Parsons Creek Aggregates

a joint venture between Graymont Western Canada Inc. & Lehigh Hanson Materials Limited

Limestone Quarry Project

Appendix A

List of Commitments

November 2013

Table of Contents

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
1.	**MINING & OPERATIONS**				
1	The limestone quarry will be developed in three distinct phases using conventional quarry mining operations involving drilling, blasting, excavations, crushing, screening and stockpiling activities. A portable plant site facility will be used. Limestone mining will begin in the northern portion of the Project lease area and advance southward, towards the Fort McMurray Urban Service Area, with progressive reclamation following in the depleted areas of the limestone quarry. Periodically, portable facilities (*i.e.*, hot mix asphalt plant or pulverized limestone plant) could also be set up in quarry working areas. The footprint of the Project is approximately 391 ha.	EIA Volume 1	A.1; B.1	1; 19; 2	Commitments south of Parsons Creek no longer apply as this area has been removed from the proposed project area as per RMWB MoU. This project will now be conducted in two phases.
2	Remove all areas located south of Parsons Creek from the quarry operating plans and retain the MAIM lease in these areas only until permanent roadway access through this area has been secured.	RMWB MoU	2.3	2	
3	To further improve product quality and engineering specifications, a portable wash plant facility will also be used for washing limestone aggregated rock products.	EIA Volume 1	B.1	2	
4	Conveyors will direct crushed and screened limestone rock products as required to the portable wash plant facility.	EIA Volume 1	B.1.2	4	
5	PCA intends to clear and develop the Project in accordance with the approved plans and authorizations.	SIR #1	4 (4.5) 241 (c)	4-81	
6	PCA will make every reasonable attempt to minimize tree clearing during quarry activities and operations such that treed buffers remain available for obstructing the view of the mine.	EIA Volume 1	B.9.4	47	
7	A timber salvage contractor will be deployed to clear any merchantable timber before any soil and overburden salvage occurs. Any remaining root mass will be cleared and grubbed.	EIA Volume 1	A.2.5.1; B.3.4; B.3.6;	6; 10; 11	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
8	Customer dump trucks and contract haulers will follow a constructed and clearly marked truck haul route within the Project to the designated quarry work area where finished limestone aggregate rock products are stockpiled.	EIA Volume 1	A.2.5.4	7	
9	The time interval between clearing/grubbing and subsequent earthworks will be minimized, particularly at or in the vicinity of watercourses or in areas susceptible to erosion.	EIA Volume 1	E.11.4.2; A.7.11	88; 45	
10	Eighty three hectares (205 acres) is the maximum area that PCA expects would be open at any particular time within the quarry mining block including stockpiles and scalehouse areas, but excluding areas undergoing reclamation. It is expected that as much as an additional 83 hectares (205 acres) could be under reclamation. The proponent is committed to implementing a progressive reclamation plan, which includes a maximum of 400 acres under quarry extraction and reclamation operations at any time including direct and sequential reclamation of previously extracted areas.	SIR #1; SIR #2	1.0 (1.3) 19 (a); 4 (4.2) 53 (a)	1-26; 4-10	
11	Equipment and facilities are to be located above the 100-year ice jam inundation level.	SIR #1	3 (3.3) 103 (a); 4 (4.1) 153 (a); 4 (4.2) 174 (a)	3-63; 4-2; 4-15	
12	To minimize off-site effects caused by sky glow, local light trespass and glare, lighting will only be provided as required to support high traffic areas, security checkpoints, and facility areas where operations and maintenance attention is regularly needed. Grounding and lightning protection systems will comply with the Canadian Electrical Code and applicable Canadian Standards Association documents, based on soil resistance and Project site isoceraunic level. The scope of protection will be identified in the detailed design engineering phase.	EIA Volume 1	B.5.5.1	30	
13	Project process, system, and equipment control will be accomplished with field controls and instrumentation providing local operating capability. Local controls will consist of control and instrument components associated with specific equipment or process lines which perform a specific function and for which control equipment is integrated. Local controls such as programmable logic controller (PLC) based systems supplied with packaged mechanical equipment will interface with the central control room. Field instrumentation will be installed in process and utilities systems to allow for remote monitoring and control, as well as for local operator use. Such devices will either interface with the Project office or plant control room directly.	EIA Volume 1	B.5.6	30	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
14	Electrical power required for the Project will be obtained by diesel generators during quarry opening up and first 10-years of operations. Should additional power be necessary for quarry operations at peak production levels, increased demand for electrical power will be reviewed by PCA with consideration for local powered grid tie-in.	EIA Volume 1	B.5.5	30	
2.	**ACCESS**				
15	PCA will restrict access to the operational areas of the proposed quarry with the use of locked gates, signage and fencing where necessary during construction and operation.	EIA Volume 1; SIR #1	E.4.3.2; A.4.3; 3 (3.5) 147 (a)	19; 15; 3-102	
16	PCA will control access to the Lease area, however current holders of trapping will be allowed access to lease areas that are not under active operations and consultation with traditional users is ongoing in order to develop acceptable practices for lease access.	EIA Volume 1	A.4.3; A.7.4; E.4.3.2; E.4.3.9; E.13.4.4	15; 39; 20; 21; 103	
17	PCA will restrict hunting activity within the Project.	EIA Volume 1	A.7.4	39	
18	Access via the site driveway and operating areas to gain access to non-operating areas of the site, may require proof of First Nations status. Such access will not be deemed to permit any activity that is not allowed on the property under other federal, provincial or municipal regulations.	SIR #1	4 (4.1) 164 (b)	4-11	
3.	**SUSPEND OPERATIONS**				
19	Operations are suspended if equipment becomes immobile and is not able to properly separate soil materials.	SIR #1	6 (6.1) 286 (b)	6-7	
20	The PCA quarry manager may decide to suspend quarry activities and operations until the inclement weather passes.	SIR #1	5 (280) b	5-43	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
4.	**BLASTING**				
21	A qualified blasting contractor will be used and no explosives or blasting agents will be stored on-site. The expertise of the explosives contractor and geology encountered will determine the combination of drill holes and explosive charges (or blasting agent) used.	EIA Volume 1	A.2.5.1; B.3.5	6; 10	
22	Throughout the life-of-quarry, PCA will be consulting with its blasting contractor to optimize quarry blasting activities; determining the correct amount of explosives to produce the intended force required for appropriate-sized rock fragmentation, with little or no shot rock and a minimum amount of vibration. Debris will travel not more than 30 m in maximum distance (both horizontal and vertical distances). No blast debris will fall outside of the site footprint.	SIR #2; SIR #1	3 (3.5) 39 (a); 1.0 (2) a, b, c & d; 3 (3.5) 131 (a)	3-28; 1-3; 1-4; 3-88	
23	The blast contractor will develop the quarry blasting program based on rock type and client requirements (including regulatory considerations, such as DFO guidelines). The quarry blasting program is modified by limited test blasts, where a single element of the blasting program is changed and then blast results are monitored. The eventual long-term quarry blasting program is a result of this continuous improvement methodology (plan-do-check-adjust).	SIR #2	3 (3.5) 39 (b)	3-29	
24	No blasting will be allowed within quarry areas located south of the east-west centre section line of Section 19. PCA will use alternative equipment for rock fragmentation that will not exceed or be greater than the impacts associated with quarry blasting activity.	RMWB MoU	2.4	2	
25	Blasting will only occur north of the east-west centre section line of Section 19 in accordance with the following requirements: • In conformity with the most relevant standards including the US Bureau of Mines and the Ontario Ministry of Environment; • A third-party blasting engineering firm will test blasting plans to ensure compliance with all relevant guidelines and best practices; A pilot blasting program will be used to assess the specific site geology and seismographs will be strategically placed at nearby structures to monitor vibrations.	RMWB MoU	3.3	4	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
26	Develop and follow a blasting program to ensure operations do not pose a risk to the infrastructure of Highway 63 or the safety of its users.	April 9, 2013 letter from PCA to ATRANS			
27	Retain a Geotechnical Engineering firm to complete a local study for landslide hazards and conduct a risk assessment for blasting to comply with the United States Bureau of Mines Structure Response and Damage Produced by Ground Vibration from Surface Blasting (USBM RI-8507) and Ontario Ministry of Environment's Noise Pollution Control Guidelines (NPC-103 and NPC-119) guidelines to ensure the vibration and concussion limits are not exceeded or impact nearby infrastructure or slopes.	April 9, 2013 letter from PCA to ATRANS			
28	Implement a pilot blasting program using signature blast-holes to assess the seismic properties of the specific site geology.	April 9, 2013 letter from PCA to ATRANS			
29	Use seismographs that will be strategically placed at nearby structures to monitor vibrations and concussion during every blast.	April 9, 2013 letter from PCA to ATRANS			
30	Blasting engineer and Geotechnical engineer familiar with local conditions will both sign off on an agreed blasting and monitoring plan, and that both are involved in the observation/monitoring phase.	June 21, 2013 from TRANS to NRCB			
31	The blasting plan will include: • Extent of noticeable blast vibrations and noise, and what are acceptable levels; • Documentation of the condition of nearby structures/facilities prior to blasting, and a post-blast inspection to see that no damage was done. Geotechnical assessment to determine what seismic conditions are most probable to trigger landslides and confirmation by the blasting engineer that these conditions would not be achieved during a blast. This paper exercise will be completed prior to the test blast and the models could be calibrated once real numbers were determined. The analysis should be submitted to Alberta Transportation prior to the test blast.	June 21, 2013 from TRANS to NRCB			

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
32	PCA is committed to developing and using a blasting regime that will meet the blasting guidelines contained in Wright and Hopky (1998) given the protection buffers specified in Volume 3, CR#11, Section 4.1.1.2, Page 18. The current blasting regime to be applied is as follows: • Two borehole sizes will be used to blast stone at PCA, a 17.2 cm diameter hole and a 6.4 cm diameter hole. These holes will be loaded with a maximum of 89 kg and 14 kg of explosives, respectively. • Guidelines set forth by the Department of Fisheries and Oceans in the paper "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters", 1998, Wright and Hopky have been used to determine appropriate setback distances for these charge weights. • As standard operating procedure, delays will be used in all blasts to limit the explosives weight charge to one hole within any eight millisecond timeframe. This eliminates any additive effects from blasting due to constructive interference.	SIR #1	3 (3.5) 132 (a & b)	3-89	
33	Zones where buffers are less than 150 m will be blasted using 6.4 cm blastholes from 150 m to within 60 m of the shoreline.	SIR #1	3 (3.5) 132 (a)	3-90	
34	The Project will specify that the blasting contractor use a common blasting agent consisting of ammonium nitrate (AN) and a mixture of diesel or fuel oil (FO). Although ANFO use is preferred, where wet conditions are encountered, the blasting contractor will use an emulsion-based blasting agent. Field trials by the blasting contractor on exposed limestone in the quarry will determine the best combination of drill hole diameters, drill hole depths, spacing and blasting agent (ANFO mixture) to be used.	EIA Volume 1	B.3.5	10	
5.	**SCHEDULING**				
35	Quarry activities and operations will follow Project development plans and schedules. These activities will be carried out sequentially, at intervals, before the development of new areas.	EIA Volume 1; SIR #2	A.7.11; 3 (3.3) 29 (a)	46; 3-17	
36	The proposed Project, the limestone quarry operation, will extend further in time than the aggregate pit operations.	SIR #2	3 (3.2) 23 (d)	3-10	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
37	The Project will be developed in a staged manner with the timing subject to market conditions. Sequential development and reclamation is planned.	SIR #1	4 (4.5) 241 (c)	4-81	
38	Initial haul operations will occur 13 hours per day (0700 hrs. to 1900 hrs.); 6 days per week (between 260 and 275 days/year with winter shut down). When quarry operations reach peak production in 10 years, haul operations would occur 24 hours per day, 7 days per week, year round excluding statutory holidays and seasonal maintenance shutdown (340-345 days/year).	SIR #2	1 (1.3) 3 (a)	1-10	
39	For limestone mining, the exposed surface area of the designated limestone ore zone is prepared by drilling and the limestone broken by controlled blasting operations. This process will be undertaken only during daylight hours.	EIA Volume 1	A.2.5.1; B.3.5	6; 10	
40	Determine appropriate hours of operation in consultation with RMWB at the Municipal Development Permit stage. Blasting will only occur from 9 am to 5 pm Monday through Friday.	RMWB MoU	3.4	4	
6. SAND & GRAVEL OPERATION					
41	PCA is actively pursuing sand and gravel development in advance of quarry operations to ensure this valuable resource is utilized.	EIA Volume 1	A.7.4	39	
42	PCA has applied to ESRD under a separate application for SML 070025 to remove the sand and gravel deposit along the Athabasca River. The sand and gravel operation will maintain a minimum setback (undisturbed buffer) of 60 m along the Athabasca River.	SIR #3	5. (5.1) 11. (a)	3-75	
43	Subject to a favourable decision of this Environmental Impact Assessment (EIA), the Conservation and Reclamation Business Plan for the sand and gravel operation, as approved under the current SML will be superseded by quarry mining plans and Conservation and Reclamation Plan as described in this EIA.	EIA Volume 1; SIR #3; SIR #2	A.2.5.5; B.1.3; E.4.3.5; 5. (5.1) 11. (a); 4 (4.3) 61 (a)	8; 4; 20; 3-75; 4-14	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
44	The quarry will intersect the existing sand and gravel operation (SML 050015) in Stage 3D and the proposed sand and gravel operations in Stages 3C and 3B. During the mining of Stages 3C and 3B, PCA proposes to backfill the completed sand and gravel pit with available overburden materials, replace cover materials and revegetate the area to re-establish a 150 m buffer between the quarry and the Athabasca River. It important to note that no quarry mining will be conducted within the 150 m setback from the Athabasca River. PCA intends to re-establish the 150 m wide land area along the Athabasca River to original grades and vegetative cover where it will blend into the reclaimed surface of the proposed quarry. The area to be re-established is the 90 m where gravel has been removed above the limestone. • The 90 m reclaimed land surface and re-established vegetation cover would be constructed by backfilling with eliminations from aggregate processing and available overburden materials from quarry activities. • Eliminations could include either oversize rocks or boulders and sand, along with broken shale or sandstone bedrock. • Eliminations would be capped by a cover of conserved overburden materials with a replaced layer of soil materials. • Surface soils would be spread, contoured, seeded with a suitable deep-rooted grass mixture and trees planted. • Revegetation species would be confirmed with ESRD before application.	SIR #3; SIR #2	5. (5.1) 11. (a & c); 4 (4.3) 61 (b)	3-75; 3-83; 4-14	
45	PCA intends to provide an updated C&R Business Plan and other required information with the MSL application to be submitted at a later date.	SIR #1	6 (6.1) 282 (a)	6-2	
7.	**BUFFERS**				
46	Development setback areas and undisturbed buffer zones will be used to separate the mine from the following areas: • 800 m development setback from the Fort McMurray Urban Service Area; • 30 m undisturbed buffer zone from Unnamed Creek #6; • 50 m undisturbed buffer zone from the high-water mark north and south of Parsons Creek or within 30 m from water-source areas within that buffer, from Highway No. 63 to the	EIA Volume 1; SIR #1	A.7.11; B.1.2; B.5.2.1.3; B.9.4 E.6.4.5.3;	45; 3; 20; 47 53;	Buffer commitments south of Parsons Creek no longer apply as this area has been removed from the Project area as per RMWB MoU.

