

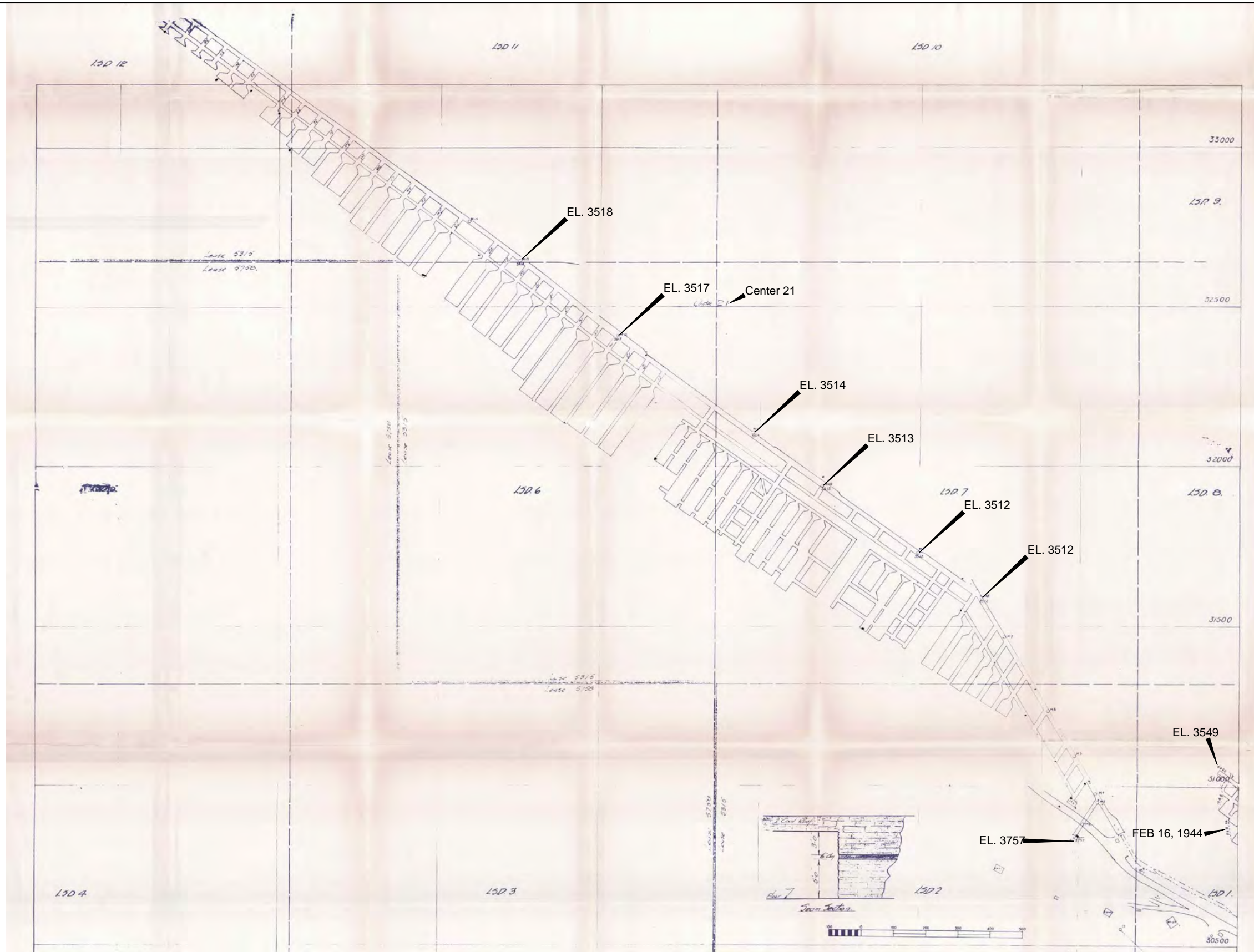


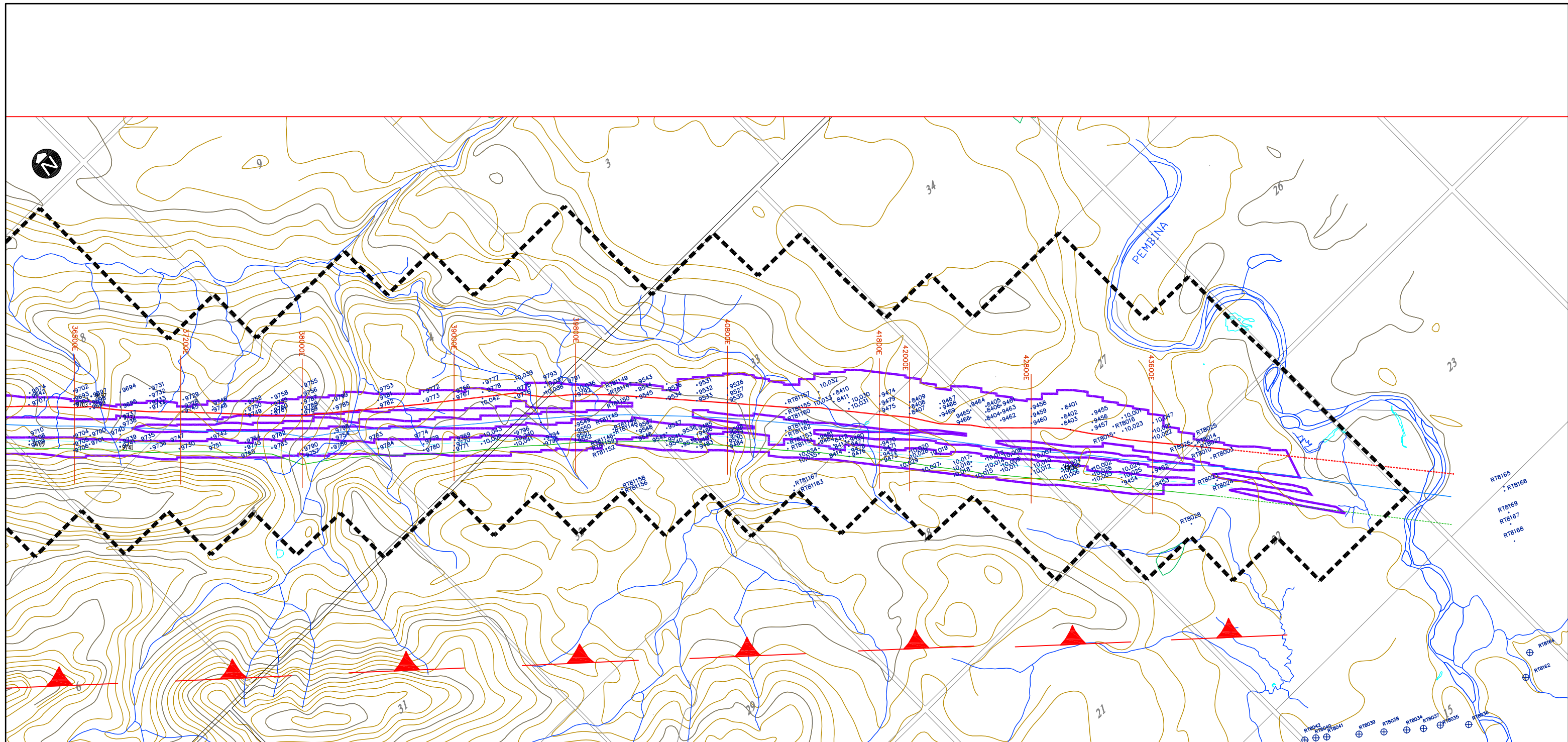


I, the undersigned, being a duly qualified and licensed Surveyor in the Province of Alberta, do hereby certify that the above is a true and correct copy of the original plan as shown to me by the owner thereof, and that the same has been compared with the original plan and found to be a true and correct copy thereof.

PROJECT:  Coal Valley Mine Robb Trend Project		 ...Final Docs\08-041b\Bryan Mine.dwg	
TITLE: Bryan - East		DRAWN: JG CHECKED: KP DATE: Jun 13/13	FIGURE: 3
		PROJECT: 08-041b	

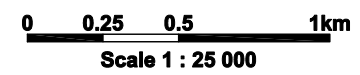


PROJECT:  Coal Valley Mine Robb Trend Project		 MILLENNIUM EMS Solutions Ltd.	
TITLE: Bryan - □ est		...Final Docs\08-041b\Bryan Mine.dwg	
DRAWN: JG	CHECKED: KP	DATE: Jun 13/13	FIGURE: □ □
PROJECT: 08-041b			



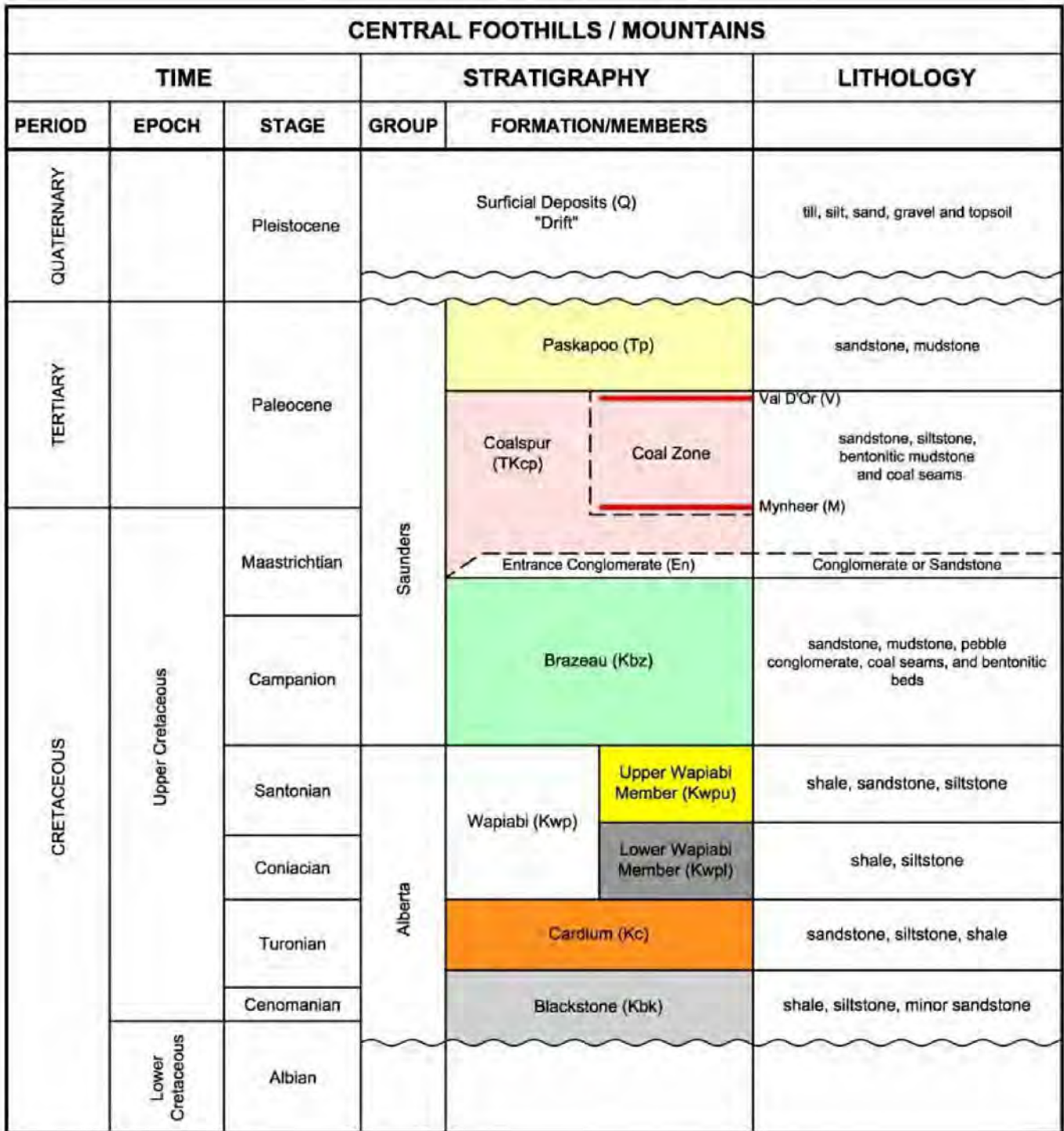
Legend

- 10910 Drillhole
- Watercourse
- Cross-Section Trace
- ▲ Thrust Fault
- Val D'Or Seam
- McPherson Seam
- Mynheer Seam
- Silkstone Seam
- - - Permit Boundary
- Pit Boundary




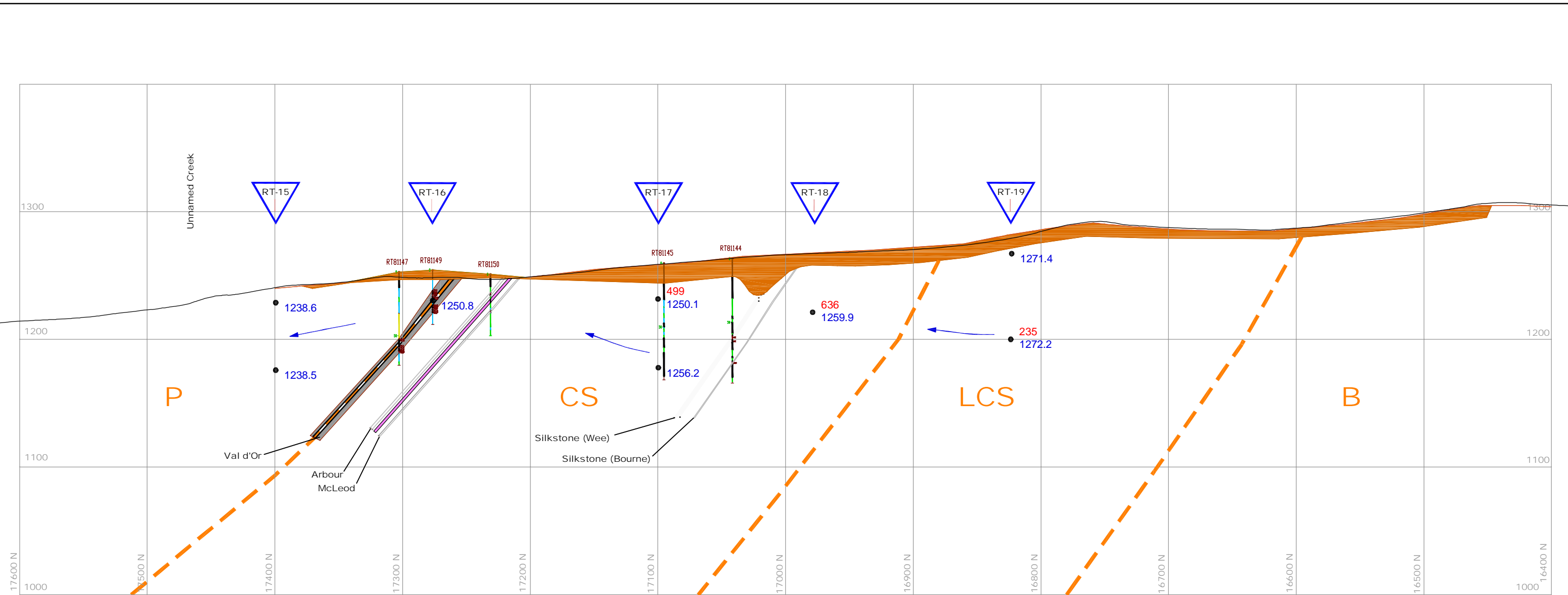
REF: CVRI, 2013.

<p>PROJECT:</p> <p>Coal Valley Mine Robb Trend Project</p>	<p>...Final Docs\08-041b\Fig 7-1 Drill Plan.dwg</p>	<p>DRAWN: JG</p> <p>CHECKED: KP</p> <p>DATE: May 16/13</p> <p>PROJECT: 08-041b</p>
<p>TITLE:</p> <p>East End Pembina Drill Plan</p>		<p>FIGURE:</p> <p>7-1</p>



 unconformity

PROJECT: Coal Valley Mine Robb Trend Project			
TITLE: Stratigraphic Column in the Vicinity of the Robb Trend Project Area		FILE: ...Final Docs\08-041b\Geology_Figs.dwg	
DRAWN: JDC/JG	CHECKED: KP	DATE: Jun 12/13	FIGURE: 9-□
PROJECT: 08-041B			



Legend

- | | | |
|------------------|-------------------------------------|----------------------|
| — Reserve Coal | — Dump Design Surface | — Pit Design Surface |
| — Waste Coal | - - - - - Inferred Coal | |
| — Sandstone | █ Mineable Coal | █ Clean Bentonite |
| — Siltstone | █ Non-Mineable Coal | █ Siltsones/Shales |
| — Carby mudstone | █ Carby Mudstones Non-Mineable Coal | █ Glacial Till |
| — Bentonitic | | |
| — Burnt rock | | |
| — Mined out/Void | | |
| — Fault | | |

● 235 Total Dissolved Solids (mg/L) (measured June/July 2011)
 ● 1272.2 Hydraulic Head (m) (measured September 2011)

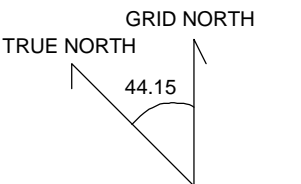
← Groundwater Flow Direction


Stratigraphic Units:
 P - Paskapoo
 CS - Coalspur
 LCS - Lower Coalspur
 B - Brazeau

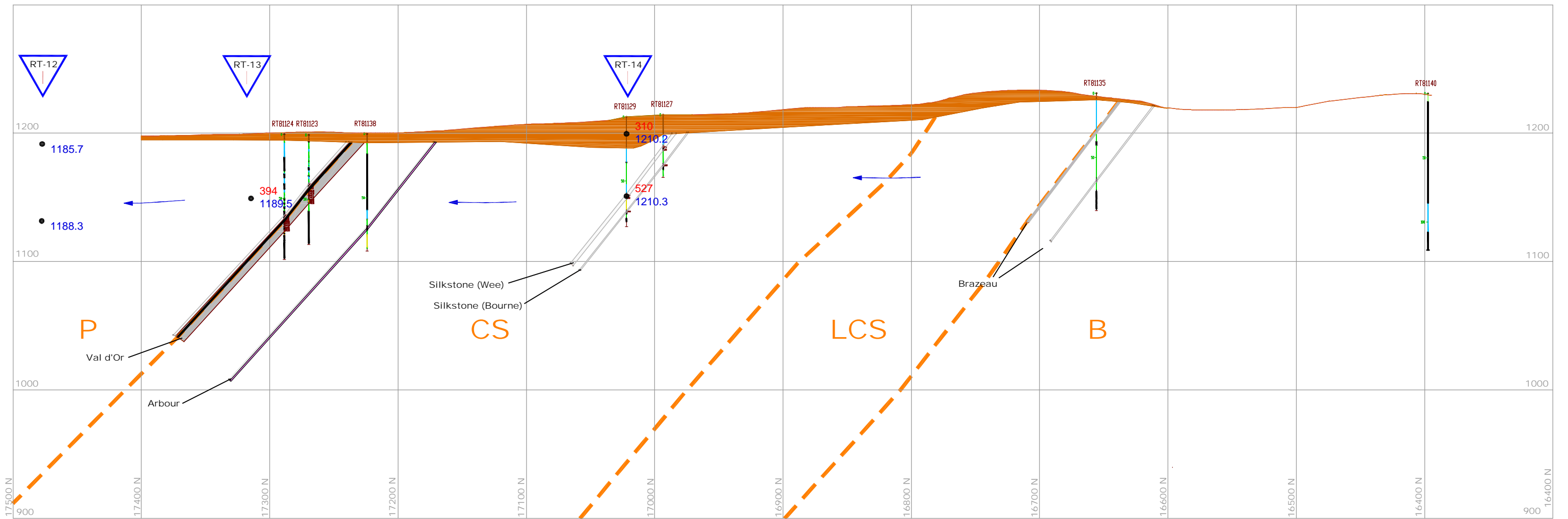


Peizometer Installation

Slug Tests BGC 2013



PROJECT: Coal Valley Mine Robb Trend Project		 <small>...Final Docs\08-041b\Fig 9-2 Section 4000E.dwg</small>
TITLE: Hydrogeological Cross Section 0000 East		
<small>DRAWN:</small> JDC/JG/RS	<small>CHECKED:</small> KP	<small>FIGURE:</small>
<small>DATE:</small> Jun 6/13		9-2
<small>PROJECT:</small> 08-041b		<small>(Section Looking East)</small>



Legend

- | | | |
|------------------|-------------------------------------|----------------------|
| — Reserve Coal | — Dump Design Surface | — Pit Design Surface |
| — Waste Coal | - - - - - Inferred Coal | |
| — Sandstone | ■ Mineable Coal | ■ Clean Bentonite |
| — Siltstone | ■ Non-Mineable Coal | ■ Siltsones/Shales |
| — Carby mudstone | ■ Carby Mudstones Non-Mineable Coal | ■ Glacial Till |
| — Bentonitic | | |
| — Burnt rock | | |
| — Mined out/Void | | |
| — Fault | | |

- 310 Total Dissolved Solids (mg/L) (measured June/July 2011)
- 1210.2 Hydraulic Head (m) (measured September 2011)

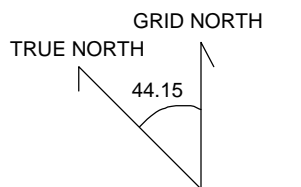
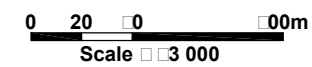
← Groundwater Flow Direction

Stratigraphic Units:
 P - Paskapoo
 CS - Coalspur
 LCS - Lower Coalspur
 B - Brazeau

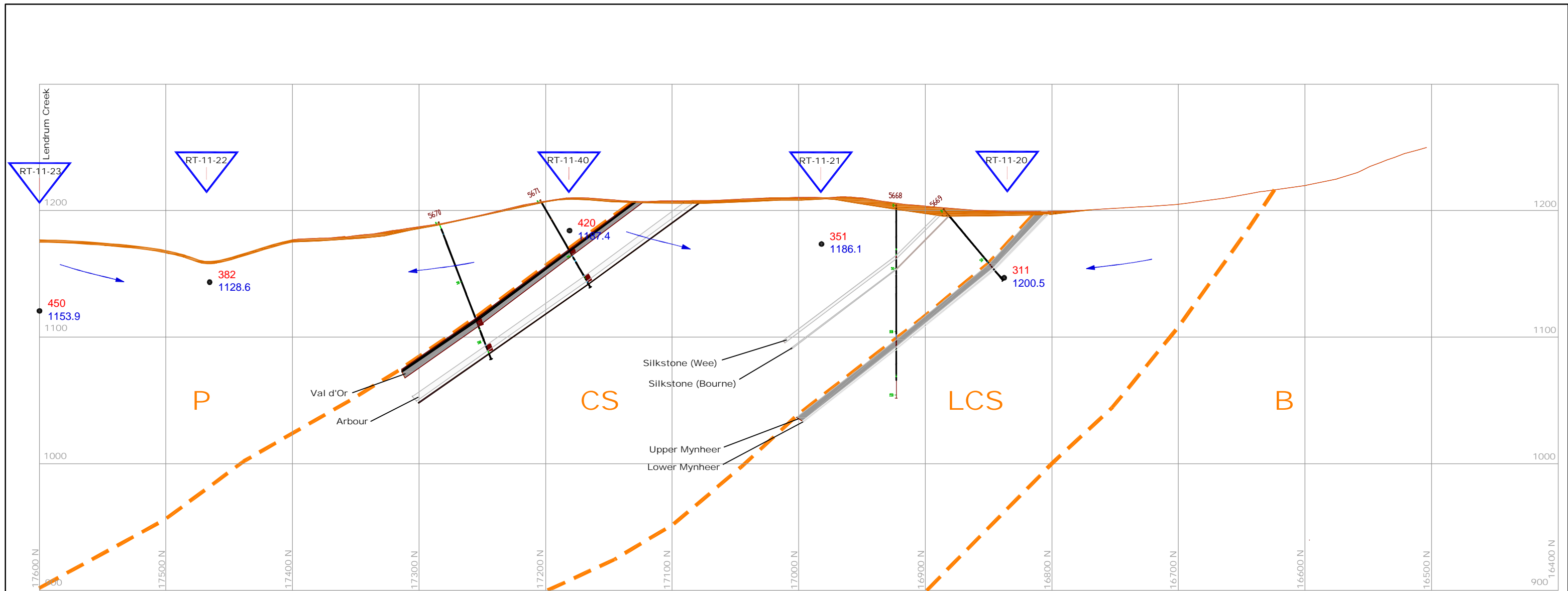


Peizometer Installation

Slug Tests BGC 2013



PROJECT: Coal Valley Mine Robb Trend Project		
TITLE: Hydrogeological Cross Section 3025 East		
...Final Docs\08-041b\Fig 9-3 Section 34425E.dwg	DRAWN: JDC/JG/RS	FIGURE: 9-3
	CHECKED: KP	(Section Looking East)
	DATE: Jun 14/13	
	PROJECT: 08-041b	



Legend

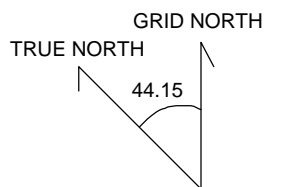
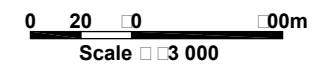
- | | | |
|------------------|-------------------------------------|----------------------|
| — Reserve Coal | — Dump Design Surface | — Pit Design Surface |
| — Waste Coal | - - - - - Inferred Coal | |
| — Sandstone | ■ Mineable Coal | ■ Clean Bentonite |
| — Siltstone | ■ Non-Mineable Coal | ■ Siltsones/Shales |
| — Carby mudstone | ■ Carby Mudstones Non-Mineable Coal | ■ Glacial Till |
| — Bentonitic | | |
| — Burnt rock | | |
| — Mined out/Void | | |
| — Fault | | |

● 311 Total Dissolved Solids (mg/L) (measured June/July 2011)
 ● 1200.5 Hydraulic Head (m) (measured September 2011)

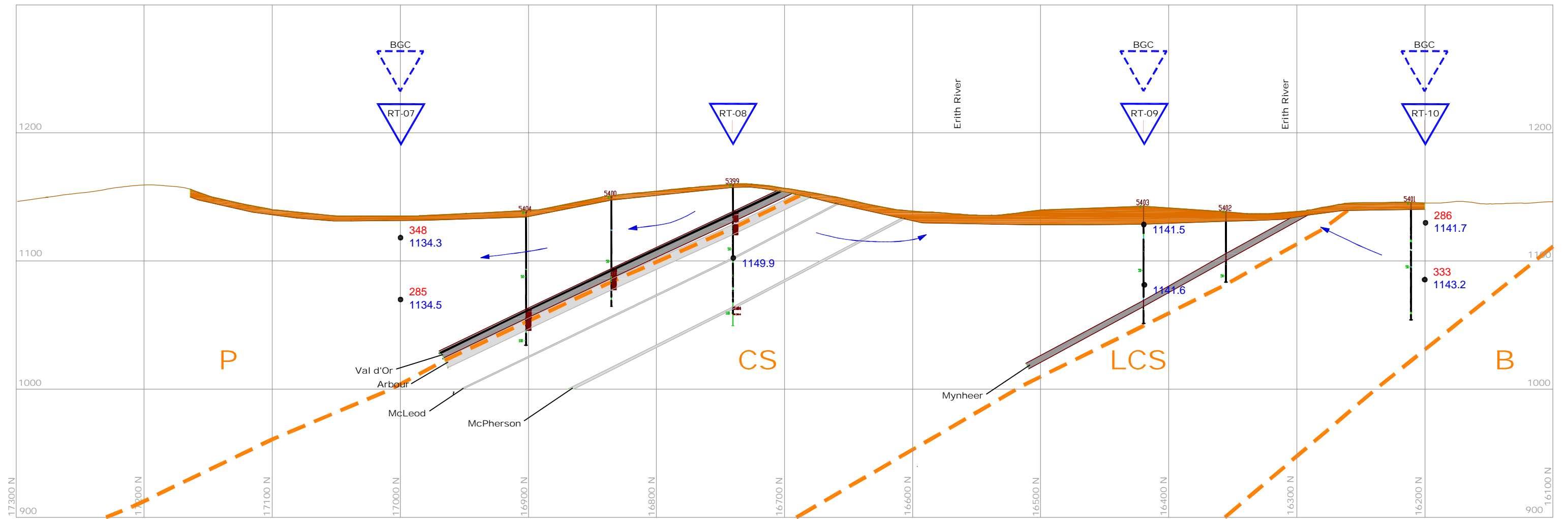
← Groundwater Flow Direction

Stratigraphic Units:
 P - Paskapoo
 CS - Coalspur
 LCS - Lower Coalspur
 B - Brazeau

RT-19 Peizometer Installation
 BGC Slug Tests BGC 2013



PROJECT: Coal Valley Mine Robb Trend Project		
TITLE: Hydrogeological Cross Section 2000 East		
...Final Docs\08-041b\Fig 9-4 Section 26600E.dwg	DRAWN: JDC/JG/RS	FIGURE:
CHECKED: DH	DATE: Jun 14/13	9-
PROJECT: 08-041b		(Section Looking East)



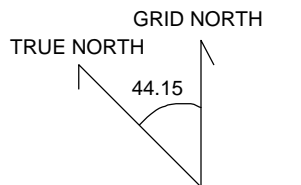
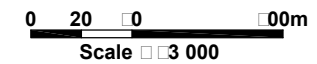
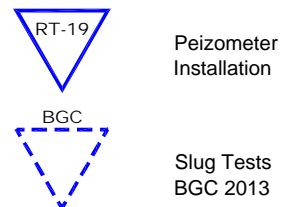
Legend

- | | | |
|------------------|-------------------------------------|----------------------|
| — Reserve Coal | — Dump Design Surface | — Pit Design Surface |
| — Waste Coal | - - - - - Inferred Coal | |
| — Sandstone | ■ Mineable Coal | ■ Clean Bentonite |
| — Siltstone | ■ Non-Mineable Coal | ■ Siltsones/Shales |
| — Carby mudstone | ■ Carby Mudstones Non-Mineable Coal | ■ Glacial Till |
| — Bentonitic | | |
| — Burnt rock | | |
| — Mined out/Void | | |
| — Fault | | |

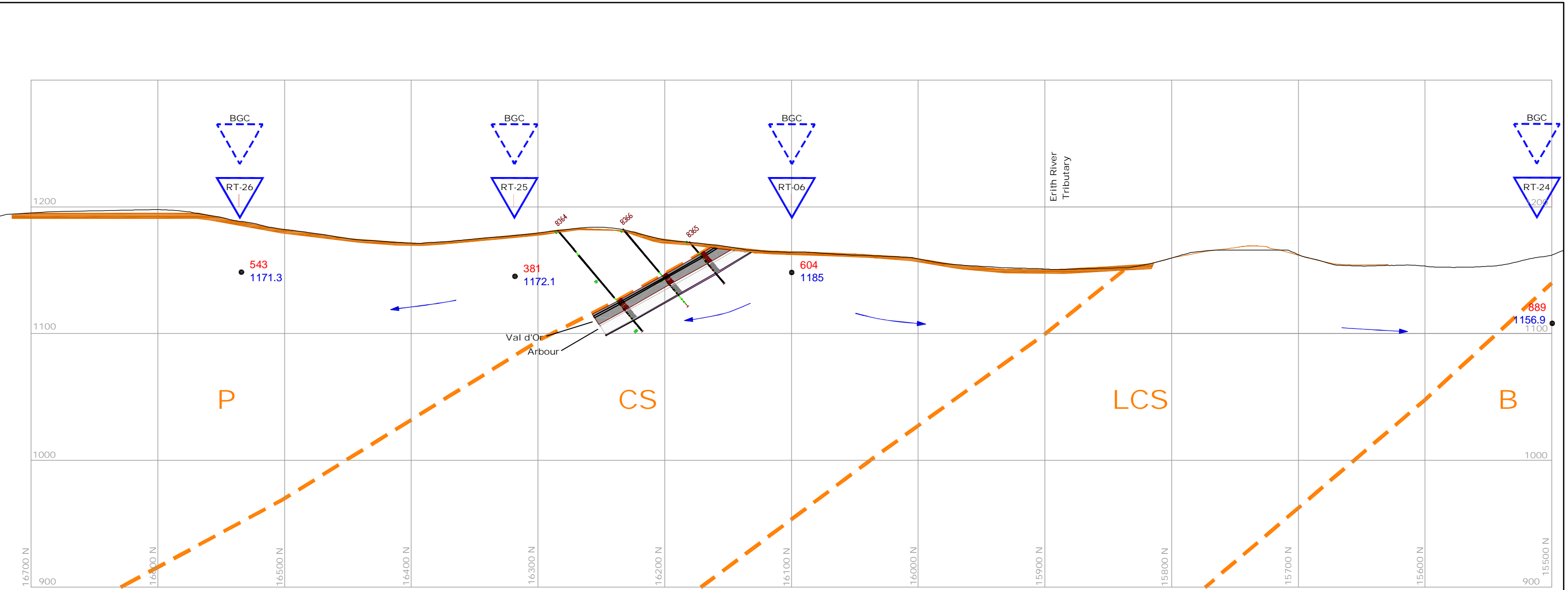
● 286 Total Dissolved Solids (mg/L) (measured June/July 2011)
 ● 1141.7 Hydraulic Head (m) (measured September 2011)

← Groundwater Flow Direction

Stratigraphic Units:
 P - Paskapoo
 CS - Coalspur
 LCS - Lower Coalspur
 B - Brazeau



PROJECT: Coal Valley Mine Robb Trend Project		
TITLE: Hydrogeological Cross Section 18000 East		
DRAWN: JDC/JG/RS		FIGURE: 9-5
CHECKED: KP		(Section Looking East)
DATE: Jun 14/13		
PROJECT: 08-041b		



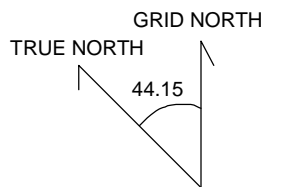
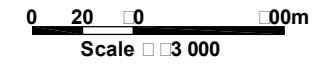
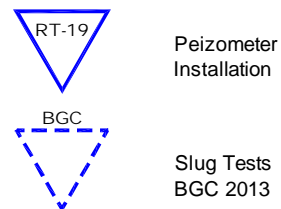
Legend

- | | | |
|------------------|-------------------------------------|----------------------|
| — Reserve Coal | — Dump Design Surface | — Pit Design Surface |
| — Waste Coal | - - - - - Inferred Coal | |
| — Sandstone | █ Mineable Coal | █ Clean Bentonite |
| — Siltstone | █ Non-Mineable Coal | █ Siltsones/Shales |
| — Carby mudstone | █ Carby Mudstones Non-Mineable Coal | █ Glacial Till |
| — Bentonitic | | |
| — Burnt rock | | |
| — Mined out/Void | | |
| — Fault | | |

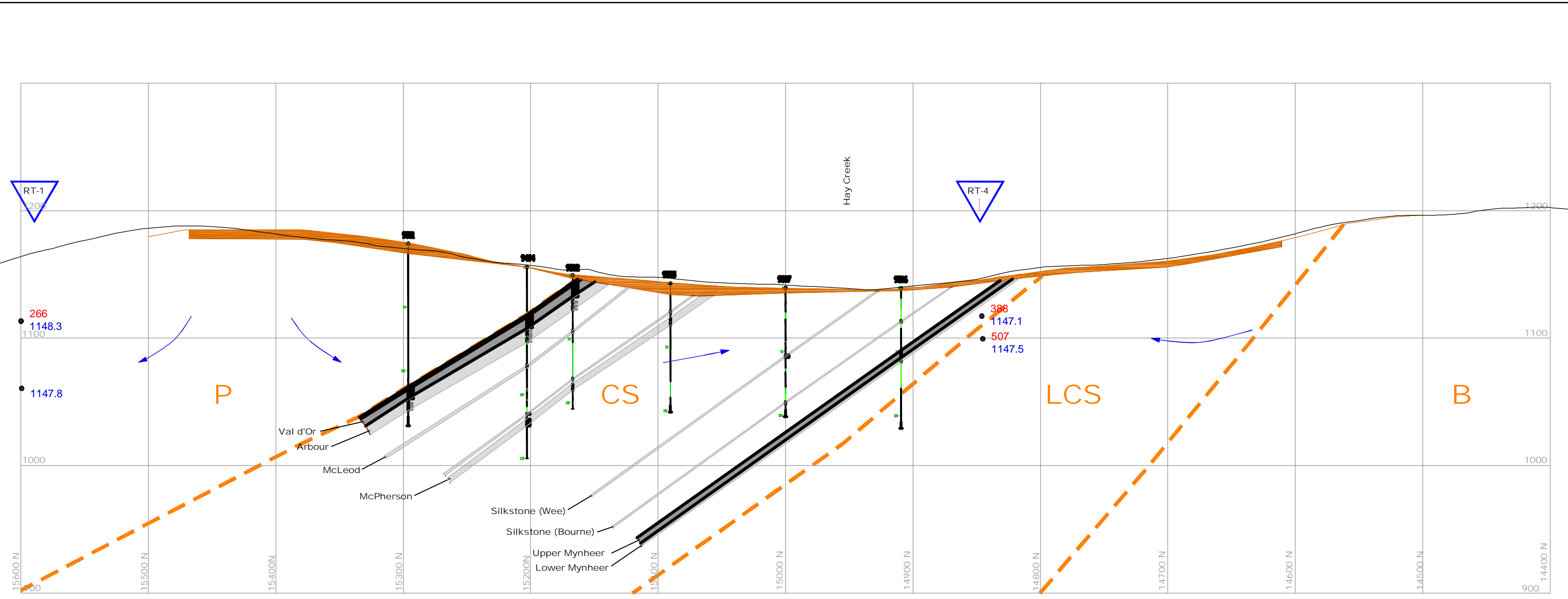
● 604 Total Dissolved Solids (mg/L) (measured June/July 2011)
 ● 1185 Hydraulic Head (m) (measured September 2011)

← Groundwater Flow Direction

Stratigraphic Units:
 P - Paskapoo
 CS - Coalspur
 LCS - Lower Coalspur
 B - Brazeau



PROJECT: Coal Valley Mine Robb Trend Project		 <small>...Final Docs\08-041b\Fig 9-6 Section 11500E.dwg</small>
TITLE: Hydrogeological Cross Section 500 East		
<small>DRAWN: JDC/JG/RS</small>	<small>CHECKED: KP</small>	<small>FIGURE: 9-</small>
<small>DATE: Jun 6/13</small>	<small>PROJECT: 08-041</small>	<small>(Section Looking East)</small>

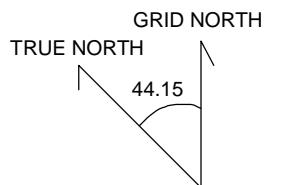
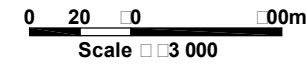
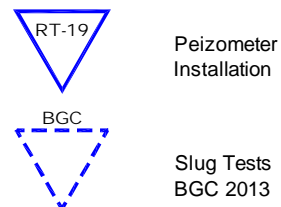


Legend

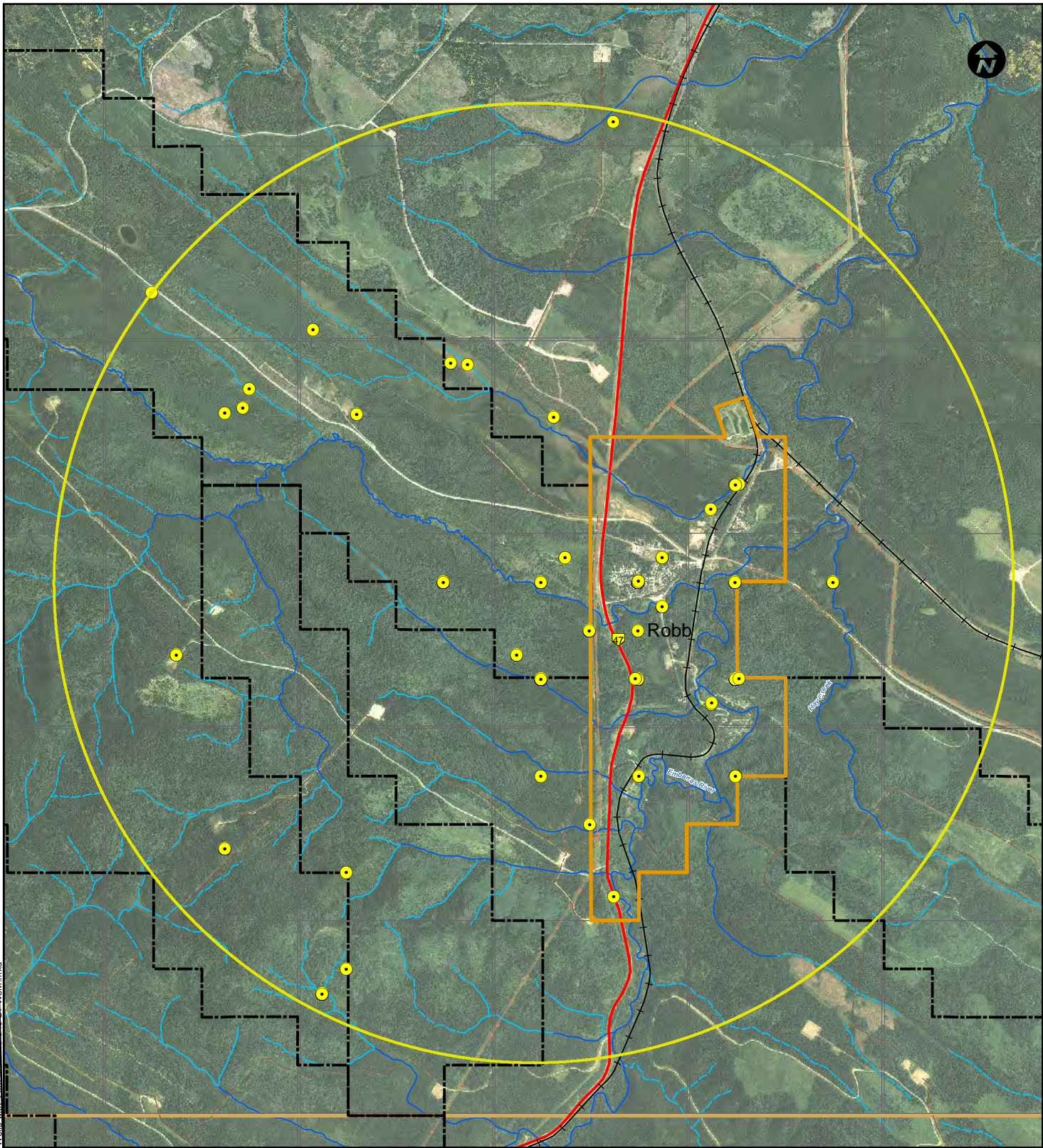
- | | | |
|------------------|-------------------------------------|----------------------|
| — Reserve Coal | — Dump Design Surface | — Pit Design Surface |
| — Waste Coal | - - - - - Inferred Coal | |
| — Sandstone | ■ Mineable Coal | ■ Clean Bentonite |
| — Siltstone | ■ Non-Mineable Coal | ■ Siltsones/Shales |
| — Carby mudstone | ■ Carby Mudstones Non-Mineable Coal | ■ Glacial Till |
| — Bentonitic | | |
| — Burnt rock | | |
| — Mined out/Void | | |
| — Fault | | |

- 388 Total Dissolved Solids (mg/L) (measured June/July 2011)
- 1147.1 Hydraulic Head (m) (measured September 2011)
- ← Groundwater Flow Direction

Stratigraphic Units:
 P - Paskapoo
 CS - Coalspur
 LCS - Lower Coalspur
 B - Brazeau

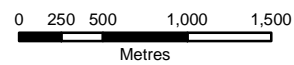


PROJECT: Coal Valley Mine Robb Trend Project		
TITLE: Hydrogeological Cross Section 000 East		
DRAWN: JDC/JG/RS CHECKED: KP DATE: Jun 6/13 PROJECT: 08-041	FIGURE: 9- (Section Looking East)	...Final Docs\08-041b\Fig 9-7 Section 6000E.dwg



Document Path: K:\Active Client\CVRI\Final Docs\08-04-13\Fig 9-8 Wells with 4 km of NW15 010 21 WGS84.mxd

- Legend**
- Water Wells
 - Search Radius 4km
 - Robb Townsite Boundary
 - Robb Trend Permit Boundary
 - Powerline
 - Railway
 - Highway



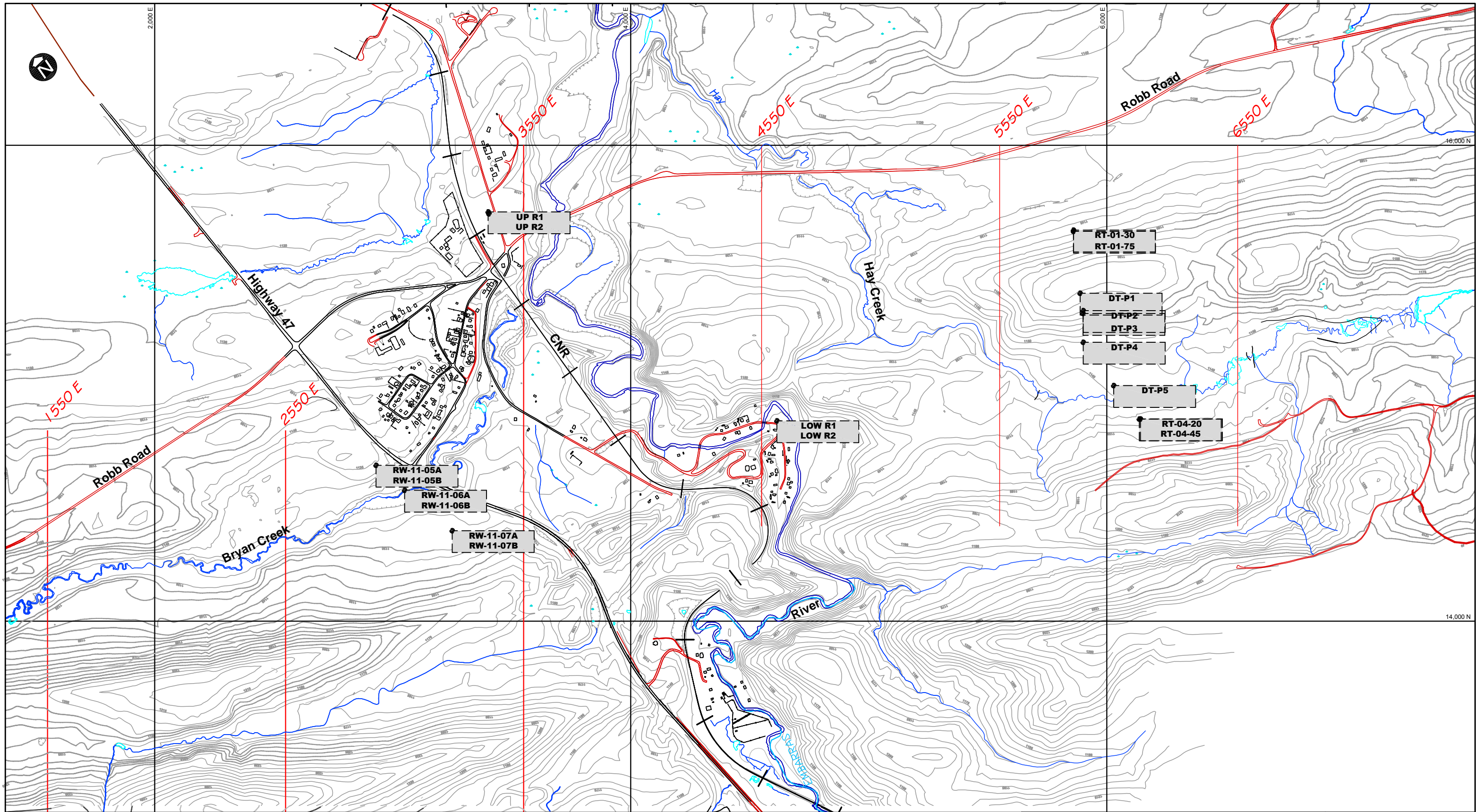
**Coal Valley Mine
Robb Trend Project**



TITLE:
 Water Wells within 4 km of
 North 5-09-20 5M


DRAWN: PS/JG
 CHECKED: KP
 DATE: May 16/13
 PROJECT: 08-041

FIGURE:
9-0



Legend


RW-11-07A
RW-11-07B Piezometer Installation


 2550 E Geology Section

0 0.1 0.2 0.5km
 Scale 1 : 15 000

PROJECT:



**Coal Valley Mine
Robb Trend Project**

TITLE:

Piezometer Plan



MILLENNIUM
EMS Solutions Ltd.

...Final Docs\08-04 1b\Fig 9-9 Piezometer Plan.dwg

DRAWN: JG

FIGURE:

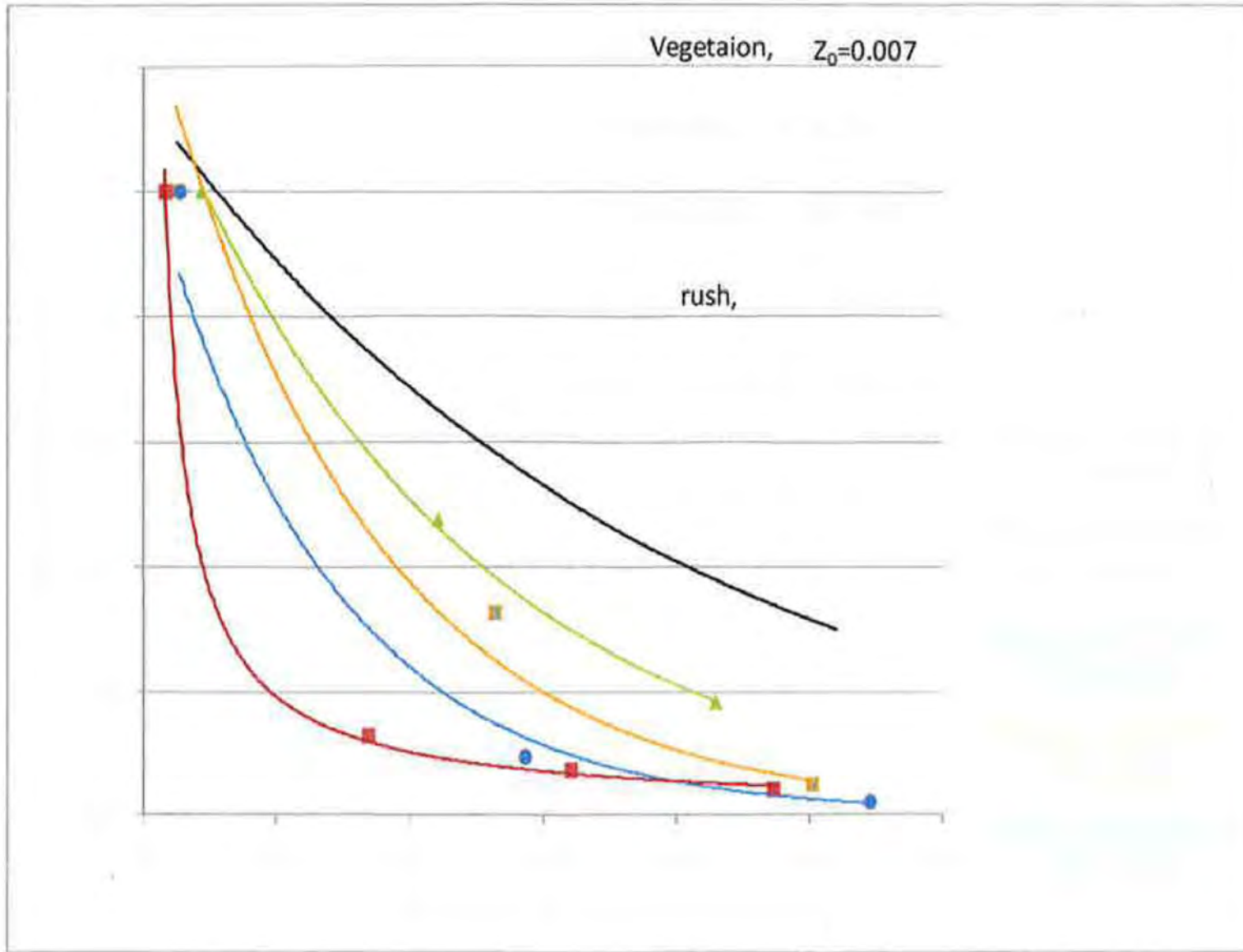
CHECKED: KP

9-9

DATE: May 16/13

PROJECT: 08-041b

AESRD FIGURES



NOTE:
The vertical axis is PM₁₀ concentration normalized to the nearest sampler from road surface.

REF: Zhu et al., 2012.

PROJECT:



Coal Valley Mine
Robb Trend Project



MILLENNIUM
EMS Solutions Ltd.

