APPENDIX C2.3 – MOE ISSUES TRACKING – ENVIRONMENTAL PROTECTION DIVISION (John Clark)

Brule Mine Project - Application Review Stage Issues Tracking Document – Government Agencies – MOE, John Clark					
Category (water quality; effluent and air)					
# ID	**Submitted by**	**Issues Raised**	**Proponent Response**	**Review Status**	**Responsible Agency**
B.C. Ministry of Environment John Clark					
1	**John Clark**	**General comment:** The proposed Brule mine effluents will ultimately discharge to the Blind Creek system via two sediment ponds, and sediment handling/release to the water course will be controlled using BACT-type technology. Experience to date with the Dillon Mine associated with sedimentation control, removes many of the "unknowns" associated with this type of operation, and it is assumed there will be no problem duplicating the Dillon sed. pond performance at sed. pond 2. The current Dillon effluent permit requires that effluent quality achieve a 96HourLC_{20}, 50 mg/L TSS (a higher allowance during high rainfall events as per the BCWQG) and indicates that B.C. Water Quality Guidelines should be achieved at BC-01, upstream of the waterfall for "other parameters". While the 96HourLC_{20} and 50 mg/L TSS are managed based on the careful and controlled addition rate of added flocculants, and the optimization of settling of input sediment, the ponds are not dedicated to removal of "other" parameters (unless a portion of the "other" parameters are in particulate form).	*WCCC:* Comments noted. No response required.	n/a. No response required.	MOE
2		While the two pond discharges are expected to be relatively innocuous (in the context of "discharge quality" from a mine in general), the downstream water quality is expected to exceed BCWQG for a number of parameters (Se, Cr, Cd). The pond discharges are expected to contain concentrations	Comments noted. No response required.	n/a. No response required.	MOE

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		of various parameters which are below the level that is amenable to any conventional "water treatment" techniques. Application of more onerous/effective methods would present a significant increase in treatment costs and the outcome may not be much of an improvement. Any leachate from the mining activity is therefore not expected to be "removed" by the sed. ponds (unless it is removed incidentally, e.g. adsorption onto fine particles settling and remaining in the ponds, and removal of any metal precipitates if they are present). Hence, the Dillon effluent permit specifies BC-01 rather than downstream of the pond as the "compliance point" relative to meeting the BCWQG.			
3		There therefore appears to be some risk that non-TSS parameters may be exceeded in receiving waters, with selenium being the most likely/significant parameter to be exceeded in Blind Creek. Based on the nature of ARD/ML predictive testing, it appears that the predicted concentrations generally may be either marginally too high or marginally too low. Given that "high" numbers are already evident associated with the operation of a "small" mine, there is an expectation that operation of the "large" mine will provide exceedences of BCWQG parameters. On the "high" side, the proponent indicates that mitigative measures will be applied, and additional sampling at the site will	*Response by Alan Martin, Lorax, on behalf of WCCC:* The revised water quality predictions demonstrate that dissolved aluminum, sulphate and selenium are most likely to exceed B.C. guidelines for the protection of aquatic life. The Dillon MSP is not characterized by "high" numbers. Observed dissolved metal concentrations in the MSP are generally consistent with the dissolved values predicted. For the larger Brule Mine, revised source concentrations for all parameters were generated based on a more extensive site-specific data set. The values observed to date for Dillon	Response satisfactory. Issue addressed. Some additional details during permitting and operations.	MOE

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		be implemented as required, and various "storage modes" will reduce leachate loadings. Overall, on the "high" side, the consequences of exceeding BCWQG (at BC-01) does not appear to present a high risk to the receiving water system, but this will be more apparent after appropriate sampling during the production phase. The consequence of this possible exceedence appears to be more of a compliance issue than an obvious detriment. The BCWQG levels, I have assumed, have built-in "safety factors, based on the methodology with which they are established, and that if they become exceeded (at BC-01), then site specific investigation to determine the biological significance of the exceedence is appropriate/acceptable provided that such investigation demonstrates there is no "measurable" significant adverse effects. This begs the question: Is this a permitting phase issue, or does additional investigations need to be carried out prior to a Certificate decision?	suggest that the source values adopted for Brule are appropriate, and that an adequate level of conservatism has been built into the predictions. The results of the residual effects analysis indicate a low risk to aquatic receptors. However, as described in the revised effects analysis, tailored management plans will be used to address aluminum, sulphate and selenium. Confirmatory work in support of aluminum management will be submitted during the EA review. Filtration and dialysis methods will be used to better quantify the truly dissolved aluminum fraction in Dillon mine waters. Data gathered to date suggest that a significant portion of the filterable fraction exists as small-diameter aluminum particles (colloids) which pass through standard 0.45 micron filter. Sulphate and selenium will be addressed through adaptive management during operations. Sulphate, toxicity test work will be conducted to establish a site-specific water quality objective for sulphate when concentrations in Blind Creek approach		

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			the100 mg/L water quality guideline. It is also anticipated sulphate management at Brule will benefit from the results of the sulphate toxicity program initiated by MOE on mine-affected waters in northeast B.C. With regards to selenium, steps will entail those outlined in the Selenium Management Plan. WCCC has also committed to address future water quality issues, should they arise, through mitigation or treatment. Refer to Commitments #42,47 (Appendix F).		
4		Will these predicted exceedences of the BCWQG at BC-01 constitute "pollution" (“means the presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment”)? If the BCWQG is a “guideline”, then it represents the preferable water quality at BC-01, and if there is an expectation that some parameters will be exceeded during mine production, then so long as these exceedences are not clearly going to substantially alter or impair the usefulness of Blind Creek, then the required response by the proponent/government is suggested as follows: (a) mitigation as preventative measures; (b) establish site-specific maximum parameter concentrations; (c) perform appropriate “research” into the applicability of the actual BCWQG	*Response by Alan Martin, Lorax, on behalf of WCCC:* As outlined in the revised residual effects analysis, predicted exceedences at BC-01 are not predicted to pose a significant adverse risk to aquatic biota. In the unlikely event that exceedences act to “alter or impair the usefulness of Blind Creek”, then it is agreed that an approach involving actions similar to those in (a) to (e) would be adopted. See Commitments #42,44,56,57 (Appendix F).	Response satisfactory. Issue addressed.	MOE

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		parameter levels relative to the aquatic species in Blind Creek; (d) perform biological sampling to determine whether the mine effluents are causing any adverse effects on Blind Creek species; and (e) define what role "insoluble" portions of parameters in the pond discharges (e.g. Se, Cr, Cd) will play in terms of inert/unavailable to aquatic species, and therefore justify why some of the BCWQG parameters could be specified in the effluent permit as "dissolved" rather than "total".			
5		Item (d) cannot be completed until the mine has operated for some time, while (b) and (c) could have been performed for the review stage of the project. Item (a) is covered in the report, but it is difficult to assess whether the proposed mitigation will reduce leachate sufficiently to achieve the result that BCWQG parameters will be achieved at BC-01.	*Response by Alan Martin, Lorax, on behalf of WCCC:* Item (d) forms a key component of the selenium management plan. Item (b) (site specific maxima) is proposed for sulphate if levels increase to values above guidelines. Aluminum is being addressed currently through items (c) and (e). See Commitment #59 (Appendix F). Using conservative assumptions, the residual effects ratings for all parameters are low. Although some parameters are predicted to exceed BCWQGs, such exceedences are not predicted to pose a significant risk to aquatic receptors.	Response satisfactory. Issue addressed.	MOE