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	Athabasca River. No quarry activities or operations will be conducted within 60 m of the western, northern, and southern edge of Pond 1 with a 30 m undisturbed buffer zone around Pond #1. • 150 m buffer from the high-water mark of Athabasca River in the southern portion of the Project; • 150 m buffer from an old river (floodplain) channel that continues north of Pond 1 and proceeds north to the northeast corner of the Project area; • 45 m development setback from North Parson Creek Interchange right of way; • 45 m development setback from Highway 63 right of way; and • 30 m development setback from a pipeline right of way in the south. In some locations, undeveloped setback distances have been increased further as a result of former high water channels, point bars and other riparian features. No further encroachment of the 150 m undisturbed buffer zone by quarry activities and operations is proposed at this time.		E.11.4.1; B.9.4 3 (3.3) 99 (b); 4 (4.5) 236 (c & e); 4 (4.5) 240 (a); 4 (4.1) 158 (b); 4 (4.1) 158 (a); 4 (4.1) 153 (a); 4 (4.2) 174 (a)	87; 47 3-60; 4-73; 4-77; 4-6; 4-7; 4-2 4-15	
47	PCA is required to maintain a minimum 45 m wide undisturbed buffer zone between quarry operations and the Highway 63 right of way.	EIA Volume 1	B.9.4	47	This commitment is superceded by a subsequent commitment (commitment # 53) that introduces a service road.
48	No quarry mining activities are proposed for mine block 1A immediately adjacent to UC6 and so it is not expected to be impacted by Project development.	EIA Volume 1	A.7.11	45	Commitments south of Parsons Creek no longer apply as this area has been removed from the Project area as per RMWB MoU.
49	In the vicinity of Pond 1, a minimum buffer from the Athabasca River of 150 m in maintained. Pond 1 is included within the undisturbed buffer along the Athabasca River.	SIR #1	4 (4.1) 156 (a); 4 (4.1) 157 (b)	4-5 4-6	
50	Ample setbacks will be provided along the Athabasca River to maintain the natural features of the river environment. Setbacks will be provided along Highway 63 to protect Alberta Transportation's interests in future highway widening and/or service roads, and to maintain a treed visual buffer between the highway and the active mining areas. The quarry will be well-separated from the nearest planned future urban development areas.	EIA Volume 1	E.4.4	22	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
51	The sand and gravel operation will proceed ahead of the quarry. The quarry plan envisions backfilling of the sand and gravel pit and re-establishing a 150 m buffer between the quarry and the Athabasca River. If approved, the quarry reclamation plan will supersede the reclamation plan for the sand and gravel operation.	SIR #2; EIA Volume 1	4 (4.3) 61 (a); 4 (4.1) 44 (a); E.9.2.2	4-14; 4-4; 76	
52	ASRD has conditioned a 45 m buffer under current SML conditions. PCA will reclaim and revegetate any disturbances in the remaining 15 m wide area along the 45 m buffer. The remaining 15 m wide area long the 45 m buffer would be reclaimed and revegetated during quarry opening and construction of Mine Block 3D during the initial development stages, anticipated to be within three years of commencing quarry opening	SIR #1	4 (4.1) 161 (a & b)	4-8	
53	PCA has allowed a 30 m right of way for a possible future service road. If this service road is built, there would be a 15 m undisturbed buffer setback between the quarry operation and the service road right of way.	SIR #1	4 (4.1) 155 (c)	4-4	
54	As shown in Figure 11-3, the position of the east boundaries of Stages 8, 9, and 10 appear to extend into the buffer. This may be simply due to distorted horizontal positioning of the boundary. As an alternative, it is recommended that the east boundary be established in the field – 60 m back from the bank line as shown by the vegetation pattern in the background image of Figure 11-3.	SIR #3	5. (5.1) 11. (a)	3-80	
55	A high voltage transmission line owned by ATCO Electric Limited and pipeline corridors containing pipelines owned by Enbridge Pipelines Incorporated and Suncor Energy Incorporated occur within the boundaries of the Parsons Creek Lease. Set back buffers of 50 metres from these right-of-ways will be in place such that there should be no impact on the transmission line and pipelines from the Project.	EIA Volume 1	E.4.3.8	20	
8.	**WATER MANAGEMENT**				
56	As part of its current water management activities for ongoing aggregate operations, PCA has been directed to maintain a minimum return flow of withdrawn groundwater from the aggregate pit operation to Pond No. 1. Groundwater withdrawals are required from this interval (*overburden sediments and weathered bedrock interval to Pond 1*) before groundwater enters quarry operating areas or before groundwater comes into contact with exposed limestone surfaces. Based on water quality sampling results for	SIR #3	3 (3.1) 8. (a)	3-60	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	aggregate operations, PCA expects that the water quality of withdrawn groundwater to be discharged into Pond No. 1 will also be better than the ambient conditions of Pond No. 1 and will also satisfy CCME parameters for aquatic resources water quality (see Vol. 3, CR#10, pp. 11-12 and Figures 3.2, 3.3 and 3.4; see also Vol. 3, CR #11, pp. 19-26 and Figures 4, 5 and 6).				
57	During operation, two streams of surface water runoff will be generated from the Project. Surface runoff from undeveloped areas will be directed to natural drainage courses or a constructed the settlement pond before discharge to the Athabasca River, while surface runoff from developed areas will be directed to the sumps or ponds for quarry water management.	EIA Volume 1	B.5.3.3	29	
58	Water management in support of proposed quarry activities and operations will use existing drainage channels within the 150 m undisturbed buffer zone. No constructed works are anticipated within the 150 m undisturbed buffer zone. Where appropriate, surface runoff will be diverted around quarry working areas, returning to existing drainage features in the 150 m undisturbed buffer zone. Water management features will advance as quarry mining progresses southward and discharge locations will change over time.	SIR #1	4 (4.5) 236 (d)	4-73	
59	The storm water pond will be designed to handle a maximum water in-flow associated with a 1-in-100 year storm event, and the other ponds will consider direct storm water entry. For storm intensity greater than a 1 in 100 year event, the ponds will be configured to discharge overflow water to the Athabasca River. In addition, storm water management practices during significant PCA process outages or unusual events such as extreme rainfall for an extended number of calendar days may also require short-duration discharge of pond contents to the Athabasca River.	EIA Volume 1	B.5.3.3	29	
60	If required, a network of interception ditches will also be constructed around the permanent waste rock stockpiles, mobile plant site areas, and access roads to capture and divert silt laden runoff to quarry retention sumps. Special provision will be made for protection of surface watercourses and waterbodies from concrete works. This will include prohibition from discharging fines from stone wash water into any watercourse or waterbody, and containment and isolation of any concrete-affected water for either treatment until it meets water quality criteria suitable for discharge to the natural environment, or else transported to a facility approved for related containment and/or disposal.	EIA Volume 1;	E.11.4.2; A.7.11; B.5.2.1.3; E.11.4.4	88; 45; 20; 90	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
61	Surface water that exists and flows through the property that intercepts the operation will be diverted around operations.	SIR #1	3.0 (3.2) 66 (a) E.11.4.4	3-14; 90	
62	Flow from Unnamed Creek No. 1 (UC1) and its tributaries will be rechanneled, with primary drainages redirected north and south, around the limits of aggregate pit operations, using a reconstructed channel that will eventually enter into Pond No.1, an existing water body feature. The intent is that the rechanneled UC1 will remain in place until the quarry reclamation stages are started in Block 3D. In opening up the first quarry mining phase in Blocks 3D, flows from the previously rechanneled Unnamed Creek No. 1 (UC1) drainage will be maintained on a continuous basis to Pond No. 1. However, the constructed UC1 drainage channel configuration may be altered slightly from time-to-time dependent on quarry activities and operations within Blocks 3D or 3C. With final reclamation of Block 3D, a permanent drainage channel will be established. In opening up Block 3C, the next phase, Unnamed Creek No. 1 (UC1) will maintain flows in its reconstructed channel to Pond No. 1 on a continuous basis. However, segments of the reconstructed UC1 drainage channel may be altered slightly from time to time dependent on quarry activities and operations within Blocks 3C. A permanent UC1 drainage channel will be established with final reclamation. Additional soil and overburden materials (not disturbed by gravel pit operations), are conserved during the opening up of Block 3C and will be stockpiled around the quarry perimeter, used for temporary berms or directly placed in proper sequence in depleted areas of Block 3D. Before opening up Blocks 3A and 3B, the upper reach flows for Unnamed Creek No. 2 (UC2) and its tributaries will be rechanneled, with primary drainage channels redirected north towards Unnamed Creek No. 1 (UC1) by berms or using a temporary drainage ditch between the westerly limits of Mine Block 3 and Hwy. 63. Before opening up Block 1C, drainages from Unnamed Creek No. 4 (UC4) and No. 5 (UC5) will be evaluated. Rechanneling resulting from the Hwy 63 realignment construction will be considered in this assessment. Where required, drainages would be redirected towards the Athabasca River by berms or temporary drainages ditch between the westerly limits of Mine Block 1 and the revised Highway No. 63 right of way.	EIA Volume 1	B.5.2.1.3	20 & 23	Commitments south of Parsons Creek no longer apply as this area has been removed from the Project area as per RMWB MoU.

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
63	*This commitment will address how surface water flow will be maintained to Pond 1 in order to maintain and protect fish habitat?* PCA has proposed diverting part of the subsurface flow intercepted and diverted before entering Mine Block 3D and the quarry working area. An alternative to the PCA proposal would be a new alignment for Unnamed Creek #1 around Mine Block 3D so that flows are maintained to Pond #1.	SIR #2	3 (3.5) 37 (a)	3-27	
64	In support of quarry water management, PCA will construct a surface drainage system, with sumps and settling ponds as required in support of a quarry dewatering program that will separately manage quarry release water and quarry process water. Quarry release water is collected directly from overburden or muskeg, surficial aquifer dewatering Quarry process water includes water that has runoff from disturbed areas and in-quarry water that has come into contact with exposed limestone surfaces.	EIA Volume 1	B.5.2.3; B.5.3.2	27; 29	
65	Primary treatment method would be use of settling pond or retention pond system where separation of suspended particles, heavier than water, occurs through gravitational settling. Alberta Environment monitoring and release criteria will be adhered to.	SIR #1	6 (6.1) 290 (b)	6-12	
66	The water supply for the settling pond system is closed circuit with no direct releases to the watershed.	EIA Volume 1	B.5.2.3	27	
67	All water, both groundwater and surface water, in the quarry will be collected in sumps.	SIR #1	6 (6.2) 312 (b)	6-30	
68	Sump and pond locations will be temporary. New sump and pond locations will be constructed as quarry mining advances. In most cases, new sump and pond locations will be required for each new mine block.	SIR #1	6 (6.1) 289 (a)	6-10	
69	It is expected that the majority of this excess water volume would be discharged via sumps and retention ponds in the quarry water management system to the riparian areas either north or south of the Mine Block 3D limits. Any discharges of excess water to Pond No. 1 would be limited to only supplement seasonal flows and maintain water quality or when discharges are limited by seasonal conditions to north or south of the Mine Block 3D limits. Except for consumptive water diversions in support of quarry activities and operations (about 2.2% of the quarry dewatering by volume), it is estimated that all quarry dewatering (sub-surface flows and groundwater, about 94% by volume) will be collected in sumps and retention ponds or retention	SIR #1	3.0 (3.1) 60 (c)	3-7	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	ponds directly, for treatment before discharge of excess water to the surrounding watershed. Surface runoff from undisturbed areas adjacent to quarry activities and operations (the remaining 3.6% by volume), will be collected by storm water ponds for treatment before any discharge of excess water to the surrounding watershed.				
70	*This commitment is specific to Mine Block 3 but is reiterated a number of times for the various mine blocks (Mine Block 1 and 2)* If required, a network of interception ditches will be constructed around the perimeter of the M3 NSL stockpile area to capture silted surface runoff and redirect this effluent to a collection sump located elsewhere in the quarry. Further excavations of M1 and M2 limestone ore at depth in Block 3D will result in groundwater interception that will be collected by a network of interception ditches and redirected into a constructed sump. If required, as a result of increased groundwater infiltration in some areas of Blocks 3D, groundwater would be diverted on a daily basis as part of quarry activities and operations.	EIA Volume 1	B.5.2.1.3; E.11.4.4	20-24; 90	
71	The exterior surfaces of buildings and structures, paved or concrete areas within the Project site and other impermeable surfaces within developed areas of the Project site will generate runoff during storm events and snowmelt. Runoff from these areas will be directed to the storm water pond by site grading, ditches, culverts, and pipelines. In process units where there is not enough gradient for gravity flow to the storm water pond, the runoff water will be collected in an open sump and then will be pumped to the storm water pond.	EIA Volume 1	B.5.3.3	29	
72	To the greatest extent practical, the water from this storm water pond will be recycled to minimize the amount of raw water required from the Athabasca River.	EIA Volume 1	B.5.3.3	29	
73	Depending on flow rates and volume, intercepted groundwater will be collected and treated with other surface runoff within the quarry, providing some dilution for water chemistry.	EIA Volume 1	B.5.2.1.2	19	
74	Water collected in the constructed sumps around the quarry, after secondary settling treatment, will be used by decicated water truck (tanl capacity up to 26,500 L) with spray bars and/or spray gun for dust suppression activities for internal haul road watering, high traffic areas (main quarry access and load out), product stockpile surface watering, and quarry working areas and portable plant site. Excess water not used for dust control will be stored in retention ponds and tested to meet applicable water quality standards prior to release to the Athabasca River buffer.	EIA Volume 1;	A.2.5.6; A.7.9; A.7.10; B.5.2.1.3;	8; 20; 42; 43;	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
		SIR #1	E.9.2.1.3; E.11.4.4 3.0 (3.1) 60 (c)	75; 90; 3-7	
75	Any water from these local drainages which eludes surface capture, and which infiltrates to shallow groundwater and thence the pit(s), will be pumped from the pits to holding ponds, and then either used onsite for dust control or released to the river after water quality has been tested and meets applicable regulatory standards.	EIA Volume 1	A.7.9	42	
76	At closure, a sustainable system of drainage channels, wetlands and end-pit lakes will be developed to manage groundwater and surface water. Several wetlands will be strategically planned at major collection points between the three end pit lakes to provide the benefit of water treatment. The closure drainage scheme will collect all runoff and drainage from around the development area, similar to the plan when the quarry is in full operation, and direct it towards and into the four end pit lakes. The re-constructed drainage channels will be developed as riparian areas through undisturbed ground or overburden materials.	EIA Volume 1	E.6.4.4; E.6.4.4.1; E.6.4.4.1	50-51	The conceptual plans in the EIA is for three end pit lakes not four as indicated in this commitment. Also refer to Section 10. End Pit Lakes.
77	The following mitigation strategies have been designed to address issues that may affect the viability and suitability of the closure watercourses and waterbodies: • all water bodies and watercourses will have a sustainable configuration to provide a stable closure landscape; • water bodies and watercourses will be designed to provide fishery habitat with a productive capability equivalent to or greater than pre-development conditions; • end pit lake releases will not occur until water quality objectives are met; • since the water quality is an estimate, future monitoring will be required to confirm the predictions; and • if the end pit lakes are determined to have an effect on fish health, plans to establish a fishery in the lakes will be re-evaluated.	EIA Volume 1	E.6.4.4.6	52	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
78	Local drainages that originated west of Highway 63 will be conveyed across the Project to the Athabasca River in a manner that avoids active quarry operations.	EIA Volume 1	E.6.4.5.3	53	
79	It is understood from a November 2009 meeting with AT that UC5 will be diverted south to UC6 and that the upstream split flow path from Parsons Creek to UC4 will be blocked, causing water from the upper Parsons Creek watershed to remain in the Parsons Creek corridor across the extent of the LSA. These activities, and construction of the storm water pond for highway runoff, are planned to be completed prior to limestone mining in the remaining lease area south of Parsons Creek. When the site is reclaimed, the local drainages north of Parsons Creek that had been diverted during construction will be directed into the end pit lakes which, in turn, will drain to the Athabasca River. South of Parsons Creek, where no end pit lake is proposed, the outflow from the highway storm water pond will be returned to a suitable discharge point to the Athabasca River.	EIA Volume 1	E.9.2.1.2	75	Buffer commitments south of Parsons Creek no longer apply as this area has been removed from the Project area (as per RMWB MoU).
80	Aggregate wash water will be recycled by PCA using a settling pond system that provides a minimum 48 hr retention time.	SIR #1	3 (3.1) 58 (a)	3-4	
81	For quarry water diverted for aggregate washing purposes, used wash water will be collected in designated settling ponds for treatment, then recycle and reuse in recurring aggregate washing.	SIR #1	3.0 (3.1) 60 (c)	3-8	
82	Quarry activities and operations will not divert raw water directly from the flowing Athabasca River channel.	SIR #1	3.0 (3.1) 62 (a)	3-10	
83	PCA does not anticipate the need to use flocculants unless site conditions change. Any flocculants considered for aggregate washing settling ponds would be anionic copolymers consisting of acrylamide and acrylic acid salts.	SIR #1	3.0 (3.1) 63 (a)	3-10	
84	Prior to any use of flocculants, an analysis of used wash water would be conducted to determine the best-suited polymer for use and the dosage.	SIR #1	3.0 (3.1) 63 (c)	3-10	
85	If PCA decides to use a flocculant for aggregate washing, it would be a solution-based polymer contained in a 454 L plastic container located on a containerized pallet or geotextile liner at the wash plant location. A second 454 L plastic container on a containerized pallet would be stored at the portable warehouse for refill purposes.	SIR #1	1.0 (1.4) 20 (a)	1-27	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
86	PCA is in communications with Alberta Transportation and will address any additional channel diversions after Year 10 of quarry operations when Alberta Transportation has disclosed all design changes for construction of the Highway 63 upgrades and overpass projects.	SIR #2	4 (4.1) 42 (c)	4-3	
87	PCA expects that the development approval process for the planned urban development will ensure that appropriate flow control will be provided in accordance with Government of Alberta Stormwater Management Guidelines (See http://environment.alberta.ca/01251.html). Section 2.5.4.1 of the guidelines recommends that post-development peak flow rates should be controlled to pre-development when development occurs in headwater areas, and this recommendation applies to the proposed urban development under discussion. The guidelines also state that water quantity targets typically aim to control post-development peak flows for the 2- 5- 25- and 100-year storms to pre-development levels.	SIR #2	3 (3.3) 26 (a)	3-13	
88	*This commitment clarifies whether any salinity mitigation methods are feasible for this project.* In the situation that mitigation becomes necessary, PCA has considered the following specific mitigation methods are feasible (graduated mitigation response provided from dilution to well injection to mine plan modification): • Dilution o PCA expects that the smaller, low-volume flows with higher level salinity would be collected in constructed sumps in the quarry, mixing with other quarry water throughout the construction year would occur in these sumps; o the larger volumes of low-salinity or non-saline water collected elsewhere within the quarry will help dilute salinity and quarry water is eventually removed from the quarry for further dilution in quarry retention ponds; o testing at various points in this process will allow PCA to manage the process; o additional sources of dilution are available as well. • Deep well injection o higher saline flows could be isolated, collected and trucked for disposal offsite in approved wells; and o a site-specific sump could be used for collecting higher saline flow volumes for offsite injection before significant dilution has taken place. • Mine Plan Modifications	SIR #2	6 (6.1) 70 (a)	6-1	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	o this would be specific to the manner in which higher saline flow is entering the quarry; and o some examples would be plugging of fractures (a technically feasible but challenging task) or modify mining depths to avoid higher salinity flows at greater depths.				
89	If warranted, PCA would consider construction of a series of settling ponds for distillation purposes during the annual quarry operating season. Collected saline groundwater flows would be pumped into distillation ponds at minimal rates, ranging from 50 - 100 m^3 day. Saline residues resulting from evaporation could be collected on regular basis for offsite disposal at an approved facility.	SIR #2	6 (6.1) 70 (b)	6-2	
90	PCA would not shut down operations but may discontinue dewatering to implement alternate methods of salinity control.	SIR #1	6 (6.1) 283 (d)	6-5	
91	If, in the improbable case that such opening(s) were encountered and salt water entered to quarry in significant volumes, the following mitigations might be undertaken: • Plug or grout the openings to shut off the flow; and • Collect saline water for onsite treatment or transport for disposal off site.	EIA Volume 1	A.7.10; E.10.3.2	43; 79	
92	Potable water will be contractor-supplied. Portable sanitation facilities will also be contractor-supplied during quarry construction and operation. If required for workforce, contractor will set up a portable water tank at PCA onsite office to ensure weekly potable water supply is maintained.	EIA Volume 1	A.2.5.6; B.5.2.4; B.5.3.1	8; 27; 29	
93	Wastewater will be transported offsite by contractor to an approved wastewater facility for processing and disposal.	EIA Volume 1	A.2.5.6; B.4.4; B.5.3.1	8; 18; 29	
94	The quarry will intercept small volumes of water in the limestone that would have discharged into the Athabasca River. This water, along with other water entering the quarry, will be transferred by pumping to the river provided that it meets regulatory guidelines. With the reclamation of the portions of the quarry, groundwater flow in the overburden and limestone will discharge into the wetland and subsequently into the Athabasca River.	EIA Volume 1	E.10.7.1	80	
95	PCA is making commitments to best management practices for water control and monitoring in an aggregate operation that will ensure zero impact on the quality and quantity of water in the river.	SIR #1	1.0 (1.1) 4 (b)	1-7	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
96	Based on quarry mining plan for the next ten years, up to three discharge points could be established (north, south and east sides of Mine Block 3D). Over the life of quarry, it could be expected that three discharge points would be maintained for succeeding Mine Blocks, but with contingencies for one or two additional discharge points as required for effective quarry water management.	SIR #2	3 (3.3) 30 (a)	3-18	This response is pertaining to surface drainage.
97	The diversion of 46,500 m^3/day required for quarry water dewatering would be dispersed by at least four primary discharge points from sumps or retention ponds constructed in the quarry operating area or about 11,500 m^3/day. Primary discharges would be from the outlet structures of constructed settling ponds towards the defined channels that enter the Athabasca River. From these four primary discharge points, releases could be further dispersed by using collapsible hoses to achieve discharge rates up to 3,000 m^3/day through multiple existing channels in the undisturbed buffer zone. Before any discharge or release from the sumps or retention ponds in the quarry operating area, PCA would conduct testing to confirm appropriate water quality parameters as per approval conditions. With appropriate holding capacity in quarry sumps and detention ponds (or two-stage capacity), any releases from quarry operating areas after treatment would be limited to ensure peak discharges of 3,000 m^3/day at any one discharge point.	SIR #2	3 (3.2)16 (a)	3-2	This response pertains to pit quarry dewatering.
98	Pumping from open quarry pits will not continue throughout the winter months, when quarry mining operations are suspended.	SIR #2	3 (3.2) 21 (b)	3-7	
99	Self-contained water pumps with diesel generators and collapsible hoses will be used for dewatering purposes. Water pump locations will have compacted clay or geo-textile lined containment and fuel for generators will be stored in steel double-walled aboveground storage tanks, typically 2,500 L in capacity. Energy dissipaters will be deployed at discharge points for the diverted water.	EIA Volume 1	B.3.6	12	
100	PCA will continue assessing the effectiveness of its water management program, ensuring the ability to divert projected water inflows and having suitable capacity available in-quarry for collected water inflows.	SIR #1	4 (4.1) 153 (a); 4 (4.2) 174 (a)	4-3 4-15	
101	PCA will continue assessing the effectiveness of its water management program, ensuring the ability to divert projected water inflows and having suitable capacity available for collected water inflows. The contingency plan for surplus water management would be twofold:	SIR #1	3 (3.5) 133 (a)	3-91	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	• where practical or appropriate, change diversion schemes to channel surface runoff or subsurface flows before contact with quarry activities and operations; and • if unable to modify diversion schemes further, construct additional capacity for collection and treatment.				
102	A protocol implementation by PCA will require that the following measures will be evaluated and implemented: • forecasting the quality and quantity of reclamation discharges; • constructing facilities to provide long term controls; and • monitoring of the impacts of these discharges.	EIA Volume 1	E.6.4.4.5	51	
9. POTENTIAL FLOOD EVENTS					
103	In the event of a flood forecast, PCA would relocate portable facilities at higher elevations until flood crest passes. If all or part of quarry working areas and open pits are inundated by floodwaters, PCA would commence dewatering activities with receding floodwaters, after flood crest passing.	SIR #1	3 (3.2) 68 (b)	3-16	
104	A flood event that totally inundates the PCA project area would result in complete site evacuation with the removal of equipment, vehicles and portable stores. As the flood recedes, a large volume of water will be contained in the mine area and control and timing of the dewatering will be under PCA's control.	SIR #3; SIR #2	4. (4.1) 10. (a) I; 3 (3.4) 40 (a)	3-74; 3-30	
105	In a flood event quarry mining operations would cease until the river floodwaters recede. Water in the pits would be pumped back to the river, subject to: • the pit water being of acceptable quality to return to the natural environment; and • implementation of a plan to rescue any fish potentially stranded in the pits.	SIR #1	3 (3.2) 68 (a); 4 (4.1) 153 (a); 4 (4.2) 174 (a)	3-16; 4-2; 4-15	
106	After a major flood event, PCA understands that ESRD would consider temporary authorizations to conduct emergency dewatering efforts subject to specified terms and conditions. Expectation is that dewatering efforts would allow direct discharge to the Athabasca River with minimal or no treatment provided that the waters pumped from the flooded area is confirmed equivalent (or within an accepted	SIR #3	4. (4.1) 10. (a) ii	3-74	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	parameter) to the receiving waters of the Athabasca River.				
107	If a major dewatering effort inundates the project area (presumably not by PCA but by another party), it would be PCA's expectation that the person responsible for this major dewatering effort would have appropriate mitigation measures in place before commencing the activity and subject to prior AEW assessment and *Water Act* approval.	SIR #2	3 (3.5) 40 (a)	3-30	
10.	**END-PIT LAKES**				
107	Three end-pit lakes will be developed by PCA during the reclamation program for incorporation into the reclaimed landscape.	EIA Volume 1	E.6.4.4.2	51	
108	The final design of each end-pit lake will be prepared once each of the mine blocks become eligible for reclamation, and PCA will use sets of guiding principles that are available at the time of end-pit lake design, in consultation with regulatory agencies and stakeholders, when developing the final end-pit lake designs. These guiding principles are expected to influence final end-pit lake values, sustainability, biological diversity and use of native species, use of practical methods for end-pit lake design and construction, and the use of adaptive management in end-pit lake design, construction, and management. Most of these guiding principles are currently under consideration for end-pit lakes in the Athabasca oil sands region and for end-pit lakes at coal mine operations in the mountains and foothills of the eastern slopes of the Rocky Mountains.	EIA Volume 1	E.11.4.5	91	
109	The final design of the end-pit lakes will be prepared as part of the required compliance with the DFO authorization and results of the CEAA screening assessment.	SIR #1	3 (3.5) 135 (a, b, c, d); 3 (3.5) 138 (a); 3 (3.5) 146 (a, b, c, d)	3-92; 3-95 3-100, 3-101	Refer to the associated NRCB cover letter, November XX, 2013. DFO has indicated that they will not be playing a role in review and approval of this project. PCA has assessed fish and fish habitat in the EIA, has proposed appropriate migration measures and has predicted the potential impacts on a local and cumulative basis. With respect to end land use and the development of end pit lake, PCA

