Question	Reviewer	TOR # (if applicable)	Is Additional Fieldwork Required?	SIR Category Pease refer to Appendix 5 of the *Guide to Reviewing Environmental Impact Assessment* for categories (e.g. vegetation, terrain and soils, hydrogeology, etc.)
1. Volume 3, CR #6, Subsection 4.1.2, Page 33. CVRI states *Additional safeguards and pond capacities including provisions for backup in ditches and sumps will be provided recognizing the risk of abnormal events such as extreme high pumped sediment loadings, ice/snow blockages and late manual response to events. In many instances, these types of events have led to previous exceedances at CVM.* a. Provide best management practices or guidelines that have been adaptively developed in response to past exceedances and how these practices will be adaptively applied to the Robb Trend project.	DFO			Hydrology
2. Volume 3, CR #6, Subsection 4.4.4, Page 53. Volume 3, CR #6, Subsection 4.4.3, Table 12, Page 52. In Section 4.4.3, CVRI described the options for diversions for the watercourses that will be impacted. Table 12 describes the chosen option for each watercourse. CVRI states *It is assumed that lake filling times following reclamation will be gradual in order to maintain downstream flows. The instream flow needs guidelines (AENV 2011b) are assumed to be applied, except possibly during high flow events where pumping cannot keep up with inflow rates. Applying this guideline means that only 15% of the inflow can be used to fill the lakes and no inflow can be used for lake filling when the flow is less than the natural Q80, value, i.e. below the flow that is normally exceeded 80% of the time for that time of year. Therefore, instream flow monitoring and pump bypasses will need to be established on the lakes during filling.* a. Discuss the range of expected flows and the type of pump systems for each diversion. b. Provide information on how the pump(s) capacity adequately addresses the potential seasonal and annual variability in flows that could be encountered for each watercourse.	DFO			Hydrology

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c. Describe for each watercourse with a pump around diversion, how fish passage upstream of the diversion will be accommodated. If fish passage is not being accommodated, discuss the potential impacts of the barrier on productivity. DFO is concerned that the fate of the downstream reaches of the potentially affected watercourses rests solely on pumping. For some watercourses, downstream flow will be dependent on pumping for several years. If the pumps should fail, downstream flow will essentially be nil, as all of the water will be flowing in to the end pit lake. d. Discuss potential downstream impacts and mitigation measures to be employed in the event of a pump failure. Most of the diversions will require pumping through winter months. e. Discuss how flows will be maintained through the winter months given the challenges of winter conditions. Discuss if diverting 15% of the total river flow through the winter months is sustainable from an instream flow needs perspective. Discharging water in to downstream reaches in winter has the potential to impact the hydrology and temperature profile downstream, as well as result in frazil ice formation. There was no consideration of this in the Application Case. f. Provide a discussion of these potential impacts.				
3. Volume 3, CR #6, Table 15, Page 66. Volume 3, CR #6, Table 13, Page 55. No. 2.1 of Table 15 states *Minimize lake depths where possible to less than 10 m with a littoral zones target of at least 20% where practical*. Table 13 shows that only 2 lakes have average depths at or below 10 m, while the maximum depths all exceed 10 m with the mean maximum depth being 45 m.	DFO			Hydrology

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a. Provide clarification on the purpose of this statement as it seems it was not taken into consideration in the end pit-lake design. b. Discuss the feasibility of designing some or all of the lakes with shallower depths consistent with the statement in Table 15. c. Discuss the limnological and biological implications of constructing long, narrow and very deep end pit lakes with respect to oxygen stratification and biological productivity.				
4. Volume 3, CR #6, Subsection 4.5.1, Page 59. CVRI states with respect to the Erith River *Alternatively, gravel bed river relationships (Hey et al. 1982) based upon the 2-year flood peak would predict the following impacts with a 50% decrease in the mean annual flood: a 26% decrease in channel width, a 20% decrease in bankfull channel depth and a 25% increase in slope.* a. Discuss the time frame these changes are expected to occur over and the distance downstream that is likely to be affected. b. Provide a short and long-term assessment of the potential impacts to downstream fish and fish habitat as a result of the channel morphological changes. c. Discuss any similar anticipated effects on the remaining impacted watercourses. d. Provide CVRI's approach to calculate the fish habitat losses associated with the reduction in flows in watercourses affected by the construction of the mine.	DFO			Hydrology
5. Volume 3, CR #6, Subsection 4.5.2, Page 59. CVRI states *Therefore, the lower 2.4 km long reach of Bacon Creek will be altered significantly with 70% of its basin lost. The percentage flow reduction on lower Bacon Creek can be expected to slightly exceed this 70% because of a higher proportional runoff contribution from the higher, steeper watershed section.*	DFO			Hydrology

