

**APPENDIX 3-Q
GOVERNMENT AGENCIES AND LOCAL
GOVERNMENT ISSUES AND RESPONSES**

Appendix Q. Government Agency and Local Government Issues and Responses

Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage

No.	Issue	Seabridge Response	Raised By
Consultation and EA Process			
1	Include “navigation” as Valued Component	Navigation has been assessed as a VC, focused on potential effects of bridges, dams, and other structures on navigable streams within the Project footprint as well as indirect health and socio-economic effects.	TC
2	Include oolichan as Valued Component	The BC EAO, in a May 5, 2010 letter to the NLG, conveyed its decision that oolichan need not be assessed for the Project EA, and provided its rationale. BC EAO decided that oolichan would not be included as a VC because oolichan are primarily restricted to the lower reaches of the Nass River, and the Project is approximately 200 km from the lower Nass. The BC EAO noted that other VCs for aquatic species such as Dolly Varden, bull trout, rainbow trout/steelhead and Pacific salmon will be sufficient to determine if there are any adverse effects on downstream oolichan populations. The CEA Agency also assessed this issue and determined that oolichan did not need to be included as a VC (see September 15, 2010 letter).	DFO
Project Design and Operation			
3	Perpetual water treatment at Mine Site and timing of treatment	Water treatment will continue throughout the year until such time as water quality meets discharge criteria and is suitable for release to the environment. Treatment volumes may vary seasonally. Discharge will be staged to coincide with the natural hydrograph of Sulphurets Creek and the Unuk River.	AK DNR
4	Risk of ice scour in Tailing Management Facility (TMF)	Tailing depths along the edge of the open water sections of the TMF will be increased to reduce the potential disturbance of tailing by scouring. Portions of the tailing beach in contact with water at closure will be faced with gravel to resist ice scour.	MEMNG
5	Recycling of TMF water	Recycling of TMF water will reduce the amount of fresh water that is required for processing and ultimately the amount of water released to the environment. Most of the required process water will be recycled from internal processes. TMF water will be recycled to the Process Plant using floating pump barge pumps.	AK DNR

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Project Design and Operation (cont'd)			
6	TMF capacity to handle Snowfield's tailing	The TMF has been designed to store 2.3 billion tonnes of tailing based on the amount of ore to be processed over the 51.5 year mine life. Deposition of tailing from the adjacent Snowfield deposit (owned by Pretivm Resources) was not considered in the environmental assessment (EA), since it is not part of the proposed Project.	MOE, MEMNG
7	Viability of ore transport tunnel	The ore transport tunnel (MTT) is a critical Project component, designed to be safe and structurally stable. The design includes 30m cross-cuts, located at intervals of about 300m to help expedite construction and facilitate equipment maintenance in the tunnels. The MTT is similar to the Granduc tunnel, located to the south of the Project, which was constructed in the 1960s and is currently being rehabilitated.	US NOAA
8	Tunnel geotechnical conditions	The MTT will be constructed in geology similar to that encountered for the Granduc tunnel. Seabridge has completed field studies and geochemical testing of rock representative of the tunnel alignments. The tunnel has a 1% gradient, sloping away from the Teigen and Treaty Creek drainages so that any resulting ARD can be collected in the Water Storage Facility (WSF) and treated prior to discharge.	AK DNR
9	Tunnel drainage	Tunnel drainage will be managed to account for the possibility of ML/ARD. The tunnels will slope towards from the Processing and Tailing Management Area (PTMA) towards the Mine Site (at a 1% grade). Drainage will be directed to the WSF for water treatment.	AK DNR
10	Sludge management	Construction-phase sludge will be dewatered and stored in a secure landfill located near the Water Treatment Plant (WTP) at the Mine Site. During operation, sludge will be transported year-round via the MTT ore conveyor to the PTMA, and deposited in the TMF. On closure, a secure landfill area will be developed on the Mitchell and McTagg RSFs to store sludge over the long term.	MOE
11	Highwall stability between Sulphurets and Mitchell pits	The slope design for all open pits is based on stability criteria that require a minimum factor of safety of 1.2 for slopes controlled by discontinuities and 1.3 for slopes controlled by rock mass. Instrumentation will be installed and monitoring criteria developed in areas where there is a stability concern. Slope designs will be updated during mine planning and mine operation.	MEMPR
12	Volumes of water to be treated in WSF	The WSF will be designed to accommodate greater than more than the 1:200 wet year. Water from the WSF will be treated by a high density sludge treatment plant with a minimum of six clarifiers, with a maximum flow rate of 7.5m ³ /s.	MEMNG