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
					understands that these will be governed by a combination of Public Lands Act, EPEA and Water Act conditions and reclamation standards.
110	*This commitment addresses contingency plans if end-pit lake of recreational fisheries and enhanced waterfowl habitat cannot be met.* PCA's first contingency response would be to reconsider the design parameters for the end-pit lakes to attain the original reclamation objective. This would be based on the assumption that the first end-pit lake, as constructed partially or completely, results in properties not as a predicted. PCA secondary contingency would then be to replace the end-pit lake feature as a reclamation objective. Depending on materials balance, additional upland could be constructed with additional wetland areas in support of waterfowl and wildlife habitat areas, with consideration for potential recreation area development further south.	SIR #2	3 (3.4) 33 (b)	3-21	
11. WATER RELEASE					
111	If surplus water volumes result from either increased area precipitation or groundwater inflows, collected water from the sumps could be diverted offsite to the Athabasca River, only after treatment to acceptable water quality standards.	EIA Volume 1	B.5.2.1.3; B.5.2.2.1	20; 25	
112	A small amount of ground water is anticipated to come from the limestone seams. The water would not be discharged directly into the Athabasca River, but released in accordance with *Water Act Approval* requirements.	SIR #1	3.0 (3.1) 55 (a)	3-1	
113	Based on maximum disturbance by quarry activities and operations in Mine Block 3D, excess water would be discharged to the riparian areas north and south of the current Mine Block 3D limits, this would be primary routing for excess water discharges. There are no direct discharges proposed via fixed works to the bed and banks of the Athabasca River.	SIR #1	3.0 (3.1) 56 (a)	3-2	
114	All planned discharges will be made only once the water to be discharged meets the discharge water quality standards that will be contained in the associated Project approvals.	SIR #1;	3.0 (3.1) 63 (b); 3 (3.4) 109 (b); 6 (6.2) 312 (c);	3-10; 3-67; 6-30;	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
		EIA Volume 1	A.6.11.1.4; A.7.11; B.3.7.5; B.5.2.1.3; E.6.4.4	35; 46; 14; 21; 50	
115	PCA will address all Alberta Environment's monitoring and release requirements associated with the washing operations.	SIR #1	3.0 (3.1) 63 (e)	3-11	
116	No groundwater will be directly released by PCA into the surrounding watershed unless required release criteria is satisfied.	SIR #1	6 (6.1) 283 (c)	6-5	
117	PCA will sample for chlorides and TDS before the release of any quarry water from the quarry mining operations area into the Athabasca River or its surrounding watershed.	SIR #2	6 (6.1) 70 (c)	6-2	
118	Before placement of non-specification limestone, any visible occurrences of bitumen would be confirmed and bitumen materials segregated. Water quality parameters include observing (visible sheen) and testing for any hydrocarbon contaminants before offsite discharge from quarry working areas to surrounding watershed.	SIR #1	6 (6.1) 284 (b)	6-6	
119	It is anticipated, in the later development stages of the quarry that surface runoff and groundwater collected in quarry sumps could also be diverted to a completed end pit lake, if increasing surplus water volumes were encountered, either by increased area precipitation or groundwater inflows. Diversion to an end pit lake would only occur after treatment of collected water to acceptable water quality standards.	EIA Volume 1	B.5.2.1.3	21	
120	If water that needs to be discharged does not meet conditions of the approval or regulations for release, PCA will consider isolation and disposal options.	SIR #1	3 (3.2) 91 (a); 6 (6.1) 283 (c)	3-53 6-4, 6-5	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
121	In areas where water used for dust suppression is not contained on the site, testing will be conducted as required.	SIR #1	3 (3.4) 109 (b)	3-67	
12. AIR QUALITY					
122	To manage SO_2 emissions from the Project, PCA will employ the following operational standards and procedures: • purchased cleaned fuel gas, containing nearly no sulphur, will be used as fuel; • use of low sulphur diesel in diesel-powered vehicles consistent with federal regulations governing sulphur levels in diesel fuel; and • Tier 3 and Tier 4 equipment engines will produce lower emissions. To manage NO_X emissions from the Project, PCA will employ the following operational standards and procedures: • the selection of low-NO_X emissions technology; and • Tier 3 and Tier 4 equipment engines will produce lower emissions. To manage VOC emissions from the Project, PCA will employ the following operational standards and procedures: • plant-wide fugitive emissions identification and control using the protocol recommended by the CCME guideline “Environmental Code of Practice for the Measurement and Control of Fugitive Emissions from Equipment Leaks”; • storage tanks will conform to the CCME guideline “Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Above Ground Storage Tanks”; • vapour recovery systems on tanks, where required, to reduce the emissions of VOCs; and • Tier 3 and Tier 4 equipment engines will produce lower emissions. To manage PM emissions from the Project, PCA will employ the following operational standards and procedures: • during all phases, PCA will apply dust suppressants, including water, during dry periods to reduce fugitive dust; and	EIA Volume 1	B.7.1; B.7.2; B.7.3; B.7.4; B.7.5; B.7.6; B.7.7	35-36	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	• routine maintenance will serve to reduce PM emissions from vehicles. • Tier 3 and Tier 4 equipment engines will produce lower emissions. To manage odorous emissions from the Project, PCA will employ the following operational standards and procedures: • control of VOC emissions and fugitive emissions, as stated above; • rigorous equipment maintenance and replacement procedures. • Tier 3 and Tier 4 equipment engines will produce lower emissions. To manage visible emissions from the Project, PCA will employ operational standards and procedures, available technologies and management practices for emissions reduction measures to reduce the effect on visibility and visual aesthetics.				
123	PCA confirms that existing vehicles owned and operated by the company do not meet Tier IV standards. When acquiring new vehicles for the operation of the Project, PCA has stated that engines meeting Tier IV standards will be a requirement for off-road equipment.	SIR #3 SIR #2; SIR #1	3 (3.1) 1 (a) 2 (2.1) 4. (a); 2.0 (2.1) 30 (a)	3-2 2-1 2-1	
124	PCA expects the use of optical technology will allow it to locate monitoring in locations that do not require line power, providing greater flexibility as the quarrying proceeds.	SIR #2	2 (2.2) 11 (a)	2-12	
125	PCA will implement dust control measures with respect to watering/oiling roads to ensure a high level of dust suppression sufficient to maintain acceptable air quality.	EIA Volume 1	B.7.7; E.1.4; A.7.1	36; 3; 38	
126	A preliminary Dust Management Plan (DMP) is provided for the proposed PCA Limestone Quarry Project. The DMP describes measures to minimize potential dust emissions from quarry activities and operations. A DMP copy will be kept on location at the quarry office and will be followed by PCA staff and contractors during quarry activities and operations. To limit dust transfer to adjacent properties, PCA will take all reasonable measures to ensure that fugitive dust emissions are minimized using the best management practices associated with the pit and quarry industry sector.	SIR #1; SIR #3	2 (2.3) 46 (e); 3 (3.1) 4. (c & d)	2-20; 3-44; 3-47	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	The DMP plan will be adaptive to allow PCA to develop mitigative responses as appropriate.				
	Implement a Dust Management Plan (DMP) as described in SIR 1, #46e and a Noise and Vibration Management Plan. The DMP will include continuous monitoring of wind speed and direction and particulate matter (PM2.5) using laser/optical technology as described in SIR 2, #11.	RMWB MoU	3.5, 3.6	4	
127	Roads will be watered to ensure control effectiveness for dust emissions of 90%. Petroleum resin products as the dust suppressants (besides water) will control effectiveness for dust emissions of 98%.	EIA Volume 1	E.7.2	58	
13. GREENHOUSE GAS					
128	PCA will comply with GHG legislation and regulations that would apply to its proposed quarry activities and operations. PCA proposes the following for its overall GHG management plan: • establish a protocol and calculate a GHG emissions inventory baseline based on quarry activities and operations after quarry opening and operations start up in 2012 based on industry sector standards and guidelines; and • implement cost-effective Best Management Practices aimed at reducing GHG emissions: • scheduled preventative maintenance program for PCA equipment and vehicles; • daily inspection program for PCA equipment and vehicle; • PCA employee training to promote efficient equipment and vehicle operations; • review potential use of after-market emissions control devices; and • replace PCA equipment and vehicles at a target age or by following a preventive maintenance schedule. PCA management annual review of program effectiveness and assessment of issues related to GHG emission reductions.	SIR #1	2 (2.1) 29 (a)	2-1	
129	Although the Project emits less than the SGER reporting requirement, PCA will develop a GHG Management Plan that will incorporate a process of continuous improvement throughout the life of the Project and will contain elements that are consistent with the Province of Alberta's GHG emissions reduction plan, *Albertans and Climate Changes; Taking Action, (2002)*.	EIA Volume 1	B.8.2.2	41-42	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	PCA's Project GHG Management Plan will include the following approaches: • optimization of energy efficiency during Project design and operations; • best practices, primarily focussing on improved energy efficiencies, will be the standard for all phases of the Project; • equipment purchasing decisions will be made with consideration of continuous improvement principles, energy efficiency, appropriate equipment sizing, and improving technology (particularly, mine fleet emissions and combustion technologies); • rigorous equipment maintenance and replacement procedures; and • training programs for operations personnel with a focus on reviewing plant energy use trends and identifying opportunities for improvement. Should GHG regulations become more stringent in the future, PCA's future GHG Management Plan may include the following approaches: • implementation of a GHG monitoring and reporting program to measure and compare against the GHG management plan and to identify gaps and opportunities for further improvement; • establishment of continuous improvement targets for the reduction of GHG emissions as part of the business planning cycle; • trading of GHG offsets, if necessary; and • contributing to the Climate Change and Emissions Management Fund, if necessary. PCA's GHG Management Plan will support five actions of the Alberta Strategy.				
14. NOISE					
130	Adopt and adhere to the current AER noise directive that require an average ambient sound level of no more than 48 dBA daytime and 38dBA night-time as measure at the closest future urban development area.	RMWB MoU	3.2	4	
131	Implement a variety of operational noise, dust and vibration reduction measures such as mufflers, silencers and shielding, road maintenance and traffic routing	RMWB MoU	3.1	4	
132	Apply further mitigation measures if exceedances of permissible noise, dust and/or vibration levels are detected by monitoring in a residential area	RMWB MoU	3.1	4	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
133	PCA will implement best management practices for crushing, screening and power generation equipment used for the Project during daytime hours. When PCA quarry activities and operations are within 1500 m of potential receptors or if PCA starts 24-hour quarry activities and operations, Also, if required as a result of plant location, overburden screening berms will be constructed along property boundaries between potential receptors and the portable plant. General equipment noise mitigation is also expected in the form of improved exhaust silencers with manufacturers upgrades required for newer engines in later years of the Project.	EIA Volume 1	A.6.3; A.7.3	22; 39	
134	In order to achieve the noise levels modelled for the various Application cases, noise mitigation is required. • An earth berm noise barrier will be required along the north end of the Project for years 1 – 10. The modelling indicated that the height of the berm required is at least 5 m above existing grade, for the entire length of the north side (approximately 340 m). Once the Project equipment moves into years 10 – 20, the berm can be removed and the land can be reclaimed. • The equipment associated with the Project will consist of heavy mobile machinery with internal combustion engines. • All of the internal combustion engines will be equipped with high grade exhaust silencers which are maintained in proper working order. • Noise monitoring would only be required in the event of a noise complaint.	EIA Volume 1	E.3.3; A.7.3	15; 39	.
135	Setting up the portable crushing-screening spread below grade within quarry mining areas and positioning finished aggregate stockpiles around the spread will provide further noise suppression. PCA would consider set up of the crushing-screening spread at operating locations that would allow for the construction of screening berms.	SIR #1	1(1.2) 9 (a & b)	1-16	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
136	PCA is committed to noise mitigation for the operations such that the noise levels at the residential receptors will not exceed the ERCB Directive 038 PSLs. The full extent of this noise mitigation is not yet known. Review of equipment enclosures for the crushing equipment indicates health concerns for workers pertaining to dust exposure. As such, enclosures are not being considered at this time. The exact equipment locations, noise levels, and mitigation methods will be reviewed and determined over the course of the first 30-years of the project operation.	SIR #2	1 (1.1) 1 (c)	1-2	This commitment replaces earlier commitments in SIR #1.
137	PCA is committed to responding to noise complaints with appropriate noise monitoring and assessment as prescribed in ERCB Directive 038 to ensure compliance at residential receptor locations.	SIR #2	1 (1.1) 1 (a)	1-1	
138	Implement a Complaint Response Protocol and a Community Awareness Program	RMWB MoU	3.5	4	
139	Noise complaints will be included by PCA as part of the following complaint response protocol. **Complaint Response Protocol** • Signage will posted at the quarry entrance and along fenced boundaries providing a phone number for the public to call should they have any dust or noise concerns. • PCA quarry manager will also request that AESRD notify them immediately if they receive a dust or noise complaint to allow for PCA response and follow-up. • Complainants will be requested by PCA to identify the location of the incident as well as the time of day that it was detected and any other relevant information. • All dust and noise complaints will be reviewed by PCA quarry manager and recorded in the logbook as identified in the previous section. The PCA quarry manager will initiate the following action plan: • Conduct an inspection to identify dust or noise sources contributing to the complaint; • Create a record of this inspection; and • Determine weather conditions (both current and at the time of the complaint).	SIR #2	2 (2.1) 8 (a)	2-8	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	If the information collected from the survey procedures indicates that quarry is not the source of the dust or noise complaint, the complainant shall be notified of this finding. Documentation supporting this response mechanism (inspection record and weather conditions at the time of the complaint) will be provided to the complainant upon request. The PCA quarry manager will respond to all complaints within 24 hours with a phone call to the complainant. If it is determined that the complaint is related to quarry activities or operations, the PCA quarry manager will implement the following response procedures: • Level 1 – Inspection and operational corrections: PCA quarry manager will ensure that all elements of the DMP are being followed. Control measures will be increased or operations may be curtailed, as required. • Level 2 – Review of the DMP procedures: If the Level 1 response does not adequately resolve the emission source resulting in the dust or noise complaint, the DMP will be reviewed for additional control measures. • Level 3 – Operational modifications: If the Level 2 response does not adequately resolve the source of the dust or noise complaint, the PCA quarry manager will commit to making facility or operational changes to address the source of dust or noise emissions. Such changes may include, but are not limited to relocation of equipment, or additional administration and engineering controls as appropriate.				
15. WILDLIFE					
140	PCA plans currently include sequential reclamation and re-establishment of wildlife habitat as depicted in the application.	SIR #1	4 (4.5) 241 (c)	4-81	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
141	"Consider sensitive periods for wildlife species and avoid clearing and construction activities during the following periods, where practical. Priority: • moose (Winter Range): November-April • birds (Nesting): May-June • Seek input from ASRD on timing of project construction: • fisher / marten (Natal Denning): March-April • beaver (Litter Birth): May-June • birds (Staging): April-May, August-September • birds (Moulting): August • amphibians (Breeding): June-July • amphibians (Hibernation): September-April". The recommended sensitive time period for moose in the Application is November-April (winter range). However, according to Regional Municipality of Wood Buffalo (1999), no industrial activity will be permitted in key moose areas between February 15 and April 30 in any year and according to Alberta Sustainable Resource Development (ASRD) 2010, no construction will be permitted in Key Wildlife and Biodiversity Zones between January 15 and April 30. Furthermore, no Canadian or Western toads were recorded within the LSA. This opens a potential window from October through January or February 15th for clearing activities.	SIR #1	4 (4.5) 243 (a)	4-84	The PCA lease area was recently designated by AESRD as part of a Key Wildlife and Biodiversity (KWB) Zone. PCA is currently in discussion with AESRD on operational requirements for developments in the in Key Wildlife and Biodiversity Zone. PCA proposes to minimize the environmental impact of clearing and construction activities by undertaking these activities during the winter months wherever possible. Strict application of the generalized guidelines for KWB Zones would make it difficult for PCA to undertake clearing and construction activities during summer or winter months. In light of wildlife and vegetation studies and related impact measures undertaken as part of the EIA process, PCA anticipates that an EIA approval would permit clearing and construction activities during winter months.
142	Mitigation Strategies for Wildlife Habitat Availability: • limit amount of disturbance in riparian vegetation communities, where practical; • avoid disturbance during winter season, if practical. The LSA is a key overwintering area for moose; and • maintain buffer zones between Project footprint and riparian zones associated with streams, lakes or wetlands, except where water bodies need to be crossed by a road or where waterbodies will be removed, where practical."	SIR #1	4 (4.5) 239 (a)	4-77	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
143	If available, remnant oversize rock or suitable overburden materials will be placed at random locations along or near the shoreline to form islands, promoting waterfowl nesting.	SIR #1	4 (4.2) 199 (a)	4-35	
144	In support of the Conservation and Reclamation Closure Plan, the following mitigation measures are proposed for wildlife: • Begin cleanup, re-vegetation of disturbed areas and reclamation of access roads as early as possible and ongoing as required following quarry operations. Implement habitat enhancement for wildlife. • Leave perimeter of trees at Project boundaries to act as wind break where practical. For Moose, limit amount of disturbance in riparian vegetation communities, where practical. Avoid disturbance during winter season. The LSA is a key overwintering area for moose. Maintain buffer zones between Project footprint and riparian zones associated with streams, lakes or wetlands, except where water bodies need to be crossed by a road or where waterbodies will be removed, where practical. • Barriers, such as large berms, rolled back slash or rock piles might be placed across right of way at key entrance points. Maintain vegetated corridors between habitat patches, where possible, to facilitate wildlife movement. Reduce the effect of wide clearings that act as barriers to movement, separating heavily traveled areas or roads by more than 100 m. Limit clearing of riparian vegetation to protect areas of higher wildlife use and movement corridors.	SIR #1	4 (4.2) 200 (a)	4-36	
145	PCA intends to operate in accordance with approved plans and the conditions of their authorizations and will re-establish wildlife habitat and build on existing buffers as depicted in the application.	SIR #1	4 (4.5) 241 (b)	4-80	
16. HISTORICAL/PALAEONTOLOGICAL					
146	To address the adverse Project effects on palaeontological resources, the following mitigation measures are proposed. These recommendations will be reviewed by the Royal Tyrrell Museum of Palaeontology who, in conjunction with Alberta Culture and Community Spirit, will determine what palaeontological mitigation is required for the Project. The Project is a large-scale development where ground disturbance will occur over a large area for an extended period of time. Fossils of high heritage value, such as fish and exceptionally preserved invertebrates, are likely to be discovered. A Management Plan to address these finds is recommended, including: • formulation of a Discovery Protocol to deal with finding fossils of high heritage value during mining, for example, collecting fish fossils so that they are not processed and crushed;	EIA Volume 1	A.7.15; E.15.4	49; 112	PCA will obtain clearance under the *Historical Resources Act* for the Project.