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a. Provide the rationale for diverting the upper Bacon Creek flow into McPherson Pit rather than pumping it downstream in to lower Bacon Creek to maintain flows. b. Provide the rationale for ultimately diverting the upper Bacon Creek flow into Lake 4 and discuss the feasibility of creating an outlet from Lake 5 East to Bacon Creek as mitigation for the flow reduction.				
6. Volume 3, CR #6, Section 4.4.4, Table 13, Page 55. Volume 3, CR #6, Figure 28. Table 13 outlines the physical and hydrologic characteristics of the 12 reclaimed end pit lakes. Figure 28 shows Erith Lakes 4 and 5 reclamation plan and profile. a. Provide an overall figure encompassing all end pit lakes and their hydrologic connectivity to one another.	DFO			Hydrology
7. EIA General : To further our understanding of impacts on Aboriginal groups, a. Provide the following additional information: i. how traditional ecological knowledge (TEK) and traditional land use information (TLU) will be included in the fish habitat assessment and in developing the No Net Loss Plan; ii. assessment of significance of the impacts of the Project on fishery resources from Aboriginal groups perspective. iii. assessment on the potential impacts to Aboriginal and treaty rights. iv. information on the Proponent strategies to address the impacts identified in "b)" and identification of any outstanding issues.	DFO			TEK/TLU
8. Volume 1, Section E, Table E.2-5, Page E-27. Table E.2-5 describes planned diversions and associated habitat impacts. The table provides	DFO			Aquatics

Question	Reviewer	TOR # (if applicable)	Is Additional Fieldwork Required?	SIR Category Pease refer to Appendix 5 of the *Guide to Reviewing Environmental Impact Assessment* for categories (e.g. vegetation, terrain and soils, hydrogeology, etc.)
linear and area measurements to describe watercourses that will be diverted as part of mining practices. a. Discuss what method has CVRI used or will be used to define the quality of fish habitat that will be harmfully altered disrupted or destroyed when these watercourses are diverted and how will the data used to define the quality of fish habitat be applied to a no-net-loss plan. (i.e.-how the quality of removed habitat will be incorporated into the development of a no-net-loss plan). b. Discuss how CVRI will ensure that the fish habitat lost will be replaced with equally productive fish habitat for the species that are native to the area.				
9. Volume 1, Section E, Page E-29. CVRI states *Some of the [pit] lakes may be constructed to preclude fish access but conceptually, the lakes will be designed to maximize habitat and biological diversity and use by native fish population...* a. Discuss examples of the types of fish habitat features that will be incorporated into the "lakes" that will help maintain native fish populations. b. Discuss how CVRI will maximize habitat and biological diversity when lotic (flowing water) habitat is changed to lentic (still water) habitat. c. Discuss how CVRI will maintain salmonid fish communities when portions of lotic habitat are changed to lentic habitat because of the creation of pit lakes within a lotic system. i. Discuss the perceived impact on fish communities when constructing lentic habitat in the middle of a lotic system. d. Discuss what the criteria are that will determine whether fish will be allowed to access pit lakes or be denied access to pit lakes. e. Provide an update on the development of a monitoring plan that will assess the effects of the mine on fish communities, species compositions and other impacts on fish and fish habitat.	DFO			Aquatics
10. Volume 1, Section E, Page E-31. CVRI states *Well established mitigation measures will be implemented to reduce potential*				Aquatics

Question	Reviewer	TOR # (if applicable)	Is Additional Fieldwork Required?	SIR Category Pease refer to Appendix 5 of the *Guide to Reviewing Environmental Impact Assessment* for categories (e.g. vegetation, terrain and soils, hydrogeology, etc.)
sediment effects to a minimum. a. Provide an outline of specific well-established mitigation measures and their application and efficacy in relation to mitigating the impact of coal mining on the aquatic environment, using other mines operated by CVRI as examples.				
11. Volume 1, Section E, Page E-31. CVRI states *During the filling period, downstream flows in receiving watercourses will decrease. Impacts to fish habitat as a result of pit filling is expected to be minimal since it is assumed that lake filling will be gradual in order to maintain downstream flows and instream flow guidelines (AENV 2011).* a. Discuss how CVRI will mitigate the effect of a decrease in downstream flow on the fish species that inhabit watercourses subject to diversion during critical life-cycle periods like spawning seasons and over-wintering periods. b. Discuss how CVRI will ensure the maintenance of downstream flow in these diversion zones during the winter season. c. Discuss how CVRI has accounted for changes to fish habitat because of reduction in downstream flows.	DFO			Aquatics
12. Volume 1, Section E, Page E-32. CVRI states *A detailed compensation plan will be developed and refined in subsequent planning phases as further mine plan details become available and following consultation with regulators and stakeholder.* a. Provide examples of how CVRI plans to incorporate successes and/or challenges of past fish habitat compensation projects into the development of a fish habitat compensation plan for Robb Trend (i.e. - the use of adaptive management). b. Discuss how CVRI plans to develop a successful fish habitat compensation plan incorporating adaptive management and provincial fish management objectives when changing lotic habitat to lentic habitat because of mining practices, using examples from other mining operations in the vicinity. c. Provide an update on the status of the development of the fish habitat compensation plan including, but not limited to: timelines, objectives and considerations.	DFO			Aquatics
13. Volume 2, CR #2.				Aquatics

