan • moving boulders on which the listed moss *Schistidium heterophyllum* grows. • with respect to wildlife habitat, at-risk plant communities, and the habitat of species at risk, implementating a reclamation approach as described in the decommissioning plan. • employing BMP throughout all Project phases and activities. In particular, prior to construction commencing, undertake all appropriate measures to ensure that sensitive habitat features are identified and all appropriate mitigative measures are implemented to avoid adverse effects. • identifying and quantifying Project effects on vegetation at a local level on a scale that enables identification of appropriate mitigation or compensation measures. • assessing the suitability of reclaimed sites for wildlife use through trace element monitoring in vegetation. • Incorporating traditional use species into reclamation • Developing a compensation plan following the draft Habitat Compensation Framework, and Fish and Fish Habitat Compensation Plans Additional mitigation measures for the load-out facility, transmission line and access road are as outlined in the March 2009 EIS/Application.	A detailed list of mitigation measures for each species assessed is provided in Table 2.7.2.8-12. Included on the list are: • Measures governing site clearing procedures • Wildlife protection measures to apply to project personnel travelling to and from Project • Prior to construction, undertake a site wildlife crossing survey to evaluate options for road design or additional considerations. • Evaluate the feasibility of fencing any appropriate mine site water features • Restrict project-related activities near the inlet to Fish Lake during the spring to minimize disturbance to any grizzly bear using this area and the risk of bear-human encounters. • Avoid site clearing of moderate or higher quality denning habitat • Develop and implement the mitigation measures that fall under the overarching Grizzly Bear Mortality Risk Reduction Plan • Develop a Vegetation and Wildlife Management Plan as described in 2.8.1 • Wildlife road mortality will be minimized through driver training, road maintenance, radio communication, and employee training • Wolves will be specifically included in the problem wildlife prevention and response plan and any wildlife awareness training • Mitigation measures for other VECs/KIs are applicable, including: old forest; wetland ecosystems; riparian ecosystems; fish habitat; aquatic ecosystems • In addition, the following EMPs (Section 2.8.1) are applicable: Access Management Plan, Air and Noise Management Plan, Water Management Plan • Sections of the Conceptual Reclamation and Decommissioning Plan that pertain to wildlife habitat Additional mitigation measures for the load-out facility, transmission line and access road are as outlined in the March 2009 EIS/Application.
Potential Residual Effects	Conservative assumptions and models were used to define the Maximum Disturbance Area (MDA) upon which spatial extent of potential vegetation loss was modelled. Without taking into consideration the commitment to compensate for any unavoidable adverse effects arising from the loss of vegetation, potential project effects on the spatial extent of post-closure vegetation within the Fish Creek watershed area are predicted to be a loss of 56 ha (8%) of non pine old forest, a loss of 311 ha (15%) of wetland ecosystems, a loss of 317 ha (10%) of riparian ecosystems, a loss of 3 ha (1%) of grassland ecosystems, a loss of 3 occurances of one blue listed rare plant, a loss of 598 ha (3.3%) of vegetation supporting country foods and a loss of 4 ha (1%) of red-listed ecological communities of conservation concern within the RSA.	For 10 of the 20 species considered, the potential effects from the proposed project mine site layout were not assessed further as these species are unlikely to utilize the mine site. For eight species and one group (amphibians) the amount of effective habitat available at maximum disturbance is greater with New Prosperity compared to the previously predicted effects for the Prosperity project. The increases range from 8 ha (3.6%) for mule deer winter feeding habitat to 231 ha (15.6%) for grizzly bear summer feeding habitat. In two cases, mule deer winter shelter habitat and moose winter feeding habitat the amount of effective habitat available in the mine site decreases at maximum disturbance by 6.8% and 1.9% respectively when compared to the previously predicted effects. The potential for the previous Prosperity project to affect movement patterns was assessed and considered not to be of concern. With the revised mine plan, the potential for disruption of movement patterns for wildlife will be reduced. The potential for the Project to affect the health of the key indicators was assessed previously and considered to be not significant for any wildlife species. Post-closure water quality within Fish Lake was assessed for the New Prosperity Project: ungulates, song birds, raptors and owls are not expected to experience any significant health effects. In a regional context, the availability of core secure habitat for Grizzly Bear is not substantially affected - the area of cores secure habitat with the largest patch size category declines by 1.6% at maximum disturbance. The linear feature density increases by 1.3% at maximum disturbance.
Cumulative Effects	Project effects on the spatial extent of vegetation is not anticipated to affect the viability or sustainability of vegetation resources and none of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on vegetation.	Project effects on wildlife are not anticipated to affect the viability or sustainability of wildlife and none of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on wildlife. Given the relatively small effect of the New Prosperity Project in the context of the grizzly bear study area, the project's location in the more developed and lower capability portion of the northwestern quadrant of the Grizzly Bear Population UNit (GBPU), and the better state of this portion of the GBPU relative to other portions to the south and east, the New Prosperity Project's incremental contribution to future cumulative effects is predicted to be not significant with respect to the sustainability of the GBPU.