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Project Design and Operation (cont'd)			
13	Water treatment at TMF	Water treatment at the TMF is focused on controlling identified key parameters such as cyanide, dissolved metals and suspended solids through various treatment methods. Recovering cyanide and copper in the CIL process is accomplished with the introduction of the SART/AVR process. Low cyanide and copper levels are controlled through a SO ₂ /air process to reduce residual concentrations of cyanide. The target cyanide and copper treatment is set at 0.5 mg/L respectively. A polishing step using activated carbon will be used to effectively reduce dissolved copper and other trace metals down to less than 0.5 mg/L. As a result, water going to the CIL lined tailing containment cell will be treated. As an added safety measure, the water decanted from the CIL cell to the main flotation tailing pond will go through a final polishing water treatment step using hydrogen peroxide. The hydrogen peroxide step will further reduce any residual cyanide and any potential thiosalts from the CIL process. The only discharge to the receiving environment will be from the large flotation tailings pond through a pipeline, then diffused into Treaty Creek. Discharge from the main flotation tailings pond will be from May 15 to October 15 of each year to ensure proper mixing in the receiving environment. Each spring after ice break-up a floating clarifier will be installed in the pond to skim surface water into the clarifier where flocculants could be added to control total suspended solids. Federal Metal Mining Effluent Regulations (2002b) discharge criteria for suspended solids is 15 mg/L. Suspended solids contribute to total metals and as such will have to be controlled below 15 mg/L. Federal MMER and provincial discharge criteria will be achieved to protect aquatic life.	BC EAO
14	Diversion tunnels post-closure	Mitchell Diversion Tunnel (MDT) flows will be temporarily diverted into the Mitchell Pit to increase the rate of pit flooding. Once filled, MDT flows will be restored to divert clean water and provide flow to generate power. The McTagg Diversion Tunnel will remain open to provide water for hydroelectric generation. The power will be used to operate the WTP or sold for use in the provincial electricity grid. The tunnels will be sealed with an engineered concrete plug when no longer required. The Sulphurets-Mitchell Conveyor Tunnel and other water diversion tunnels will be sealed if no longer required after mine closure. The Mitchell and McTagg Diversion tunnels will be backed up with surface diversion channels.	RDKS
15	Removal of Eskay Creek access road at closure	The Coulter Creek Access Road (CCAR) will be closed no longer required. Bridges and culverts will be removed and natural drainage restored. The road surface will be ripped and the topsoil that was stripped and stored along the road will be spread on the surface. It will then be seeded using native seed, in accordance with Closure and Reclamation Plan (see Chapter 27 of the Application/EIS).	Town of Smithers
16	Effect of tailing on Aboriginal groups	The Tailing Management Facility (TMF) impoundment and dams will be designed, constructed, monitored, and maintained in accordance with industry standards. A detailed monitoring plan will be developed to monitor the TMF. Significant design changes to the TMF have been made to accommodate potential effects on Aboriginal group and interests. These include lining the Carbon-in-Leach (CIL) cell to reduce seepage of leachate, and re-routing the discharge to avoid the more sensitive Teigen Creek and drain instead to North Treaty and Treaty Creeks to avoid more sensitive Teigen Creek (see response #13)	RDKS

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Project Design and Operation (cont'd)			
17	Concern over engineering design	Engineering design will follow BC, federal, and international standards appropriate for the Project facilities to be constructed. The TMF is designed as an extreme consequence facility according to the Canadian Dam Safety guidelines (2007), and a site-specific seismic hazard assessment has been completed. The tailing dams and other water storage facilities are designed to meet or exceed the Maximum Credible Earthquake (approximate magnitude 7.0 earthquake at the site). Both the North TMF Spillway and the Southeast TMF Spillway are designed to separately route the Probably Maximum Flood (PMF) for the entire TMF. In this way, if either spillway is blocked, the PMF can still be managed.	RDKS
18	Scheduling of road and tunnel construction	The CCAR and TCAR roads will be the first components of the Project to be constructed. These roads will provide access to the mine site and the PTMA, located in two separate valleys. The MTT will be constructed as soon as access is available, and sediment ponds, development rock pads, and temporary water treatment facilities are constructed.	RDKS
19	Electrical supply, including Project's relationship to NTL	Electrical power (171 MW) will be provided from the provincial grid (the new Northwest Transmission Line), supplemented by small scale on-site hydroelectric power generation (5.5 MW) provided by turbines installed at the Mitchell diversion tunnel, McTagg diversion tunnel, and mine site Water Treatment Plant (WTP). These facilities will continue to operate after closure to provide electricity to power the WTP. Diesel generators will be used initially to supply construction power for tunnel driving and other initial construction activities.	RDKS
Air Quality and Climate			
20	Extent of meteorological baseline studies at mine site	Meteorological baseline data (temperature, pressure, precipitation, wind speed, wind direction, solar radiation, and humidity) for the Mine Site has been collected at four meteorological stations, established between 2007 and 2009. The different stations are collecting slightly different data. Since 2008, baseline dustfall measurements have been collected during the summer months (driest period) throughout the Project area. Most baseline measurements for the 98th average percentile indicate no exceedances of the BC ambient air control objective of 1.7 mg/dm ² /day (only two dustfall exceedances were observed in 2010). Meteorological towers were installed following the procedures outlined in the BC Ministry of Environment's Air Monitoring Site Selection and Exposure Criteria and Environment Canada - Meteorological Services of Canada (2004).	MOE
21	Increased acid deposition, such as production of gases from ore processing (NO _x and SO _x)	Based on air quality modeling results, the rate of acid deposition from ore processing will be < 1% of baseline measurements. Given this low level, no significant adverse effects related to acid deposition are anticipated.	MOE