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	• a sampling program to document the faunal content of new areas/horizons exposed as mining occurs; • occasional site visits by a professional palaeontologist are recommended to evaluate the potential of newly exposed horizons and areas, sample the fauna, and examine fossils set aside by workers; and • development of an Education Program for quarry workers.				
17. C&R PLAN					
147	PCA is committed to minimizing the amount of surface disturbance that is required for Project development.	EIA Volume 1	E.6.3.4	42	
148	PCA is committed to ensure that the final C&R and Closure Plan for the Project is integrated and compatible with adjacent leaseholders.	EIA Volume 1	E.6.4.5	52	
149	Where applicable and appropriate, the reclaimed landforms will be designed using the Reclamation Working Group (RWG) Landscape Design Checklist (CEMA 2004). The following goals and principles have been incorporated in the reclamation and closure planning: • progressive reclamation will be undertaken whenever practical; • landforms will be geo-technically stable and will be integrated into the surrounding natural landforms; • drainage systems will be designed to minimize erosion rates and sediment loading; • end pit lakes will be ecologically sustainable; • forest capability, including commercial forestry potential, will be equivalent to pre-development conditions; • reclaimed areas will be developed into self-sustaining ecosystems with an acceptable degree of biodiversity; • reclaimed areas will reduce hazard potential to protect on-site public health and safety; • reclamation certificates will be applied for and obtained to allow transfer of the lands back to the Crown; • direct placement of reclamation materials will be undertaken, whenever practical, to maximize	EIA Volume 1	E.6.1.2	33	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	potential viability of native seed banks and propagules; • natural invasion and succession of native vegetation will be encouraged in ecologically receptive areas; and • local native seed sources will be used wherever practical to maintain genetic integrity of re-established plant communities. The following PCA corporate policies will ensure that during the on-going reclamation and closure process: • end land use objectives are developed in consultation with stakeholders, building on the existing consultation process; • there will be an on-going consultation process with adjacent developers to ensure continuity of landforms and drainage systems across lease boundaries; and • adaptive management of the C&R and Closure plan will be pursued through the incorporation of results of site specific research, regional research by Canadian Oil Sands Network for Research and Development (CONRAD) and regional management systems developed by the Cumulative Environmental Management Association (CEMA).				
150	Some of the principles that PCA will consider under the Reclamation and Closure Plan include: • direct placement of mineral soil which will introduce biodiversity to the reclaimed landscape and increase the re-establishment of native vegetation; • reforestation to a variety of species; • establishment of grassy areas around some water bodies; and • establishment of wetlands and water bodies.	EIA Volume 1	E.6.1.7	35	
151	PCA will make every reasonable effort to incorporate adaptive management techniques as routine components in all of its environmental management activities. PCA will use the experience gained during the development of the quarry and other successes observed in the oil sands, mining and quarry industries over the next 40 years, to manage and implement a more effective reclamation program.	EIA Volume 1	E.6.2.2	38	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
152	PCA will reference and use the following guidelines and resource plans where applicable and appropriate to assist in developing the closure and detailed reclamation plan for the Project: • Guidelines for Preparation of Applications and Reports for Coal and Oil Sands Operations ALC&R 1991; • A User Guide to Pit and Quarry Reclamation in Alberta RRTAC 1992; • Environmental Protection Guidelines for Pipelines (C&R/IL/94-5) AENV 1994; • Environmental Protection Guidelines for Electric Transmission Lines (C&R/IL/95-2) AENV 1995; • Regional Sustainable Development Strategy for the Athabasca Oil Sands Area AENV 1999a; • Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan AENV 1996; • Guideline for Monitoring and Management of Soil Contamination Under EPEA Approvals AENV 1996; • Land Capability Classification for Forest Ecosystems in the Oil Sands Region Leskiw 1998; • Guideline for Reclamation to Forest Vegetation in the Athabasca Oil Sands Region OSVRC 1998; • Guideline for Wetlands Establishment on Reclaimed Oil Sands Leases OSWWG 2000; • Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body AENV 2000a; • Code of Practice for Watercourse Crossings AENV 2000b; • Environmental Protection Guideline for Roadways AENV 2000c; • Sites Reclaimed Using Natural Recovery Methods, Guide on Site Assessment AENV 2003; • Code of Practice for Pits AENV 2004; • A Guide to the Code of Practice for Pits AENV 2004; and • Landscape Design Checklist CEMA 2004.	EIA Volume 1	E.6.3	40	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
18.	**SOIL SALVAGE**				
153	PCA's experience with this site is that moisture conditions are typically wet and that this condition is constant except under frozen conditions. Suitable equipment is utilized to operate in these conditions to ensure proper separation of soils.	SIR #1	6 (6.1) 286 (a)	6-7	
154	Soil salvage operations will be completed by typical earth moving equipment. Motor scrapers are preferred for increased soil salvage depths and for larger surface areas requiring soil salvage. Bulldozers will be utilized where necessary in areas where thinner topsoil averages were recorded (*i.e.*, map units with an estimated thickness 15 cm or less; includes the surface litter and topsoil material). For areas with limited scraper access, bulldozers and backhoes will collect the soil into windrows and piles. The collected soils will be loaded into articulated haul trucks and will be either direct placed on re-contoured areas or placed into stockpiles.	EIA Volume 1; SIR #1	E.6.3.5; 4 (4.2) 194 (a)	42; 4-32	
155	PCA intends to handle the soil resource and overburden material in a manner that is acceptable based on regulatory requirements.	SIR #1	4 (4.3) 223 (a)	4-62	
156	Salvage and handling will be avoided during wet weather conditions to reduce the chances of erosion, compaction, and admixing.	EIA Volume 1; SIR #1	E.7.2; 4 (4.3) 227 (c);	59; 4-65	
157	Throughout the life of the Project, topsoil and subsoil materials disturbed within the PDA as a result of the mining process will be salvaged and direct replacement techniques utilized for subsequent replacement where possible. The first 10 years of mining is the exception to this practice. Topsoil and suitable subsoil material from the initial stages of the mining process will be stockpiled and eventually utilized in the reclamation process once the progressive mining process advances and direct replacement of the soil material takes place.	SIR #1	4 (4.3) 227 (a)	4-65	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
158	Sufficient soil material will be salvaged to meet the requirements of the reclamation plan with some additional volume for contingency. Excess soil material will not be salvaged and will be disposed of with the overburden materials.	EIA Volume 1	E.6.3.5	43	
159	Soil salvage and replacement will follow guidelines provided in the Land Capability Classification for Forest Eco-systems in the Oils Sands Region, Working Manual (Leskiw 1998) and the Landscape Design Checklist (CEMA 2004).	EIA Volume 1	E.6.4.2	49	
160	Topsoil and upper subsoil will be salvaged from the base of any constructed overburden stockpiles and from the base of the constructed M3-NSL (non-specification limestone) stockpile site. Only stockpile sites for topsoil and upper subsoil materials will be direct placed on undisturbed topsoil or surface soil.	SIR #1	4 (4.2) 179 (a)	4-20	
161	PCA intends to salvage all available topsoil material from all areas to be disturbed for replacement during reclamation including areas to be mined, process areas, storage areas and access road. The amount of topsoil material replaced is expected to be similar to pre-disturbance conditions.	SIR #1; SIR #2	4 (4.2) 188 (d); 4 (4.2) 184 (a); 4 (4.3) 211 (a); 6 (6.1) 72 (a)	4-28; 4-24; 4-44; 6-4	
162	All topsoil material will be salvaged in a single lift along with the LFH horizon. The topsoil material will be stockpiled along the west edge of the pit. Organic soils will be salvaged and also stockpiled along the west edge of the pit with the mineral topsoil. The underlying subsoil (upper and lower) will not be salvaged as part of the topsoil lift. Subsoil materials will be removed as overburden. Sufficient subsoil material will be stockpiled for use at reclamation as suitable overburden material. PCA will make reasonable effort to salvage topsoil material separately from subsoil material, depending on layer thickness	SIR #1; EIA Volume 1	4 (4.3) 221 (a); 4 (4.3) 211 (a); 4 (4.3) 226 (a); 4 (4.2) 194 (c); 6 (6.1) 296 (b); B.3.4	4-58; 4-44; 4-64; 4-33; 6-15; 10	
163	In some upland areas, there may be isolated locations where a better defined topsoil and upper subsoil layer is present, greater than 20 cm thickness. Attempts will be made to salvage this topsoil and upper subsoil layer and identify stockpile for future reclamation.	SIR #1	6 (6.1) 286 (c)	6-7	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
164	Surface organic material < 40 cm thick will be salvaged with the topsoil lift. Organic layers that are > 40 cm (deep organic deposits) will be salvaged and stored for use in reclamation.	SIR #1	4 (4.2) 184 (b)	4-24	
165	PCA plans to salvage and store the peat material from the MUS1m-G/O1 with the other topsoil lift materials.	SIR #1	4 (4.3) 211 (c)	4-44	
166	PCA does not intend to dispose of topsoil material; all topsoil will be used as reclamation material. Sufficient subsoil material will be salvaged and stockpiled to ensure a minimum average of 20 cm of good to fair subsoil is replaced at reclamation. PCA will salvage and replace sufficient suitable subsoil material (both upper and lower together) to ensure 0.9 m of suitable material underlies the replaced topsoil material to provide land capability equivalent to pre-disturbance conditions.	SIR #1	4 (4.3) 226 (b); 4 (4.3) 211 (a); 4 (4.2) 188 (d)	4-64; 4-44; 4-28	
167	PCA intends to salvage sufficient subsoil material to ensure there is suitable material to allow for a minimum 50 cm replaced lift of upland surface and subsoil over replaced suitable overburden material. There are excess volumes of subsoil that will allow up to 120 cm of upland surface and subsoil to be placed over suitable overburden. Subsoil – a stratum that includes one or more of the following: • that portion of the B horizon left after salvage of upland surface soil; • the C horizon of an upland soil; and • the C horizon of an organic soil (*e.g.*, Terric layer).	SIR #2	6 (6.1) 72 (a)	6-4	
168	PCA will ensure that sufficient suitable overburden material is available at reclamation to provide adequate cover of suitable overburden underlying the replaced topsoil lift as required by regulatory requirements.	SIR #1	4 (4.3) 228 (a); 4 (4.2) 184 (c)	4-67; 4-24	
169	30 cm of Transitional soils is to be salvaged for use in reclamation of transitional areas along lake shores and wetlands.	SIR #2	6 (6.1) 72 (b & a)	6-4	
170	PCA will not purposely mix topsoil and subsoil material during salvage activities, however, due to the sub-meter variability in sol layers, some inadvertent over or under salvage of the topsoil layer will occur.	SIR #1	4 (4.2) 194 (b); 6 (6.1) 296 (b); 6 (6.1) 301 (a)	4-32; 6-15; 6-18	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
171	*These commitments are from the sand and gravel pit application.* • Topsoil will be salvaged from all areas to be disturbed including areas to be mined, process areas, storage areas and access roads. All topsoil material will be salvaged in a single lift along with the LFH horizon. The topsoil material will be stockpiled along the west edge of the pit. Organic soils will be salvaged and also stockpiled along the west edge of the pit with the mineral topsoil. • Mineral soils will be stripped and stockpiled during non-frozen soil conditions to prevent admixing of topsoil with subsoil. • Stripping gleysolic and organic soils is generally best completed in frozen conditions • The pit will be reclaimed progressively. • Soil materials will remain in stockpiles until mined areas are depleted and ready to receive it. • Stripping and stockpiling activity will be monitored by an environmental specialist to ensure stripping does not adversely affect soil quality. • Decommissioning will commence at the end of the Project. A plan will be developed that will consider such aspects as the removal of infrastructure, environmental site assessments and remediation if required. • Once subsoil manipulations are complete, topsoil will be replaced evenly throughout the Project site to establish depths and characteristics appropriate to facilitate revegetation. • Surface manipulation will be required once the topsoil has been replaced to break up, level and firm the soil. • Seed will be double-sampled for weed species prior to purchase to prevent introduction of non-native or invasive vegetation. • The site may be seeded with a cover crop to protect the soil from erosion and prevent the emergence of weeds. • Revegetation will be staged with reclamation activities to ensure areas are not left void of vegetation following reclamation.	SIR #1	4 (4.2) 221 (a)	4-58	
172	All topsoil material used to cover and aid in vegetation establishment on soil berms would be salvaged separately during initial handling to facilitate final placement.	SIR #1	4 (4.3) 227 (c)	4-66	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
173	Mitigative measures include (but not limited to): • prescribed salvage information for topsoil and subsoil material, will be followed to ensure placement of suitable rooting medium during soil placement, thereby allowing for equivalent capability to be achieved; • terrain will be re-created as per desired end land uses; • de-compaction of the replaced soil profiles will be undertaken to reduce potential compaction as a result of soil replacement; • in mined areas known to contain significant shale waste rock (sodic overburden), attempts to cap shale waste rock overburden with surficial overburden materials (heterogeneous mixture of sands, silt and clay), or placement of additional subsoil material, will minimize the potential of sodic material comprising a portion of the rooting zone in the soil profile; and • all reclaimed lands will be vegetated after soil replacement to minimize soil loss via erosion (wind and water).	EIA Volume 1	E.5.4	25	
174	Mineral soils will be stripped and stockpiled during non-frozen soil conditions to prevent admixing of topsoil with subsoil. Stripping gleysolic and organic soils is generally best completed in frozen conditions. Exceptions may be wet depressional areas that can only be accessed during frozen ground conditions.	SIR #1; EIA Volume 1	4 (4.3) 221 (a); E.7.2	4-58; 59	
175	In localized instances, prior to earthworks activities, portions of the proposed disturbance area will be dewatered prior to soil salvage and handling. All other soil material salvaged for storage will be stockpiled and it is expected that any saturated material will drain and dry.	SIR #1	4 (4.3) 211 (d)	4-45	
176	Persistence of soil issues will be determined based on findings of monitoring activities during soils handling, stockpiling, and placement at reclamation. If an issue arises during monitoring it will be addressed immediately. If it is determined that a particular issue, activity, or procedure has (or may have) the potential to re-occur PCA will evaluate the situation immediately and implement proactive modifications to the soils handling and reclamation program to prevent a reoccurrence.	SIR #1	4 (4.3) 225 (a)	4-63	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
19.	**QUALIFIED SOILS INDIVIDUAL**				
177	Stripping and stockpiling activity will be monitored by an environmental specialist to ensure stripping does not adversely affect soil quality. The soil thickness map provided in Volume 2, CR#5, Figure 6a and Figure 6b) of the Application will be used as a tool to assist in appropriate topsoil salvage.	SIR #1	4 (4.3) 221 (a); 4 (4.2) 194 (b); 4 (4.3) 227 (c)	4-59; 4-32; 4-65	
178	PCA refers to a qualified individual as a person who is a professional both recognized and holds good standing with the Alberta Institute of Professional Agrologists (P. Ag., Professional Agrologist) or an experienced Construction Supervisor, familiar with soil salvage procedures.	SIR #1	4 (4.3) 224 (a)	4-63	
20.	**STOCKPILES / STORAGE AREAS**				
179	Soil materials will be placed in designated stockpile areas for future reclamation use. Identified overburden materials will also be salvaged and stockpiled in a similar manner.	EIA Volume 1	B.3.4	10	
180	Reclamation Material Stockpiles (RMS) will be constructed to store the reclamation materials for later use. The RMS will be constructed with stable foundations to ensure easy retrieval and will be vegetated to minimize the potential for erosion.	EIA Volume 1	E.6.3.5	43	
181	All topsoil and suitable subsoil material is to be stockpiled, utilizing acceptable stockpile dimensions, and vegetated in an appropriate manner to minimize the risk of soil loss via wind or water erosion	EIA Volume 1	E.7.2	59	
182	PCA intends to follow standard practices of stockpiling topsoil materials on topsoil and stockpiling upper subsoil materials on subsoil.	SIR #1	4 (4.2) 179 (b)	4-20	
183	Subsoil material salvaged for replacement will be stockpiled separately from topsoil material and overburden materials.	SIR #1	4 (4.3) 226 (c)	4-64	
184	The topsoil will be stored in areas accessible for reclamation and detached from any salvaged subsoil materials.	SIR #1 EIA	4 (4.3) 227 (c) E.7.2	4-65 59	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
		Volume 1			
185	All topsoil and suitable subsoil material to be stockpiled will be placed in areas that minimize exposure to the effects of wind or water and will be vegetated in a timely manner to minimize the risk of soil loss.	SIR #1	4 (4.3) 227 (c	4-65	
186	All stockpiles/berms will be constructed with slopes less than or equal to 3V:1H and constructed with ridges perpendicular to the main slope gradient.	SIR #1	4 (4.3) 227 (c)	4-66	
187	Conserved soil and overburden materials will be placed in designated stockpile areas outside of active quarry working areas for future reclamation use. The stockpile surface will be seeded with a suitable grass and fertilizer mixture to stabilize and protect the stockpile surface and to minimize erosion. Depending on stockpile location and elevation within the Athabasca River floodplain, further erosion protection measures will be assessed by PCA, such as rip-rap or armour placement along the stockpile base.	SIR #1	3 (3.3) 104 (a); 6 (6.1) 291 (a)	3-63; 6-12	
188	Topsoil stockpiles/berms will be seeded immediately after placement with a tackifier containing a quick establishing cover crop.	SIR #1	4 (4.3) 227 (c	4-66	
189	Long term overburden stockpiles may have thin cover of soil materials to help support revegetation along with seeding to minimize erosion.	SIR #1	6 (6.1) 291 (a)	6-12	
190	*This commitment deals with elevation of stockpiles and protection during floods and/or ice jams*. The pad areas for most of the stockpile sites required for reclamation materials would be constructed at 342 m or higher surface elevations. Reclamation material stockpiles would be contoured with complete vegetation cover and rip rap or armour rock placed along the stockpile pad base.	SR #2	3 (3.3) 28 (a)	3-16	
191	PCA plans to: • stabilize reclamation materials stockpiles to withstand inundation. • provide flow paths through or around stockpiles so that there are no berm effects from reclamation material stockpiles which could breach during a flood.	SIR #1	4 (4.1) 153 (a); 4 (4.2) 174 (a)	4-2 4-15	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
21.	**END LAND USE**				
192	PCA will work towards a full adaptive management approach that involves establishing end land use objectives according to pre-development land use capability, site-specific conditions, improved practices based on research and monitoring results, and stakeholder input.	EIA Volume 1	E.6.2.2	38	
193	PCA will reclaim the area to be compatible with the end land use as determined in consultation with the public, first nations, municipality and provincial authorities.	EIA Volume 1	A.4.3; E.4.3.1	15; 19	
194	PCA plans to return the land to capability that would support the many end use options presented. At this time, PCA understands that there is a desire to achieve a more natural end land use on the north portion of the site and to achieve a recreational end land use on the south portion of the site. Ultimately, ASRD land management requirements and RMWB land development guidelines will confirm and approve final end land use.	SIR #1	4 (4.2) 171 (a)	4-14	Final land use is still under discussion with the RMWB and other stakeholders.
195	Design of the closure landforms will, where appropriate and suitable, employ the Landscape Design Checklist (CEMA 2004);	EIA Volume 1	E.7.2	57-59	
196	The final plan will have forested hills of overburden; a mosaic of dry upland forests and swamps; and marshes, small ponds and wetland areas along the shorelines of the end-pit lakes.	EIA Volume 1	E.6.3.7	45	
22.	**RECLAMATION**				
197	PCA will utilize quarry closure techniques that will blend the quarry into the natural landscape. This will include incorporating the engineered slopes into the natural topography and establishing a variety of vegetation types.	EIA Volume 1	B.9.4	47	
198	Attempts will be made to incorporate natural floodplain terrace topography into post-mining landform design.	EIA Volume 1	E.7.2	57-59	
199	Reclamation will take into account natural landform variability and will mimic natural soil conditions and create a micro-hummocky surface that enhances moisture by using rough mounded coversoil replacement techniques to unevenly spread coversoil on the recontoured surfaces.	EIA Volume 1	E.7.2	57-59	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
200	Direct placement of soil materials will be undertaken wherever possible. Over 60% of the reclamation will involve direct coversoil placement.	EIA Volume 1	E.6.3.7; E.6.4.3; E.7.2	45; 50; 59	
201	All direct replacement locations will be seeded immediately upon completion of soil placement using a quick establishing cover crop.	SIR #1	4 (4.3) 227 (c)	4-66	
202	PCA will ensure that proper operational procedures are in place to allow for equivalent reclamation capabilities.	EIA Volume 1	E.6.2.3	40	
203	PCA intends to cover unsuitable overburden and M3 NSL layer with a minimum 130 cm of material consisting of 30 cm upland soils over 1 m of subsoil and suitable overburden. Definition: Suitable Overburden – overburden with a pH less than or equal to 8.0, and electrical conductivity (EC) of less than or equal to 5.0 dS/m, and a sodium adsorption ratio 9 (SAR) of less than or equal to 8 (AEW 2011) Unsuitable overburden – values for SAR, EC and pH that exceed those listed in suitable overburden	SIR #2	6 (6.1) 72 (a); 6 (6.1) 76 (b)	6-4; 6-6	
204	PCA plans to place a minimum of 1.0 m of subsoil and suitable material is placed over unsuitable parent materials prior to placement of 30 cm of upland surface soil material.	SIR #2	4 (4.3) 58 (c)	4-12	
205	PCA will replace a minimum of 30 cm of upland surface soil over subsoil materials.	SIR #2	6 (6.1) 72 (a); 6 (6.1) 76 (a)	6-4; 6-6	
206	The 1.0 m of cover material will consist of a minimum of 20 cm of subsoil over suitable overburden. The 1.0 m cover of overburden material will be replaced in single layer, comprised of multiple lifts of subsoil and overburden, dependent on equipment passes and moisture content.	SIR #2	6 (6.1) 73 (a)	6-5	
207	Priority will be given to capping unsuitable material with 1.0 m of subsoil and suitable overburden materials. A minimum cover of 50 cm over suitable overburden is proposed, however, there will be opportunities to increase the cover due to subsoil material availability.	SIR #2 SIR #1	6 (6.1) 73 (c); 4 (4.2) 186 (a)	6-5; 4-25	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
208	PCA intends to cover saline/sodic materials with minimum 1 m of subsoil and suitable overburden materials.	SIR #2	4 (4.2) 51 (a)	4-8	
209	Parent material that is suitable will be covered with a minimum 30 cm of upland soils over a 20 – 70 cm layer of subsoil.	SIR #2	6 (6.1) 73 (b)	6-5	
210	An average combined depth of 50 cm of coversoil and suitable subsoil must be placed on all reclaimed areas.	SIR #1	4 (4.2) 186 (a)	4-25	
211	After year 10 of quarry operations, the expectation is that M3-NSL would be directly placed as backfill in the depleted quarry pits of Mine Block 3D. All M3 NSL material will be capped with a minimum 1 m cover of subsoil and suitable overburden.	SIR #2	4 (4.3) 59 (a)	4-13	
212	It is intended to place minimum 30 cm of Transitional soils for reclamation of area along lakes and wetlands and 30 cm of upland surface soil on upland areas on top of subsoil and overburden as described in SIR 72 a.	SIR #2	6 (6.1) 72 (b & a)	6-4	
213	All coversoil (topsoil material) and subsoil material salvaged shall be replaced in reclamation.	SIR #1	4 (4.2) 186 (a)	4-25	
214	Overburden materials will be used for additional cover.	SIR #1	6 (6.1) 295 (a)	6-14	
215	Some of the overburden material will be used for landscaping upland locations, such as the M3-NSL storage area and the upland areas to the west and south along some of the end-pit lake shorelines.	SIR #1	4 (4.2) 172 (a)	4-14	
216	PCA will strive to minimize the amount of sodic material placed near the surface of the backfilled and re-contoured landscape.	SIR #1	4 (4.2) 198 (b)	4-35	
217	The M3-NSL stockpiles will require a cap of suitable overburden materials before soil placement.	SIR #1	6 (6.1) 297 (a)	6-15	
218	PCA will determine the suitability of the replaced overburden once backfilling of a depleted pit has been undertaken through analysis of select sampled taken from the surface of the re-contoured pit. Areas that have unsuitable overburden material near surface will be addressed through addition of suitable overburden or subsoil prior to placement of topsoil materials.	SIR #1	4 (4.2) 195 (b)	4-33	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
219	Through sampling and data collection of MIII materials, PCA intends to identify various material characteristics that will allow differentiation of the potentially unsuitable MIII material from the suitable MIII material; this will allow for appropriate handling and placement of the unsuitable MIII materials during reclamation.	SIR #1	4 (4.3) 217 (a)	4-50	
220	Shale waste rock that is deemed unsuitable for use, as a reclamation material will be placed as reject material in the bottom of mined out pits. This material will be not placed near surface and PCA will strive to keep this material from comprising the top 1.0 m of overburden capping material.	SIR #1	4 (4.3) 217 (b)	4-50	
221	The external storage areas will be designed and built to establish landforms that meet the overall reclamation goals of the Project. The slopes of the M3-NSL external storage areas will be progressively reclaimed as the storage area is developed. Slopes will be contoured at variable angles ranging from 3:1 to a 6:1 gradient. Soil will be spread on the recontoured slopes and subsequently revegetated.	EIA Volume 1	E.6.4.5.1	52	
222	PCA does not expect hardpan to develop in the reclaimed profile. If encountered, PCA would consider mitigation measures that may include para-tilling or multi-shank deep ripping, depending on what depth hardpan is encountered. Final solution would be removal of hardpan layer and replacement with suitable soil materials.	SIR #2	4 (4.3) 63 (b)	4-15	
223	Where required, conditioning of the replaced soil profiles will be completed to reduce potential compaction as a result of soil handling during direct replacement activities.	SIR #1	4 (4.3) 227 (c)	4-66	
224	Drainages for the identified unnamed watercourses will be re-established during interim and final reclamation of the quarry workings after quarry mining progresses to the next mine block (*e.g.,* final reclamation in Mine Block 3 when quarry mining operations are located in Mine Block 2 further south). PCA aquatics resources assessment has identified Pond No. 1 and Parsons Creek as important resources for fish or fish habitat and will not be disturbed. As depicted in the submitted quarry reclamation plan, reconstructed watercourses and surface drainage will be established and integrated with wetland areas and end-pit lake existing channels.	SIR #2	4 (4.1) 42 (d)	4-3	
225	Various species mix, reclamation techniques, and adaptive management approaches that are successful under a wide range of climatic conditions will be used, depending upon climate conditions	EIA Volume 1	B.8.3.3	45	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	at that time.				
226	PCA's reclamation plan intends to sequentially develop and reclaim this site with consideration for wildlife habitat at the north end of the site.	SIR #1	4 (4.5) 241 (a)	4-80	
227	Re-constructed landforms will be geo-technically stable and will be integrated into the surrounding natural landforms.	SIR #1	6 (6.1) 300 (b)i	6-17	
228	Various traditional land uses were identified that PCA will incorporate into the development of the Closure Plan. Some of the principles that PCA will incorporate into the Reclamation and Closure Plan include: • direct placement of mineral soil which will introduce biodiversity to the reclaimed landscape and increase the re-establishment of native vegetation; • reforestation to a variety of species; • establishment of grassy areas around some water bodies; and • establishment of wetlands and water bodies.	EIA Volume 1	A.6.13	36	
229	All quarry roads, utilities and powerlines constructed for Project development will be reclaimed by PCA to equivalent capability during the closure of the mine. Access roads will have all of the culverts removed and will be recontoured to integrate with the surrounding landscape.	EIA Volume 1	E.6.4.5.4	53	
230	With final reclamation and removal of the quarry infrastructure, the equipment and vehicle crossing will be removed and any disturbances of the slopes and banks resulting from the crossing installation will be reclaimed, ensuring the integrity of Parsons Creek drainage channel.	EIA Volume 1	E.6.4.5.3	53	.
23. WOODY DEBRIS					
231	All merchantable timber that is encountered during the clearing operations will be salvaged and transported to a designated Al-Pac facility.	EIA Volume 1	E.6.3.4	42	
232	Woody debris would not be mixed (after chipping) with topsoil or cover soil materials. If conventional disposal methods (*i.e.,* controlled burning of woody debris piles) is not permitted, woody debris would be spread over top of topsoil and cover soil in a thin cover not more than 5 cm in	SIR #2	4 (4.2) 46 (a)	4-6	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	depth.				
233	Larger-size slash materials, broken or fragmented, would be placed on the surface for use as erosion control, depending on slope and aspect, or providing microsites that enhance wildlife habitat.	SIR #1	4 (4.2) 176 (b, c, e)	4-17	
24. VEGETATION					
234	All reclaimed lands will be vegetated as per end land use objectives upon completion of soil placement to minimize soil loss via erosion (wind and water).	SIR #1	4 (4.3) 227 (c)	4-66	
235	Before revegetation work is started, PCA and its vegetation specialists would consult further with AESRD representatives to determine suitable species planting and seeding to promote biodiversity and to minimize or eliminate monoculture features.	SIR #2	4 (4.2) 54 (a)	4-10	
236	PCA would purchase or collect seeds to be used for intended reclamation purposes.	SIR #1	4 (4.2) 190 (b)	4-30	
237	The Project will use planting prescriptions that consider variations in micro-climate, drainage, reclamation material, depth and composition to start the process of reaching a target ecosite.	EIA Volume 1	E.6.3.7	45	
238	Pre-development vegetation communities will be selected for use as target ecosites for final reclamation.	EIA Volume 1	E.6.3.7	45	
239	A vegetation cover will be established using the seeding prescriptions as follows: • natural establishment on areas where soil is direct placed and slopes are <5%; and • nurse crop approved by AESRD on areas where soil is direct placed and slopes are >5%;	EIA Volume 1	E.6.3.7	45	
240	The primary method for the application of seed will be aerial broadcasting. In small areas a broadcaster mounted on an ATV may be used. In smaller areas with poor access a hydro-seeder may be used.	EIA Volume 1	E.6.3.7	46	
241	The shoreline will be graded to allow periodic flooding in the upland, and will be planted with balsam poplar and shrubs adapted to rich wet soil conditions.	EIA Volume 1	E.6.3.7	46	
242	While there will be the ongoing revegetation during the progressive reclamation program the majority	EIA	E.6.3.7	46	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	of the revegetation will occur in later years of the Project.	Volume 1			
243	Established revegetation procedures, as recommended in the "Guidelines for Reclamation or Terrestrial Vegetation in the Alberta Oils Sands Region" (OSVRC 1998) will be used for the revegetation program at the Project.	EIA Volume 1	E.6.4.3	49	
244	Where possible, patches of undisturbed natural vegetation will be retained within the disturbance footprint.	EIA Volume 1	E.6.4.3	50	
245	Measures that will be applied to avoid or lessen potential Project impacts are listed and discussed below. • Rare plants subject to surface disturbance will be transplanted to similar site conditions within the Project area. Seeds may be harvested from affected species and sown in appropriate site conditions. Specific relocation plans sensitive to the life history and rarity of the species will be developed to guide transplanting measures. • Soil and understory vegetative materials from rare plant community locations subject to surface disturbance will be removed and stored. Ecologically optimum sites for relocation of these materials will be sought either in the Project area or off-site. A specific plant community relocation plan will be designed by a professional botanist. • Loss of original native land cover from surface disturbance will be partially reduced by progressive reclamation using primarily existing topsoil salvage and direct topsoil placement. • Only certified native seed will be used for reclamation purposes. Seed sources will be monitored for non-native/invasive species. • Construction equipment will be cleaned (particularly the tires and under carriage) prior to entering the site to reduce spread of weeds. • Stockpiled soils will be regularly monitored for occurrence of weedy species and controlled using mechanical and chemical methods. • Weed control methods will include mowing prior to seed set and hand-picking and bagging. Chemical methods will be conducted only by a licensed professional and necessary regulatory approvals will be sought. Weeds will be controlled in accordance with the *Weed Control Act.*	EIA Volume 1	E.7.2; E.6.3.7.2	57-59; 47	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	• A formal weed control program will be developed or reviewed by a certified professional agrologist/biologist and a presentation to construction staff supervisors on the appropriate use of the control system will be conducted. • Natural invasion and succession of native vegetation will be encouraged in ecologically receptive areas; and • Direct placement of reclamation materials will be undertaken, whenever practical, to maximize potential viability of native seed banks and propagules.				
246	PCA summarizes the mitigation measures that are recommended to preserve rare plants within the disturbance footprint as follows: • Rare plants subject to surface disturbance will be transplanted to similar site conditions within the Project area. • Seeds may be harvested from affected species and sown in appropriate site conditions. Specific relocation plans sensitive to the life history and rarity of the species will be developed to guide transplanting measures. • Soil and understory vegetative materials from rare plant community locations subject to surface disturbance will be removed and stored. Ecologically optimum sites for relocation of these materials will be sought either in the Project area or off-site. • Specific relocation plans sensitive to the life history and rarity of the species will be developed to guide transplanting measures. A specific rare plant and rare plant community relocation plan will be designed by a professional botanist. As appropriate, rare plants will be collected or transplanted prior to complete removal of vegetation.	SIR #1	4 (4.4) 231 (a); 6 (6.1) 300 (b) i to iv	4-69; 6-16; 6-17	
25. EROSION & SEDIMENT CONTROL					
247	Earthworks contractors will be required to implement a sediment control plan. Sediment control methods will be utilized at the stream crossings according to methods such as those described in Alberta Infrastructure and Transportation (1999, currently under revision) and will include, as required: the use of cutoff trenches, silt fences, flow barriers, temporary and/or permanent sediment control ponds and/or traps, and ditches to minimize or eliminate sediment transport from exposed soil areas into receiving waterbodies and watercourses;	EIA Volume 1; SIR #1	E.11.4.2; A.7.11; 7 (334)	88; 45; 7-7	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	Upon completion of construction, disturbed areas will be revegetated to stabilize soils and minimize erosion (to be done as soon as practicable after construction is complete). Interim vegetative cover will be established where necessary or appropriate to bridge the interval between disturbance and reclamation. Additional erosion and sediment controls (*i.e*. silt fences, fiber matting *etc.*) would be deployed as appropriate in these disturbed areas where erosion or sedimentation is observed.				
248	In order to reduce the negative impact of erosion the landscape will be shaped to provide dips and swales that will reduce slope steepness and slope length thereby reducing surface flow rates and distance. Drainage courses on the reclaimed landscape will shift over time as erosion occurs. The drainage courses will be designed to accommodate these changes through the use of erosion control systems such as the use of armouring with boulders and, in critical cases the establishment of vegetation.	EIA Volume 1	E.6.4.4.3	51	
249	Discharge of quarry water, after suitable treatment, from quarry retention ponds or storm water ponds will be controlled and buffered by energy dissipaters to reduce potential erosion and sediment from water flows into undisturbed drainages.	SIR #1	4 (4.5) 236 (d)	4-73	
250	*This commitment addresses erosion control measures.* Use of energy dissipaters (*i.e.* rip rap or armour rock) placed at discharge end of collapsible hoses. Regular inspection to confirm energy dissipaters are working as designed. Deploy other erosion and sediment control countermeasures as required based on inspections.	SIR #1	6 (6.1) 288 (b)	6-10	
251	Erosion and sediment control measures will be deployed for reclamation materials stockpile sites.	SIR #1; EIA Volume 1	6 (6.1) 299 (b); B.5.2.1.3	6-16; 20	
252	Subsoil material placed into long-term stockpiles or utilized for berms will either be stabilized with erosion prevention materials (*e.g*., coconut mats) or overlain by a topsoil layer that is to be seeded.	SIR #1	4 (4.3) 227 (c)	4-66	
253	All salvaged materials will be stabilized, typically with a seed and fertilizer mixture, to minimize erosion and sedimentation from surface runoff. Additional erosion and sediment controls (i.e. silt fences, geotextiles, fiber matting, etc.) would be deployed as appropriate where sediment and erosion or sedimentation is observed.	EIA Volume 1	B.5.2.1.3	20-24	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
26.	**MONITORING**				
254	Quarry haul roads will be inspected by PCA on daily basis for spilled rock fragments and appropriate moisture content for dust control. PCA quarry manager will inspect haul road conditions. Follow up inspections will occur on an hourly basis if quarry activities and operations continue during inclement weather.	SIR #1	5 (280) b	5-43	
255	Actively monitor open water and ice jam flood forecasts from Alberta Environment, and evacuate equipment and vehicles from the pits and other areas at flood risk prior to the onset of a forecast flood event.	SIR #1	4 (4.1) 153 (a); 4 (4.2) 174 (a)	4-2 4-15	
256	Monitoring and sampling programs will be required to ensure suitable water quality before any offsite discharge takes place to the receiving watershed.	EIA Volume 1	B.5.2.1.2	19	
257	If continuous diversion is required during quarry operations, flow meters and daily readings would be required. If diversion occurs on an intermittent basis, the discharge would be logged on a weekly basis and flow determined by outlet design and release rates.	SIR #2	3 (3.3) 30 (a)	3-18	
258	Given proximity of Pond No. 1 to quarry opening and operations in Mine Block 3D, this location would be considered as one of the monitoring locations around the active quarry areas.	SIR #2	3 (3.3) 31 (a)	3-18	
259	PCA will collect water samples from the sumps and other points within the quarry. PCA may use electrical conductivity for field screening and will also submit samples for laboratory analysis.	SIR #1	6 (6.2) 312 (a)	6-30	
260	PCA will monitor and sample collected quarry water. Any water in the quarry sumps or retention ponds which is released to the clean surface water diversion system will be tested by PCA and will meet regulatory requirements before discharge.	SIR #2; SIR #1	3 (3.3) 29 (a); 6 (6.1) 283 (c)	3-17; 6-4	
261	PCA is aware that they will be required to monitor discharged water volumes resulting from both surface runoff and groundwater diversion activities resulting from quarry mining operations. Water being released offsite to the Athabasca River, riparian areas or surrounding watershed from the	SIR #2	3 (3.3) 30 (a)	3-18	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	constructed settling ponds would be monitored for: • volume discharged; • discharge rates; and • discharge timing. PCA will monitor discharge to confirm that no adverse effects result to the receiving watershed.				
262	Environmental monitoring for surface water quality will be conducted by PCA at three stages of the Project: construction, active mining, and reclamation. Monitoring will consist of: • water quality monitoring (to ensure environmental quality guidelines are being met); • compliance with regulatory approvals; and • fish inventories (to ensure that Project effects of aquatic habitats are insignificant).	SIR #2	3 (3.3) 29 (a)	3-17	
263	• Monitoring locations for surface water quality would be selected by PCA relative to and in proximity of active quarry working areas. • Surface water quality monitoring would be conducted to ensure environmental quality guidelines are being met and compliance requirements for all regulatory approvals. • Monitoring and sampling activities would be conducted primarily around any retention ponds constructed for release of treated quarry water to the surrounding watershed. • Constructed unnamed channel diversions around quarry working areas would also be monitored to ensure appropriate erosion and sediment control measures function as designed	SIR #1	3 (3.3) 108 (a)	3-66	