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CVRI states that *Impacts to the aquatic environment including, but not limited to fish and benthic invertebrates are insignificant. CVRI indicates that the project is not expected to contribute to cumulative effects because mitigations will be in place.* a. Discuss what methodology, with respect to impacts on fish and fish habitat, that was used to determine that impacts to these VEC's is insignificant. b. Discuss how CVRI defines insignificant/negligible impacts, with respect to impacts on fish and fish habitat. c. Discuss what methodology was employed to determine that the Robb Trend project will not contribute to cumulative effects on aquatic resources. d. Discuss how CVRI has accounted for the following impact of the Project in terms of immediate and cumulative effects on fish and fish habitat: i. long term alteration of flows in watercourses affected directly and indirectly (downstream reaches) by the Project, ii. alteration of overland drainage, iii. elimination of lotic environment and replacing it with lentic, iv. fragmentation of fish habitat, and v. potential degradation of water quality including upsets and accidents				
14. Volume 1, Section E.2.4, Page E-38. CVRI states *TSS is not expected to change significantly in the Embarras River or Erith River downstream of the project.* a. Discuss what CVRI's plan is for TSS monitoring of watercourses other than the Embarras and Erith Rivers because of impacts associated with the Robb Trend development? (i.e.- impacts to water quality on Erith tributaries, Bacon Creek, Bryan Creek, Hay Creek, Halpenny Creek and tributaries, Lendrum Creek and tributaries, Lund Creek and tributaries, Mitchell Creek, Pembina River Tributary, Jackson Creek, White Creek). i. Provide a copy of this plan or if the plan is not ready, provide objectives and timelines associated with the development of this plan. CVRI references an adaptive approach throughout the EA.	DFO			Aquatics

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b. Discuss how CVRI will incorporate adaptive management in the development of a water quality monitoring program to assess whether or not the Robb Trend development is having a negative impact on downstream water quality in the local and regional study area. i. Provide context using other mines as examples.				
15. Volume 1, Section E.2.5, Page E-39/40. *Mitigation/ Monitoring* CVRI references an adaptive approach throughout the EA. a. Discuss how CVRI has incorporated adaptive management in the development of mitigation strategies for the Robb Trend Mine. i. Provide examples from other mines operated by CVRI. b. Discuss how CVRI has incorporated adaptive management in the development of monitoring plans for the Robb Trend Mine and surrounding areas.	DFO			Aquatics
16. Volume 1, Section E, Page E-32. CVRI states *They will work with Fisheries and Oceans Canada (DFO) in developing a habitat compensation plan with the goal of maintaining productive fish habitat and addressing potential habitat disturbance, alteration, or destruction resulting from the project".* a. Provide the timeline for the development of fish habitat compensation plans. b. Discuss the concept that CVRI is working on with respect to the development of a fish habitat compensation plan. c. Discuss what methodology will be used to calculate losses and gains of fish habitat. d. Provide examples of fish habitat compensation concepts that have been constructed in other mines that are operated by CVRI and/or other mining operations that have prepared, constructed and monitored fish habitat compensation projects for salmonid species. e. Explain how previously constructed fish habitat compensation projects in mining zones have been successful and to what degree, and/or explain deficiencies in previously constructed fish habitat compensation projects. i. Relative to the assessment of known deficiencies in previously constructed fish habitat compensation projects, incorporate a framework for adaptive	DFO			Aquatics

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management in the discussion and outline areas that require improvement. f. Discuss how the no-net-loss plan will align with provincial fish management objectives for the species known to inhabit the watercourses that will be impacted by Robb Trend. g. Discuss how the no-net-loss will plan align with the recovery planning strategy that is currently being developed by the province for native Rainbow Trout.				
17. Volume 2, Section CR#2, Tables 5.4, 5.8, 5.15 Page 54, 55, 58, 63, 64. *Watercourse Crossings/ fish passage* a. Provide the method that will be used to determine fish passage ability through proposed culverts for the species that are known to be, or may be in the watercourses that will have watercourse crossings on them.	DFO			Aquatics
18. Volume 2, Section CR#2, Page 72. CVRI states *Sediment and certain chemical contaminants that may have chronic or lethal effects on aquatic biota have the potential to enter the aquatic ecosystem during mining operations.* a. Discuss potential contaminants that may pose a threat to the aquatic environment, using data obtained from existing coal mining operations. b. Discuss the impact that these contaminants could have on fish and/or their habitat. c. Provide a list of mitigations that will be put into practice to eliminate/minimize the affect that these contaminants could have on fish and their habitat.	DFO			Aquatics
19. Volume 3, Section CR#6, Figure 26. a. Provide examples of watercourses in the upper Athabasca watershed that have a body of water similar in appearance to a watercourse that will have a pit lake on it and describe the fish communities on the up and downstream sides of the body of water as well as within the body of water itself. (i.e.-locate watercourses that look like a watercourse with a pit lake in the middle of it and conduct an analysis of the fish community). b. Describe the fish habitat characteristics associated with the example system(s) referenced in part “a” and critically assess the functionality of CVRI’s pit lake	DFO			Aquatics