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Water Quality and Quantity			
22	SNPR cut-off value for ARD analysis	Standard BC default ranges of Sulphide Net Potential Ratio (SNPR) were used to determine acid generating potential (AGP). The standard ranges are: adjusted SNPR <= 1 (PAG); 1 > adjusted SNPR <=2 (uncertain AGP); and adjusted SNPR >2 (not PAG) (MEMNG 1998) and Prediction Manual for Drainage Chemistry (MEND 2009).	NRCan
23	ML/ARD characterization of four deposits	<p>Seabridge’s geochemical program has characterized and predicted the potential for Project-related ML/ARD associated with waste rock, ore, pit walls, tailing, non-deposit material, and groundwater seep geochemistry. Waste rock, ore, and potential pit wall material were assessed in 2,030 Acid Base Accounting (ABA) and solid-phase elemental analyses from waste rock and ore samples, 40 waste rock humidity cells (12 ore and 28 waste rock samples), and 17 field leach barrels from waste rock and ore samples. Tailing material was assessed in 33 static tailing samples, eight humidity cells, six subaqueous columns (SAC), and three aging tests. Naturally occurring groundwater seeps were sampled at the Kerr Deposit (five seeps), Sulphurets Deposit (one seep), Mitchell Deposit (23 seeps), McTagg Creek Valley (three seeps), and Ted Morris Creek Valley (five seeps).</p> <p>Non-deposit samples were collected from overburden and rock in the proposed KSM Project area for assessment of ML/ARD potential in areas that may be disturbed, exposed, or excavated during proposed mining activities such as infrastructure development.</p> <p>The study approach conforms to the BC Ministry of Energy and Mines “Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia” (MEMNG 1998).</p>	NRCan
24	Rationale for subaqueous disposal of rougher tailing in TMF	The TMF design does not include subaqueous deposition for the rougher tailings. Since they are high in sulphides, the cleaner sulphide tailing from the CIL circuit will be deposited subaqueously in the lined CIL pond.	NRCan
25	Ageing tests on Iron Cap tailing	The Iron Cap underground mine will not be developed until after approximately Year 32 and will operate until Year 51.5. Various tests have been completed on Iron Cap tailing including humidity cells and subaqueous cells, but no ageing tests, due to a lack of samples. Moreover, these tests were deemed non-essential. Iron Cap underground ore will be part of the feed to the mill with Mitchell underground and Kerr open pit ore.	NRCan
26	PAG issues associated with tunnel excavations	Seabridge has completed field studies and geochemical testing of rock representative of the proposed MTT alignment. PAG rock is not anticipated in the eastern catchment tunnel. Where PAG material is encountered, it will be assessed and identified. Appropriate remediation measures will be implemented where there is a risk to aquatic life from ARD (see Chapter 26 for ML/ARD Management).	

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Water Quality and Quantity (cont'd)			
27	Rock storage facilities (RSFs) management and mitigation	Mined waste rock from the Mitchell, Sulphurets and Iron Cap workings will be stored in engineered RSFs in the Mitchell and McTagg Creek valleys. Waste rock from the Kerr Pit will be backfilled in the mined out Sulphurets Pit. Benches and the tops of the RSFs will be lined to minimize infiltration of precipitation through the waste rock, minimizing ML/ARD associated with PAG waste. Water from the waste rock backfilled into the Sulphurets Pit will be collected in a basal drain and routed to an ion-exchange selenium treatment plant. Some not-PAG waste rock from the Sulphurets Deposit will be used as construction material for the WSD and RSF basal drains. Non-contact surface runoff will be diverted around these facilities. Contact runoff from the Mitchell and McTagg RSFs will be collected and directed to the WSF for treatment through the WTP prior to discharge to the receiving environment.	NRCan
28	Cover over cleaner tailing in TMF	The sulphide (or cleaner) tailing represent about 10% of the total tailing generated, and are considered PAG tailing. The rougher tailing represents about 90% of the tailing material, and is classified as not PAG. During operation and closure there will be a water cover over the cleaner/sulphide tailing to prevent ARD. The cleaner (or carbon-in-leach [CIL]) tailing, will be stored in a lined cell. Towards the end of operation, the CIL tailing will be covered with non-reactive rougher tailing and a water cover.	MEMNG
29	Independent review committee should include a person with mine water treatment expertise	The Independent Review Committee includes a water quality specialist (Stephen Day). Seabridge has retained the professional services of Rescan, SGS and BioteQ who have extensive experience in mine water treatment.	MEMNG
30	Sampling station on Bell-Irving River	Water quality sampling in the Bell-Irving River upstream and downstream of Treaty Creek has been monitored from 2008 to 2012. Approximately 25 water quality baseline sampling stations were established on Treaty, Teigen, and Snow Bank creeks and on the Bell Irving River. Monthly samples (nutrients, metals, sediments, fish tissue, periphyton, and benthos) were taken at sites directly downstream of the TMF on South Treaty Creek, with additional quarterly sampling taken at sites further downstream on Treaty Creek and the Bell Irving River. Baseline results and the effects assessment for water quality and fish and aquatic habitat will be included in the Application/EIS.	MOE