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6		**General comment on sedimentation control and effluent permitting:** The initial Brule runoff is planned to flow to the existing Dillon sed. pond, which is currently permitted and has a functioning flocculant system. Therefore, the risks associated with the Brule runoff being added to this system eliminate some of the unknowns associated with a new proposal and achieving permitted discharge TSS/Turbidity quality.	Comments noted. No response required.	n/a. No response required.	MOE
7		Achieving downstream water quality permit requirements may not be as clear cut an issue: typically, "downstream" will be downstream of the settling pond discharge (compared to water quality upstream of the settling pond discharge). The original Dillon Permit allowed for a discharge pond control site that was not immediately downstream of the sediment pond (at the falls). Due to a natural slide upstream of the falls, a control point on Blind Creek further upstream of the falls is being used. This concession of not using the control point immediately downstream of the sedimentation pond has been based on the absence of fish above the falls. Fish are not the only species, etc. which should be protected. The Dillon permit (permit section numbers used) was therefore structured as follows in terms of where the compliance point is located: **The rate at which effluent may be discharged from the Main Sediment Pond is variable, depending on the precipitation/runoff rates at the Dillon Mine site.**	*Response by Alan Martin, Lorax, on behalf of WCCC:* Water quality predictions indicate that water quality conditions will be protective of all biological receptors upstream of BC-01. *WCCC:* The temporary control point on Blind Creek further upstream of BC01 was required as a result of safety considerations of sampling below the unstable slide into Blind Creek upstream of BC01. The slide and subsequent dam on Blind Creek have stabilized and water quality sampling at BC-01 has resumed.	Response satisfactory. Issue addressed.	MOE

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		The Main Sediment Pond discharge into Blind Creek, during precipitation/runoff rates which do not exceed the 10-year, 24-hour rainfall event (4.0 m^3/second into the Main Sediment Pond) shall meet the following requirements: • *toxicity (Rainbow Trout) 96 Hour LC_{20} > 100% effluent concentration (i.e. 8 or more fish out of 10 tested must survive);* • *non-filterable residue shall be less than, or equal to, 50.0 mg/L, or, shall be as indicated in 1.1.2.3, whichever is the lower concentration;* • *non-filterable residue (TSS) shall be less than, or equal to:* ***$[(TSS)_{BC-01}$ + 25(D - 1)] mg/L when the TSS at BC-01 is less than, or equal to, 275 mg/L, or,*** ***$[(TSS)_{BC-01}$ /11] [D + 10] mg/L when the TSS at BC-01 is greater than 275 mg/L,*** where D is the dilution rate calculated by dividing the flow rate as measured at Blind Creek BC-01 by the flow rate as measured at the Main Sediment Pond discharge, and $(TSS)_{BC-01}$ mg/L is the TSS measured at BC-01. **The Main Sediment Pond discharge quality into**			

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		Blind Creek during precipitation/ runoff rates which exceed the 10-year, 24-hour rainfall event shall meet the requirements in 1.1.2.3. *In the event that the water quality parameters measured in Blind Creek at site BC-01 exceed their respective BCWQG (except for turbidity and TSS), or exceed the turbidity levels indicated in 1.2.1, additional mitigation measures and works, and/or more stringent discharge requirements may be required by the Director. In the event that measured turbidity at site BC-02 exceeds the triggers in 1.2.1, corrective action may be required by the Director.*	*Response by Alan Martin, Lorax, on behalf of WCCC:* It is also assumed that there is the possibility that total metal levels may exceed water quality objectives during extreme flow periods characterized by high TSS. In other words, the baseline data used to set water quality objectives does not likely encompass the full range of TSS levels, and hence total metal values, which occur naturally in Blind Creek.		
8		The predictions of water quality/downstream impact relative to TSS need to be addressed in the EAC Application Report (for both sediment ponds). The Dillon situation was addressed by MOE as described above, but the impact above the waterfall on species/plants/etc (i.e. other than fish) should be clearly assessed relative to TSS.	*Response by Alan Martin, Lorax, on behalf of WCCC:* Given that at certain times of the year there is little dilution afforded by Trib 3 and Blind Creek, a 50 mg/L TSS discharge from SP1 and SP2 could theoretically result in exceedances of TSS guidelines. In reality, however, high TSS loadings are not predicted for the sed ponds during low-flow periods. Higher TSS levels in sed pond discharges will be expected during freshet and storm events, at times when both dilution and TSS levels in receiving streams are also predicted to be high. It is assumed that this issue will be addressed further at permitting.	Response satisfactory. Issue to be addressed at permitting.	MOE

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			Specifically, the equation provided in the effluent permit which describes the allowable TSS inducement, implicitly considers both dilution and background TSS concentrations. Flocculation as a contingency will provide a mechanism to meet the limits set out in the effluent permit. Accordingly, WCCC is confident that the TSS management plan will be protective for Blind Creek. Given these considerations, no additional TSS modelling is proposed at this time.		
9		In addition, the proponent should provide some comment on the Dillon permit toxicity requirement (96 Hour LC_{20}) in relation to when flocculants are used. Typically 1.0 Toxic Unit (96 Hour LC_{50}) is used in permits, but in the Dillon situation 96 Hour LC_{20} was used to protect non-fish species because of the inadequate dilution in Blind Creek at the sediment pond location. Ideally, this would be assessed by establishing the 96 Hour LC_{20} for the combination of flocculants used (the reason being that we do not have a correlation between the 96 Hour LC_{50} and 96 Hour LC_{20}). This sounds like a permitting issue but it's an aspect of the impact assessment on Blind Creek that should be addressed in the EA stage, particularly since the available dilution for pond discharges is minimal.	As discussed with John Clark (April 18, 2006) WCCC has been conducting 96 Hour LC50 testing due to an error in the wording of Permit PE-17679. WCCC has since clarified the wording of the Permit and will now conduct 96 Hour LC20 toxicity tests.	Response satisfactory. Issue addressed.	MOE

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10		Note that with two inputs from two sed. ponds, the permit will be rewritten to essentially meet the same requirements as the current Dillon permit, the major difference being that the *sum of the sediment load from the two ponds* will be required to meet the 1.1.2.3 requirement and the section 1.1: "1.1 In the event that the water quality parameters measured in Blind Creek at site BC-01 exceed their respective BC Water Quality Guidelines (except for turbidity and TSS), or exceed the turbidity levels indicated in 1.2.1, additional mitigation measures and works, and/or more stringent discharge requirements may be required by the Director. In the event that measured turbidity at site BC-02 exceeds the triggers in 1.2.1, corrective action may be required by the Director. 1.1.1 Turbidity triggers applicable to BC-02 are: - mean turbidity in Blind Creek at BC-02 exceeds mean turbidity at BC-US by more than 4 NTU over any 30-day period when mean turbidity at BC-US is ≤ 8 NTU (clear flow period). - turbidity in Blind Creek at BC-02 exceeds turbidity at BC-US by more than 16 NTU at any time when turbidity at BC-US is between 8 and 80 NTU (turbid flow period). - turbidity in Blind Creek at BC-02 exceeds turbidity at BC-US by more than 20 % at any time when turbidity at BC-US exceeds 80 NTU (turbid flow period). "	*Response by Alan Martin, Lorax, on behalf of WCCC:* Point noted that permit will be re-written with the understanding that the sum of the sediment loads from the two ponds will meet requirements.	Response satisfactory. Issue to be addressed at permitting.	MOE
11		**<u>Comments on specific sections:</u>**	*WCCC:* Comments Noted. WCCC intends to develop SEPSC Plans that	Response Satisfactory.	MOE

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		4.1.3.9: Surface Erosion Prevention and Sediment Control Plan The SEPSC is somewhat generic and as mentioned will be applied to the Falling Creek Haul Road, new Loadout and power line. SEPSC plans for these various locations should be completed well before permit issuance so that they can be screened prior to approval (requirement of waste permit regarding sedimentation control aspects).	will take into account the uniqueness of the various aspects of the Brule Project. Lead agencies for the permitting of the powerline and road will be MAL and MOF, respectively. Western will complete SEPSC plans for the road and powerline, prior to construction.	Issue to be addressed at Permitting.	
12		4.2 Construction Management Plan - Was an "Environmental Monitor" or equivalent planned. The proponent should plan on providing weekly/etc. updates of construction relative to environmental issues. Water sampling requirements as part of the effluent permit would be similar to Dillon/Wolverine in order to ensure that receiving water quality is not impacted and to ensure that if it is, then appropriate sampling detects potential impacts in a timely manner so that mitigation measures are implemented/assessed. MOE would rely on the company providing this feedback in a timely and sufficiently detailed manner (via emails/photos/etc.). MOE/WCC can work out a reporting procedure during the construction phase so that when high turbidities/spills/etc. occur, MOE is quickly appraised of the details at the site and the mitigation/response to be applied, so that MOE is in a position to quickly assess the significance. Will this requirement be part of the Construction Management Plan?	*WCCC:* WCC's Environmental Superintendent will be responsible for monitoring construction work for compliance to environmental design specifications, design guidelines for regulatory requirements and quality control on environmental monitoring programs and for compliance reporting. Comments noted. Refer to Commitment #2 (Appendix F).	Response satisfactory. Issue addressed.	MOE
13		While an air permit is not considered to be required for the construction phase at the Brule site, the	*WCCC:* Agreed. WCCC will discuss timing with MOE early.	Response Satisfactory.	MOE