Significance of Residual Effects – Direction	Regardless of the likelihood that estimated spatial losses are exaggerated some loss of spatial extent will occur. Any loss is considered adverse in direction.	Conservative assumptions and models were used to define the Maximum Disturbance Area (MDA) upon which spatial extent of the loss or alteration of habitat was modelled. Regardless of the likelihood that estimated spatial losses are exaggerated some loss of spatial extent will occur. Any loss is considered negative in direction. Increased risks of direct mortality and potential reduction in wildlife health are considered to be negative in direction.
Significance of Residual Effects – Magnitude	During construction and operation the loss of old growth in the RSA is low in magnitude (<10% reduction in spatial extent). Using the arbitrary scale developed to recognize the importance of wetlands and riparian ecosystems, the loss of wetland ecosystems (15%) and riparian ecosystems (10%) is considered high in magnitude when measured within the Project RSA; however, when considered in a broader regional context, the percentage reduction relative to the large areas of similar wetland and riparian ecosystems in the region is not high. The loss of grassland ecosystems is low in magnitude (1% reduction), the loss of rare plants is moderate in magnitude (<1% reduction), the loss of ecological communities of conservation concern is moderate in magnitude (<1% reduction). No magnitude attribute was assigned to the 598 ha (3.3%) loss of vegetation supporting country foods.	During operations thru to post-closure quantitative assessment of the loss or alteration of habitat for each of the species or groups assessed are expressed either in terms of hectares or percentage change and no magnitude rating was assigned; for wildlife overall, a magnitude rating of medium was assigned. For the qualitative assessment of potential increases to direct mortality risk, the potential effects are medium in magnitude (measureable effect(s) vary depending upon the effect but are unlikely to pose a serious risk to the sustainability of wildlife within the study area); and risk of potential reduction in animal health is low in magnitude (no measurable effect(s) on sustainability of wildlife resource within the RSA)
Significance of Residual Effects – Geographical Extent	Reductions in spatial extent for seven of the eight key indicators would occur at more than one sight within the local study area (within the immediate vicinity of the project). For ecological communities of conservation concern reductions in spatial extent are site specific and occur at one site within the local study area.	Effects to wildlife would occur within the regional area of the project, with the exception of wildlife health which would be within the LSA.
Significance of Residual Effects – Frequency	Vegetation loss would occur during construction and operation thru to post-closure and occur only once in any given location.	Loss or alteration of habitat would occur during construction and operation through to post-closure and occur only once in any given location. Risk of direct mortality would occur throughout the life of the project and frequency is species specific. If a reduction in wildlife health, this would likely occur only once in any given location; the actual frequency is species specific.
Significance of Residual Effects – Duration	The duration of reductions in old forests, wetland and riparian ecosystems would be long term (lasts up to 10 years); for grassland ecosystems and country foods, medium term (>1 year but not beyond life of the project); and, for rare plants and ecological communities of conservation concern far future (>10 years beyond commencement of post-closure).	The loss or alteration of habitat would be long term (effect(s) last beyond individual life spans of plant species; actual number of years is species specific). The risk of increases to direct mortality and a reduction in wildlife health, if they occur would likely last beyond individual life spans (i.e. long term).
Significance of Residual Effects – Reversibility	Losses to old forests, wetland, riparian, grassland ecosystems, and country foods are reversible. Losses to rare plants and ecological communities of conservation concern are irreversible.	When considering the combined potential project effects on the loss or alteration of habitat and the risk of increases to direct mortality, the potential residual effects for all phases are considered to be reversible. The potential for a reduction in wildlife health is considered to be irreversible.
Significance of Residual Effects – Ecological/Socio-economic Context	Apart from logging, grazing, hunting and recreation related activity, the project area **is relatively und**isturbed and not adversely affected by human activity.	Apart from logging, grazing, hunting and recreation related activity, the project area is relatively undisturbed and not adversely affected by human activity.
Overall Significance	Predicted effects are considered to be minor, localized and as they would not effect the sustainability of any of the vegetation KIs assessed after taking into account mitigation measures including potential compensation they are predicted to be NOT SIGNIFICANT.	Potential effects are considered to be minor, localized and with implementation of the proposed mitigation measures, they will not effect the sustainability of wildlife and are thus predicted to be NOT SIGNIFICANT.
Likelihood of Occurrence of Adverse Effects Found to be Significant	As no significant residual effects are predicted, there is no likelihood of occurrence	As no significant residual effects are predicted for wildlife, there is no likelihood of occurrence. Any adverse effects will be gradual in nature allowing the application of additional mitigation measures if required.