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Water Quality and Quantity (cont'd)			
31	Sampling on Unuk River at BC/Alaska border	Twenty-five streams and river water quality sites were monitored in the Mine Site baseline study area from 2007 to 2012. Most streams near the proposed Mine Site area were near-neutral to slightly alkaline, with moderately hard to soft waters, and with low sensitivity to acid inputs. The exception was the upper reaches of Mitchell Creek where acidic and poorly buffered conditions were a result of naturally occurring ARD from the highly mineralized deposit area. At the toe of the Mitchell Glacier (site MC1A-US), pH values were occasionally measured below 3.0. The pH of lower Mitchell Creek above the confluence with Sulphurets Creek (site MC2) was frequently 2 to 3 pH units higher than at MC1A-US, indicating an increase in buffering capacity due to mixing with the well-buffered McTagg and Gingras creeks and interactions with neutralizing minerals. Sulphurets Creek and the Unuk River have a low sensitivity to acid inputs (mean annual alkalinity > 20 mg/L as CaCO ₃) and typically had near-neutral pH values throughout the year. In 2008, a water quality monitoring site (UR2) was established on the Unuk River at Border Lake Provincial Park on the Canadian side of the BC/Alaska border. Water quality has been sampled quarterly at UR2 since 2008.	AK DNR
32	Water quality baseline program methodology	The design of the surface water quality baseline monitoring program, including methodology, sampling parameters, sampling frequency, analytical detection limits, and QA/QC procedures were reviewed with BC Ministry of Environment staff. The proposed annual water quality baseline program was discussed with KSM Project EA Working Group. Baseline water quality reports are appended to Chapter 14 of the Application/EIS.	MOE
33	Water quality, including Mitchell Creek natural water quality and effect on Sulphurets Creek water quality	Baseline water quality studies have been done to determine natural water quality, including seasonal variations. Water quality modeling has been used to predict potential changes to water quality from the Project. These predictions have been used to assess potential effects to the aquatic receiving environment. See response #25.	AK DNR
34	Volume of additional water to be directed to Unuk River	No additional volume will be directed to the Unuk River as all water originates in the same basin.	AK DNR
35	Water quality standards for discharges from TMF will exceed drinking water standards	No Project-related increases in metal concentrations above BC drinking water guidelines are predicted downstream of the TMF.	DFO

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Water Quality and Quantity (cont'd)			
36	More differentiation needed between ore, pit wall, and waste rock in terms of acid generation potential.	See response #25.	MEMNG
37	Tunnel drainage	Temporary water treatment plants will treat tunnel discharge water during MTT construction to remove dissolved metals and suspended solid content. During operation, due to the 1% grade, water will drain to the Mitchell side, and be collected in the WSF and treated prior to discharge.	AK DNR
38	Management of potential ARD in pit faces at closure, including flooding the pit.	The Mitchell Pit will be flooded at closure. Drainage from the pit walls above the pit lake will be collected and directed to the WSF. The configuration of the Sulphurets and Kerr pits will not be conducive to flooding. Drainage from the pit walls will be collected and piped to the WSF in perpetuity.	AK DNR
39	Concern that seeps are not giving an accurate picture of worst case water quality that could need managing during Operation.	Seep chemistry in the deposit areas is variable and dependent on hydrology, groundwater flow paths, residence time, and rock type. Maximum concentrations observed across all seeps, however, represent a reasonable analogue for site-specific solubility limits and is an accepted approach for mine sites in BC.	MOE
40	Consider oxy-anion build-up in the process water and its possible removal during the process	The build-up of oxy-anions in the flotation pond is not deemed to be an issue for the discharge of water from the flotation pond to the receiving environment. The low grade chalcopyrite ore is largely devoid of the reactive mineral pyrrhotite, normally associated with high thiosalt issues. Chemical oxygen demand (COD) measurements (as an alternative thiosalt or oxy-anion indicator) on the tailings were very low, indicating low thiosalts or other oxy-anions. The potential for elevated thiosalts is higher in the high pyrite CIL circuit, but will be addressed by hydrogen peroxide treatment. Any thiosalts from grinding and rougher flotation will be discharged into a large oxygenated pond where natural degradation will be enhanced through the large surface area and retention time that will promote oxidation.	MEMNG

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Water Quality and Quantity (cont'd)			
41	Inclusion of monitoring program for tailing to track metals in rougher tailing	The proposed ML/ARD Management Plan and TMF Management Monitoring and Maintenance Requirements Plan are appended to Chapter 26 of the Application/EIS. They include a program to monitor tailing for metal content.	MOE
42	Water quality impacts as a result of access road to TMF	Water quality impacts originating from the proposed Treaty Creek access road (TCAR) are not anticipated. Seabridge conducted an access roads ML/ARD drainage potential assessment along proposed Project road alignments. This assessment concluded that the ML/ARD potential rankings along the TCAR are relatively low to none, with a few 200m segments of high or possible ML/ ARD potential. These rankings reflect the location of the alignment predominantly on quaternary alluvial and colluvial sediments.	EC
43	Effects on Unuk River	<p>Selenium concentrations above the BC water quality guideline (0.002 mg/L) are predicted in the Unuk River immediately downstream of Sulphurets Creek (site UR1). Selenium concentrations are never predicted to be above the BC water quality guideline at site UR2 at the BC/Alaska border. Selenium concentrations in the Unuk River (site UR1 and UR2) are never predicted to above the Alaska selenium water quality guideline (0.005 mg/L). The predicted concentrations are within the safety factor of the BC water quality guideline and will be monitored through the Aquatic Effects Monitoring Plan (see Chapter 26 of the Application/EIS). Key measures to minimize effects include construction and maintenance of an extensive system of water management facilities to divert non-contact water away from disturbed areas and to collect water that has contacted disturbed areas for treatment before release.</p> <p>Contact water collected at the WSF will be pumped to the Mine Site WTP located downstream near the confluence of Mitchell and Sulphurets creeks. The large treatment flows at certain times of the year are dictated by the requirement to match the natural hydrograph to ensure sufficient dilution capacity. The treatment rates in late fall, winter and early spring will be very low (0.10 to 0.25 m3/s) due to low receiving environment stream flows. Effluent water quality will be monitored continuously and water will not be released unless it meets discharge permit levels (see ML/ARD Management Plan in Chapter 26 for description of Mine Site water treatment including WTP and selenium treatment plant).</p> <p>During construction of the Coulter Creek access road and related watercourse crossings, fish timing windows, and DFO operational statements for bridge construction, and the use of explosives and protection of aquatic habitat will be followed.</p>	US DOI