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concept. c. Describe limiting factors to fish populations and communities associated with watercourses that resemble the types of systems proposed in figure 26 Using examples from other mines that are operated by CVRI.				
20. Volume 3, Section CR#6, Page 58. CVRI states *When lakes 4 and 5 are filling, downstream flows will be maintained by pumping. Due to the large Erith River flows, this could mean pump flows of 20, 000 ipgm (1.52 m^3/s) will be required just to maintain 85% of mean flows in the high flow months of June to July in order to meet downstream instream flow need.* a. Discuss what type of infrastructure will be required to pump volumes of water that could be 1.52 m^3/s or greater. i. Discuss impacts to fish and fish habitat resulting from the infrastructure required to pump the Erith River flows. ii. Discuss mitigations that will be introduced to prevent impacts to fish and fish habitat. b. Identify other watercourses in the project area that may be subject to pumping for water management and/or maintenance of downstream flows and: i. Discuss impacts to fish and fish habitat resulting from the infrastructure required to pump on these systems; c. Discuss mitigations that will be introduced to prevent impacts to fish and fish habitat on these systems. Provide details on how CVRI plans to avoid entraining, impinging or killing fish when pumps draw water from one waterbody or watercourse and transfer it downstream. d. Discuss how CVRI will mitigate the impact of pumping to maintain downstream flows on fish and fish habitat during critical life stages such as spawning and rearing if optimal flow is not present during these life stages.	DFO			Aquatics
21. Section D – EIA Methodology, Section D.2.4, pg. D5 This section describes the Baseline Case, Application Case and Cumulative Effects Assessment Case. Application Case is defined as including, “Baseline Case plus the Project”. Table D.2-1 provides a list of Existing, Approved and Planned projects. According to this table, Approved	HC		No	Health

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Activity (Application Case) includes the mining operations at Mercoal West and Yellowhead Tower Mine Areas. a. Explain why the Robb Trend Mine Area (the Project) is not included in Table D.2-1 as the Application case.				
22. CR 5 – Human Health, Section 2.5, Page 3 The Human Health Risk Assessment (HHRA) indicates that at no time will mining coincide on both sides of the Hamlet of Robb. However, the project Description (section C, pg. C-30, Table C2-4) development schedule indicates that Robb East, Robb Main and Robb West mines will all be operational at the same time. The Air Quality Assessment Report (Millennium 2012) appears to address mining at Robb West and Robb East at the same time, with no mention of Robb Main (Project 1 scenario). a. Confirm the mining schedule and that the appropriate air modeling data was used in the HHRA for the proposed Project.	HC		No	Health
23. CR 5 – Human Health, Section 3.2.1.1, pg. 6 The HHRA states that since the project will not release any chemicals in to the groundwater or surface water, the COPCs are based on air emissions only. Based on the information in the Air Quality Assessment Report (Millennium 2012), it appears that the plant operations are considered as part of the project with respect to air emissions. a. Clarify if the processing of the mined material at the plant is considered a part of the Project. If the processing of mined material at the plant is considered as part of the project b. Discuss potential COPC releases to surface water and/or groundwater (i.e. tailing and settling ponds associated with the coal process plant) and incorporate these releases into the HHRA as necessary.	HC		No	Health
24. CR 5 – Human Health, Section 3.2.1.1, pg 6	HC		No	Health

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Health Canada generally advises that Particulate Matter with diameter of <10µm (PM_{10}) should be considered a COPC in the air quality assessment. PM_{10} poses a risk to human health as these particles can travel deep into the lungs and affect the human respiratory system to varying degrees based on penetration and deposition rates into the lungs (WHO 2003). a. Discuss if PM_{10} was considered in the assessment or provide a rationale for its exclusion.				
25. CR 5 – Human Health, Section 3.2.1.2, pg. 10-13 and Table 3-2 Of the 18 discrete receptor locations (denoted as R1 to R18), 4 locations are not considered in the HHRA (R10, 11, 12, and 13). a. Clarify why these locations are not considered in Table 3-2, specifically R11 (in Local Study Area) and R12 (identified as a campground). Currently recreational receptors are only assessed with respect to acute inhalation. However, the project scenario appears to be for a timeframe longer than an acute scenario. It is indicated that the recreational receptors may engage in camping, hunting and/or fishing for variable periods of time, which may require the assessment of other operable exposure pathways for this receptor group (e.g. local food consumption of foods collected from the area impacted by the site and eaten immediately or later). b. Provide the multiple pathway assessment for the recreational receptors or provide a rationale as to why this was excluded.	HC		No	Health
26. CR 5 – Human Health, Section 4, pg. 43-46, 50-53 Acute inhalation risk quotient (RQ) exceedances: Baseline arsenic concentrations result in a RQ exceeding the target, but the application fleet will convert from Tier 1 to Tier 4 engines. a. Clarify whether there is a plan to confirm this fleet change to validate the air quality	HC		No	Health

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monitoring prior to moving forward with the Project. NO_2 and SO_2 RQ exceedances at maximum point of impingement (MPOI) are discussed as overly conservative and unlikely to result in negative health impacts. However, the predicted concentrations are unlikely to result in negative health impacts. However, the predicted concentrations may result in adverse impacts to people with respiratory sensitivities. b. Discuss whether the project will include controls to prevent access or notify receptors that may be sensitive.				
27. CR 5 – Human Health, Appendix D The Application Case includes Baseline concentrations and project related concentrations. The Baseline concentrations include background exposure to soil, air, water and local foods. For additional clarification on Health Canada's guidance for human health risk assessment for chemicals, please refer to *Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals, Health Canada, 2010* http://www.hc-sc.gc.ca/ewh-semt/pubs/constamsite/chem-chim/index-eng.php a. Clarify why commercial foods were not incorporated in the total background exposure as the incorporation of commercial foods into the total background exposure may alter the results of the risk assessment.	HC		No	Health
28. CR 8 – Noise Impact Assessment, General Comment The Noise Impact Assessment (NIA) provides a qualitative discussion of general noise nuisance issues including blasting noise and vibrations, low frequency noise (LFN) and back-up beepers. No quantitative noise assessment was conducted; rather the NIA states that mitigation measures will be investigated when the proponent receives noise complaints. Health Canada advises that a quantitative noise assessment (with applicable adjustments for sound characteristics such as tonal and impulsive noise), and separate consideration of construction and operation phases, would provide a more accurate prediction of noise levels and potential impacts to human health. Appropriate mitigation measures could then be identified.	HC		No	Health