VEC		Resource Users (Section 2.7.3.1)	Navigable Waters (Section 2.7.3.2)
Potential Effect		The Project is expected to interact with the several resource values during construction, operations and closure. These include: • Land use • Fishing • Outdoor recreation and tourism • Hunting, trapping and guiding • Forestry, agriculture and ranching Each of these indicators was evaluated for changes in previously predicted effects due to changes in the environment resulting from the Project. A comparison of the spatial disturbances of the current and previous mine footprints was made and observations offered about changes to baseline conditions and project effects since the previous review was conducted in 2010. Special consideration was given to the Taseko Lake Lodge, Sonny Lulua trapline and individuals grazing cattle at the meadows at Fish Lake as the previous Panel determined that the proposed Prosperity Project would have resulted in significant adverse effects in these areas.	Development of the open pit and the tailings storage facility has the potential to alter stream flows in Beece and Fish Creek, alter water levels and access to Fish Lake and will be the cause of the loss of Little Fish Lake. Potential effects on the physical interference with navigation and changes to the public's use of waterways and right to navigate were assessed.
Proposed Mitigation		With respect to Taseko Lake Outfitter's commercial recreational tenure it is Taseko Mines intention to discuss mitigation/compensation that is fair and reasonable in the context of verifiable losses in the case that the mine is approved and built. Proposed wildlife mitigation would minimize potentially adverse effects on the populations of target species and opportunities for hunting. A hunting ban for mine employees during the construction and operations phases of the mine would avoid any related increase in hunting pressure in the LSA. Regarding potential effects on users of the meadows in Fish Creek watershed Taseko will work with the Ministry, the one licensee and the First Nations' rancher who use the meadows to access replacement forage elsewhere in the area, or discuss mitigation/ compensation for lost productivity if the Ministry of Forests, Lands and Natural Resource Operations is unable to offer replacement opportunities.	For Fish Lake planned water management strategies will be put in place (Appendix 2.7.2.4A-A) throughout all phases of the Project to ensure there will be no interference with navigation on Fish Lake. Various mitigation measures will be used to ensure that the public and First Nations are aware of construction and mining operation activities in the area and protection zones (no-go areas) will be identified and communicated if required. These include providing and maintaining access and boat launch facilities and installing and maintaining signage. Post-closure, two new lakes will be created, Pit Lake and the TSF Lake.
Potential Residual Effects		The proposed Project has a lower magnitude effect on the land on the viability or sustainability of the values land use plans are intended to manage. During construction and operation phases the Project reduces the forest land base that contributes to the Williams Lake Annual Allowable Cut determination by an estimated 0.07% of the William Lake Timber Supply Area. With the preservation of Fish Lake and implementation of a new fisheries compensation plan, and other mitigation measures, opportunities for recreational fishing would be preserved at Fish Lake and created or enhanced elsewhere. The construction and operation of the mine would have a positive effect on accommodation, food, beverage and miscellaneous services such as rentals due to business travel in the RSA (Williams Lake) and the LSA. The Project could affect one commercial recreation tenure that has part (0.58%) of its licence area within the MDA, The MDA would overlap with four registered guide-outfitters territories with the 2,601 ha affected by the mine footprint representing between 0% and 2.2% of any one individual territory and would occupy a total of 5.4% of the area of two traplines in the vicinity of the MDA.	