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Fish and Fish Habitat			
44	Fish populations, including density estimates, particularly in the TMF area	Fish population size/density estimates were assessed in the proposed TMF area and downstream of the proposed TMF area in South Teigen and North Treaty creeks. Relative abundance of fish populations were assessed in study streams, wetlands and lakes using different sampling techniques including single pass electrofishing, minnow trapping, gill netting, snorkel surveys, red surveys, and spawning surveys. Detailed results are provided in Chapter 15 of the Application/EIS.	DFO
45	Steelhead presence and spawning habitat use in lower South Teigen Creek (below falls) and lower North Treaty Creek	Based on steelhead spawning surveys, conducted in 2010 and 2011, no adult steelhead were observed in North Treaty or Treaty creeks, no spawning was observed, suitable steelhead spawning habitat is not present in North Treaty or South Teigen creeks, and steelhead fry were not captured in South Teigen or North Treaty creeks. These surveys indicate spawning habitat is not present.	MOE
46	Sub-lethal toxicity testing of fish in mainstem of Treaty and Teigen creeks, downstream of TMF	Sub-lethal fish embryo toxicity tests (coho salmon) were conducted using water from mainstem Treaty and Teigen creeks. The sample locations represent mainstem river zones immediately downstream of the TMF, once mixing has occurred.	MOE
47	Spatial boundary of the biophysical assessment to include discernable (fish and aquatic habitat) effects in Alaska	Project-related (fish and aquatic habitat) impacts are not anticipated to occur downstream of the BC/Alaska border. At the request of US regulators, a site to monitor fish and aquatic communities and habitat was established immediately upstream of the BC/Alaska border (UR2) to evaluate potential Project downstream effects.	US DOI TC
48	Genetic diversity of Dolly Varden populations in South Teigen and North Treaty watersheds	A genetic study of Dolly Varden within and downstream of the proposed TMF area was conducted. Samples were taken from South Teigen Creek within the proposed footprint of the TMF, South Teigen Creek downstream of the falls, Teigen Creek, North Treaty Creek within the proposed TMF area, and Treaty Creek. The results indicate that Dolly Varden within the TMF are not a unique sub-species. In addition, DNA samples were collected from Dolly Varden throughout the study area to confirm species identification.	DFO

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Fish and Fish Habitat (cont'd)			
49	Potential for HADD on local fisheries near Seabee mining camp due to riparian vegetation removal and stream bed modification.	Seabridge received a <i>Mines Act</i> (1996) permit from MEMNG to establish the Seabee camp and a Licence to Cut from the MMFLNRO to remove trees from the riparian area. After the modified stream bed was restored, a biologist assessed the stream bed, concluding that there was no long-term impact. Vegetation was cleared from the riparian area in order to build a helicopter landing pad that meets safety standards. Areas outside of the helicopter landing area were replanted in 2010. This area is now undergoing restoration.	DFO
50	Fish salvage plan for TMF	The proposed fish salvage plan for the TMF provides for the live transfer of fish to another area downstream of the Project. The fish are primarily small stream Dolly Varden measuring a maximum of 15 cm (6 inches) fork length with a mean age of 5 years.	DFO
51	Location of Taft Creek compensation site is located in a riparian setback for the adjacent timber cut block	The proposed Taft Creek fish habitat compensation site is located within a riparian zone. Fish habitat would be created and a new riparian setback would be created as part of the compensation Project. (See appendix in Chapter 15 of the Application/EIS).	DFO
52	Consideration of Project modifications to enhance anadromous fish habitat	The EA has considered Project modifications to enhance anadromous fish habitat; but no technically feasible options were identified. Fish habitat compensation work will target Dolly Varden and fish habitat for various species of Pacific salmon.	US NOAA
53	Long-term viability of Dolly Varden monitoring sites	Regarding long-term Dolly Varden monitoring site, the proposed Aquatic Effects Monitoring Plan provides an overview of potential sampling locations and recommended sampling frequencies for each site. The selection of monitoring sites will be finalized during the permitting process. The suitability of STE2 in South Teigen Creek has been considered, and another monitoring site further downstream, below the falls, has also been investigated. Sampling sites that were used during baseline studies are preferred to ensure continued assessment. Background reference sites will also be chosen to allow for comparison.	DFO

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Fish and Fish Habitat (cont'd)			
54	Presence/absence of salmonid species in Coulter Creek (downstream of falls)	Coho salmon and Dolly Varden rear in Coulter Creek downstream of the falls, which is a barrier to fish migration. No fish are present above the falls in Coulter Creek based upon habitat and sampling data.	US NOAA
Terrestrial Ecosystems and Wetlands			
55	Consider effects of fish habitat compensation on wetland habitat in development of fish habitat compensation plans	The 2011 fish habitat compensation fieldwork included an assessment of potential effects on wetland function. Proposed fish habitat compensation sites have been designed to produce a net benefit to wetlands.	CWS, EC
56	Wetland Management Plan	The proposed Wetlands Management Plan identifies strategies to reduce potential effects on wetlands prone to degradation. This plan also considers operational requirements and the safety of Project employees. Plan targets include: no loss of wetland extent beyond what was predicted in the effects assessment; and maintenance of hydrological, biochemical and ecological function associated with wetlands within potentially affected area.	CWS, EC
57	Rationale for determination of effects on wetland function	The range of functions performed by wetlands is what makes them ecologically important. Direct loss of wetland function is related to direct loss of wetland area. Alteration or degradation of wetland function has been calculated by proximity to Project development and the degree of fragmentation experienced. The need to assess effects on the four primary wetland functions - hydrological, biochemical, ecological and habitat - is explained with the technical assessments in more detail in Chapter 16 of the Application / EIS.	CWS, EC