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a. Discuss, with respect to potential low-frequency noise (LFN), whether CVRI considered the advice given in the WHO (1999) *Community Noise Guidelines.* b. Discuss, with respect to blasting noise, if CVRI will use the US EPA's sonic boom criterion (US EPA 1974) as a blasting mitigation noise level for blasting that lasts less than one year. For blasting exposures of more than one year, Health Canada advises following the recommendations in ISO 1996-1:2003.				
29. CR 8 – Noise Impact Assessment, General Comment The NIA does not provide any cumulative noise assessment. Cumulative effects assessments are required when other ongoing or future projects in the region may contribute to noise levels. a. Provide a cumulative noise assessment, or provide a rationale as to why a cumulative noise assessment was excluded.	HC		No	Noise
30. CR 8 – Noise Impact Assessment, Section 2.1, pg 2 The NIA reports predicted noise levels at 48 receptors in and around the community of Robb. a. Discuss whether any of these particular receptors may have heightened sensitivity to noise exposure (schools, childcare centres, hospitals, places of worship, etc).	HC		No	Noise
31. CR 8 – Noise Impact Assessment, Section 2.1, pg 2 The NIA states that all other trappers cabins, campsites, etc. that are 1.5 km beyond the mind pit boundary have not been included in the study; and that this meets the requirements of the Alberta Energy Resources Conservation Board Directive 038. a. Confirm that project related transportation noise will not impact any human receptors 1.5 km beyond the mine pit boundary, and if there are potential impacts, and appropriate mitigation measures.	HC		No	Noise
32. CR 8 – Noise Impact Assessment, Section 3.5, pg 6-7	HC		No	Noise

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Section 3.5 describes the 3 modeling scenarios for the NIA. No construction scenario is described. a. Explain why no construction scenario was described. Is it assumed that construction and operational noise are similar for a coal mine project operating for an extended period. b. Provide the duration of exposure at each receptor location for either construction of operational noise.				
33. CR 8 – Noise Impact Assessment, Section 5, pg 9 The results of the Application Case modeling indicated that operational noise results exceed the WHO (2009) *Night Noise Guidelines.* The WHO (1999) *Community Noise Guidelines* recommendations for sleep, recommend that sound levels from discrete noise events should not exceed 45d BA Lmax inside sleeping quarters more than 10-15 times per night. With windows partially opened, this equates to an outdoor level of about 60 dBA Lmax. a. Discuss what nighttime noise mitigation measures will be considered to ensure the annual average outdoor nighttime levels at the façade of each impacted receptor does not exceed 40dBA.	HC		No	Noise
34. CR 8 – Noise Impact Assessment, Section 5.4, pg 32 There appears to be uncertainty about potential noise impacts on human receptors as the coalmine progresses towards the Hamlet of Robb and cabins. a. Provide additional noise modeling to assess potential monitoring and/or mitigation that may be required. b. Discuss whether a noise complaint/resolution line will be established for residents.	HC		No	Noise
35. CR 1 – Air Quality Assessment, General Comment Two project only cases were considered in the assessment approach for the air quality assessment. Project Case 1 was chosen for the assessment, as it is the worst-case air quality	HC		No	Air Quality

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scenario (Section 2.1.1 Assessment Approach). a. Discuss whether consideration has been given to situations where the Project Case 2 scenario yields higher predicted air emissions values than the Project Case 1 scenario. For example, Table 5.5-1 Predicted PM_{10} Concentrations shows higher values for Project Case 2 than Project Case 1 for receptor locations Overall Maximum (RSA-MPOI), Robb Area Maximum, and R1-SE Robb.				
36. CR 1 – Air Quality Assessment, Section 2.5.2, Table 2.5-2, pg 12 Table 2.5-2 details the evaluation criteria for characterizing residual effects. a. Discuss why there is no difference in the criteria definitions for Neutral, Positive and Negative Project Contribution/Direction.	HC		No	Air Quality
37. CR 1 – Air Quality Assessment, Section 4.1.2, pg 26 According to the National Pollutant Release Inventory the following pollutants are emitted by this industrial sector/facility: benzo(e)pyrene, dibenz(a,h)acridine; indeno(1,2,3-c,d)pyrene, phosphorus, and sulphuric acid. a. Discuss why emission calculations were not done for these pollutants.	HC		No	Air Quality
38. CR 1 – Air Quality Assessment, Section 4.1.2, pg 26 This section details the emissions summary and states that, *"haul roads will be regularly watered in summer, reducing dust from wheel entrainment by 80% (e.g., Luscar, 2999). Winter dust emissions from haul roads were reduced by 90% because roads will be covered by snow and/or frozen. Soil handling emissions were reduced in winter by 80% to account for wet and/or frozen ground."* a. Describe what is meant by 'regularly' when referring to road watering. In Luscar, 1999, page 48, there is mention of a 70% (not 80%) reduction only in the Total Suspended Particulate (TSP emissions by applying water to mine haul roads, pits and dumps.	HC		No	Air Quality