TITLE:

PM₁₀ Deposition for Different Vegetation
Types on Wind of Impacted Road

FILE: ...CVRIFinal Docs\08-041b\Fig-Variou.dwg

DRAWN: JG

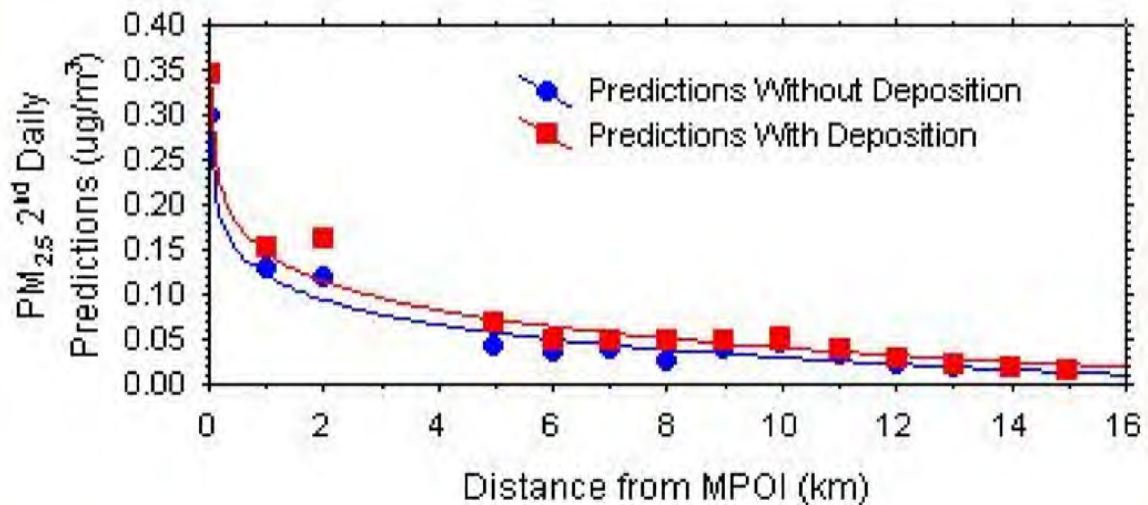
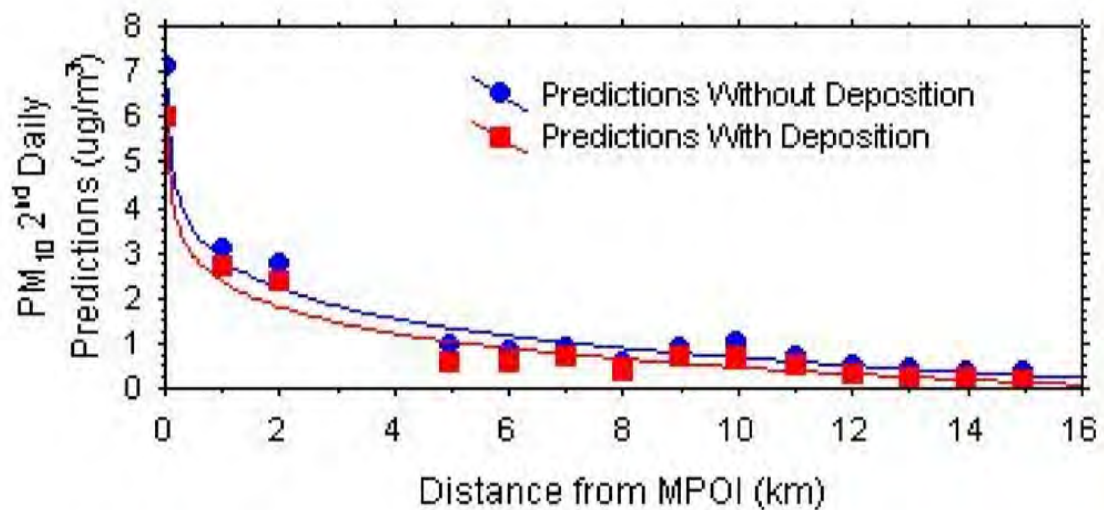
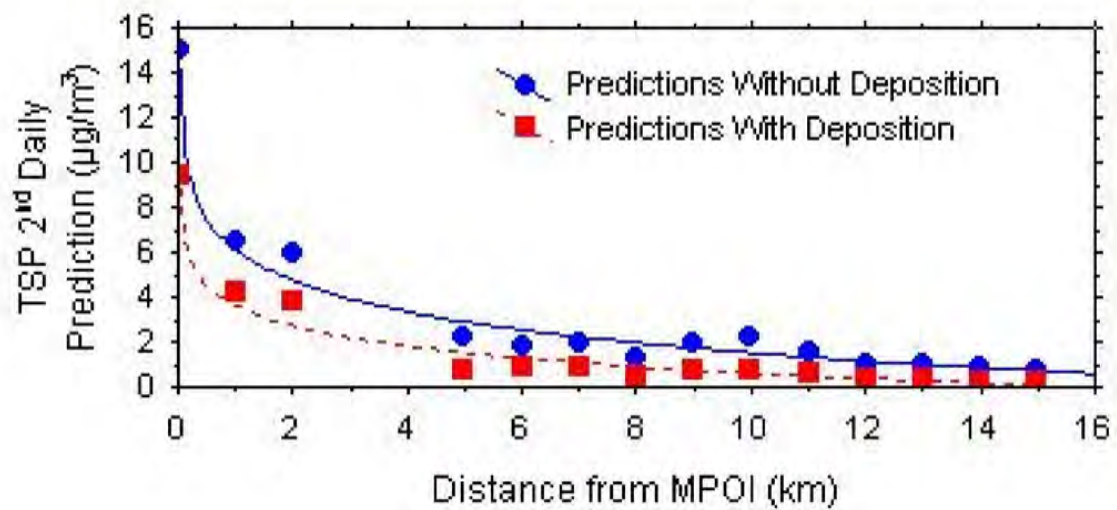
FIGURE:



CHECKED: KP

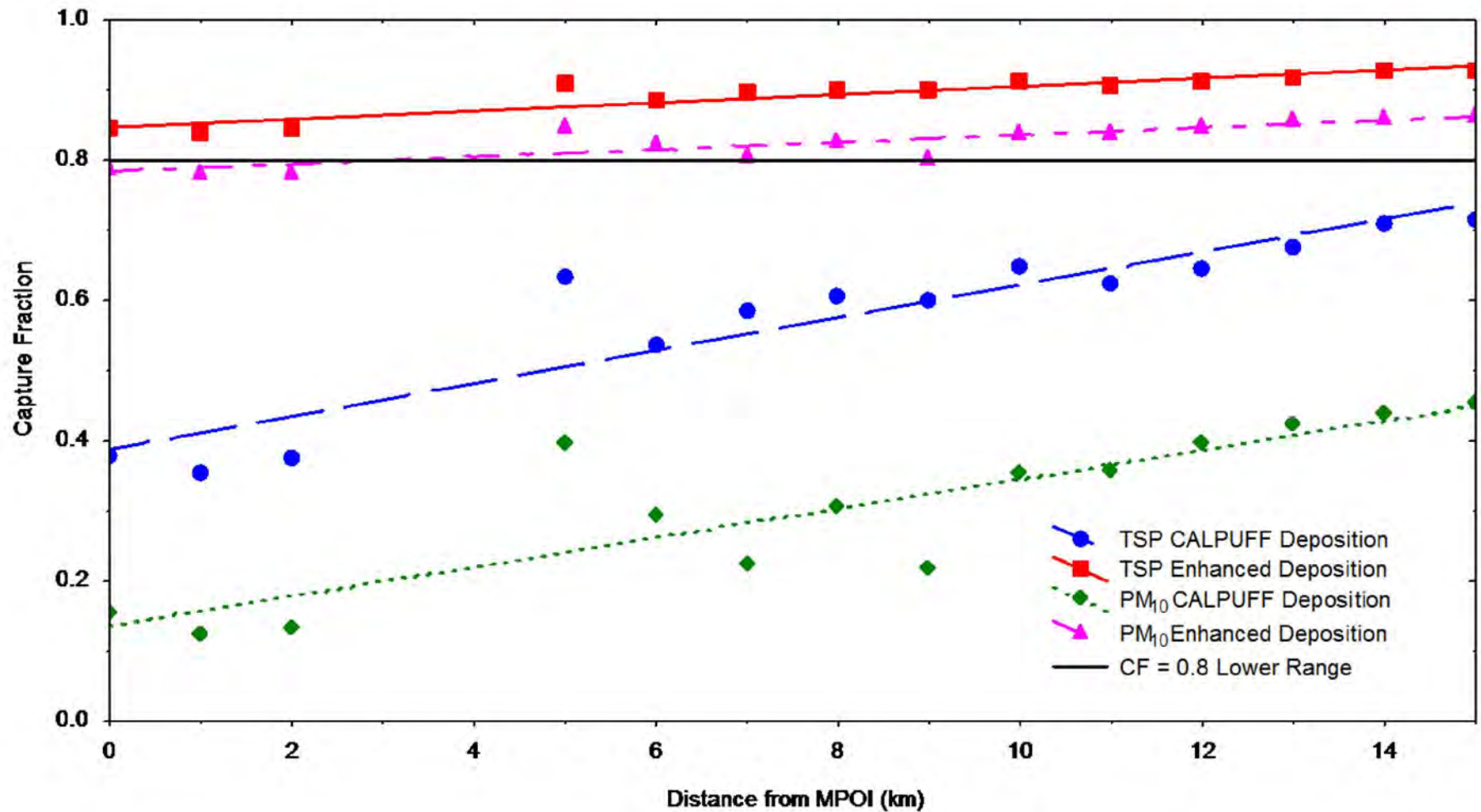
9-



DATE: May 15/13

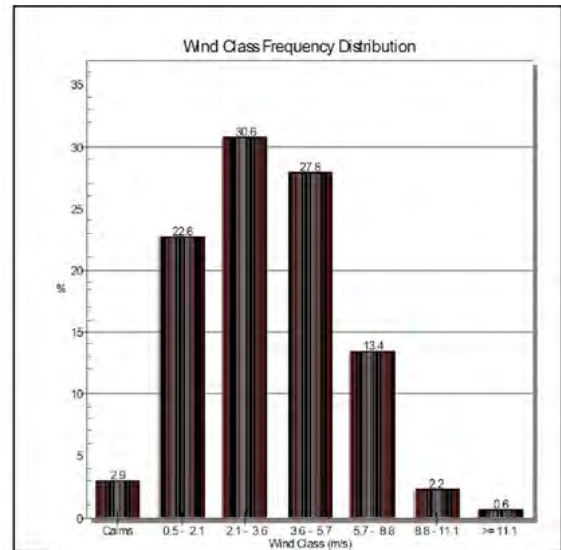
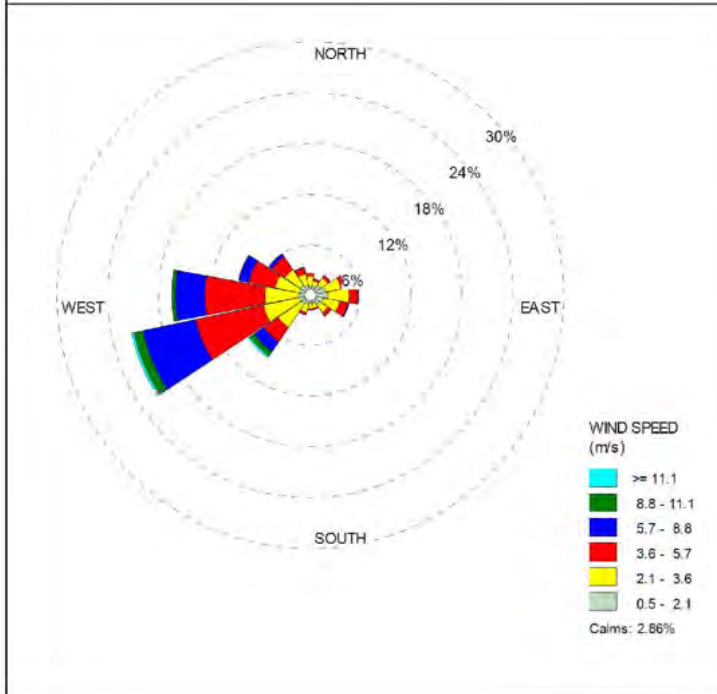
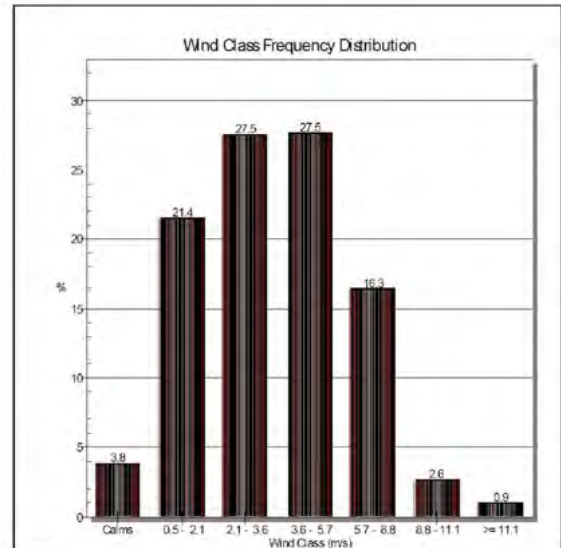
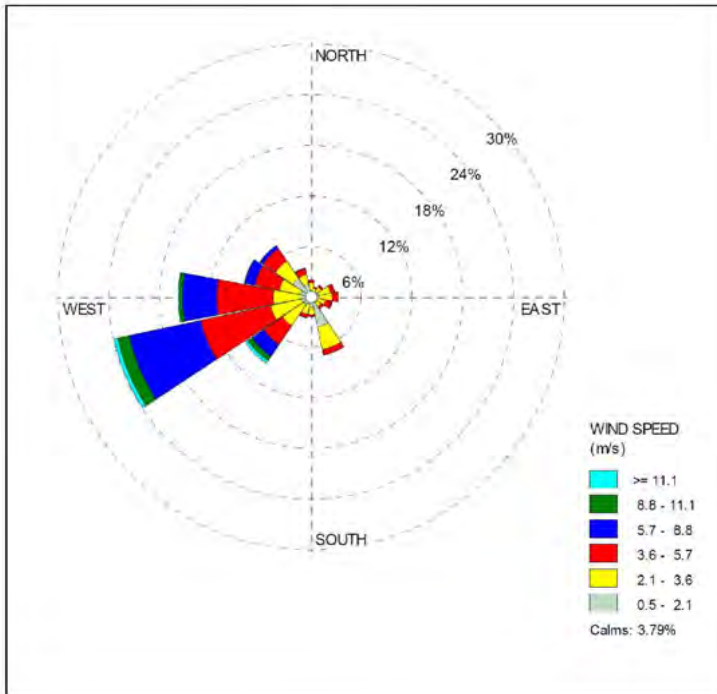
PROJECT: 08-041b



PROJECT: 	Coal Valley Mine Robb Trend Project	
TITLE: Comparison of CA₁₀P₁₀ Predicted Concentrations with and without Deposition for Stocpile Emissions		



PROJECT:	 Coal Valley Mine Robb Trend Project	 MILLENNIUM EMS Solutions Ltd.
TITLE:	Comparison of Capture Fractions (CF) due to CALPUFF Model Deposition Algorithm and CF Used in Assessment here Beside CF due to Model Results Obtained with CALPUFF with Deposition Core Further Reduced by 5%	FILE: ...CVRIFinal Docs\08-041b\Fig-Variou.dwg
		DRAWN: JG
		CHECKED: KP
		DATE: May 15/13
		PROJECT: 08-041b
		FIGURE: 9-3



PROJECT:



Coal Valley Mine
Robb Trend Project



MILLENNIUM
EMS Solutions Ltd.

TITLE: CA M T Wind Rose and Wind Speed
Frequency Distribution at Robb for
T05 (Top) and T05 (Bottom)

FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.dwg

DRAWN: JG

FIGURE:

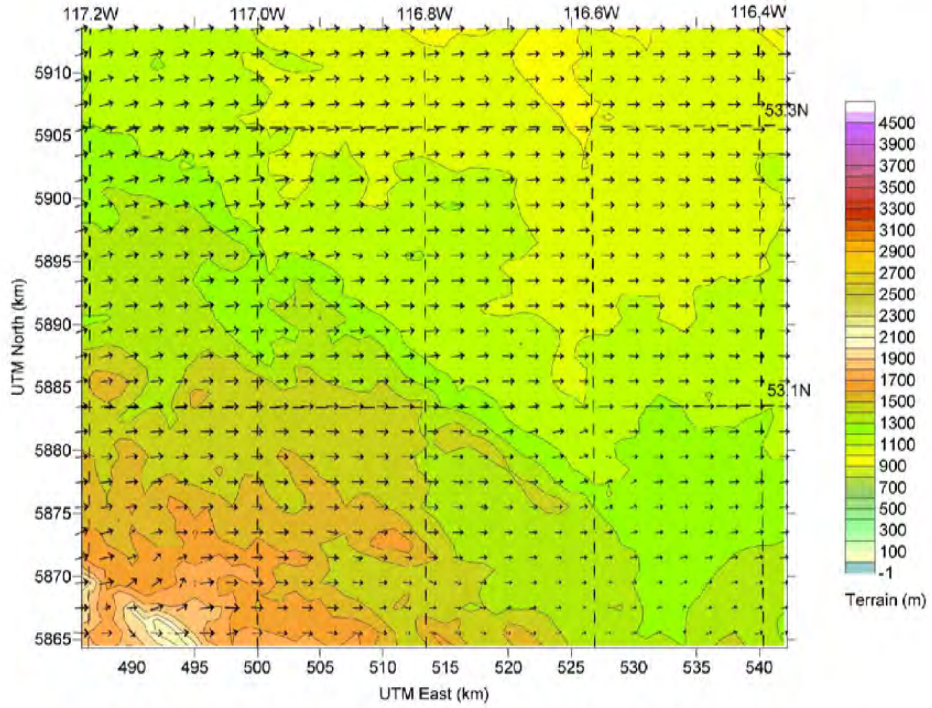
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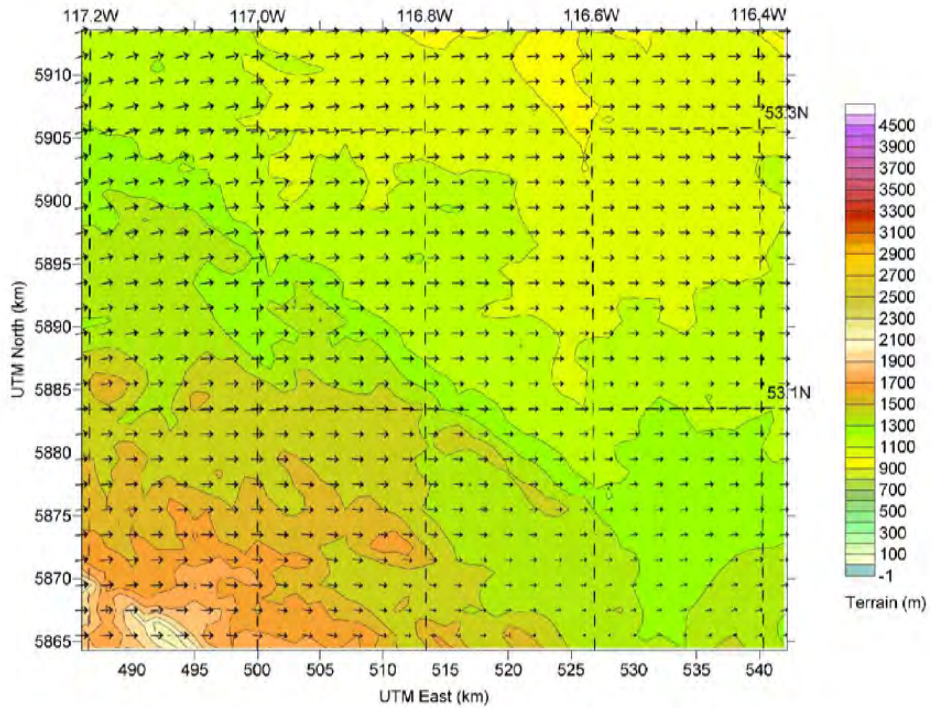
DATE: May 15/13


PROJECT: 08-041b

UTM Zone: 11
 Hemisphere: N
 Datum: NAR-B




UTM Zone: 11
 Hemisphere: N
 Datum: NAR-B

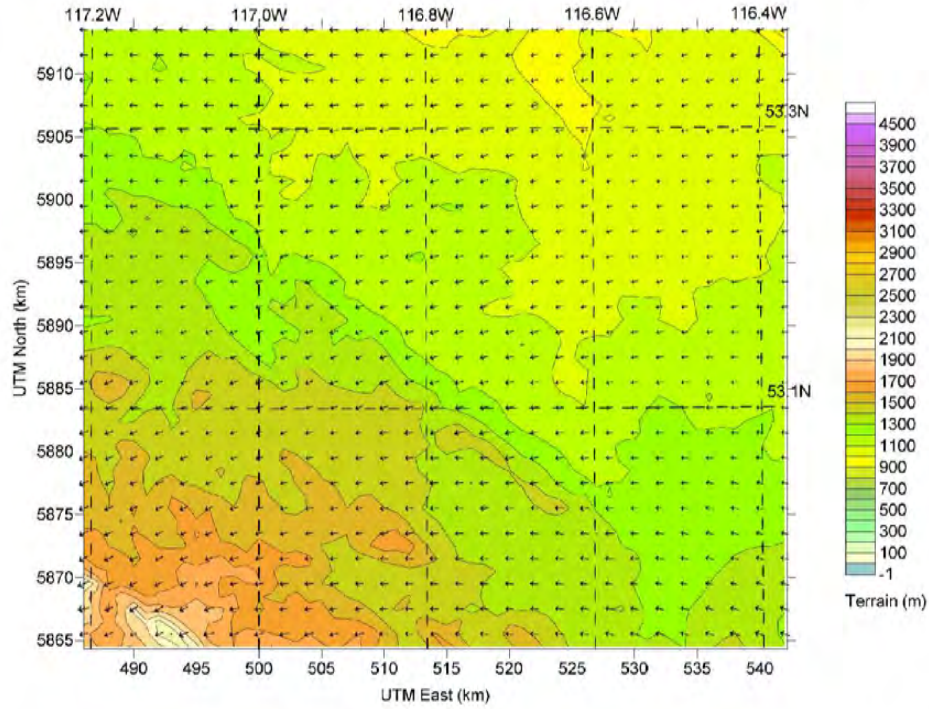


PROJECT:
 **Coal Valley Mine
 Robb Trend Project**

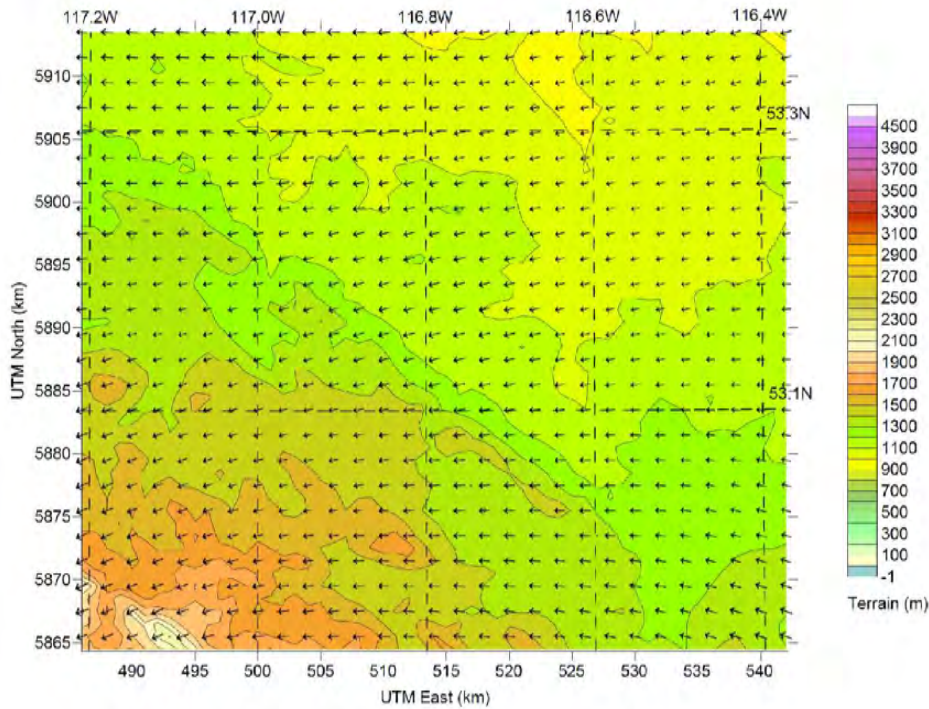
TITLE:
**CA M T ind Vectors for T RRA 5 (Top)
 and T RRA (Bottom) September 2002
 00 h- 0 h e el (0-20 m)**


 MILLENNIUM EMS Solutions Ltd.	
FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.s.dwg	
DRAWN: JG	FIGURE:
CHECKED: KP	0-2
DATE: May 15/13	
PROJECT: 08-041b	

UTM Zone: 11
Hemisphere: N
Datum: NAR-B




UTM Zone: 11
Hemisphere: N
Datum: NAR-B



PROJECT:
 **Coal Valley Mine
Robb Trend Project**

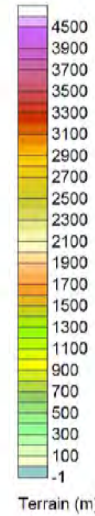
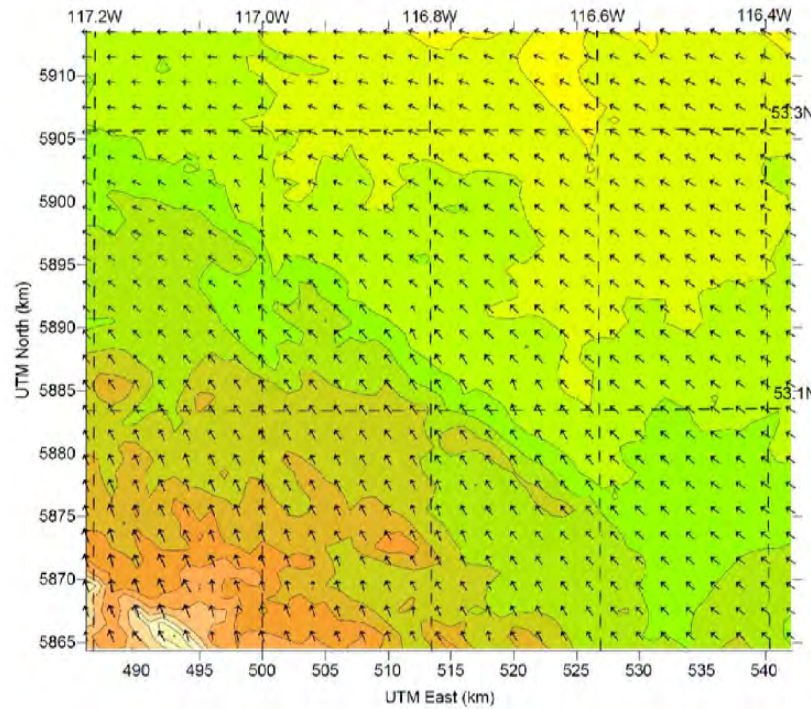
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**CA M T ind Vectors for T RRA 5 (Top)
and T RRA (Bottom) 22 July 2002**
h- h e e l (0-20 m)


MILLENNIUM
EMS Solutions Ltd.

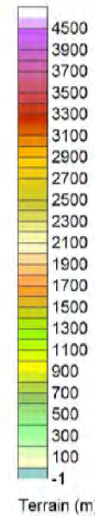
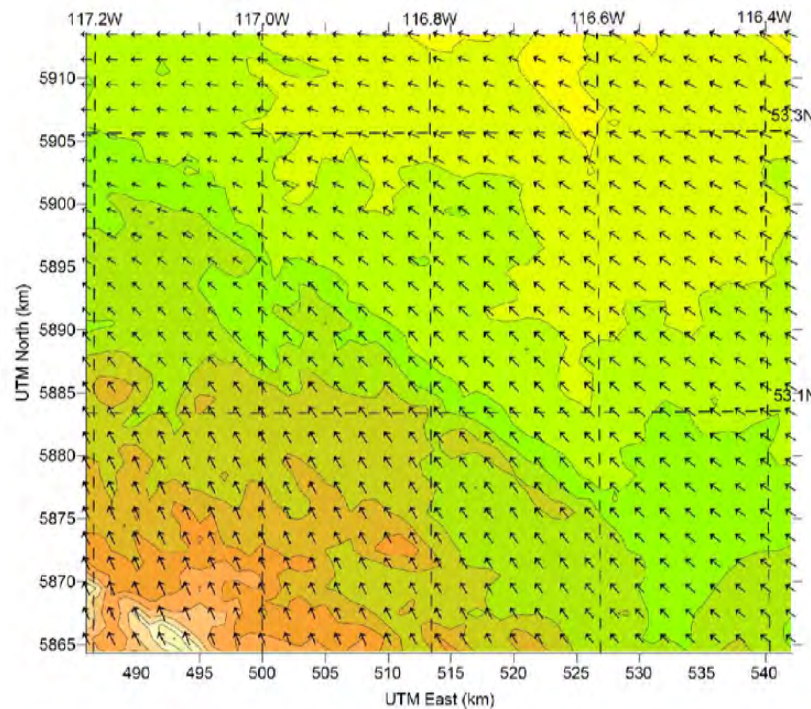
FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.dwg

DRAWN: JG	FIGURE:
CHECKED: KP	0-3
DATE: May 15/13	
PROJECT: 08-041b	

UTM Zone: 11
 Hemisphere: N
 Datum: NAR-B



UTM Zone: 11
 Hemisphere: N
 Datum: NAR-B



PROJECT:



**Coal Valley Mine
 Robb Trend Project**



MILLENNIUM
 EMS Solutions Ltd.

TITLE:
**CA M T ind Vectors for T RRA 5 (Top)
 and T RRA (Bottom) July 2002
 22 h- 23 h e el (0-20 m)**

FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.dwg

DRAWN: JG

FIGURE:

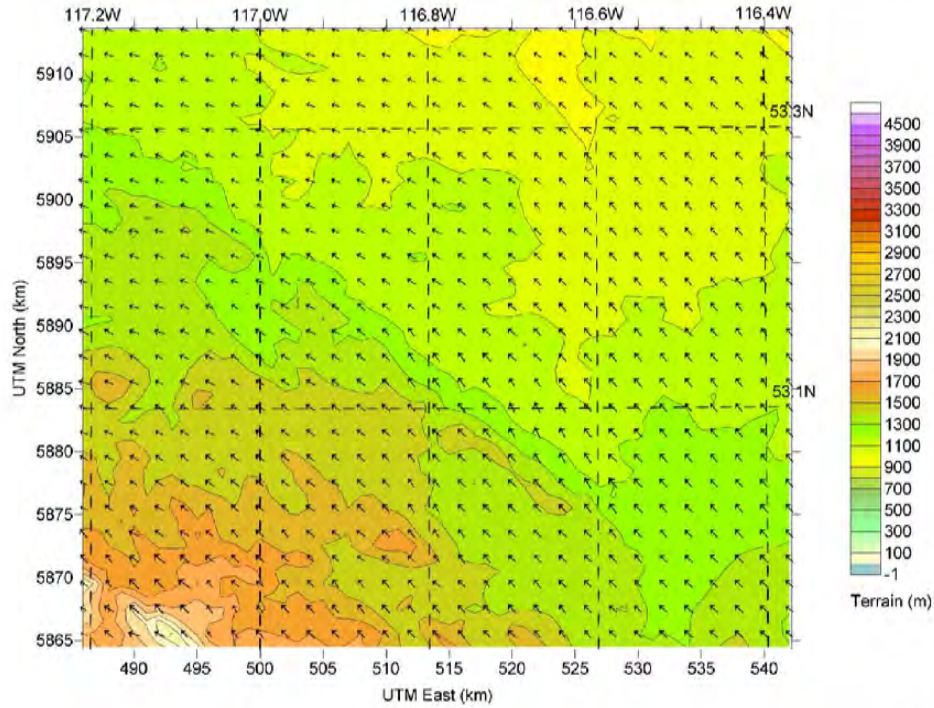
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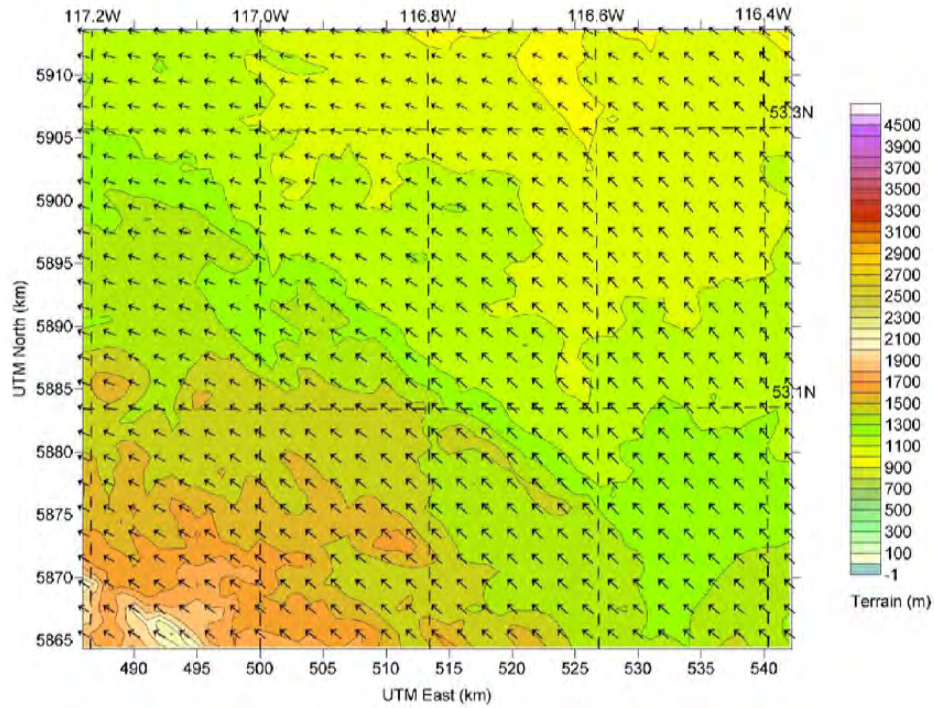
DATE: May 15/13


PROJECT: 08-041b


UTM Zone: 11
Hemisphere: N
Datum: NAR-B



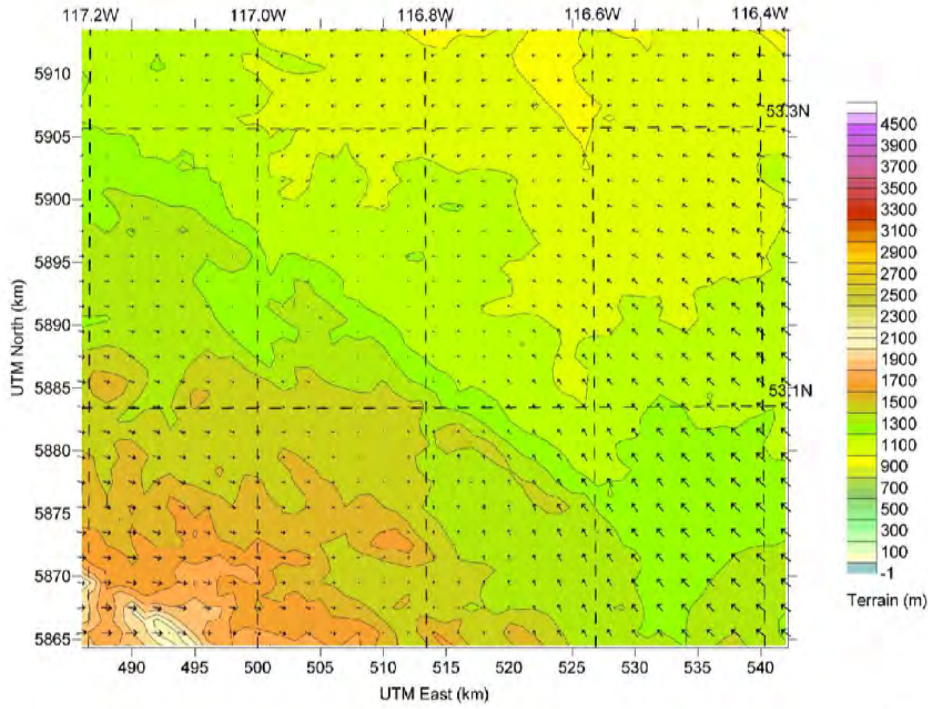
UTM Zone: 11
Hemisphere: N
Datum: NAR-B



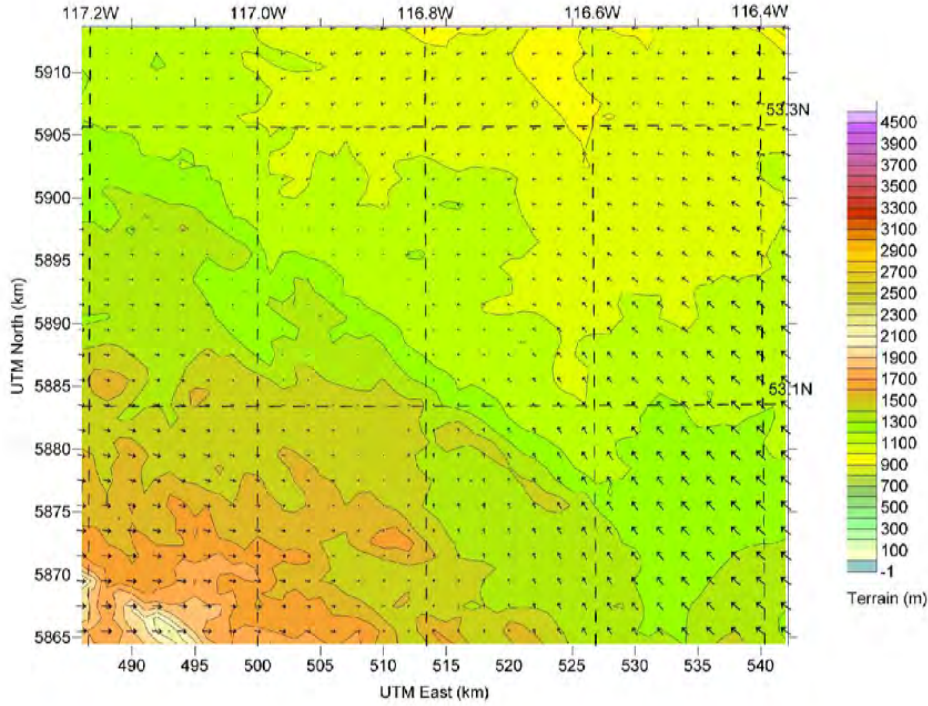
PROJECT:	 Coal Valley Mine Robb Trend Project
TITLE:	CA M T ind Vectors for T RRA 5 (Top) and T RRA (Bottom) 22 July 2002 20 h- 2 h e e l (0-20 m)



	
FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.dwg	
DRAWN: JG	FIGURE:
CHECKED: KP	0-5
DATE: May 15/13	
PROJECT: 08-041b	

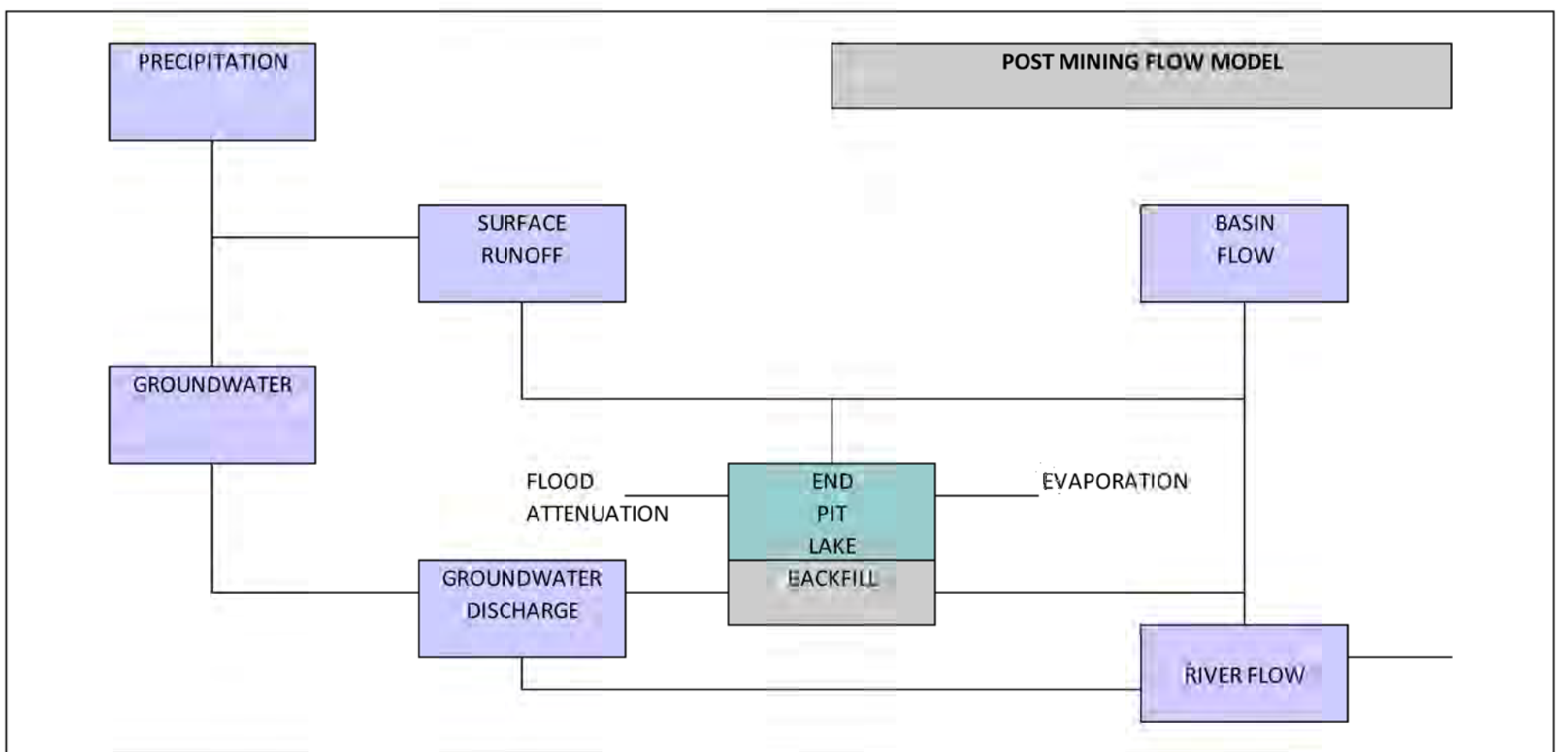
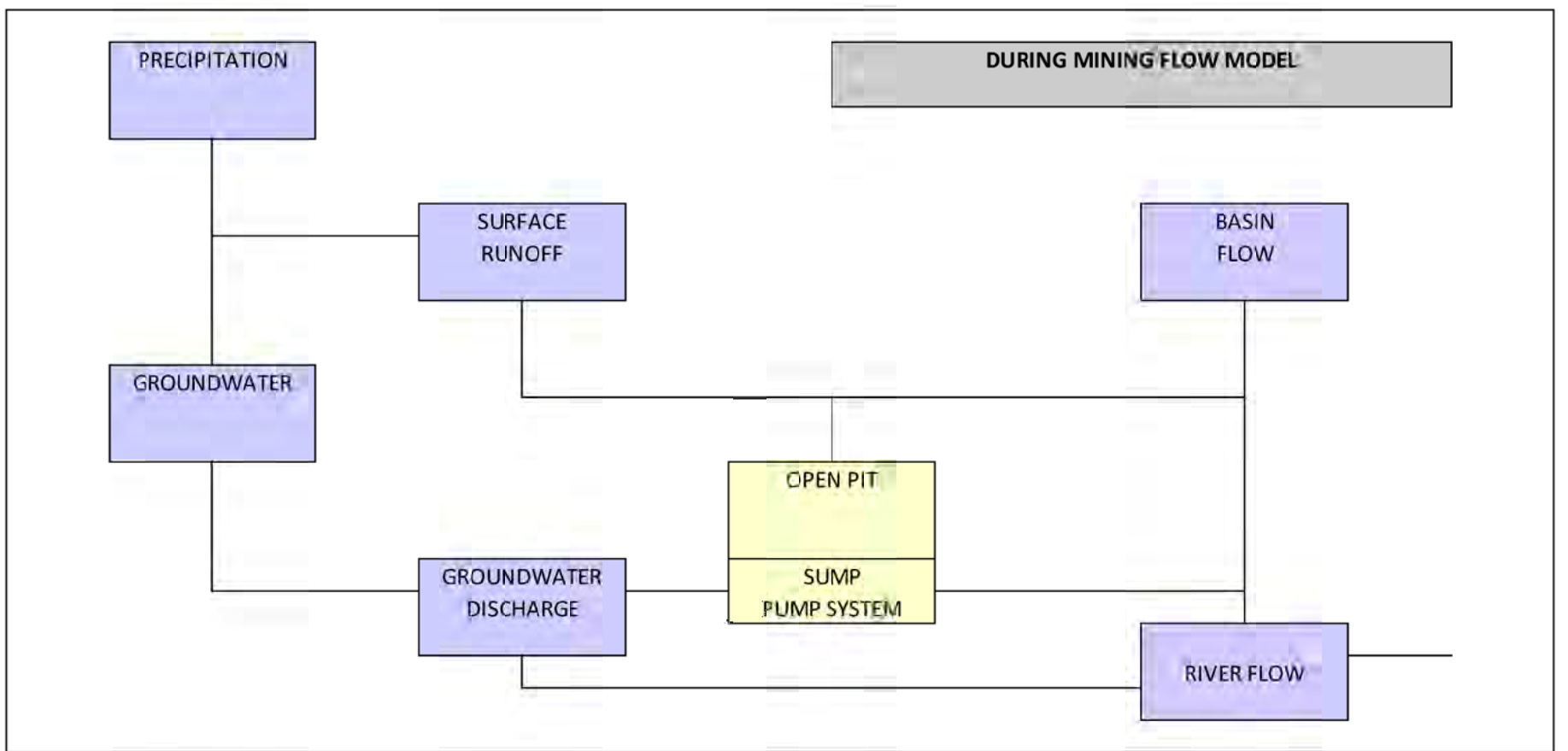
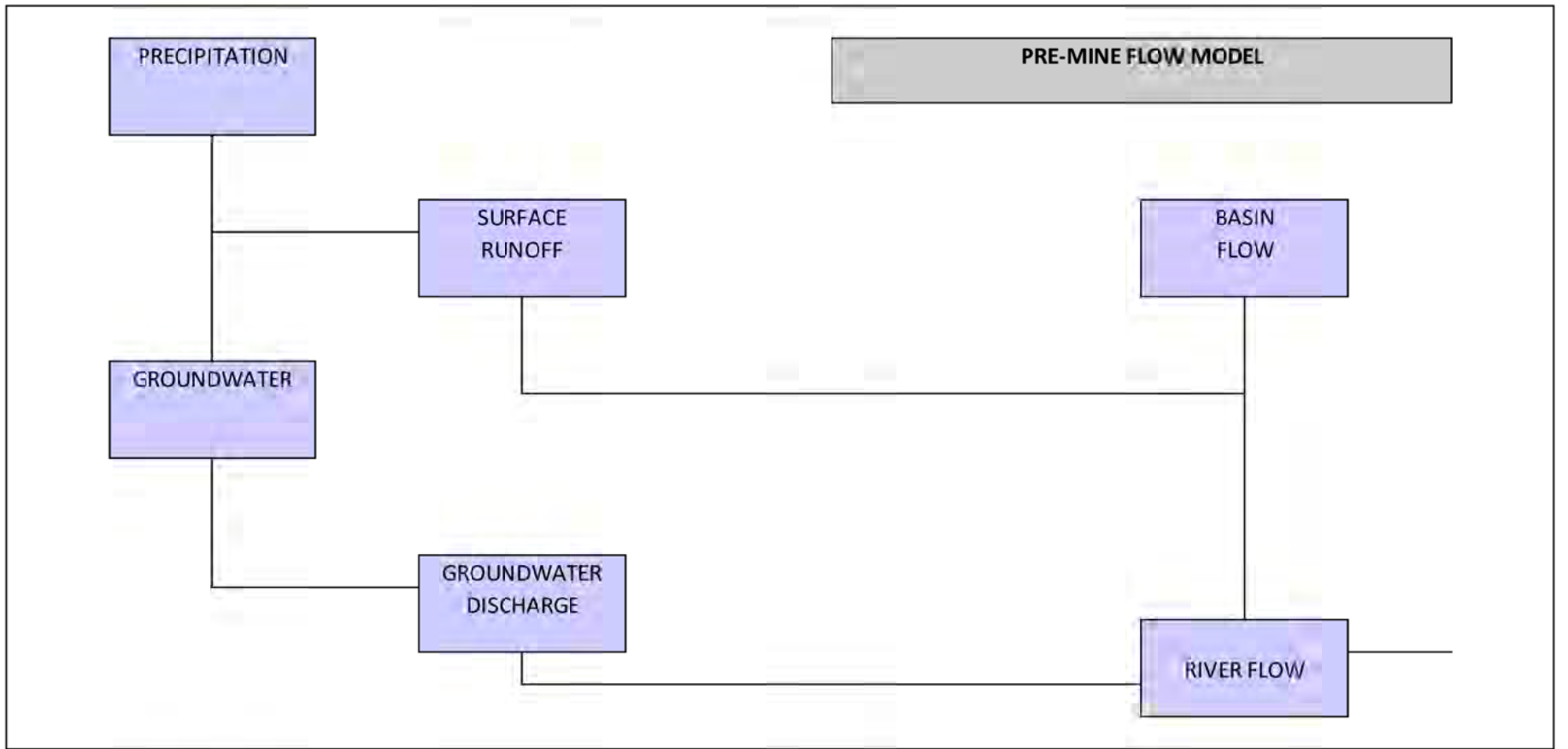
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 Hemisphere: N
 Datum: NAR-B





UTM Zone: 11
 Hemisphere: N
 Datum: NAR-B

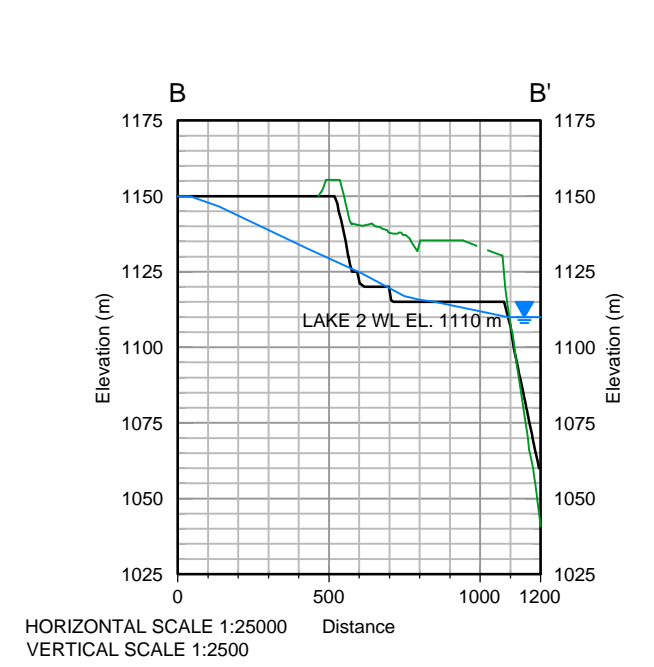
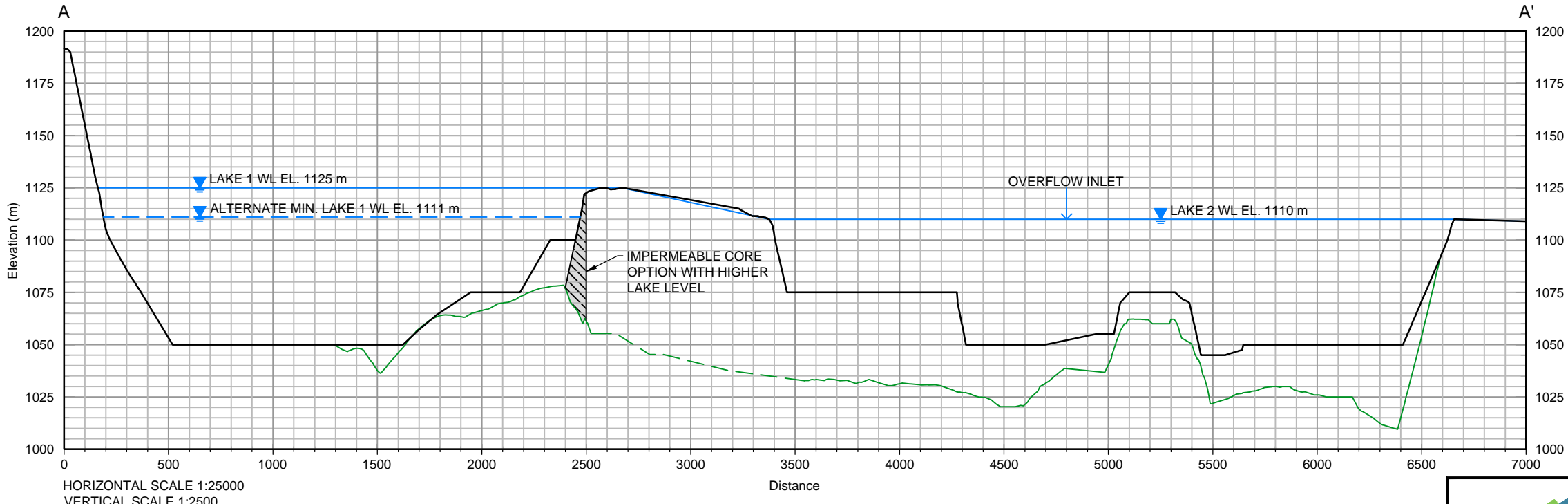
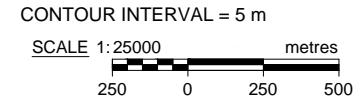
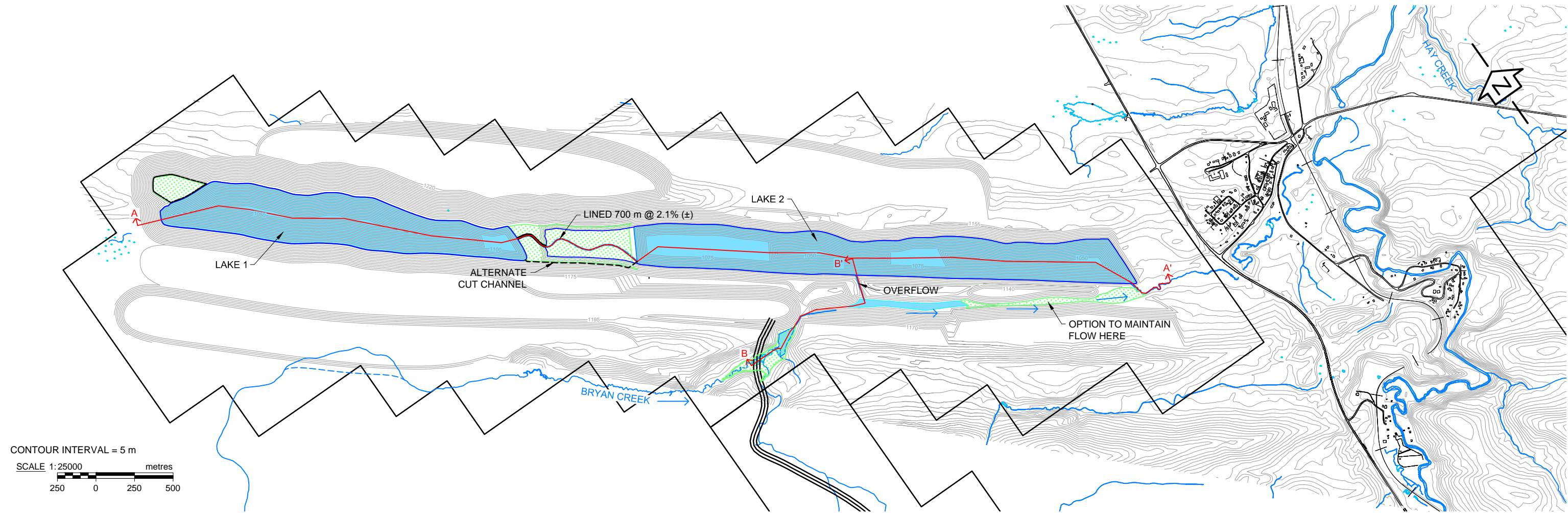