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Terrestrial Ecosystems and Wetlands (cont'd)			
58	Wetland mitigation, especially blue- and red-listed wetlands; Wetland Compensation Plan	Sensitive wetlands, including red- and blue-listed ecosystems, were considered during the wetland baseline studies. Based on these studies, no red- or blue-listed wetlands were encountered. The proposed wetland compensation plan is guided by program Environment Canada's (1996) Federal Policy on Wetland Conservation. Approximately 59 ha will be lost (48 ha in the TMF area), and the Proponent's Wetlands Compensation Plan will provide 48 ha as wetland compensation, as well as 75 ha gained through reclamation. Plan objectives are to: integrate the development of wetland features into fish habitat compensation so as to create functioning compensation ecosystems benefiting fish and wetland resources; identify areas in Northwest BC that would benefit from wetland enhancement; and identify site(s) that could provide research, education, and recreation values to Northwest BC communities in addition wetland functions. Wetland compensation will address the loss of individual wetlands but also wetland function. Wetland compensation will focus on the restoration and enhancement of existing wetlands. This compensation plan will: 1) address 1:1 compensation during Project development and 2) address an additional 1:1 compensation upon closure.	CWS, EC
59	Ensuring fish compensation efforts do not adversely affect toads or result in a loss of amphibian habitat	Western toad habitat at proposed fish habitat compensation sites has been assessed, and fish compensation sites altered accordingly, to avoid western toad breeding habitat, and to incorporate features to improve western toad breeding habitat.	CWS, EC
Wildlife and Wildlife Habitat			
60	Deterring moose from accessing TMF until water is suitable	Adaptive management measures to deter moose from the TMF are presented in Chapter 18 of the Application/EIS. Measured include preventing moose from accessing the TMF if monitoring indicates water quality does not meet guidelines.	BC EAO
61	Consideration of goat ungulate winter range (UWR) in VC assessment	Mountain goats are a VC in the effects assessment. Loss of ungulate winter range is assessed in the Application/EIS. Mitigation includes following guidelines under the BC <i>Forest and Range Practices Act (2002a)</i> . The wildlife management plans consider loss of the UWR in the UWR Management Plan. To mitigate for potential loss and/or degradation of provincial approved UWR u-06-002, alternate areas that could be used as UWR to compensate for area lost from development will be identified.	MOE

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Wildlife and Wildlife Habitat (cont'd)			
62	Consideration of Caribou habitat	Caribou were not assessed because the Project area does not overlap with current caribou range, although some individuals may disperse into the area (as evidenced by a shed antler found near the proposed Mine site). No caribou were observed during surveys. This area may be part of the historic caribou range, but that herd has since been extirpated.	EC
63	Habitat information for each grizzly bear hair capture station	Habitat information was collected for each station in 2009 following a Terrestrial Ecosystem Mapping (TEM) site description, recording Biogeoclimatic Ecosystem Classification (BEC) unit, site series, serial stage, plan list, percentage cover by species, and representative photo-documentation. DNA hair capture stations use scent lures to attract bears, and are therefore not an accurate representation of habitat use.	MOE
64	Procedure in event bear den is found during construction of mine	If active bear dens are identified during pre-clearing surveys, a forested buffer of approximately one tree length (based on the average height of the main tree canopy layer in the surrounding stand) will be maintained. This buffer will retain additional thermal protection and climbing trees for cubs. If an active den cannot be avoided or work must be undertaken within buffer areas, the relevant regulators will be consulted to develop appropriate strategies.	MOE
65	Bird transects in proposed pit area	Baseline surveys for alpine birds were conducted in the mine area, including the Mitchell Pit. High levels of snow and variable weather conditions during the breeding surveys (June 2008 and 2009) prevented access to the Sulphurets and Kerr Pit alpine areas.	CWS, EC
66	Lack of a call playback survey for marsh birds	The Project area is outside of the range of marsh birds of conservation concern requiring call playback surveys (e.g., yellow rail, least bittern). Therefore these surveys were not conducted.	CWS, EC
67	Habitat, bird species effects of TMF	The TMF area is not in a high use area for migratory birds.	CWS, EC
68	Potential for water birds to use TMF and potential effects of use	Wetland bird use of the TMF will be monitored through the migration and breeding periods during operation and appropriate steps will be taken to attempt to deter birds from the TMF and water treatment areas if deemed necessary by the proposed Aquatic Effects Monitoring Plan and Water Quality Monitoring Program (see Chapter 26). Deterrent systems will be adapted over time if necessary and the need to deter birds will be evaluated based on operating experience.	CWS, EC