There will be no interference with navigation on Fish Lake. The construction and operation of a TSF will result in the unavoidable loss of Little Fish Lake and the outlet control structures and coffer dams in portions of Fish Creek below Fish Lake will result in interference with the public's right to navigate on those portions of Fish Creek The portions of Fish Creek upstream of the inlet to Fish Lake are considered minor waterways but will be enhanced due to water management operations and the implementation of fish and fish habitat flow mitigation measures.
Cumulative Effects		None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on resource users.	None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on navigation.
Significance of Residual Effects	Direction	Potential effects on land use, forestry, agriculture and ranching, hunting, public recreaton and tourism are predicted to be neutral in direction. With preservation of Fish Lake and implementation of fish compensation measures the effect on fish and fishing is predicted to be positive in direction. Effects on the one commercial recreational tenure holder, the registered guide-outfitters and the two traplines are adverse in direction but with compensation the direction will be neutral.	It is anticipated that construction and operation of outlet control structures and coffer dams resulting in interference to the public's right to navigate in Fish Creek would be adverse in direction. The unavoidable loss of Little Fish Lake would be adverse in direction.
	Magnitude	For all predicted effects the magnitude of effect is low (i.e. Will not materially decrease use levels or regional economic values).	Both the intereference with the public's right to navigate on portions of Fish Creek and the unavoidable loss of Little Fish Lake would be low in magnitude (measurable effects to use of Navigable Waters anticipated in low use areas).
	Geographical Extent	Effects to resource users would occur within the immediate vicinity of the project area.	Effects to navigation would occur only within the immediate vicinity of the mine site.
	Frequency	Predicted changes to resource users would occur during all phases of mine development and would likely occur only once in any given location.	Effects to navigation would occur once in any given area.
	Duration	Effects to resource users would be long term (i.e.extends beyond a business or resource cycle (greater than 5 years).	Effects to navigation are long term (i.e. effects are measurable for > 2 years but are not permanent).
	Reversibility	Effects to resource users would all be reversible at end of mine life.	Interference with the public's right to navigate on Fish Creek are reversible post-closure and while the loss of Little Fish Lake is permanent, two much larger lakes will be created post-closure.
	Ecological/Socio-economic Context	Apart from logging activity the project area is relatively undisturbed and not adversely affected by human activity.	Apart from logging activity the project area is relatively undisturbed and not adversely affected by human activity.
Overall Significance		Potential effects are considered to be minor, localized and reversible and with the implementation of compensation and mitigation measures, the effects are predicted to be NOT SIGNIFICANT.	Potential effects are considered to be localized and as there are no long-term effects on navigational use for a large proportion of the area and users, is predicted to be NOT SIGNIFICANT.
Likelihood of Occurrence of Adverse Effects Found to be Significant		There are no significant effects on resource users; therefore there is no likelihood of occurrence.	There are no significant effects on navigable waters arising from the Project; therefore there is no likelihood of occurrence.