PROJECT:	 Coal Valley Mine Robb Trend Project	
TITLE:		
CA □ M □ T □ ind Vectors for T □ RRA □ □ 5 (Top) and T □ RRA □ □ □ (Bottom) □ □ □ July 2002 □ □ □ h- □ □ h □ e □ el □ (0-20 m)		FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.dwg DRAWN: JG CHECKED: KP DATE: May 15/13 PROJECT: 08-041b
		FIGURE: 0-□



PROJECT:	 Coal Valley Mine Robb Trend Project	 MILLENNIUM EMS Solutions Ltd.
TITLE:	Q 12 Flow Model Diagram	...Final Docs\08-041b\Fig 12-1 Q12 Flow Model.dwg
	DRAWN: JG	FIGURE:
	CHECKED: KP	12-1
	DATE: Apr 25/13	
	PROJECT: 08-041b	

PLOT 1:1 = Tabloid (L)
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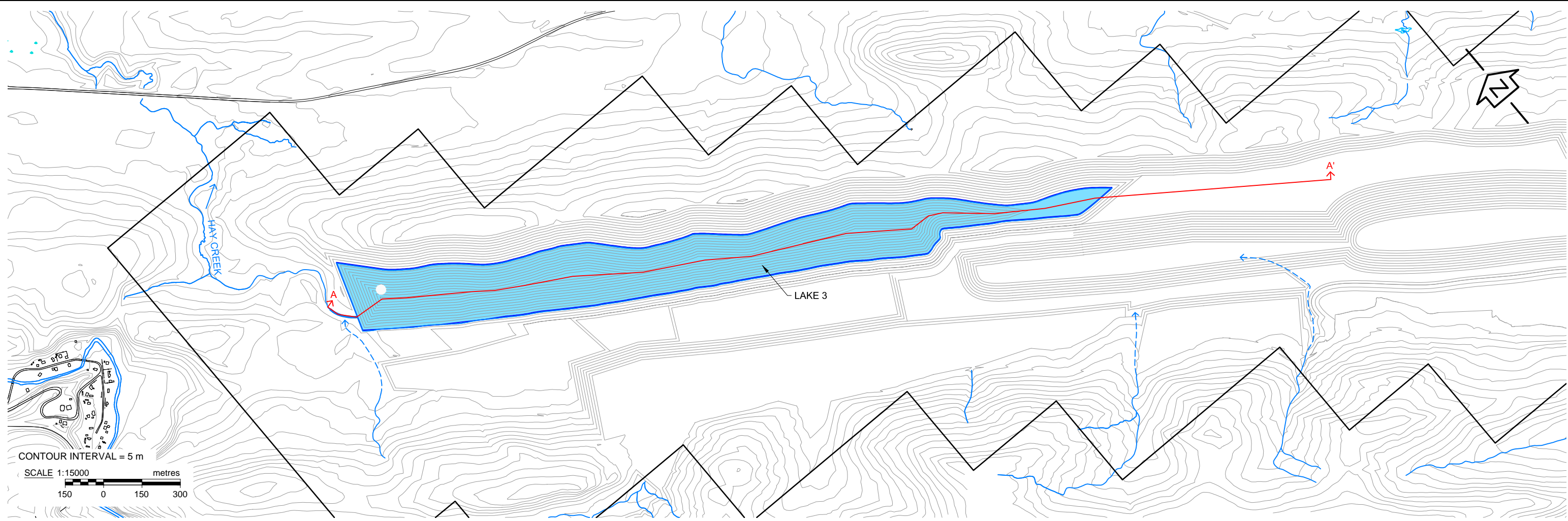
LEGEND

	Lake		Final Grade
	Wetland		Channel / Water
	Approximate Pit Bottom		

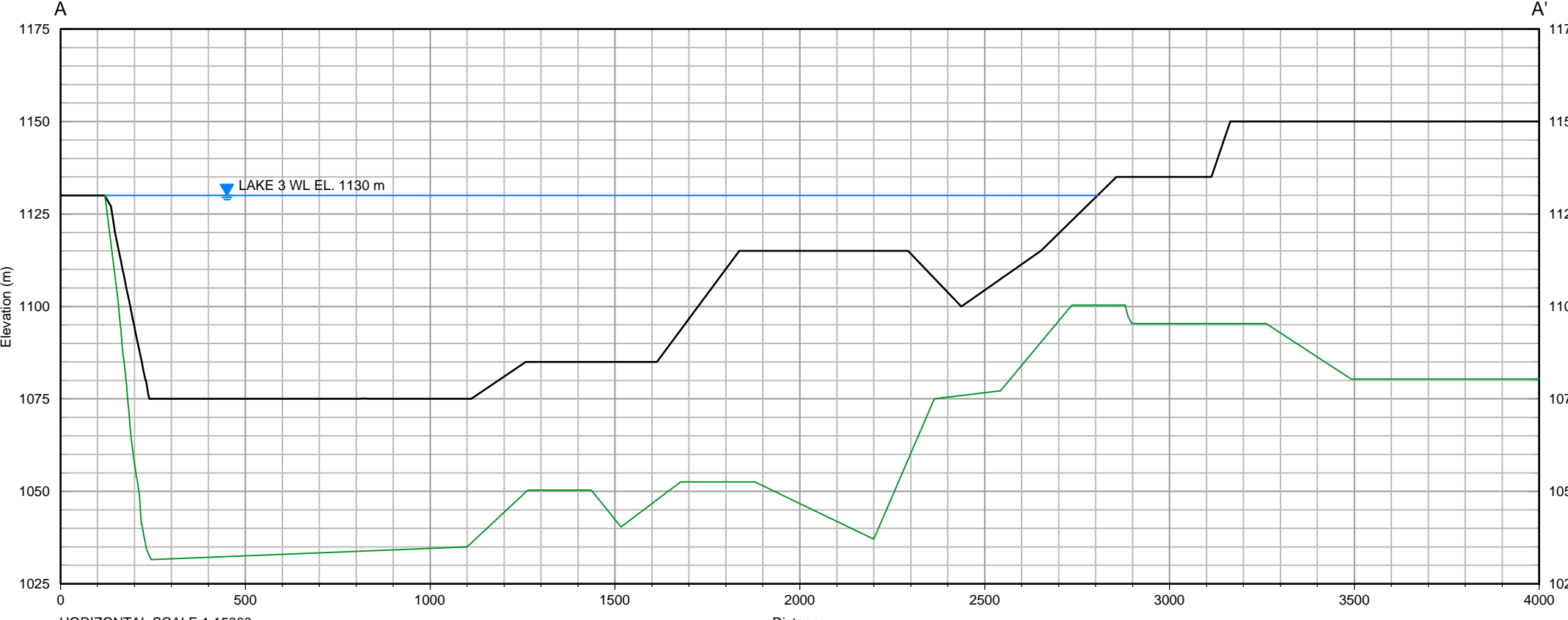
REFERENCE:
 The information contained herein may be compiled from numerous third party materials that are subject to periodic change without prior notification. While every effort has been made by Matrix Solutions Inc. to ensure the accuracy of the information presented at the time of publication, Matrix Solutions Inc. assumes no liability for any errors, omissions, or inaccuracies in the third party material.

		COAL VALLEY RESOURCES INC.	
		AN 2 R C AMATI N P AN AN PR I	
ROBB TREND PROJECT - SIR 75 AND 183			
DATE: AUGUST 2012	DESIGN: D. COOPER	DRAWN: Z. STEELE	
FILE: 5867-XS-ROBB-11.DWG	CHECK: D. RAMSEY	DATUM: UTM83-11	

PLOT 1:1 = Tabloid (L)
 F:\0867\Drainage\2011\0867-XS-ROBB-11.dwg - 3 - Tuesday, May 14, 2013 12:12:22 PM - Zachary Steele



CONTOUR INTERVAL = 5 m
 SCALE 1:15000 metres
 150 0 150 300



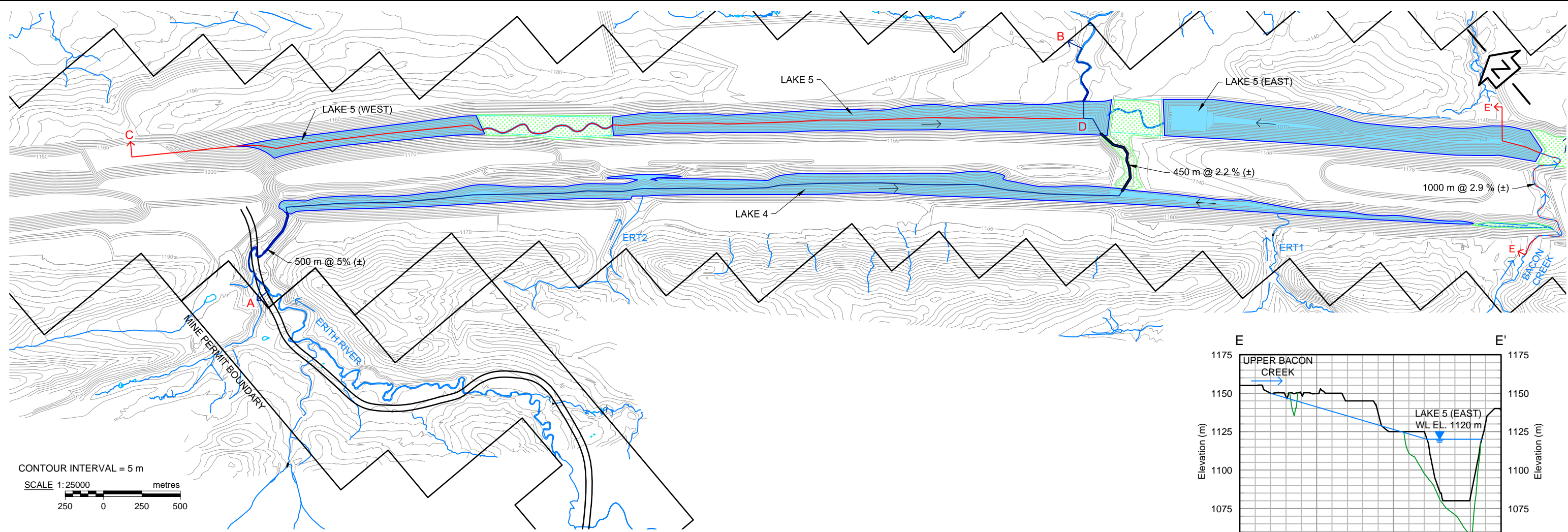
HORIZONTAL SCALE 1:15000
 VERTICAL SCALE 1:1500
 Distance

- LEGEND**
- Lake
 - Wetland
 - Approximate Pit Bottom
 - Final Grade
 - Channel / Water

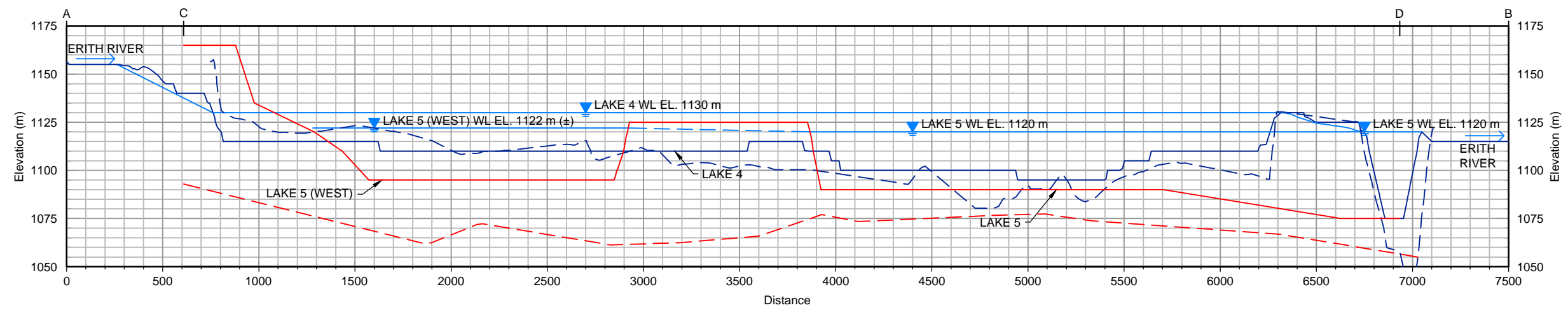
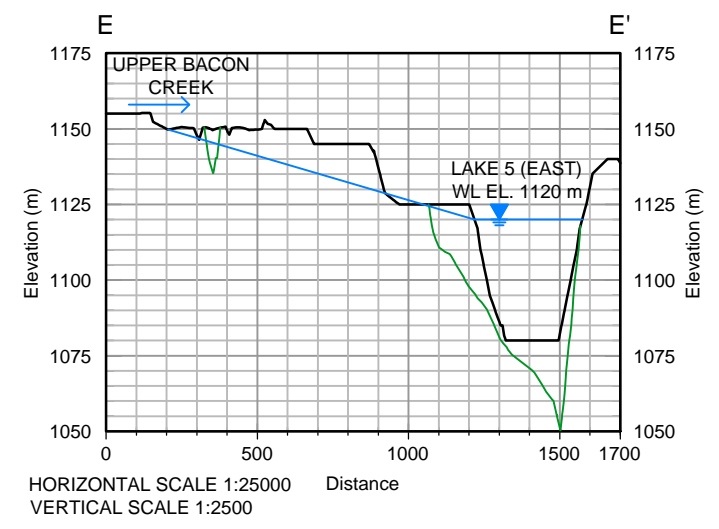
	COAL VALLEY RESOURCES INC.		
	A 3 R C AMATI N P AN AN PR I		
	ROBB TREND PROJECT - SIR 75 AND 183		
DATE: AUGUST 2012	DESIGN: D. COOPER	DRAWN: Z. STEELE	
FILE: 5867-XS-ROBB-11.DWG	CHECK: D. RAMSEY	DATUM: UTM83-11	
			-2

REFERENCE:
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PLOT 1:1 = Tabloid (L) F:\687\Drilling\2011\687-XS-ROBB-11.dwg - 4.5 - Tuesday, May 14, 2013 12:22:22 PM - Zachary Steele



CONTOUR INTERVAL = 5 m
 SCALE 1:25000 metres
 250 0 250 500



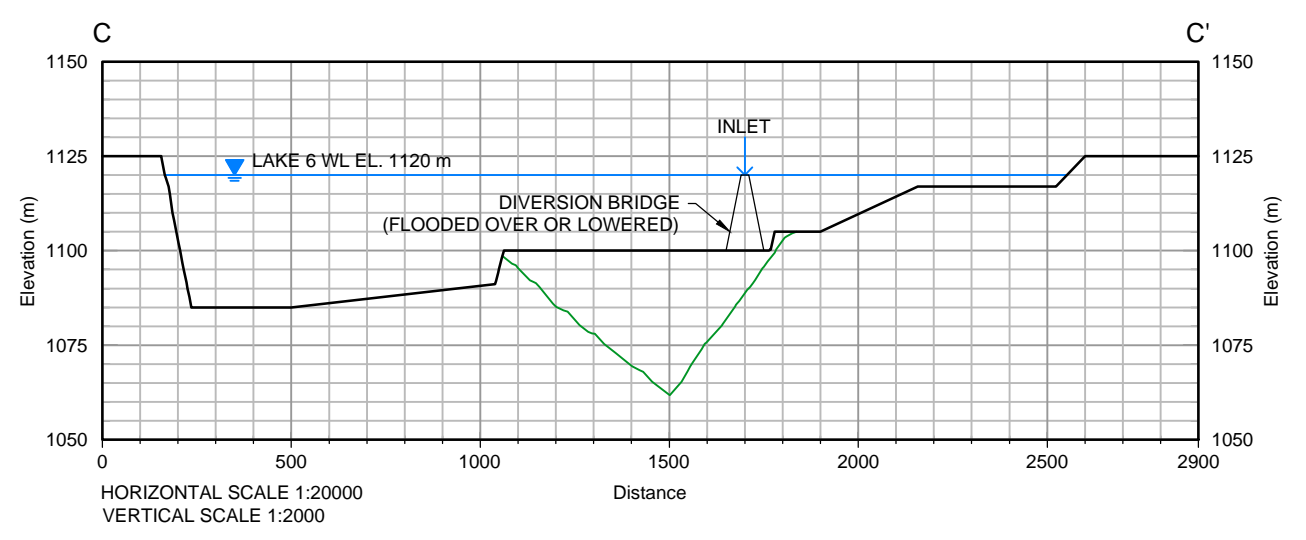
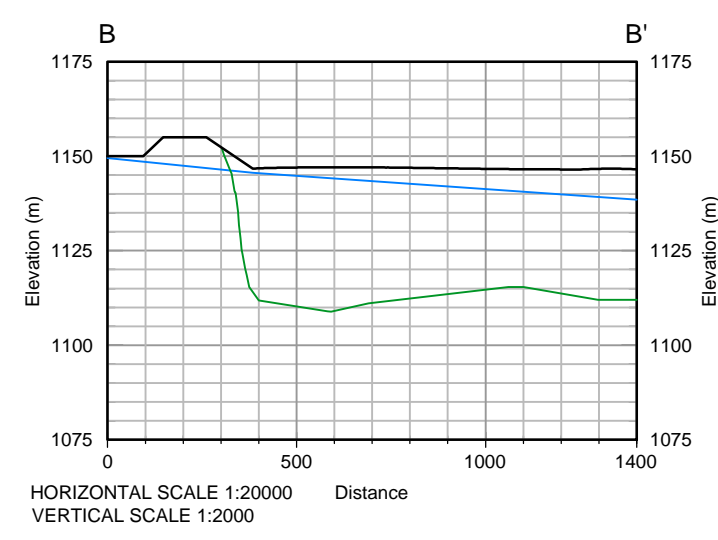
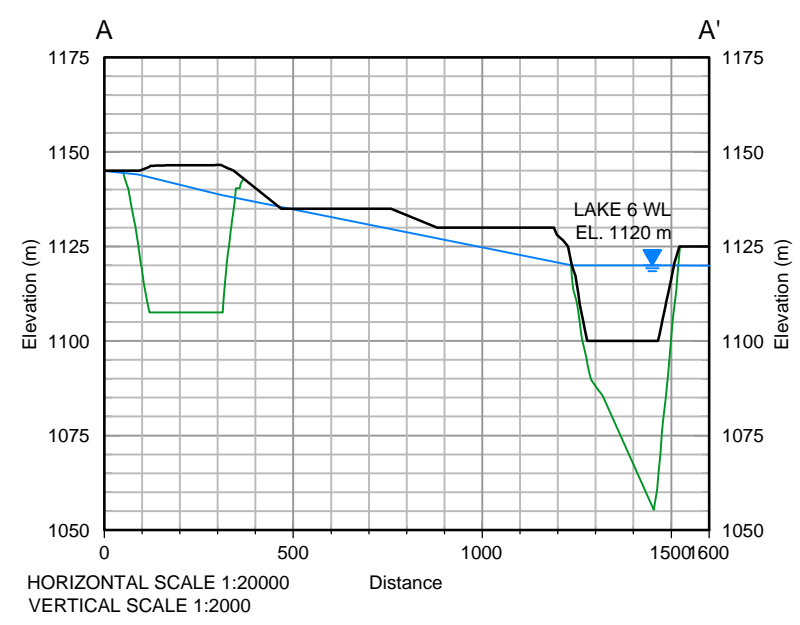
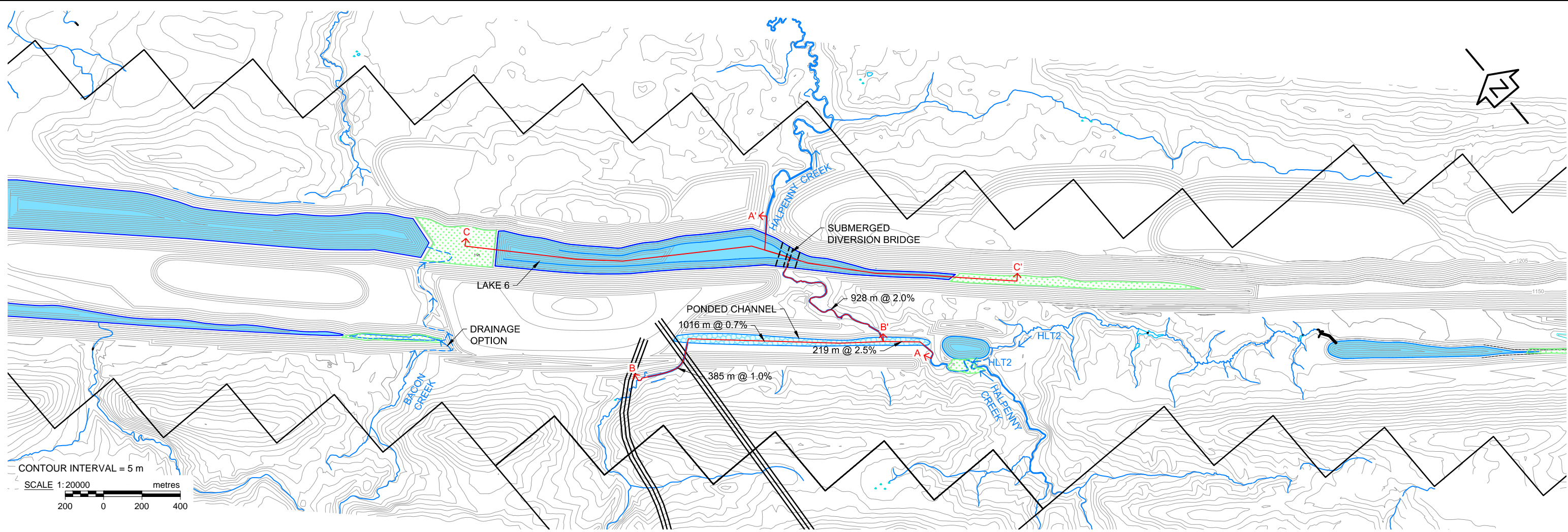
A AN 5 PR I S
 HORIZONTAL SCALE 1:25000 VERTICAL SCALE 1:2500

LEGEND					
█	Lake	—	Lake 4 Final Grade	—	Approximate Pit Bottom
█	Wetland	- - -	Lake 5 Approximate Pit Bottom	—	Channel / Water
- - -	Lake 4 Approximate Pit Bottom	—	Lake 5 Final Grade	- - -	Drainage Option

REFERENCE:
 DISCLAIMER: The information contained herein may be compiled from numerous third party materials that are subject to periodic change without prior notification. While every effort has been made by Matrix Solutions Inc. to ensure the accuracy of the information presented at the time of publication, Matrix Solutions Inc. assumes no liability for any errors, omissions, or inaccuracies in the third party material.

Matrix Solutions Inc.		COAL VALLEY RESOURCES INC.	
A S AN 5 R C AMATI N P AN AN PR I			
ROBB TREND PROJECT - SIR 75 AND 183			
DATE: AUGUST 2012	DESIGN: D. COOPER	DRAWN: Z. STEELE	R -3
FILE: 5867-XS-ROBB-11.DWG	CHECK: D. RAMSEY	DATUM: UTM83-11	

PLOT 1:1 = Tabloid (L) F:\687\Drain\2011\687-XS-ROBB-11.dwg - 6 - Tuesday, May 14, 2013 12:12:22 PM - Zachary Steele



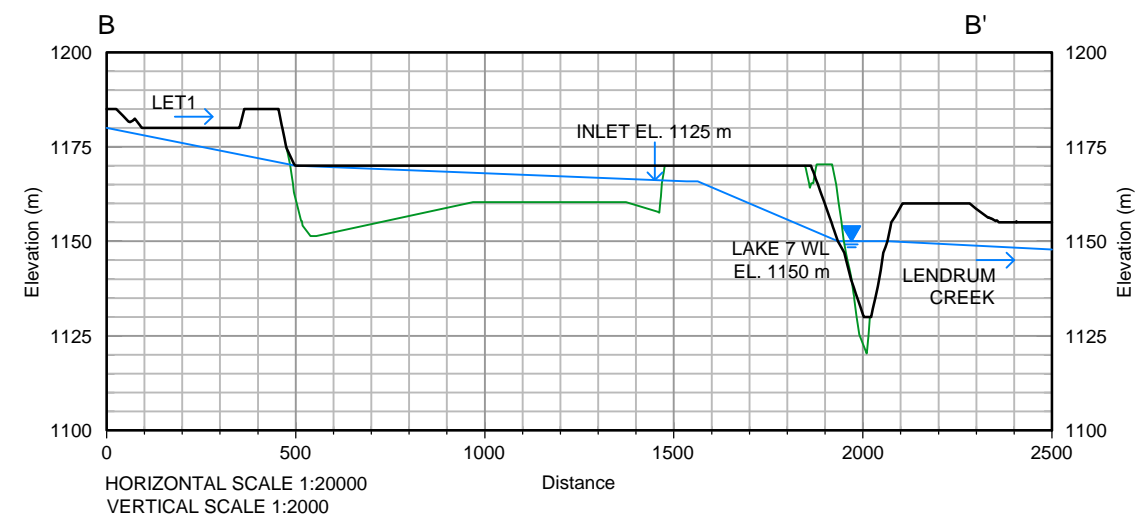
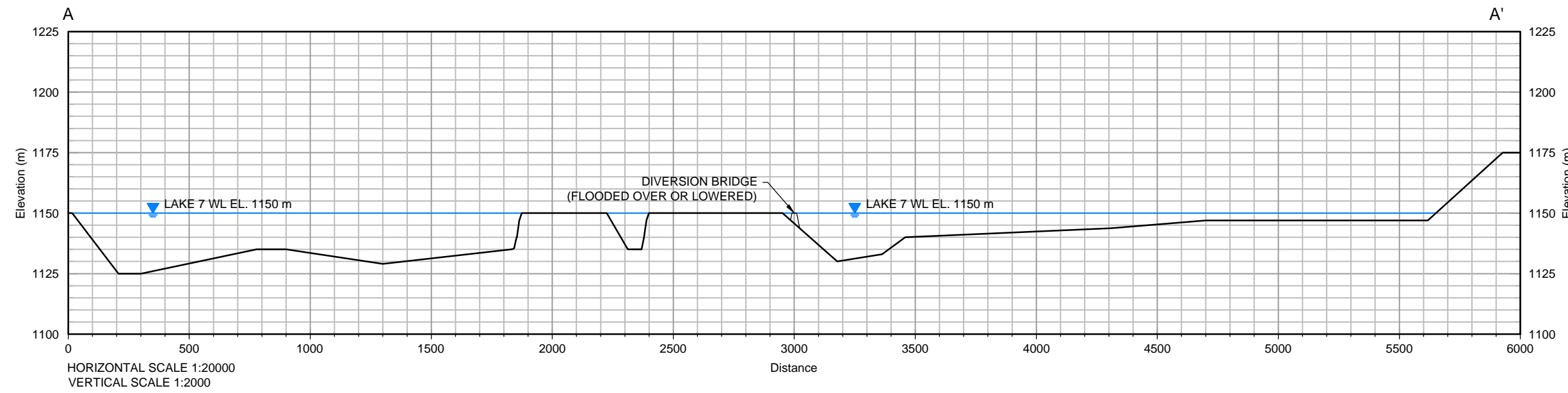
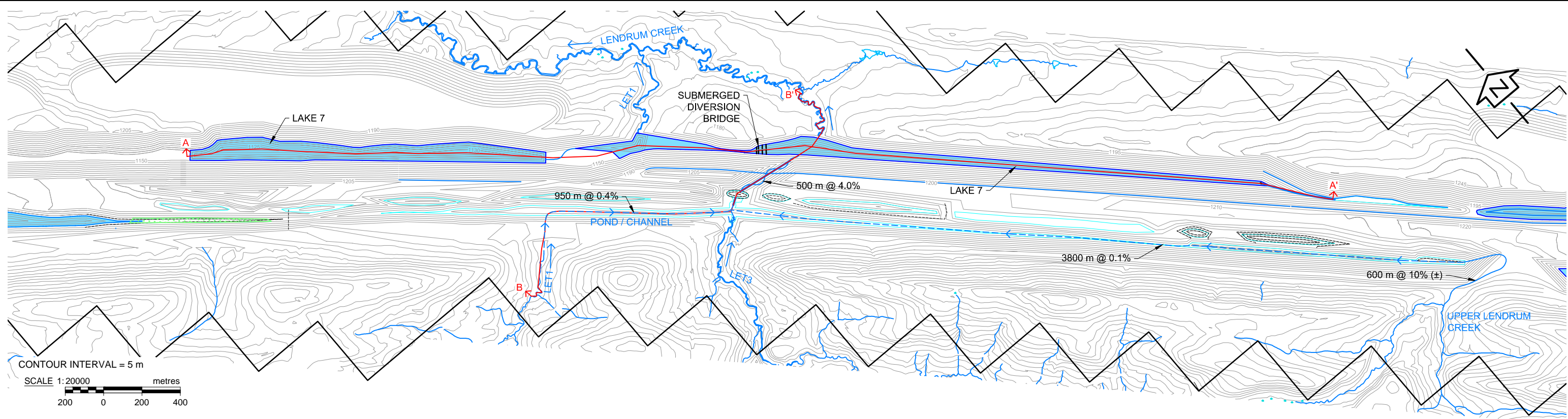
LEGEND

	Lake		Final Grade
	Wetland		Channel / Water
	Approximate Pit Bottom		Drainage Option

REFERENCE:
 DISCLAIMER: The information contained herein may be compiled from numerous third party materials that are subject to periodic change without prior notification. While every effort has been made by Matrix Solutions Inc. to ensure the accuracy of the information presented at the time of publication, Matrix Solutions Inc. assumes no liability for any errors, omissions, or inaccuracies in the third party material.

	COAL VALLEY RESOURCES INC.		
	A R C A M A T I O N P A N A N P R I I		
	ROBB TREND PROJECT - SIR 75 AND 183		
DATE: AUGUST 2012	DESIGN: D. COOPER	DRAWN: Z. STEELE	
FILE: 5867-XS-ROBB-11.DWG	CHECK: D. RAMSEY	DATUM: UTM83-11	

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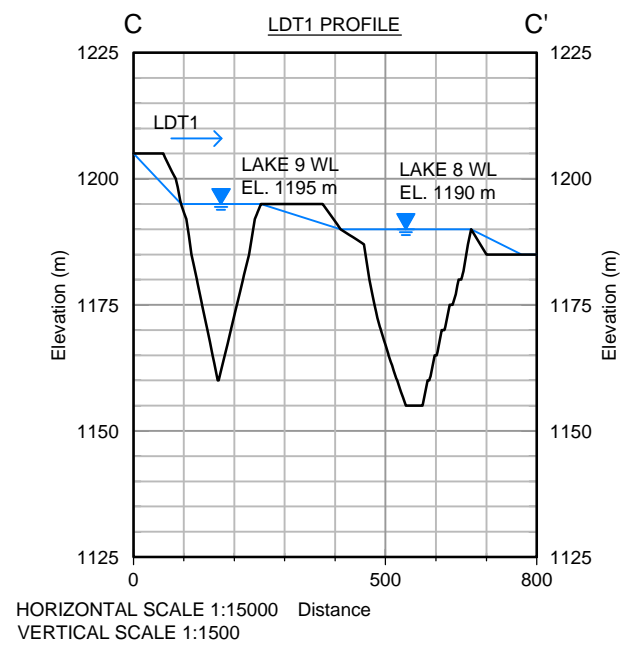
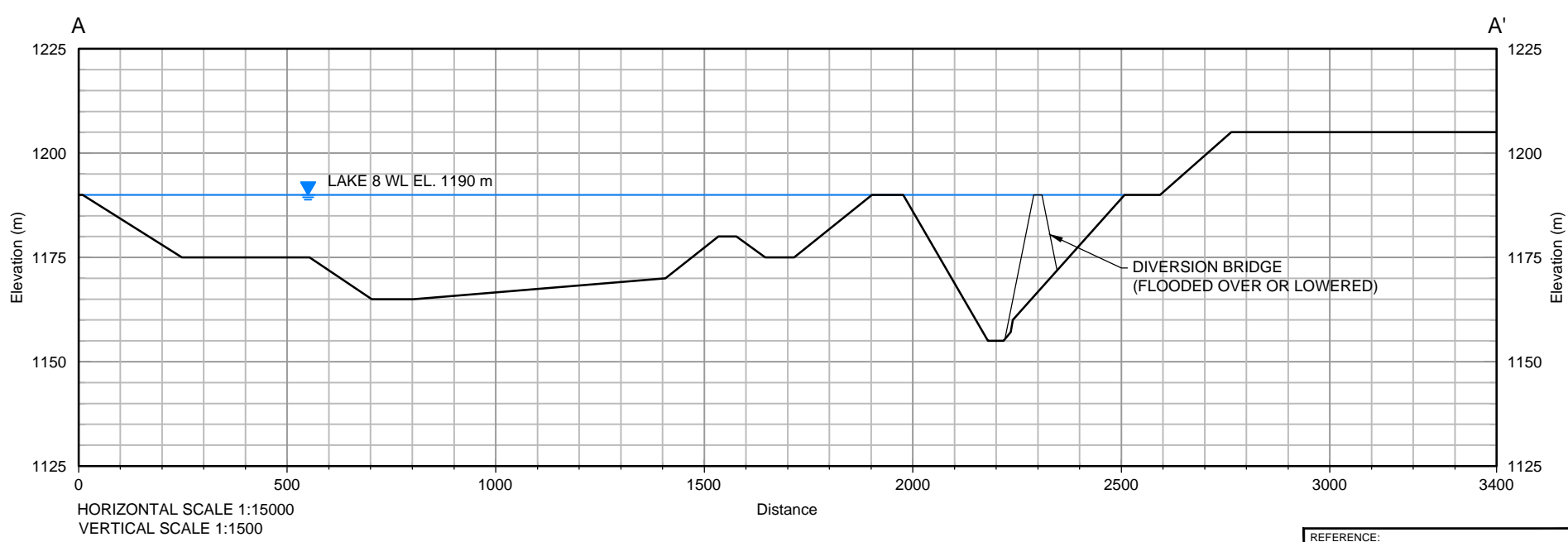
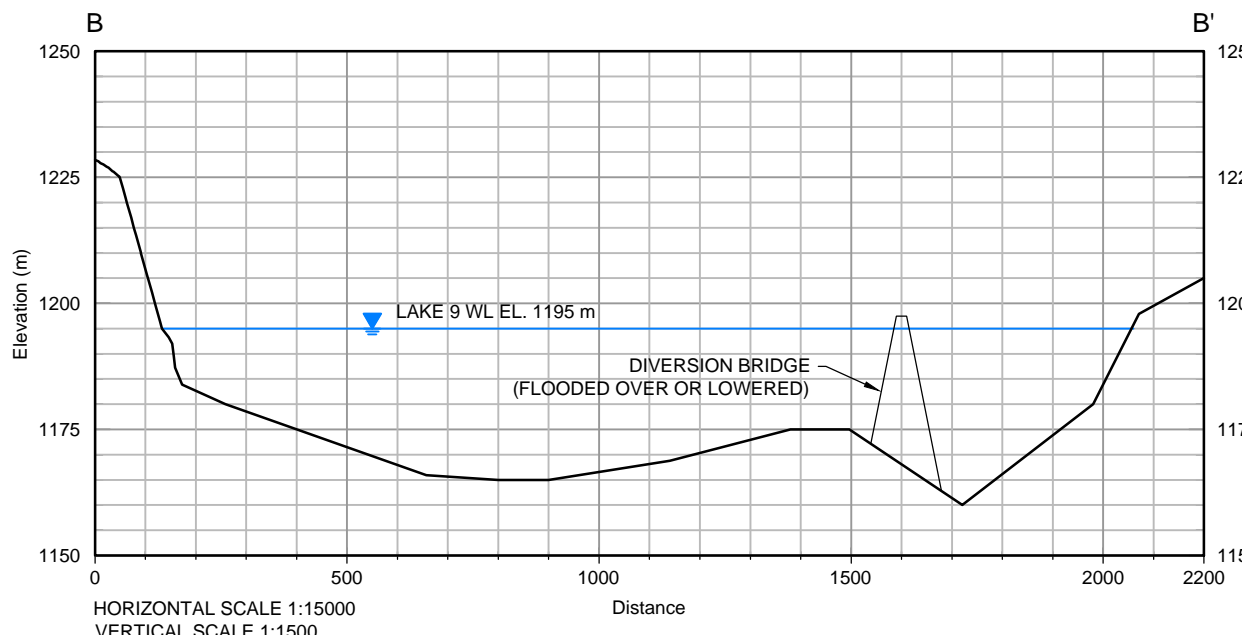
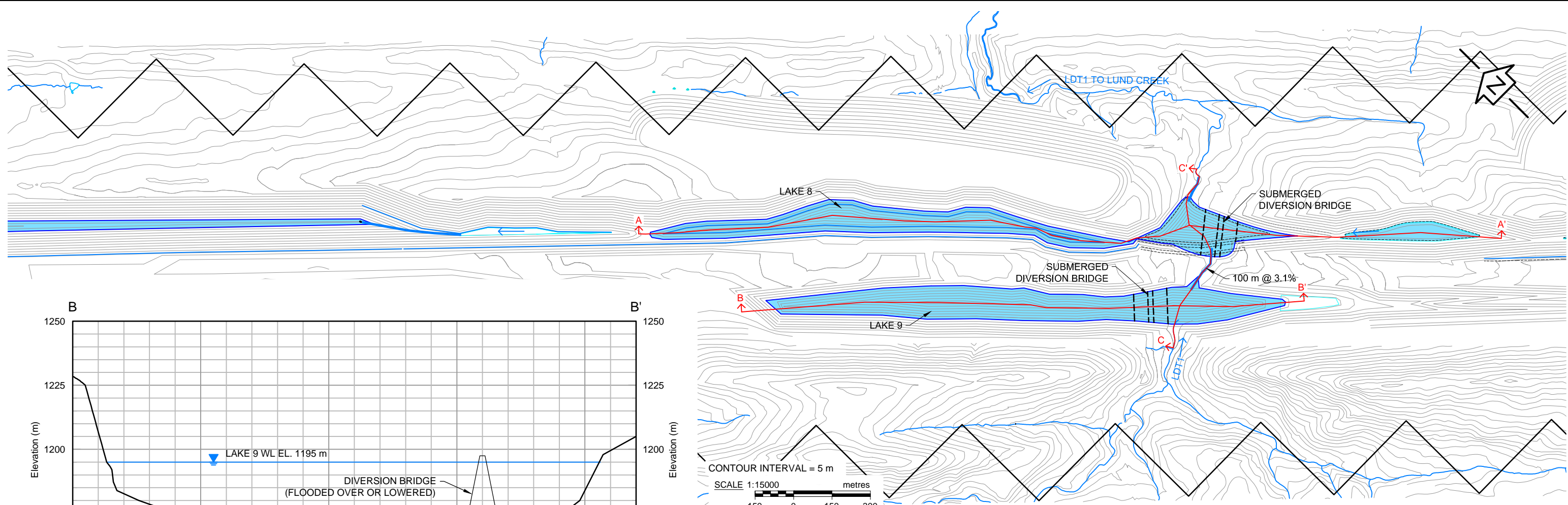


- LEGEND**
- Lake
 - Wetland
 - Approximate Pit Bottom
 - Final Grade
 - Channel / Water
 - Drainage Option

	COAL VALLEY RESOURCES INC.		
	INFORMATION PLAN AND PROFILE		
	ROBB TREND PROJECT - SIR 75 AND 183		
DATE: AUGUST 2012 FILE: 5867-XS-ROBB-11.DWG	DESIGN: D. COOPER CHECK: D. RAMSEY	DRAWN: Z. STEELE DATUM: UTM83-11	5

REFERENCE:
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F:\9867\Drilling\2011\9867-XS-ROBB-11.dwg - 8.9 - Tuesday, May 14, 2013 12:22:22 PM - Zachary Steele
 PLOT 1:1 = Tabloid (L)

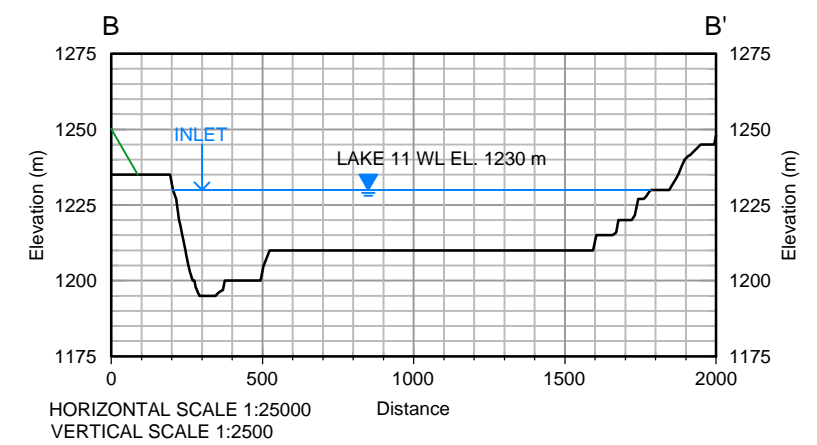
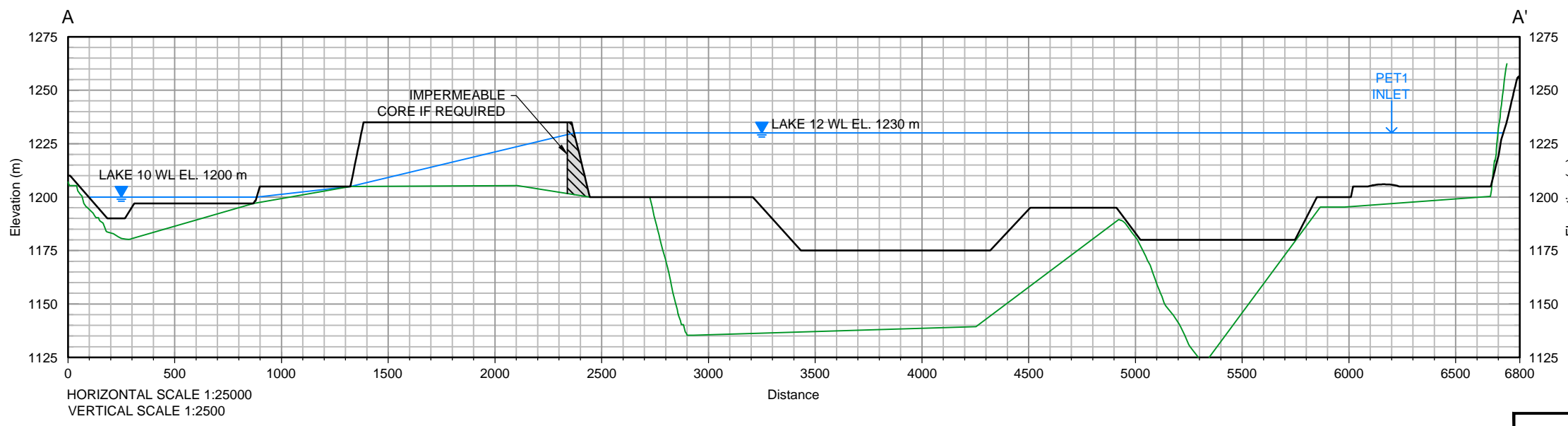
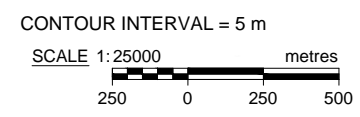
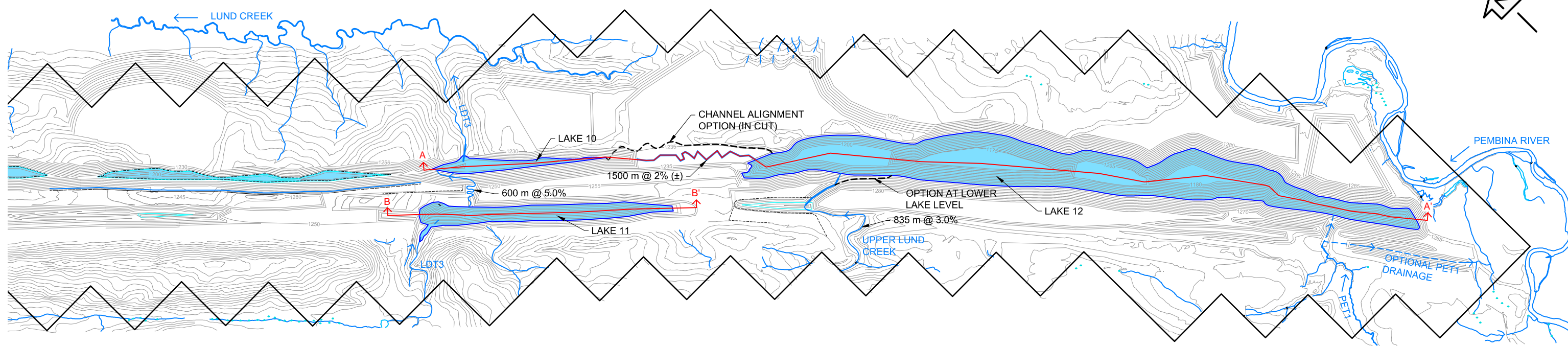


- LEGEND**
- Lake
 - Wetland
 - Final Grade
 - Channel / Water

	COAL VALLEY RESOURCES INC.		
	T A S A N 9 R C A M A T I O N P A N A N P R O J E C T		
	ROBB TREND PROJECT - SIR 75 AND 183		
DATE: AUGUST 2012 FILE: 5867-XS-ROBB-11.DWG	DESIGN: D. COOPER CHECK: D. RAMSEY	DRAWN: Z. STEELE DATUM: UTM83-11	

REFERENCE:
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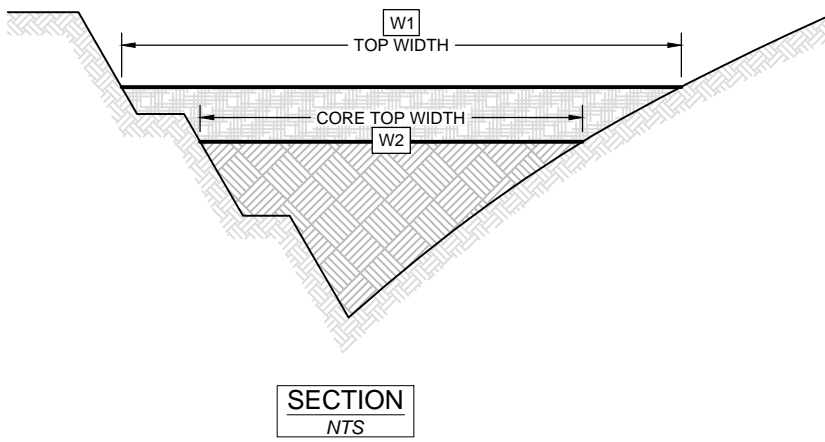
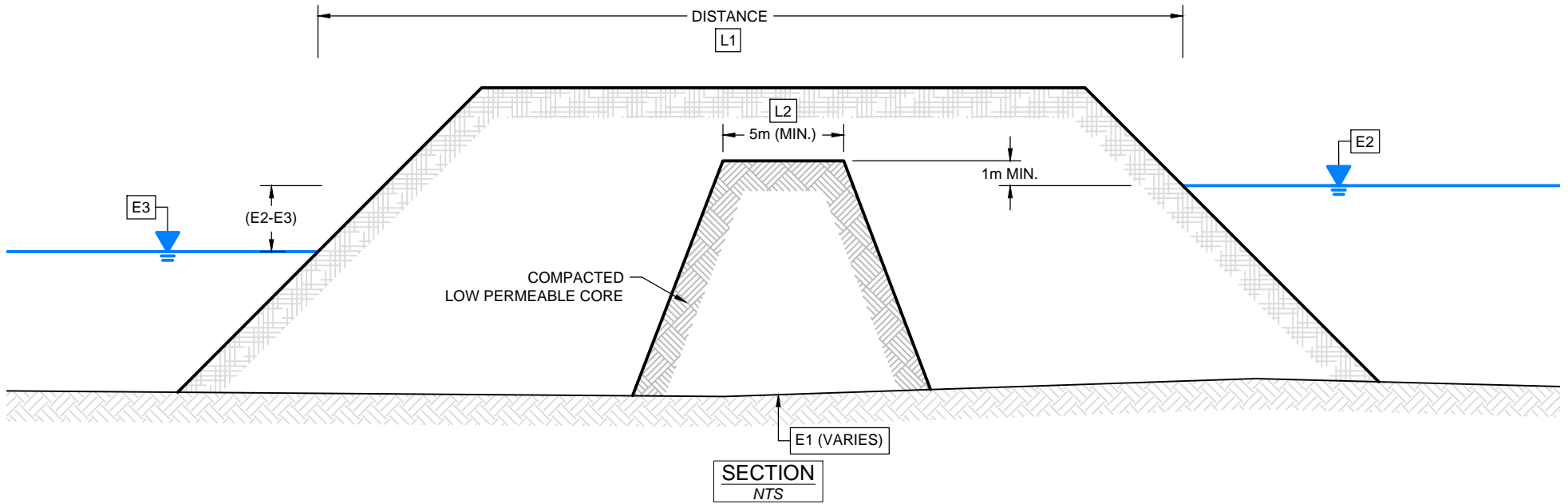
LEGEND

	Lake		Final Grade
	Wetland		Channel / Water
	Approximate Pit Bottom		Drainage Option

REFERENCE:

DISCLAIMER: The information contained herein may be compiled from numerous third party materials that are subject to periodic change without prior notification. While every effort has been made by Matrix Solutions Inc. to ensure the accuracy of the information presented at the time of publication, Matrix Solutions Inc. assumes no liability for any errors, omissions, or inaccuracies in the third party material.

	COAL VALLEY RESOURCES INC.		
	NONRMAAS 0-2 RCAMATION PLAN AND PROI		
	ROBB TREND PROJECT - SIR 75 AND 183		
DATE: AUGUST 2012	DESIGN: D. COOPER	DRAWN: Z. STEELE	
FILE: 5867-XS-ROBB-11.DWG	CHECK: D. RAMSEY	DATUM: UTM83-11	



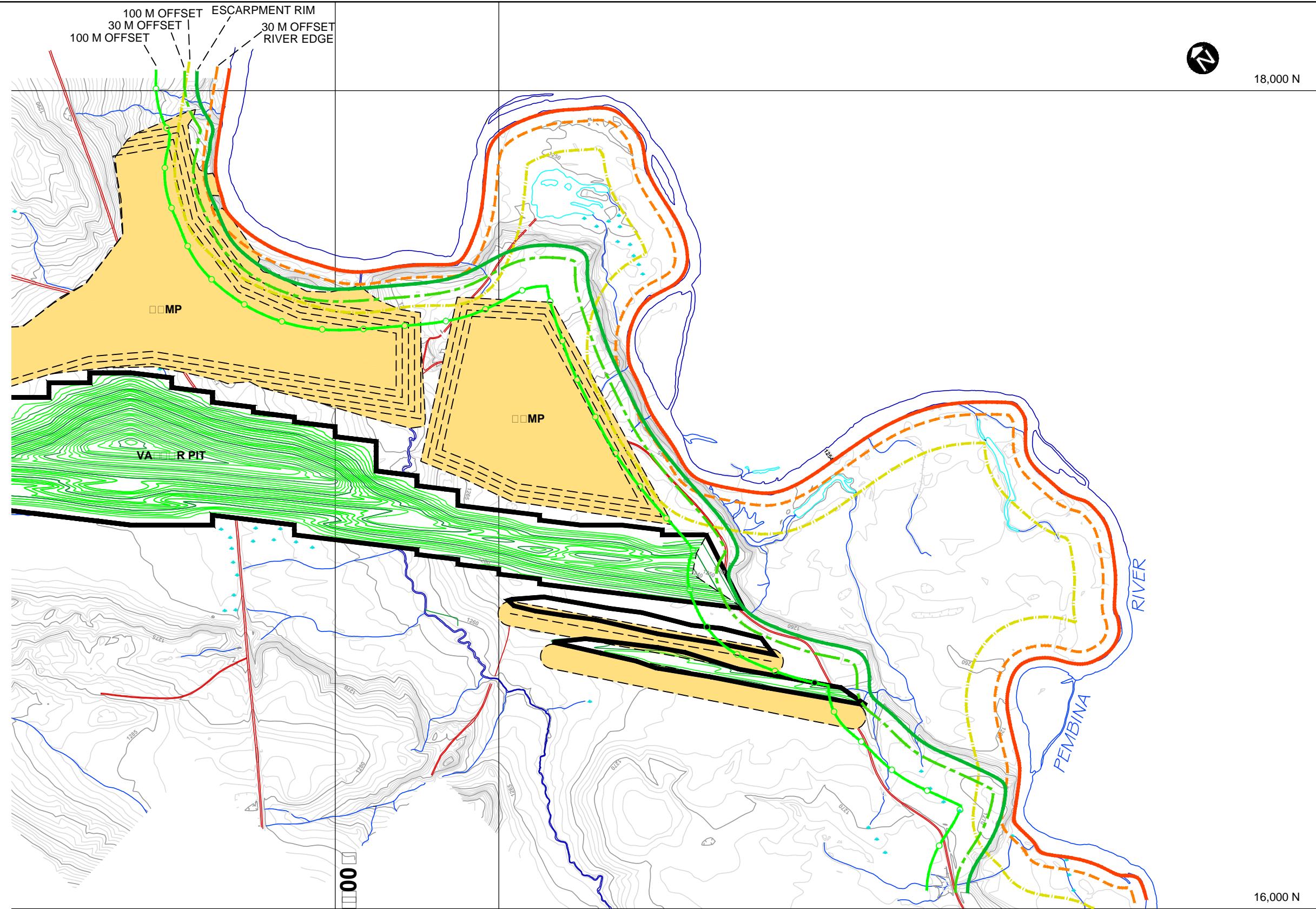
Location	Pit Bottom (m)	Water Level (m)			Pit Backfill (m)		Maximum Seepage with Core (m ³ /s)	% of Mean Annual Flow		Comments
		E1	E2	E3	W2	L1		U/S Lake	D/S Lake	
Lake 1 to Lake 2	1005	1125	1110	250	120	0.0011	2.3%	0.7%	Same Stream, No Core	
Lake 3 to Lake 5	1110	1130	1120	230	2620	0.0005	1.2%	0.1%	To Use Core	
Lake 12 to Lake 10	1200	1230	1200	220	890	0.0021	1.7%	1.2%	Same Drainage, No Core	
Lake 5 to Lake 6	1060	1120	1120	200	360	0.0000	N/A	N/A	Same Level, No Core	
Lake 7 to Lake 6	1060	1150	1120	120	3280	0.0035	2.0%	2.0%	To Use Core	
Lake 8 to Lake 7	1120	1190	1150	150	2150	0.0045	6.4%	2.5%	To Use Core	
Lake 10 to Lake 8	1140	1200	1190	110	1050	0.0007	0.4%	0.9%	To Use Core	

COAL VALLEY RESOURCES INC.