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b. Describe the mitigation measures to reduce the PM_{10} and $PM_{2.5,}$ which will not be substantially mitigated by watering. No information on winter dust emissions from haul roads being reduced by 90% because of snow and/or freezing was found in Luscar, 1999. b. Discuss how the 90% reduction of dust emissions from haul roads in the winter months was estimated.				
29. CR 1 – Air Quality Assessment, Section 5.0, pg 47-55 Air quality modeling predictions are presented and indicate a significant increase in $SO_2/NO_2/CO$ levels. Health Canada advises that all projects attempt to minimize air emissions to the greatest extent possible, regardless of any upper limits referenced in the applicable criteria, guidelines or standards. Aside from the use of Tier 4 engines, mitigation measures presented in section 6.3 only address controls for the emission of particulate matter. a. Discuss measures for air emission control of $SO_2/NO_2/CO$ to determine if additional mitigation is feasible.	HC		No	Air Quality
30. CR 1 – Air Quality Assessment, Section 5.0, pg 47-77 Section 2.1.1 describes the assessment approach and states that the Application Case includes both the Baseline Case and Project Case 1. Section 5.0 details the Air Quality Modeling Predictions in a series of tables. Throughout the tables in Section 5.0: a. Discuss why the Predicted COPC Concentrations for the Baseline Case are equal to the Application Case, when Project Case 1 values are not zero. For example, Table 5.1-1 Predicted Sulphur Dioxide Concentrations for receptor location R1-SE Robb, Baseline Case is 26 $\mu m/m^3$, Application Case is 26 $\mu m/m^3$, and Project Case is 11 $\mu m/m^3$. If Application Case includes both Baseline Case and Project Case 1, it would yield a value	HC		No	Air Quality

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of 37 µm/m^3 and not 26 µm/m^3.				
31. CR 1 - Air Quality Assessment, Section 5.4, Page 55 This section describes the mitigating influences of forested vegetation described in Pace, 2005, and used to reduce predicted PM10, PM2.5, and TSP emissions. The capture factors (CF) provided in Pace 2005 "*are only generalized defaults and should be modified by local data or as further research becomes available. Also, the estimated CF's herein are believed to be too high for windblown dust events because the wind's turbulence will usually lift particles higher more quickly, and the opportunity for vegetative removal is likely reduced*". a. Discuss if these generalized defaults were modified by local data specific to this project or other references were considered prior to utilizing these mitigating factors to reduce predicted particulate emissions.	HC		No	Air Quality
32. Section A.8.1 and E.1.3.7, Pages A-20 and E-9. This section notes that nitrogen deposition is 4.8kg/ha/year (baseline) and 5.7 kg/ha/yr (application and planned development cases) but there is no indication of whether or not these levels are of concern. a. Discuss how these numbers compare to regulatory or permitted levels for deposition.	EC			Air Quality
33. Section A.8.3 - Groundwater, Page A-26. The text states: "It has been shown that the quality of groundwater in the two proposed mining areas are similar to groundwater chemistry in present and past mining areas in Coal Valley and of acceptable quality for discharge to surface water bodies". However, there is no information included on how "acceptable quality" was defined and which information this is referring to. a. Provide the specific studies and acceptable levels.	EC			Water Quality - Groundwater
34. Section C.1.5.2, Page C-13.	EC			Terrestrial – Terrain and Soil

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The text states: "Coarse reject produced as a by-product from the Plant can also be used as an alternative to crushed rock." However, there is no indication that the coarse reject has been characterised and determined to be of suitable geochemical composition for such a use. a. Discuss the geochemical properties of the coarse rejects or testing for leaching.				
35. Section C.3.2, Page C-37. The text states: "The first competent rock will be utilized to build haul roads between pits and external dump areas." However, there is no indication that the rock will be tested before use. a. Discuss the testing to be done on the rock and whether it will be determined to be non-PAG and non-leaching before it is used in construction.	EC			Terrestrial – Terrain and Soil
36. Sections C.3.1 to C.3.9, Pages C-36 to C-46. Insufficient details are provided on the design and functioning of the Ponds mentioned in the Project Development Plan. a. Provide more details on the Ponds such as whether they are simply retention ponds, if sedimentation is achieved using chemical methods (and if so, which type of chemicals would be used) or if infiltration is expected to occur.	EC			Hydrology – Water Quality - Ponds
37. Section C.3.9.4, Page C-45. The text states that Bryant Creek will be diverted during mining of the Val d'Or seam and directed to flow through an old pit. However, there is no discussion on the potential impact this would have on the water quality in the creek. a. Discuss the potential impact of the diversion on the quality of the water in Bryant Creek and b. Discuss measures that would be put in place should it be found to have detrimental	EC			Water Quality