VEC		Human Health (Section 2.7.3.3)	Physical and Cultural Heritage Resources (Section 2.7.4)
Potential Effect		Project operations and activities have the potential to cause changes in air, soil, surface water and country food quality and effect terrestrial ecosystem receptors. The assessment of potential environmental effects is based on an assessment of the changes in metal concentrations in environmental media between pre-development baseline conditions and predicted conditions during the operations, closure and post-closure phases of the development. The assumptions regarding country food consumption rates were not changed between baseline and the other phases of the project. It is the relative change in exposures and risks that occur between baseline, operations, closure and post-closure conditions that is used to determine the overall environmental effects of the project. Key issues for the HHERA associated with the Project include: • Changes in air quality in relation to human health; • Changes in water quality in relation to human health; • Country food quality in relation to human health; • Identification of reasonable country food consumption estimates; • Changes in chemical concentrations in the environment (soil, sediment, surface water and vegetation) in relation to terrestrial ecological receptors. Canadian Drinking Water Guidelines (CDWG) and the Livestock Water Guidelines (LWG) are used to facilitate the assessment of potential effects of changes to surface water on human and terrestrial ecological receptors. Potential human health risks associated with fish consumption for five metals of concern including arsenic, chromium, copper, mercury and selenium were assessed.	The project will directly impact some known archaeological sites.
Proposed Mitigation		Mitigation measures proposed to maintain air quality and limit dust and maintain water quality in the Fish Lake watershed, will provide the necessary protection for human health, terrestrial ecological receptors and for country food quality, Additional mitigation measures for the load-out facility, transmission line and access road are as outlined in the March 2009 EIS/Application.	Special monitoring and mitigation measures include avoidance of most sites, clear marking of boundaries around the sites and the development of a Cultural and Heritage Protection Plan which ensures the sites will not be disturbed throughout all phases of the mine development.
Potential Residual Effects		For the majority of the Criteria Air Contaminants (CACs) (Dustfall (DF), NO2, CO, SO2 and lead (Pb)) predicted concentrations are well below the established provincial or national air quality criteria. Particulate concentrations in the Nemaiah Valley would also be below their respective regulatory standard or objective. Metal concentrations in soil in the vicinity of Fish Lake are not expected to increase above baseline conditions and thus, direct exposures to metals in soils would not be a concern for humans or terrestrial ecological receptors (wildlife and vegetation) in the vicinity of Fish Lake. Even under worst-case assumptions, the post-closure concentrations of metals in the soils do not represent health concerns for terrestrial animal receptors in the LSA in the vicinity of Fish Lake and beyond. For assessing potential effects on surface water, the use of the Canadian Drinking Water Guideline (CDWG) as the basis for identifying potential concerns for human health is a conservative approach that tends to over-estimate potential risks. A review of the CDWG shows that the yearly-averaged daily mean concentrations are well below the CDWG for each of the metals. Therefore, surface water quality in the mine site area would be acceptable as a source of potable water and thus, the predicted metals concentrations do not pose a potential concern for human health. The data show that the maximum predicted yearly-averaged mean metal concentrations in surface water are below the Livestock Water Guidelines and thus, the predicted metals concentrations in the mine site area do not pose a potential concern for the health of terrestrial ecological receptors. Looking at the predicted post-closure metals concentrations in soil in the vicinity of Fish Lake, the greatest increase in concentration was noted for copper, where the concentration after 20 years was estimated to be 0.65% higher than the copper concentration in soil under baseline conditions. To provide a worst-case estimate of changes in exposures for people and ecological receptors this 0.65% increase in metal concentration was assumed to occur for all metals of potential concern. When the Hazard Quotients (HQs) are increased for all metals of potential concern by 0.65% for the toddler and adult receptors, the consumption of country food does not alter the potential health risks above what would be predicted for a baseline condition.	Out of the seventy nine identified archaeological sites, there will be a loss of four low scientific value sites, one moderate scientific site, and three high scientific value sites.
Cumulative Effects		None of the reasonably forseeable projects or activities are likely to interact cumulatively with the project's potential residual effects on human health.	No cumulative effects.
Significance of Residual Effects	Direction	Predicted changes to air, soil, surface water, country food quality and terrestrial ecosystem receptors are considered to be neutral in direction.	Any loss is considered adverse.
	Magnitude	For all predicted effects the magnitude of effect is low (i.e. post closure potential for dust migration is limited,and post-closure drinking water, soil and country foods quality are essentially unchanged from baseline conditions).	For all predicated effects the magnitude is low, due to ability to avoid known sites and relatively low significance and minimal number of sites lost.
	Geographical Extent	Potential effects to human health, if they were to occur, would occur within the immediate vicinity of the mine site area.	The effects are local and site specific.
	Frequency	If effects to human health were to occur they would likely occur during operations thru to closure.Effects could occur on a regular or continuous basis.	Effects to archaeological resources would occur once in any given area.
	Duration	The predicted effects to air quality are predicted to be short term in duration (i.e. during project lifetime). All other effects have the potential to be far future or permanent.	Effects to archaeological resources are long term.
	Reversibility	Effects to air quality are reversible and will cease upon completion of post-closure. Low magnitude (i.e. post-closure soil, country food, vegetation and water quality unchanged from baseline quality) effects, if they occur would be irreversible.	Effects to archaeological resources are permanent and not reversible.
	Ecological/Socio-economic Context	Apart from logging activity the project area is relatively undisturbed and not adversely affected by human activity.	The project mine site area is relatively undisturbed and not adversely affected by human activity.
Overall Significance		The combined residual environmental effects of the Project on human health and terrestrial ecological receptors are predicted to be NOT SIGNIFICANT (predicted effects represent no appreciable increase over baseline conditions).	Effects are localized and sites specific and with mitigation measures implemented, overall effects are considered not significant.
Likelihood of Occurrence of Adverse Effects Found to be Significant		As no significant residual effects are predicted, there is no likelihood of occurrence. There is the possibility that the prediction of significant adverse effects is incorrect, whereby an adverse effect deemed to be not significant may have an adverse effect. The likelihood of this remains low.	As no significant residual effects are predicted, there is no likelihood of occurrence.