**Seepage Controls
Between and Pit Piles (SIR 9a)**

ROBB TREND PROJECT

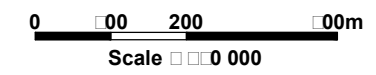
22-□





18,000 N

Legend

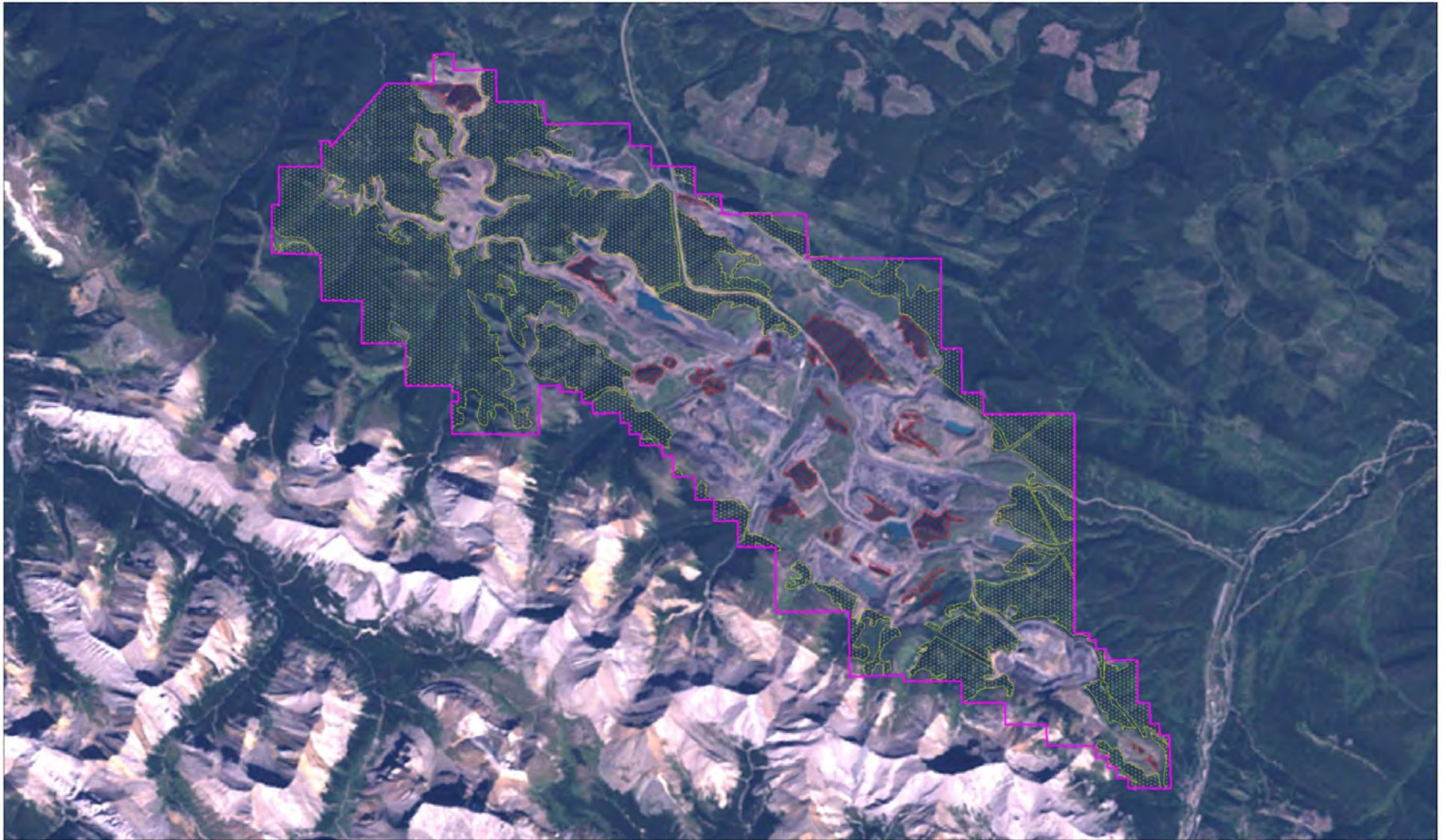
- Edge of Pembina River
- - - 30 m Offset
- - - 100 m Offset
- Rim of Escarpment
- - - 30 m Offset
- - - 100 m Offset



REF: CVRI, 2013.

PROJECT:  Coal Valley Mine Robb Trend Project		
DRAWN: JG CHECKED: KP DATE: May 8/13 PROJECT: 08-041b	FIGURE: 2	...Final Docs\08-041b\Fig 27-1 Pembina Buffers.dwg

CEAA FIGURES



PROJECT:



**Coal Valley Mine
Robb Trend Project**



MILLENNIUM
EMS Solutions Ltd.

TITLE:

- uscar regg Mine Bloc Remnant
- orest Patches

FILE: ...CVRIFinal Docs\08-041b\Fig-Variou.dwg

DRAWN: JG

CHECKED: KP

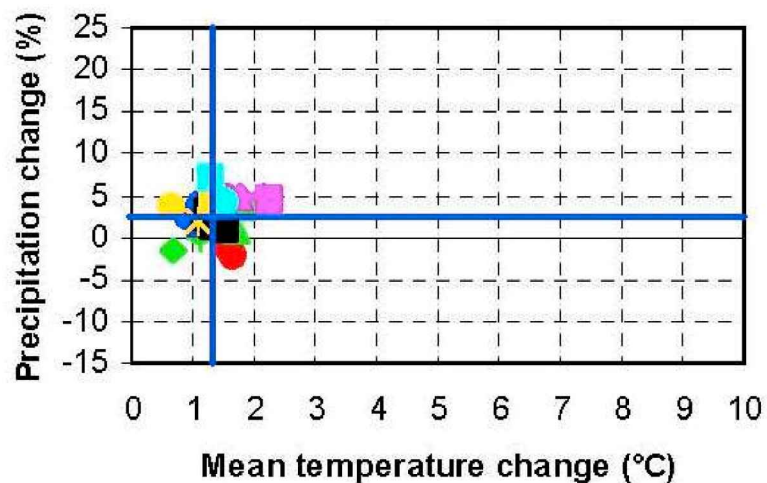
DATE: May 15/13

PROJECT: 08-041b

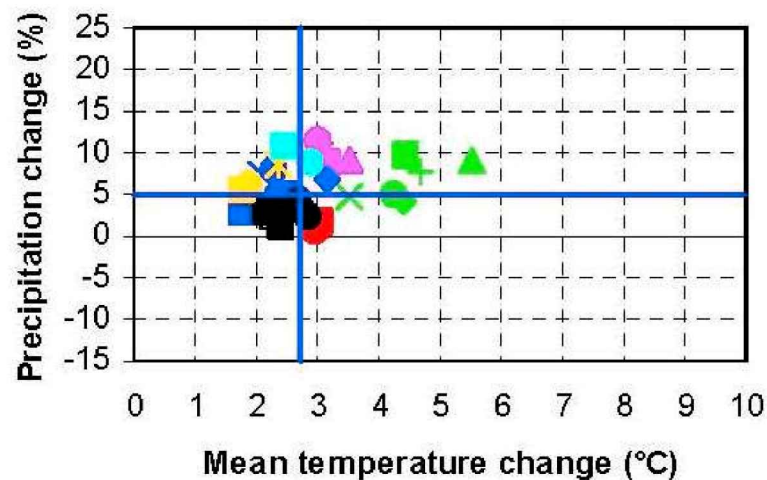
FIGURE:

32-

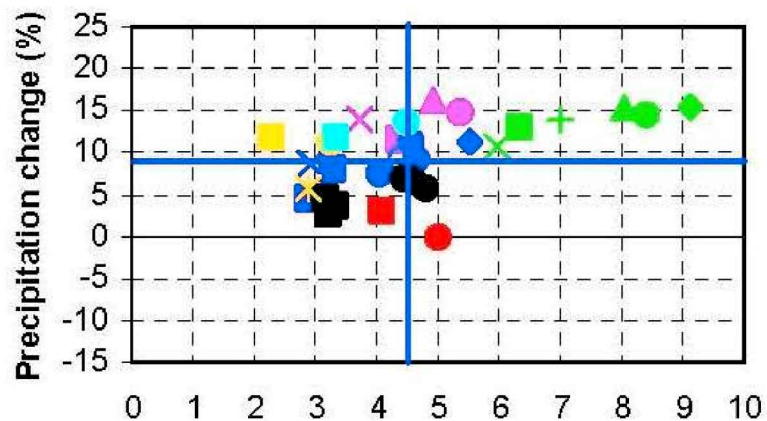
Annual, 2020s





Annual, 2050s



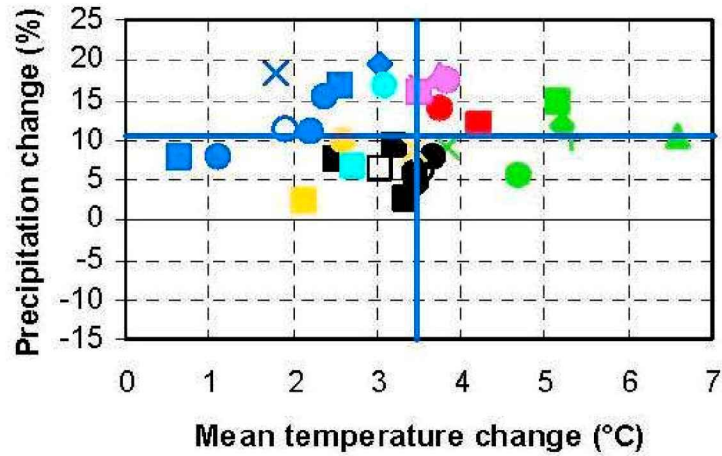
Annual, 2080s



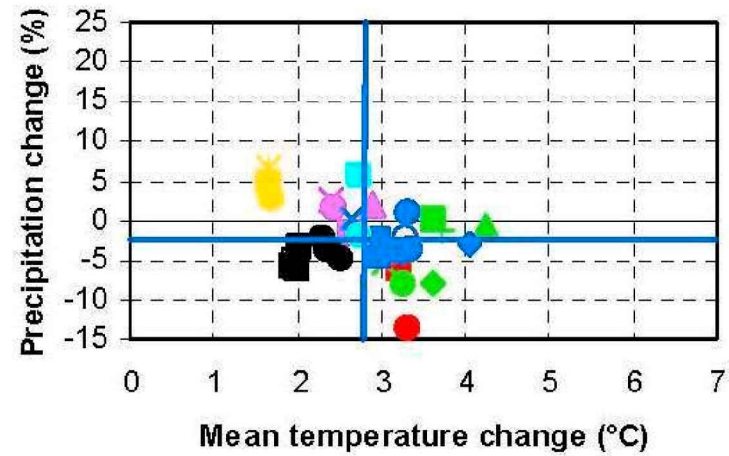
REF: Barrow and Yu (2005).

<p>PROJECT:</p>  <p>Coal Valley Mine Robb Trend Project</p>							
<p>TITLE:</p> <p>Range in Projected Changes in Global-Mean Temperature (°C), in Response to a Number of Different Missions Scenarios</p>	<p>FILE: ...CVRN\Final Docs\08-041b\Fig-Variou.dwg</p> <table border="1"> <tr> <td>DRAWN: JG</td> <td>FIGURE:</td> </tr> <tr> <td>CHECKED: KP</td> <td rowspan="3">39-</td> </tr> <tr> <td>DATE: May 15/13</td> </tr> <tr> <td>PROJECT: 08-041b</td> </tr> </table>	DRAWN: JG	FIGURE:	CHECKED: KP	39-	DATE: May 15/13	PROJECT: 08-041b
DRAWN: JG	FIGURE:						
CHECKED: KP	39-						
DATE: May 15/13							
PROJECT: 08-041b							

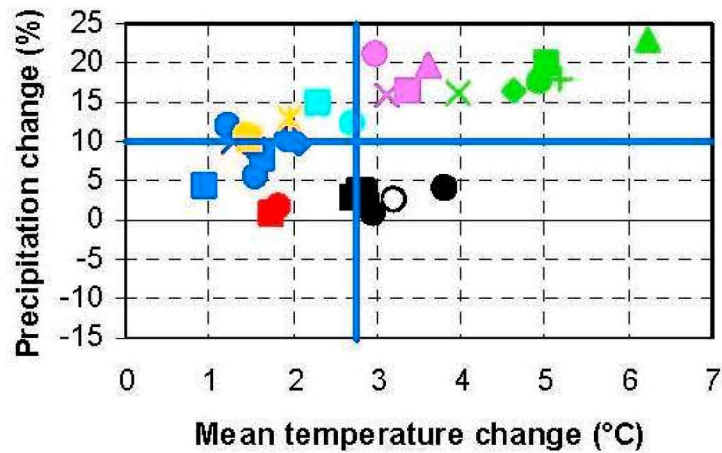
Winter, 2050s



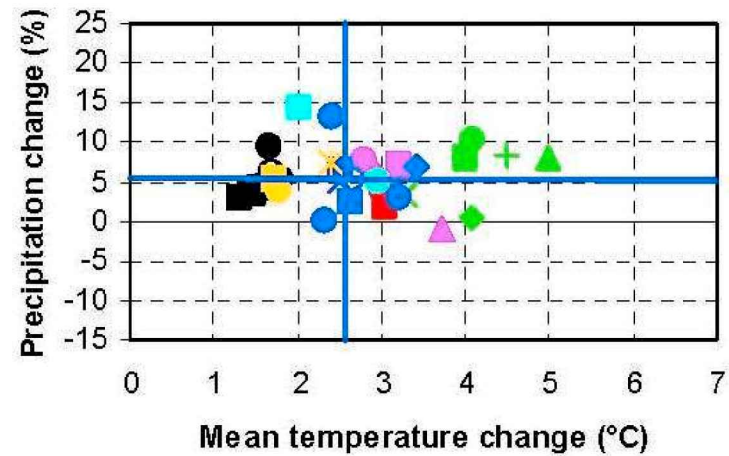
Summer, 2050s





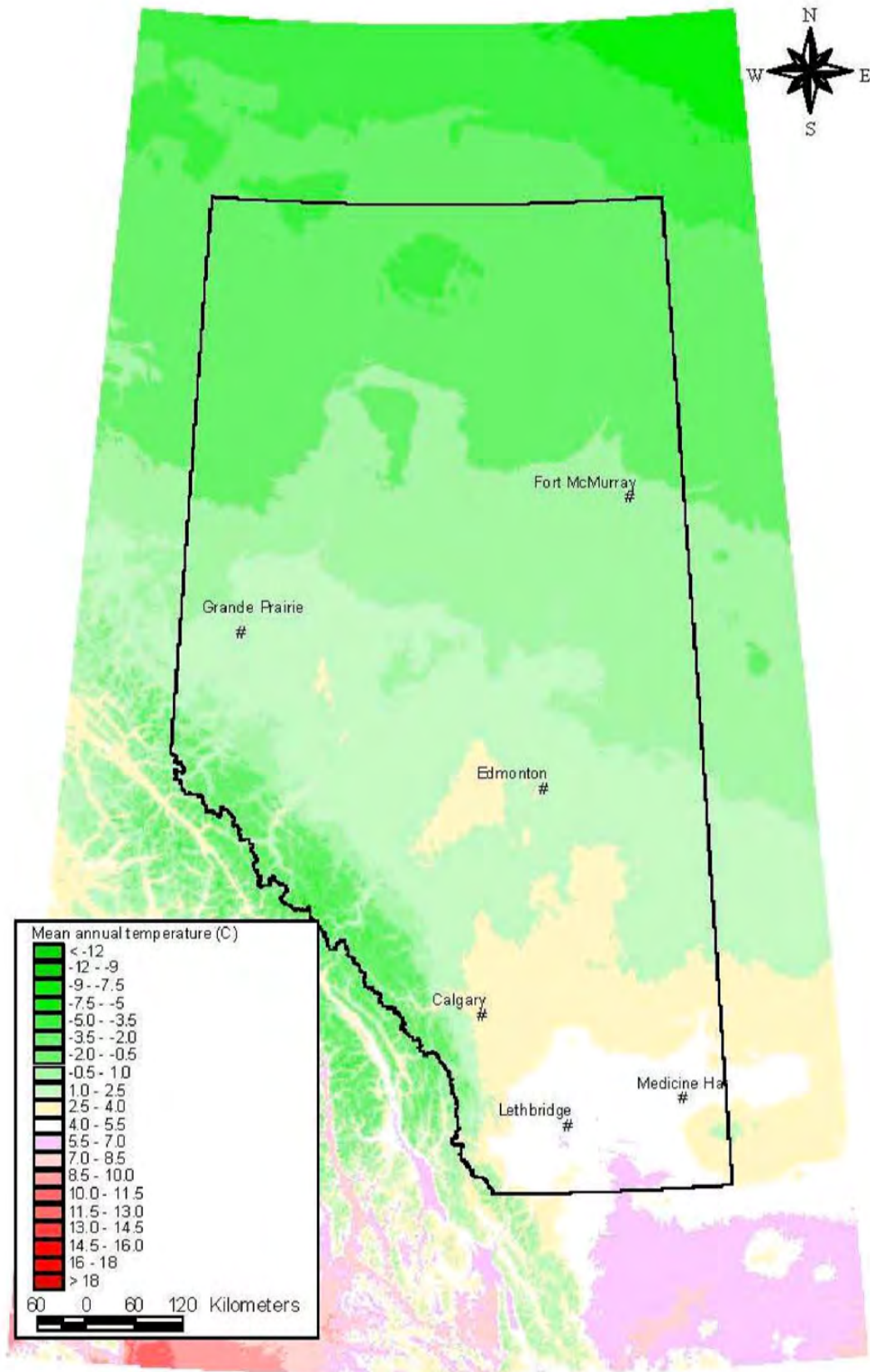
Spring, 2050s



Fall, 2050s



<p>PROJECT:</p> 	<p>Coal Valley Mine Robb Trend Project</p>	
<p>TITLE: Scatter Plots Indicating Seasonal Changes in Mean Temperature (°C) and Precipitation (%) for Alberta for the 2050s Based on a Number of Climate Models</p>		
<p>FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.dwg DRAWN: JG CHECKED: KP DATE: May 15/13 PROJECT: 08-041b</p>		<p>FIGURE: 39-2</p>



PROJECT:



**Coal Valley Mine
Robb Trend Project**



MILLENNIUM
EMS Solutions Ltd.

TITLE:

**Mean Annual Temperature in the
Baseline Period 1990-1990**

FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.dwg

DRAWN: JG

FIGURE:

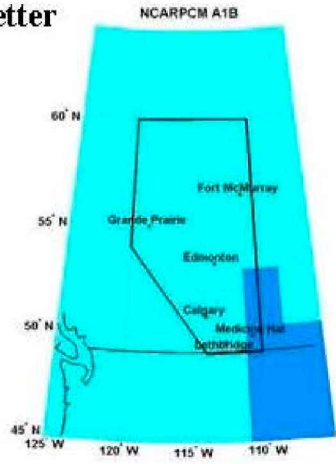
CHECKED: KP

39-3

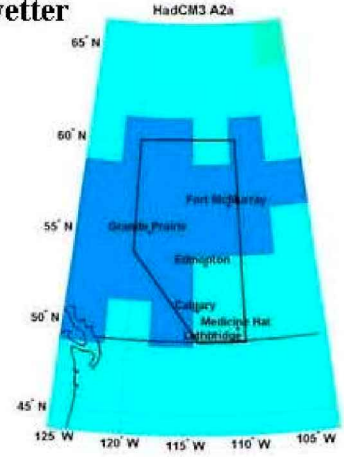
DATE: May 15/13

PROJECT: 08-041b

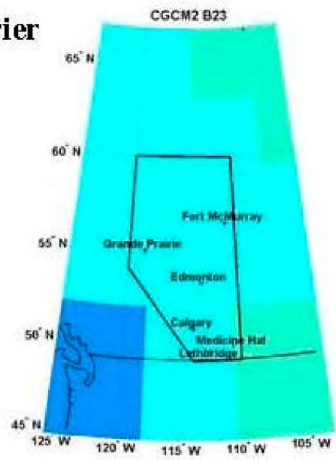
Cooler, wetter



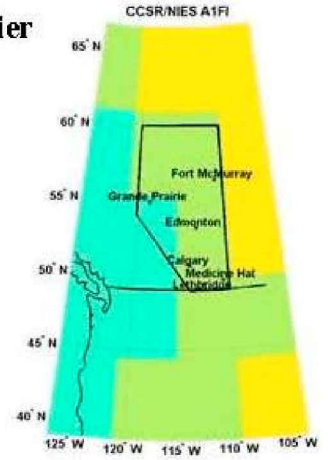
Warmer, wetter



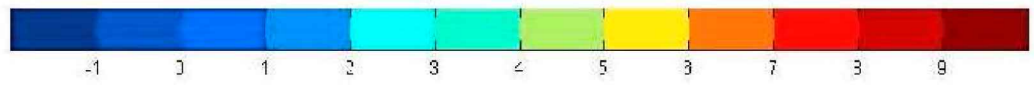
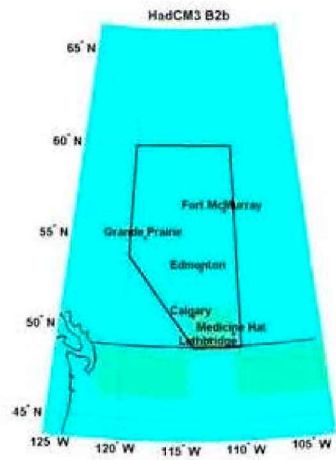
Cooler, drier



Warmer, drier



Median



PROJECT:



Coal Valley Mine
Robb Trend Project



MILLENNIUM
EMS Solutions Ltd.

TITLE:
**Annual Mean Temperature Changes (°C) for
the 2050s with Respect to 1961-1990 at the
Original Global Climate Model Resolution**

FILE: ...CVRI\Final Docs\08-041b\Fig-Variou.dwg

DRAWN: JG

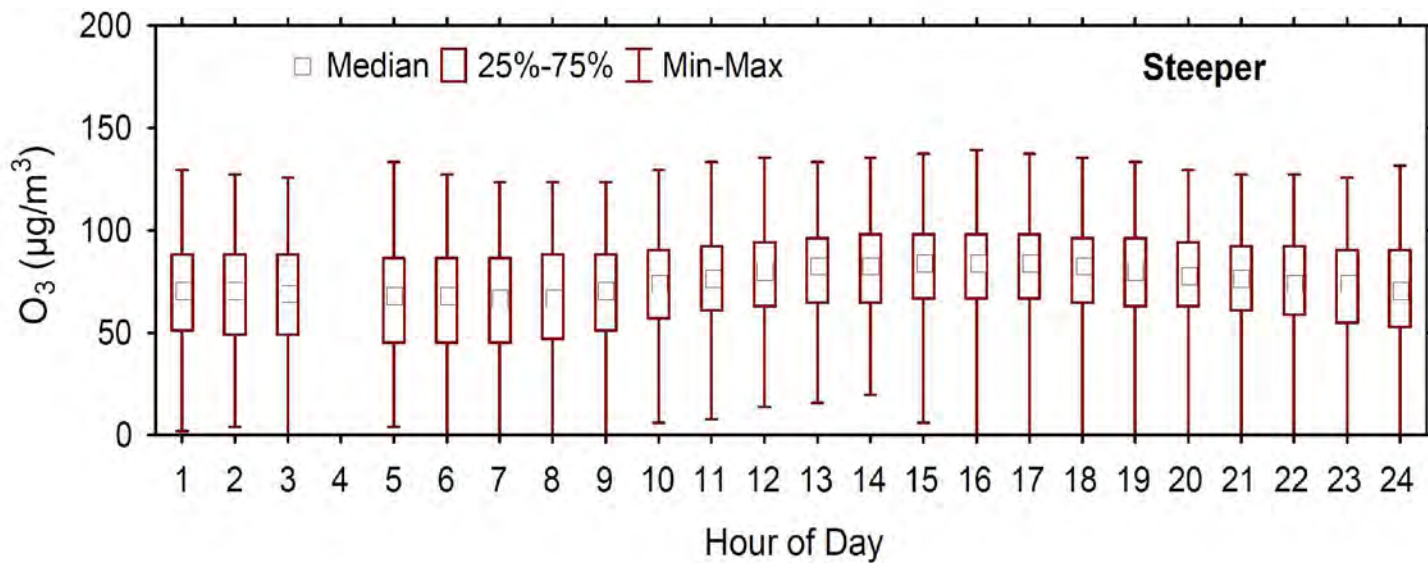
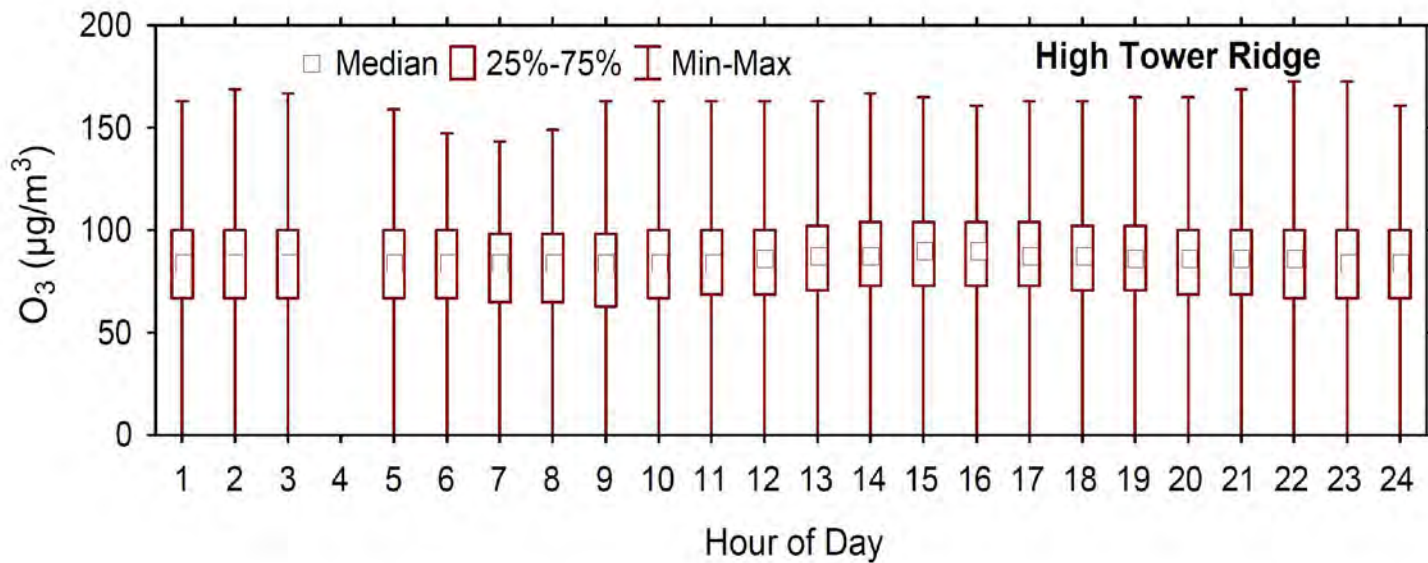
FIGURE:



CHECKED: KP

DATE: May 15/13

PROJECT: 08-041b

39-4



PROJECT:  Coal Valley Mine Robb Trend Project		 MILLENNIUM EMS Solutions Ltd.	
TITLE: Diurnal Variation in O_3 Concentrations at Three Central Airshed Society Stations (High Tower Ridge, December 2009-December 3, 2009 and Steeper March 2009-September 30, 2009)		FILE: ...CVRIFinal Docs\08-041b\Fig-Variou.dwg	
DRAWN: JG		FIGURE:	
CHECKED: KP		<input type="checkbox"/> <input type="checkbox"/>	
DATE: May 15/13			
PROJECT: 08-041b			

ERCB Appendix 9

ESRD WATER WELL DATABASE

TGWC On-line Search Report

Search Results for a 4000.00 m radius around NW 15-049-21 W5M.

[View Search Results in Google Earth \(click\)](#)

(click for more details) TGWC ID	Legal Location	Owner Name	Ground Elevation AMSL (metre)	Well Depth (metre)	Date Drilling Completed	Date Well Abandoned	Top of Bedrock (metre)	Completion Interval (metre)	Most Recent Water Level (metre)	Most Recent (Aquifer Test)	Most Recent (Chemistry)	* Distance From Location (metre)
Well Proposed Use: Domestic												
Feature Class: Water Well												
M37066.930509	NW 04-049-21-5	Improvement District No. 14	1326									3598 C
M35379.075544	SW 09-049-21-5	Deedman, Don	1387	59.4	Aug 02, 1993		5.8	41.2 - 59.4	29.0	Aug 02, 1993		2888 C
M37066.930468	· · 10-049-21-5	Guion, Bob	1159	24.4	Jul 28, 1964		6.7	6.7 - 24.4	9.2	Jul 28, 1964		2089 C
M37066.930451	NW 11-049-21-5	Phander, Paul	1163	30.5								2358 C
M37066.930452	NW 11-049-21-5	Robb, E. A.	1163	6.1					1.2	Oct 15, 1972	Oct 30, 1972	2358 C
M37066.930453	NW 11-049-21-5	Gorgichuk, Fred	1163	4.9					2.4	May 26, 1973	Jul 06, 1973	2358 C
M37066.930480	NW 11-049-21-5	Simmons, W.	1163	3.7					2.8	Oct 03, 1971	Oct 26, 1971	2358 C
M35379.055669	NW 11-049-21-5	Hollowack, Walter	1163	61.0								2358 C
M35379.059751	NW 11-049-21-5	Robb, Edward	1163	18.3	Sep 10, 1974		0.9	7.6 - 18.3	3.7	Sep 10, 1974		2358 C
M37066.930503	NE 10-049-21-5	Department of Municipal Affairs	1130	96.6	May 28, 1964		15.9	26.2 - 96.6	24.1	May 28, 1964	Apr 09, 1976	1857 C
M39859.702804	NE 10-049-21-5	Simmonds, Patrick	1130	39.6	Nov 03, 2008		9.1	27.4 - 39.6	0.6	Nov 04, 2008		1855 C
M37066.930504	NW 10-049-21-5	Robb Ranger Station	1178									1632 C
M35379.114756	04-14-049-21-5	Aluisio, Edward	1112	2.4	Jan 01, 1932				1.1	Jan 01, 1932	Oct 12, 1983	1816 C
M40608.497418	04-14-049-21-5	Tindall, Neal	1109	67.1	Sep 03, 2010		5.2	48.8 - 61.0	0.9	Sep 03, 2010		1814 C
M37066.930434	· · 10-049-21-5	Nikiforuk, G.	1140	33.5	Dec 18, 1962		6.7	7.9 - 33.5	26.2	Dec 18, 1962		1890 C
M37066.930070	· · 14-049-21-5	Murrat, Richard	1140	4.0							Oct 04, 1983	1890 C
M37066.930069	SW 14-049-21-5	Simmonds, W. D.	1140	5.5							Jun 05, 1984	1890 C
M37066.930449	SW 14-049-21-5	Weston, William J.	1140	36.6	Jun 30, 1971			32.0 - 35.0	9.2	Jun 30, 1971		1890 C
M37066.930448	SW 14-049-21-5	Beatty	1140	24.4	Jul 07, 1981		12.2	18.3 - 24.4	9.2	Jul 07, 1981		1890 C
M37066.930447	SW 14-049-21-5	Philbrick	1140	30.5	Jul 08, 1981		4.6	16.8 - 30.5	3.1	Jul 08, 1987		1890 C
M37066.930433	SW 14-049-21-5	Check, G.	1140	30.5	Oct 13, 1981		3.0	24.4 - 30.5	19.8	Oct 13, 1981		1890 C
M37066.930446	SW 14-049-21-5	Adam, A.	1140	36.6	Oct 14, 1981		3.0	24.4 - 36.6	5.5	Oct 14, 1981		1890 C
M35379.106922	SW 14-049-21-5	Brown, Ken	1140	24.4	Jul 19, 1995		1.2	18.3 - 24.4	2.7	Jul 25, 1995		1890 C
M36727.991029	SW 14-049-21-5	Brown, Ken	1140	24.4	Jul 19, 1995		1.2	18.3 - 24.4	2.7	Jul 25, 1998		1890 C
M39227.489310	SW 14-049-21-5	Labranch, Emile	1145	31.4	Aug 10, 2002		4.9	25.0 - 31.4	1.8	Aug 10, 2002		1915 D
M37066.930438	SE 15-049-21-5	Edson School Division	1128	51.8	Dec 14, 1962		4.3	6.1 - 51.8	29.9	Dec 14, 1962	Jan 21, 1982	1209 C
M37066.930466	SE 15-049-21-5	Fander, Paul	1128									1209 C
M37066.930437	SE 15-049-21-5	Meachern, Chester	1128	42.7	Jun 30, 1982		14.6	36.6 - 42.7	18.9	Jun 30, 1982		1209 C
M37066.930436	SE 15-049-21-5	Pambrun, Ray	1128	36.6	Jul 02, 1982		11.6	24.4 - 36.6	16.8	Jul 02, 1982		1209 C
M37066.930435	SE 15-049-21-5	Tunna, Karl	1128	42.7	May 31, 1983		6.1	38.4 - 42.7	13.7	May 31, 1983		1209 C
M39227.490897	SE 15-049-21-5	Cesario, John	1128	59.4	Oct 16, 2005		10.7	35.1 - 53.3	25.9	Oct 16, 2005		1188 D
M39227.480685	SE 15-049-21-5	Pellerin, Derrick	1128	54.9	Sep 08, 2006		8.5	48.8 - 54.9	23.3	Sep 22, 2006		1188 D
M37066.930473	SW 15-049-21-5	Kospersak, Joe	1164	70.1	Sep 09, 1975		65.5	27.4 - 70.1	30.5	Sep 09, 1975		824 C
M37066.930472	SW 15-049-21-5	Grubchel, Ervin	1164	65.5	Sep 11, 1975		25.9	47.2 - 65.5	9.7	Sep 11, 1975		824 C
M37066.930476	SW 15-049-21-5	Mccullum, Robert	1164	59.4	Aug 13, 1976			31.4 - 59.4	18.3	Aug 13, 1976		824 C
M37066.930475	SW 15-049-21-5	Powers, Betty	1164	83.8	Nov 28, 1976		38.4	41.2 - 83.8	0.0	Nov 26, 1976		824 C
M37066.930474	SW 15-049-21-5	Sietz, Barry	1164	33.5	Sep 08, 1977		29.9	30.5 - 33.5	1.5	Sep 08, 1977		824 C
M37066.930443	SW 15-049-21-5	Ludwig, Hubert	1164	44.2	Sep 10, 1977		42.1	15.9 - 44.2	8.5	Sep 10, 1977	Feb 10, 1980	824 C
M37066.930477	SW 15-049-21-5	Thiessen, Vern	1164	46.3	Nov 10, 1977			42.7 - 46.3	31.1	Nov 10, 1977		824 C

TGWC On-line Search Report

Search Results for a 4000.00 m radius around NW 15-049-21 W5M.

[View Search Results in Google Earth \(click\)](#)

(click for more details) TGWC ID	Legal Location	Owner Name	Ground Elevation AMSL (metre)	Well Depth (metre)	Date Drilling Completed	Date Well Abandoned	Top of Bedrock (metre)	Completion Interval (metre)	Most Recent Water Level (metre)	Most Recent (Aquifer Test)	Most Recent (Chemistry)	* Distance From Location (metre)
M37066.930445	SW 15-049-21-5	Hopkinson, Jane	1164	44.2	Nov 25, 1977	—	42.1	42.7 — 44.2	8.5	Nov 25, 1977		824 C
M37066.930471	SW 15-049-21-5	Daily, James	1164	42.7	Sep 11, 1987	—	9.4	38.1 — 42.7	30.5	Sep 11, 1987		824 C
M35379.110093	SW 15-049-21-5	Sinclair, E.	1164	22.9	Nov 30, 1976	—		15.2 — 22.9	10.4	Nov 30, 1976		824 C
M35379.109531	SW 15-049-21-5	Daniels, B	1164	61.0	Nov 16, 1988	—		24.4 — 61.0	27.4	Nov 16, 1988		824 C
M35379.110099	SW 15-049-21-5	Smidte, R.	1164	38.1	Jul 15, 1978	—		35.0 — 38.1	16.8	Jul 15, 1978		824 C
M35379.110096	SW 15-049-21-5	Kaludjer, L.	1164	53.3	Jul 17, 1978	—		42.7 — 47.2	—	Jul 17, 1978		824 C
M37066.930470	05-15-049-21-5	Beier, Richard	1191	36.6	Jul 16, 1976	—	5.2	12.5 — 36.6	22.0	Jul 16, 1976		630 C
M37066.930575	EH 15-049-21-5	Mcwhirter, Kathy	1127	48.8		—		—	—			977 C
M35379.063193	.. 15-049-21-5	Witzke, Bruno	1129	54.9		—		—	—			633 C
M35379.069360	.. 15-049-21-5	Desjarlais, Fred	1129			—		—	—			633 C
M35379.104086	.. 15-049-21-5	Zezel, John	1129	54.9	Jul 24, 1978	—	9.1	24.7 — 54.9	17.4	Jul 24, 1978	Mar 04, 1982	633 C
M35379.070526	.. 15-049-21-5	Whitehead, John	1129	97.5	Mar 12, 1993	—	1.5	54.9 — 97.5	25.9	Mar 12, 1993		633 C
M37066.930441	NE 14-049-21-5	Bertram, Kelly	1102	54.9	Jun 18, 1981	—	4.6	18.3 — 54.9	7.6	Jun 18, 1981		2518 C
M37066.930440	NE 14-049-21-5	Miller, Peter	1102	48.8	Jun 19, 1981	—	4.6	24.4 — 48.8	22.9	Jun 19, 1981		2518 C
M37066.930439	NE 14-049-21-5	Lindskog, Percy	1102	48.8	Dec 03, 1988	—	7.6	18.3 — 48.8	35.0	Dec 03, 1988		2518 C
M37066.930442	NW 14-049-21-5	Bryan Mountain Service Ltd.	1093	79.2		—		—	—			1699 C
M37066.930444	NW 14-049-21-5	Canadian National Railway	1093	48.8	Oct 29, 1970	—	5.8	34.4 — 37.5	13.7	Oct 29, 1970	Sep 16, 1975	1699 C
M35379.075566	NW 14-049-21-5	Department of Land & Forests	1093	95.1	Aug 10, 1964	—	3.0	39.3 — 95.1	—			1699 C
M37066.930455	NW 14-049-21-5	Showstak, Toni	1093	73.1	Aug 17, 1982	—	11.6	36.9 — 73.2	18.3	Aug 17, 1982		1699 C
M37066.930573	.. 15-049-21-5	Witzke, E.	1135	41.5	Jan 01, 1965	—		—	22.3	Dec 11, 1978	Dec 29, 1978	885 C
M37066.930574	.. 15-049-21-5	Zezel, Gary	1135	44.2		—		—	19.8	Sep 29, 1977	Oct 05, 1977	885 C
M37066.930583	.. 15-049-21-5	J & J General Store	1135	96.6	Jul 01, 1981	—	5.2	79.2 — 96.6	25.9	Jul 01, 1981		885 C
M37066.930572	.. 15-049-21-5	Lazette, Charlie	1135	40.2	Jul 03, 1981	—	9.1	10.1 — 40.2	24.4	Jul 03, 1981		885 C
M37066.930066	NE 15-049-21-5	Alberta Municipal Affairs	1135	85.9		—		—	22.1	Nov 02, 1976	Nov 18, 1976	885 C
M37066.930067	NE 15-049-21-5	Bryan Hotel	1135	39.6		—		—	—			885 C
M37066.930068	NE 15-049-21-5	Mountain Restaurant	1135	30.5		—		—	—		Apr 16, 1985	885 C
M37066.930097	NE 15-049-21-5	Robb Community Center	1135	51.8		—		46.6 — 51.8	31.7	Nov 02, 1976	Nov 18, 1976	885 C
M37066.930457	NE 15-049-21-5	Conger, Gary	1135	48.8		—		—	18.3	Jun 05, 1968	Jun 14, 1968	885 C
M37066.930459	NE 15-049-21-5	Zaverucka, H.	1135	51.8	Aug 23, 1971	—	8.2	45.7 — 51.8	28.9	Aug 23, 1971		885 C
M37066.930461	NE 15-049-21-5	Schultz, Max	1135	54.9		—		—	10.1	Nov 06, 1978	Nov 15, 1978	885 C
M37066.930464	NE 15-049-21-5	Pfander, Paul	1135	36.6	Aug 01, 1972	—	9.1	15.2 — 36.6	19.8	Aug 01, 1972	May 12, 1977	885 C
M37066.930514	NE 15-049-21-5	Niemi, Walter	1135	32.0	Jul 01, 1972	—	9.1	18.3 — 32.0	27.4	Jul 01, 1972	Sep 26, 1972	885 C
M37066.930526	NE 15-049-21-5	Weston	1135	43.6		—		—	9.2	Aug 02, 1971	Aug 20, 1971	885 C
M35379.076848	NE 15-049-21-5	Robb Community Center	1135	61.0	Oct 01, 1974	—	2.4	46.6 — 61.0	31.7	Nov 02, 1976		885 C
M35379.076855	NE 15-049-21-5	Robb	1135	85.3	Sep 02, 1980	—		—	—			885 C
M35379.056120	NE 15-049-21-5	Dolanz, Norm	1135			—		—	—			885 C
M37066.930580	NE 15-049-21-5	Heidler, Susan	1135	67.1		—		—	—			885 C
M37066.930584	NE 15-049-21-5	Bertangoli, Alfred	1135			—		—	—			885 C
M37066.930593	NE 15-049-21-5	Mergaert, Jerry	1135			—		—	—			885 C
M35379.105535	NE 15-049-21-5	Jones, Ron	1135	54.9	Sep 05, 1974	—	10.1	35.4 — 54.9	—	Sep 05, 1974	Apr 27, 1977	885 C
M37066.930591	NE 15-049-21-5	Lindskog, Percy	1135	24.4	Sep 06, 1974	—	7.6	14.9 — 24.4	9.2	Sep 06, 1974	Sep 18, 1975	885 C

TGWC On-line Search Report

Search Results for a 4000.00 m radius around NW 15-049-21 W5M.

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(click for more details) TGWC ID	Legal Location	Owner Name	Ground Elevation AMSL (metre)	Well Depth (metre)	Date Drilling Completed	Date Well Abandoned	Top of Bedrock (metre)	Completion Interval (metre)	Most Recent Water Level (metre)	Most Recent (Aquifer Test)	Most Recent (Chemistry)	* Distance From Location (metre)
M37066.930458	NE 15-049-21-5	Zezel, Mike	1135	48.8	Sep 19, 1974	—	11.6	36.3 — 48.8	26.5	Sep 19, 1974	Oct 21, 1974	885 C
M37066.930595	NE 15-049-21-5	Smalley, Frank	1135	41.1	Jul 15, 1976	—	11.6	27.4 — 41.2	18.3	Jul 15, 1976		885 C
M37066.930462	NE 15-049-21-5	Schultz, Max	1135	24.4	Jul 29, 1976	—	10.7	11.0 — 24.4	10.7	Jul 29, 1976		885 C
M37066.930463	NE 15-049-21-5	Sietz, Barry	1135	33.5	Sep 03, 1977	—	10.7	30.5 — 33.5	2.1	Sep 03, 1977		885 C
M37066.930460	NE 15-049-21-5	Heidler, Siegfried	1135	54.9	Jun 25, 1980	—	6.1	30.5 — 54.9	30.5	Jun 25, 1980		885 C
M37066.930589	NE 15-049-21-5	Wheat, Ken	1135	36.6	Jul 17, 1981	—	9.8	19.2 — 36.6	21.3	Jul 17, 1981		885 C
M37066.930587	NE 15-049-21-5	Kucher, Taras	1135	47.2		—	7.3	30.5 — 47.2	21.3	Jun 28, 1982		885 C
M37066.930585	NE 15-049-21-5	Ruddy, Frank	1135	42.7	Jun 29, 1982	—	10.7	30.5 — 42.7	0.0	Jun 29, 1982		885 C
M37066.930588	NE 15-049-21-5	Pambrun, Charlie	1135	48.8	Jul 01, 1982	—	4.3	36.6 — 48.8	21.3	Jul 01, 1982		885 C
M37066.930586	NE 15-049-21-5	Kucher, Taras	1135	42.7		—	8.5	30.5 — 42.7	22.9	Jul 02, 1982		885 C
M37066.930074	NE 15-049-21-5	Freund Homes Inc.	1135	56.1	Nov 17, 1982	—	10.1	16.5 — 55.2	16.8	Nov 17, 1982	Jan 05, 1983	885 C
M37066.930582	NE 15-049-21-5	Marbetta, Marko	1135	24.4	Jun 12, 1985	—	4.0	13.7 — 24.4	10.7	Jun 12, 1985		885 C
M37066.930571	NE 15-049-21-5	Bennett, Bill	1135	83.8	Jul 03, 1985	—	9.1	39.6 — 83.8	27.4	Jul 03, 1985		885 C
M35379.066877	NE 15-049-21-5	St. Peter, Gerry	1135	21.3	May 27, 1992	—	5.5	18.3 — 21.3	6.1	May 27, 1992		885 C
M36727.989671	NE 15-049-21-5	HINTON CUSTOM CONTRACTING	1135	73.1	Sep 13, 1997	—	54.9	54.9 — 73.2	45.7	Sep 13, 1997		885 C
M37066.932660	NE 15-049-21-5	Palmer, Lucielle	1135	30.5	Aug 19, 2000	—	11.6	21.3 — 30.5	12.8	Aug 19, 2000		885 C
M38232.650620	NE 15-049-21-5	Grenier, Pierre	1135	49.7	Oct 06, 2003	—	11.6	18.3 — 49.7	36.0	Oct 06, 2003		889 C
M41129.412417	NE 15-049-21-5	Ridley, Everett	1135	79.2	Mar 26, 2012	—	8.8	12.2 — 79.2	—	Mar 26, 2012		889 C
M37066.930456	NW 15-049-21-5	Wiseman, D. S.	1125	57.9	Jun 22, 1984	—	4.3	24.4 — 57.9	18.3	Jun 23, 1984		74 C
M37066.930469	NW 15-049-21-5	Shappler, Barry	1125	23.2	Aug 23, 1984	—	3.7	18.3 — 23.2	16.5	Aug 23, 1984		74 C
M37066.930613	.. 15-049-21-5	Gavacs, Joe	1189	39.6	Mar 20, 1981	—	10.4	30.5 — 36.6	27.4	Mar 20, 1981		740 C
M37066.930615	.. 15-049-21-5	Daily, F.	1189	70.1	Mar 23, 1981	—	7.9	64.0 — 70.1	28.9	Mar 23, 1981		740 C
M37066.930612	.. 15-049-21-5	Brandel, Ken	1189	19.8	Mar 24, 1981	—	0.6	7.6 — 19.2	8.5	Mar 24, 1981		740 C
M37066.930614	.. 15-049-21-5	Chenard, Gerald	1189	76.2	Mar 26, 1981	—	5.2	35.0 — 76.2	23.8	Mar 26, 1981		740 C
M37066.930611	.. 15-049-21-5	Alberta Housing Corporation Ltd.	1189	97.2	Oct 13, 1983	—	8.5	41.5 — 96.3	16.8	Oct 13, 1983		740 C
M37066.930610	NE 16-049-21-5	Holbwack, Wally	1189	79.2	Sep 07, 1988	—	2.1	61.0 — 79.2	0.0	Sep 07, 1988		740 C
M37066.930576	16-15-049-21-5	Brandle, Pat	1126	39.6		—		9.1 — 39.6	9.2	Aug 26, 1975	Sep 16, 1975	1105 C
M37066.930577	16-15-049-21-5	Laberge, Gene	1126	62.5	Jan 01, 1966	—	33.5	19.8 — 62.5	15.9	Jan 01, 1966		1105 C
M41038.623913	16-15-049-21-5	Willows, Clarence	1127	97.5	Apr 04, 2012	—	6.1	35.4 — 97.5	38.4	Apr 10, 2012		1107 C
M37066.930465	14-15-049-21-5	Beier, Fred	1136	24.4	Jun 23, 1980	—	1.5	6.1 — 24.4	12.2	Jun 23, 1980		341 C
M37066.930478	14-15-049-21-5	Ferguson, Orbil	1136	36.6	Jun 27, 1980	—	4.6	24.4 — 36.6	21.3	Jun 27, 1980		341 C
M37066.930596	04-23-049-21-5	Ranger Station	1114	54.3	Jan 01, 1966	—	15.2	6.1 — 33.5	13.4	Jan 01, 1966		1612 C
M37066.930600	SW 23-049-21-5	Allsop, D.	1107	73.2		—		—	16.5	Apr 25, 1973	May 23, 1973	1880 C
M37066.930601	SW 23-049-21-5	Martin, Morris	1107	27.4	Sep 05, 1979	—	7.3	18.9 — 27.4	15.2	Sep 05, 1979		1880 C
M37066.930599	SW 23-049-21-5	Alberta Housing Corporation Ltd.	1107	67.1	Aug 20, 1982	—	5.5	—	10.7	Aug 20, 1982		1880 C
M40567.510077	SW 23-049-21-5	Lambert, Jim	1107	86.6	Nov 30, 2009	—	4.6	67.1 — 85.3	25.5	Nov 30, 2009		1883 C
M40659.572430	SW 23-049-21-5	Martinella, Steve & Tait, Lolita	1107	82.3	Feb 16, 2011	—	16.2	36.6 — 79.2	22.9	Mar 01, 2011		1883 C
M39227.495088	SW 23-049-21-5	Arnhottz, Candice	1107	48.8	Jul 03, 2006	—	2.4	36.6 — 48.8	21.0	Jul 03, 2006		1913 D
M37066.930606	.. 15-049-21-5	Herman, Elizabeth	1206	18.3	Jul 11, 1983	—	6.4	11.0 — 18.3	7.6	Jul 11, 1983		2930 C
M37066.930594	NE 20-049-21-5	Branch. Emuela	1170	12.2	Aug 11, 1988	—	3.0	7.3 — 12.2	4.3	Aug 11, 1988		2861 C
M37066.930604	.. 15-049-21-5	Nunweller, Vern	1124	36.6	Nov 19, 1983	—		18.3 — 36.6	21.0	Nov 19, 1983		1889 C

TGWC On-line Search Report

Search Results for a 4000.00 m radius around NW 15-049-21 W5M.