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Wildlife and Wildlife Habitat (cont'd)			
69	Transmission of pathogens affecting amphibians	The "Standard Operating Procedures: Hygiene Protocols for Amphibian Fieldwork" (MOE 2008) were followed for biological field work in wetland habitats. Seabridge used an established provincial method for sterilizing equipment and personal gear. The MOE standard protocol used to avoid transmission of disease to amphibians was forwarded to the Tahltan along with confirmation that it is being used on the Project site.	CWS, EC
70	Potential for western toad in Project area	Baseline studies for western toad were conducted during 2008 and 2009. In 2008, 136 ponds were surveyed during aerial reconnaissance surveys for suitable breeding ponds and wetlands. Ground surveys were conducted in 2008 and 2009 at a total of 65 (48%) of these ponds to record any breeding evidence. Overall, few sites appropriate for toad breeding were identified in surveys. However, adult toads and two breeding ponds were observed. One pond on the eastern edge of the TMF was classified as having high potential as a breeding pond, although no evidence of breeding was found. One adult toad was reported in the vicinity of the proposed Processing Plant, outside of the TMF footprint. In general, the TMF does not appear to offer good quality breeding habitat for western toad, given its high elevation and consequently later thawing, creating cold environments.	CWS, EC
71	Access management	Public access will be restricted on the proposed CCAR and TCAR. Post-closure, the CCAR will be reclaimed to forest, while access to the TCAR will remain controlled (see Traffic and Access Management Plan in Chapter 26 of the Application/EIS).	MOE
72	Effects of transmission line on red- and blue-listed species	The transmission line will be constructed according to best management guidelines drafted by the Avian Power Line Interaction Committee to minimize any effects on bird populations. Bird electrocutions and collisions with the Project transmission lines and structures are expected to be rare, and are not expected to adversely affect local populations.	CWS, EC
73	Mitigation and monitoring plans for dens and hibernacula	Pre-clearing surveys will be conducted for bat hibernaculum and maternal roosts if construction occurs within the hibernation and breeding period. If hibernacula or maternity roosts are identified in the Project area, a buffer of at least 125 m radius will be maintained. For dens, clearing will be conducted outside of denning season. If clearing must be completed during this time, pre-construction surveys for dens will be conducted to identify areas where tree clearing will be prohibited. Forested buffer zones around any identified active dens will be maintained.	CWS, EC
74	Potential for migration of chemicals from TMF after closure through vegetation to wildlife	Post-closure, a waterborne pathway could exist for the migration of chemicals from the TMF. Water will not be discharged from the TMF unless it meets regulated discharge criteria. The TMF have a closure spillway designed to discharge the probable maximum flood (in excess of 1:1,000 years). Seepage through dams will be intercepted by seepage collection ponds and pumped back to the TMF. Re-vegetation of the TMF could create a second potential pathway for the migration of chemicals. At closure, TMF reclamation will involve placement of a dry cover over tailing, and re-vegetation with minimal pond/wetland area. The potential for uptake of TMF related chemicals through re-vegetation will be mitigated, and the vegetation cover monitored.	MOE

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Wildlife and Wildlife Habitat (cont'd)			
75	Explain and justify elevation settings of Anabat detector	Bat surveys were conducted in accordance with provincial inventory standards. Surveys were conducted in high quality habitat. Long-eared myotis were the focus of studies, since they are a listed species. The inventory standards do not specify an elevation above ground that is optimal for bat detection. The Anabat detector was placed at approximately 3 m from the ground at a 45° to 90° angle, so as to avoid understory vegetation acting as an obstruction between bats and the detector microphone. Bat species have been detected successfully with a similar set-up for other projects in the region. Potential mining-related impacts to bats are linked to ground-based infrastructure, so identifying bats closer to the ground is more appropriate than placing detectors at higher elevations to detect migrating species.	CWS, EC
Economic			
76	Economic development in the region	The Proponent is committed to strive to hire and source goods and services from the local communities as much as possible. The Project will provide an estimated 1,800 direct jobs on site, and 2,510 indirect jobs in BC during the 5-year construction period. The Project will provide 1,040 direct jobs on site and 1,840 indirect jobs operations jobs in BC during the 51.5 year mine life.	
Project Traffic			
77	Change to traffic volumes with addition of Iron Cap zone	The addition of Iron Cap affects the duration of the Project but not average daily traffic volumes.	MOTI
78	Assessment of cumulative effects of traffic	The KSM Project: Highway 37 and 37A Traffic Effects Assessment has been revised to include an assessment of cumulative traffic effects. Potential traffic impacts to moose between the Cranberry Junction and Kitwanga were modelled for the Nass moose population. A moose/vehicle collision model was imbedded into a population dynamics model to emulate the fraction of moose mortality that can be explained by vehicle collisions. Results of the analysis indicate that the Nass moose population will be sustainable.	MOTI
79	Personnel transport	Project personnel will be bussed or shuttled to the site.	AK DNR
80	Number of trucks travelling through Hyder, Alaska	During the first two years of construction, there will be an average of three return trips travelling through Hyder to deliver equipment and materials to a staging area at Granduc. Materials and equipment will be moved from the Granduc staging area to the Project site via the Frank Mackie Glacier during the winter. Traffic to and from the Granduc staging area will move throughout the year, thus avoiding concentrated traffic impacts on Hyder residents.	U.S. DOI