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		Dust Management Plan for the production phase should include dust management for the construction phase. This approach was used for the Wolverine mine and appears to be an efficient method to handle this and avoids a certain amount of permitting for proponent/MOE. The actual point in time when "mining" commences is important for the proponent to define in order to apply this simplified approach on the air permitting.	*RWDI:* Dust management for the construction phase is included in the Air Quality and Dust Control Plan (Section 4.10 of the Application). Specifically, the plan addresses dust management for road construction (Section 4.10.2.6.1) and open burning (Section 4.10.3). All other dust producing activities associated with construction, such as material handling, stockpiling and equipment and vehicle traffic, will be managed according to the plan. *WCCC*: The start of mining in the Brule will not be a discretely definable event; mining in the Dillon Pit is expected to overlap with Phase 1 of the Brule. In general terms start of mining in the Brule could be defined as the day required permits for the Brule Project are in place.	Issue to be addressed at Permitting.	
14		Appendix C, Surface Erosion Control – There will be a need at the permitting/construction/operation phases to translate the generalized Surface Erosion Control into an actual "to do" plan: suggestion – this could take the form of weekly update reports on what Surface Erosion Control measures have been implemented, including maps and measures with appropriate photos, etc. The precise application of the Surface Erosion Control measures is recognised to be applied on site and	*WCCC:* Comments noted. No response required.	Response Satisfactory. Issue to be addressed at Permitting.	MOE

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		as activities unfold daily/weekly/etc.			
15		As an aside regarding terminology section 2, 2.1, Appendix C-4 – the reference to van der Waals "dispersion forces" should be "van der Waals attractive force", and the "dispersion forces" is attributed to Brownian motion. Particle surface charges above a magnitude of approximately 10 mv Zeta Potential prevent the (natural) agglomeration of (fine) particles that are too fine to settle (this represents the break down point for the application of Stokes settling equation). This concept was described in the literature by Kitchener, et al in Britain and by La Mere and Healy in North America approximately three decades ago. Some of the literature is cited in the MOE settling pond guideline draft defining these terms and I can provide additional references on request.	Comments noted. No response required.	n/a. No response required.	MOE
16		Soil particle size analyses suggest problematic size fractions will be present in runoff into settling ponds (i.e. particle sizes which are too fine to actually settle based on Stoke's settling equation due to the Brownian motion imparted from the water molecules). The portion of fines in the feed to the settling ponds (reference to Appendix D-1: Brule Mine Footprint Area Soils Particle size) suggested by this Table is such that pond discharge quality would exceed 50 mg/L TSS. These "problematic" fine particles in runoff feeding settling ponds will only settle out if they can "naturally" agglomerate, and this is assumed only to be likely if these particle charges in suspension are less than (approx.) 10 mv. Since this low particle charge is	Comments noted. Particle size analysis and settling tests related to the Dillon Mine were previously provided to MOE and were the subject of extensive discussions during the permitting of Dillon. Based on concerns related to the fine texture of site soils, a flocculation plant was established at SP1 as a contingency to prevent potential TSS exceedences in pond discharges. The flocculation plant has been used during high runoff periods and has been proven effective. SP1 and its flocculation plant will collect flow from the Brule Phase 1 development area. SP2 (and an	Response satisfactory. Issue addressed.	MOE

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		unlikely (at the pH of natural water) the settling tests would be expected to show high turbidity/TSS mg/L in a settling test jar supernatant after a reasonable "simulated" settling time.	additional flocculation plant for it) will be constructed and be operational prior to mining activity (excluding clearing and construction of SP2 and related works) into the SP2 catchment area. Extensive SEPSC planning was also completed and implemented for Dillon, and will also be done for Brule. These measures are expected to result in acceptable levels of TSS in Brule sediment pond discharges. The "problematic" fine particle content in runoff feeding Sediment Pond 1 has not been evident during the operation of Sediment Pond 1 and high turbidity discharges are infrequent. The same results are expected at Sediment Pond 2.		
17		In conjunction with the SEPSC Plan, the proponent should provide a plan addressing water management that can be referenced in the effluent permit (any plans referenced in the permit should be "stand-alone" reports, rather than "buried" in a large document.	Comments noted.	Response satisfactory.	MOE
18		Regarding sed. pond #2, similar requirements to the Dillon effluent permit can be assumed in terms of discharge quality and downstream water requirements.	Comments noted. No response required.	Response satisfactory. Issue to be addressed at Permitting.	MOE
19		4.2.5.1.7 Concrete Batch Plant – Where will gravel	Concrete aggregates will probably not	Response	MOE

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		wash water and truck wash-out be treated?	be produced (i.e. screen and wash local gravel) at the Brule Mine. Aggregates would be trucked to the batch plant as per the Wolverine experience. Gravel wash water will therefore not be produced and will not require treatment. Cement trucks originating at the batch plant would return to the plant for washing out and wash water would be collected in a temporary settling pond near the batch plant. The collected water would be allowed to naturally ex-filtrate and the pond filled and reclaimed at the end of construction. If the batch plant option was not used, cement trucks originating in Chetwynd would be washed near a temporary settling pond at the plant site. The collected wash water would be allowed to naturally ex-filtrate and the pond filled and reclaimed at the end of construction.	satisfactory. Issue addressed.	
20		4.2.5.1.8 Explosive site: Typically the building to handle this is concreted and self-contained to avoid any spills entering the ground water/watercourse. Good handling practices to minimise spills/etc. would be delineated in an appropriate operating plan.	Comments noted. Adherence by WCCC employees and contractors to the Chemical & Material Storage and & Handling Plan and Western's Spill Response Plan, will result in the safe handling and storage of chemicals; thereby minimizing/eliminating the chance for spills.	Response satisfactory. Issue addressed.	MOE
21		4.2.6.1.9 Equipment Erection Site. Provisions to	All facilities located at the Brule Mine will	Response	MOE

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		address oil spills at this site should be planned – applicable to equipment which has hydraulic fluid/oil.	be subject to the requirements set out Fuel Management Plan and Chemicals and Material Handling Plan. Both of these plans layout Best Management Practices to eliminate/reduce spills and the response to spills if they occur.	satisfactory. Issue addressed.	
22		4.2.6.1.10 Raw Coal Handling, Breaker & Storage. Typically for a Breaker station for a large mine, an appropriate dust collection system would be part of this plan (e.g. vacuum draw system and baghouse, etc.). 4.2.6.1.11 Product Coal Handling, Storage & Loadout. Typically for a Product Coal Handling, Storage & Loadout facility for a large mine, an appropriate dust collection system would be part of this plan (e.g. vacuum draw system and baghouse, etc.).	WCCC is currently using and planning BMPS, as the Brule crushing and coal handling system will incorporate the following measures to control and reduce the generation of fugitive dust: ▪ Raw coal feeder will be semi-enclosed; ▪ All outside belt conveyors (excluding the reject belt conveyor RJ-1) will have belt covers/hoods over the carry side of the belt to minimize dust generation and reduce the effects from wind. These belt covers will be hinged on one side to facilitate maintenance and repair work. Belt covers will not be necessary over the reject conveyor RJ-1, because the reject product will consist primarily of rock material; ▪ All conveyor transfer points will be contained by chutes to control the generation of dust; ▪ Raw coal screener and primary	Response satisfactory. Issue addressed.	