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effects.				
38. Section C.4.2 – Pit Dewatering, Page C-49. The text states that the proposed mining is expected to intersect abandoned underground mining areas, which contain an unknown volume of water. While the EIS states that "(m)ine waste handling facilities and practices in place at the CVM are expected to be able to adequately accommodate these volumes", there is no discussion of whether treatment might be needed and how it would be accomplished. a. Discuss how the water from the underground mining areas would be tested (and for what) and how CVRI intends to manage it should it be found to be unfit for discharging.	EC			Water Quality
39. Section E.13.5 – Vegetation, Wetlands and Rare Plants – Mitigation and Monitoring, Page E-204. The proponent commits to mitigation and monitoring, i.e. implement a re-vegetation program, which aims at the establishment of ecosite equivalent to the pre-disturbed landscape. Avoidance is also one form of mitigation and the extent to which it was applied is unclear. a. Provide the measures taken to avoid wetlands and ecologically significant wetlands. b. Describe (and show) areas where wetlands were avoided through modifications of the mine plan.	EC			Wetlands
40. Section E.13.3.2 – Wetlands and Section E.13.5 – Mitigation and Monitoring, Pages E-199 and E-204. The text in section E.13.3.2 discusses the amount, type and significance of wetlands that will be lost during the project. Section E.13.5 goes on to discuss possible mitigation measures including: • implement a re-vegetation program which aims at the establishment of ecosite equivalent to the pre-disturbed landscape;	EC			Wetlands

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• implement a re-vegetation program which aims at the re-establishment of ecosites which are regionally limited in distribution; a. Provide the measures the proponent will implement to restore bogs and fens. b. Discuss the appropriateness of recent techniques being applied in the oilsands area.				
41. Section E.14.5.1 – Mitigation and Monitoring - Mitigation, Page E-244. The following measures are recommended to mitigate the potential impacts of the Project on wildlife: • where possible vegetation clearing should be planned for outside of the May to July Breeding season; A May 1 to July 31 restricted activity period is often acceptable for smaller areas. However when large areas are to be cleared, there is a greater likelihood of encountering migratory bird nests outside this time period. For larger areas, such as this project, Environment Canada typically recommends that at minimum April 1 to August 31 be used as the restricted activity period for clearing vegetation. a. Clarify whether CVRI will comply with an April 1 to August 31 restricted activity period.	EC			Terrestrial - Wildlife
42. Section E.14.5.1 – Mitigation and Monitoring – Mitigation, Page E-244. The proponent has provided general mitigation measures for migratory birds, but the extent to which these may be applicable to at risk migratory bird species remains uncertain. a. Clarify whether CVRI will target mitigation specifically for SARA and COSEWIC species (e.g. Barn Swallow, Olive-sided Flycatcher) that were confirmed as regular breeders in project area?	EC			Terrestrial – Migratory Birds
43. Section A4.4.3 – Emissions of Greenhouse Gases During Construction/Reclamation, page	EC			GHG Emissions

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A-31 and Table 4.1-21 – Total Annual Direct GHG Emissions (for Year 2034), page 40, of CR#6. EC notes a slight disparity in identifying values used to estimate the total GHG emissions during the construction phase. The main test formula on page 41 employs the value taken from table 4.1-21 of 357 kt CO2e/yr, while the formula on page A-32 intends to use the same value, but erroneously incorporates a value of 392 kt CO2e/yr. a. Provide the correct calculation.				
44. Project components include 15 watercourse diversions and 14 watercourse crossings. Consultant Report #6, Hydrology a. Provide information for any proposed works that are to be built or placed in, on, over, under, through or across any navigable water and that may require an approval by the Minister of TC under the Navigable Waters Protection Act (i.e. 15 watercourse diversions and 14 watercourse crossings). b. Provide information for each proposed work not covered by the Minor Works and Waters (Navigable Waters Protection Act) Order (available online at http://canadagazette.gc.ca/rp-pr/p1/2009/2009-05-09/html/notice-avis-eng.html#d103). Appendix A outlines the information that Transport Canada requires a proponent to submit when applying for an approval under the Navigable Waters Protection Act. If final design information is not available, provide as much conceptual information as is possible.	TC	3.3		Hydrology
45. Consultant Report #6, Hydrology a. Describe indirect effects of the project on navigation, and describe mitigation measures if warranted.	TC	3.3		Hydrology
46. Consultant Report #6, Hydrology	TC	3.3		Hydrology

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a. Provide a cumulative environmental effects assessment of the impacts to navigation, which takes into account influences such as: overall water withdrawals, water diversion, natural river fluctuation, sand movement, and dredging.				
47. Consultant Report #12 – Traditional Ecological Knowledge and Land Use a. Describe Aboriginal consultation activities with Aboriginal groups in the area for specific concerns related to potential adverse impacts of TC's potential approval(s) (i.e. any works to be built or placed in, on, over, under, through or across any navigable water located at watercourse crossings – the watercourse crossings and diversions) on potential or established Aboriginal or treaty rights. b. Provide consultation records of any consultation with all Aboriginal groups in the area who may have an interest in the above-noted works. Provide information about Aboriginal consultations, including but not limited to any concerns raised by the Aboriginal groups in relation to Transport Canada's potential NWPA approval(s) as well as the measures taken or proposed to be taken to address those concerns. In Table 2 of the TEK study, it indicates that the Alexis Nakota Sioux Nation raised concerns related to navigable waters on April 11, 2007 and that a response to the concerns was provided on May 3, 2007. c. Provide further details in regards to the concerns about navigable waters as well as how these concerns were addressed.	TC	5		Traditional Knowledge
48. Section A: A.4.3.4 Additional Approvals Required: Project Introduction a. Provide a section that adds Natural Resources Canada as a Responsible Authority under CEAA where required and reference the need for a license under s.7(1)(a) of the Explosives Act.	NRCan		No	General
49. Hydrogeology EIA: Robb Trend Project Report: Section 3.4.2. Cross-section 4000 East (Fig. 3.4.1) shows a buried valley (~17020N). Buried valleys have a	NRCan		No	Hydrogeology