264	PCA will conduct water quality testing in accordance with recommendations provided under the Aquatic Resources Impact Assessment (Volume 3, CR #11) during operation and closure of the quarry to confirm water quality has not been adversely impacted by the Project.
	Recommendations are:
	• Environmental monitoring for surface water quality will be conducted at three stages of the Project:
	  • construction;
	  • active mining,
	  • and reclamation.
	• monitoring will consist of water quality monitoring to ensure environmental quality guidelines are being met and compliance with regulatory approvals as well as fish inventories to ensure that
		EIA
		Volume 1
		SIR #1;
		SIR #2
			A.7.11;
			E.11.7;
			6 (6.1) 308 (a);
			3 (3.3) 31 (b);
			3 (3.3) 29 (a)
				47;
				93;
				6-17;
				3-19;
				3-17	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	Project effects of aquatic habitats are insignificant. • all construction activities will comply with strict Environmental Management Plans prepared as part of construction agreements that will outline acceptable methods for each of these activities. • Routine audits and associated environmental monitoring will be conducted during construction periods. • In particular, suspended sediments will be routinely monitored during construction periods for all instream construction activities (*i.e.,* watercourse crossings). • Parsons Creek is the primary watercourse in the LSA and it will be sampled on a regular basis both upstream and downstream of the Project to monitor the quality of surface aquatic resources both entering and leaving the Project site. • Surface water quality sampling will occur in more than one season in a year to document seasonal changes, • fish inventories and aquatic habitat surveys will likely be conducted once per year. • In addition to those water quality variables with regulatory guidelines, a variety of water quality variables in addition to those with regulatory guidelines will be monitored in water released to natural watercourses from the water management system. • Reclamation and closure monitoring will be conducted at annual intervals at selected reclaimed sites and in end-pit lakes to document changes in surface aquatic resources during the reclamation and closure process.				
265	PCA will conduct aquatic resources monitoring as required and specified in all Project approvals.	SIR #1	3 (3.5) 139 (a & b)	3-38 3-95	
266	Soils monitoring activities include: • assess mitigative measures (*e.g*. deep tillage to reduce compaction) to determine effectiveness of activity; • inspect landscape characteristics and features (*e.g*. identify subsidence or drainage issues); • identify potential soil erosion issues of stockpiled or recently replaced soil material; • inspect reclaimed areas for topsoil quality (*i.e*. admixing) and quantity (depths); • inspect for appropriate vegetation composition and weed densities; and • assess established vegetation for plant vigour, health, cover, density, height, and yield, as	EIA Volume 1	E.5.5	26	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	applicable.				
267	To ensure the quality of the topsoil and salvaged subsoil materials monitoring will include: • effectiveness of salvage activities in disturbance areas; • potential soil erosion issues of stockpiled or recently replaced soil material; • potential compaction issues in high traffic areas located within soil handling areas and stockpiles; and • reclaimed areas to ensure appropriate topsoil replacement depths are achieved.	SIR #1; EIA Volume 1	4 (4.3) 227 (c); E.5.4	4-66; 25	
268	Implement a routine noise, dust and vibration monitoring program through the life of the quarry	RMWB MoU	3.1	4	
269	Monitoring of soil storage locations will be completed throughout the life of the Sand and Gravel Operation. Any issues resulting in potential soil loss will be mitigated.	EIA Volume 1	E.7.2	59	
270	PCA has developed an initial dust management plan and intends to monitor particulate as part of it. PCA will develop adaptive responses as appropriate.	SIR #3; Clarification	3 (3.1) 4 (c & d); SIR 4 (b) b	3-44; 3-47; 4	
271	PCA proposes to monitor the following: • wind speed and direction continuously to support its dust management plan; and • $PM_{2.5}$ continuously using laser/optical technology to support its dust management plan.	SIR #2	2 (2.2) 11 (a)	2-12	
272	A detailed management system for monitoring biodiversity will be developed and implemented. Input from the regional management plans will be incorporated.	EIA Volume 1	E.6.3.2	41	
273	PCA monitoring efforts should focus on predictions for which confidence level is low and on mitigation measures for which success is uncertain. The following areas of uncertainty exist: • degree of success in restoring upland native plant diversity in reclaimed mine areas using directly placed and stockpiled soils;	EIA Volume 1	A.7.7; E.7.5	41; 64	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	• ability to successfully transplant rare plants and rare plant communities; • degree of success in restoring wetlands using on-site native plant materials; and • degree of success in restoring stream channels and associated riparian vegetation traversing the quarry from the west to the Athabasca River. Monitoring programs will be designed by PCA to verify mitigation success as per the above areas of uncertainty. Monitoring plans will be established for each of these areas and these will include targets for measuring success and for adapting mitigation approaches if success targets are not met.				
274	Appropriate monitoring programs will be implemented to measure reclamation success. Given the relatively small size of the Project, it is expected that any adaptive measures that are foreseeable will be easily incorporated into the Project's plans.	EIA Volume 1	B.8.3.3	45	
275	PCA intends to monitor the revegetation success of reclaimed sites. For rare plant and rare plant community relocation a specific monitoring plan will be designed by a professional botanist. Monitoring programs will be designed to verify mitigation success.	SIR #1	4 (4.2) 190 (a); 6 (6.1) 300 (b) iv & v	4-30; 6-17	
276	A weed control program will be developed for the Project. The program will consist of conducting spring and summer surveys to identify infestations of noxious weeds.	EIA Volume 1	E.6.3.7.2	47	
277	PCA will monitor releases at all discharge points to confirm appropriate erosion and sediment controls are in place and effective.	SIR #2	3 (3.2) 16 (a)	3-2	
278	Any specialized erosion and sediment control measures constructed would be located outside of the undisturbed buffer zone and would be monitored by PCA at regular intervals when in operation.	SIR #2	4 (4.3) 61 (b)	4-14	
279	A monitoring program will be developed and implemented to assess the success of reclamation. Success will be measured as compared to applicable reclamation criteria and the requirements set by regulators. Monitoring activities will assess the following: • success of mitigative measures (*e.g.*, deep tillage to reduce compaction); • landscape characteristics (*e.g.*, subsidence, drainage); • erosion concerns;	SIR #1	4 (4.2) 221 (a)	4-61	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	• topsoil quality and quantity; • vegetation composition, including weeds; and • plant vigour, health, cover, density, height and yield (as applicable). Post-reclamation monitoring will be conducted in late summer/fall to assess vegetation at the end of a full growing season and will continue until the desired plant community has developed and soil parameters meet criteria. Reclamation will progress until reclamation criteria and equivalent land capability are achieved. Overall reclamation success will be measured relative to applicable reclamation criteria and regulatory approval conditions. Success will be confirmed upon receipt of a reclamation certificate.				
280	Reclamation and closure monitoring will be conducted at annual intervals at selected reclaimed sites and in end-pit lakes to document changes in surface aquatic resources during the reclamation and closure process.	EIA Volume 1	A.7.11; E.11.7	47; 93	
27. EMERGENCY RESPONSE PLAN					
281	In the unlikely event that an emergency incident resulting from quarry activities and operations will affect local residents, the PCA quarry manager will consult with lead emergency responders and the RCMP to confirm if an area or areas at risk to the public. With confirmation from emergency responders and the RCMP, the PCA quarry manager will contact PCA senior management and determine appropriate public notice, which, in most situations, would be an advisory to local area broadcast media.	SIR #1	5 (281) a	5-43	
282	Given that 100 year ice jam inundation level covers more than 90% of the 10 year project area, PCA proposes implementation of a two staged emergency response plan procedure for flooding events based on flood warning received within 24 hours. • First stage response by PCA would be mobilization of all portable equipment and vehicles from quarry operating areas to relocate on constructed pad area at the north side of the project area, near property access. • Second stage response would be complete evacuation from project area of all portable	SIR #2	3 (3.1) 15 (a); 3 (3.4) 40 (a)	3-1; 3-30	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	equipment and vehicles by PCA if the 100-year ice jam is confirmed downstream. • All chemicals, fuels, solvents and hydrocarbons in tanks or portable totes would be evacuated, eliminating potential sources onsite for deleterious or harmful substances.				
283	All process areas will be equipped with fire water protection. In the event of a fire in any process unit, the fire water will be collected in the process area runoff drains and directed to the storm water pond. The drain system will be designed to accommodate fire water flows.	EIA Volume 1	B.5.3.3	29	
28. ENVIRONMENTAL MANAGEMENT SYSTEM, ENVIRONMENTAL MANAGEMENT PLAN, WASTE MANAGEMENT					
284	The storage and handling of hazardous materials in the Project will be conducted in compliance with CCME guidelines as well as the *Transportation of Dangerous Goods Act*, and other applicable environmental legislation, regulation, standards or codes, including: • secondary containment designed and constructed to ensure that spills from storage containers will be fully contained; • regular inspections of all storage equipment containing hazardous waste or dangerous goods for signs of degradation and or leakage. Any remediation works required will be completed in accordance with applicable legislation, regulation and codes of practice; • continued training of applicable personnel in the handling and transportation of all hazardous materials on the Project site as defined under the *Transportation of Dangerous Goods Act* and of controlled substances as defined under the *Occupational Health & Safety Regulation*; • ongoing inventory of all dangerous goods and hazardous waste on the Project site; • designation of specific areas and locations for the transfer and limited temporary storage of hazardous wastes with controlled access; • maintenance of appropriate spill clean-up equipment and materials; • removal of any hazardous wastes and surplus dangerous goods promptly by an approved management company; and • provision of berms around above-ground storage tank areas, and lining of berms with impermeable material. Contingency plans for responses to releases will include timely clean-up, remediation, and reporting for any unexpected releases. These plans are therefore measures to mitigate against the release of	EIA Volume 1	E.11.4.4	90	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	substances that could enter watercourses and waterbodies and negatively influence aquatic resources.				
285	All oils, grease, other lubricants and any flocculants will be stored with suitable containment in the warehouse to be located near the quarry entrance with the office and scale house. Exceptions are the hydraulic oil, used oil and waste stores with appropriate containment for the crushing and screening facility and the flocculent container (if used) at the wash plant facility.	SIR #1	1.0 (1.4) 21 (a)	1-30	
286	PCA will be implementing an Environmental Management System as outlined in Part B, B.11.3, B.11.4, B.11.5 and B.11.6 (Pages 54-64). This includes routine inspections by PCA operations and PCA-directed environmental audits of standard operating procedures for quarry activities and operations. Each storage area or portable facility location will have a documented history of use including spills, clean up and remediation activities. Before relocation of any storage area, PCA will review its site history. After relocation of storage area, PCA will physically inspect the site to confirm history and to assess if conditions are acceptable. A key indicator would be observations of remnant staining in old storage area locations.	SIR #1	1.0 (1.4) 21 (b & c); 6 (6.1) 292 (c)	1-31; 6-13	
287	Fuel storage sites will comply with provincial regulations and, if a spill occurs, appropriate remediation and monitoring will be implemented in the locality of the spill.	SIR #1	6 (6.1) 308 (b)	6-28	
288	All chemicals will be contained by PCA within the Project area boundaries, stored and transported according to relevant requirements (*i.e.*, TDG, EPEA and Regulations). The chemicals will be stored in containers appropriate to the type of substance and use (*e.g.*, silos, tanks, vessels, tote, drum). A standard Spill Prevention and Contingency Plan is developed and will be reviewed before quarry construction and operation to confirm appropriate procedures to reduce the potential for a spill, as well as the procedures required in the event of a spill.	EIA Volume 1	B.5.7.1	31	
289	Portable storage facilities will be located in upland locations above determined flood elevations. Portable storage facilities will relocate as quarry operations progress. No permanent storage facilities will be used.	SIR #1	6 (6.1) 292 (b); 6 (6.1) 292 (a)	6-13; 6-12	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
290	Petroleum products for use in operating mining and hauling equipment may include fuels, oils, greases and other lubricants. Quantities of substances stored on-site will be restricted to ensure that large amounts are not stockpiled, thereby minimizing the risk of release to the local environment and the need for implementation of PCA's Spill Response Plan. All products will be stored according to applicable standards, legislated requirements of the Workplace Hazardous Materials Information System (WHMIS) and best management practices, as per PCA Operating Procedures. Material Safety Data Sheets (MSDS) for all chemicals will be available on-site in a convenient marked location. Explosives will be used for quarry mining. Their transport to and from the site as well as their use will be the responsibility of a qualified contractor regulated under the federal *Explosives Act.* Explosives will not be stored on-site. PCA will test flocculant candidates before introduction into aggregate washing process to determine suitability for use. It is important to recognize that the slightly acidic residue from alum-based flocculants will be neutralized, in whole or in part, by the alkalinity of wash water used for limestone aggregate rock products.	EIA Volume 1	B.10.1	48	
291	Lehigh will also develop a plan specific to all construction and operation activities for the Project and will outline: • details on appropriate awareness and training programs; • personnel roles and responsibilities; • contingency plans; • contractor management; • performance measurement; and • verification measures and monitoring.	EIA Volume 1	B.10.2	48	To be included in PCA's EMS/EMP.
292	All non-hazardous waste products associated with the Project will be temporarily stored indoors and transported off-site for appropriate recycling or disposal through a waste management contractor. Hazardous wastes and recyclables generated at the plant site will be disposed of or recycled off-site	EIA Volume 1	B.10.3	50	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	at approved facilities through a waste management contractor. A hazardous waste storage facility will be constructed for storage of hazardous wastes and recyclables prior to shipping to the disposal facilities. Hazardous recyclable wastes will be stored at the storage facility, bulked into larger secure containers and shipped to licensed recycling facilities specializing in the particular wastes to be managed. The hazardous waste storage facility will be designed to meet the requirements found in "Hazardous Waste Storage Guidelines" published by Alberta Environment in June 1988 and amended. The facility will be designed to contain leaks and to isolate incompatible materials from one another. Requirements of the Guidelines include: • the facility will be readily accessible for fire-fighting; • the site will not be subject to flooding; • the site will be equipped with fire-fighting equipment to comply with the Alberta Fire Code; • access will be limited to employees who have been trained in the management of wastes that will be produced by the NLP; • signs will indicate that hazardous waste is stored therein; • the floor will be coated with an impermeable barrier which will not react with or absorb the wastes being stored in the building; • the floor will not have any drains that connect to a sewer; • a continuous impervious curb (minimum height of 15 cm) will be placed around the storage area; • the storage area will have a roof and sidewalls to protect the waste from the weather; • if tanks are needed, the requirements of the Standards for waste storage tanks will be observed; • emergency equipment including overpack drums will be available to manage any spills or leaks; and • wastes will be adequately labelled. The storage facility will be constructed with adequate ventilation and will be serviced by power.				