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			crusher are enclosed units with vents; ▪ A dry dust collection system (bag house) will be integral to the dry screening process in the preparation plant; ▪ Product coal conveyor will contain fines on the bottom with washed coal on top; and ▪ Rubber skirting will be used to contain coal dust from loadout bin to trucks. ▪ The breaker for Brule is an outside feeder arrangement with a rotary breaker to reduce oversize lumps to a manageable size. The small quantity of coal expected to require sizing will be reduced to 300 mm top size and fines generation will be minimal. ▪ The primary screening/crushing operation and transfer points will incorporate passive dust collection (i.e. chutes will be designed with gradual transition, skirting, dust curtains, skirt board covers, hoods, etc.). ▪ Filtered bin vent dust collectors will be installed on top of the raw coal and specification coal storage bins. Severe dust generation is not expected at the raw coal bin due to the coarse product size (-100 mm) or		

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			at the specification coal bin due to the moisture content of the coal. Outside specification (washed) coal stockpiles will be sprayed with water to control airborne dust generation. Note: The use of a wet suppression type system before the wash plant would not be appropriate since the additional moisture added to the raw coal may reduce the effectiveness of the dry screens (flip-flow live deck type) located in the preparation plant. Baghouses are not needed for the loadout because the washed product will maintain a higher moisture content than dry coal, and therefore are far less likely to generate dust. WCCC (additional comments) April 10 – Managing dust emissions from the clean coal stockpiles will occur as follows: The traveling luffing stacker is designed to allow adjustment of the discharge end of the stacker in relation to the top of the coal stockpile; the drop height can be minimized to control coal dust creation. Rainbird water sprays installed around the perimeter of the stockpiles will be used to wet the coal as required. When loading trains, product coal is		

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			reclaimed from stockpiles by using dozers to push coal to a trap loadout where coal is transferred onto the conveyors. Excessive dusting is not expected during reclamation since the moisture content of the washed coal is in the 6% to 8% level. Coal reclaim dozers are equipped with large blades designed for coal handling. The quantity of coal moved during each cycle is maximized. The blades deflect radiator cooling fan airflow away from the coal and therefore help reduce dust creation. The distance coal is pushed from the stockpile to the trap loadout is minimized through optimal feeder location in relation to stockpiles. Rainbird water sprays (with chemical additives such as calcium chloride in winter) can be turned on as required to wet down the active working areas. Dust emissions occurring while recovering coal from stockpiles will be monitored and appropriate action taken to manage dust creation.		
23		4.2.6.1.12 Based on the need for a coal prep. plant, given the current lower pricing of PCI market, this plan would be addressed/permitted based on the proponent's request to amend air/effluent permits. Based on the lack of need to produce any fine material in the proposed wash plant, product water would essentially "drain" from product materials, or otherwise be dewatered (i.e. without the need for a	A dry collection system (baghouse) will be integral to the dry screening process in the wash plant. The dust collection system will collect airborne dust captured with dust hoods from the screens and place the collected ultra-fine coal onto the specification coal conveyor.	Response satisfactory. Issue addressed.	MOE

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		dryer). The front-end (dry parts of the wash plant) would be expected to include appropriate dust collection equipment as required.			
24		4.2.6.1.13 Construction Bins, Conveyors & Prep…… The proponent should plan for disposal of construction-type refuse and make application for any required refuse permit. Where will the "water" be directed during initial plant commissioning?	As noted in Section 4.7 of the Application, *Waste Management Plan,* WCCC is committed to ensuring that the collection, storage, transportation and disposal of all wastes generated by all Project components will be conducted in a safe, efficient, and compliant manner. Water during the initial plant commissioning will be directed to the SP1. "Water" during initial plant commissioning and operation will be recycled. A small makeup component will replace process water loss to final product coal and coarse coal rejects (minor losses).	Response satisfactory. Issue addressed.	MOE
25		4.2.6.1.15 Transfer of Dillon Mine Raw…… "Dillon raw coal equipment" – no mention of additional dust collection equipment.	Refer to responses to Issues #22 and #23. *WCCC:* The Dillon Raw coal equipment will be used during the initial years of operation, when Brule is operating with lower production rates similar to that of Dillon. Upon transfer from the Dillon like production rates to the higher production rates associated with Brule, new	Response satisfactory. Issue addressed.	MOE

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			equipment will be brought in and equipped with additional dust mitigation measures.		
26		4.2.5.2 Falling Creek Flats Loadout. Sewage could be handled via the local authority based on the expected discharge volume will be under the EMA limit requiring a permit.	Comments noted. WCCC proposes to truck sewage effluent off-site by use of a certified contractor.	Response satisfactory. Issue addressed.	MOE
27		Refuse presumably will be hauled to the "local" landfill?	Correct. Refuse from the Loadout will be transported to the nearest local landfill.	Response satisfactory. Issue addressed.	MOE
28		Appropriate provisions to minimize bear-related problems should be implemented.	Provisions to minimize bear-related problems are described in the Wildlife Protection Plan and will be implemented.	Response satisfactory. Issue addressed.	MOE
29		Any effluent/emissions from this site could be authorized via separate permits or be appended to the main permits.	Comments noted. No response required.	Issue to be addressed at Permitting.	MOE
30		If accumulated coal at the site (i.e. coal staying on the ground from coal piles, etc. is considered to present an ARD/ML issue, then there should be provision to remove "old" coal from the base of piles, etc. at a frequency that minimizes ARD/ML releases. Alternatively, if "aged coal" is considered less of an ARD/ML issue, then there would be no need to remove "old" coal from the site.	Removal of "old" coal from stockpile bases at the Falling Creek Loadout is not practical. Bedding coal would be contaminated with waste (rocks, sand till etc.) from the underlying foundation and would require disposal in a land fill or would require reprocessing to meet product specifications. Stockpile areas would not be available for coal storage during removal and replacement of bedding coal, consequently additional stockpile areas would require development. ARD/ML properties of old	Response satisfactory. Issue addressed.	MOE

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			coal are currently being defined. The timing delay in requirement of a Falling Creek Loadout based on the mine plan for the Permit Application gives sufficient time to define the ARD/ML characteristics of "old" coal. *Response by Stephen Day, SRK, on behalf of WCCC:* In addition, it was agreed at the March 20, 2006 working group meeting (refer to Appendix E2.5) that evaluation of water quality for the coal stockpile does not need to be considered for the EA because the company has committed to ensure that water can be collected if needed and the loadout will not be constructed for several years. Operational monitoring of coal pile runoff at the mine provides an opportunity to evaluate water chemistry, water collection and monitoring requirements for the loadout.		
31		Vegetation removal should be minimized relative to erosion benefits and "wind-break" benefits.	Comment noted. The intent is to retain as much vegetation as possible for this and other reasons	Response satisfactory. Issue addressed.	MOE
32		The proponent is planning on installation of dust collection/treatment at the front end of the process (truck dumping and conveying to stockpiles) and	Coal silos are not part of the loadout system. A dozer/loader reclaim system with a 500t storage bin provides surge	Response satisfactory. Issue	MOE

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		the loading onto rail cars via a silo is proposed with appropriate dust collection facilities). The stockpiled coal and the actual coal stacking appear to be the areas most likely to generate dust from the loading facilities, particularly during windy periods.	capacity for train loading. Rainbird water sprays installed at the edges of the stockpile area will be sued to wet stockpiles to control dust. A calcium chloride solution may be used in winter. The residual moisture from the coarse coal washing will help control coal stockpile dust emissions. *RWDI, on behalf of WCCC:* Wind erosion from stockpiled coal is expected to be the largest sources of fugitive dust at the loadout. Based on available emission factors, coal stacking is a less important source of fugitive dust than some of the conveyor transfer points (Table 11.3.3-1, Application). Coal stacking emissions will be minimized by the use of a luffing stacker that can be raised or lowered to minimize the drop height. Wind erosion from stockpiles will be managed by maintaining the forested area around the loadout for natural wind sheltering and by using rainbird water sprays as required. If ambient monitoring indicates that these mitigation measures are not sufficient, additional mitigation measures will be considered as indicated in the Air Quality and Dust Control Plan (Section 4.10).	addressed.	