VEC		Aboriginal Interests (Section 2.7.5)
Potential Effect		There is a loss of fish habitat in the Fish Creek watershed which could adversely affect current use of waterways for fishing, navigation and aboriginal rights to fish. Salmon fisheries sites are unaffected by the project. Fish Lake remains accessible. There is a loss of wildlife habitat and vegetation communities from land disturbance, and loss of access to land covered by infrastructure which could adversely affect current use of lands and resources for traditional purposes (hunting and trapping, fishing, gathering of berries, plants and medicines) and aboriginal rights to hunt, trap and gather. The island in Fish Lake is preserved. There is a loss of cultural heritage resources including known archaeological sites and cabins/camping areas in the vicinity of Little Fish Lake.
Proposed Mitigation		The mine design preserves Fish Lake and the fishery in the watershed, and the ability to navigate in Fish Lake. There is protection of water quality and salmon fisheries through a one watershed project design with zero discharge during operations. Mitigation and compensation measures for fish and fish habitat for the 2012 New Prosperity project are summarized in Section 2.7.2.5, with a concise summary in Table 2.7.2.5-30. Fish Compensation plans propose to enhance fish and fish habitat, and provide fishing opportunities in the region, to offset the loss of Little Fish Lake. Mitigation measures for water quality are specified in Sections 2.7.2.4 and implementation of the water management plan, including sediment and erosion control measures are detailed in 2.8.1. Vegetation and wildlife mitigation measures are specified in Sections 2.7.2.7 and 2.7.2.8. Taseko will implement the Vegetation and Wildlife Management Plan as outlined in 2.8.1 and apply reclamation practices to restore land capability and land use as described in 2.8.2. Taseko will develop and implement a compensation plan following the Habitat Compensation Framework. Taseko will enable access to Fish Lake during operations. Taseko is also open to discussing measures that enhance habitat, and improve abundance and diversity of wildlife species that are of interest, providing or improving access to other areas in the territory for harvesting and gathering of plants, or as part of the New Prosperity Habitat Compensation Plan. The New Prosperity MDA preserves the island in Fish Lake , and 85% of the known archaeological sites are retained. A cultural heritage protection plan in 2.8.1 identifies measures to avoid disturbances within the MDA.
Potential Residual Effects		The New Prosperity mine development plan retains 55% of the fish bearing and non-fish bearing streams and 94% of the lake habitat compared to the previous project. Access to Fish Lake during all mine phases will be maintained and the preservation of Fish Lake maintains fishing opportunities, and navigation for fishing, for current and future generations. Land disturbance is less than that proposed for the previous project and as a result, habitat losses are either materially unchanged or reduced, less impact on local wildlife populations is expected, trapping areas for all species assessed are less impacted, the overall vegetation loss is less and as a result, areas for plant gathering species of interest to First Nations are less impacted than with the previous project. The predicted residual effects on cultural heritage have decreased relative to the previous project. Residual effects include the loss of cabins in the vicinity of Little Fish Lake.
Cumulative Effects		For each Project residual effect, either due to spatial or temporal separation, no mechanism for interaction was found to exist for any of the potential residual environmental effects potentially arising from the 22 projects and activities assessed. Consequently, it was concluded that the Project's contribution to cumulative effects would not affect either the viability or sustainability of the land and resource upon which current use for traditional purposes relies or on cultural heritage.
Significance of Residual Effects	Direction	The preservation of Fish Lake and fishery and the protection of water quality and salmon fisheries through a one watershed project design with zero discharge during operations, and implementation of Fish Compensation Plans, would be neutral in direction. The loss of habitat and the loss of access to areas disturbed by mine components would be adverse in direction. The loss of cultural heritage resources would be adverse in direction.
	Magnitude	Project effects on fish and fish habitat for which there may be current use for traditional purposes or aboriginal rights are low in magnitude (they do not affect salmon fisheries sites, Fish Lake remains accessible and planned fish compensation plans results in no net loss). The spatial extent of loss of area for wildlife and wildlife habitat, or vegetation, accessed for hunting and trapping, plant gathering and other current use purposes or aboriginal rights to hunt, trap and/or gather is low in magnitude (disturbances are reclaimed and a Habitat Compensation Plan is developed and implemented). With the New Prosperity MDA the 15% of known archaeological sites that will be affected and effect on cultural heritage is considered to be low in magnitude.
	Geographical Extent	Project effects to aboriginal interests would occur within the immediate vicinity of the mine site area.
	Frequency	Project effects would occur during all phases of mine development and operation through to closure and occur only once in any given location.
	Duration	Project lifetime.
	Reversibility	Residual effects on aboriginal interests for all phases are considered to be reversible.
	Ecological/Socio-economic Context	The project mine site area is relatively undisturbed and not adversely affected by human activity.
Overall Significance		Potential effects are considered to be low, localized and reversible and with the implementation of mitigation measures, reclamation and compensation plans, the effects are predicted to be NOT SIGNIFICANT.
Likelihood of Occurrence of Adverse Effects Found to be Significant		There are no significant residual effects to aboriginal interests, including current use for traditional purposes, cultural heritage, and aboriginal rights, arising from effects on fish and fish habitat, water, vegetation, wildlife and wildlife habitat, and/or disturbance to land and waterways.As no significant residual effects are predicted, there is no likelihood of occurrence. There is the possibility that the prediction of significant adverse effects is incorrect, whereby an adverse effect deemed to be not significant may have an adverse effect. The likelihood of this remains low.