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
293	Storage of hazardous wastes will be located in a properly configured, designated area of the portable warehouse as described in the Application, Part B, Section B.4.3. The hazardous waste management facility will be designed to be portable.	SIR #1	1.0 (1.4) 22 (a); 1.0 (1.4) 22 (b)	1-31	
294	Waste minimization activities will be ongoing. As new processes, materials, or management practices are adopted at the Project site, they will be subject to a waste management review to identify opportunities for waste minimization. A PCA Manager will be responsible to oversee waste minimization efforts, make recommendations regarding waste minimization to PCA corporate management and engineering teams, and liaise with employees to identify opportunities for reducing the volume, toxicity and environmental burden of waste. Additionally, the Project Waste Manager will assess and incorporate, as appropriate, evolving industry best practices, industrial ecology or cleaner production technologies that are feasible, cost-effective and relevant. Waste minimization practices will be integrated into business activities for Project operations The Project's HSE Management System will be the means by which waste minimization practices are integrated.	EIA Volume 1	B.10.4	52	
295	Pollution prevention will be accomplished by a recurring review of Project processes, material and energy inputs, maintenance procedures, purchasing practices, and staff support activities in an attempt to achieve improved performance. Additionally, specialists in industrial ecology or clean technology and production may be periodically consulted to ensure that all opportunities for pollution prevention are identified. The Project Environmental Manager will develop a Pollution Prevention Program. This program will be established and be in effect prior to commencement of Project construction and will help to prevent, reduce or reuse Project wastes.	EIA Volume 1	B.10.4.1	52	
296	For non-hazardous recyclable materials, it is anticipated that the amount of waste paper, cardboard and plastics will be small and will be collected for recycling. As appropriate, other commodities will be evaluated for recycling as viable markets develop and recycling facilities become available. Some of the hazardous wastes generated are recyclable and will require off-site services for	EIA Volume 1	B.10.4.2	53	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	processing. Specialized contractors will be engaged to collect these wastes from the Project site and transport them to recycling and processing stations. PCA will require that all contractors maintain full compliance with applicable regulations pertaining to the transportation of dangerous goods and processing. The Project Environment Manager will be responsible to ensure that all recycling activities are carried out in a manner that reflects current best practices for waste management and recycling.				
276	All construction activities will comply with strict Environmental Management Plans prepared as part of construction agreements that will outline acceptable methods for each of these activities.	EIA Volume 1; SIR #2	A.7.11; E.11.7; 3 (3.3) 29 (a)	46; 93; 3-17	
298	During quarry opening and construction, fire protection will be provided by portable fire extinguishers located as required in the portable buildings being used for quarry office, scale and maintenance and at the designated location for above ground fuel storage. There is limited fire potential within the quarry; fire protection in quarry mining areas will be provided by portable fire extinguishers mounted on all equipment and vehicles in use. A Wildfire Control Plan will be submitted by PCA to the Forest Protection Division of Alberta Sustainable Resource Development in Fort McMurray. It describes the equipment and level of readiness that is present at the PCA Project to assist in wildfire control. It also includes maps of roads and access to Project Lease areas. Forest Fire awareness training will required for PCA employees and contractors.	EIA Volume 1	B.5.7.2	33	
299	Utilities equipment will be stored in a series of buildings at the Project site for environmental protection, noise mitigation, security, and other reasons	EIA Volume 1	B.5.7.3	33	
300	Buildings will be equipped with lighting, heating/ventilating equipment, noise attenuation features and will be rated for environment and process hazards in accordance with the Alberta Fire Code.	EIA Volume 1	B.5.7.3	33	
301	Appropriate soil storage locations and an on-site waste management and spill response plan will reduce the potential impacts of accidental releases onsite.	EIA Volume 1	E.7.2	59	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	Any soils impacted by accidental releases as a result of operations will be remediated to meet all regulatory requirements.				
29.	**HEALTH, SAFETY AND ENVIRONMENT**				
302	Lehigh Hanson is committed to achieving high levels of Health, Safety, and Environment (HSE) performance for PCA during the design, construction, operation and decommissioning of the Project. Lehigh Hanson will implement the HSE Plan to guide its HSE management activities throughout the life-of-Project.	EIA Volume 1	B.11.1	53	
303	Specifically, Lehigh Hanson is committed to: • conducting business activities with openness, honesty and integrity; • protecting the health and safety of our workers and other people living in the region; • minimizing effects on the environment through innovation and by integrating environmental considerations into every business aspect; • meeting or exceeding all regulatory requirements; • respecting community and stakeholder concerns; and • working collaboratively with various levels of government, other operators and affected communities to address issues associated with the proposed Project. Lehigh Hanson's organizational structure reflects its commitment to HSE performance and continuous improvement. Lehigh Hanson will establish a Health, Safety Environment Committee that is responsible for oversight of HSE matters.	EIA Volume 1	B.11.2	53	
304	The Project HSE Management System is being designed to implement all HSE-related operational integrity, regulatory compliance, and corporate commitments throughout the design, construction, operations and decommissioning phases of the Project. The HSE Management System will also be central to the effective management of change and continuous HSE performance improvement throughout the life of the Project.	EIA Volume 1	B.11.3	53	
305	The HSE Management System will address non-regulatory requirements such as corporate expectations and industry standards and best practices.	EIA	B.11.4.3	55	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
		Volume 1			
306	Lehigh Hanson is committed to an integrated approach to HSE management, as this is central to meeting corporate HSE commitments. Work is underway to develop plans and programs in the following areas to ensure all aspects of the HSE Management System are linked: • Occupational Health and Safety; • Environmental Protection; • Emergency Preparedness and Response; • Asset Integrity; • Stakeholder Involvement; and • Worker Competency and Training.	EIA Volume 1	B.11.5	55	
307	PCA intends to develop a Safety Orientation Package which identifies site specific requirements, conduct, social licence, *etc.* and outline disciplinary measures for contract hauler behaviour. Hauler complaints will be investigated and verified by PCA with disciplinary action determined, up to and including contract termination, based on complaint investigation outcome. PCA will employ general and specific safety training as well as quarry orientation for all equipment or vehicle operators that are PCA employees. PCA will also deploy general safety training and specific safety training as appropriate as well as required quarry orientation for all PCA contractors or subcontractors onsite.	SIR #1	5 (280) a	5-42	
308	To ensure the effective implementation and continuous improvement of the Lehigh Hanson HSE Management System, the following programs will be established: • HSE Meetings and Communications; • Incident Reporting and Follow-up; • Compliance Auditing and Inspections; • Performance Measuring, Monitoring and Reporting; and • Records Management.	EIA Volume 1	B.11.6	60	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
309	Contractor Management will be integrated throughout Lehigh Hanson's HSE Management System. The Lehigh Hanson HSE Management System will: • identify Lehigh Hanson's prime contractor role and responsibilities in the corporate HSE policies and management system documentation; • identify Lehigh Hanson's contractor management strategy in all relevant HSE Management System plans, programs and documentation; • develop Project-specific hazard management plans, and associated standards and checklists in conjunction with contractors; • develop and deliver contractor orientations and qualification/training programs; • monitor contractor performance relative to Lehigh Hanson's HSE Management System expectations and safety performance indicators, and provide feedback to contractors on an ongoing basis; and • include contractor management and performance in management review activities.	EIA Volume 1	B.11.5.7	60	
310	All workers, employees or contractors, from corporate officers to managers, supervisors and front line workers, will be made aware of Lehigh Hanson's corporate HSE commitments and HSE Management System expectations. Workers who have management system implementation responsibilities and/or have the potential to have a substantial influence on safety or environmental performance will be provided with the relevant information to ensure conformance with Lehigh Hanson's HSE Management System. With PCA, Lehigh Hanson will develop targeted processes to provide opportunities for communication, and to ensure that communication is effective. Key processes include: • HSE (safety) tailgate, pre-job and general or loss control meetings; and • safety bulletins and information.	EIA Volume 1	B.11.6.1	60-61	
311	Lehigh Hanson will establish and maintain programs to facilitate effective incident reporting and investigation. These programs will allow analysis of incident history so that frequencies, trends, and common causes can be identified.	EIA Volume 1	B.11.6.2	61	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
312	With PCA, Lehigh Hanson will establish formal audit and compliance inspection programs to manage all activities that could influence worker and public safety and the environment. Compliance audits and inspections will be applied to all components of the Lehigh Hanson HSE Management System, with specific focus on the following areas: • Occupational Health and Safety; • Environmental Protection; • Asset Integrity Management; and • Security.	EIA Volume 1	B.11.6.3	61	
313	To ensure that HSE objectives are being met and that continuous performance improvements are being achieved, indicator measurement, monitoring of key activities and reporting will be implemented. With PCA, Lehigh Hanson will establish and maintain programs to communicate Lehigh Hanson HSE management activities and performance including: • measurement and monitoring programs with an emphasis on contractor safety and environmental monitoring as required to address specific operating functions and effects; • internal reporting systems between various levels and functions of the company; and • processes for external communication on its significant HSE aspects as required.	EIA Volume 1	B.11.6.4	62	
314	Programs will be developed by Lehigh Hanson with PCA to control electronic and paper records in accordance with Lehigh Hanson HSE Management System.	EIA Volume 1	B.11.6.5	62	
315	Periodic management review will be conducted by PCA and Lehigh Hanson to facilitate continuous improvement in HSE performance, and ensure the suitability and effectiveness of the Lehigh Hanson HSE Management System. The review will consider: • results from incident investigations, non-conformances, audit results and the completion of corrective actions; • benchmarking of actual performance against corporate commitments and goals; and • new/revised legislative or regulatory requirements and/or industry practices, and stakeholder	EIA Volume 1	B.11.6.6	62	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	expectations, and the associated influence on plans and programs.				
316	Adaptive management principles will be applied in the following areas: • changing environmental regulatory requirements; • consideration of the Athabasca River; • predictions regarding energy efficiency and air emissions; and • management of cumulative environmental effects in the region.	EIA Volume 1	B.12	64	
30. REGULATORY					
317	PCA is committed to meeting or exceeding all regulatory requirements in respect of the Project.	EIA Volume 1	A.4	11	
318	PCA's development plans will be consistent with existing provincial and municipal land use policies.	EIA Volume 1	A.6.4	23	
319	Relevant regulatory requirements, licence and approval conditions, industry standards and operating practices will be identified in order to maintain regulatory compliance and ensure due diligence. The HSE Management System will also establish processes to ensure that regulatory requirements are identified, interpreted and communicated to relevant staff on a regular basis.	EIA Volume 1	B.11.4.2	55	
320	PCA intends to follow all Federal, Provincial and Municipal approval, authorizations and guidelines that are applicable to this Project.	SIR #1	4 (4.5) 254 (a)	4-95	
321	The design and construction of all stream crossings will be done in compliance with the Alberta *Code of Practice for Watercourse Crossings* and associated guidelines. For watercourse crossings these include,: • aquatic and biological assessments, watercourse crossing design and construction; post-construction clean-up and reclamation; • contingency measures; and • watercourse crossing site monitoring.	EIA Volume 1	A.6.11.1.2; A.7.11; E.11.4.2	33; 45; 87-88	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	These mitigation measures will commence once the exact location of the stream crossings are finalized. All stream crossings constructed and operated by the Project will meet regulatory requirements for protection of fish resources and aquatic habitat.				
322	The watercourse crossings will be prepared and designed in accordance with the *Alberta Environment Code of Practice for Watercourse Crossings* and will be the subject of a separate application.	SIR #1	3 (3.5) 137 (a & b)	3-94	
323	Relevant regulatory requirements, license and approval conditions, industry standards and operating practices will be identified in order to maintain regulatory compliance and ensure due diligence. The regulatory compliance objectives of the HSE Management System will be to: • identify areas of legal responsibility that are relevant to the Project; • ensure that workers (employees, service providers, contractors, consultants) understand their legal responsibilities; • ensure copies of key legislation, regulations and guidelines are available to all workers; • ensure that the terms and conditions of permits and approvals are reviewed and understood by relevant workers prior to commencing work; and • ensure that no activities requiring regulatory approval commence or continue without the appropriate regulatory approvals. The HSE Management System will also establish processes to ensure that regulatory requirements are identified, interpreted and communicated to relevant staff on a regular basis. The HSE Management System will address non-regulatory requirements such as corporate expectations and industry standards and best practices.	EIA Volume 1	B.11.4.2	55	
31. CO-OPERATIVE INITIATIVES					
324	PCA will address any future emerging issues with respect to soil/water acidity in association with other regional industries in the manner specified by Clean Air Strategic Alliance (CASA) and AENV (1999). Graymont is currently a participant and an Alberta Chamber of Resources representative on CASA.	EIA Volume 1	E.1.3	3	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
325	PCA will participate in regional initiatives relative to air quality issues.	EIA Volume 1	E.1.4	3	
326	PCA will be pleased to consider participating in regional and municipal wildlife research and monitoring activities as part of our ongoing community outreach and communication processes that occur during operations.	SIR #2	4 (4.5) 67 (a)	4-20	
327	PCA will continue to share monitoring data with government and regional groups upon request. PCA will continue to work with the province, aboriginal groups and the municipality to prepare and implement end-use and reclamation strategies that are appropriate for the PCA site context.	SIR #1	1.0 (1.1) 3 (a) i	1-5	
328	PCA is committed to working with regulators and stakeholder groups to implement a variety of mitigation programs to monitor the effectiveness of mitigation techniques, and to share information with all regulatory, aboriginal and regional stakeholder groups through ongoing communication and informal collaboration throughout the life of the operation.	SIR #1	1.0 (1.1) 3 (a) ii	1-5	
329	PCA is aware of the Cumulative Environmental Management Association (CEMA) as well as its committees and sub-groups which includes the Reclamation Working Group (RWG). As development of the Project advances, so will PCR's direct interaction with the appropriate committees and sub-groups.	EIA Volume 1	E.6.1.6	35	
330	Through interaction with regional committees, PCA will determine its level of participation in any regional or specific reclamation research programs. PCA will consider research programs that build on the successes made in soil replacement, wetlands construction and revegetation techniques. PCA will explore avenues to participate in research opportunities that will assist in the improvement of the reclamation programs that will be implemented at the Project.	EIA Volume 1	E.6.1.5	35	
331	The potential for issues to develop with respect to acid deposition will continue to be assessed and managed by AESRD. Any emerging issues will be addressed by PCA in association with other regional industries in accordance with the process specified by CASA and AENV (1999).	EIA Volume 1	A.6.1	20	
332	PCA will examine opportunities to work with other operators of oil sands mines, CEMA and the RWG, as well as AESRD and local community representatives, to further develop criteria and monitoring	EIA	E.6.2.2	38	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
	programs that clearly demonstrate progress toward environmentally sound sustainable ecosystems.	Volume 1			
32.	**FIRST NATIONS & STAKEHOLDER**				
333	Consult with RMWB and other stakeholders at the Mineral Surface Lease stage to prepare an end-use and reclamation plan that incorporates the objectives of the RMWB along with requirements of PCA, the Crown, regulatory authorities and First Nation stakeholders	RMWB MoU	2.7	3	
334	PCA has made a commitment to provide meaningful engagement opportunities with local and aboriginal interests who may be affected by the Project.	EIA Volume 1	A.5.1	15	PCA has been most actively consulting with the three FN groups that reviewed the EIA. These include Fort McKay FN, Athabasca Chipewyan FN, and Mikisew Cree FN. PCA and Mikisew Cree have signed a confidential legal agreement regarding the project and Mikisew Cree have submitted a letter withdrawing their concerns regarding the project. PCA is at the signing stage for similar agreements with Fort McKay FN and Athabasca Chipewyan FN. PCA expects that these groups will also submit a letter to withdraw all concerns prior to the MSL stage of the project.
335	PCA has committed to working with Aboriginal communities.	EIA Volume 1	A.5.3	16	Formal legal agreements with FMFN, ACFN, and MCFN define the requirements for ongoing consultation with these groups during project operations. PCA also has an agreement in place with Metis 1935 with respect to ongoing consultation.