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Project Traffic (cont'd)			
81	Increase in mining-related traffic on Highway 37	Changes in traffic volumes along highways 37 and 37A are addressed in the Proponent's Highway 37 and 37A Traffic Effects Assessment. The highest Project-related percentage increase in traffic is expected during the operation phase. A 40% increase is expected along Highway 37 between the TCAR and Meziadin Junction, and a 15% increase along Highway 37A. Percentage increases along other highway segments and during the other phases of the Project range between 1 and 11%. Historically, dating back to the 1980s and 1990s, traffic volumes were much higher. On Highway 37A, predicted Project-related traffic is expected approximate 27% of historical maximum volumes during all phases except for operation, when it is expected to approximate 31% of historical maximum volumes. On Highway 37 north of Meziadin Junction, predicted Project-related traffic volumes are expected to range between 22 and 31% of historical maximum traffic volumes.	District of Stewart
Accidents and Malfunctions/Geohazards			
82	Avalanche control on Teigen Creek Access Road	The Teigen Creek Access Road is no longer part of the Project design. Access to the TMF is now proposed via the TCAR. The entry to the TCAR will be less exposed to avalanche risk than the entry to the Teigen Creek Access Road (see Avalanche Management Plan appended to Chapter 4 of the Application/EIS).	MOTI
Closure and Reclamation			
83	Reclamation plans for waste rock including management of waste rock post-closure	Waste rock from the Mitchell Pit will be stored in the McTagg and Mitchell RSFs. Portions of the waste rock facilities below 1,100 m (approximately tree line) will be re-sloped and covered with 50 cm of soil / overburden, and planted with native seed. The area above 1,100 m will mimic surrounding talus slopes, and serve as escape terrain for mountain goats. Portions of the RSFs will be re-sloped to 26° below 1,100 masl and to the angle of repose above that elevation. Benches and re-sloped areas will be covered with a growth medium. Waste rock from the Kerr Pit will be backfilled in the mined out Sulphurets Pit. Benches and the top of the waste rock will be lined to minimize infiltration of precipitation through the waste rock. Water from the Sulphurets backfill will be collected at a basal drain and routed to an ion-exchange selenium treatment plant. Sulphurets waste rock will be stored in the Mitchell RSF, except for some not-PAG material that will be used for construction of the WSD and RSF basal drains. Non-contact surface runoff will be diverted around these facilities. Contact runoff from the RSFs will be collected and directed to the WSF for treatment (see Chapter 27 of the Application/EIS for proposed Closure and Reclamation Plan).	AK DNR

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (continued)

No.	Issue	Seabridge Response	Raised By
Closure and Reclamation (cont'd)			
84	Closure planning including water quality predictions for all mine components post-closure with a long-term water quality focus	Water quality effects due to discharge from the TMF will be mitigated by diverting clean water around the TMF, using cyanide destruction and metal recovery water treatment processes in the Process Plant, and staging discharge from the TMF to Treaty Creek to match the natural hydrograph. No adverse effects on water quality are predicted for the PTMA. Water quality effects due to discharge from the Mine Site will be mitigated by diverting clean water around surface disturbances, segregating Kerr waste rock, treating drainage from Kerr Pit waste rock at an ion-exchange selenium treatment plant, collecting contact water in the WSF, treating contact water at the HDS lime-WTP, and staging discharge from the WTP to Sulphurets Creek to match the natural hydrograph. Marginal short term concentrations of selenium and sulphate above guidelines levels in the Unuk River downstream of Sulphurets Creek are predicted at certain times of the year. They will be within receiving environment safety tolerances, and will not lead to sustained long-term downstream effect on the Unuk River. The Proponent's proposed Aquatic Effects Monitoring Plan will be implemented to monitor effluent quality and the aquatic receiving environment (see Chapter 26 of the Application/EIS).	BC EAO
85	Raise Mitchell Pit dam to allow more PAG rock to be submerged at closure	The option of raising the proposed Mitchell Pit closure dam has been considered, but it is not being pursued for safety reasons. Raising the closure dam beyond the toe of the dumps is not feasible.	MEMNG
86	Soil salvage plans for mine site (including the overburden under the footprint) for site reclamation	Soil and overburden that are suitable for reclamation will be salvaged from disturbed areas, where practical. Soils will not be salvaged from areas that are too steep for equipment or where topography prevents access by salvage equipment.	MEMNG
87	Calculation and management of post-closure treatment funds	Calculation of post-treatment funds will be based on treatment, equipment, capital replacement, reagent costs, labour and monitoring costs. Long term prediction of water quality will be a key component in determining cost. As a condition of issuing a mine permit under the BC <i>Mines Act</i> (1996), the Proponent will be required to post financial security to cover mine reclamation costs and provide for protection of, and mitigation of damage to, watercourses and cultural heritage resources affected by a mine. Pursuant to the Fisheries Act (1985) the Department of Fisheries and Oceans (DFO) may also require a financial security or letter of credit to cover costs associated with fish habitat compensation plan works. Pursuant to the <i>Fisheries Act</i> (1985), the Department of Fisheries and Oceans may also require a financial security or letter of credit to cover costs associated with fish habitat compensation plan works.	AK DNR

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Table Q-1. Issues Raised by Government Agency and Local Government during the Pre-Application Review Stage (completed)

No.	Issue	Seabridge Response	Raised By
Closure and Reclamation (cont'd)			
88	TMF Mine Site and Closure Plan	<p>The BC Mines Act (1996) and Health, Safety and Reclamation Code for Mines in BC sets out requirements for reclamation and closure. The Project closure and reclamation plan is designed to meet provincial requirements. The Project's closure and reclamation program has four main objectives:</p> <ul style="list-style-type: none"> • providing stable landforms; • re-establishing productive land use; • protecting terrestrial and aquatic resources; and • protecting heritage and archaeological resources. <p>The Proponent's proposed Closure and Reclamation Plan provides conceptual level reclamation plans for the Mine Site and TMF.</p>	EC

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