[View Search Results in Google Earth \(click\)](#)

(click for more details) TGWC ID	Legal Location	Owner Name	Ground Elevation AMSL (metre)	Well Depth (metre)	Date Drilling Completed	Date Well Abandoned	Top of Bedrock (metre)	Completion Interval (metre)	Most Recent Water Level (metre)	Most Recent (Aquifer Test)	Most Recent (Chemistry)	* Distance From Location (metre)
M37066.930616	SW 29-049-21-5	Leduc Construction	1220	24.4	Jul 26, 1982	—	9.1	12.2 — 24.4	0.0	Jul 26, 1982		3994 C
Well Proposed Use: Domestic & Stock												
Feature Class: Water Well												
M35379.061631	05-15-049-21-5	Ludwiczak, Frank	1191	14.0	Sep 24, 1991	—	13.4	13.7 — 14.0	4.9	Sep 24, 1991		630 C
Well Proposed Use: Industrial												
Feature Class: Water Well												
M35379.109930	07-08-049-21-5	Petro-Canada Oil & Gas	1397	91.4	Jan 18, 1996	—	3.7	6.1 — 91.4	25.0	Jan 18, 1996		3406 C
M35379.042331	06-17-049-21-5	Amerada Hess Canada Ltd.	1303	48.8	Jan 02, 1996	—	—	13.7 — 48.8	15.2	Jan 02, 1996		3040 C
M35379.042332	06-17-049-21-5	Amerada Hess Canada Ltd.	1303	39.6	Jan 02, 1996	—	29.3	6.1 — 39.6	7.9	Jan 22, 1996		3040 C
M37066.930538	02-34-049-21-5	Speight Constuction Ltd.	1101	12.2	Oct 29, 1981	—	7.6	9.1 — 12.2	2.4	Oct 29, 1981		3902 C
Feature Class: Reclaimed Water Well												
M37066.929091	12-04-049-21-5	Talisman Energy Inc.	1287	152.4	Sep 14, 2000	Sep 15, 2000	1.2	—	0.0	Sep 17, 2000		3870 C
M37066.929059	12-04-049-21-5	Talisman Energy Inc.	1287	140.2	Sep 15, 2000	Sep 15, 2000	2.4	—	0.0	Sep 15, 2000		3870 C
M37490.033289	12-04-049-21-5	Talisman Energy	1287	61.0	Sep 16, 2000	Dec 20, 2000	3.1	6.7 — 18.3	10.9	Sep 16, 2000		3870 C
M37490.033288	12-04-049-21-5	Talisman Energy	1287	152.4	Sep 17, 2000	Dec 20, 2000	9.1	13.1 — 152.4	40.5	Sep 17, 2000		3870 C
M37490.033287	12-04-049-21-5	Talisman Energy	1287	121.9	Sep 27, 2000	Dec 20, 2000	0.6	6.7 — 121.9	4.2	Sep 27, 2000		3870 C
M35379.101373	02-10-049-21-5	Conoco	1143	67.1	Nov 08, 1993	Dec 07, 1993	8.2	10.1 — 67.1	0.0	Nov 08, 1993		2725 C
M35379.109929	07-08-049-21-5	Petro-Canada Oil & Gas	1397	152.4	Jan 17, 1996	Jan 17, 1996	4.6	6.1 — 152.4	—	Jan 16, 1996		3406 C
Feature Class: Flowing Shot Hole												
M37066.930602	11-22-049-21-5	Amoco Canada Petroleum Company Ltd.	1122	18.3	Oct 28, 1978	Oct 28, 1978	—	—	—	—		1384 C
M37066.930617	11-21-049-21-5	Amoco Canada Petroleum Company Ltd.	1154	18.3	Oct 28, 1978	Oct 28, 1978	—	—	—	—		2026 C
M37066.930605	10-20-049-21-5	Chevron Standard Ltd.	1182	22.9	Nov 23, 1979	Nov 23, 1979	—	—	—	—		2823 C
M37066.930603	16-21-049-21-5	Amoco Canada Petroleum Company Ltd.	1124	18.3	Oct 28, 1978	Oct 28, 1978	—	—	—	—		1949 C
M37066.930560	04-28-049-21-5	Amerada Hess Canada Ltd.	1155	18.3	Feb 03, 1980	Feb 03, 1980	—	—	—	—		2789 C
Well Proposed Use: Municipal												
Feature Class: Water Well												
M37066.930579	09-15-049-21-5	Town of Robb	1107	53.3	—	—	—	—	—	Apr 06, 1973		1108 C
M37066.930578	09-15-049-21-5	Department of Municipal Affairs	1107	91.4	Aug 19, 1976	—	4.9	61.0 — 85.3	0.0	Aug 19, 1976	Sep 29, 1976	1108 C
M37066.930590	NE 15-049-21-5	Town of Robb	1135	9.1	—	—	—	—	6.1	Mar 09, 1973	Feb 01, 1984	885 C
M35379.062199	NE 15-049-21-5	Robb Recreation Association	1135	59.4	Nov 13, 1991	—	4.6	54.9 — 59.4	32.6	Nov 13, 1991	Nov 13, 1991	885 C
M37066.930597	SW 23-049-21-5	Alberta Housing Corporation Ltd.	1107	73.1	Aug 19, 1982	—	7.9	37.8 — 73.2	17.1	Aug 19, 1982		1880 C
M37066.930598	SW 23-049-21-5	Alberta Housing Corporation Ltd.	1107	85.3	Aug 26, 1982	—	6.7	28.0 — 82.3	5.2	Aug 20, 1982		1880 C

*** Spatial Description of Groundwater Well**

- A - GPS or Surveyed Location
- B - Geo-Referenced Location
- C - Centre of Location
- D - Less Than Centre of Location

ESRD Appendix 2

FIRST NATION CONSULTATION

FIRST NATIONS CONCERNS REGARDING PROJECT IMPACTS

1.0 INTRODUCTION

This progress report is provided in response to Supplemental Information Request from ESRD related to the Robb Trend Project EIA review process. The intent of the report is to provide documentation to support the following conclusions:

- CVRI has followed and provided the requirements of the Aboriginal Consultation Program associated with the Project EIA Terms of Reference as established by ESRD.
- Effective consultation has been and continues to be practiced by CVRI with respect to the Project.
- Concerns raised through the consultation have been identified and mitigation efforts implemented within the Project plans covering construction, operation and reclamation activities.
- A collaborative approach has been established and can be expected to continue during the life of the Project and extend the consultation and mitigation approach.

2.0 BACKGROUND

Aboriginal consultation for CVRI's Robb Trend Project (Project) has been a continuum of consultation efforts starting in 2006 when Aboriginal groups were first informed of the Project. Efforts included undertaking traditional use studies where necessary (in conjunction with CVM's Mercoal West and Yellowhead Tower extension projects). Various milestones through this timeframe included:

- EPEA and ERCB approvals for the Mercoal West and Yellowhead Tower projects have been received throughout 2005 and up to 2013. These approvals resulted from the successful Aboriginal Consultation programs current to that period.
- The Aboriginal Consultation Plan and Project Description for the Project were approved by Alberta Environment on February 14, 2011 and are attached as Appendix 2a. CVRI has provided fifteen bi-monthly reports of consultation activities as requested by ESRD in their approval of the plan.
- On February 23, 2011, Margaret Fairbairn, Acting Regional Director of the Canadian Environmental Assessment Agency, mailed early notification letters to potentially affected First Nations and Métis groups, noting that the Project was subject to a provincial EA, consideration of an EA under CEAA, and participation by the MPMO.
- A notification regarding the Project and Proposed Terms of Reference appeared in the May, 2011 (Volume 18, No. 6) edition of *Alberta Sweetgrass*.
- The Ermineskin Cree Nation and Samson Cree Nation filed Statements of Concern regarding the Project Application with the ERCB, and as a result, at the request of the SREM Aboriginal Affairs Branch the Aboriginal Consultation Plan was revised in January, 2013 to include consultation with the Samson Cree Nation, and to clearly reflect that consultation is voluntary with the Mountain Cree Camp and mandatory with the Ermineskin Cree Nation.

- All groups have been provided copies of the *Robb Trend Project Environmental Impact Assessment and Mine Permit Application* (April 2012) and encouraged to provide comment. Copies of bi-monthly reporting on consultation efforts have also been provided.
- On October 15, 2012 CEAA contacted Aboriginal groups with preliminary assessments of potential adverse impacts on their potential or established Treaty or Aboriginal rights.
- CVRI's responses to Supplemental Information Requests were provided to each Aboriginal group in January 2013, and the current set of Supplemental Information Requests will also be supplied.
- On January 23, 2013 Whitefish First Nation submitted correspondence to CEAA regarding the Project. Subsequently, CVRI has initiated a consultation effort with the Whitefish First Nation.

Direct Contact

In the time since approval of the consultation plan, all eleven aboriginal communities detailed in the plan have been contacted to provide copies of the Consultation Plan, Project Description, Detailed Maps, Proposed Terms of Reference, Terms of Reference, and the federal Project Agreement for the Project. At least 60 major or otherwise significant meetings have been held between CVRI and Aboriginal groups to discuss the Project (not including those numerous meetings prior to 2011) and any Aboriginal concerns, including those related to site-specific concerns, concerns related to Treaty or Aboriginal Rights and traditional uses, general environmental impacts, and socio-economic impacts. Further consultation and traditional use studies as necessary have been undertaken. Six groups have partially or totally completed additional field traditional use studies or tours of the area (beyond those completed in previous years). Discussions continue with several groups on the need for, scope, and scale of potential additional field visits or studies of traditional use.

Contact Record

CVRI has been consulting with Aboriginal groups on the Project since 2006. The precise “status” of on-going consultations varies between groups, and CVRI expects these consultations to extend well into the future, both during the operation of the proposed Project and other future proposed CVRI operations. The tables, as requested in [ESRD SIR2 #2a](#)) are provided in [ESRD SIR2 Appendix 2](#). These provide the detailed break-down of all concerns related to CVRI in its delegated consultation activities for the Project. In order to protect confidentiality, these are provided in separate tables indexed by randomized Aboriginal group.

Response to Concerns

Many of the concerns and issues raised by individual groups are similar. Given the overwhelming overlap of concerns regarding the Project voiced by the various Aboriginal groups, the sections below provide a summary of CVRI's response including any proposed mitigations or accommodations to address any potential impacts to Treaty or Aboriginal Rights and traditional uses or environmental impacts. Much of the detailed information in the responses below and in the tables, including the specific bibliographical references, is derived from information available in the EA and Project Application and attached technical consultant reports.

3.0 PROJECT ENVIRONMENTAL IMPACT ASSESSMENT

The Project Application has included an extensive environmental impact assessment which has been subject to public and aboriginal input and review. Section D (Environmental Impact Assessment [EIA] Methodology) of the Application is provided for reference. Summarized conclusions from the EIA are also provided. These summaries itemize impact assessments for individual valued ecological components (VEC's). These VEC's have been developed over time in consultation with various public and Aboriginal stakeholder groups.

4.0 GENERAL IMPACTS TO TREATY OR ABORIGINAL RIGHTS AND TRADITIONAL USES

A summary of the 'general impacts' which have been raised during the consultation process is provided with CVRI comments regarding the 'context' with respect to the Project. Specific discussion is provided regarding hunting, fishing, trapping and other traditional land use.

Continuation of Current Activity

The Project is not a new enterprise, but an undertaking that will allow the continuation of an existing venture. Mining has continued through +30 years within the same land areas of concern.

CVRI and the Aboriginal groups have prior experience with mining activity within the land base of their interests.

As reclamation of the existing mining operations mature the land once utilized by mining will again be returned to the public land base. Thus the temporary use of the land is illustrated.

Occupation of Crown Land Sequenced Over Time

CVRI acknowledges that its Project will occupy Crown land otherwise available for the exercise of Treaty or Aboriginal Rights and traditional uses for a period of time during mine development, operation, and reclamation. Access to the proposed Project lands will be phased over the entire area during a 25-year period allowing the continued pursuit of Treaty Rights and the undertaking of traditional activities.

CVRI's use of the land base will occur in progressive stages over this period. The first stages will involve road construction as early as 2013. The first mine pits opening in the center of the area as early as 2014. The development of mining areas towards the southeast will not be developed until 2021. The areas west of the town of Robb will not be developed until 2027.

Land Reclaimed and Returned to Land Base

The reclamation plans for the Project will incorporate Aboriginal traditional ecological knowledge to return the land once mining activities have ceased. Reclamation activities will occur as mining in each pit area is finished, with all re-vegetation occurring within 5 years, and certification of reclamation (*i.e.*, finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Project should be returning for use as the last lands are being mined. Those last areas mined should have reclamation

certification by 2060; the earliest lands mined will have been returned for use well before that time.

Surrounding Land Base Remains Available

The surrounding region, with similar plants, animals, and other resources, will remain accessible for the undertaking of Treaty Rights and traditional uses during the development of the Project, as it is today.

Lands previously involved in the older mine areas will once again become available to the public land base. These areas will then be available for the continuation of traditional land uses.

Land Use Minimized and Temporary

The Project will directly affect wildlife and vegetation in the Project area but only for short periods of time until reclamation activities can re-establish productive terrain. Again, it should be noted that the Project will be completed over a number of years and not all the lands will be disturbed at one time. CVRI promotes progressive reclamation and when the opportunity exists the mine will start to re-contour and reclaim mined lands as soon as possible. Mining is a temporary use of the land and reclamation activities aim to make this time as short as possible. Disturbance footprints are minimized as much as possible to decrease the overall effect on vegetation, wildlife, and various other factors.

Wildlife Habitat Maintained

CVRI will maintain as much undisturbed habitat as possible within the lease area during mining which will help retain the wildlife diversity of the Project area. A variety of wildlife uses on undisturbed and reclaimed habitat associated with coal leases during and after the mining phases has been documented. Wildlife have colonized new habitat created by reclamation of coal mines (MacCallum, 2003). Activity associated with mining is predictable and focused. Animals are not subject to random and varied human disturbance within a Mineral Surface Lease (MSL) occupied by CVRI. These conditions allow animals to colonize the reclaimed landscape.

The existing MSL associated with the CVM has provided a secure environment for wildlife and is instrumental in maintaining regional ungulate populations especially in the Critical Wildlife Habitat associated with the Lovett Ridge.

Reclamation Returns Wildlife Habitat

Initial displacement of the existing wildlife community on the Project LSA by active mining will be followed relatively quickly by colonization of wildlife species appropriate to the stage of succession reached by the regenerated plant community. Given that appropriate habitats are established and movement opportunities are designed into the Project disturbance, wildlife are expected to adjust to the initial displacement and disturbance by colonizing newly available habitat and incorporating it into their daily and seasonal activities.

Crown Land

Some Aboriginal groups have cited concerns over the dwindling size of Crown land available to them.

The Provincial and Federal Crowns are responsible for the administration of Crown lands.

CVRI's response is to minimize the Project footprint, ensure mining is a temporary land use through progressive reclamation and to allow continued access to the non-active mining areas of the mine permit. Upon the completion of mining activities and reclamation all lands are returned to the Crown.

4.1 IMPACTS TO HUNTING

All Aboriginal groups consulted have expressed concerns about the Project's effects on hunting in the region, in particular to ungulates and birds, while none provided site specific hunting locations potentially to be impacted by the Project.

CVRI acknowledges that active mining in the Project area may have a direct impact on wildlife, including birds and amphibians, through short to medium-term removal of habitat, fragmentation of habitat, barriers to movement, and possibly direct mortality in some cases (*e.g.*, vehicle collisions *etc.*). This would have a potential impact on the generalized right to hunt, fish, and trap in these areas during mine development. The development of the Project, particularly the development of the mine pits, soil and rock stockpiles, dumps, and roads, will definitely impact plants and animals in the disturbance zones through displacement. Most wildlife will likely be displaced to adjacent habitat patches.

CVRI has planned to undertake reclamation activities that specifically enhance wildlife use of the reclaimed area, providing diverse vegetation communities and complex arrangements of vegetation and landscape features.

Ungulates

Ungulates may be temporarily displaced by active mining. This displacement will be restricted to local use as there are no indications of long distance or major season migrations in the LSA.

Ungulates and other wildlife respond positively to predictable human activity by a process of habituation which allows the animal to gradually accept new experiences in the absence of negative feedback. Elk, moose, mule deer, white-tailed deer and other wildlife on the CVM make use of the reclaimed landscapes in the presence of active mining. It can be expected that animals local to the LSA area will respond in the same positive manner as at the CVM. It is expected that elk and deer will respond positively to the early stages of upland reclaimed and re-vegetated areas on the LSA particularly in the Robb West, Main, and Central zones where there is extensive mixed wood and deciduous habitat adjacent the disturbance area.

Birds

Many of the species on the CVM are birds associated with water habitats which would have been poorly represented in the pre-development ecosystem. While bird abundance and types of species may change as a result of mining activity it appears that the number of bird species will be similar or may increase as a result of adding new habitats *e.g.*, upland grassland, shrubland, lake, pond and wetland development. The edge associated with the Project should enhance tree growth potential both natural and through reclamation planting as well as promoting maintenance of bird species occurrence during active mining.

EIA Results

CR#14 and CR#7 of the Project application detail the proposed mitigation of these effects through the identification of wildlife as a primary end use of the lands, the maintenance of as much undisturbed habitat as possible in the Project area, the re-vegetation of soil stockpiles to maintain wildlife use, vegetation clearing outside of breeding seasons, buffers along riparian zones, contouring to reduce lines of sight, identification of natural seepages that will become salt/mineral licks after reclamation, hunting restrictions, measures to avoid direct mortality, and a reclamation program that will promote the structural integrity and biodiversity of the landscape to enhance future wildlife use.

In order to reduce potential impacts to wildlife within the Project area, the following mitigation measures will also take place:

- incorporate select native trees and shrubs such as alder and willow into re-vegetation activities;
- maximize downed woody debris (stumps) through direct placement of top-soil and associated slash and stumps;
- maintain and connect to core areas as many residual forest patches as possible;
- maintain a 30 meter buffer zone of undisturbed natural habitat along well developed riparian corridors, where available;
- plant coniferous trees at higher stem densities (>180 stems per acre);
- continue to maintain hunting and firearm restrictions on the reclaimed areas of the Project including after mining has ceased and until hiding cover on the mines is equivalent to that of natural closed forest cover types; and
- maintain haul truck and regular vehicle speeds of <70 kph.

Monitoring

In order to evaluate and if need be adapt the mitigation measures, CVRI will also implement monitoring. Site wide monitoring will allow CVRI to determine the length of time it takes for wildlife to return to the landscape and what reclaimed landscape features are most desirable. All potential effects are noted to be reversible over the short-term or long-term depending on the type of effect. Section 7 below details some of the other proposed and planned mitigation and accommodation measures for specific wildlife species of concern to Aboriginal groups in this regard.

Summary

Overall, any potential effects on Treaty or Aboriginal Rights to hunt for food in the Project area are both temporary and insignificant.

4.2 IMPACTS TO FISHING

All Aboriginal group consulted have expressed concerns about the Project's effects on fishing in the region. Site-specific fishing locations potentially to be impacted by the Project were not identified.

Watercourses

Watercourses will be directly affected due to the development of the Project. The Project will require diversions around active mine areas. Many of the diversions are temporary and may only be in place until backfilling and reclamation can occur. Some of the diversions will be permanent installations that will be integrated with the end pit lake development. When possible, stream channels will be reclaimed to close proximity of the original channel. Meanders and channel variability will be included in the reclamation plans. CVRI will monitor watercourses within the watersheds to be affected by the Project.

Habitat Compensation

CVRI is working with the Department of Fisheries and Oceans Canada (DFO) in creating a conceptual compensation plan for approval. The compensation plan will be followed in establishing site specific compensation related to each habitat disturbance area (crossing, diversion).

Lakes

No existing natural ponds will be affected due to the development of the Project.

End pit lakes are one of the end results of coal mining. Several lakes will be incorporated into the final reclamation landscape. Water levels will be maintained by groundwater and surface water runoff. Specific lake design features will be incorporated in the reclamation process to assist the development of appropriate fish habitat and enhance regional fish populations.

Fish Populations

The impacts to fish populations and benthic invertebrates as a result of the mining is expected to be minimal since it is assumed that downstream flows will be managed to maintain instream flow requirements (AENV 2011). In general, peak flows will be reduced and low flows will be increased. This attenuating effect may have some impact on fish habitat composition and could also benefit fish populations by reducing the intensity of high flow events that can adversely affect fish, particularly during the early life stages.

Water Quality

No significant water quality changes are expected and water quality in streams and the end pit lakes. Water quality will be similar to current conditions.

Access

As previously indicated, access to the proposed Project lands will be phased over the entire area during a 25-year period allowing the continued pursuit of Treaty Rights and the undertaking of traditional activities including fishing.

CVRI's use of the land base will occur in progressive stages over this period. The first stages will involve road construction as early as 2013. The first mine pits opening in the center of the area as early as 2014. The development of mining areas towards the southeast will not be developed until 2021. The areas west of the town of Robb will not be developed until 2027.

EIA Results

Aquatic resources issues related to construction, operation, and reclamation of the Project were generally linked to potential changes to physical habitat components, changes in flow regimes, surface water quality, and resource access. Measures to reduce or mitigate potential effects were identified using proven strategies and combined expertise of professionals. Potential local effects on the fisheries Valuable Environmental Component's (VEC) associated with direct habitat loss or alteration are expected to be fully mitigated with properly implemented mitigation strategies. CR#2 (Section 5.4) of the Project application provides details of the numerous mitigation strategies proposed to protect fish resources, in the areas of surface water management and erosion control, haulroad crossing construction, stream diversions, management of stream flows, public access restrictions, and habitat enhancement.

Therefore, no cumulative effects on fisheries VECs associated with direct habitat loss or alteration are expected. Potential adverse effects relate primarily to direct physical habitat alteration/loss, changes in surface water hydrology and water quality issues. With mitigation there will be an insignificant impact on the fisheries VEC's. Section 8 below details some of the other proposed and planned mitigation and accommodation measures for specific fish species of concern to Aboriginal groups in this regard.

Summary

Overall, any potential effects on Treaty or Aboriginal Rights to fishing in the Project area are both temporary and insignificant.

4.3 IMPACTS TO TRAPPING

All Aboriginal group consulted have expressed concerns about the Project's effects on trapping in the region. Site-specific trapping locations potentially to be impacted by the Project were not identified.

Access

As noted above, Project development will occur over time, and access to mine areas to undertake Treaty Rights to trap will be restricted in active mining areas for a period of time. However, areas surrounding the Project will still be available to undertake Treaty trapping rights, and Project development and reclamation will be complete by 2060, returning Project lands for trapping uses.

Existing Fur Management

A total of 22 Registered Fur Management Areas (RFMAs) overlap in whole or in part with the RSA. Fur harvest return information for the period 1985 to 2001 was obtained from Alberta Sustainable Resource Development for the RFMA and is available in the EIA.

Habitat loss will be short-term as reclamation will target replacing habitat features important in maintaining wildlife populations.

Section 7 below details some of the other proposed and planned mitigation and accommodation measures for specific fur-bearing species of concern to Aboriginal groups in this regard.

Summary

Overall, any potential effects on Treaty or Aboriginal Rights to trap for food or fur in the Project area are both temporary and insignificant.

4.4 IMPACTS TO OTHER TRADITIONAL USES

All Aboriginal group consulted have expressed concerns about the Project’s effects on traditional use locations, such as medicinal plant gathering locations. Site-specific traditional use locations potentially to be impacted by the Project were not identified.

4.4.1 TEK Vegetation

One of the most common concerns among Aboriginal elders was the impact to medicinal and food plants in the Project area (refer to [Table E.12-1](#) and [E.12-2](#); [CR#12](#), [A number of these plants are cited as “rare” or “rare elsewhere,”](#) whereas others are considered to be more common. None of the TEK vegetation species are on Alberta’s 2011 Tracking and Watch List, used to identify species that are rare or otherwise special in some way.

Species Identification

Aboriginal consultation meetings and field visits conducted by CVRI with First Nations and Aboriginal representatives resulted in the identification of a list of vegetation species which are valued by the Aboriginal groups for their uses ([Table 1](#) below; see also [CR#12](#), [Table 11](#)). [CR#13](#) (Vegetation) of the Project Application also discusses many plants identified as important to Aboriginal Communities. The vegetation field surveys identified 88 TEK vegetation species, in other words, species identified by the plant specialists as known to be used by Aboriginal persons, which occur in the LSA ([CR# 13](#), [Appendix 5](#)). Of the TEK vegetation species documented during field surveys, 8 are typically used for medicinal purposes, 20 are used for food, and 60 are used for other purposes.

Common Name	Latin Name	Observed by Aboriginal Communities in LSA	Identified by Vegetation Specialist as TEK Plant Occurring in LSA	Observed During Vegetation Studies in LSA	Observed in Reclaimed CVM Areas
Balsam fir	<i>Abies balsamea</i>	x	x	x	
Sweet Pine (subalpine fir?)	<i>Abies bifolia</i>			x	
Common Yarrow	<i>Achillea millefolium</i>	x	x	x	x
Rat Root	<i>Acorus calamus</i>	x			
Red and White Baneberry	<i>Actaea rubra</i>	x	x	x	
Wild Chives	<i>Allium schoenoprasum</i>	x			
River Alder	<i>Alnus incana</i>		x	x	

Table 1 Vegetation Species Observed by Aboriginal Communities in the LSA					
Common Name	Latin Name	Observed by Aboriginal Communities in LSA	Identified by Vegetation Specialist as TEK Plant Occurring in LSA	Observed During Vegetation Studies in LSA	Observed in Reclaimed CVM Areas
Green Alder	<i>Alnus crispa or viridis</i>	x	x	x	x
Saskatoonberry	<i>Amelanchier alnifolia</i>	x	x	x	
Blue Columbine	<i>Aquilegia brevistyla</i>		x	x	
Wild Sarsaparilla	<i>Aralia nudicaulis</i>	x		x	
Bearberry (Kinnikinnik)	<i>Arctostaphylos uva-ursi</i>	x	x	x	x
Lindley's aster	<i>Aster ciliolatus</i>		x	x	x
Lady Fern	<i>Athyrium filix-femina</i>	x	x	x	
Bog Birch	<i>Betula glandulosa</i>	x		x	x
White (Paper) Birch	<i>Betula papyrifera</i>	x	x	x	
Low Birch	<i>Betula pumila</i>		x	x	
Venus's Slipper	<i>Calypso bulbosa</i>	x		x	
Common Harebell	<i>Campanula rotundifolia</i>	x	x	x	
Indian Paint Brush	<i>Castilleja miniata</i>	x	x	x	x
Prince's-Pine/Common Wintergreen	<i>Chimaphila umbellata</i>	x			
Ox-eye Daisy	<i>Chrysanthemum leucanthemum</i>	x		x	
Ectomorphic reindeer lichen	<i>Cladina mitis</i>		x	x	lichen spp.
Grey reindeer lichen	<i>Cladina rangiferina</i>		x	x	lichen spp.
Star nosed reindeer lichen	<i>Cladina stellaris</i>		x		lichen spp.
Clematis	<i>Clematis verticellaris or Clematis sp.</i>	x		<i>Clematis sp.</i>	
Columbia Bower	<i>Clematis occidentalis</i>		x	x	
Bunchberry	<i>Cornus canadensis</i>	x		x	
Indian Moccasin	<i>Cypripedium pubescens</i>	x			

Table 1 Vegetation Species Observed by Aboriginal Communities in the LSA					
Common Name	Latin Name	Observed by Aboriginal Communities in LSA	Identified by Vegetation Specialist as TEK Plant Occurring in LSA	Observed During Vegetation Studies in LSA	Observed in Reclaimed CVM Areas
(Lady Slipper)					
Spiny Wood Fern	<i>Dryopteris carthusiana</i>	x	x	x	
Fireweed	<i>Epilobium angustifolium</i>	x	x	x	x
Field or Common Horsetail	<i>Equisetum arvense</i>	x	x	x	x
Swamp Horse-tail	<i>Equisetum fluvitile</i>	x	x	x	
Scouring Rush	<i>Equisetum hyemale</i>		x	x	
Meadow Horse-tail	<i>Equisetum pratense</i>		x	x	
Wild Strawberry	<i>Fragaria virginiana</i>	x	x	x	x
False Toadflaw	<i>Geocaulon lividum</i>		x	x	
Old Man's Whiskers	<i>Geum triflorum or Geum sp.</i>	x		<i>Geum spp.</i>	
Yellow Avens	<i>Geum aleppicum</i>		x	x	x
Water Avens	<i>Geum rivale</i>		x	x	
Diamond Willow fungus	<i>Haploporus odorus</i>	x	--		-
Alpine Sweet Vetch	<i>Hedysarum alpinum</i>	x	x	x	
Cow Parsnip	<i>Heracleum lanatum</i>	x		x	
Sweet Grass	<i>Hierochloe hirta</i>				
Stair-Step Moss	<i>Hylocomium splendens</i>	x	x	x	moss sp.
Ground Juniper	<i>Juniper communis</i>	x	x	x	
Bog Laurel	<i>Kalmia polifolia</i>		x	x	
Larch (Tamarack)	<i>Larix laricina</i>	x	x	x	
Labrador Tea	<i>Ledum groenlandicum</i>	x	x	x	
Western Wood Lily	<i>Lilium philadelphicum</i>	x		x	
Twinflower	<i>Linnaea borealis</i>	x	x	x	x
Honeysuckle	<i>Lonicera dioica</i>		x	x	

Table 1 Vegetation Species Observed by Aboriginal Communities in the LSA					
Common Name	Latin Name	Observed by Aboriginal Communities in LSA	Identified by Vegetation Specialist as TEK Plant Occurring in LSA	Observed During Vegetation Studies in LSA	Observed in Reclaimed CVM Areas
Bracted Honeysuckle/ Black Twinberry	<i>Lonicera involucrate</i>	x	x	x	
Puffballs	<i>Lycoperdom spp.</i>	x	--		-
Spiked Clubmoss	<i>Lycopodium annotinum</i>	x	x	x	x
Ostrich Fern	<i>Matteuccia struthiopteris</i>		x	x	
Fog Mint	<i>Mentha arvensis</i>	x	x	x	
Devils Club	<i>Oplopanax horidus</i>	x	x	x	
Sweet Cicely	<i>Osmorhiza brevistylis</i> or <i>Osmorhiza sp.</i>	x		<i>Osmorhiza sp.</i>	
Blunt fruited Sweet Cicely	<i>Osmorhiza depauperata</i>		x	x	
Small-bog Cranberry	<i>Oxycoccus microcarpus</i>	x	x	x	
Arrow-leafed Coltsfoot	<i>Petasites sagittatus</i>	x	x	x	Coltsfoot sp.
White Spruce	<i>Picea glauca</i>	x	x	x	x
Black Spruce	<i>Picea mariana</i>	x	x	x	
Lodgepole Pine	<i>Pinus contorta</i>	x	x	x	x
Pine	<i>Pinus spp.</i>	x		x	
Tree fungus	<i>Piptoporus betulinus</i>	x	--		-
Common Plantain	<i>Plantago major</i>	x	x	x	
Seneca Snakeroot	<i>Polygala seneca</i>	x			
Alpine Bistort	<i>Polygonum viviparum</i>	x		x	x
Balsam Poplar	<i>Populus balsamifera</i>		x	x	x
White Poplar (Aspen)	<i>Populus tremuloides</i>	x	x	x	x
Pin cherries	<i>Prunus pensylvanica</i>				
Choke cherries	<i>Prunus virginiana</i>				
Pink-bracted Common Wintergreen	<i>Pyrola asarifolia</i>	x	x	x	

Table 1 Vegetation Species Observed by Aboriginal Communities in the LSA					
Common Name	Latin Name	Observed by Aboriginal Communities in LSA	Identified by Vegetation Specialist as TEK Plant Occurring in LSA	Observed During Vegetation Studies in LSA	Observed in Reclaimed CVM Areas
Green Wintergreen	<i>Pyrola virens or Pyrola sp.</i>	x			x
Greenish-flowered Wintergreen	<i>Pyrola chlorantha</i>		x	x	
Acorns	<i>Quercus macrocarpa</i>				
Skunk Current	<i>Ribes glandulosum</i>		x	x	
Black Current	<i>Ribes hudsonianum</i>		x	x	
Black Gooseberry	<i>Ribes lacustre</i>		x	x	
Gooseberry	<i>Ribes oxycanthoides</i>	x	x	x	
Red Currant	<i>Ribes triste or Ribes sp.</i>	x			
Prickly Rose (Wild Rose)	<i>Rosa acicularis</i>	x	x	x	x
Baked Apple Berry	<i>Rubus chamaemorus</i>		x	x	
Wild Raspberry	<i>Rubus idaeus</i>	x	x	x	x
Dewberry/ Trailing Raspberry	<i>Rubus pubescens</i>	x	x	x	x
Dock	<i>Rumex crispus or Rumex sp.</i>	x		<i>Rumex spp.</i>	x
Bebb's Willow	<i>Salix bebbiana</i>		x	x	
Hoary Willow	<i>Salix candida</i>		x	x	
Grey Leaved Willow	<i>Salix glauca</i>		x	x	
Shining Willow	<i>Salix lucida</i>		x	x	
Flat leaved Willow	<i>Salix planifolia</i>		x	x	
Scouler's Willow	<i>Salix scouleriana</i>		x	x	
Diamond Willow	<i>Salix sp.</i>	x		<i>Salix spp.</i>	x
Red Willow	<i>Salix sp.</i>	x		<i>Salix spp.</i>	x
Willow	<i>Salix spp.</i>	x		<i>Salix spp.</i>	x
Common Sage	<i>Salvia officinalis</i>	x			

Table 1 Vegetation Species Observed by Aboriginal Communities in the LSA					
Common Name	Latin Name	Observed by Aboriginal Communities in LSA	Identified by Vegetation Specialist as TEK Plant Occurring in LSA	Observed During Vegetation Studies in LSA	Observed in Reclaimed CVM Areas
Red Elderberry	<i>Sambucus racemosa</i>	x	x	x	
Canada Buffaloberry	<i>Shepherdia canadensis</i>	x	x	x	
Water Parsnip	<i>Sium suave</i>	x	x	x	
False Solomon's seal	<i>Smilacina stellata</i> or <i>S. racemosa</i>	x	x	x	
Sow Thistle	<i>Sonchus sp. or arvensis</i>	x	x	x	
Western Mountain Ash	<i>Sorbus scopulina</i>	x	x	x	
Sitka Mountain Ash	<i>Sorbus sitchensis</i>		x	x	
Twisted stalk; liverberry	<i>Streptopus amplexifolius</i>	x	x	x	
Cedar	<i>Thuja plicata</i>				
White Clover	<i>Trifolium repens</i>		x	x	Clover spp.
Alsike Clover	<i>Trifolium hybridum</i>	x		x	x
Moss fungus	unknown	x		-	
Stinging or Common Nettle	<i>Urtica gracilis or dioica</i>	x	x	x	
Old Man's Beard lichen/Sugar Frosted Bear Lichen	<i>Usnea hirta</i>	x	x	x	moss sp.
Dwarf Blueberry/ Dwarf Billberry	<i>Vaccinium caespitosum</i>	x	x	x	x
Tall Bush Blueberry	<i>Vaccinium membranaceum</i>	x		x	
Common Blueberry	<i>Vaccinium myrtilloides</i>	x		x	
Huckleberry	<i>Vaccinium spp.</i>	x		x	
Bog Cranberry	<i>Vaccinium uliginosum or Vaccinium sp.</i>	x		<i>Vaccinium spp.</i>	
Lingonberry or Bog Cranberry	<i>Vaccinium vitis-idaea</i>	x	x	x	

Table 1 Vegetation Species Observed by Aboriginal Communities in the LSA					
Common Name	Latin Name	Observed by Aboriginal Communities in LSA	Identified by Vegetation Specialist as TEK Plant Occurring in LSA	Observed During Vegetation Studies in LSA	Observed in Reclaimed CVM Areas
Marsh Valerian	<i>Valeriana dioica</i>		x	x	
Tobacoo Root	<i>Valeriana edulis or Valeriana sp.</i>	x		<i>Valeriana sp.</i>	
Low-bush Cranberry/ High-Bush Cranberry	<i>Viburnum edule</i>	x	x	x	
Mooseberry	<i>Viburnum nudicaulis or Viburnum sp.</i>	x		<i>Viburnum sp.</i>	
Kidney leaved Violet	<i>Viola Renifolia</i>		x	x	x

Species of Interest

Combining the list of plants identified by Aboriginal knowledge holders in the field, with those identified by the plant specialists (TEK vegetation), and those otherwise reported results in a list of 117 species or classes of plants or fungi identified in possible association with the Project of importance to Aboriginal people. Table 1 lists all of the plant species identified through field studies (Aboriginal and plant specialist) or other reporting as important for Aboriginal uses, and indicates which of those species have been observed in previously reclaimed areas of the CVM.

Some such as Alsike clover, white clover, and ox-eye daisy are invasive species.

Fourteen of the species identified were not observed during the comprehensive studies of LSA vegetation, including rat root, prince’s pine, Seneca snakeroot, choke cherries, pin cherries, sweet grass, cedar, acorns (presumably burr oak), and others.

One must bear in mind that some of the Aboriginal studies included information also derived from previous studies of other CVRI extensions, or the general foothills region. Given this and the range of both traditional and scientific knowledge of participants in all of the various studies, not to mention issues of scientific classification, it is possible that “misidentifications” are present. Discounting fungi or classes of plants (such as generic “Pine”) this is a combined list of 117 species. Only two of them are found on Alberta’s 2012 Tracking and Watch List (some species of sweet cicely and wintergreen are, but it does not appear to include those identified). The two on the List are cedar and acorns, neither of which is actually found in the Project area. Discounting those two, of the 115 plants potentially found in the Project or area, 34 of them or 30% have been observed on reclaimed areas on the CVM (Longman 2010). Very few of these plants were intentionally placed in the reclaimed areas, indicating that through seeds found in the soil and through colonization from adjacent areas, these plants are coming

back. With some additional focused efforts, even short-term reclamation activities will result in the re-establishment of a considerable suite of plants important for traditional Aboriginal uses.

Mitigation

Mitigation measures for TEK vegetation effects should include but will not be limited to the following:

- inviting Aboriginal groups to participate in designing mitigation measures which contribute to the sustainable management of TEK vegetation, and which complement the re-vegetation measures proposed in the Application;
- working with Aboriginal groups, who may be affected by the Project, to locate alternative areas where TEK vegetation is accessible during the life of the Project; and
- implementing a re-vegetation program which aims at the re-establishment of ecosites common to the pre-disturbed landscape. The re-establishment of pre-disturbance ecosites will, over time, again support TEK vegetation.

With the implementation of mitigation measures the Project is expected to have a limited spatial effect, and a moderate temporal effect. Potential Project effects are related to the attenuation of available TEK vegetation (vegetation used for medicinal, food, and other uses) as a result of the removal of ecosite phases within the LSA. CVRI is committed on working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation. Accordingly, it is anticipated that the Planned Project effects on TEK vegetation will be local in extent and over the long term, all areas used for harvesting TEK vegetation will be re-established. CVRI will account for medicinal plants identified by Aboriginal communities that may be disturbed during the mining process to incorporate them into the reclamation process.

4.4.2 Other Traditional Use Sites

As for impacts to other types of traditional use sites, CVRI has requested information on the location, nature, and significance of any traditional use sites in the Project area, in order that its planners can work with communities to avoid sites where necessary or to otherwise mitigate impacts resulting from removals, *etc.* CVRI has funded Aboriginal groups' efforts to locate and record information in the Project area. Again, much information has been provided on the types of resources present, but no site-specific concerns have been presented.

Some groups have indicated that site-specific concerns may be present, but the lack of information about the sites does not allow for verification and a discussion of potential Project impacts and strategies to mitigate concerns related to those sites. The only sites representatives of CVRI have been shown on the ground, or are otherwise aware of, including cabin sites, burials, and ceremonial sites, lie outside of the currently proposed Project area.

Avoidance in Future

CVRI continues to offer to avoid or mitigate sites where possible, but sufficient detailed information must be provided by Aboriginal communities on any site-specific concerns. As stated on numerous occasions in the past, if CVRI is provided with locations and descriptive

information regarding specific Aboriginal community traditional sites, it is prepared to work with the community to avoid important sites or otherwise mitigate Project effects where possible.

CVRI will continue the consultation with the Aboriginal groups as information is brought forward regarding specific impacts to traditional uses as well as undertake further discussions with Aboriginal groups on specific impacts and mitigation measures.

4.4.3 Summary

Negotiations with Aboriginal groups will also continue on a case by case basis for avoidance of specific plant species, other resources, or sites if possible. As with Treaty and Aboriginal Rights, large proportion of the surrounding region, with similar plants, animals, and other resources, will remain accessible for the undertaking of traditional uses during the development of the Project.

5.0 HERITAGE

5.1 LAND USE

5.1.1 Gravesites

Aboriginal group have not identified site specific burial locations within the Project areas.

Burial sites are known in the general area, including some near the Pembina River but well outside of the Project area, the locations of which are privy to those who have identified their presence.

Local Cemeteries

There are a number of small cemeteries in the region associated with the old Coal Branch towns. Due to concerns expressed by Aboriginal groups and those expressed by other stakeholders during previous regulatory processes, CVRI has worked with the Director of Cemeteries, Alberta Culture, to record information regarding these cemeteries and provide it to the Director of Cemeteries and ESRD to help ensure that the sites are not inadvertently disturbed in the future. A report on these activities is forthcoming. None of these cemeteries are associated with the Project area.

5.1.2 Heritage Sites

Artifacts and the archaeological or historic sites on which they are found are considered to be historical resources in Alberta. The management of historical resources in Alberta is governed by the Historical Resources Act and administered by the Provincial Crown (Alberta Culture). Provincial authority to regulate all historical resources has been supported by past Supreme Court of Canada decisions, most notably *Kitkatla Band v. British Columbia* (2002 SCC 31).

Although CVRI has shared some general information regarding its Historical Resources Impact Assessment studies with both Aboriginal groups and the public, regulations under the Act limit information sharing on the part of CVRI and its consultants in order to help protect extant significant sites and any associated information and artifacts. Any questions regarding historical resources and artifacts should be directed to the Head, Archaeological Survey of Alberta, Historical Resources Management Branch, Alberta Culture.

5.1.3 Cabins

Aboriginal groups have not identified any cabin locations known to be within the Project areas.

5.1.4 Ceremonial areas and sacred grounds

Aboriginal groups have not identified ceremonial site locations within the Project areas.

Nearby Sites

One site recorded and discussed in some traditional use reports is a Sundance location, associated camping areas, and other types of sites used by a number of Aboriginal groups in the region. It is well-known to CVRI and other industrial proponents in the region, and to recreational users of the area. There have been several instances in the past of cabins or ceremonial structures being burned or otherwise vandalized by unknown parties. This location is of concern to several Aboriginal groups, and probably to other non-Aboriginal recreational users. However, this area is located well outside of the proposed Project area, and will see no impact from its development.

5.2 RESPECT

5.2.1 Cultural awareness

Cultural awareness of Aboriginal societies by industry and the public is a concern that has been noted by many Aboriginal groups consulted with. The lack of respect to Aboriginal concerns in the past and problems such as racism in the work place have been cited as issues.

Company Initiatives

Through the consultation process, Project managers and their consultants have worked to enhance understanding on the part of the proponent, its management team, and its workforce. Admittedly, more work needs to be done, not only at companies such as CVRI, but in the general public as well.

In response to these concerns related directly to the Project and at the urging of its managers, Sherritt International (the parent company of CVRI) has drafted an Indigenous and Aboriginal Engagement Policy that expressly notes the enhancement of cultural awareness as one of its goals. Working together in the future CVRI expects to be able to help bridge some of the gaps remaining between Canada's Aboriginal peoples and its industrial players.

5.2.2 Opportunity for ceremony

CVRI receives funding requests from Aboriginal communities to use for the enhancement of educational or social initiatives, such as the support of ceremonies. CVRI representatives are often invited to attend as well. As always, CVRI entertains requests for support funding on an ad hoc basis when such requests are presented.

As part of the development of the corporate Aboriginal consultation plan, the formalization of such a funding program is one of the items under consideration.

5.2.3 Environmental respect by company

Aboriginal groups have mentioned the lack of respect for the environment from numerous industrial users and point to historical record of such development in Alberta.

Company Policy

CVRI will continue to work with government regulators, public stakeholders, and Aboriginal groups to ensure modern environmental practices are applied to its operations and the Project.

CVRI is an active participant in many environmental and regulatory initiatives and will continue to be an active member of these programs during the operating life of the Project. Programs range from participation in regional programs such as the West Central Airshed Society (WCAS) and West Fraser's Forest Resources Advisory Group (FRAG), to Provincial and National initiatives. The purpose of the Environmental Protection Program at the CVM is first to prevent and second to minimize adverse environmental impacts resulting from mine related operations.

The program will be implemented in the Project area through the following on-site mechanisms:

- adaptive management approach to environmental risk assessment;
- Safety, Health and Environment Committee (SHE) comprised of key CVRI employees;
- emergency response and wildfire control and prevention;
- waste management program;
- spill response and clean up procedures;
- operating policy commitments; and
- site reclamation.

6.0 LAND ACCESS

A concern of Aboriginal groups is the restriction of access to the Project lands, and the duration for the return of reclaimed lands for use. This access and potential impacts to Treaty and Aboriginal Rights and traditional uses has been discussed above.

CVRI acknowledges that its Project will occupy Crown land otherwise available for the exercise of Treaty or Aboriginal Rights and traditional uses for a period of time during mine development, operation, and reclamation. CVRI notes that access restrictions to the proposed Project lands to pursue Treaty Rights and undertake traditional activities will be phased over the 25 year mine life period.

Occupation of the land base will occur in progressive stages over this period. The first stages will involve road construction as early as 2013, with the first mine pits opening in the center of the area as early as 2014, but with development of mining areas towards the southeast not until 2021, and in the areas west of the town of Robb not until 2027.

6.1 GAME TRAILS

Aboriginal groups have raised concerns of project impacts to the continuity of game trails across the Project area.

Disturbance footprints are minimized as much as possible to decrease the overall effect on vegetation, wildlife and various other factors. CVRI also aims to maintain as much undisturbed habitat as possible during mining which will help to maintain the wildlife diversity of the area. Wildlife displacement will be restricted to local use as there are no indications of long distance or major seasonal migrations in the LSA.

7.0 WILDLIFE

In addition to the potential effects on Treaty or Aboriginal Rights to hunt and trap, all Aboriginal communities expressed concerns regarding the impact of the Project on wildlife.

Many of these concerns were of a general nature, but in some instances specific animals or classes of wildlife were noted (potential impacts to wildlife health are discussed under Health).

Tasks that were completed during the wildlife assessment include:

- identify relative abundance, concentration areas, distribution patterns, and habitat associations of ungulates by means of winter aerial surveys, snow track-counts, and a spring pellet-browse survey;
- identify small mammal, avian and amphibian presence, relative abundance and habitat association by means of snow track-counts, trapping small mammals, owl surveys, spring bird survey, breeding bird survey, migration survey, and amphibian survey;
- compile a list of vertebrate species (excluding fishes) and identify their status as per the Committee on Endangered Wildlife in Canada (COSEWIC), the Canadian Endangered Species Conservation Council (CESCC 2006) and the General Status of Alberta Wild Species (ASRD 2005);
- prepare a habitat map to identify the quantity and quality of habitat present in the Project Development Areas;
- update wildlife use of the existing CVM by means of aerial survey, systematic monthly ground surveys, spring pellet-group counts, breeding bird survey and amphibian survey;
- identify Valued Environmental Components for assessing the potential impact of the proposed development on ungulates, small mammals, birds and amphibians;
- discuss biodiversity at the LSA and RSA scale;
- review Traditional Use Studies (TUS) prepared for CVRI from a wildlife perspective;
- discuss climate change with respect to changes in the Boreal-Cordilleran ecoregion that may affect wildlife; and
- evaluate the potential impacts of the Project within a temporal and spatial perspective that incorporates existing and future demands by other users and developments by conducting a quantitative cumulative effects assessment for elk.

No significant affects to wildlife, including health, are expected due to the Project. Wildlife monitoring including aerial surveys, winter track surveys, pellet count surveys and the use of wildlife cameras are all utilized at the CVM.

7.1 CARNIVORES

Proposed mitigation strategies to help protect mammalian carnivore species include:

- monitor the effectiveness of measures designed to increase understory cover (downed woody debris, shrubs, tree density) on reclaimed mine lands for marten, fisher and lynx. Design a program that includes establishment of specific targets;
- monitor response of marten, fisher lynx to existing and planned mine land reclamation using winter tracking techniques;
- determine if habitats required for fisher maternal denning occur on or immediately adjacent to the Project and assess their levels of use by fisher;
- monitor the effectiveness of establishing and maintaining hiding cover for grizzly bears near Project edges and adjacent to main roads;
- measure and monitor human use levels of linear features during summer, winter and fall (hunting) seasons. Assign this as a primary task of the 'bear warden' position. Use this data to design road closure plans;
- monitor the effectiveness of voluntary and enforced road closures including gating;
- monitor and study specific use of the existing CVM and proposed Project by grizzly bears. Investigate the extent to which existing mines in the region serve as attractive forage sources for grizzlies, and study implications for sub-regional mortality. Consider non-intrusive methods including DNA hair snagging; and
- continue long-term, multi-species winter monitoring of mammals (carnivores and prey) to regional habitat fragmentation using the tracking data conducted in 2007, 2009 and 2011 as a starting point.

7.1.1 Grizzly Bear

Grizzly bears will likely be displaced from portions of the Project mine footprint and permit area during the active mining period. At some point shortly after reclamation grizzly bears will be attracted to the herbaceous forage and ungulates on the Project mine footprint as was observed on the Luscar, Gregg River and CVM reclaimed mine areas. The mined lands will not act as a serious barrier to grizzly bears, with the possible exception of during active mining and hauling.

In the case of regional and cumulative grizzly bear mortality, the proposed Project is unlikely to add significantly to regional mortality. The greatest threat to regional grizzly bear populations is human-caused mortality caused by legal and illegal hunting, self-defence kills by ungulate hunters, and vehicle/train collisions. Any land use that results in increased access or use of access by individuals carrying firearms is a threat to grizzly bear population persistence. Any roads with vehicle speeds greater than 70 kph also have potential to result in increased grizzly bear mortality. Sources of domestic garbage at the CVM are contained in appropriate secure containers and transported to the licensed landfill in Hinton as per the Approval conditions. Problem bear actions at mines in the Coal Branch region are of extremely limited occurrence.

Grizzly bears actively select habitats and foods that provide them with the greatest possible net digestible energy (Hamer and Herrero 1983, Pritchard and Robbins 1989). Mining and subsequent reclamation of the existing CVM has significantly changed landscape structure, composition and food production in the permit area for grizzly bears. Mining and reclamation at

the CVM has resulted in removal of tree canopies, leading to increases in availability of high energy herbaceous plant material (clover, thistles, legumes) and an increase in ungulates (elk, deer) responding to increased forage and edge habitat. There is strong evidence to suggest that ungulates and plants used for reclamation are sought and used extensively by grizzly bears occurring in the vicinity of the CVM area. Similar findings were observed in the existing Luscar and Gregg River mines (Stevens and Duval 2005; Kansas and Symbaluk 2011). Bears using the reclaimed Luscar and Gregg River mine lands were on average larger than bears in an adjacent un-mined Subalpine and the Gregg/Luscar permit block was considered to be an attractive habitat for grizzly bears and a source for enhanced cub production (Kansas 2005). If similar reclamation measures are used on the Project then impacts on grizzly bears from a habitat alteration perspective will likely be positive within 10 years post-construction.

Summary

In the case of regional and cumulative grizzly bear mortality, the proposed Project is unlikely to add significantly to regional mortality. This assertion is based on the fact that carrying of firearms is not permitted within any mine permit areas and traffic speed control is practiced. It is further supported by the fact that no grizzly bear mortalities have occurred on mine permit areas in 40+ years in the Coal Branch region (Symbaluk 2008). This does not diminish the seriousness of cumulative effects on grizzly bear mortality in the RSA and broader Yellowhead region.

Also in response to these concerns CVRI can add the following considerations:

- CVM is aware of the bear population and habitat in the mine and surrounding area. Numerous sightings of black and grizzly are reported each year, even within the mining area. The mine area is often a narrow, long disturbance area surrounded by forested land. Wildlife continues to cross the area and utilize the nearby habitat.
- CVM uses a local wildlife biologist to provide routine baseline and ongoing wildlife monitoring on and around the mine. This includes identification of potential bear dens in proposed disturbance areas. Through this we are able to avoid disturbance of active dens.
- The company is also a member of the Foothills Research Institute program focusing of Grizzly Bears. As a member of this group funds are provided for research into bear populations and habitat protection.
- It is also important to note that mining areas are 'off limits' to public access and hunting. Therefore, while mining is ongoing there is an increased 'protection zone' for all major wildlife species.
- Finally, the land use plans for reclamation of mine disturbed lands takes into account general wildlife requirements in addition to forest cover. The objective is to provide a diverse reclaimed landscape.

7.1.2 Black Bear

Black bear are common in the area, and typically resilient to industrial activity.

7.1.3 Marten

According to [CR#7](#), Marten are listed as "Secure" by the Alberta Fish and Wildlife Division (2010), and winter tracking surveys from 2007 to 2011 indicate normal to above-normal marten

densities throughout the RSA. Those surveys also indicate that marten trail densities in areas with past timber harvest were as high as or higher than in areas without timber harvest. Based on the results of the wildlife studies it was concluded that marten will possibly avoid some high quality habitat during blasting and coal hauling during active mining, but this will be a short to medium-term effect with limited demographic consequences. While marten utilize reclaimed mine habitats, at this point in natural succession they are reliant on remnant forest stands embedded within the CVM footprint. The following mitigation measures are recommended to increase marten habitat suitability and use of reclaimed mine lands: Marten use of regenerating stands may be enhanced with the occurrence of dense shrub and coniferous regeneration (Poole *et al.* 2004; Thompson *et al.* 2008). Selected native shrubs and trees should be planted to increase security cover for marten and their prey (varying hare, red squirrel, voles and mice).

7.1.4 Lynx

According to [CR#7](#), the main potential causes of lynx mortality arising from the Project are: 1) vehicle collisions from coal haul; and, 2) fur harvest. Unlike cougars, lynx are not a big game species in Alberta. Therefore, increased legal hunting pressure due to improved human access will not likely occur. Trapping of lynx is quota-based and recent lynx harvest has not been excessive. Vehicle speeds are reduced on mines to <70 kph further reducing the likelihood of vehicle collisions. Overall, it is predicted that development of the Project is unlikely to cause an increase in direct lynx mortality. After the immediate maximum effect of construction, the losses of lynx habitat are predicted to be ameliorated over time by natural aging of existing forests and regeneration of forest on reclaimed lands. Succession of early post-seral clear cuts and Project reclamation to young forest with abundance hare populations are the main reasons for projected increases in quality lynx habitat. Planned timber harvest in the RSA will provide an optimal mix of regenerating forest and older forest that lynx need for forage and reproduction (denning). Surface coal mining will offer the same conditions if mitigation measures recommended are followed. Habitat supply projections for lynx predict that supply of high and very high quality lynx habitat will significantly increase from baseline to T50 in the RSA (277% in Embarras BMU and 193% in Lendrum BMU) largely because of planned timber harvest, beetle salvage, and surface coal mining.

7.1.5 Wolverine

The wolverine is listed as "may be at risk" under Provincial Status (2010) and as "special concern" Federally Listed under COSEWIC. Wolverine status is listed as transient/migrant and abundance as rare in the study region.