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
336	PCA is committed to an open bidding process that includes aboriginal contractors	EIA Volume 1	A.5.3	17	Commitments regarding notice of employment and contracting opportunities are contained in Agreements with FMFN, ACFN and MCFN.
337	An annual onsite open house will be held during the life of the Project for stakeholders to tour ongoing PCA operations.	EIA Volume 1	A.5.3	18	
338	As part of its corporate policies PCA will ensure that during the on-going reclamation and closure process: • end land use objectives are developed in consultation with stakeholders, building on the existing consultation process • there will be an on-going consultation process with adjacent oil sands developers to ensure continuity of landforms and drainage systems across lease boundaries; and • adaptive management of the C&R and Closure plan will be pursued through the incorporation of results of site specific research, regional research by Canadian Oil Sands Network for Research and Development (CONRAD) and regional management systems developed by the Cumulative Environmental Management Association (CEMA). PCA will involve local stakeholders including the aboriginal communities in consultation in an effort to identify acceptable land use options and goals.	EIA Volume 1	A.7.6	40	PCA has been continuously coordinating the end-land use concepts with the LARP, the RMWB and First Nation groups. We have recently engaged the RMWB in a positive manner in this process. We have committed to selected First Nation involvement in detailed reclamation planning through formal agreements.
339	Using a focused consultation process, PCA will engage local stakeholders (including aboriginal communities) in an effort to identify acceptable land use options, targets and goals.	EIA Volume 1	E.6.1.2	33	PCA will continue to engage local stakeholders in land use planning processes while respecting the mandates of the Crown and the RMWB with respect to land use decisions.
340	PCA is working with regional stakeholders to ensure that reclamation programs for the Project are progressive and are designed to meet the goals of the program and address the issues that have been raised for the development.	EIA Volume 1	E.6.1.5	35	PCA continues to communicate the end-land use objectives of aboriginal groups, LARP, AESRD and the RMWB and to work to coordinate the interests of all parties in a reclamation plan that will be capable