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33		4.2.5. Falling Creek Connector…….. Appropriate sed. control plans/implementation during construction/longer term is main concern.	Surface erosion prevention and sediment control along the Falling Creek Connector Road will be addressed through SEPSC planning, as described in the Application.	Response satisfactory. Issue addressed.	MOE
34		4.2.11 Environmental Management. An environmental monitor was not evident in this plan – Presumably, the EPCM Contractor will fulfil this responsibility together with WCC?	WCCC's Environmental Superintendent will be responsible for monitoring construction work for compliance to environmental design specifications, design guidelines for regulatory requirements and quality control on environmental monitoring programs and for compliance reporting. The Environmental Superintendent will work hand in hand with EPCM contract to ensure environmental compliance.	Response satisfactory. Issue addressed.	MOE
35		4.2.12.2 General Clearing Guidelines ……. Suggest the plan incorporate the utilization of vegetated areas as much as possible to "treat" sediment in runoff where appropriate (not as a "substitute" for ponds, and other erosion prevention measures but as a useful supplement to remove particularly finer material. In applying this technique, the limiting factor would be the application rate of sediment per unit area of vegetated area (e.g. grams/square metre/year consistent with not "smothering" ground vegetation) and should be monitored as part of the sed. control plan. The proponent should provide adequate provisions to ensure that the sediment-containing runoff is well distributed over the vegetated areas and does not generate "gullies" as it is applied to	Comments noted. Use of vegetated areas to "treat" sediment in runoff will be documented in the SEPSC plans. Access roads and the Falling Creek coal haul road are amenable to this form of sediment control.	Response satisfactory. Issue addressed.	MOE

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		the vegetation.			
36		4.2.13.1 Surface Erosion Prevention ……General …….. making the contractors responsible for application of soil loss practices is a good proactive strategy as they are removing vegetation and should be doing it in a way that minimizes soil loss/potential sedimentation problems. The Environmental Superintendent will be available as a "resource" and I assume will act as an environmental "monitor". Given the experience EP has had with WCCC to date, on similar projects, this is a workable system. WCC's plan should clearly define a reporting system to EP (e.g. weekly, which apprises EP of what current activities have been commenced, are ongoing, completed and what erosion control measures have been applied).	Comments Noted. No response required.	WCCC Response Required.	MOE
37		Also, if problems occur, or appear imminent, the plan should identify how this information will be relayed to EP in a timely manner with appropriate proposed mitigation/additional sampling measures (e.g. additional photos, maps, mitigation in response to the problem, etc.).	Refer to response to Issue #34. Response required.	Response Required.	MOE
38		Appropriate and frequent (depending on certain "triggers") for turbidity measurements at key locations will be required as appropriate. Appropriate compliance locations on watercourses will be developed during permitting.	Comments Noted. No response required.	Response satisfactory. Issue to b e addressed at Permitting.	MOE
39		4.3 Preliminary Surface Erosion Prevention: appears to cover all issues. The "measure" for effectiveness of erosion prevention would be compliance at the downstream control points (was	Refer to the response to Issue #7.	Response satisfactory. Issue addressed.	MOE

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		at the falls, BC-01 but this has been relocated further upstream due to dangers caused by the natural slide). Based on the existing Dillon effluent permit, the compliance point is at BC-01 rather than downstream of the creeks into which sed. pond 1 (and sed. pond 2) discharge.			
40		The proposed plan appears to be acceptable – as construction of ditching, etc. proceeds issues may arise that would be addressed via the waste permit. For example will there be any runoff containing sediment that is not recovered and directed into the sedimentation ponds? For example, such runoff might require pumping to get it into the collection system, which might not always be practical. In the case of the Brule mine proposal and the water management aspects and the sediment pond functioning, the experience gained from operation of the Dillon mine provides some simplification/confidence that the methods proposed (sed. pond 2) are workable systems. While the sediment entering sed. pond 2 is likely to be "similar" to that going into sed. pond 1, a confirmation settling test is advisable. It is considered that the water management plan and erosion prevention plan should minimize any soil loss so that (a) inputs of sediment to the sed. ponds are minimized, which may reduce floc. consumption and sediment load in Blind Creek and (b) soil loss is minimized regarding reclamation aspects after mine closure.	*Response by Jaime Cathcart, Knight Piesold, on behalf of WCCC:* The proposed water management plan is designed to capture and route all surface runoff from the mine site into sedimentation ponds prior to release to Blind Creek. Collection ditches are planned for the entire lower perimeter of the mine area. Pumping of runoff is only potentially envisioned for water trapped in low areas in the pits, which cannot be discharged by gravity. The topography of the site and the planned placement of ditches and sedimentation ponds ensures that any water discharged from the pits (either pumped or by gravity) must eventually enter a sedimentation pond prior to discharge to Blind Creek. Geotechnical samples of till collected for analysis in the Norwest dump design report indicate relatively uniform properties over the Brule area. Details will be included in the Mine Permit Application at the end of April. Based on experience at the Dillon Mine,	Response satisfactory. Issue addressed.	MOE

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			presently used flocculants will be effective. Based on the results of the Dillon sediment pond, which shows effective settling of fine particles, the use of the same flocculant at the Brule is expected to generate the same 'positive' results, as the sediment that will be generated is nearly identical to that generated at Dillon.		
41		Page 9-23: The Soil Erosion Prevention and Sediment Control Plan (SEPSC Plan). EP's main focus regarding soils at the Brule site focus on erosion potential/prevention/sedimentation ponds/discharge quality, similar to as delineated in the Dillon effluent permit. The SEPSC Plan should be structured such that the waste permit can reference a distinct Plan. The waste permit will allude to "the most recently approved version" of the SEPSC Plan. While the waste permit's main focus is on the sedimentation pond(s) and discharge quality, there is also a focus on minimizing inputs of sediment into sed. ponds (to reduce the particle size fraction that is resistant to un-assisted settling and to minimise the quantity of flocculants required).	Geotechnical samples of till collected for analysis in the Norwest dump design report indicate relatively uniform properties over the Brule area. Details will be included in the Mine Permit Application at the end of April. Based on experience at the Dillon Mine, presently used flocculants will be effective.	Details during permitting.	MOE
42		Regarding the use of flocculants and the "new" inputs of sediment into the existing sed. pond at the	Based on the results of the Dillon sediment pond, which shows effective	Response satisfactory.	MOE

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		Dillon site, in addition to the increased sediment load into the pond that is minus (approx.) 5 to 10 micron particle size, the proponent should confirm that the presently used flocculants at the Dillon pond will also be effective on the fine particles that will be generated from the Brule mining activity.	settling of fine particles, the use of the same flocculant at the Brule is expected to generate the same 'positive' results, as the sediment that will be generated is nearly identical to that generated at Dillon.	Issue addressed.	
43		4.4 Water Management Plan …… no comments: appears to cover all issues.	*WCCC:* Comment noted. No response required.	n/a. No response required.	MOE
44		4.5 ML/ARD Prevention Management & Monitoring Plan. Samples tested (static/kinetic/etc) were used to generate predicted concentrations downstream of the mine. From EP's view point the inherent "errors" associated with prediction (if they are underestimating) would have an increased "impact" on downstream water quality (and the Dillon effluent permit identifies a compliance point approximately at BC-01 for non-TSS parameters, and BCWQG is required to be met). Pond discharge quality must meet 50 mg/L TSS and be non-toxic, while turbidity triggers apply downstream of the sed. pond. There is an allowance for high rainfall events based on BCWQG for TSS.	*Response by Stephen Day, SRK, on behalf of WCCC:* As discussed at the March 20, 2006 meeting, the source predictions from testwork are based on filterable (dissolved) concentrations. These concentrations have been re-evaluated using the Dillon MSP and were found to require only slight adjustments (refer to Compendium Appendix D2.5)	Response satisfactory. Issue addressed.	MOE
45		The errors which could affect the BC-01 compliance point water quality therefore appear to be associated with: (a) How representative were the samples used for the ARD testing (and Kevin Morin mentioned this in his work for MEM) – Kevin Morin is suggesting that the compositing method was	*Response by Stephen Day, SRK, on behalf of WCCC:* Water quality predictions for BC-01 are being re-calculated using the re-evaluated source terms (see response to comment 44). The issue presented by MEMPR was on	Response satisfactory. Issue addressed.	MOE