7.1.6 Fisher

According to [CR#7](#), fishers are listed as Sensitive by the Alberta Fish and Wildlife Division (2010), and little is known of their ecology in the foothills of Alberta. They are an uncommon species in the RSA with occurrence linked to older mixedwood forests in the lower elevation eastern portions. This species is not commonly trapped in the RSA with harvest limited to eastern RFMAs. High and very high quality fisher habitat currently comprises about 6% of the Project mine permit area (LSA). Fisher tracks were observed in the Project permit area but at much lower (40 times) densities than marten. The greatest threats to regional fisher populations are habitat alteration at maternal denning sites and over-trapping. Over-trapping is unlikely to occur because fisher harvest is very low in the region and subject to quotas. The government can

reduce quotas at any time if concerns over regional fisher occurrence or population density arise. A study of habitat alteration showed the predicted supply of high and very high quality fisher habitat over time considering effects of the Project and other planned and reasonably foreseeable land uses. The supply of high/very high fisher habitat increases steadily over time with increases of 273% and 444% for the Embarras and Lendrum BMUs from baseline to T50. Based on the above evidence, the combined effects of the Project and past, present and future land actions on fisher populations are rated as insignificant.

7.1.7 Others

The bobcat, long-tail weasel, and badger are not likely inhabitants of the study area.

7.2 UNGULATES

Ungulates will be temporarily displaced by active mining as they are unable to cross a pit disturbance. This displacement will be restricted to local use as there are no indications of long distance or major seasons migrations in the LSA. Ungulates and other wildlife respond positively to predictable human activity by a process of habituation which allows the animal to gradually accept new experiences in the absence of negative feedback. Elk, moose, mule deer, white-tailed deer and other wildlife on the CVM make use of the reclaimed landscapes in the presence of active mining. It can be expected that animals local to the LSA area will respond in the same positive manner as at the CVM. It is expected that elk and deer will respond positively to the early stages of upland reclaimed and re-vegetated areas on the LSA particularly in the Robb West, Main, and Central zones where there is extensive mixed wood and deciduous habitat adjacent the disturbance area.

A minimum 30 m buffer is maintained around all watercourses and if an important wildlife component (nest, den, rearing area) is identified, site specific mitigation will be implemented that could include time restrictions. Seepages which develop on the landscape after mining may provide mineral licks for ungulates in the future. These should be identified as permanent features in the final reclaimed landscape.

CVRI has also planned to undertake reclamation activities that specifically enhance wildlife use of the reclaimed area. Specifically provide diverse vegetation communities and complex arrangements of vegetation and landscape features. CVRI also aims to maintain as much undisturbed habitat as possible during mining will help to enhance the wildlife diversity of the reclaimed sites. The future management of the reclaimed areas, including access for hunting and the management of ungulate populations, will be the responsibility of AESRD.

7.2.1 Moose

Large amounts of moderate quality moose habitat is available throughout the RSA for moose thereby moderating the effect of habitat change caused by mining. High quality moose habitat on the Project and other areas associated with mixed wood of the Lovett Ridge will be reclaimed with a closed forest regeneration forest of lesser habitat quality.

The impacts of the Project development on moose in the region can be mitigated by: implementing reclamation techniques appropriate for moose, establishing a variety of vegetation types and promoting understory complexity in regenerated forests that includes willow species,

aligning reclamation and other re-vegetation efforts to maintain and improve moose habitat, taking steps to ensure core security areas are provided for wildlife, implementing appropriate monitoring, cooperating with the province and other industry on access management and other relevant management issues.

Low calf moose numbers are generally attributed to wolf predation, lack of forage, increased access leading to increased hunting and die-off related to ticks.

Mining and forest harvesting may result in temporary displacement of local populations but the RSA is characterized by a large amount of moderate quality moose habitat.

7.2.2 White tailed Deer

See 7.2 Ungulates above

7.2.3 Mule deer

See 7.2 Ungulates above

7.2.4 Elk

An examination of elk observations during Fish and Wildlife moose surveys in the area on the north side of the existing CEA study area indicates scattered elk in low numbers. There is not a substantive elk population in this area.

7.2.5 Bighorn sheep

Bighorn Sheep are not typically found in the Project area or nearby, but has been observed as an accidental visitant to the CVM.

7.2.6 Caribou

Based on the in-depth wildlife assessment completed for the Project as well as past wildlife studies within the CVM and ongoing studies, no caribou populations have been identified in the Project area.

7.3 SMALL MAMMALS

Small mammal species of concern noted during Aboriginal consultation efforts include:

- Rabbit (see also 2.3 for discussion);
- Beaver (see also 2.3 for discussion);
- Weasel (see 2.3 and 5.1.7 for discussion);
- Mink (see also 2.3 for discussion);
- Skunk (see 2.3 for discussion);
- Badger (see 2.3 and 5.1.7 for discussion);
- Muskrat (see also 2.3 for discussion);
- Fisher (see 2.3 and 5.1.6 for discussion); and
- Squirrel (see also 2.3 for discussion).

The muskrat is a semi-aquatic rodent and is widespread throughout the region wherever there is long-standing or permanent water, *i.e.*, sloughs, lakes, marshes, streams (Smith 1993). Muskrats were incidentally on the Project LSA in the pond north of HWY 47 at the Robb corner. Muskrats are found on the CVM. On May 22, 2006, observations of individuals, bank burrows and a lodge were made on the west end of Lovett Lake and on ponds elsewhere on the mine. Muskrat are also present in the RSA and their status is “secure” by Provincial Status 2010.

American beaver are found throughout the province wherever there is suitable water (sloughs, rivers, creeks and lakes) and trees within easy access. Active and abandoned beaver dams were present throughout the northern part of the Project. This area of the Project LSA consists of narrow, slow flowing rivers and streams, *i.e.*, Hay Creek, whereas the south end of the Project LSA consists more of fast flowing streams and open fens. Beavers have been recorded on ponds and various water bodies on the CVM. American Beaver is also present at the CVM and in the RSA, and their status is “secure” by Provincial Status 2010.

The snowshoe hare is found throughout the Province except for the grassland region. It occurs in the Foothills where it is widespread but may undergo local periodical fluctuations. The snowshoe hare is an animal of the forest preferring the shrubby open areas or the forest edges. The Snowshoe Hare was present throughout the Project LSA. Snowshoe Hare are also present in the RSA and are listed as “secure” by Provincial Status 2010.

The red squirrel is widespread throughout the Boreal-Cordilleran region (Smith 1993) and is probably the best known tree squirrel in the region. It is absent from grassland regions. The red squirrel and characteristic middens were observed in many different habitats that throughout the Project LSA. Red Squirrel is also present at the CVM and in the RSA, and their status is “secure” by Provincial Status 2010. The LSA occurs within the range of the northern flying squirrel (Smith 1993). This species occurs in coniferous and mixed wood forests. Trees with holes suitable for nesting are important requirements for these squirrels. It is likely that the northern flying squirrel occurs throughout the Project LSA. Northern Flying Squirrel is also present in RSA and is listed as “secure” by Provincial Status 2010.

The American Mink is listed as “secure” by Alberta Status 2010, and is a permanent resident but rare in the RSA. Mink was not selected for the Valued Ecosystem Component (VEC) assessment of the Project and cumulative impacts on mammalian carnivores because it is listed as secure and has a small home range. The Striped Skunk is listed as “secure” by Alberta Status 2010, and is a permanent resident but uncommon in the RSA. The skunk was not selected for the assessment of Project and cumulative impacts on mammalian carnivores because they are a resilient generalist, and are likely to be positively affected by the Project.

The impact of mining development will involve direct mortality through clearing and loss of habitat during mine development and changed composition in small mammal communities in the early stage of reclamation. Small mammals will be temporarily displaced by active mining as they are unable to cross a pit disturbance. Other forest dependent small mammals (red squirrel, snowshoe hare) will be expected to use the regenerated forest and its understory once it becomes established. Understory development is a necessary component of snowshoe hare habitat. The density of small mammals in reclaimed grasslands has been shown to be similar to undisturbed habitats (Hingtgen and Clark 1984). After initial grassland establishment, the number of small

mammal species is expected to be similar to those on undisturbed similar habitats. Muskrat and beaver have been observed using the reclaimed lakes on the CVM (Bighorn 1995:24).

7.4 OTHER FUR-BEARING ANIMALS

7.4.1 Fox

The Provincial Status (201) for the fox population is listed as "secure." The Red Fox is noted as a permanent resident in the study region but with a scarce abundance.

7.4.2 Wolf

According to [CR#7](#), wolves are a common species in the LSA and RSA. From 1985 to 2001, a total of 14 wolves were trapped within the three RFMAs that overlap the LSA. Wolf trails were regularly observed during winter tracking surveys from 2007 to 2011 with travel and hunting occurring within the existing CVM permit area. Wolves are not a listed species at risk in Alberta or nationally. The greatest threats to regional wolf populations are human-caused mortality caused by legal and illegal hunting, fur harvest, and vehicle collisions. Wolves could also be affected by significant and large-scale regional declines in ungulate prey availability. It is unknown to what extent projected decreases in ungulate prey and wolf habitat will impact wolf populations. Wolves have inherently high fecundity and in a region with low human population levels (*i.e.*, low mortality risk) are very unlikely to be extirpated in the RSA.

7.4.3 Coyote

Coyote back-trailing was not conducted in the LSA. The majority of back-trailing for coyote was completed in the vicinity of the existing CVM where trails were most common. Coyotes were commonly observed travelling and hunting in early, mid and late succession vegetation on reclaimed mine areas.

7.5 BIRDS

Twenty-six bird species in the Project or Local Study Area (LSA) are identified as "Sensitive" by ASRD (2011) and one species is identified as "May Be At Risk." These 27 species were identified to discuss potential cumulative effects of the Project on birds at the regional scale in the RSA. This list includes hawks and eagles such as the Bald Eagle, Northern Harrier, Northern Goshawk, Broad-winged Hawk, Golden Eagle, American Kestrel, and ducks such as the Green-winged Teal and Lesser Scaup. Mining and other activities will affect birds in the RSA by:

- Potential collisions on roads by scavenging birds (Golden Eagle, Bald Eagle)
- Potential redistribution of migrants and visitants on the Project area during active mining (Northern Harrier, Golden Eagle, Bald Eagle, Broad-winged Hawk). These birds are expected to continue to move through or visit the Project once reclamation begins to establish upland grassland communities:
- Loss of breeding habitat will occur for species which primarily prefer:
 - Mature broadleaf and mixed wood (Northern Goshawk, Broad-winged Hawk, Barred Owl, Northern Pygmy-Owl, Pileated Woodpecker).
 - Open regenerating conifer (Western Wood-Pewee)

- Shrublands and Upland Herb (Northern Harrier, American Kestrel)

Project factors that will reduce the impact of the Project on birds (raptors) include:

- Implementation of reclamation techniques that create wildlife habitat by mimicking the natural disturbance regime where possible.
- Reclamation of wetlands incorporates diverse habitat components, *i.e.*, lakes with fish, shallow ponds with emergent vegetation, lakes with shallow mudflat margins, shorelines with dense upland cover as well as forest cover, *etc.*
- Immediate removal of any ungulate carcasses on roads to avoid collisions with eagles and other scavenging birds.
- Use of raptor safe guidelines for power distribution line construction.

The number of bird species associated with the reclaimed CVM (165) is higher than the number of species identified in the Project (121 birds). While bird abundance and types of species may change as a result of mining activity it appears that the number of bird species will be similar or may increase as a result of adding new habitats *e.g.*, upland grassland, shrubland, lake, pond and wetland development. The edge associated with the Project should enhance tree growth potential both natural and through reclamation planting as well as promoting maintenance of bird species occurrence during active mining.

Reclamation on the CVM has resulted in a bird community with diversity comparable or higher to natural habitats adjacent to the mine. The bird community on the CVM is composed of those bird species preferring early succession grasslands, species restricted to the aquatic environment provided by lake and pond development, species using the forest/grassland edge, species using the riparian/grassland edge, and those species which are present in the undisturbed riparian and forested habitat within the mine boundaries (Bighorn 1999). The high bird species diversity of the reclaimed habitats on the CVM is partly a result of species response to upland and aquatic reclamation but is also a result of proximity to a variety of undisturbed habitats including pine forest, wetland, riparian areas and their associated bird species.

7.5.1 Eagles and Hawks

Ten species of diurnal raptors (Osprey, Bald Eagle, Northern Harrier, Sharpshinned Hawk, Northern Goshawk, Broad-winged Hawk, Red-tailed Hawk, Roughlegged Hawk, Golden Eagle, and American Kestrel) were recorded during raptor surveys conducted on the Project LSA. The Red-tailed Hawk, American Kestrel, and Broad-winged Hawk were identified as summer residents; breeding evidence was confirmed by the presence of a nest site for these species. The Osprey, Bald Eagle, Northern Harrier, and Sharpshinned Hawk, were designated as summer visitants with the potential of breeding in the Project LSA in appropriate habitat. The Golden Eagle which occurs further west and breeds in the Front Ranges was observed as a fall migrant on the Project LSA. It is potentially a seasonal visitor to the LSA either accidentally, the result of weather patterns or when foraging for food. The Rough-legged Hawk was designated as a migrant, using the Project LSA either as a travel corridor or for resting /feeding. Repeated observations of the Northern Goshawk throughout all seasons indicated that this bird is a permanent resident in the Project LSA, probably breeding.

"Human activities impact raptors in three basic ways: by causing mortality of eggs, young, or adults; by altering habitats and by disrupting birds' normal behaviour" (Postovit and Postovit 1987). These three basic forms of impact can range from: direct impacts such as mortality (electrocution on power lines), habitat loss (clearing of tree cover and habitats for prey), to indirect impacts from simple human presence and activity (sensory disturbance or obstruction of movements).

Habitat loss or alteration results in direct impacts to raptors by removal of cover, perch sites, nest sites and loss or alteration of prey sources. Clearing of vegetation will result in direct losses of both nesting and foraging habitat for raptors using the immediate area. Not all raptors will be affected in the same way by vegetation clearing. While certain species like the cavity nesters, *e.g.*, Boreal Owl, may be affected by forest clearing, others such as the Great Gray Owl will benefit as they hunt along the edges of forest margins. Hawks and eagles will generally benefit from clearing a continuous forest because they need the open spaces for hunting and migration. Open areas have the potential of creating thermal updrafts important for migrating soarers. Red-tailed Hawks and Rough-legged Hawks have been observed during migration in modest numbers over the CVM; Golden Eagles have also been observed during migration. The presence of healthy small mammal communities in the CVM reclamation provide good foraging habitat for species like the Northern Harrier which are commonly observed hunting over the reclaimed grasslands. Practices to re-establish or improve raptor habitat on reclaimed lands are compatible with general wildlife habitat reclamation goals. The first priority must be to establish healthy prey populations.

Raptors that hunt or scavenge dead rodents or ungulates along roads or railways may be killed by moving vehicles. In Jasper National Park, Golden Eagles have been killed by collision with trains while scavenging on dead ungulates along the tracks. Potential direct mortality through vehicle collisions is not expected to be a problem in the LSA as haul roads are typically wide, and truck travel is slower than highway speeds. Because of their size, behaviour, and habit of perching or nesting on power poles, some raptor species are particularly prone to electrocution, *i.e.*, Golden Eagles, Osprey, Great Horned Owls, Red-tailed Hawks, and Rough-legged Hawks. Large size is the most crucial factor predisposing birds to electrocution however there are few records of large falcons (Peregrine and Prairie) and surprisingly few for Osprey given that it often nests on power poles (APLIC 1996). Eagles and the large soaring hawks like the Red-tailed Hawk and Rough-legged Hawk are susceptible to electrocution because of their large size. The maximum wing span of a female Golden Eagle is 2.3 m (7.5 feet). Tails can extend 25.4 (10 inches) below the top of a perch. Forest dwelling raptors such as Sharp-shinned Hawk, Cooper's Hawk and the Northern Goshawk are rarely found in electrocution records (APLIC 1996). Forested areas generally have fewer reported raptor electrocutions than parklands, shrublands, and grasslands. Because natural perches are abundant in forested areas, accipiters (small forest dwelling raptors) are more likely to perch in trees than on relatively exposed perches provided by electric transmission and distribution lines. Ground nesting raptors, *e.g.*, Northern Harrier, are electrocuted infrequently and owl species appear in the records in low numbers. Small species like American Kestrel, and Merlin with wing spans below 100 cm (39 inches) generally cannot span the distance between two electric conductors even with outstretched wings. There has been no indication that electrocution of raptors has been a problem on the existing CVM. The Project LSA is located in a forested environment. Raptor electrocution, if it occurs, likely happens as an isolated event. Modifications are generally not

recommended as a response to single electrocutions that may be isolated events (APLIC 1996). These two factors and the use of raptor safe specifications on distribution lines will minimize potential of raptor electrocution in the LSA.

Mining is not expected to interrupt the raptor migration over the Yellowhead Fire Tower but removal of forested habitat early in the mining process will eliminate trees and foraging habitat for raptors that may occasionally stop to hunt and rest in the LSA. It is expected that once reclamation is initiated, the small mammals typically associated with early succession grasslands will provide a food source for raptors during migration especially for Northern Harrier, Rough-legged Hawk and Red-tailed Hawk in the fall and perhaps eagles in the spring.

7.5.2 Ducks and Waterfowl

The Green-winged Teal is an uncommon summer resident in the Project area. It was observed on one plot during the Project breeding bird survey. It was observed 10 more times during other work in the Project; five of these observations were on the pond near the Hwy 47 turnoff to Robb. Green-winged Teal have been observed on lakes in the CVM. Wetland development associated with the Project should provide habitat for this species. Millennium (2011c:91) indicates that the Project should result in a net increase of water of 869.6 ha by Year 50.

The Lesser Scaup was observed on one plot during the Project breeding bird survey for a total of 3 birds; relative abundance was 0.46 pairs/km². It was observed another 18 times at different locations throughout the Project study area and is considered an uncommon summer visitant. On the CVM it is identified as probable breeding. Wetland development associated with the Project should provide breeding habitat for this species. Millennium (2011c:91) indicates that the Project should result in a net increase of water of 869.6 ha by Year 50.

The Common Loon was also observed by at least one Aboriginal group and noted as a concern. The loon is very uncommon in the Project area, a summer resident, possibly breeding. The Common Loon is listed as “secure” by Alberta Status 2010 and “not at risk” by Federal COSEWIC.

Reclaimed lakes and ponds on the CVM support breeding water birds, *i.e.*, Canada Goose, Mallard, Bufflehead, Common Goldeneye, Barrow's Goldeneye, Killdeer, Greater Yellowlegs, Spotted Sandpiper; probably or possible breeding water birds *i.e.*, Ring-necked Duck, Lesser Scaup, Solitary Sandpiper, summer visitants *i.e.*, Common Loon, Osprey, and several species of waterfowl and shorebird migrants not seen elsewhere in the RSA, *i.e.*, Semipalmated Sandpiper, Western Sandpiper, Least Sandpiper, Baird's Sandpiper, Short-billed Dowitcher.

7.5.3 Geese

See above.

7.5.4 Grouse

The Ruffed Grouse was found to be fairly common in the Project area, being a permanent resident with confirmed breeding. The Spruce Grouse is also fairly common, being a permanent resident, with probable breeding occurring. Dusky Grouse was observed in the RSA, but are not present in the LSA. Sharp-tailed Grouse, listed as “sensitive,” were also not observed in the

Project area. They are observed at the CVM and in the RSA. Ruffed Grouse, Spruce Grouse, and Dusky Grouse are listed as “secure” species according to Alberta Status 2010.

7.5.5 Ruffed grouse

See above.

7.5.6 Prairie chickens

There are no prairie chickens in the Project area. This may refer to the spruce grouse.

7.6 SUMMARY

The temporary land use components of mining coupled with CVRI’s commitment to progressive reclamation ensures that the effects to wildlife are known, minimized and mitigated.

8.0 FISH

In addition to the potential effects on Treaty or Aboriginal Rights to fish, all Aboriginal communities expressed concerns regarding the impact of the Project on fish. Most of these concerns were of a general nature, but in some instances specific fish species were noted including:

- Whitefish;
- Trout;
- Grayling;
- Pickerel; and
- Jackfish.

EIA Discussion of Fish

The EIA provided with the Project fully discusses the fish species, distribution, habitat and effects of the Project.

Rainbow Trout were the most common and widespread species within the LSA and RSA and were found in 38 of the 42 waterbodies sampled during baseline fisheries investigations. Bull Trout, Burbot, Lake Chub, Longnose Sucker, and Spoonhead Sculpin were encountered much less frequently than Rainbow Trout but were still found at a number of different locations. Other species, including Arctic Grayling, Brook Stickleback, Brook Trout, Longnose Dace, Mountain Whitefish, Northern Pike, Pearl Dace, Trout-perch, and White Sucker were rare and were only found in one or two waterbodies. Arctic Grayling are listed as Sensitive and is considered a Species of Special Concern in Alberta (ASRD 2010). Populations have decreased in the past few decades. Threats provincially include increased harvest pressure from improved road accessibility, blocked migration routes and altered stream flow resulting from improperly placed culverts in newly constructed roads. Brook Trout are listed as an exotic/alien species (ASRD 2010). They were introduced into Alberta in the early 1900s and are abundant in many foothills streams and isolated lakes. Bull Trout are listed as Sensitive and is considered a Species of Special Concern in Alberta (ASRD 2010). Over-harvesting has led to a decline in population and while angling regulations may lead to recovery, habitat degradation and

competition from introduced species may contribute to further declines. Introduced stocks of Rainbow Trout in Alberta are Secure. However, the native Athabaskan Rainbow Trout population has suffered introgression from introduced trout in the Athabaskan drainage system. The native species is currently considered At Risk (ASRD 2010) but Alberta's Endangered Species Conservation Committee has recommended that Athabasca Rainbow Trout be listed as Threatened under the Wildlife Act. Rainbow Trout (At Risk status) were widespread in the Project and were often the only species found, or historically reported, in study streams. As such the majority of watercourses had a moderate diversity ranking.

Aquatic resources issues related to construction, operation, and reclamation of the Project were generally linked to potential changes to physical habitat components, changes in flow regimes, changes in surface water quality, and changes in resource access. Measures to reduce or mitigate potential effects were identified using proven strategies and combined expertise of professionals. Potential local effects on the fisheries Valuable Environmental Component's (VEC) associated with direct habitat loss or alteration are expected to be fully mitigated with properly implemented mitigation strategies. CR#2 (Section 5.4) of the Project application provides details of the numerous mitigation strategies proposed to protect fish resources, in the areas of surface water management and erosion control, haulroad crossing construction, stream diversions, management of stream flows, public access restrictions, and habitat enhancement. Therefore, no cumulative effects on fisheries VECs associated with direct habitat loss or alteration are expected. Potential adverse effects relate primarily to direct physical habitat alteration/loss, changes in surface water hydrology and water quality issues. With mitigation there will be an insignificant impact on the fisheries VEC's. CVRI is currently working with the Department of Fisheries and Oceans Canada (DFO) in creating a conceptual compensation plan to be able to uphold the principle of 'No Net Loss' to fish habitat.

Silkstone and Lovett Lakes are stocked with rainbow trout by ESRD. CVRI does not have information on the edibility of the stocked fish. However, CVRI has studied the water quality of its end-pit lakes. There have now been three sets of limnological and ecological studies conducted on CVM end-pit lakes: the studies in the 1990s conducted on Lovett, Silkstone, and Stirling (Pit 24) lakes (Agbeti 1998, Mackay 1999); the 2006 studies conducted on Lovett, Silkstone, and Stirling (Pit 24) lakes plus Pit 35 and Pit 45 lakes (Hatfield 2008), and the current study. Taken together, the results of these studies indicate that there may be fewer constraints of water quality to the ecological viability of end-pit lakes in the CVM area than those described in End-Pit Lake Working Group (2004):

- The concentration of a number of water quality variables, such as nutrients and major ions, are higher in end-pit lakes than in natural lakes, but these higher concentrations are not at levels that would affect the ecological viability of the end-pit lakes.
- There have been relatively few instances of measured water quality variables, including metals, exceeding provincial or federal water quality guidelines.
- The incidence of water quality guideline exceedance is not measurably greater in end-pit lakes than in natural lakes in the CVM area.
- The trophic status of end-pit lakes is similar to that of natural lakes in the CVM area.

The exception to this is dissolved oxygen. The results of this study indicate there are portions of end-pit lakes in all seasons sampled with concentrations of dissolved oxygen that are below provincial guidelines for the protection of aquatic life. The same is true of Fairfax Lake, the natural lake that was surveyed as part of this study. The depth patterns of dissolved oxygen in the lakes that were studied are related to processes of lake stratification and turnover.

EIA Discussion of Consumption & Health

CVRI can also offer the following information with respect to edibility of fish in the region. The predicted exposure to methyl mercury is associated with Risk Quotient (RQ) values greater than 1.0 for the resident group in the multiple pathway assessment. The maximum RQ value of 1.3 for the resident group is not predicted to change from the Baseline Case to Application Case. The Project is not expected to measurably increase methyl mercury-related health risks in the region. Methyl mercury is the form of mercury that is of greatest concern with respect to accumulation in biological organisms, and subsequent consumption by people (Health Canada 2007). Food intake is the primary route of exposure to mercury compounds in humans, with fish and seafood being the most significant contributors to human exposure (ATSDR 1999). For the resident group, the highest RQ value was predicted for the toddler life stage, where 100% of the estimated daily intake of methyl mercury is attributable to local fish consumption. The methyl mercury concentration (*i.e.*, 95UCLM) in fish used in the HHRA is 0.11 mg/kg wet weight. This concentration is below the subsistence fish consumption guideline of 0.2 mg/kg recommended by Health Canada (2007). The fish consumption rates used in the HHRA represent rates cited by Health Canada (2007) for subsistence fish consumers for all types of fish. No adjustments for local fish consumption preferences were applied, suggesting that the consumption rates used may be conservative. At present, there is no consumption advisory on fish caught from the Embarras or McLeod River within the RSA for the Project (Government of Alberta 2011). Additional factors that may have contributed to the overestimation of the health risks are:

- The estimated daily intakes and associated RQ values are based on the assumption that people rely on locally caught fish as a part of their diet.
- The exposure limit used in this assessment (0.1 µg/kg/day) is based on developmental impairment in children. Health Canada (2007) cites a TDI of 0.2 µg/kg/day for methyl mercury. When compared to the Health Canada TDI, the RQ values for the resident toddler is reduced to 0.7.
- It is important to note that any nutritional benefits associated with eating fish from the RSA were not accounted for in the characterization of the potential health risks.
- The predicted RQ values for methyl mercury remain consistent across the Baseline and Application Case for the resident group. This suggests that the Project is not expected to increase methyl mercury-related health risks in the region.

Summary

As reflected in the EIA and in consideration to the mitigation plan outlined in that document including flow management, surface water management, construction timing, and fish salvage the effects to fish are known, minimized and mitigated.

9.0 WATER QUALITY

In addition to the potential effects on Treaty or Aboriginal Rights to fish, all Aboriginal communities expressed concerns regarding the impact of the Project on water quality. Without exception, the number one concern related to CVRI by Aboriginal leadership, Elders, and community members were the potential Project impacts on water quality.

Water Management

The existing mine areas within the CVM have implemented a Water Management Plan in order to maintain clean water flows in local watercourses and to capture mine affected water for treatment. CVRI is planning on implementing a similar plan for the Project area to maintain water quality and quantity.

The mine wastewater treatment program similar to the one currently in use at the CVM will be established to minimize downstream siltation and minimize downstream effects on surface water quality. The objective will be to observe water quality relative to baseline values to identify any changes over time.

Within the Hydrology and Surface Water Quality reports in the Application, a number of monitoring programs are listed including:

- continue monitoring programs already in place at the existing CVM mine (*i.e.*, flow and TSS at settling ponds, regular inspections of all drainage works, and upstream and downstream water quality sampling);
- document the effect of mine operations on long term flow regimes in order to document critical low flow conditions during pit filling periods and define the need for any bypass pumping to maintain in-stream flows;
- establish flow monitoring stations 2-3 years in advance of commencement of Project operations in each watershed;
- conduct periodic runoff and drainage control monitoring (adjust the capacity of or relocate sump systems and drainage works as mining proceeds);
- conduct ongoing monitoring, operations, and maintenance as outlined in the water management plan with periodic reviews and adjustments;
- monitor adjacent undisturbed areas to ensure surface runoff from disturbed areas does not occur; and
- monitor surface water quality in natural watercourses, both upstream and downstream of Project activities as required in the EPEA approval.

9.1 CONTAMINANTS

A general concern expressed during Aboriginal consultation was contamination of the water supply.

The following surface water quality variables with surface water quality guidelines ([Table 4, Section 2 of CR#11](#)) were assessed during water quality studies: aluminum; ammonia; arsenic; barium; boron; cadmium; chloride; chromium; cobalt; copper; dissolved phosphorous; iron; lead;

lithium; mercury; molybdenum; nickel; phenols; selenium; silver; sulphate; thallium; titanium; total phosphorus; total suspended solids; uranium; and zinc. Both dissolved and total forms of all metals were used in assessments with the exception of mercury for which only total mercury concentrations were assessed.

These variables were measured in unaffected watercourses in order to compare them to watercourses downstream of an existing mine. 33% of the 4,760 combinations of measured water quality variables, seasons, and sampling locations of many surface water quality variables in the watercourses within the LSA that are not affected are below their applicable detection limits (Table 6, Section 2 of CR#11). Concentrations of 4.2% of all combinations of measured water quality variables with guidelines, seasons, and sampling locations are above guideline values (Table 7, Section 2 of CR#11). Total aluminum, and total iron concentrations account for approximately 65% of all metal guideline exceedances, with lower frequencies of guideline exceedances for total copper, chromium, cadmium, dissolved iron, and dissolved aluminum (Table 7, Section 2 of CR#11). Total phosphorus, phenols and sulphide account for most of the guideline exceedances for water quality variables that are not metals (Table 7, Section 2 of CR#11). 15 of the 50 surface water quality variables in watercourses that are not downstream of existing mines were measured to have at least one guideline exceedance. The highest frequency of guideline exceedance occurred in the spring season and the lowest in the winter season (8.9% and 1.4%, respectively, Table 7 Section 2 of CR#11). The frequency with which surface water quality guidelines for total and dissolved metals are exceeded is 2.7% of all measured cases.

Surface water quality of watercourses in the LSA downstream of existing mines is similar to water quality of watercourses that are not downstream of existing mines (Table 8, Section 2 of CR#11). The frequency with which the concentration of surface water quality variables are below detection limits are similar in watercourses in the LSA that are downstream of existing mines (29% of 3,335 combinations of measured water quality variables, seasons, and sampling locations, Table 8, Section 2 of CR#11) as compared to watercourses in the LSA that are not downstream of existing mines (33%, Table 6, Section 2 of CR#11). Concentrations of 6% of measured water quality variables with guidelines are above those guideline values in watercourses in the LSA that are downstream of existing mines (Table 9, Section 2 of CR#11). Total aluminum, and total iron concentrations account for approximately 33% of all metal guideline exceedances, with lower frequencies of guideline exceedances for total copper, chromium, mercury, cadmium, silver, as well as dissolved copper (Table 9, Section 2 of CR#11). Total phosphorus, phenols and sulphide account for all of the guideline exceedances for water quality variables that are not metals (Table 9, Section 2 of CR#11). 16 of the 50 surface water quality variables in watercourses that are downstream of existing mines were measured to have at least one guideline exceedance in the Baseline Case dataset (Table 9, Section 2 of CR#11). The highest and lowest frequencies of guideline exceedance occur in the spring season (12%) and winter season (0%), respectively (Table 9, Section 2 of CR#11). The frequency with which surface water quality guidelines for total and dissolved metals are exceeded is 4% of all measured cases in watercourses in the LSA that are downstream of existing mines (Table 9, Section 2 of CR#11).

Like the LSA, surface water quality in the RSA is also of generally good quality (Table 10, Section 2 of CR#11).

Watercourses in the RSA are alkaline (pH from 7.6 to 8.8) and have concentrations of TDS that are similar to that in the LSA (20 mg/L to 322 mg/L). Concentrations of many surface water quality variables in the watercourses in RSA are below their applicable detection limits, with concentrations of 33% of the 6,042 combinations of measured water quality variables, seasons, and sampling locations being below detection limits in watercourses in the RSA (Table 10, Section 2 of CR#11). Concentrations of 7.7% of measured water quality variables with guidelines are above those guideline values in watercourses in the RSA (Table 11, Section 2 of CR#11). The highest and lowest frequencies of guideline exceedance occur in the summer season (8.7%) and winter season (3.7%), respectively (Table 11, Section 2 of CR#11). 17 of the 50 surface water quality variables in watercourses that are downstream of existing mines were measured to have at least one guideline exceedance in the Baseline Case dataset (Table 9, Section 2 of CR#11). The frequency with which surface water quality guidelines for total and dissolved metals are exceeded is 5% of all measured cases in watercourses in the RSA (Table 11, Section 2 of CR#11). Total aluminum, total iron, and total chromium concentrations account for 49% of all guideline exceedances in the Baseline Case in the RSA, with lower frequencies of guideline exceedance for total phosphorus, total and dissolved cadmium, total and dissolved copper, and dissolved lead (Table 11, Section 2 of CR#11).

These data indicate that the water quality in watercourses downstream of an existing mine are very similar to those in an unaffected stream. The Project is not expected to contaminate watercourses. Additional information related to phosphorous, nitrogen, selenium, pH, and sediment is found below.

9.1.1 Phosphorus

The CVM does not use phosphorous in its operations (including laundry), and the Project is not expected to add phosphorous to the water.

9.1.2 Nitrogen (Nitrate)

Several studies addressing elevated nitrogen levels in surface waters from mining activities were summarized in Hackbarth (1999) and MEMS (2005); the main findings reported in these documents are as follows:

- While increased levels of nitrogen (nitrate) were noted in streams receiving discharges from settling ponds, these increases were inconsistent with data from the Erith, Pembina and Embarras Rivers downstream of the mines which indicated concentrations often at or below detection limits.
- Studies conducted in the Lovett River by Alberta Environment and Sustainable Resource Development (ESRD) found significantly higher concentrations of nitrogen in areas downstream of mining, although the elevated concentrations were less than surface water quality guidelines.
- Release of nitrogen from explosives does not necessarily occur in the same year as the explosives were used but depends on factors such as hydrological cycle, form and intensity of precipitation, drainage exposure, aspect of waste dump, quantity of water and watershed characteristics.

- While nitrogen release increases rapidly with mining, the total quantity of nitrogen drops relatively quickly following the first freshet after blasting is completed and then continues to release over a period of five to ten years.
- A review of nitrate and ammonia concentrations in surface waters used in the Project application report found that:
 - most of the measured concentrations of ammonia were below the detection limit in both watercourses downstream of existing mines (100% of measured ammonia concentrations were below detection limits) and watercourses not downstream of existing mines (97% of measured ammonia concentrations were below detection limits);
 - many of the measured concentrations of nitrate were below the detection limit in both watercourses downstream of existing mines (80% of measured nitrate concentrations were below detection limits) and watercourses not downstream of existing mines (40% of measured nitrate concentrations were below detection limits); and
 - there was no significant difference in the concentration of nitrates in watercourses downstream of existing mines (n=5) compared with the concentration of nitrates in watercourses not downstream of existing mines (n=18, t-test, p = 0.25).

Nitrogen release to the aquatic environment will be minimized through a number of mitigation measures already in use at existing coal mines in the area:

- The use of explosives with less slurry to reduce the amount of nitrogen compounds released.
- Minimization of water contact with explosives. Nitrogen compounds found in explosives are water soluble and water control activities (dewatering of pit areas, use of diversion ditches and interceptor ditches) will ensure the driest conditions possible for mining and blasting operations.
- Explosives will be properly stored to prevent contact with surface waters.

The residual (after mitigation) effects of the Project on surface water quality via increases in nitrogen caused by the use of explosives containing ammonium nitrate are assessed as Insignificant in the LSA.

9.1.3 Selenium

Selenium presence in the mined rock is low in comparison to other locations in Canada. Hence the opportunity for "leaching" selenium into the water column is low. Release of selenium from rock dumps into surface water has been noted at mountain mines in Alberta and British Columbia.

A review of 92 selenium values from the groundwater monitoring wells demonstrate that prior to mining the highest concentration was 0.006 mg/L and the average concentration was slightly above 0.001 mg/L (CR#3, Table 2.3-7). A review of 36 selenium values from the groundwater monitoring wells post-mining demonstrate that the highest concentration post-mining was 0.0013 mg/L and the average concentration was slightly below 0.001 mg/L. The fact that the statistics appear to indicate that selenium concentrations go down after mining in an area is likely

just a function of dealing with values that are: 1) close to the method detection limit and 2) can vary naturally in the order of several micrograms per liter. The appropriate interpretation is that there is no indication that CVM mining affects selenium concentrations in groundwater. In the 35 years of mining, the CVM has not had any major issues related to selenium concentrations.

With respect to selenium, the CVM will continue an effective water quality monitoring program including a focus on selenium concentrations. The objective will be to observe water quality relative to baseline values to identify any changes over time. Should a significant increase in selenium levels be noted an investigation will be undertaken to identify possible sources and mitigation plans will be implemented.

9.2 pH

Watercourses downstream of existing mines in the LSA are alkaline (pH from 7.5 to 8.5) and have TDS levels ranging from 64 to 320 mg/L. Surface waters not downstream of existing mines are also alkaline (pH ranging from 7.5 to 8.5) and have levels of total suspended solids ranging from a concentration that is below the detection limit of 3.0 mg/L to 544 mg/L, with an annual median of 4.5 mg/L. Watercourses in the RSA are alkaline (pH from 7.6 to 8.8) and have concentrations of TDS that are similar to that in the LSA (20 mg/L to 322 mg/L). [CR#11](#) indicates that the Project will not likely have an effect on pH of watercourses.

9.3 SEDIMENT

The surface hydrology assessment ([CR#6](#)) presents proposed water management plans and addresses the potential impact of the Project on:

- the quantity of surface water flow and stream behavior during high, average and low flow conditions; and
- sediment concentrations in local and regional streams.

Settling ponds (impoundments) will be constructed to collect local runoff from haul roads, spoil pile areas, sumps, and pit dewatering operations. Runoff from Project operations can be controlled by routing to settling ponds before being released to external watersheds.

Precipitation in excess of the design storm event, or unusual short-term sediment generation events, may occur. Design of controlled outflows for this type of event will provide an effective level of sediment control. In instances where volumes exceed the holding capacity of the impoundment, sediment may be expected to exceed provincial guidelines (elevated TSS levels) for short periods of time. All mine-affected water will be treated prior to its release in to the receiving waters to reduce potential effects from loading of suspended sediments and potential effects of water quality variables typically associated with suspended sediments (*e.g.*, total aluminum and total iron).

Various water management and sediment control measures will be implemented for the Project during operations, reclamation, and closure, including:

- Water from pit dewatering operations will be directed to settling impoundments for treatment prior to discharge of surface waters. In impoundments, pit water will mix with surface runoff. If necessary, flocculants will be used to enhance the rate of settlement of

suspended solids. Impoundment discharges will be subject to conditions in the EPEA approval.

- Release of water pollutants from the site such as oil and grease is controlled. With the installation of oil booms on the impoundments and immediate containment of oil in the event of a spill, there is little danger of these materials contaminating surface waters. Components of the water handling system will be designed according to the governmental specification and the systems will be operated in accordance with regulatory approval requirements.
- Installation of surface runoff collection and treatment systems to control groundwater seepage from road cuts and surface runoff from disturbed areas. Surface runoff will be directed to settling impoundments for removal of settleable solids.
- All mine-affected water will be treated prior to its release in to the receiving waters to reduce potential effects from loading of suspended sediments and potential effects of water quality variables typically associated with suspended sediments (*e.g.*, total aluminum and total iron).
- The mine wastewater treatment program similar to the one currently in use at the CVM will be established to minimize downstream siltation and minimize downstream effects on surface water quality.
- Where necessary, interim erosion/sediment control measures will be utilized until long-term protection can be effectively implemented.
- Minimization of the time interval between clearing/grubbing and subsequent earthworks, particularly at or in the vicinity of watercourses or in areas susceptible to erosion.
- Slope grading and stabilization techniques will be adopted. Slopes will be contoured to produce moderate slope angles to reduce erosion risk. Other stabilization techniques used to control erosion include: ditching above the cutslope to channel surface runoff away from the cutslope, leaving buffer (vegetation) strips between the construction site and a watercourse, placing large rock rip rap to stabilize slopes.
- Whenever possible, construction activities in close proximity to watercourses will be carried out during periods of relatively low surface runoff in late fall, winter and early spring (from October to April). A 30 m buffer (vegetation) strip will be left between construction sites and watercourses except at stream crossings and diversions.
- Temporary measures to control erosion before a vegetation cover is re-established, including: diversion ditches, drainage control, check dams, sediment ponds, sumps and mulches.
- Installation of surface runoff collection and treatment systems to control groundwater seepage from road cuts and surface runoff from disturbed areas. Surface runoff will be directed to settling impoundments for removal of settleable solids.
- 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. This means that all stream crossings constructed by the Project will meet regulatory requirements for protection of fish resources and aquatic habitat; this will also effectively mitigate against effects on surface water quality.

Summary

As reflected in the EIA and in consideration to the mitigation plan outlined in that document including a detailed water management plan, sediment control, wastewater treatment, and vegetated buffers the effects of the Project are insignificant to surface water quality.

9.4 BENTHICS

Benthic levels are closely related to both surface water quality and fisheries and are addressed within the EIA in [CR#11](#) and [CR#2](#). Benthic populations have been monitored within the existing mine and in the vicinity of the Project to determine a ‘baseline’ status. Commitments for monitoring during mining and reclamation have been included in the Project application.

9.5 RIVERS

The potential effects of the Project on rivers such as the Athabasca, McLeod, Embarrass and Erith Rivers have been noted. The Project will have no direct effect on the Athabasca, McLeod, or Embarras Rivers, and the low potential for downstream impacts on water quality has been discussed above. Current plans indicate that a portion of the Erith River will be diverted. CVRI is in active discussions with the DFO on a comprehensive plan regarding these diversions.

Potential effects of the Project on the Pembina River were specifically noted on some occasions. Mining associated with the Project will approach the Pembina River area from the west. A 15 to 20 m high escarpment is located on the west side of the river. CVRI identifies this escarpment as the limit of the river floodplain as the escarpment is formed from intact bedrock. The river meanders within a floodplain below this high embankment. The proposed ‘disturbance boundary’ will be positioned 30 m from the rim of the escarpment. A 30 m setback value was utilized as a reasonable assumption based on past practice in similar situations. The setback was applied from the edge of the ‘break’ of the river floodplain embankment which increases the buffer from the actual current river flow position. The excavation ‘rim’ of the nearest Pit (Val d’Or) is positioned to be at least 115 m from the actual Pembina River position. All necessary mitigation measures will also be in place including a robust water management plan and silt fencing protecting the Pembina from any potential sediment loading from the mine disturbance. The Project effect on the Pembina River will be insignificant.

10.0 WATER SUPPLY

10.1 NATURAL FLOWS MAINTAINED

Some Aboriginal groups have expressed concerns about the impact to streams and the maintenance of natural flows.

This has already been discussed as it clearly relates to impacts on fish and fishing (see above sections), and is of course of interest to the DFO and its mandate. Mining activities are expected to reduce high flows, and low flows are expected to either remain the same, slightly decrease, or slightly increase. Annual runoff may have modest variations dependent on mining activities at the time (*e.g.*, pit dewatering). Temporary water diversions will also contribute to some slight variations in flow quantity for short periods of time. Instream flows will be maintained by bypass pumping. Depending on the extent of the disturbance footprint within the watershed the

significance to flow quantity may remain the same, increase or decrease depending on the mine progression and seasonal variability.

Dewatering

Dewatering of the groundwater around or in the mine pits, to permit mining, has the potential to increase surface flows. This is usually a minor flow component of the overall surface runoff rate from an area. The magnitude of the flows is small and regulated by pumps. If the sump or dewatering area is well laid out and separated from active mining, the effect on sediment loads can be negligible.

Impoundments

Impoundments such as settling ponds or end pit ponds or lakes generally reduce downstream peak flows as a result of storage. Increases in low flows can result from a more gradual release of the water stored in the impoundment. Depending upon their size, pond evaporation losses may be significant at times, but is near balanced with direct precipitation on an annual basis. Depending upon their size and efficiency, impoundments can reduce sediment loads significantly.

End Pit Lakes

End pit ponds will reduce flows when initially filling but can provide opportunities for enhancement. For open water bodies (lakes, ponds and to some extent wetlands), lake evaporation essentially replaces evapotranspiration in the equation with groundwater having both an inflow and outflow component. After initial filling and stabilization of the groundwater level, such that the net regional groundwater recharge is the same as pre-mining, it may be assumed that groundwater inflow equals outflow on an average annual basis. It should be noted that even large differences in net groundwater inflow/outflow for the water bodies typically will have minor net surface flow impacts because of the small areas of the ponds relative to the basin sizes and the smaller groundwater flow component compared to the surface runoff component.

Diversions

Diversions will be sized and designed to convey peak flows safely considering the life of the diversion. As a result, water diversions do not impound water or cause losses due to infiltration (if lined) and, if returned to the same stream, will not affect the magnitude of downstream flows.

Watercourse Crossings

All defined watercourse crossings will be designed, and constructed, to meet or exceed the regulatory requirements for approval under the provincial Water Act and the federal Fisheries Act and Navigable Waters Protection Act. If appropriately designed and constructed, these crossings will have negligible effect on flows or sediment loads to the streams.

10.2 SPRINGS AND MINERAL/SALT LICKS

Some Aboriginal groups have expressed concerns about the impact to loss of mineral springs and salt licks.

Groundwater sources may be affected for short periods of time but it is expected and has been documented in past mine areas that groundwater levels should return to baseline conditions. It has been demonstrated that significant drawdown of groundwater levels does not typically extend 100 m beyond a mine pit. Additionally, these declines in water table have been shown to be temporary.

Seepages which develop on the landscape after mining may provide mineral licks for ungulates. These should be identified as permanent features in the final reclaimed landscape.

11.0 FOREST AND RECLAMATION

Related to almost all of the previously discussed issues, Aboriginal groups have noted the generalized potential Project effects on the forested environment of the region. These often include questions of air quality, habitat fragmentation, and reclamation.

Sections on wildlife impacts, health, traditional uses, and vegetation should be consulted for additional information.

Vegetation

In the impact zones of the Project area, considerable change to the current vegetation patterns will occur. After initial topsoil placement, these areas may indeed be described as "barren," but relatively quickly the reclamation process will begin the natural succession that has and will characterize the development of the landscape's vegetation. The re-vegetation program proposed for the Project area will use experiences gained over the years at the CVM. Vegetation species will be selected to match site-specific conditions (slope position and exposure) that are consistent with the land use objectives; watershed, timber, wildlife, fisheries and aesthetics/recreation.

Three seed mixes are currently being utilized at CVM; the standard mix was formulated for use in drier upland areas, the wetland mix is formulated for the re-vegetation of lower lying wetter sites and constructed wetlands, and a native seed mix formulated to facilitate native succession. Traditional value plants will be identified in respect to their possible use as re-vegetation species.

The re-vegetation program will plant the dominant tree species; either a conifer or deciduous species. Where reclamation stock is available suitable understory species will be inter-planted with the tree seedlings. Initial grass/legume seeding will be undertaken during the first growing season following minesoil placement. Fertilizing will be completed in the same year (and may be repeated once more on some sites within the next five years). Planting or seeding of native herbaceous stock and planting of woody species (shrubs and trees) will be completed by the fourth growing season following coversoil replacement. Woody species planting will only be done when the ground cover has become fully established and has progressed beyond the initial heavy growth phase.

Vegetation on the reclaimed landscape will continue to change after the reclamation activities have been completed. Some of the species in the initial seed mix will not persist, allowing other native species to ingress. Many native species will establish from roots or seed in the replaced soil, and other species will ingress from surrounding areas.

CVRI has also planned to undertake reclamation activities that specifically enhance wildlife use of the reclaimed area. Specifically provide diverse vegetation communities and complex arrangements of vegetation and landscape features. CVRI also aims to maintain as much undisturbed habitat as possible during mining will help to enhance the wildlife diversity of the reclaimed sites. Adjacent landscape features will be emulated in the reclamation plan allowing for the development of similar habitat. A variety of wildlife uses on undisturbed and reclaimed habitat associated with coal leases during and after the mining phases has been documented. Wildlife have colonized new habitat created by reclamation of coal mines (MacCallum 2003). Initial displacement of the existing wildlife community on the Project LSA by active mining will be followed relatively quickly by colonization of wildlife species appropriate to the stage of succession reached by the regenerated plant community. Given that appropriate habitats are established and movement opportunities are designed into the Project disturbance, wildlife are expected to adjust to the initial displacement and disturbance by colonizing newly available habitat and incorporating it into their daily and seasonal activities.

CR#14 and CR#7 of the Project application detail the proposed mitigation of these effects through the identification of wildlife as a primary end use of the lands, the maintenance of as much undisturbed habitat as possible in the Project area, the revegetation of soil stockpiles to maintain wildlife use, vegetation clearing outside of breeding seasons, buffers along riparian zones, contouring to reduce lines of sight, identification of natural seepages that will become salt/mineral licks after reclamation, hunting restrictions, measures to avoid direct mortality, and a reclamation program that will promote the structural integrity and biodiversity of the landscape to enhance future wildlife use. CVRI has committed to the use of Aboriginal traditional ecological knowledge to assist in land reclamation activities to achieve these goals. The studies conclude that when recommended mitigation and monitoring occur, appropriate biodiversity will re-establish in disturbed areas in the medium to long-term (25 to 50 years), and have no cumulative effect on the region.

In order to evaluate and if need be adapt the mitigation measures, CVRI will also implement monitoring. Site wide monitoring will allow CVRI to determine the length of time it takes for wildlife to return to the landscape and what reclaimed landscape features are most desirable. All potential effects are noted to be reversible over the short-term or long-term depending on the type of effect.

Habitat loss will be short-term as reclamation will target replacing habitat features important in maintaining wildlife populations. Through the reclamation activities also discussed, CVRI will return the land in the impact zones to a more productive state in the future. CVRI will complete longer-term monitoring on the impact to medicinal and other plants and for general environmental monitoring, and continue to consult with the Aboriginal communities regarding future development plans. CVRI will ensure that environmental factors and protection measures are taken into consideration during all phases, from planning to reclamation, of mine development. Technically proven and economically feasible measures will be taken which protect environmental quality for air, water, vegetation, wildlife and land resources.

As noted above, reclamation activities will occur as mining in each pit area is finished, with all re-vegetation occurring within 5 years, and certification of reclamation (*i.e.*, finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first

lands mined in the Project should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. Given the timelines of forest succession, precise timelines for the development of a "climax community" in reclaimed areas are difficult to predict, but this "successional reclamation" process (Polster, 1989) will continue for several decades.

Summary

As reflected in the EIA and in consideration to the mitigation plan outlined in the EIA including detailed re-vegetation plans and objectives the effects of the Project are insignificant to forest reclamation.

12.0 VEGETATION

Aboriginal concerns regarding vegetation on reclaimed lands focused on diversity and return of native species.

In total, 574 vegetation species were documented during field surveys within the LSA. Of these, 345 were vascular and included 9 trees, 62 shrubs, 193 forbs and 81 graminoids, and 229 were non-vascular and included 134 bryophytes and 95 lichens. Forty-six vegetation species documented during field surveys in the LSA are on the ACIMS Alberta Rare Plant Tracking and Watch Lists (Table E.13-5). Of these, 20 are vascular plants (with 38 occurrences), 18 are bryophytes (with 40 occurrences), and 7 are lichens (with 9 occurrences). Additionally, one occurrence each of *Chrysosplenium iowense* (golden saxifrage), the crust lichen *Lecidea leprarioides*, and *Conocephalum conicum* (snake liverwort) were observed within 500 m outside the LSA boundary.

The potential impact of the Project on plants, particularly those noted for medicinal or food uses, is a common area of concern for Aboriginal communities. Not only is there concern for the removal of the plants, but there is concern about if those plants will come back.

The ecosites commonly supporting TEK vegetation will be targeted in the reclamation process in order to provide the traditional knowledge and native plant species an environment suitable for survival. CVRI is committed on working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation.

Mitigation measures for TEK vegetation effects will include the following:

- inviting Aboriginal groups to participate in designing mitigation measures which contribute to the sustainable management of TEK vegetation, and which complement the re-vegetation measures proposed in the Application;
- working with Aboriginal groups, who may be affected by the Project, to locate alternative areas where TEK vegetation is accessible during the life of the Project; and
- implementing a re-vegetation program which aims at the re-establishment of ecosites common to the pre-disturbed landscape. The re-establishment of pre-disturbance ecosites will, over time, again support TEK vegetation.

With the implementation of mitigation measures the Project is expected to have a limited spatial effect, and a moderate temporal effect. Potential Project effects are related to the attenuation of available TEK vegetation (vegetation used for medicinal, food and other uses) as a result of the removal of ecosite phases within the LSA. CVRI is committed on working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation. Accordingly, it is anticipated that the Planned Project effects on TEK vegetation will be local in extent and over the long term, all areas used for harvesting TEK vegetation will be re-established.

A common concern expressed during Aboriginal consultation is the use of non-native species during reclamation. During a vegetation survey of the currently reclaimed areas on the CVM by Longman (2010), 118 species of plants were identified, of which 87 (74%) were native. There were 18 species seeded as part of the past reclamation programs (primarily grasses), and lodgepole pine and white spruce were planted. As previously mentioned, 34 plants used by Aboriginal peoples are included in the plants found. CVM's reclamation strategy expects that native plant richness, native plant cover, and woody species will increase over time from early reclamation until integration with surrounding undisturbed lands. In Longman's study, she found that almost all native species had higher cover in the older reclaimed areas, and that total native species richness and cover increased significantly with time.

Some unseeded native species are clearly establishing themselves in CVM's reclaimed areas, but there is room for improvement. In addition to the integration of Aboriginal knowledge and concerns as already discussed, CVM has identified a number of reclamation vegetation trends which should allow for the establishment and propagation of native species. Most of these trends are confirmed in the assessed reclamation vegetation but a review of the literature and the vegetation development on the mine raises concerns that the expected trends may not supply the expected opportunities for native species establishment. Improving the seeding mix, re-establishing a herb and shrub planting program, improving conifer establishment, and the creation of a formal monitoring program will increase the likelihood of the vegetation developing into the forested ecosystem desired by all parties.