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considerable role in groundwater flow in some regions of Canada. NRCan could not find evidence in the EIS of inclusion of the buried valley in the groundwater baseline, project effect assessment and proposed monitoring program. a. Provide an assessment of the importance of the buried valley for the groundwater flow.				
50. Hydrogeology EIA: Robb Trend Project Report, Section 3.4.3. The upper Robb ground water levels in Fig. 3.4.7 are not the same as noted in Section 3.4.3. a. Clarify the discrepancy noted above. The water well data show unexplained spikes in water levels for June 11. Presumably, further monitoring will determine the meaning of these fluctuations e.g. potential periodic drainage of old underground mine works. b. Confirm that CVRI will be conducting further monitoring to determine the meaning of the fluctuations noted above.	NRCan		No	Hydrogeology
51. Hydrogeology EIA: Robb Trend Project Report, Section 4.2.6. Impact on Surface Water Bodies In Section 4.2.6, it is stated that “There are no significant lakes, ponds or similar non-flowing water bodies in the study area.”. However, a brief scan of the area shows at least 6 hectares of water bodies in the vicinity. a. Clarify the above statement.	NRCan		No	Hydrogeology
52. Hydrogeology EIA: Robb Trend Project Report, Section 4.2.8. Impact on Terrestrial Vegetation, Wildlife and Aquatic Resources Section 4.2.8 states that drawdown of groundwater levels does not typically extend 100 m beyond a mine pit. The data show that drawdown effects extend to a least 250 m. Moreover, these drawdown measurements are across the geological strike. It is probable that drawdown	NRCan		No	Hydrogeology

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along the strike (perpendicular to this direction) would be different. a. Clarify the discrepancy noted above.				
53. Hydrogeology EIA: Robb Trend Project Report, Section 6.0 Climate Change Climate change scenarios for Edmonton were applied to the Robb Trend area. However, the current climate difference between these two places is greater now, than what the forecasted change is for Edmonton between now and 2039. a. Explain why the climate change scenario for Edmonton was used, how it was used, and why this is the best scenario to use.	NRCan		No	Hydrogeology
54. Appendix 9 Geological and Geotechnical Compilation Report, Section 4.2.1. Soil Types and Characteristics a. Provide a definition for and description of “Re-worked till”.	NRCan		No	Terrain and Soils
55. Appendix 9 Geological and Geotechnical Compilation Report, Section 4.2.2. Geotechnical Parameters and Mechanical Properties of Surficial Soils Section 4.2.2 describes mechanical properties of soils, but almost all the data are from outside the LSA. For example, only 2 points are from Robb Trend. In addition, the type of surficial material plotted is not given. It is stated however, that additional data will be obtained in the future. a. Provide any existing geotechnical data for the Robb Trend area, and elaborate on future plans to obtain these data.	NRCan		No	Terrain and Soils
56. Volume 1, Section C.5.5, Pages C56-57: Blasting Storage and Manufacturing CRVI will use the existing explosive manufacturing plant and will relocate it following the beginning of the Project. a. Confirm that the project and related explosives manufacturing and storage operations	NRCan		No	Explosives

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will meet the regulations and safety distances required by the Explosives Regulatory Division of Natural Resources Canada (Guidelines for Bulk Explosives Facilities and Quantity Distance Principles Manual). http://www.nrcan.gc.ca/sites/www.nrcan.gc.ca.minerals-metals/files/pdf/mms-smm/expl-expl/pdf/BulkRev51-eng.pdf http://www.nrcan.gc.ca/minerals-metals/explosives/4283				
57. Volume 1, Section C.1.5.5, Pages C13-15 & Section C.5.5, Pages C56-57: Explosives NRCan requests the proponent provide information about the presence of any temporary or permanent explosive facility that could be used on the Project site before the relocation of the manufacturing plant. a. Confirm whether there is a plan to have any temporary/permanent maintenance/wash area on the site or to have any temporary/permanent 'magazine' on site for ancillary blasting items?	NRCan		No	Explosives

Health Canada References

Berglund, B., Lindvall, T. & Schwela, D.H (Eds.). (1999). *Guidelines for Community Noise*. World Health Organization (WHO). Available at: http://www.who.int/docstore/peh/noise/guidelines2.html

Health Canada. (2010). *Part V: Guidance on Human health Detailed Quantitative Risk Assessment for Chemicals (DQRA).* Available at: http://www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/chem-chim/index-eng.php

Hurtley, C. (Ed). (2009) *Night Noise Guidelines for Europe*. World Health Organization (WHO). Available at: http://www.euro.who.int/__data/assets/pdf_file/0017/43316/E92845.pdf

International Standards Organization (ISO). (2003). *ISO 1996-1:2003 Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures*. http://www.iso.org/iso/catalogue_detail?csnumber=28633

United States Environmental Protection Agency (EPA). (1974). *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (Report No. 550/9-74-004).

World Health Organization (WHO). (2003). *Health aspects of air pollution with particulate matter, ozone, and nitrogen dioxide*. Report on a WHO Working Group. Bonn, Germany 13-15 January 2003. Copenhagen: World Health Organization. Available at: http://www.euro.who.int/data/assets/pdf_file/005/112199/E79097.pdf