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		not fully representative of the way the wastes will be deposited, etc. for some of the tests and that the resulting parameter concentrations measured may be "too low" if part of the composited contribution is more likely to be higher in the net amount of sulphides oxidizing.	the calculation of average ABAs. The background to this approach was provided at the March 10 and 20 meetings (refer to Appendices E1.1 and E2.2). Comparison of average ABA results with experience from Appalachian mines shows that the risk of ARD is very low for Brule. WCCC has provided additional description on the management of CCR to clarify information presented in the EA. *WCCC:* Appendices D1.13 and D1.8 illustrate that ARD test samples are representative for the Brule and Blind areas and compositing test results are valid.		
46		(b) The samples used for acid-base accounting were considered representative and that the samples prepared prior to compositing for kinetic, etc. testing were also representative.	*Response by Stephen Day, SRK, on behalf of WCCC:* The static testing included detailed sampling of five drill holes that are judged to be representative. Kinetic testing considered the full range of characteristics including worst case materials that could be a source of ARD. See 4.5.2.1.2 of the application..	Response satisfactory. Issue addressed.	MOE
47		(c) The kinetic, etc. testing uses ratios of water: solids which would not represent "actual concentrations", since the "actual" ratios of	*Response by Stephen Day, SRK, on behalf of WCCC:* Loadings were calculated in the water	Response satisfactory. Issue	MOE

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		water: solids are a function of precipitation (and possibly runoff into the waste materials) and also the depth and foot print the wastes occupy. Therefore released loading rates provide a better estimate for predicted concentrations.	quality predictions. It is agreed that actual concentrations are more appropriately obtained from tests such as columns, barrels and operational monitoring; and for this reason the back calculations from the Dillon Pit form a good estimate for predicted concentrations.	addressed.	
48		Given that the ARD/ML testing did not produce any relatively high sulphide oxidation rates or ML rates and that the predicted concentrations may (marginally, except for Se) exceed BCWQG rather than present any "lethal"-type (or sub-lethal) concentrations (note, at BC-01), the level of concern therefore appears to be in the category "possible/likely" BCWQG exceedences as mining progresses. We therefore need to know the significance of this in terms of how it affects the ARD/ML plan – what additional modifications are required in terms of covers, blending, etc. Are we possibly looking at "treatment"; and "lime treatment", etc. may not be appropriate in the Brule context in being able to reduce parameters that are already below the threshold which would respond significantly to "precipitation" with lime.	*Response by Stephen Day, SRK, on behalf of WCCC:* The comment notes that ARD risk is low. WCCC has provided additional information to show weakly PAG materials such as CCR will be managed to ensure the risk remains low (refer to Application Appendices D1.11, D1.13, and D1.14). The approach used to estimate water quality effects has focused on a reasonable worst case approach so that there is a low probability that actual concentrations could exceed the values predicated. This approach has indicated that selenium will significantly exceed water quality guidelines, but the effects assessment indicates that that probability of significant effects is low. The plan is to address this concern by monitoring and, if ultimately necessary, further measures. The preferred option is to reduce infiltration which will reduce loadings to the environment. The	Response satisfactory. Issue addressed.	MOE

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			monitoring will indicate to what degree infiltration would need be reduced and therefore the method used (soil, engineered cover etc). Several technologies are available to treat selenium. However (WCCC, April 7), based on preliminary discussions to date, costs associated with treatment of selenium at the flows present at Brule may not be practical. Quote provided by SRK: $500K capital cost and $200k/year operating to treat the flows and water types at Brule. These are very rough (±30%), Treatment would involve an initial step to reduce and co-precipitate Se with iron, followed by polishing in a column (silica gel or carbon). General notes on selenium treatment technologies: - If selenium is in the IV oxidation state (i.e. dissolved selenite), it can be readily treated using ferric iron (e.g. ferric chloride) to cause precipitation of ferric hydroxide and adsorption of selenite. If the selenium is present as selenate (VI state), this process is ineffective. Reduction of selenium can be achieved		

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			using sulphur dioxide or metallic iron. Experience from other sites shows that selenium leaching from oxidizing waste rock is in the selenate rather than selenite state and therefore this technology would not be appropriate for the Brule Project. - Granular activated carbon using columns can be used to treat any form of selenium to levels of less than 15 µg/L. - Activated silica gel is effective for treating any form of selenium and has been shown to remove selenium to levels below 10 µg/L. It is more cost effective and has a higher removal capacity than activated carbon but is not yet widely accepted as a treatment method for selenium. - Bio-reactors in which bacteria reduce selenate to elemental selenium can produce selenium concentrations below 10 µg/L. This process has been accepted by the US EPA.		
49		The ARD/ML testing is therefore suggesting there is a risk that BCWQG may be exceeded for a few parameters, and should this transpire during the operational phase, the proponent has proposed biological sampling/site specific criteria, etc. In addition, for how long would this exceedence continue for and would the effect on BC-01 be detrimental in terms of measurable parameters on	*Response by Alan Martin, Lorax, on behalf of WCCC:* Effects to water quality in Blind Creek can be expected to occur for several decades. However, the results of the residual effects analysis suggest that negative effects to aquatic biota are unlikely to occur. In the unlikely event that water quality	Response satisfactory. Issue addressed.	MOE

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		the biological community?	issues arise in the future, WCCC has committed to managing such WQ issues through mitigation or treatment.		
50		After mine closure and application of reclamation measures, parameters are predicted somewhat lower. Site specific criteria may be more applicable as "dissolved", rather than "total" for parameters that have a significant contribution from the TSS (and which are "unavailable"). Is there a need for the proponent to "re-visit" the actual BCWQG levels for parameters that may be exceeded?	*Response by Alan Martin, Lorax, on behalf of WCCC:* Agreed that site-specific criteria may be more applicable as "dissolved" for some parameters. The only parameter which requires revisiting at the current time is dissolved aluminum as outlined in the response to ID#3. Cadmium has already been revisited through the Water Effect Ratio testwork. Sulphate and selenium may require revisiting during the operational period. .	Response satisfactory. Issue addressed.	MOE
51		Will there be a need to modify the waste storage plan such that the "offending" wastes will have "collectable" runoff flows?	*Response by Stephen Day, SRK, on behalf of WCCC:* Wastes that may present an issue due to potential for ARD will become mixed with prime wastes during the natural course of mining or through management measures for specific units (e.g. CCR, refer to Appendix D1.11 of the Appendix). The ability to collect most flows is provided by ditching and the sediment ponds, however some groundwater loss from these systems is inevitable.	Response satisfactory. Issue addressed.	MOE

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			Therefore, the NE Dump, which will contain CCR has been located and designed such that it can be re-sloped and covered if necessary to reduce infiltration and loadings.		
52		Will there be a need to generate lower TSS mg/L from the ponds to reduce the "total minus dissolved" portion for parameters from the ponds?	*Response by Alan Martin, Lorax, on behalf of WCCC:* The "total minus dissolved" portion is equivalent to the particulate fraction. The export of particulate metals from the sed ponds will be controlled through the same measures used to control TSS.	Response satisfactory. Issue addressed.	MOE
53		The "effective ML/ARD" sampling program should include specific testing aimed at verification of the basic premises (derived from the ARD/ML testing in the Application, Appendix B) on which the discharge, etc. water quality predictions have been formulated. There is still somewhat a "leap of faith" to go from the ML/ARD testing results and actual site water quality (due to the complexity of ML/ARD testing/prediction).	*Response by Stephen Day, SRK, on behalf of WCCC:* As described at the March 10 and 20 meetings, the risk of ARD is very low for this site due to the large excess of neutralization potential (refer to Appendices E1.2 and E2.2 of the Application). This ARD conclusion is not complex in this case and not a leap of faith. Significant available data, including runoff data from Dillon provide a very sound data base for prediction. The use of the reasonable worst case approach for metal leaching predictions should reduce the concern on ML since it is very unlikely that all wastes will leach at the worst case rate. The ML/ARD prediction and prevention plan will contain previsions to re-	Response satisfactory. Issue addressed.	MOE