13.0 CHEMICALS

Aboriginal groups have raised concerns regarding the effects of chemicals that might be utilized for the Project.

The Human Health assessment ([CR#5](#)) addresses the nature and significance of potential short term and long term health risks to people associated to exposure to the chemicals of potential concern (COPC) emitted or released from the Project.

13.1 SPILLS

The incidence of spills occurring at the CVM is low and a comprehensive spill response plan is in place to prevent any adverse effects on the environment including groundwater sources. As mentioned in [Section C.6.6.5 to C.6.6.9](#) of the application, CVRI maintains a Standard Practice and Procedure for Spill Response which includes training all staff members in spill response and clean up measures. Employees are accountable for ensuring that a high level of spill prevention is maintained by following good housekeeping and maintenance practices. In the event of a

spill, the effectiveness of response operations are influenced by the time in which the spill is detected, controlled and contained. The initial spill response is designed to address the issues of paramount concern such as safety, environmental and property protection.

After a spill is detected, the following actions are taken:

- ensure that the source(s) of the spill has been shut-off;
- determine the level of hazard to personnel, property and the environment. If necessary, the Senior Foreman is called for assistance. The Senior Foreman may elect to handle cleanup operations with departmental personnel. If it appears that the spill could result in damage or harm to personnel, the environment or property, CVRI's Emergency Response Team will be called and respond for cleanup. If additional manpower and spill response expertise is required, it will be obtained through mutual aid support groups, spill cleanup contractors and/or consulting services;
- start spill containment, recovery and cleanup operations with equipment on hand; and
- initiate spill notification procedures.

Initial cleanup operations focus on containing the spilled product to prevent further contamination. The spill is contained to the smallest manageable area possible, reference will be made to the product Material Safety Data Sheet for proper treatment and cleanup procedures. Spilled material is recovered and sent to off-site licensed disposal facilities and/or recycling stations as appropriate. Procedures followed in the onsite disposal or short term storage of contaminated material comply with regulatory requirements for disposal/storage. Spills are contained immediately and materials are used to soak the product up or the area is excavated not allowing for the spilled product to seep into the ground or groundwater sources. The CVM has a long-term groundwater monitoring program that monitors groundwater levels and chemistry in various areas of the mine including the active mine areas, future mining areas, reclaimed areas and surrounding the plant, shop, and maintenance facilities. Any potential spills would be detected from the numerous piezometers found within the mine permit.

Summary

The chemical emissions from the Project are not expected to result in adverse health effects in the region. The magnitude of the differences in predicted health risks between the baseline and project case is insignificant.

14.0 HEALTH IMPACTS

Of common concern to Aboriginal peoples consulted has been the potential health impact to both wildlife and humans. These concerns are of course related to issues of water quality and contamination discussed above, and to other issues including coal dust, air quality, and roads.

14.1 LOCAL FOOD SOURCES

Studies of Human Health impact (CR#5), including Aboriginal receptors utilizing a subsistence diet in the region, indicate no substantial Project-related health risks due to exposure to, inhalation, or ingestion of chemicals, toxins, carcinogens, or harmful non-carcinogens. No adverse health effects are expected for the region from the Project. CVRI will continue to

implement monitoring of air, surface water, and ground water to help mitigate any potential effects. Potential impact to members of Aboriginal communities through dietary intake cannot reasonably be expected to exceed the conditions as laid out for an Aboriginal receptor in the study of human health.

14.2 WILDLIFE HEALTH

Through its consultation efforts, CVRI is aware that many Aboriginal groups are concerned about the effect of industrial development on wildlife health. Aboriginal groups report cases of diseased animals that when harvested are found unfit for consumption, and many attribute this to industrial development. This has even led to research studies into animal health supported by several Treaty 6 First Nations. Alberta Fish & Wildlife (ESRD) studies numerous animal health issues including Chronic Wasting Disease (CWD), White-nose Syndrome, West Nile Virus, mammalian skin tumours, and numerous others. ESRD have established programs to track, understand, and manage many of these.

For the Project's potential effects on animal health, a discussion is found in [CR#5, Human Health, Appendix F: Screening Level Wildlife Risk Assessment \(SLWRA\)](#). This assessment looked at any potentially harmful substances that could be associated with the Project such as air contaminants, heavy metals, polycyclic aromatic hydrocarbons, volatile organic compounds, and others that could be released into the air, or otherwise make their way into soils or surface water, and then be breathed in or eaten by animals. In order to err on the side of caution, the study assumed that potentially affected animals would be exposed to maximum potential adverse effects from the air for their entire life cycle, and that the Project would last 80 years instead of 25. The assessment concluded that predicted acute exposures to the substances through the air would not have an adverse effect on either avian or mammalian wildlife in the region. It was also concluded that predicted chronic exposures to the substances through the air would not have an adverse effect on mammalian wildlife in the region. Most predicted soil concentrations for these substances are not expected to have an adverse effect on wildlife populations in the study area. However, some metals identified during the screening indicated a possible concern under only one of the several screening guidelines, and resulted in more in-depth analysis. This analysis indicated that these metals will be within the typical range of levels across Alberta, and therefore comparison of predicted soil concentrations to background levels indicated that wildlife are not likely to be at any greater risk in the RSA than other populations across Canada. Review of the long-term surface water concentrations for these substances indicates no anticipated adverse effects on wildlife populations in the region.

The results of the SLWRA indicate that the overall risks posed to wildlife health from the Project will be low. Therefore, no impacts to wildlife populations are expected based on estimated wildlife exposures to predicted maximum acute and chronic air concentrations and measured soil and surface water concentrations. The confidence in the prediction is high since highly conservative assumptions were applied in the SLWRA. CVRI will continue to work with government agencies, Aboriginal groups, and others to monitor and mitigate against potential effects to animal health in the region.

14.3 COAL DUST

Through its consultation efforts, CVRI is aware that many Aboriginal groups are concerned about the effect of coal dust on wildlife and human health. The Project will result in fugitive emissions from coal movement, processing and handling. At the ROM stockpile at the Plant, emissions result from the unloading of raw coal from trucks and from wind erosion. There were also emissions related to the loading of raw coal on the grizzly. At the clean coal pile, emission sources include wind erosion and dropping the excess clean coal from the conveyor outside of the stacking tube. CVRI undertakes dust suppression activities throughout the coal handling process to mitigate for coal dust. The coal that is placed in the train cars has a high moisture content to help in dust suppression. Train cars are not filled to levels that would be susceptible to wind erosion and if moisture content is low the coal piles can be sprayed with water to reduce wind erosion.

CR#1 of the Project Application studies the effects of particulate concentrations (including coal dust) and concluded that the effects are local and insignificant in consideration of the mitigation applied.

14.4 AIR QUALITY

Through its consultation efforts, CVRI is aware that many Aboriginal groups are concerned about air quality and its effects on wildlife and human health. The Project will result in atmospheric emissions from fossil fuel combustion sources, fugitive emissions from mine equipment and processing Plant, soil handling, coal movement and wheel entrainment. The CVM does produce NOx and particulate emissions.

Overall, residual air quality impacts relevant to the Project were considered to be insignificant for several reasons. Project contributions to predicted concentrations at the RSA MPOI and at local receptors were typically very small in an absolute sense. The addition of the Project did not result in exceedances of the CWS and AAAQOs or odour thresholds. All Project air quality impacts are reversible and the ambient air quality is expected to revert to its original state after the Project ceases to operate.

14.5 ROADS

Through its consultation efforts, CVRI is aware that many Aboriginal groups are concerned about mine traffic and its effects on wildlife and human health. Hauling has the potential to impact wildlife through collisions and emissions including dust. Potential direct mortality through vehicle collisions is not expected to be a problem as haul roads are typically wide (approx. 30 m) and provide a good field of view for operators and wildlife. Haul truck operators at the CVM are experienced drivers. All mine vehicles using the haulroad are radio-equipped. It is standard operating practice for operators to advise other operators if a road hazard is encountered including wildlife on the road.

Based on the above stated operating practices and mitigation any effects are deemed to be localized and insignificant.

15.0 NOISE

Through its consultation efforts, CVRI is aware that many Aboriginal groups are concerned about noise and its effects on wildlife and human health. The noise and vibration levels associated with blasting are typically a cause for concern by nearby residents and can disturb wildlife.

15.1 WILDLIFE IMPACT

Blasting will be conducted on weekday afternoons and the utilization of smaller more localized blasts will be implemented to reduce noise levels and the amount of explosive being used. As mentioned above, ungulates and other wildlife respond positively to predictable human activity by a process of habituation which allows the animal to gradually accept new experiences in the absence of negative feedback.

15.2 HUMAN

Blasting will be conducted on weekday afternoons and the utilization of smaller more localized blasts will be implemented to reduce noise levels and the amount of explosive being used. Depending on the geological formation and the associated mine plan blasting can occur once a week.

16.0 SOCIO-ECONOMIC

Through its consultation efforts, CVRI is aware that many Aboriginal groups are concerned about social and economic benefits available to Aboriginal members. The Project is not a new enterprise but an undertaking that will allow the continuation of an existing venture. Employment is expected to remain roughly constant to current levels, therefore, population and social conditions in the local or regional area are expected to stay fairly static.

16.1 EMPLOYMENT

CVRI and some Aboriginal Groups have entered into a long-term agreement written in part to address concerns regarding Aboriginal employment at the CVM.

The issue of hiring and worker retention at the CVM, including that related to Aboriginal groups, is complex. Nonetheless, CVRI continues to make efforts aimed at improving employment with Aboriginal groups associated with CVM operations, both in terms of direct hiring and potential contracting opportunities for Aboriginal owned businesses.

16.2 TRAINING

CVRI encourages members of the Aboriginal community to apply for jobs at the CVM, both for trade and general labour positions. Onsite training is provided for newly hired equipment operators and CVM also maintains a trades apprenticeship program.

16.3 CONTRACTING OPPORTUNITIES

CVRI continues to work with interested Aboriginal groups on contracting opportunities associated with the CVM.

As a union shop, CVM has a limited number of such opportunities, but where Aboriginal groups have demonstrated capacity, CVRI will continue discussions aimed at assisting in this regard.

16.4 COMPENSATION

CVRI does recognize that the development of the Project can offer mutually beneficial opportunities in the forms of employment and contracting opportunities to potentially affected Aboriginal groups, and that CVRI can help provide community support to Aboriginal groups from time to time as a good "corporate citizen." It will continue to discuss ways in which Aboriginal groups can potentially benefit from the development of natural resources in the region.

16.5 EDUCATION ASSISTANCE

CVRI and Sherritt are in the process of developing a corporate Aboriginal consultation plan. One of the items under a consideration is a scholarship or bursary program designed to help Aboriginal students fund continuing education. When such a program is developed, CVRI anticipates that Aboriginal group members potentially affected by its operations would have access to it.

16.6 COMMUNITY EVENT SPONSORSHIP

CVRI will continue to fund Aboriginal group community programs through donations on an ad hoc basis. As part of the development of a corporate Aboriginal consultation plan at CVRI and Sherritt, the formalization of such a funding program is one of the items under consideration. When such a program is developed, CVRI anticipates that Aboriginal groups potentially affected by its operations would have access to it.

16.7 MEMORANDA OF UNDERSTANDING OR IMPACT BENEFITS AGREEMENTS

CVRI has engaged in consultation with Aboriginal groups since 2006 on its proposed developments including the Project. Past consultation efforts have spent considerable time discussing MOUs or other agreements that might encapsulate concerns such as employment and contracting opportunities, other economic opportunities, and educational or community support in part to mitigate Aboriginal group concerns with the development. Written agreements have been consummated with some of the Aboriginal groups and discussions continue with others.

16.8 PROJECT PARTICIPATION

Some Aboriginal groups have discussed a general interest in "project participation." In some cases this is a direct reference to compensation (see above), and in some cases it refers to employment and contracting opportunities. In addition to continuing discussions and actions to promote those, CVRI notes that in the past it has hired Aboriginal based companies on a contract basis for seeding and replanting operations.

Future reclamation will provide further opportunities for the Aboriginal community to be engaged in commerce with the CVM. In particular, mitigation measures for TEK vegetation effects could include the following:

- inviting Aboriginal groups to participate in designing mitigation measures which contribute to the sustainable management of TEK vegetation, and which complement the re-vegetation measures proposed in the Application;
- working with Aboriginal groups, who may be affected by the Project, to locate alternative areas where TEK vegetation is accessible during the life of the Project; and
- implementing a re-vegetation program which aims at the re-establishment of ecosites common to the pre-disturbed landscape. The re-establishment of pre-disturbance ecosites will, over time, again support TEK vegetation.

16.9 SUMMARY

Through its continuing efforts, CVRI is committed to maintaining hiring and procurement policies which include participation by Aboriginal communities.

17.0 RECLAMATION

All Aboriginal groups consulted are concerned that CVRI take steps to ensure that native plant species are included in reclamation plans rather than solely agronomic species as have been often utilized in the past.

Aboriginal consultation meetings and field visits conducted by CVRI with Aboriginal representatives resulted in the identification of a list of vegetation species which are valued by the Aboriginal groups for their uses. Over 100 species or classes of plant/fungi that are important to Aboriginal groups have been identified in the Project area. The distribution of ecosite phases which support traditionally used vegetation will be accessible in both the RSA following removal of ecosite phases by the Project Footprint in the LSA.

With the implementation of mitigation measures, the Project is expected to have a limited spatial effect, and an insignificant temporal effect. Potential Project effects are related to the attenuation of available traditionally used vegetation (vegetation used for medicinal, food and other uses) as a result of the removal of ecosite phases within the LSA. Important plants will still be available in the region outside of Project direct impact zones. In addition not all of the Project area will be disturbed at one time.

CVRI can work with local Aboriginal groups to identify periods of time in certain locations (undisturbed by mining and safe to access) in which berry picking and medicinal plant gathering can occur. CVRI is committed to continually improving its reclamation activities to meet the end land use goals, including those related to the undertaking of Treaty and Aboriginal Rights and traditional uses on the landscape after mining.

CVRI is committed to working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation. CVRI will continue consultation with the local Aboriginal groups regarding future development plans as well as undertake further discussions on specific impacts and mitigation measures.

18.0 MONITORING

Through its consultation efforts, CVRI is aware that many Aboriginal groups are concerned about the degree of monitoring and the potential for Aboriginal participation in such programs.

Environmental studies, and associated monitoring and impact mitigation measures are discussed in many of the sections above. The following monitoring will continue within the Project area and throughout the mine site:

- Groundwater;
- Surface water;
- Air;
- Noise;
- Wildlife/aquatics;
- Vegetation/wetlands;
- Reclamation; and
- Regulatory compliance.

CVRI will complete longer-term monitoring on the impact to medicinal and other plants and for general environmental monitoring, and continue to consult with the Aboriginal communities regarding future development plans.

All monitoring results are publicly available through the various government websites. CVRI is prepared to provide such reports to any Aboriginal group upon request as part of the ongoing Project consultation efforts.

19.0 SUMMARY

CVRI will continue to consult directly with Aboriginal groups on the Project, its operations, and other matters of importance to the communities. CVRI believes that its efforts within the consultation process have presented the Project, its potential benefits and effects, and provided accommodations and mitigation to address concerns stated by the Aboriginal groups.

A	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Date Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
1	Potential Impact to Treaty or Aboriginal Rights	general impact to Treaty rights	general impact to Treaty rights	<p>[Aboriginal Group] submits that [Aboriginal Group] affidavits and conclusions of EIA for Project demonstrate "some degree of location or connection between the work proposed by CVRI and the Aboriginal, Treaty, and NRTA rights of [Aboriginal Group] members to hunt, fish, gather and trap in the areas within the footprint and immediately surrounding area of the Project and the Local Study area, as well as other areas of the [Aboriginal Group] traditional territories that may be impacted by the Project...This impact may (and likely will) directly and adversely affect the ability of [Aboriginal Group]'s members to exercise their traditional harvesting rights in the Project area and LSA...[Aboriginal Group] submits that the Application should be denied due to disturbance of traditional plants and wildlife populations including species of concern that are in declined and culturally important species.</p> <p>[Individual] advised CVM reps that members from the community have also expressed a concern over project activities as it relates to their traditional use of the territories.</p>	<p>September 28, 2012</p> <p>March 15, 2013</p>	<p>Following discussion of this issue and clarification with the SREM Aboriginal Affairs Branch, the Crown indicated that it would require consultation with Aboriginal Group A and requested the group's inclusion in the official Project Aboriginal Consultation Plan. CVRI representatives met with Aboriginal Group A Chief and Council in March, 2013 to discuss consultation matters related to the Project. The parties have agreed to move forward on a consultation process. At this meeting Les LaFleur provided a brief general overview of the Project and how it relates to existing Coal Valley operations. Next steps will include a longer formal presentation to Chief and Council about the Project, possibly followed by a presentation to the entire community. As this consultation process has recently been initiated, additional steps to provide information about the Project and gather Aboriginal Group A input are needed. CVRI notes, however, that Aboriginal Group A has presented a series of concerns in writing, and responses to those general concerns are provided in this document. CVRI welcomes Aboriginal Group A input on these responses. No Aboriginal group consulted to date has demonstrated that access restrictions to the Project area will have a specific, particularly deleterious, non-mitigable effect on individual or collective abilities to undertake the Rights to hunt, fish, and trap for food on Crown lands as protected under Treaty or undertake other traditional pursuits. CVRI does acknowledge that its Project will occupy Crown land otherwise available for the exercise of Treaty Rights and traditional uses for a period of time during mine development, operation, and reclamation. CVRI notes that access to proposed Project lands to pursue Treaty Rights and undertake traditional activities will not be restricted in the entire area upon Project approval and it will not be permanent, as it will mine the Robb Trend in stages over a 25-year period. The first stages will involve road construction as early as 2013, with the first mine pits opening in the center of the area as early as 2014, but with development of mining areas towards the southeast not until 2021, and in the areas west of the town of Robb not until 2027. The reclamation plans for the Robb Trend will incorporate Aboriginal traditional ecological knowledge to return the land to a more natural, useable state once mining activities have ceased. Reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. A large proportion of the surrounding region, with similar plants, animals, and other resources, will remain accessible for the undertaking of Treaty Rights and traditional uses during the development of the Project.</p>
2	Potential Impact to Treaty or Aboriginal Rights	Hunting	displacement of game animals from Project area	Wildlife is an important part of the [Aboriginal Group]'s, culture and traditional economy. In particular, the [Aboriginal Group] Harvesters have deposed that they hunt various species including moose, elk, deer, bears, wolverines, and various bird species in or near to the Project area and LSA. Birds hunted include, but are not limited to grouse, ducks, and pheasants.	September 28, 2012	<p>The development of the Project, particularly the development of the mine pits, soil and rock stockpiles, dumps, and roads, will definitely impact plants and animals in the disturbance zones through displacement. Most wildlife will likely be displaced to adjacent habitat patches. Ungulates will be temporarily displaced by active mining as they are unable to cross a pit disturbance. This displacement will be restricted to local use as there are no indications of long distance or major seasons migrations in the LSA. Large amounts of moderate quality moose habitat is available throughout the RSA for moose thereby moderating the affect of habitat change caused by mining. High quality moose habitat on the Project and other areas associated with mixed wood of the Lovett Ridge will be reclaimed with a closed forest regeneration forest of lesser habitat quality. The impacts of the Project development on moose in the region can be mitigated by: implementing reclamation techniques appropriate for moose, establishing a variety of vegetation types and promoting understory complexity in regenerated forests that includes willow species, aligning reclamation and other re-vegetation efforts to maintain and improve moose habitat, taking steps to ensure core security areas are provided for wildlife, implementing appropriate monitoring, cooperating with the province and other industry on access management and other relevant management issues. An examination of elk observations during Fish and Wildlife moose surveys in the area on the north side of the existing CEA study area indicates scattered elk in low numbers. There is not a substantive elk population in this area. Ungulates and other wildlife respond positively to predictable human activity by a process of habituation which allows the animal to gradually accept new experiences in the absence of negative feedback. Elk, moose, mule deer, white-tailed deer and other wildlife on the CVM make use of the reclaimed landscapes in the presence of active mining. It can be expected that animals local to the LSA area will respond in the same positive manner as at the CVM. It is expected that elk and deer will respond positively to the early stages of upland reclaimed and re-vegetated areas on the LSA particularly in the Robb West, Main and Central zones where there is extensive mixed wood and deciduous habitat adjacent the disturbance area. Many of the species on the CVM are birds associated with water habitats which would have been poorly represented in the pre-development ecosystem. While bird abundance and types of species may change as a result of mining activity it appears that the number of bird species will be similar or may increase as a result of adding new habitats e.g. upland grassland, shrubland, lake, pond and wetland development. The edge associated with the Project should enhance tree growth potential both natural and through reclamation planting as well as promoting maintenance of bird species occurrence during active mining. Reclaimed lakes and ponds on the CVM support breeding water birds, i.e., Canada Goose, Mallard, Bufflehead, Common Goldeneye, Barrow's Goldeneye, Killdeer, Greater Yellowlegs, Spotted Sandpiper; probably or possible breeding water birds i.e., Ring-necked Duck, Lesser Scaup, Solitary Sandpiper, summer visitants i.e. Common Loon, Osprey, and several species of waterfowl and shorebird migrants not seen elsewhere in the RSA, i.e., Semipalmated Sandpiper, Western Sandpiper, Least Sandpiper, Baird's Sandpiper, Short-billed Dowitcher. region (Symbaluk 2008). This does not diminish the seriousness of cumulative effects on grizzly bear mortality in the RSA and broader Yellowhead region.</p> <p>[continued below]</p>
2a	continued from above			continued from above		<p>[continued from above]</p> <p>Wolverine status is listed as transient/migrant and abundance as rare in the study region. The wolverine is listed as "may be at risk" under Provincial Status (2010) and as "special concern" Federally Listed under COSEWIC. Grizzly bears will likely be displaced from portions of the Project mine footprint and permit area during the active mining period. Displacement will result from construction noise and blasting. At some point shortly after reclamation grizzly bears will be attracted to the herbaceous forage and ungulates on the Project mine footprint as was observed on the Luscar, Gregg River and CVM reclaimed mine areas. The mined lands will not act as a serious barrier to grizzly bears, with the possible exception of during active blasting and hauling. In the case of regional and cumulative grizzly bear mortality, the proposed Project is unlikely to add significantly to regional mortality. The greatest threat to regional grizzly bear populations is human-caused mortality caused by legal and illegal hunting, self-defence kills by ungulate hunters, and vehicle/train collisions. Any land use that results in increased access or use of access by individuals carrying firearms is a threat to grizzly bear population persistence. Any roads with vehicle speeds greater than 70 kph also have potential to result in increased grizzly bear mortality. Sources of domestic garbage at the CVM are contained in appropriate secure containers and transported to the licensed landfill in Hinton as per the Approval conditions. Problem bear actions at mines in the Coal Branch region are of extremely limited occurrence. Grizzly bears actively select habitats and foods that provide them with the greatest possible net digestible energy (Hamer and Herrero 1983, Pritchard and Robbins 1989). Mining and subsequent reclamation of the existing CVM has significantly changed landscape structure, composition and food production in the permit area for grizzly bears. Mining and reclamation at the CVM has resulted in removal of tree canopies, leading to increases in availability of high energy herbaceous plant material (clover, thistles, legumes) and an increase in ungulates (elk, deer) responding to increased forage and edge habitat. There is strong evidence to suggest that ungulates and plants used for reclamation are sought and used extensively by grizzly bears occurring in the vicinity of the CVM area. Similar findings were observed in the existing Luscar and Gregg River mines (Stevens and Duval 2005; Kansas and Symbaluk 2011). Bears using the reclaimed Luscar and Gregg River mine lands were on average larger than bears in an adjacent un-mined Subalpine and the Gregg/Luscar permit block was considered to be an attractive habitat for grizzly bears and a source for enhanced cub production (Kansas 2005). If similar reclamation measures are used on the Project then impacts on grizzly bears from a habitat alteration perspective will likely be positive within 10 years post-construction. In the case of regional and cumulative grizzly bear mortality, the proposed Project is unlikely to add significantly to regional mortality. This assertion is based on the fact that carrying of firearms in not permitted within any mine permit areas and traffic speed control is practiced. It is further supported by the fact that no grizzly bear mortalities have occurred on mine permit areas in 40+ years in the Coal Branch region (Symbaluk 2008). This does not diminish the seriousness of cumulative effects on grizzly bear mortality in the RSA and broader Yellowhead region.</p>
3	Potential Impact to Treaty or Aboriginal Rights	Trapping	displacement of fur-bearing animals from Project area	The [Aboriginal Group] Harvesters have also deposed that they trap muskrat, marten, weasel, beaver, mink, squirrels, skunk, and rabbits. [note elsewhere in document indicates marten are not trapped]	September 28, 2012	<p>A total of 22 Registered Fur Management Areas (RFMAs) overlap in whole or in part with the RSA. Fur harvest return information for the period 1985 to 2001 was obtained from Alberta Sustainable Resource Development for the RFMA. Fur returns for 17 different species were reported. This included red squirrel (13,348), muskrat (3,649), beaver (3,401), marten (1,796), weasel spp. (1,531), coyote (896), wolf (236), lynx (133), mink (128), fisher (50), red fox (47), black bear (18), badger (14), striped-skunk (7), wolverine (6), river otter (4) and raccoon (1). The average numbers of captures per year per trap line for Valued Environmental Component (VEC) species were: lynx (0.42), marten (5.17), fisher (0.16), and wolf (0.71). RFMAs 1516, 2619 and 2256 will be directly affected by the proposed development of the Project permit area. Over a 16 year period, RFMA 1516 reported an average number of lynx (0.4/year), fisher (0.19), marten (5.4/year) captures and reported below average wolf captures (0/year). Over a 15 year period, RFMA 2256 reported above average marten (8.5/year), and fisher (0.13) captures and below average lynx (0.3/year) and wolf (0.1/year) captures. Over a 17 year period, RFMA 2619 reported below average capture rates for lynx (0.2/year), marten (1.2), fisher (0.12), and wolf (0.6). Caution must be used when interpreting this data. Capture rates can vary widely and may reflect trapper effort and fur prices as much as it does of animal abundance. Capture rates can also reflect the size of the RFMA. Habitat loss will be short-term as reclamation will target replacing habitat features important in maintaining wildlife populations. Contact and discussions have been held with people holding Registered Fur Management Area rights. Where required, agreements have been reached and compensation provided. Trapping is likely to continue in the RSA. Harvest levels are difficult to predict and are dependant largely on fur prices, RFMA tenure and levels of industrial activity. It is reasonable to assume that future trapping levels will occur at average levels from 1985 to 2001. Small mammals, such as rabbits, will be temporarily displaced by active mining as they are unable to cross a pit disturbance. Other forest dependent small mammals (red squirrel, snowshoe hare) will be expected to use the regenerated forest and its understory once it becomes established. Understorey development is a necessary component of snowshoe hare habitat. The density of small mammals in reclaimed grasslands has been shown to be similar to undisturbed habitats (Hingten and Clark 1984). After initial grassland establishment, the number of small mammal species is expected to be similar to those on undisturbed similar habitats. As noted above, Project development will occur over time, and access to mine areas to undertake Treaty Rights to trap will be restricted in active mining areas for a period of time. However, areas surrounding the Project will still be available to undertake Treaty trapping rights, and Project development and reclamation will be complete by 2060, returning those lands for trapping uses.</p>

A	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Date Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
4	Potential Impact to Treaty or Aboriginal Rights	Fishing	removal of fish resources/habitat in Project area	The [Aboriginal Group] Harvesters have deposed that they fish in the areas deposed to for species including trout and jackfish.	September 28, 2012	<p>Rainbow Trout were the most common and widespread species within the LSA and RSA and were found in 38 of the 42 waterbodies sampled during baseline fisheries investigations. Bull Trout, Burbot, Lake Chub, Longnose Sucker, and Spoonhead Sculpin were encountered much less frequently than Rainbow Trout but were still found at a number of different locations. Other species, including Arctic Grayling, Brook Stickleback, Brook Trout, Longnose Dace, Mountain Whitefish, Northern Pike, Pearl Dace, Trout-perch, and White Sucker were rare and were only found in one or two waterbodies. Arctic Grayling are listed as Sensitive and is considered a Species of Special Concern in Alberta (ASRD 2010). Populations have decreased in the past few decades. Threats provincially include increased harvest pressure from improved road accessibility, blocked migration routes and altered stream flow resulting from improperly placed culverts in newly constructed roads. Brook Trout are listed as an exotic/alien species (ASRD 2010). They were introduced into Alberta in the early 1900's and are abundant in many foothills streams and isolated lakes. Bull Trout are listed as Sensitive and is considered a Species of Special Concern in Alberta (ASRD 2010). Over-harvesting has led to a decline in population and while angling regulations may lead to recovery, habitat degradation and competition from introduced species may contribute to further declines. Introduced stocks of Rainbow Trout in Alberta are Secure. However, the native Athabaskan Rainbow Trout population has suffered introgression from introduced trout in the Athabaskan drainage system. The native species is currently considered At Risk (ASRD 2010) but Alberta's Endangered Species Conservation Committee has recommended that Athabasca Rainbow Trout be listed as Threatened under the Wildlife Act. Rainbow Trout (At Risk status) were widespread in the Project and were often the only species found, or historically reported, in study streams. As such the majority of watercourses had a moderate diversity ranking.</p> <p>Aquatic resources issues related to construction, operation, and reclamation of the Project were generally linked to potential changes to physical habitat components, changes in flow regimes, changes in surface water quality, and changes in resource access. The impacts to fish populations and benthic invertebrates as a result of the mining and pit filling is expected to be minimal since it is assumed that downstream flows will be managed to adhere to instream flow guidelines (AENV 2011). In general, peak flows will be reduced and low flows will be increased. This attenuating effect may have some impact on fish habitat composition and could also benefit fish populations by reducing the intensity of high flow events that can adversely affect fish, particularly during the early life stages. No significant water quality changes are expected and water quality in the end pit lakes will likely be suitable for aquatic life. Measures to reduce or mitigate potential effects were identified using proven strategies and combined expertise of professionals. Potential local effects on the fisheries Valuable Environmental Component's (VEC) associated with direct habitat loss or alteration are expected to be fully mitigated with properly implemented mitigation strategies. CR #2 (Section 5.4) of the Project application provides details of the numerous mitigation strategies proposed to protect fish resources, in the areas of surface water management and erosion control, haulroad crossing construction, stream diversions, management of stream flows, public access restrictions, and habitat enhancement. Therefore, no cumulative effects on fisheries VECs associated with direct habitat loss or alteration are expected. Potential adverse effects relate primarily to direct physical habitat alteration/loss, changes in surface water hydrology and water quality issues. With mitigation there will be an insignificant impact on the fisheries VEC's. CVRI is currently working with the Department of Fisheries and Oceans Canada (DFO) in creating a conceptual compensation plan to be able to uphold the principle of 'No Net Loss' to fish habitat. This plan will be required to be approved and implemented prior to disturbance. Any operational works that require a harmful alteration, disruption and destruction (HADD) of fish habitat will require to be applied for with DFO. The compensation plan will be referred to in establishing site specific compensation related to each working (crossing, diversion).</p>
5	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	removal of medicinal plant species in Project area	The [Aboriginal Group] Harvesters have deposed that they gather traditional medicines including roots [not specified], muskeg tea, tamarack, spruce, cedar, willow, acorns, and bark.	September 28, 2012	<p>No Aboriginal group consulted to date has demonstrated through such studies that impacts from the Project will have a specific, particularly deleterious, non-mitigable effect on individual or collective abilities to undertake traditional pursuits such as the collecting of plants for food or ceremonial/medicinal purposes. CVRI does acknowledge that its Project will occupy Crown land otherwise available for the exercise of Treaty Rights and traditional uses for a period of time during mine development, operation, and reclamation. CVRI notes that access to proposed Project lands to pursue Treaty Rights and undertake traditional activities will not be restricted in the entire area upon Project approval and it will not be permanent, as it will mine the Robb Trend in stages over a 25-year period. The first stages will involve road construction as early as 2013, with the first mine pits opening in the center of the area as early as 2014, but with development of mining areas towards the southeast not until 2021, and in the areas west of the town of Robb not until 2027. The reclamation plans for the Robb Trend will incorporate Aboriginal traditional ecological knowledge to return the land to a more natural, useable state once mining activities have ceased. Reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. A large proportion of the surrounding region, with similar plants, animals, and other resources, will remain accessible for the undertaking of Treaty Rights and traditional uses during the development of the Project.</p> <p>CR #13 (Vegetation) of the Project Application discusses many plants identified to CVRI as important to the Aboriginal community, including many of those identified in this concern. CVRI notes that no oak or closely related species are found in the area, and thus there are no acorns. There is no cedar in the area, but species such as ground juniper and spruces have been identified. Aboriginal consultation meetings and field visits conducted by CVRI with First Nations and Aboriginal representatives resulted in the identification of a list of vegetation species which are valued by the Aboriginal groups for their uses. The field surveys identified 88 TEK vegetation species which occur in the LSA (CR # 13, Appendix 5), including all of the species cited (except for acorn and cedar). Of the TEK vegetation species documented during field surveys, 8 are typically used for critical medicinal purposes, 20 are used for food, and 60 are used for other purposes. None of the TEK vegetation species, including all of those cited, are on Alberta's 2011 Tracking and Watch List, used to identify species that are rare or otherwise special in some way. TEK vegetation have a very high potential to occur in ecoseite phase d1, e2, e3 and i1 and a high potential to occur in c3, e1 and j1 in the Foothills Natural Sub-regions (CR # 13, Table 4.7). These occurrences have been mapped and documented to identify species that are within the LSA and within the Project Footprint. In total 2,264.9 ha of ecoseite phases with very high potential to support TEK vegetation will be removed by the Project Footprint, this area encompasses 22.4% of the very high potential area in the LSA. As well, in total 1,354.1 ha of ecoseite phases with high potential to support TEK vegetation will be removed by the Project Footprint, high potential area encompasses 13.4% of the high potential area in the LSA. Fifty-four percent (5,467.0 ha) of areas which support TEK vegetation will be removed from the LSA by the Project Footprint. However, TEK vegetation Project effects at the LSA level do not necessarily lessen the accessibility of TEK vegetation for Aboriginal groups given that TEK vegetation is available in the RSA and region. The distribution of ecoseite phases which support TEK vegetation will be accessible in the RSA following removal of ecoseite phases by the Project Footprint in the LSA. It is assumed that ecoseite phases within the LSA are similar in composition and distribution as those in the RSA; consequently, TEK vegetation will still be accessible in the RSA.</p>
6	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	removal of food plant species in Project area	The [Aboriginal Group] Harvesters have deposed that they gather various berries including blueberries, high bush cranberries, low bush cranberries, raspberries, Saskatoon berries, strawberries, gooseberries, huckleberries, pincherries, kinikikhk [sic], and chokecherries in or near to the Project area and the LSA.	September 28, 2012	<p>All of the berries noted in this concern were identified in the studies of TEK discussed in response #6 above. None of them are uncommon in the region. TEK vegetation Project effects at the LSA level do not necessarily lessen the accessibility of TEK vegetation for Aboriginal groups given that TEK vegetation is available in the RSA and region. The distribution of ecoseite phases which support TEK vegetation will be accessible in the RSA following removal of ecoseite phases by the Project Footprint in the LSA. It is assumed that ecoseite phases within the LSA are similar in composition and distribution as those in the RSA; consequently, TEK vegetation will still be accessible in the RSA. Mitigation measures for TEK vegetation effects should include but will not be limited to the following:</p> <ul style="list-style-type: none"> • inviting Aboriginal groups to participate in designing mitigation measures which contribute to the sustainable management of TEK vegetation, and which compliment the re-vegetation measures proposed in the Application; • working with Aboriginal groups, who may be affected by the Project, to locate alternative areas where TEK vegetation is accessible during the life of the Project; and, • implementing a re-vegetation program which aims at the re-establishment of ecoseites common to the pre-disturbed landscape. The re-establishment of pre-disturbance ecoseites will, over time, again support TEK vegetation. <p>With the implementation of mitigation measures the Project is expected to have a limited spatial effect, and a moderate temporal effect. Potential Project effects are related to the attenuation of available TEK vegetation (vegetation used for medicinal, food and other uses) as a result of the removal of ecoseite phases within the LSA. CVRI is committed on working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation. Accordingly, it is anticipated that the Planned Project effects on TEK vegetation will be local in extent and over the long term, all areas used for harvesting TEK vegetation will be re-established. The revegetation program proposed for the Project area will use experiences gained over the years at the CVM. Vegetation species will be selected to match site-specific conditions (slope position and exposure) that are consistent with the land use objectives; watershed, timber, wildlife, fisheries and aesthetics/recreation. Three seed mixes are currently being utilized at CVM; the standard mix was formulated for use in drier upland areas, the wetland mix is formulated for the revegetation of lower lying wetter sites and constructed wetlands and a native seed mix formulated to facilitate native succession. Traditional value plants will be identified in respect to their possible use as revegetation species. The revegetation program will plant the dominant tree species; either a conifer or deciduous species. Where reclamation stock is available suitable understory species will be inter-planted with the tree seedlings. Initial grass/legume seeding will be undertaken during the first growing season following minesoil placement. Fertilizing will be completed in the same year (and may be repeated once more on some sites within the next five years). Planting or seeding of native herbaceous stock and planting of woody species (shrubs and trees) will be completed by the fourth growing season following coversoil replacement. Woody species planting will only be done when the ground cover has become fully established and has progressed beyond the initial heavy growth phase. Vegetation on the reclaimed landscape will continue to change after the reclamation activities have been completed. Some of the species in the initial seed mix will not persist, allowing other native species to ingress. Many native species will establish from roots or seed in the replaced soil, and other species will ingress from surrounding areas. As noted above, reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. Given the timelines of forest succession, precise timelines for the development of a "climax community" in reclaimed areas are difficult to predict, but this "successional reclamation" process (Polster, 1989) will continue for several decades.</p>

A	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Date Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
7	Potential Impact to Treaty or Aboriginal Rights	Traditional Uses	loss of access	Buffer zones being able to come and go "trails"	March 15, 2013	CVRI is more than willing to work with Aboriginal Group A to help maintain access to areas of traditional use when necessary should the Project restrict access. In addition, CVRI can offer assistance if requested to help identify other suitable areas for certain traditional uses should the Project development restrict access to, or remove, specific preferred locations for undertaking traditional uses or exercising other Rights. In addition, the safety considerations of an open pit mine need to be considered when judging and gaining access through active mining areas. CVRI also notes that access to all areas will not be restricted at once if approval for the Project is issued as discussed above. Any access restrictions would not be permanent given the intended period of time that CVRI plans to operate in the Robb Trend Project area. Should Aboriginal Group A provide information relative to an existing traditional use site in the Project area, CVRI will be willing to discuss the idea of buffer zones or other possible or appropriate mitigation strategies.
8	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	general impacts to water quality in Project area	The [Aboriginal Group] also has concerns with respect to water hydrology, hydrogeology, and the impacts of the Project on the environment and fish and fish habitat due to increased emissions and other impacts on water bodies in the area used for traditional fishing purposes. Sediment and certain chemical contaminants that have chronic or lethal effects on aquatic biota will enter the aquatic ecosystem during mining. The EIA notes that changes to physical habitat components, flow regime, water quality and access are all factors that affect fish habitat potential. These effects will directly and adversely affect [Aboriginal Group]'s fishing rights.	September 28, 2012	<p>Response #4 above discusses some of the specifics of local fisheries and the low potential for impact to those resources and associated fishing rights. Potential changes in surface water quality in the RSA were assessed as insignificant (Section E.11, CR# 11) and are not expected to significantly impact fish populations in the RSA. No additional access to water bodies in the RSA is expected to occur as a result of the Project. CVRI will monitor watercourses within the watersheds to be affected by the Project. Within the Hydrology and Surface Water Quality reports in the Application, a number of monitoring programs are listed including:</p> <ul style="list-style-type: none"> • continue monitoring programs already in place at the existing CVM mine (i.e., flow and TSS at settling ponds, regular inspections of all drainage works, and upstream and downstream water quality sampling); • document the effect of mine operations on long term flow regimes in order to document critical low flow conditions during pit filling periods and define the need for any bypass pumping to maintain in-stream flows; • establish flow monitoring stations 2-3 years in advance of commencement of Project operations in each watershed; • conduct periodic runoff and drainage control monitoring (adjust the capacity of or relocate sump systems and drainage works as mining proceeds); • conduct ongoing monitoring, operations, and maintenance as outlined in the water management plan with periodic reviews and adjustments; • monitor adjacent undisturbed areas to ensure surface runoff from disturbed areas does not occur; and • monitor surface water quality in natural watercourses, both upstream and downstream of Project activities as required in the EPEA approval. <p>The surface hydrology assessment presents proposed water management plans and addresses the potential impact of the Project on:</p> <ul style="list-style-type: none"> • the quantity of surface water flow and stream behaviour during high, average and low flow conditions; and • sediment concentrations in local and regional streams. <p>Various water management and sediment control measures will be implemented for the Project during operations, reclamation, and closure, including:</p> <ol style="list-style-type: none"> 1) Water from pit dewatering operations will be directed to settling impoundments for treatment prior to discharge of surface waters. In impoundments, pit water will mix with surface runoff. If necessary, flocculants will be used to enhance the rate of settlement of suspended solids. Impoundment discharges will be subject to conditions in the EPEA approval; 2) Release of water pollutants from the site such as oil and grease is controlled. With the installation of oil booms on the impoundments and immediate containment of oil in the event of a spill, there is little danger of these materials contaminating surface waters. Components of the water handling system will be designed according to the governmental specification and the systems will be operated in accordance with regulatory approval requirements; and Water from pit dewatering operations will be directed to settling impoundments for treatment prior to discharge of surface waters. In impoundments, pit water will mix with surface runoff. If necessary, flocculants will be used to enhance the rate of settlement of suspended solids. Impoundment discharges will be subject to conditions in the EPEA approval; 3) Installation of surface runoff collection and treatment systems to control groundwater seepage from road cuts and surface runoff from disturbed areas. Surface runoff will be directed to settling impoundments for removal of settleable solids; and 4) All mine-affected water will be treated prior to its release in to the receiving waters to reduce potential effects from loading of suspended sediments and potential effects of water quality variables typically associated with suspended sediments (e.g., total aluminum and total iron). [continued below]
8a	continued from above			continued from above		<p>[continued from above] CVRI will pay particular attention to selenium (see below). The mine wastewater treatment program similar to the one currently in use at the CVM will be established to minimize downstream siltation and minimize downstream effects on surface water quality; 5) With respect to selenium, the CVM will continue an effective water quality monitoring program including a focus on selenium concentrations. The objective will be to observe water quality relative to baseline values to identify any changes over time. Should a significant increase in selenium levels be noted an investigation will be undertaken to identify possible sources and mitigation plans will be implemented; 6) Where necessary, interim erosion/sediment control measures will be utilized until long-term protection can be effectively implemented; 7) Minimization of the time interval between clearing/grubbing and subsequent earthworks, particularly at or in the vicinity of watercourses or in areas susceptible to erosion; 8) Slope grading and stabilization techniques will be adopted. Slopes will be contoured to produce moderate slope angles to reduce erosion risk. Other stabilization techniques used to control erosion include: ditching above the cutslope to channel surface runoff away from the cutslope, leaving buffer (vegetation) strips between the construction site and a watercourse, placing large rock rip rap to stabilize slopes; 9) Whenever possible, construction activities in close proximity to watercourses will be carried out during periods of relatively low surface runoff in late fall, winter and early spring (from October to April). A 30 m buffer (vegetation) strip will be left between construction sites and watercourses except at stream crossings and diversions; 10) Temporary measures to control erosion before a vegetation cover is reestablished, including: diversion ditches, drainage control, check dams, sediment ponds, sumps and mulches; 11) Installation of surface runoff collection and treatment systems to control groundwater seepage from road cuts and surface runoff from disturbed areas. Surface runoff will be directed to settling impoundments for removal of settleable solids; 12) 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. This means that all stream crossings constructed by the Project will meet regulatory requirements for protection of fish resources and aquatic habitat; this will also effectively mitigate against effects on surface water quality.</p> <p>Mining activities are expected to reduce high flows, and low flows are expected to either remain the same, slightly decrease or slightly increase. Annual runoff may have modest variations dependent on mining activities at the time (e.g. pit dewatering). Temporary water diversions will also contribute to some slight variations in flow quantity for short periods of time. Instream flows will be maintained by bypass pumping. Depending on the extent of the disturbance footprint within the watershed the significance to flow quantity may remain the same, increase or decrease depending on the mine progression and seasonal variability. Dewatering of the groundwater around or in the mine pits, to permit mining, increases surface flows. This is usually a minor flow component of the overall surface runoff rate from an area. The magnitude of the flows is small and regulated by pumps. If the sump or dewatering area is well laid out and separated from active mining, the effect on sediment loads can be negligible. Impoundments such as settling ponds or end pit ponds or lakes generally reduce downstream peak flows as a result of storage. Increases in low flows can result from a more gradual release of the water stored in the impoundment. Depending upon their size, pond evaporation losses may be significant at times but is near balanced with direct precipitation on an annual basis. Depending upon their size and efficiency, impoundments can reduce sediment loads significantly. End pit ponds will reduce flows when initially filling but can provide opportunities for enhancement. For open water bodies (lakes, ponds and to some extent wetlands), lake evaporation essentially replaces evapotranspiration in equation (1) above with groundwater having both an inflow and outflow component. After initial filling and stabilization of the groundwater level, such that the net regional groundwater recharge is the same as pre-mining, it may be assumed that groundwater inflow equals outflow on an average annual basis. It should be noted that even large differences in net groundwater inflow/outflow for the water bodies typically will have minor net surface flow impacts because of the small areas of the ponds relative to the basin sizes and the smaller groundwater flow component compared to the surface runoff component. Diversions will be sized and designed to convey peak flows safely considering the life of the diversion. As a result, water diversions do not impound water or cause losses due to infiltration (if lined) and, if returned to the same stream, will not affect the magnitude of downstream flows. All defined watercourse crossings will be designed, and constructed, to meet or exceed the regulatory requirements for approval under the provincial Water Act and the federal Fisheries Act and Navigable Waters Protection Act. If appropriately designed and constructed, these crossings will have negligible effect on flows or sediment loads to the streams.</p>

A	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Date Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
9	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	general effects on wildlife in Project area	The EIA identifies several areas of impact to culturally important species harvested in hunting and trapping activities, in particular, grizzly bear, marten, fisher, lynx and wolf. Adverse impacts on these culturally important species will result from the Project due to: (1) habitat alteration, (2) sensory disturbance and effective habitat loss (3) habitat fragmentation, (4) direct mortality, and (5) barriers to movement. The direction of impact is universally negative, and these impacts explained in the EIA itself demonstrate how the Project will further directly and adversely affect the [Aboriginal Group]'s Aboriginal and Treaty rights.	September 28, 2012	Grizzly bears will likely be displaced from portions of the Project mine footprint and permit area during the active mining period. Displacement will result from construction noise and blasting. At some point shortly after reclamation grizzly bears will be attracted to the herbaceous forage and ungulates on the Project mine footprint as was observed on the Luscar, Gregg River and CVM reclaimed mine areas. The mined lands will not act as a serious barrier to grizzly bears, with the possible exception of during active blasting and hauling. In the case of regional and cumulative grizzly bear mortality, the proposed Project is unlikely to add significantly to regional mortality. The greatest threat to regional grizzly bear populations is human-caused mortality caused by legal and illegal hunting, self-defence kills by ungulate hunters, and vehicle/train collisions. Any land use that results in increased access or use of access by individuals carrying firearms is a threat to grizzly bear population persistence. Any roads with vehicle speeds greater than 70 kph also have potential to result in increased grizzly bear mortality. Sources of domestic garbage at the CVM are contained in appropriate secure containers and transported to the licensed landfill in Hinton as per the Approval conditions. Problem bear actions at mines in the Coal Branch region are of extremely limited occurrence. Grizzly bears actively select habitats and foods that provide them with the greatest possible net digestible energy (Hamer and Herrero 1983, Pritchard and Robbins 1989). Mining and subsequent reclamation of the existing CVM has significantly changed landscape structure, composition and food production in the permit area for grizzly bears. Mining and reclamation at the CVM has resulted in removal of tree canopies, leading to increases in availability of high energy herbaceous plant material (clover, thistles, legumes) and an increase in ungulates (elk, deer) responding to increased forage and edge habitat. There is strong evidence to suggest that ungulates and plants used for reclamation are sought and used extensively by grizzly bears occurring in the vicinity of the CVM area. Similar findings were observed in the existing Luscar and Gregg River mines (Stevens and Duval 2005; Kansas and Symbaluk 2011). Bears using the reclaimed Luscar and Gregg River mine lands were on average larger than bears in an adjacent un-mined Subalpine and the Gregg/Luscar permit block was considered to be an attractive habitat for grizzly bears and a source for enhanced cub production (Kansas 2005). If similar reclamation measures are used on the Project then impacts on grizzly bears from a habitat alteration perspective will likely be positive within 10 years post-construction. In the case of regional and cumulative grizzly bear mortality, the proposed Project is unlikely to add significantly to regional mortality. This assertion is based on the fact that carrying of firearms is not permitted within any mine permit areas and traffic speed control is practiced. It is further supported by the fact that no grizzly bear mortalities have occurred on mine permit areas in 40+ years in the Coal Branch region (Symbaluk 2008). This does not diminish the seriousness of cumulative effects on grizzly bear mortality in the RSA and broader Yellowhead region. According to CR #7, Marten are listed as "Secure" by the Alberta Fish and Wildlife Division (2010), and winter tracking surveys from 2007 to 2011 indicate normal to above-normal marten densities throughout the RSA. Those surveys also indicate that marten trail densities in areas with past timber harvest were as high or higher than in areas without timber harvest. Based on the results of the wildlife studies it was concluded that marten will possibly avoid some high quality habitat during blasting and coal hauling during active mining, but this will be short to medium-term effect with limited demographic consequences. While marten utilize reclaimed mine habitats, at this point in natural succession they are reliant on remnant forest stands embedded within the CVM footprint. The following mitigation measures are recommended to increase marten habitat suitability and use of reclaimed mine lands: Marten use of regenerating stands may be enhanced with the occurrence of dense shrub and coniferous regeneration (Poole et al. 2004; Thompson et al. 2008). Selected native shrubs and trees should be planted to increase security cover for marten and their prey (varying hare, red squirrel, voles and mice). According to CR #7, fishers are listed as Sensitive by the Alberta Fish and Wildlife Division (2010), and little is known of their ecology in the foothills of Alberta. They are an uncommon species in the RSA with occurrence linked to older mixedwood forests in the lower elevation eastern portions. This species is not commonly trapped in the RSA with harvest limited to eastern RFMAs. High and very high quality fisher habitat currently comprises about 6% of the Project mine permit area (LSA). Fisher tracks were observed in the Project permit area but at much lower (40 times) densities than marten. The greatest threats to regional fisher populations are habitat alteration at maternal denning sites and over-trapping. Over-trapping is unlikely to occur because fisher harvest is very low in the region and subject to quotas. [continued below]
9a	continued from above			continued from above		[continued from above] The government can reduce quotas at any time if concerns over regional fisher occurrence or population density arise. A study of habitat alteration showed the predicted supply of high and very high quality fisher habitat over time considering effects of the Project and other planned and reasonably foreseeable land uses. The supply of high/very high fisher habitat increases steadily over time with increases of 273% and 444% for the Embarras and Lendrum BMUs from baseline to T50. Based on the above evidence, the combined effects of the Project and past, present and future land actions on fisher populations are rated as insignificant. According to CR #7, the main potential causes of lynx mortality arising from the Project are: 1) vehicle collisions from coal haul; and, 2) fur harvest. Unlike cougars, lynx are not a big game species in Alberta. Therefore, increased legal hunting pressure due to improve human access will not likely occur. Trapping of lynx is quota-based and recent lynx harvest has not been excessive. Vehicle speeds are reduced on mines to <70 kph further reducing the likelihood of vehicle collisions. Overall, it is predicted that development of the Project is unlikely to cause an increase in direct lynx mortality. After the immediate maximum effect of construction, the losses of lynx habitat are predicted to be ameliorated over time by natural aging of existing forests and regeneration of forest on reclaimed lands. Succession of early post-seral clear cuts and Project reclamation to young forest with abundance hare populations are the main reasons for projected increases in quality lynx habitat. Planned timber harvest in the RSA will provide an optimal mix of regenerating forest and older forest that lynx need for forage and reproduction (denning). Surface coal mining will offer the same conditions if mitigation measures recommended are followed; and, habitat supply projections for lynx predict that supply of high and very high quality lynx habitat will significantly increase from baseline to T50 in the RSA (277% in Embarras BMU and 193% in Lendrum BMU) largely because of planned timber harvest, beetle salvage and surface coal mining. According to CR #7, wolves are a common species in the LSA and RSA. From 1985 to 2001, a total of 14 wolves were trapped within the three RFMAs that overlap the LSA. Wolf trails were regularly observed during winter tracking surveys from 2007 to 2011 with travel and hunting occurring within the existing CVM permit area. Wolves are not a listed species at risk in Alberta or nationally. The greatest threats to regional wolf populations are human-caused mortality caused by legal and illegal hunting, fur harvest, and vehicle collisions. Wolves could also be affected by significant and large-scale regional declines in ungulate prey availability. It is unknown to what extent projected decreases in ungulate prey and wolf habitat will impact wolf populations. Wolves have inherently high fecundity and in a region with low human population levels (i.e. low mortality risk) are very unlikely to be extirpated in the RSA. In addition to mitigations mentioned above, proposed mitigation strategies to help protect these mammalian carnivore species include: 1) Monitor the effectiveness of measures designed to increase understory cover (downed woody debris, shrubs, tree density) on reclaimed mine lands for marten, fisher and lynx. Design a program that includes establishment of specific targets; 2) Monitor response of marten, fisher lynx to existing and planned mine land reclamation using winter tracking techniques; 3) Determine if habitats required for fisher maternal denning occur on or immediately adjacent to the Project and assess their levels of use by fisher; 4) Monitor the effectiveness of establishing and maintaining hiding cover for grizzly bears near Project edges and adjacent to main roads; 5) Measure and monitor human use levels of linear features during summer, winter and fall (hunting) seasons. Assign this as a primary task of the 'bear warden' position. Use this data to design road closure plans; 6) Monitor the effectiveness of voluntary and enforced road closures including gating; 7) Monitor and study specific use of the existing CVM and proposed Project by grizzly bears. Investigate the extent to which existing mines in the region serve as attractive forage sources for grizzlies, and study implications for subregional mortality. Consider non-intrusive methods including DNA hair snagging; 8) Continue long-term, multi-species winter monitoring of mammals (carnivores and prey) to regional habitat fragmentation using the tracking data conducted in 2007, 2009 and 2011 as a starting point.
10	Potential Impact to Treaty or Aboriginal Rights	Health	general impacts to environmental quality in Project area	The habitat suitability decrease, resulting in lost habitat, from the Project, is material for culturally important species...across all types of habitats...mining activities will change lands in the Project area from closed forest to barren land and herb-dominated vegetation communities.	September 28, 2012	In the impact zones of the Project area, considerable change to the current vegetation patterns will obviously occur. After initial topsoil placement, these areas may indeed be described as "barren," but relatively quickly the reclamation process will begin the natural succession that has and will characterize the development of the landscape's vegetation. The revegetation program proposed for the Project area will use experiences gained over the years at the CVM. Vegetation species will be selected to match site-specific conditions (slope position and exposure) that are consistent with the land use objectives; watershed, timber, wildlife, fisheries and aesthetics/recreation. Three seed mixes are currently being utilized at CVM; the standard mix was formulated for use in drier upland areas, the wetland mix is formulated for the revegetation of lower lying wetter sites and constructed wetlands and a native seed mix formulated to facilitate native succession. Traditional value plants will be identified in respect to their possible use as revegetation species. The revegetation program will plant the dominant tree species; either a conifer or deciduous species. Where reclamation stock is available suitable understory species will be inter-planted with the tree seedlings. Initial grass/legume seeding will be undertaken during the first growing season following minesoil placement. Fertilizing will be completed in the same year (and may be repeated once more on some sites within the next five years). Planting or seeding of native herbaceous stock and planting of woody species (shrubs and trees) will be completed by the fourth growing season following coversoil replacement. Woody species planting will only be done when the ground cover has become fully established and has progressed beyond the initial heavy growth phase. Vegetation on the reclaimed landscape will continue to change after the reclamation activities have been completed. Some of the species in the initial seed mix will not persist, allowing other native species to ingress. Many native species will establish from roots or seed in the replaced soil, and other species will ingress from surrounding areas. As noted above, reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. Given the timelines of forest succession, precise timelines for the development of a "climax community" in reclaimed areas are difficult to predict, but this "successional reclamation" process (Polster, 1989) will continue for several decades. CVRI has also planned to undertake reclamation activities that specifically enhance wildlife use of the reclaimed area. Specifically provide diverse vegetation communities and complex arrangements of vegetation and landscape features. CVRI also aims to maintain as much undisturbed habitat as possible during mining will help to enhance the wildlife diversity of the reclaimed sites. Adjacent landscape features will be emulated in the reclamation plan allowing for the development of similar habitat. A variety of wildlife uses on undisturbed and reclaimed habitat associated with coal leases during and after the mining phases has been documented. Wildlife have colonized new habitat created by reclamation of coal mines (MacCallum 2003). Activity associated with mining is predictable and focused. Animals are not subject to random and varied human disturbance within the MSL. These conditions allow animals to colonize the reclaimed landscape. The MSL associated with the CVM has provided a secure environment for wildlife and is instrumental in maintaining regional ungulate populations especially in the Critical Wildlife Habitat associated with the Lovett Ridge. Initial displacement of the existing wildlife community on the Project LSA by active mining will be followed relatively quickly by colonization of wildlife species appropriate to the stage of succession reached by the regenerated plant community. Given that appropriate habitats are established and movement opportunities are designed into the Project disturbance, wildlife are expected to adjust to the initial displacement and disturbance by colonizing newly available habitat and incorporating it into their daily and seasonal activities.