Overall Findings

Alternatives Assessment Summary

The EIS identifies a preferred mine development plan (MDP) including a preferred means of disposing of waste rock and tailings generated throughout the operating life of the proposed mine. The approach used to support this conclusion was a multiple accounts assessment (MAA) approach following the procedural recommendations contained within the Guidelines for the Assessment of Alternatives for Mine Waste Disposal (Environment Canada, 2011).

Two MDPs resulted from a pre-screening assessment; the New Prosperity Project as proposed, and an alternative, still utilizing subaqueous tailings disposal but with the tailings facility located in the upper reaches of Tête Angela Creek.

Both alternatives would impact stream and lake habitat for rainbow trout. The project as proposed results in less stream and lake impacts than the Tete Angela alternative.

A significant distinguishing factor favouring the project as proposed is the ability to limit direct impacts to a single watershed, allowing for greater control and containment of mine water and waste by limiting the number of potential pathways to the greater receiving environment.

The project as proposed results in the open pit sited between the TSF location and the Taseko River, providing an additional measure of protection to minimizing or eliminating the possibility of mine water migrating to the Taseko River. Conversely, the Tête Angela alternative does not have such redundancy.

The MAA included four accounts (environment, technical, socio-economic, and project economics). Each account was populated by one of more sub-accounts, each made up of a number of indicators. Indicators were qualitatively or quantitatively ranked based on measureable attributes of each MDP or on reasonable surrogates when actual measurement could not be achieved.

MDP's were then evaluated by applying different weighting factors to accounts, sub-accounts, and indicators to enable an assessment of the relative merit of each MDP as a result of applying differing levels of importance to each account. This enabled a comparison of the alternative MDPs from a variety of viewpoints and value sets.

The analysis demonstrates that the New Prosperity project as proposed is the preferred alternative with respect to environmental, technical, socio-economic, and project economic accounts, irrespective of the weight applied to each account.

Previous Panel Conclusions

The July 2010 Report of the Federal Review Panel documents their conclusions on the significance of the environmental effects and effects on potential and established Aboriginal rights of the previously proposed Prosperity Project. In its response to the report, the Government of Canada indicated that while it accepted the conclusions of the panel as presented, its decision did not preclude Taseko from submitting a new project proposal that addressed the factors considered by the Panel.

Taseko has undertaken revisions to the mine development plan, mine site layout, and mitigation to address the factors identified by the Panel.

The Panel concluded that the Project would result in a significant adverse effect on fish and fish habitat in the Fish Creek watershed and in the inability of the fisheries resource in the Fish Creek watershed to meet the needs of present and future generations. New Prosperity incorporates a mine site plan that preserves Fish Lake and the fisheries resources in the Fish Creek watershed, incorporates mitigation and compensation measures that achieve the no net loss policy objective and provides additional opportunities to meet the needs of present and future generations in the Fish Creek watershed and elsewhere.

The finding of a significant effect on navigation will be addressed with the preservation of, access to, and use of Fish Lake throughout all phases of the project.

The previous Panel concluded that there was a significant adverse effect on the users of the meadows within Fish Creek watershed due to the loss of grazing lands, on the Xeni Gwet'in (Nemiah Band) Sonny Lulua trapline, and on Taseko Lake Outfitters tourism business. While it is not clear how the previous Panel reached these conclusions, or whether they were consistent with CEAAs policy for determining significant adverse effects, New Prosperity, because of its reduced mine development area, will have a reduced effect on all of these activities. Mitigation and compensation measures focussed upon quantifying actual effects and seeking remedies for both the short and long term effects are incorporated into the New Prosperity project.