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			evaluate the predictions as has been done for the Dillon Mine.		
54		Generally, stacking wastes in piles that are higher, rather than in piles that are lower and cover a larger surface area foot print, does not reduce the net loading from that storage pile (the increased surface area and rainfall volume per square metre and the contact surface area per cubic metre of rainfall balance out). The only significant parameter which can be easily manipulated appears to be infiltration of precipitation as suggested in the report. In addition, the marker horizons, seam cleanings and CCR will be deposited in thin layers and encapsulated. If the levels of Se exceed 5 ppb in the sed. pond discharges/Blind Creek, additional biological sampling will be conducted. Site specific toxicity testing will be conducted to establish a site-specific water quality objective (the most likely parameter in site water that may lower chronic toxicity is hardness and while this may provide a factor that is greater than 1.0 to apply to the BCRWQ, it will require significant hardess at the site to be meaningful (unless there are other constituents in the Blind Creek water (lignands/tannins) that may bind the Cd and lower the toxicity.	*Response by Stephen Day, SRK, on behalf of WCCC:* If constant concentrations are applied (as used for the EA), the smaller volume of water moving through a pile with a smaller footprint will result in lower net loadings. As described in the response to Issue #53, concentrations are applied as reasonable worst case therefore; footprint reduction will result in lower loadings.	Response satisfactory. Issue addressed.	MOE
55		4.1.3.6. Se management This plan is fairly general and would possibly be part of the effluent waste permit as a plan referenced, and which would require updating as required. Will the on-going sampling of waste materials also be performed to	*Response by Stephen Day, SRK, on behalf of WCCC:* The ML/ARD prediction and prevention plan includes ongoing static sampling.	Response satisfactory. Issue addressed.	MOE

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		confirm Se levels as the wastes are produced.			
56		Will this sampling include Se-release rates for samples collected so that any mitigative efforts applied to (CCR etc.) specific wastes as they are mined/excavated/etc. can be optimized. Or will the mitigative management be based on current sampling results and/or "geological type"?	*Response by Stephen Day, SRK, on behalf of WCCC:* Sampling of the sediment ponds, ditches and seeps will provide the best evaluation of the metal leaching predictions as mining progresses.	Response satisfactory. Issue addressed.	MOE
57		Regarding the load out site, Se/ARD/ML is not expected to be a significant problem based on the fact that any coal going through the loadout site should have a short residence time. Also, it should not often be at the site long enough to allow any "coal leachate" to be washed through onto the ground (the ratio of rainfall/square metre to tonnes of coal stockpile is low – depends on shape of pile too). Any accumulation of coal at the base of the piles that "stays at the site" and has oxidized may need to be cleaned up and dealt with at the Brule mine/plant sites.	*Response by Stephen Day, SRK, on behalf of WCCC:* It was agreed at the March 20, 2006 Working Group meeting (refer to Appendix E2.5) that evaluation of water quality for the coal stockpile does not need to be considered for the EA because the company has committed to ensuring that water can be collected if needed. In addition, the loadout will not be constructed for several years. Operational monitoring of coal pile runoff at the Dillon and Brule mines in the interim provides an opportunity to evaluate water chemistry, water collection and monitoring requirements for the loadout.	Response satisfactory. Issue addressed.	MOE
58		4.7. Waste Management Plan. Comment regarding refuse: Volume 1, Reference to 22 re. permitting needed: need for refuse/sewage permits – there is the option of removing all refuse off site to the nearest permitted municipal garbage dump. For disposal of refuse at the mine site: (a) food wastes are typically incinerated in an auxiliary-fired unit to minimize bear-related problems; (b) "other refuse"	Comments noted. As is the current practice with the Dillon and Wolverine Mines, WCCC intends to remove all refuse from site to the nearest permitted municipal Landfill.	Response satisfactory. Issue addressed.	MOE

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		from building and from the mine site is typically land filled (often some minor amounts of food will get into the refuse from buildings and may also generate bear problems; (c) all refuse land filled must only include materials suitable (and approved) for land filling; (d) some mines have received approval to incorporate approved refuse into the waste rock dumps.			
59		4.8 Chemicals & Storage & Handling Plan….appears complete.	Comment noted. No response required.	n/a. No response required.	MOE
60		4.9 Fuel Management Plan. : The BC fuel handling guideline should be adhered to and the Hazardous Waste Reg. followed.	Comments noted. No response required.	n/a. No response required.	MOE
61		Particularly for the construction phase, the proponent should consider their need for refuse/sewage permits. The sewage facilities should follow the requirements of the Municipal Sewage reg. (i.e. rather than an effluent permit).	Comments noted. WCCC intends to pursue authorization through the Municipal Sewage regulation and to remove all refuse from site to the nearest permitted municipal Landfill.	Response satisfactory. Issue addressed.	MOE
62		4.10 Air Quality Dust Control Plan. No Dust Suppression Plan was provided in the report, but this should be provided during the permit application stage.	Dust suppression measures are included in the Air Quality and Dust Control Plan (e.g. use of rainbird water sprays for stockpiles, road watering and application of chemical dust suppressants). Nonetheless, a more detailed Dust Suppression Plan will be prepared in consultation with the MOE during the permit application stage.	Response satisfactory. Issue Addressed. Details at permitting.	MOE

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63		In addition, a proposed dustfall sampling plan (maps and dustfall canister sampling locations) should be provided.	*Response by RWDI, on behalf of WCCC:* A dustfall sampling plan is contained in Section 11.6.1 of the Application. Figures 11.6.1-1 and 11.6.1-2 show dustfall canister sampling locations at the mine site and loadout, respectively. *WCCC:* A plan showing existing Dillon facilities and current dustfall sampling points will be available in April 2006. The plan will show contours of distance from dust generating facilities.	Response satisfactory. Issue addressed.	MOE
64		While mitigations strategies are listed in general terms (page 4-8) a more detailed plan would be desirable, but can be provided early on in the permit application stage.	*Response by RWDI, on behalf of WCCC:* A more detailed air quality and dust control plan is provided in Section 4.10 beginning on page 4-245. This plan will be finalized, in consultation with the MOE, at the permit application stage.	Response satisfactory. Issue addressed. Details at permitting.	MOE
65		Air Quality Management Plan (Issue identified re appropriate pollution control Phase I/Phase II). The dust collection system at the Dillon crushing plant is considered non-typical in terms of what would be expected for a larger, more permanent plant and the Brule crushing facility should be modeled on the pollution control requirements for a larger, longer term plant.	The Dillon crushing plant equipment will only be used during the initial years of operation when Brule is operating with lower production rates similar to that of Dillon. Upon transfer from the Dillon like production rates to the higher production rates associated with Brule new equipment will be brought in, equipped with additional dust mitigation measures.	Response satisfactory. Issue addressed.	MOE
66		When a “large” mine proceeds, the expectation is	*WCCC:* Refer to the response to Issue	Response	MOE