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
					of accommodating an appropriate range of final land uses.
341	Mitigation strategies being implemented by PCA to mitigate any potential reduction in regional land base available for traditional hunting activities of MCFN, ACFN, FMcMFN and CPFN members include the following: • commitment to maintain access to large, non-operating areas of the site, including riverbank setback natural areas, at all times to First Nations members; • commitment to work with the province and the municipality for an end-use plan that accommodates more intensive recreational uses at the south end of the site, and more extensive recreational and natural habitat areas at the north end of the site; • commitment to enter into agreements that will provide annual funding for community cultural and educational events and regional cumulative impact studies to be determined by each First Nation group according to their own priorities; • commitment to provide an opportunity for First Nation members to participate in the economic benefits from the project by advertising all contract work opportunities with First Nation IRC groups; • commitment to provide quarry staff with training to recognize and report any evidence of aboriginal historical artefacts to ensure documentation by an Historical Resources professional and protection where warranted.	SIR #1	1.0 (1.1) 4 (b)	1-7	These commitments are imbedded in formal legal agreements that are in place, or currently being finalized with MCFN, FMFN and ACFN. CPFN have stated they have no concerns with the project. Fort McMurray FN has not indicated any concern.
342	*This commitment addresses how the TEK will be utilized during operations, i.e. using TEK in reclamation plans.* • The riverbank cabins will remain undisturbed by PCA because they are located within operating setbacks. • Include wetlands, meadows, grasslands and forest in the reclamation plan at the north end of the lease. • Negotiate with municipal and provincial authorities to balance concerns about loss of habitat with the need for riverbank parks and recreation areas adjacent to the City. • Facilitate FN access to large, non-operating areas of the site. • Implement best management practices to control and retain any process water within the quarry. These practices to include water monitoring and reporting, and third party verification of all procedural commitments related to water management and monitoring.	SIR #1	1.0 (1.1) 4 (c)	1-8	These commitments are imbedded within formal legal agreements with those FN groups that expressed concern.

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
343	The following points briefly summarize how PCA is addressing FMFN's Project Specific Environmental Management Concerns under CR#13, Section 1.5.1. • PCA has documented and committed to a dust management control program that includes seeding of stockpiles, and operating a water truck to hold down dust on on-site driveways. • There is no impact to the river from dust due to the PCA dust control program. All water entering the pit will be returned to the river through a monitored pit dewatering process. Process water will be contained within the pit with no release to the river. PCA will use a very low quantity of water from the river (approximately 140,000 m^3 per year at peak production) • FMFN has concerns with moose/traffic collisions along Highway 63 in the vicinity of the project site. PCA supports the idea of "moose crossing" signs along the highway. Alberta Transportation is the operator of the highway and regulates signage within the highway right-of-way. PCA will support any moose signage initiative undertaken by AT. • PCA has designed a reclamation program that responds directly to the FMFN recommendations. We are supportive of reclaiming the north portions of the lease for natural habitat and limiting recreational uses to the south half of the lease. We will be pursuing this objective with the provincial and municipal regulators through the more detailed stages of the regulatory approvals process. • PCA reclamation plan proposes to return the north end of the site to a natural landscape that may support berry-producing shrubs and other indigenous plantings subject to appropriate provincial and municipal regulatory approvals. The following points briefly summarize how PCA is addressing FMFN's Project Specific Traditional Land Use concerns under CR#13, Section 1.5.2. • PCA supports the FMFN recommendation and is committed to allowing FMFN members access to non-operating areas at the north end of the lease for hunting; • Although the riverbank cabins are owned by Steve Price, Trapline #1790 Fort McMurray, PCA has negotiated a compensation agreement with the cabin owner. The cabin owner, FMFN, and PCA all share the same objective which is to minimize future vandalism to the cabins by intruders.	SIR #1	1.0 (1.1) 6 (a)	1-10	All concerns of Fort McKay First Nation (FMFN) have been addressed in a formal legal agreement between PCA and FMFN. The agreement is currently out for signing by both parties. The parties have agreed that the contents of the agreement will remain confidential.

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
344	PCA suggests that the impact of the quarry on the trapping cabin can best be addressed directly between the two parties.	SIR #1	1.0 (1.1) 7 (a)	1-12	The trapping cabins are located near the river and well within the setback area where no quarry operations will occur. Mr. Price will continue to access the cabins through ongoing communication with the PCA site manager. Any remaining impact is accommodated under a financial compensation agreement between Mr Price and PCA.
345	Both parties anticipate that a new compensation agreement will be negotiated once the quarry project is at the provincial MSL and municipal Land Use Redesignation stage of the approval process.	SIR #1	4 (4.1) 163 (a)	4-10	PCA has paid trapper compensation to Mr. Price for the Phase 1 and 2 sand and gravel operation. PCA and Mr Price have agreed that additional compensation will be payable at the MSL/Zoning stage for the quarry.
346	PCA's commitment to provide lease access for First Nations people will be detailed in the following ways: • Fort McKay FN IRC has indicated that they will provide PCA with a list of Best Practices; • Mikisew Cree FN IRC, PCA has committed to provide a list of environmental commitments subsequent to answering regulator SIR questions; • Athabasca Chipewyan FN IRC, PCA has committed to provide ACFN with copies of our responses to government SIRS as a basis for an agreement. PCA's commitment is to allow physical access to any non-operations part of the MAIM lease for First Nation people.	SIR #1	4 (4.1) 164 (a)	4-10	PCA had now signed and/or finalized for signing the formal legal agreements with FMFN, MCFN and ACFN. These agreements deal with commitments regarding lease access.
347	PCA will work with adjacent lease holders to ensure that any disposition boundary issues are dealt with in a timely manner.	EIA Volume 1	A.7.4	39	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
348	PCA is working with both companies (Al-Pac) and Northland Forest products Limited) to ensure that all merchantable timber located within the Project is salvaged and made available to these two operators.	EIA Volume 1	A.7.4	39	
349	Through its public consultation program, PCA will continue to work with local stakeholders to ensure that potential impacts on land and resource use are minimized.	EIA Volume 1	A.7.4	39	
33. SOCIO-ECONOMIC					
350	If required, PCA will use the following mitigation strategies, as identified in the January 2010 Traffic Impact Assessment, to avoid traffic congestion or safety issues at the north intersection during peak hours: • night and off-peak hour haul periods for larger aggregate contracts; • offset operating hours for quarry shipping • clear operating rules and site safety orientation requirements for haulers; and • traffic monitoring and enforcement.	SIR #1	1.0 (1.5) 26 (b)	1-34	
351	The proponent will attempt to hire local contractors, where possible, thus providing benefit to the local economy. If a local contractor cannot be secured then a contractor from outside the region will be hired. Based on merit, Parsons Creek Aggregates approach to hiring involves hiring locally first, from Alberta second and then from across Canada third.	EIA Volume 1	E.14.2.1.1	106	
352	The proponent is committed to following a similar recruitment process during operations as during construction. To the degree possible, the proponent will attempt to hire locally first, from Alberta second and then from across Canada third. The proponent is also committed to supporting local Aboriginal communities by ensuring an open bidding process to create opportunities to both employ Aboriginal peoples and use Aboriginal businesses for trucking and other business contracts such as equipment maintenance.	EIA Volume 1	E.14.2.1.2	106	

No.	Parsons Creek Limestone Quarry Project – Commitment Description	Volume	Section	Page #	Comments
353	PCA will attempt to hire locally first, from Alberta second and then from across Canada third. However, there are factors that will limit the ability of the Project to hire workers and procure materials and equipment from the local area, including: • anticipated challenges in recruiting from the locally available labour force (*e.g*. the January 2011 unemployment rate in the Wood Buffalo-Cold Lake region was 4.5%); and • the limited availability of certain materials and equipment from local contractors (*e.g*. specialized equipment such as heavy haulers, shovels, pipes and valves, and crushers that are not manufactured locally within the RSA).	SIR #1	1.0 (1.3) 14 (a)	1-22	
354	Despite the relatively small impact of the Project on the local community, the proponent is committed to working with community stakeholders throughout the life of the Project, including supporting specific community programs and initiatives where possible.	EIA Volume 1	A.7.14	49	