The Panel also concluded that the project would result in a significant adverse cumulative effect on the South Chilcotin grizzly bear population and would result in the inability of the population to meet the needs of present and future generations. In recognition of the Panel's finding, for New Prosperity, Taseko undertook a comprehensive assessment of potential cumulative effects utilizing up-to-date provincial management agency information and advice. Despite the fact that both the Prosperity March 2009 EIS/Application and the New Prosperity EIS concluded that the proposed project's contribution to cumulative effects would not affect the viability or sustainability of this population, Taseko is cognizant of the province's intention to develop a recovery plan for the population and is committed to the process. Taseko has developed a draft framework for the plan intended as the foundation for engaging in discussion with regulatory agencies, other industrial operators, First Nations and local stakeholders. Taseko's target is to develop a detailed Grizzly Bear Mortality Risk Reduction Plan within 6 months of approval and a decision to proceed with project development.

The previous Panel reached two conditional findings of a significant effect: provided a wildlife habitat compensation plan is developed and implemented, the Project would not result in a significant adverse effect on migratory birds and their habitat; and, provided the recommendation (archaeology) identified by the Panel is implemented, the Project would not result in a significant adverse effect on physical heritage and sites of archaeological importance. New Prosperity, with its revisions to the mine development plan and mine site layout, reduces the direct and indirect effects to wildlife habitat and avoids altogether sites of archaeological importance. New Prosperity incorporates the previous commitment to develop and implement a wildlife habitat compensation plan and incorporates mitigation measures to ensure sites of archaeological importance remaining within the mine development area will remain undisturbed.

The previous panel interpreted its mandate to mean that it was required to consider and provide conclusions on the significance of the effects of the Project on asserted or established Aboriginal rights or title in the area of the Project. The panel found the following significant adverse effects in the previously proposed Prosperity Project in relation to rights and title: Tsilhqot'in Aboriginal rights as defined in the William Case; the potential Tsilhqot'in Aboriginal right to fish in Fish Lake; Tsilhqot'in Aboriginal title that

could be granted, and title that could be granted to the Esketemc (Alkali Lake Band) and the Stswecem'c/Xgat'tem (Canoe Creek Band).

It must be noted that not in all cases is it clear how or to what extent the previous panel applied the CEAA Reference Guide for determining significant adverse effects when reaching these conclusions. It is also noted that the panel made findings regarding significance of adverse effects in respect of asserted or established aboriginal rights and title even though such matters do not fall within the definition of "environmental effect" under Canadian Environmental Assessment Act but rather relate to the Crown's duty to consult and accommodate, which must be assessed under a different methodology prescribed by the Supreme Court of Canada. As required by the Guidelines, this EIS provides information in respect of each of these findings by the prior panel but Taseko does so without prejudice to its position that the present panel must consider and expressly apply the objective test for determination of significance of adverse effects as set out in that Guide in relation to "environmental effects", and that it is not to apply that test to consideration of aboriginal rights and title and the Crown's duty to consult. In every instance as a result of the modified mine development plan, the magnitude of direct and indirect effects on habitat and the right to fish in Fish Lake are reduced.

Accidents and Malfunctions

In order to assess environmental effects that may result from accidents and malfunctions that could potentially occur during the life of the New Prosperity Project, a historic review of similar projects was carried out. The review identified a range of inadvertent events that posed risks to the environment and to the health and safety of workers. These events were screened to determine whether any similar accident or malfunction could occur at the New Prosperity Project and whether that event would result in an environmental effect.

Scenarios were then developed to model the worst case situation if a similar event were to happen at the New Prosperity Project. The modelling of the scenarios took into account the event's potential effect on the environment, preventative measures that will be instituted, emergency response, clean-up that would take place, and the monitoring of any residual effects. The emergency response protocols, environmental management systems, site policies and procedures envisioned for the New Prosperity project were also used to describe the probable mitigation of such events.

A rating system was then employed to rank the event's effect on each of the Valued Ecosystem Components (VEC) within the Project. The ranking assigned one of three designations to each events effect on each VEC. The designations used are:

0 No interaction with the VEC

1 Interaction occurs, however the interaction would not result in a significant environmental effect even without mitigation

2 Interaction could result in an environmental effect of concern even with mitigation

For all of the accidents or malfunction events that were ranked as a 2, further assessment was carried out to determine the need for further mitigation measures to be incorporated into the New Prosperity Project's designs, emergency response plans, and environmental management programs.

Based on the screening of potential interactions between VECs, the VECs are likely to have minor effects, have no detrimental effects, and/or effects that are considered manageable with the application of emergency response and post-emergency response clean-up plans.

Conclusions with Respect to Significant Adverse Effects

Taking into account the implementation of proposed mitigation, including commitments made by Taseko in this EIS, and relying on the information supplied by relevant experts in each of the scientific and social disciplines who have contributed to this report, Taseko concludes that the Project is not likely to cause any significant adverse environmental effects.

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