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		that the crushing plant will be designed along more conventional lines regarding dust collection: vacuum draw points for dust at the primary crusher and secondary/other crushers and at all the transfer/crushing locations, etc.. The dust-laden air that is "vacuumed" off is directed to appropriate pollution control equipment (baghouses/scrubbers). This is also typically necessary for industrial hygiene reasons. In addition, there is also an expectation that the level of dust control/dust suppression for other areas of the operation which are significant dust sources receives the appropriate level of mitigation based on the "large" mine approach.	#65.	satisfactory. Issue addressed.	
67		There is a significant cost spread ranging form minimum pollution control to BACT pollution control, for which the proponent should make a commitment prior to Certificate issue. Otherwise, if this "a permitting issue", it puts the Regional office in a weaker negotiating position in terms of what pollution control measures are applied when the mine starts construction/production. If these pollution control measures are not in the EAC Application, future installation of pollution control measures then becomes more of a "catch-up" scenario based on a reaction to sampling, etc. It also has a bearing on minimizing cumulative effects for this geographical area of increasing coal mining activity.	The mitigation measures listed below are expected to adequately address any dustfall issues that could potentially arise. The existing Dillon crusher will be used during Phase 1 (production to 1 million tonnes per year (Mt/Y)). The raw coal process generates fugitive dust as a result of the low inherent moisture in the run-of-mine coal. Raw coal stockpiles tend to readily adsorb moisture from precipitation over time thus reducing dust emissions from the crushing operation. The wheeled loader working around the crushed coal pile generates dust when traveling between the coal trucks and stockpile area. During	Response satisfactory. Issue addressed.	MOE

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			operation over the winter (2005/2006), measures expected to reduce fugitive dust were identified and include the following: • The existing passive collection (i.e. chutes built with gradual transitions, skirting, dust curtains, skirt board covers, hoods, etc.) will be monitored and repaired and upgraded when required. • The existing cover on the screen deck is not functioning properly and will be replaced with a maintenance friendly version. • The foam dust suppression system, which was operated intermittently during the last year while design and installation problems were rectified, will operate on a continuous basis and the resulting impact on dust levels results monitored. • The coal loading area around the loading dock will be equipped with water sprays for use in dry weather. The sprays will supplement water truck use on the coal loading area roads. • A mist system will be installed over the truck box for use during coal loading cycle. • Water sprays will be installed at the discharge end of the coal stacker conveyor.		

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			For Phase 2 operation, (production to 2 Mt/Y), Western feels that it is currently planning BMPS, as the Brule crushing and coal handling system will incorporate the following measures to control and reduce the generation of fugitive dust: • Raw coal feeder will be semi-enclosed and equipped with a water/calcium chloride spray system; • All outside belt conveyors (excluding the reject belt conveyor RJ-1) will have belt covers/hoods over the carry side of the belt to minimize dust generation and reduce the effects from wind. These belt covers will be hinged on one side to facilitate maintenance and repair work. Belt covers will not be necessary over the reject conveyor RJ-1, because the reject product will consist primarily of coarse rock material; • All conveyor transfer points will be contained by chutes to control the generation of dust. Passive dust control measures will be incorporated in the design and construction of transfer points; • Raw coal screener and primary crusher are enclosed units with vents. The crusher will be equipped with a water/calcium chloride spray system; • A dry dust collection system (bag		

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			house) will be integral to the dry screening process in the preparation plant; • Product coal conveyor will contain dry fines on the bottom with moist washed coal on top. Mixing is expected as the conveyor discharges; • Rubber skirting will be used to contain coal dust from loadout bin while loading trucks; • The outside crushed coal stockpile will be equipped with a water/calcium chloride spray system for dust suppression. e: The use of a wet suppression type system before the wash plant would not be appropriate since the additional moisture added to the raw coal may reduce the effectiveness of the dry screens (flip-flow live deck type) located in the preparation plant.		
68		It is noted that page 10 of the Executive Summary portrays a "Phase I" which is 1,000,000 tpa which will be processed in the Dillon facilities (using the current pollution control facilities which were authorized based on the "small mine"/short term concept). Phase II, twice the tonnage, mentions construction of the Brule Plantsite, and possibly a coal washing plant. A modified coal washing plant is proposed: any fine coal associated with mining, crushing, etc. is of sufficient quality and will not go through the wash plant (and therefore a coal dryer	*WCCC:* Comments noted. No response required.	n/a. No response required.	MOE

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		is not required). Sounds like the washing plant will not generate significant fine material (either coal product or waste materials) and therefore if there is no significant crushing/screening, or if it is performed on "wet materials", this could have an impact on what is the appropriate pollution control equipment required. Therefore no (fine) tailings will be generated and no tailings pond is planned (only coarse tailings, i.e. CCR).			
69		4.11 Wildlife & Fisheries Protection Plan. Bear-related problems relative to food wastes require careful attention and will be addressed at permitting.	WCCC, through the implementation of its Wildlife Protection Plan, outlines specific actions to be taken by WCCC employees and contractors to limit the possibility of human/bear interactions i.e. the proper handling and disposal of food wastes.	Response satisfactory. Issue addressed. Details at Permitting.	MOE
70		4.12 Conceptual Reclamation & Decommissioning Plan. At mine closure, the decommissioning of the sed. ponds should be based on the assessment of water sampling data. The sed. ponds may be required a number of years after mine closure. In addition, problematic "elevated" metal/parameter releases existing after mine closure may require some of the water management/sed. pond facilities for "treatment". This is a somewhat generic comment for mines in general, derived from any discrepancy between predicted runoff water quality and actual water quality at end of mine life.).	Post mining monitoring will allow WCCC to determine whether there is still a need for structures such as the sed. Ponds. If monitoring indicates that there is still a need for these structures then they will continue to operate until monitoring indicates otherwise.	Response satisfactory. Issue addressed.	MOE
71		It is suggested that reclamation bonding also take into account the need for ongoing sampling after mine closure, until the release of any problematic parameters has decreased to the point that	Comments noted.	Details during permitting.	MOE

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		receiving water quality is not adversely effected.			
72		4.1.3.1.1 Geotechnical Monitoring – include this for soil salvage piles to minimize fluidization/migration/slides associated with soil salvage piles.	Soil stockpile maximum volumes will be minimized through use of progressive reclamation practices. Stockpiles will be sited so that ultimate recovery of the piles is possible – i.e. haul truck access is required. This implies good stockpile foundation conditions and stable soil piles. Efforts to prevent unstable stockpiles will include water management (diversion of surface flows away from the stockpile), re-sloping stockpile faces to maximum slopes of 2H: 1V, and instituting vegetation cover (grasses, clover) as soon as practical following re-sloping. As a result of difficulties in handling wet soils, recovery would take place during dry periods. Soil stockpiles are inspected on a frequent basis (Dump OMS procedures) and remedial work performed as required. The probability of failure/instability is very small if these management procedures are followed.	Response satisfactory. Issue addressed.	MOE
73		5. Risk Assessment and Management. Page 5-2 identifies the risks concerning EP: Selenium leaching; potential ARD from a small portion of the waste materials; Blind Creek impacts on water quality; and fugitive dust. Regarding the latter, the need to apply BACT pollution control technology when using the Dillon processing equipment (Phase I) has not been discussed/addressed. In light of the description in "Sedimentation control	*Response by RWDI, on behalf of WCCC:* WCC added pollution control technology to Dillon processing equipment in response to high observed dust levels in the spring of 2005. The additional measures are described on page 11-18 of the Application, and include: - installation of chutes and covers on the	Response satisfactory. Issue addressed.	MOE

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		and effluent permitting" above, is there a risk that permit requirements will be exceeded?	crushing system - installation of water sprays on the product coal stockpile - installation of a foam dust suppression spray system on the crusher inlet *WCCC:* With the use of practices outlined in the response to Issue#67 WCCC believes that the chance of permit requirements being exceeded will be greatly reduced, if not eliminated.		
74		What is the risk that these permit requirements will be exceeded for most of the mine life?	*WCCC:* Refer to response to Issue #73.	Response satisfactory. Issue addressed.	MOE
75		Is there sufficient baseline biological sampling to compare production phase biological sampling results so that meaningful conclusions will be made?	*Response by Barbara Wernick, Golder, on behalf of WCCC:* During the Working Group meeting of April 4, it was agreed that this question cannot be addressed until the 2005 data are available and compared to the 2004 data. The 2005 data are expected to be available sometime in the next two months. WCCC will meet with MOE after that time, to resolve this question.	Response satisfactory. Details during permitting.	MOE