A	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Date Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
11	Potential Impact to Treaty or Aboriginal Rights	Hunting	loss of access to additional land for traditional uses in general region	The maps attached to the Affidavits of the [Aboriginal Group] Harvesters delineate the areas in relation to the Project area and the LSA where the [Aboriginal Group] Harvesters have and continue to hunt, fish, gather and trap. The [Aboriginal Group] Harvesters further depose that the Project will impact wildlife populations beyond existing impacts, and that the Project will further restrict rights of access to lands previously available to them to practice their constitutionally protected rights to hunt, fish, gather and trap. The [Aboriginal Group] Harvesters also report that the frequency of the exercise of their harvesting rights is currently being impacted by development. Additional development, such as the Project in the [Aboriginal Group]'s traditional territory, has the potential to further negatively impact the exercise of these traditional activities, and will further erode [Aboriginal Group]'s constitutionally entrenched and protected Aboriginal and Treaty rights.	September 28, 2012	CVRI notes that the submitted affidavits indicate that hunting, fishing, trapping, and gathering is undertaken across the general Project region, in some cases including the Robb Trend Project area, but in some cases the maps even indicate harvesting areas that include active mining areas related to CVRI and other companies. No information is provided relative to site-specific hunting, fishing, trapping, and traditional use activities indicated to occur within the Project area. Significant potential impact to harvesting activities is claimed, but no information supporting an adverse negative impact or unjustifiable infringement on Treaty Rights has been provided by Aboriginal Group A. Nonetheless, CVRI does acknowledge that its Project will occupy Crown land otherwise available for the exercise of Treaty Rights and traditional uses for a period of time during mine development, operation, and reclamation. CVRI notes that access to proposed Project lands to pursue Treaty Rights and undertake traditional activities will not be restricted in the entire area upon Project approval and it will not be permanent, as it will mine the Robb Trend in stages over a 25-year period. The first stages will involve road construction as early as 2013, with the first mine pits opening in the center of the area as early as 2014, but with development of mining areas towards the southeast not until 2021, and in the areas west of the town of Robb not until 2027. The reclamation plans for the Robb Trend will incorporate Aboriginal traditional ecological knowledge to return the land to a more natural, useable state once mining activities have ceased. Reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. A large proportion of the surrounding region, with similar plants, animals, and other resources, will remain accessible for the undertaking of Treaty Rights and traditional uses during the development of the Project. The purpose of discussions with individual Aboriginal groups is an acknowledgement by both parties that proposed mining activities will restrict access to areas for general traditional uses, and that that restriction may have a negative, unquantifiable impact on portions of the Aboriginal communities, and that further consultation may result in the identification of mitigations or accommodations of potential impacts suitable to all parties. CVRI will continue to consult with Aboriginal Group A in search of mutually agreeable understanding.
12	Consultation	Consultation	Consultation	It is clear from the [Aboriginal Group] affidavits and the EIA that many species in the Project area and LSA are already under stress. The Application fails to explain specifically how CVRI will reduce or mitigate impacts specifically with respect to [Aboriginal Group]'s constitutionally entrenched and protected Aboriginal and Treaty rights. Absent a proposal to specifically address potential direct and adverse impacts to [Aboriginal Group] Aboriginal and Treaty rights, there exists a real risk that, if approved, the Project effects on culturally important species to [Aboriginal Group] will be direct and adverse. It necessarily follows that the potential Project effects on the [Aboriginal Group] rights associated with these culturally important species may also be both direct and adverse.	September 28, 2012	As noted above, in March 2013 both parties met to move the consultation process forward in a mutually agreeable form. This continuing consultation process should make meaningful progress in addressing, mitigating, or accommodating any identified project-specific potential impacts to Aboriginal Group A Treaty Rights and traditional uses of the Project area. Any Aboriginal Group A concerns brought forward to date through the consultation process or the submission of a Statement of Concern are addressed in this table. CVRI attempted to discuss some of them directly with Chief and Council during the meeting of March 2013, but the meeting was restricted due to unforeseen circumstances and did not allow for in-depth discussion of stated concerns. CVRI welcomes Aboriginal Group A comment on the responses, mitigations, or accommodations proposed here. The continuing consultation process will entail further discussion of these issues and others raised by and with Aboriginal Group A on a range of matters from potential impacts to Treaty Rights and traditional uses, to employment and contracting opportunities, to issues of community support. CVRI will work with potentially affected Aboriginal groups, including Aboriginal Group A, to understand, address, and accommodate potential impacts to Treaty Rights and traditional uses, and to provide other potential benefits to Aboriginal communities from the development of the Project where appropriate. Future meetings are required as discussed above. The reclamation process and mitigation measures are detailed in many of the above responses. CVRI will defer a response to the request for participation in ERCB hearings to the ERCB.
				How are their concerns being mitigated with respect to wildlife and plants? Reclamation processes.	March 15, 2013	
				[Aboriginal Group] submits that at minimum oral hearing necessary for ERCB to consider how Project may impact [Aboriginal Group]'s rights, and if approved what conditions needed. Request for participatory rights in ERCB proceedings.	September 28, 2012	
13	Employment Opportunities	Socio-economic development	increased employment for underemployed sector of Aboriginal society	Any possible employment or procurement opportunities? It was also suggested that CVM attend a career fair/tradeshaw at [Aboriginal Group] on March 27th.	March 15, 2013	CVRI has a hiring policy open to anyone with suitable qualifications. This policy has been provided to Aboriginal groups. CVRI has offered to communicate job postings with Aboriginal group employment officers.
14	Education Support	Socio-economic development	supporting children's education; increased employment for underemployed sector of Aboriginal society	[Aboriginal Group] has a strong focus on promoting youth employment opportunities	March 15, 2013	CVRI has a hiring policy open to anyone with suitable qualifications. This policy has been provided to Aboriginal groups. CVRI has offered to communicate job postings with Aboriginal group employment officers.
15	Contracting Opportunities	Socio-economic development	development of Aboriginal owned business; increased employment for underemployed sector of Aboriginal society	[Aboriginal Group] is very focused on accessing procurement opportunities from the relationship with CVM. [Aboriginal Group] is a business-oriented community, with a tremendous amount invested in building capacity within their own community. They are also focused on promoting employment and business opportunities off reserve	March 15, 2013	CVRI has a procurement policy open to any business which provides competitive services. This policy has been provided to Aboriginal groups. CVRI has offered to receive and review available Aboriginal group business proposals.

B	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
1	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	direct impact/removal of traditional use site locations in Project area	<p>[Aboriginal Group] representatives have asserted on numerous occasions that the community has traditional use sites in the Project area.</p> <p>Potentially numerous traditional use sites not recorded as of 2006, once recorded does not want them public.</p> <p>Claim of over 110 sites in the expansion areas (includes Mercoal West, Yellowhead Tower, Robb Trend)</p> <p>Discussion of additional land use studies to locate sites.</p> <p>Small-scale map of [Aboriginal Group] traditional sites in project area produced (no information on specific locations or nature of sites).</p> <p>On December 9, 2011, [Leader] called specifically regarding a ceremonial location potentially in Robb Trend West (his immediate concern was not Project related, nonetheless a potential site conflict was reported).</p> <p>Issue of buffers around avoided sites has been discussed on numerous occasions</p>	<p>October 5, 2006</p> <p>April 22, 2008</p> <p>October 19, 2011</p> <p>November 22, 2011</p> <p>December 9, 2011</p> <p>November 9, 2011; January 30, 2012</p>	<p>CVRI has worked with Aboriginal Group B in the past to avoid or otherwise mitigate claimed traditional use sites in its project areas, and has offered to work with the Aboriginal Group B to reduce any potential impacts in the Project footprint. As noted in correspondence from Aboriginal Group B, they do not feel that all of the past efforts have been successful, particularly regarding older CVRI operations. It is true that in the past, neither the Crown nor most proponents engaged in significant consultation with Aboriginal groups. However, even CVRI's record on consultation with Aboriginal Group B has its origins prior to the implementation of consultation requirements in the Province. As for impacts to traditional use sites or other Aboriginal Rights, CVRI has requested information on the location, nature, and significance of any traditional use sites in the Project area, in order that its planners can work with the community to avoid sites where necessary or to otherwise mitigate impacts resulting from removals, etc. CVRI has funded Aboriginal Group B efforts to locate and record information in the Project area, and has provided additional funding on more than one occasion for efforts to manage the information database and produce mapping information. These efforts, begun in 2007, have resulted in no sharing of information on the part of Aboriginal Group B. One small-scale print of "dots on a map" has been provided, but the regional scale and lack of information about the sites is completely inadequate for a meaningful discussion of potential Project impacts and strategies to mitigate concerns related to those sites. The only sites representatives of CVRI have been shown on the ground, including cabin sites, burials, and ceremonial sites, lie outside of the currently proposed Project area. The continued frustration of this process on the part of Aboriginal Group B can only result in a situation where continued unsubstantiated claims regarding impacts are made, to which CVRI is unable to respond due to lack of information. CVRI has offered to avoid or mitigate sites where possible, but sufficient detailed information must be provided by Aboriginal Group B leadership. Most recently, at a November 22, 2011 meeting Les LaFleur offered immediate capacity funding to move Aboriginal Group B sites (supplied). On February 7, 2012 [Leader] and Les LaFleur met to discuss the location of a site and another in potential conflict with CVRI operations in Robb Trend West, but again a specific location and nature of the site have not been shared. Based on the description of the site location, Les LaFleur believes that it is most likely outside of CVRI's proposed development footprint. As stated on numerous occasions in the past, once CVRI is provided with locations and descriptive information regarding Aboriginal Group B traditional sites, it is prepared to work with the community to avoid important sites or otherwise mitigate Project effects where possible. Aboriginal Group B leadership has indicated that until its terms are met on a final agreement between the parties (which includes requests for substantial funding and compensation), there will be no additional field studies or information sharing regarding Aboriginal Group B sites in the Project area.</p>
2	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	loss of access to specific traditional use locations in Project area	<p>Concern mentioned about access to important sites after mine development.</p> <p>Again that is when you go back now to when things were outlawed and that is why I asked you before how are you going to allow me, if I have a site here, and mining is going on here, because I have drove in there once. Your company's cops came after me and told me I shouldn't be here, I am just trying to get to my bundle I left here, but they sent me out.</p> <p>[Aboriginal Group] should have free, unrestricted access (conforming to safety needs), and any environmental monitors would need free movement to demonstrate not controlled by company.</p>	<p>October 5, 2006</p> <p>November 9, 2011</p> <p>March 30, 2012</p>	<p>CVRI understands that Aboriginal Group B may have traditional use sites currently used, the access to which could become restricted by the development of the Robb Trend Project. As noted in several face-to-face meetings with Aboriginal Group B leadership, CVRI is more than willing to work with Aboriginal Group B to help maintain access to those sites when necessary. In addition, CVRI has offered assistance if requested to help identify other suitable areas for certain traditional uses should the Project development restrict access to, or remove, specific preferred locations for undertaking traditional uses or exercising other Rights. CVRI notes that courts have interpreted jurisprudence to indicate that the protection of a right does not guarantee its exercise in an "unspoiled wilderness" or in one particular location (Halfway River 1999: 140-141). As acknowledged by Aboriginal Group B, the safety considerations of an open pit mine need to be considered when judging and gaining access through active mining areas, but CVRI is prepared to work with Aboriginal Group B to help maintain access in the best manner possible. CVRI also noted that access to all areas will not be restricted at once if approval for the Project is issued. Any access restrictions would not be permanent given the intended period of time that CVRI plans to operate in the Robb Trend Project area. It will mine the Robb Trend in stages over a 25-year period. The first stages will involve road construction as early as 2013, with the first mine pits opening in the center of the area as early as 2014, but with development of mining areas towards the southeast not until 2021, and in the areas west of the town of Robb not until 2027. Reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use, including unrestricted access, as the last lands are being mined.</p>
3	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	removal of medicinal, ceremonial, and food plant species in Project area, desire to be involved in reclamation using traditional knowledge	<p>[Aboriginal Group] would like to be directly involved in reclamation process using traditional knowledge</p> <p>We want it to return to the way it was so we can use it the same way in the future and balance what has been introduced from the educational system and shows up in environmental assessments, with what we know. We are in a perfect place, and time, to return things the way it should be because the land has all been looked at through the Foothills Model Forest program and now we have the Forest Research Institute so the studies are all there. All the studies that have taken place over the last few years and for the government as well. We're hoping our people are going to become involved with all of them as employees of the government, in the industries and in the Research Institute.</p> <p>If we use the same soil and get seeds in the same season we are in now, the fall, that were there before the mine work I can guarantee that the lands will all comeback exactly the way it was before.</p> <p>On numerous occasions [Aboriginal Group] have expressed concern with the use of non-native species such as grass for reclamation activities</p> <p>[Leader] noted that the greatest long term concern is that the land be returned to its natural vegetation and animal communities as soon as possible after the land is used for mining...[Aboriginal Group] would require some guarantees that the rehabilitation of specific site values lost would be replaced in the same year they were destroyed and that the rehabilitation would return the natural conditions of the site not just be an exercise in mono culture planting</p>	<p>May 2, 2008; July 16, 2008; October 30, 2009; October 19, 2011; January 30, 2012; March 30, 2012</p> <p>November 9, 2011</p> <p>November 9, 2011</p> <p>January 30, 2012</p> <p>February 19, 2013</p>	<p>CVRI has continuously offered to support Aboriginal Group B direct involvement in the reclamation process through environmental monitoring, use of Aboriginal Group B traditional ecological knowledge and community members, collection of seeds and dispersal, transplanting, or other measures to help avoid the issues with mono-culture or the use of non-native species as discussed. Specifics of this have not been worked out, as the two parties have yet to reach a final agreement that addresses some of these matters directly. Several other Aboriginal groups have expressed this same concern, and CVRI is committed to availing itself of Aboriginal knowledge to develop the specific reclamation plans for the mine areas requiring reclamation. CVRI must also address AESRD requirements for reclamation activities. CVRI has repeatedly expressed interest in Aboriginal Group B recommended techniques for reclamation, and looks forward to an arrangement that will see some of that expertise put to use to return the land to a condition ultimately suitable for use by Aboriginal groups to exercise Treaty and Aboriginal Rights and traditional uses.</p> <p>CR #13 (Vegetation) of the Project Application discusses many plants identified to CVRI as important to the Aboriginal community. Aboriginal consultation meetings and field visits conducted by CVRI with First Nations and Aboriginal representatives resulted in the identification of a list of vegetation species which are valued by the Aboriginal groups for their uses. The field surveys identified 88 TEK vegetation species which occur in the LSA (CR # 13, Appendix 5). Of the TEK vegetation species documented during field surveys, 8 are typically used for critical medicinal purposes, 20 are used for food, and 60 are used for other purposes. None of the TEK vegetation species are on Alberta's 2011 Tracking and Watch List, used to identify species that are rare or otherwise special in some way. TEK vegetation have a very high potential to occur in ecotype phase d1, e2, e3 and i1 and a high potential to occur in c3, e1 and j1 in the Foothills Natural Sub-regions (CR # 13, Table 4.7). These occurrences have been mapped and documented to identify species that are within the LSA and within the Project Footprint. In total 2,264.9 ha of ecotype phases with very high potential to support TEK vegetation will be removed by the Project Footprint, this area encompasses 22.4% of the very high potential area in the LSA. As well, in total 1,354.1 ha of ecotype phases with high potential to support TEK vegetation will be removed by the Project Footprint, high potential area encompasses 13.4% of the high potential area in the LSA. Fifty-four percent (5,467.0 ha) of areas which support TEK vegetation will be removed from the LSA by the Project Footprint. However, TEK vegetation Project effects at the LSA level do not necessarily lessen the accessibility of TEK vegetation for Aboriginal groups given that TEK vegetation is available in the RSA and region. The distribution of ecotype phases which support TEK vegetation will be accessible in the RSA following removal of ecotype phases by the Project Footprint in the LSA. It is assumed that ecotype phases within the LSA are similar in composition and distribution as those in the RSA; consequently, TEK vegetation will still be accessible in the RSA. Mitigation measures for TEK vegetation effects should include but will not be limited to the following:</p> <ul style="list-style-type: none"> • inviting Aboriginal groups to participate in designing mitigation measures which contribute to the sustainable management of TEK vegetation, and which compliment the re-vegetation measures proposed in the Application; • working with Aboriginal groups, who may be affected by the Project, to locate alternative areas where TEK vegetation is accessible during the life of the Project; and, • implementing a re-vegetation program which aims at the re-establishment of ecotypes common to the pre-disturbed landscape. The re-establishment of pre-disturbance ecotypes will, over time, again support TEK vegetation. <p>With the implementation of mitigation measures the Project is expected to have a limited spatial effect, and a moderate temporal effect. Potential Project effects are related to the attenuation of available TEK vegetation (vegetation used for medicinal, food and other uses) as a result of the removal of ecotype phases within the LSA. CVRI is committed on working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation. Accordingly, it is anticipated that the Planned Project effects on TEK vegetation will be local in extent and over the long term, all areas used for harvesting TEK vegetation will be re-established.</p> <p>The revegetation program proposed for the Project area will use experiences gained over the years at the CVM. Vegetation species will be selected to match site-specific conditions (slope position and exposure) that are consistent with the land use objectives; watershed, timber, wildlife, fisheries and aesthetics/recreation. Three seed mixes are currently being utilized at CVM; the standard mix was formulated for use in drier upland areas, the wetland mix is formulated for the revegetation of lower lying wetter sites and constructed wetlands and a native seed mix formulated to facilitate native succession. Traditional value plants will be identified in respect to their possible use as revegetation species. The revegetation program will plant the dominant tree species; either a conifer or deciduous species. Where reclamation stock is available suitable understorey species will be inter-planted with the tree seedlings. Initial grass/legume seeding will be undertaken during the first growing season following minesoil placement. Fertilizing will be completed in the same year (and may be repeated once more on some sites within the next five years). Planting or seeding of native herbaceous stock and planting of woody species (shrubs and trees) will be completed by the fourth growing season following coversoil replacement. Woody species planting will only be done when the ground cover has become fully established and has progressed beyond the initial heavy growth phase. Vegetation on the reclaimed landscape will continue to change after the reclamation activities have been completed. Some of the species in the initial seed mix will not persist, allowing other native species to ingress. Many native species will establish from roots or seed in the replaced soil, and other species will ingress from surrounding areas. As noted above, reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. Given the timelines of forest succession, precise timelines for the development of a "climax community" in reclaimed areas are difficult to predict, but this "successional reclamation" process (Polster, 1989) will continue for several decades.</p>

B	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
4	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	direct impact/removal of burials in Project area	<p>"There are burial sites of our people in the area by the Robb Trend and Lovett Rivers...Graves: in the Robb Trend. These absolutely NEED to be protected."</p> <p>Yes but we would like to have something in place for certain things like gravesites or special area sites. You walk into a place and you feel this energy. Those are the kind of sites that we want to protect.</p>	<p>2009</p> <p>November 9, 2011</p>	<p>Aboriginal Group B has provided no information to CVRI regarding any burials located within the Project area. In the context of Robb Trend consultations, representatives of CVRI were shown a single burial location outside of the proposed Robb Trend Project lease area. Otherwise, the Lovett River burials referred to are also well outside of the Project area. As always, CVRI is prepared to work with Aboriginal Group B on the avoidance or mitigation of any verifiable burial locations in the Project area. If during operations possible burials are encountered, CVRI is prepared to work with Aboriginal communities and regulators to confirm burial association and devise an appropriate avoidance or mitigation strategy. The presence of human remains or burials on Project lands, whether Aboriginal or not, is subject to Federal and Provincial laws and regulations including Section 182 of the Criminal Code, the Alberta Cemeteries Act, and potentially the Alberta Historical Resources Act. Knowingly disturbing human remains (improper interference) without legal authorization constitutes a criminal act, and knowingly disturbing burials, recorded or not, without legal authorization contravenes the Cemeteries Act and potentially the Historical Resources Act. In addition to moral duties, sanctions of both a criminal and financial nature for any actions provide significant impetus for CVRI to act swiftly and accordingly should potential burials be identified during development activities. Mine management will ensure that all supervisors and workers are aware of the legal and moral issues regarding possible burials.</p>
5	Potential Impact to Treaty or Aboriginal Right	Traditional Use	general impacts to water quality in Project area	<p>"The streams and rivers must be allowed to maintain a natural flow...They must be kept and remain unobstructed and un-polluted...Any disturbance of the land must not affect or harm the aquatic organisms...There can be zero sediment loading from the construction activities...The PH level of the water must stay balanced and remain the same as the natural water prior to any disturbance...Selenium leeching has been a problem, there must be accurate and careful MONITORING conducted in accordance with environmental standards and this must be shown to and/or monitored by the community...Clay has a purpose, for the water will turn stale when it is disturbed, which will lead to sickness for the animals, clay purifies the water. So this also must be preserved and carefully protected...Water monitoring reports must be sent to the community as we also hunt in the area and conduct periodic community ceremonies there."</p>	January 28, 2009	<p>CVRI will monitor watercourses within the watersheds to be affected by the Project. Within the Hydrology and Surface Water Quality reports in the Application, a number of monitoring programs are listed including:</p> <ul style="list-style-type: none"> • continue monitoring programs already in place at the existing CVM mine (i.e., flow and TSS at settling ponds, regular inspections of all drainage works, and upstream and downstream water quality sampling); • document the effect of mine operations on long term flow regimes in order to document critical low flow conditions during pit filling periods and define the need for any bypass pumping to maintain in-stream flows; • establish flow monitoring stations 2-3 years in advance of commencement of Project operations in each watershed; • conduct periodic runoff and drainage control monitoring (adjust the capacity of or relocate sump systems and drainage works as mining proceeds); • conduct ongoing monitoring, operations, and maintenance as outlined in the water management plan with periodic reviews and adjustments; • monitor adjacent undisturbed areas to ensure surface runoff from disturbed areas does not occur; and • monitor surface water quality in natural watercourses, both upstream and downstream of Project activities as required in the EPEA approval. <p>The surface hydrology assessment presents proposed water management plans and addresses the potential impact of the Project on:</p> <ul style="list-style-type: none"> • the quantity of surface water flow and stream behaviour during high, average and low flow conditions; and • sediment concentrations in local and regional streams. <p>Various water management and sediment control measures will be implemented for the Project during operations, reclamation, and closure, including:</p> <ol style="list-style-type: none"> 1) Water from pit dewatering operations will be directed to settling impoundments for treatment prior to discharge of surface waters. In impoundments, pit water will mix with surface runoff. If necessary, flocculants will be used to enhance the rate of settlement of suspended solids. Impoundment discharges will be subject to conditions in the EPEA approval; 2) Release of water pollutants from the site such as oil and grease is controlled. With the installation of oil booms on the impoundments and immediate containment of oil in the event of a spill, there is little danger of these materials contaminating surface waters. Components of the water handling system will be designed according to the governmental specification and the systems will be operated in accordance with regulatory approval requirements; and Water from pit dewatering operations will be directed to settling impoundments for treatment prior to discharge of surface waters. In impoundments, pit water will mix with surface runoff. If necessary, flocculants will be used to enhance the rate of settlement of suspended solids. Impoundment discharges will be subject to conditions in the EPEA approval; 3) Installation of surface runoff collection and treatment systems to control groundwater seepage from road cuts and surface runoff from disturbed areas. Surface runoff will be directed to settling impoundments for removal of settleable solids; and 4) All mine-affected water will be treated prior to its release in to the receiving waters to reduce potential effects from loading of suspended sediments and potential effects of water quality variables typically associated with suspended sediments (e.g., total aluminum and total iron). CVRI will pay particular attention to selenium (see below). The mine wastewater treatment program similar to the one currently in use at the CVM will be established to minimize downstream siltation and minimize downstream effects on surface water quality; 5) With respect to selenium, the CVM will continue an effective water quality monitoring program including a focus on selenium concentrations. The objective will be to observe water quality relative to baseline values to identify any changes over time. Should a significant increase in selenium levels be noted an investigation will be undertaken to identify possible sources and mitigation plans will be implemented; 6) Where necessary, interim erosion/sediment control measures will be utilized until long-term protection can be effectively implemented; 7) Minimization of the time interval between clearing/grubbing and subsequent earthworks, particularly at or in the vicinity of watercourses or in areas susceptible to erosion; 8) Slope grading and stabilization techniques will be adopted. Slopes will be contoured to produce moderate slope angles to reduce erosion risk. Other stabilization techniques used to control erosion include: ditching above the cutslope to channel surface runoff away from the cutslope, leaving buffer (vegetation) strips between the construction site and a watercourse, placing large rock rip rap to stabilize slopes; [continued below]
5a	continued from above			continued from above		<p>[continued from above] 9) Whenever possible, construction activities in close proximity to watercourses will be carried out during periods of relatively low surface runoff in late fall, winter and early spring (from October to April). A 30 m buffer (vegetation) strip will be left between construction sites and watercourses except at stream crossings and diversions;</p> <ol style="list-style-type: none"> 10) Temporary measures to control erosion before a vegetation cover is reestablished, including: diversion ditches, drainage control, check dams, sediment ponds, sumps and mulches; 11) Installation of surface runoff collection and treatment systems to control groundwater seepage from road cuts and surface runoff from disturbed areas. Surface runoff will be directed to settling impoundments for removal of settleable solids; 12) 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. This means that all stream crossings constructed by the Project will meet regulatory requirements for protection of fish resources and aquatic habitat; this will also effectively mitigate against effects on surface water quality. Surface water quality could be impacted by issues including: 1) soil erosion, sediments entering streams via surface runoff, increased sedimentation of surface waters; 2) leaching of nitrates into surface waters; 3) discharges of water from impoundments to natural watercourses; and effects on end-pit lakes on surface water quality. Several of the responses above detail the mitigation measures to be used to avoid these problems. In addition, the general practice at the CVM is to discharge groundwater entering the Project mine areas to nearby surface water courses after being treated in settling ponds. It has been shown that the quality of groundwater in the two proposed mining areas are similar to groundwater chemistry in present and past mining areas in Coal Valley and of acceptable quality for discharge to surface water bodies. There will be an insignificant impact on surface water quality caused by the discharge of groundwater from the pits. There are two issues with respect to how changes in groundwater chemistry may affect the quality of groundwater in the vicinity of the Project pits. These issues can be summarized as: 1) changes resulting from the removal and placement of mine spoil, and 2) changes due to spills and leaks. Toe springs are a characteristic of spoil dumps that are external to the mine pit. Water chemistry of four springs at the toes of major mine spoil dumps in the CVM have been monitored since 2000. All parameters fall within acceptable ranges observed elsewhere in the area. The monitoring of toe springs at CVM has demonstrated that there are no significant impacts from spoil on water chemistry. Hydrocarbon fuels will be present in the Project mobile equipment, vehicles and in bulk storage. There is a potential for spills or leaks of these hydrocarbons. Spills from equipment and vehicles will be the result of accidents. In this situation, there will be rapid response and clean up. The probability that such an event could cause an impact on groundwater quality is remote. The impact is therefore insignificant. CVRI has also studied the water quality of its end-pit lakes. There have now been three sets of limnological and ecological studies conducted on CVM end-pit lakes: the studies in the 1990s conducted on Lovett, Silkstone, and Stirling (Pit 24) lakes plus Pit 35 and Pit 45 lakes (Hatfield 2008), and the current study. Taken together, the results of these studies indicate that there may be fewer constraints of water quality to the ecological viability of end-pit lakes in the CVM area than those described in End-Pit Lake Working Group (2004). <ol style="list-style-type: none"> 1. The concentration of a number of water quality variables, such as nutrients and major ions, are higher in end-pit lakes than in natural lakes, but these higher concentrations are not at levels that would affect the ecological viability of the end-pit lakes. 2. There have been relatively few instances of measured water quality variables, including metals, exceeding provincial or federal water quality guidelines. 3. The incidence of water quality guideline exceedance is not measurably greater in end-pit lakes than in natural lakes in the CVM area. 4. The trophic status of end-pit lakes is similar to that of natural lakes in the CVM area. <p>The exception to this is dissolved oxygen. The results of this study indicate there are portions of end-pit lakes in all seasons sampled with concentrations of dissolved oxygen that are below provincial guidelines for the protection of aquatic life. The same is true of Fairfax Lake, the natural lake that was surveyed as part of this study. The depth patterns of dissolved oxygen in the lakes that were studied are related to processes of lake stratification and turnover.</p>

B	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
6	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	general effects on wildlife in Project area	<p>"Wildlife corridors must be maintained as near to their natural pathways as possible, especially for the large ungulates (specifically the grass eating animals such as elk, moose, deer, bighorn sheep and caribou). Also it is necessary to be aware of and monitor the carnivores presence in the area (bears, wolves, coyotes, wolverines). This must be undertaken on a regular basis, and natural safety precautions for doing so must be taken. Natural mineral licks and Salt licks must first be identified and then be protected in the three trends. Protection of ALL calving areas is required. There must be monitoring and protection of the Healing mosses that grow in the marshes, and muskegs. Wildlife habitats need to be identified and protected such as bear dens squirrel trees and bird habitat."</p>	January 28, 2009; numerous other occasions	<p>Wildlife monitoring is common practice at all CVRI mines to various degrees of complexity. All CVRI projects required to provide baseline wildlife data and ongoing monitoring occurs with wildlife cameras and survey counts identifying what habitat (pre-mine, during mining, post-mine, reclaimed) is used and to what degree. The development of the Project, particularly the development of the mine pits, soil and rock stockpiles, dumps, and roads, will definitely impact plants and animals in the disturbance zones through displacement. Most wildlife will likely be displaced to adjacent habitat patches. Ungulates will be temporarily displaced by active mining as they are unable to cross a pit disturbance (big horn sheep and caribou are not found in the Project area or the RSA). This displacement will be restricted to local use as there are no indications of long distance or major seasonal migrations in the LSA. Large amounts of moderate quality moose habitat is available throughout the RSA for moose thereby moderating the affect of habitat change caused by mining. High quality moose habitat on the Project and other areas associated with mixed wood of the Lovett Ridge will be reclaimed with a closed forest regeneration forest of lesser habitat quality. The impacts of the Project development on moose in the region can be mitigated by: implementing reclamation techniques appropriate for moose, establishing a variety of vegetation types and promoting understory complexity in regenerated forests that includes willow species, aligning reclamation and other re-vegetation efforts to maintain and improve moose habitat, taking steps to ensure core security areas are provided for wildlife, implementing appropriate monitoring, cooperating with the province and other industry on access management and other relevant management issues. Low calf moose numbers are generally attributed to wolf predation, lack of forage, increased access leading to increased hunting and die-off related to ticks. Mining and forest harvesting may result in temporary displacement of local populations but the RSA is characterized by a large amount of moderate quality moose habitat. An examination of elk observations during Fish and Wildlife moose surveys in the area on the north side of the existing CEA study area indicates scattered elk in low numbers. There is not a substantive elk population in this area. Ungulates and other wildlife respond positively to predictable human activity by a process of habituation which allows the animal to gradually accept new experiences in the absence of negative feedback. Elk, moose, mule deer, white-tailed deer and other wildlife on the CVM make use of the reclaimed landscapes in the presence of active mining. It can be expected that animals local to the LSA area will respond in the same positive manner as at the CVM. It is expected that elk and deer will respond positively to the early stages of upland reclaimed and re-vegetated areas on the LSA particularly in the Robb West, Main and Central zones where there is extensive mixed wood and deciduous habitat adjacent the disturbance area.</p>
				<p>What does CVRI do with the bear dens?</p>	November 22, 2011	<p>CR #7 is a comprehensive study of the mammalian carnivores noted in this concern and potential impacts to them from the Project. Proposed mitigation strategies to help protect these mammalian carnivore species include: 1) Monitor the effectiveness of measures designed to increase understory cover (downed woody debris, shrubs, tree density) on reclaimed mine lands for marten, fisher and lynx. Design a program that includes establishment of specific targets; 2) Monitor response of marten, fisher lynx to existing and planned mine land reclamation using winter tracking techniques; 3) Determine if habitats required for fisher maternal denning occur on or immediately adjacent to the Project and assess their levels of use by fisher; 4) Monitor the effectiveness of establishing and maintaining hiding cover for grizzly bears near Project edges and adjacent to main roads; 5) Measure and monitor human use levels of linear features during summer, winter and fall (hunting) seasons. Assign this as a primary task of the 'bear warden' position. Use this data to design road closure plans; 6) Monitor the effectiveness of voluntary and enforced road closures including gating; 7) Monitor and study specific use of the existing CVM and proposed Project by grizzly bears. Investigate the extent to which existing mines in the region serve as attractive forage sources for grizzlies, and study implications for subregional mortality. Consider non-intrusive methods including DNA hair snagging; 8) Continue long-term, multi-species winter monitoring of mammals (carnivores and prey) to regional habitat fragmentation using the tracking data conducted in 2007, 2009 and 2011 as a starting point.</p>
				<p>[Aboriginal Group] indicated that traditional studies did not cover off places like salt licks, calving areas, bear dens, eagle nests.</p>	January 30, 2012	<p>A minimum 30m buffer is maintained around all watercourses and if an important wildlife component (nest, den, rearing area) is identified, site specific mitigation will be implemented that could include time restrictions. Seepages which develop on the landscape after mining may provide mineral licks for ungulates in the future. These should be identified as permanent features in the final reclaimed landscape.</p>
7	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	general impacts to environmental quality in Project area	<p>Need to monitor for things like spills etc. and how those affect the soil and vegetation near important areas.</p>	July 16, 2008	<p>The incidence of spills occurring at the CVM is low and a comprehensive spill response plan is in place to prevent any adverse effects on the environment including groundwater sources. As mentioned in Section C.6.6.5 to C.6.6.9 of the application, CVRI maintains a Standard Practice and Procedure for Spill Response which includes training all staff members in spill response and clean up measures. Employees are accountable for ensuring that a high level of spill prevention is maintained by following good housekeeping and maintenance practices. In the event of a spill, the effectiveness of response operations are influenced by the time in which the spill is detected, controlled and contained. The initial spill response is designed to address the issues of paramount concern such as safety, environmental and property protection. After a spill is detected, the following actions are taken:</p> <ul style="list-style-type: none"> • ensure that the source(s) of the spill has been shut-off; • determine the level of hazard to personnel, property and the environment. If necessary, the Senior Foreman is called for assistance. The Senior Foreman may elect to handle cleanup operations with departmental personnel. If it appears that the spill could result in damage or harm to personnel, the environment or property, CVRI's Emergency Response Team will be called and respond for cleanup. If additional manpower and spill response expertise is required, it will be obtained through mutual aid support groups, spill cleanup contractors and/or consulting services; • start spill containment, recovery and cleanup operations with equipment on hand; and • initiate spill notification procedures. <p>Initial cleanup operations focus on containing the spilled product to prevent further contamination. The spill is contained to the smallest manageable area possible, reference will be made to the product Material Safety Data Sheet for proper treatment and cleanup procedures. Spilled material is recovered and sent to off-site licensed disposal facilities and or recycling stations as appropriate. Procedures followed in the onsite disposal or short term storage of contaminated material comply with regulatory requirements for disposal/storage. Spills are contained immediately and materials are used to soak the product up or the area is excavated not allowing for the spilled product to seep into the ground or groundwater sources. The CVM has a long-term groundwater monitoring program that monitors groundwater levels and chemistry in various areas of the mine including the active mine areas, future mining areas, reclaimed areas and surrounding the plant, shop and maintenance facilities. Any potential spills would be detected from the numerous piezometers found within the mine permit.</p>
				<p>"The key concerns are that different essential types of trees are be destroyed and how this affects the air quality."</p>	January 28, 2009	<p>Not all of the Project area will be disturbed at one time. CVRI's reclamation objective for the CVM is to reclaim mined lands to meet equivalent land capability with the intended end land uses. The achievement of this objective assures that mining is a temporary use of the land. An ecosystem based management approach has been used for the development of this reclamation plan. The revegetation program proposed for the Project area will use experiences gained over the years at the CVM. Vegetation species will be selected to match site-specific conditions (slope position and exposure) that are consistent with the land use objectives; watershed, timber, wildlife, fisheries and aesthetics/recreation. The revegetation program will plant the dominant tree species; either a conifer or deciduous species. Vegetation on the reclaimed landscape will continue to change after the reclamation activities have been completed. Some of the species in the initial seed mix will not persist, allowing other native species to ingress. Many native species will establish from roots or seed in the replaced soil, and other species will ingress from surrounding areas.</p> <p>The following monitoring will continue within the Project area and throughout the mine site to mitigate against environmental damage:</p>
				<p>General concerns about environmental damage noted</p>	March 30, 2012	<ul style="list-style-type: none"> • groundwater; • surface water; • air; • noise; • wildlife/aquatics; • vegetation/wetlands; • reclamation; and • regulatory compliance.

B	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
8	Potential Impact to Treaty or Aboriginal Rights	Health	general impacts to Aboriginal health quality in surrounding region	"When you see such huge increases of diseases and cancers affecting the native population, it because Mother Earth is sick with so many different destructions that are being done to her, especially through the terrible impacts from industries."	January 28, 2009	<p>Studies of Human Health impact (CR#5), including Aboriginal receptors utilizing a subsistence diet in the region, indicate no substantial Project-related health risks due to exposure to, inhalation, or ingestion of chemicals, toxins, carcinogens, or harmful non-carcinogens. No adverse health effects are expected for the region. CVRI will continue to implement monitoring of air, surface water, and ground water to help mitigate any potential effects. Potential impact to a member of the Aboriginal Group B community through dietary intake cannot reasonably be expected to exceed the conditions as laid out for an Aboriginal receptor in the study of human health. Through its consultation efforts, CVRI is aware that many Aboriginal groups are concerned about the effect of industrial development on wildlife health. They report cases of diseased animals that when butchered are found unfit for consumption, and many attribute this to industrial development. This has even led to research studies into animal health supported by several Treaty 6 First Nations. And of course, Alberta Fish & Wildlife (AESRD) studies numerous animal health issues including Chronic Wasting Disease (CWD), White-nose Syndrome, West Nile Virus, mammalian skin tumours, and numerous others. They have established programs to track, understand, and manage many of these. CVRI recommends that Aboriginal groups continue to press the Provincial Crown and other industrial players on the potential link between industrial activities and animal health. As for Robb Trend Project potential effects on animal health, a discussion of these is found in CR#5, Human Health, Appendix F: Screening Level Wildlife Risk Assessment (SLWRA). This assessment looked at any potentially harmful substances that could be associated with the Project such as air contaminants, heavy metals, polycyclic aromatic hydrocarbons, volatile organic compounds, and others that could be released into the air, or otherwise make their way into soils or surface water, and then be breathed in or eaten by animals. In order to err on the side of caution, the study assumed that potentially affected animals would be exposed to maximum potential adverse effects from the air for their entire life cycle, and that the Project would last 80 years instead of 25. The assessment concluded that predicted acute exposures to the substances through the air would not have an adverse effect on either avian or mammalian wildlife in the region. It was also concluded that predicted chronic exposures to the substances through the air would not have an adverse effect on mammalian wildlife in the region. Most predicted soil concentrations for these substances are not expected to have an adverse effect on wildlife populations in the study area. However, some metals identified during the screening indicated a possible concern under only one of the several screening guidelines, and resulted in more in-depth analysis. This analysis indicated that these metals will be within the typical range of levels across Alberta, and therefore comparison of predicted soil concentrations to background levels indicated that wildlife are not likely to be at any greater risk in the RSA than other populations across Canada. In all instances, the long-term surface water concentrations of the substances are not anticipated to adversely affect wildlife populations in the region. The results of the SLWRA indicate that the overall risks posed to wildlife health from the Project will be low. Therefore, no impacts to wildlife populations are expected based on estimated wildlife exposures to predicted maximum acute and chronic air concentrations and measured soil and surface water concentrations. The confidence in the prediction is high since highly conservative assumptions were applied in the SLWRA. CVRI will continue to work with government agencies, Aboriginal groups, and others to monitor and mitigate against potential effects to animal health in the region.</p> <p>As noted in response #7 above, monitoring will continue within the Project area and throughout the mine site to help ensure the continued minimization of impact to the environment. Based on the ongoing monitoring, changes, if required, can be made to the mine plan or reclamation plan in order to decrease any potential for irreversible effects.</p>
9	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	general effect on environmental quality in surrounding region	<p>We are interested in the preservation of the land that our people have used over time and also migrations in the area and the environment in the area. That is not only talking about the ecosystem but the springs that are there the salt and the mineral licks in the area and the wildlife use areas and calving areas...</p> <p>Must also review the CVRI Environmental Impact Assessment from the aboriginal view of the environment, which is not the same as the white technical review.</p>	<p>November 9, 2011</p> <p>March 30, 2012</p>	<p>CVRI has provided capacity funding in the past specifically for Aboriginal Group B review of its past project applications. Aboriginal Group B has not in the past provided specific information or comment to CVRI based on those reviews. CVRI and Aboriginal Group B currently operate through an interim agreement that provides substantial on-going capacity funding to allow Aboriginal Group B to provide comment and input on aspects of the Project from their Aboriginal perspective. Through these consultation efforts, numerous strategies designed to minimize potential environmental impacts, and strategies aimed at affective reclamation including the use of Aboriginal traditional ecological knowledge, CVRI plans to return the land to a more natural state at the end of its proposed stewardship of the Project area.</p>
10	Potential Impact to Aboriginal Heritage	Sacred and Archaeological Sites	other	<p>I've just been taking you to the current use areas beyond 1951. When ceremonies were outlawed, that is cultural and ceremonial areas used, back in the 1800s and they said you are not going to do anymore ceremonies and they didn't release those prohibitions until 1950's after 1951 the prohibitions were released. Jasper National Park was just released in 2010. That's very recent history. But the sites from 1820 to 1951 which was when the Freedom of Religion Act came into place during that time our people had no structures not until things but it still took until the 1960s before [Aboriginal Group] members trusted the government would not interfere with the ceremonies in public. Some of the areas I've been with Dan basically just the current use. So my question to you always in the back of my mind is what is historical in your determination for your company and government.</p> <p>[Aboriginal Group] indicated that previous traditional studies have recorded only current use sites, not historical sites that may be hundreds of years old.</p> <p>"With regards to the Obed Mountain, Mercoal West, and Yellowhead Tower mines that have already been constructed, CVRI failed to avoid any destruction of the sacred and archaeological sites that would have otherwise been identified by [Leader] had the appropriate consultation, cooperation, and accommodation been undertaken by the Crown prior to project authorization. Any significant damage caused to those sacred and archaeological sites by the projects is the result of the failure of the Crown to consult and cooperate with the [Aboriginal Group] prior to issuing the permits for those projects. Only meaningful consultation and cooperation that compels future protection of remaining sacred sites can satisfactorily protect the territory of the [Aboriginal Group]."</p>	<p>November 9, 2011</p> <p>January 30, 2012</p> <p>March 7, 2012</p>	<p>CVRI recognizes that Aboriginal Group B traditional uses of the region includes locations where ceremonies or other religious activities would have been performed. CVRI has provided substantial capacity funding in the past to Aboriginal Group B to assist in the recording of traditional use sites in its project areas, including the Robb Trend Project area. As these studies were substantial, and the personnel involved were chosen at the sole discretion of Aboriginal Group B leadership, CVRI trusts that the appropriate knowledge holders were consulted to identify Aboriginal Group B traditional use sites in the Project area. As noted above, none of the information collected during the work programs has been shared with CVRI planners to assist in the development of avoidance or mitigation options. The onus has been and is on Aboriginal Group B to inform CVRI and the Crown of the presence of any such sites in the Project area. Given that CVRI has been engaged with Aboriginal Group B regarding the Robb Trend since 2006, it trusts that sites of importance should have been reported to and discussed with both CVRI and the Crown. With respect to archaeological and historic period sites, the management of historical resources in Alberta is governed by the Historical Resources Act and administered by the Provincial Crown (Alberta Culture). Provincial authority to do so has been supported by past Supreme Court of Canada decisions, most notably Kitkatla Band v. British Columbia (2002 SCC 31). Although CVRI has shared some general information regarding its Historical Resources Impact Assessment studies with both Aboriginal groups and the public, regulations under the Act limit information sharing on the part of CVRI and its consultants in order to help protect extant significant sites and any associated information and artifacts. Any questions regarding historical resources should be directed to the Head, Archaeological Survey of Alberta, Historical Resources Management Branch, Alberta Culture.</p>

B	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
11	Consultation Process	Consultation	Consultation	Complaint regarding statement on web reflecting completeness of consultation with "key groups"; "There is potentially already reason for concern that the rights and interests of the [Aboriginal Group] are not fully being taken into consideration as the regulatory process unfolds. For instance, in the document 'Robb Trend Project - Summary Table and Map', published on the Alberta Ministry of Environment and Water website, and enclosed here, one finds a statement that the Robb Trend project has 'received sign off from all key aboriginal groups for most of the Robb Trend Area' (our emphasis). However, the [Aboriginal Group] have not 'signed off' on the project and all aboriginal groups are key. This statement is likely to mislead the reader into believing that the 'Aboriginal question' has been satisfactorily put to rest."	January 30, 2012; March 7, 2012	The statement referred to in this concern was present at one time on the Alberta Environment web site, and was removed following the report of this stated concern to CVRI. CVRI views consultation as an on-going process with Aboriginal Group B and the others with which it is engaged in consultation. Consultation efforts are expected to extend beyond the period of Project development and application into its operational phases, as is anticipated in CVRI's efforts to enter into long-term relationships and agreements with Aboriginal groups where appropriate. CVRI and Aboriginal Group B have an interim agreement in place, and have been involved in discussions to cement a final agreement intended in part to address Aboriginal Group B concerns. CVRI has been engaged in consultation with Aboriginal Group B on the Robb Trend Project since 2006, believes that its efforts on the delegated aspects of the consultation process can be considered well beyond reasonable in terms of the assessment of its adequacy. Nonetheless, it does not consider that "the Aboriginal question has been put to rest," and continues to engage Aboriginal groups regarding the proposed Project and potential impacts to Rights and traditional uses.
12	Capacity Funding	Consultation	Consultation	<p>Also a separate, specific budget that will cover environmental, legal, and administrative costs for the negotiations will be provided. I trust that Coal Valley Mine Inc. will be ready to negotiate. With the two sides on even footing, benefit agreement negotiations can then commence.</p> <p>I'm also concerned that there is a budget in place funded through outside sources that allows the [Aboriginal Group] to fulfill their promises.</p> <p>General commentary on need for additional funding for consultation.</p> <p>"I appreciate the commitments in principle CVRI has either proposed, or agreed to; during the meetings we have had over the past few months but reiterate that it is impossible to conduct fair and equitable negotiations without adequate funding to hire consultant and legal assistance in this process, a point which you promised to address in our next meeting."</p> <p>"Although we appreciate this commitment to continued funding, we want to be clear that in going forward the funding must be increased to a level that adequately supports the [Aboriginal Group] in the tasks at hand whether they be providing input for the EIA or participating in negotiations towards a 'Mutual Benefits Agreement' which, as can be seen from the law and policy on meaningful consultation and accommodation articulated above, are two intimately related tasks. Without adequate funding provided in the immediate term we will no longer be in a position to provide input towards the EIA. Likewise, as was discussed in the last correspondence from [Leader] to you at the last paragraph, without adequate funding ensuring our continued participation in negotiating a 'Mutual Benefits Agreement', we would simply not be in a position to confirm that we were adequately consulted and accommodated."</p>	<p>April 22, 2008</p> <p>November 9, 2011</p> <p>March 19, 2012</p> <p>April 29, 2012</p> <p>May 25, 2012</p>	CVRI and Aboriginal Group B have an interim agreement in place that provides substantial funding to allow Aboriginal Group B to maintain consultation efforts with the company regarding the Robb Trend Project and other related activities. As noted above, CVRI believes that its efforts on the delegated portions of the consultation process are well beyond reasonable in terms of the assessment of its adequacy, with that funding being a prime example of the commitment to continued fair and reasonable dealings. CVRI in no way regularly engages legal counsel in its consultation efforts with Aboriginal groups, and expects that even should Aboriginal Group B require modest amounts of legal advice at certain stages of the process, adequate funding is in fact in place. CVRI is not solely responsible for the support and development of Aboriginal Group B's consultation program, and suggests that additional funding for that be sought from relevant Provincial and Federal ministries should the community believe funds available to them for these efforts are insufficient. The Crown is ultimately responsible for consultation given that the Duty to Consult is vested in the Honour of the Crown, not CVRI to whom only aspects of the consultation process have been delegated.
13	Compensation	other	other	<p>Request for "[Aboriginal Group] participation" in project.</p> <p>Request for compensation for disturbances associated with the Obed Mine.</p> <p>Clause for compensation for present and past disturbances in MOU.</p> <p>Compensation required for lack of consultation in past and impacts to traditional territory.</p>	<p>May 2, 2008</p> <p>November 22, 2011</p> <p>January 30, 2012.</p> <p>March 30, 2012</p>	At a November 22, 2011 meeting Les LaFleur indicated that CVRI would not be prepared to offer any compensation for operations that may have disturbed Aboriginal Group B "sites" in the past or disturbed lands on which their members may have undertaken pursuits related to Aboriginal Rights and traditional uses such as hunting and collecting. CVRI is unaware of any decisions indicating that Aboriginal Group B has demonstrated Title to the Project area or portions thereof, and will not be offering compensation in the forms of payments or royalties to any Aboriginal group. CVRI does recognize that the development of the Project can offer mutually beneficial opportunities in the forms of employment and contracting opportunities to potentially affected Aboriginal groups, and that CVRI can help provide community support to Aboriginal groups from time to time as a good "corporate citizen." It has done so with Aboriginal Group B in the past and continues to discuss ways in which Aboriginal Group B can potentially benefit from the development of natural resources in the region.
14	Royalty Fees	other	other	Request for clause in MOU on royalty or lease fees for use of territory.	November 9, 2011; January 30, 2012	CVRI will not be offering compensation in the forms of payments or royalties to any Aboriginal group. Should Aboriginal Group B believe it is entitled to compensation in the form of lease or royalty fees, the Provincial and Federal Crowns should be contacted to discuss this issue.
15	Recognition of Aboriginal Title	other	other	<p>Aboriginal title to area asserted as proven.</p> <p>Request for letter of support on [Aboriginal Group] historical ties in the region.</p> <p>Assertion that [Leader] is a Chief with a land claim on a traditional territory (on which Project lies).</p> <p>CVRI must recognize [Aboriginal Group] aboriginal title and rights and agree to their protection in order to comply with their position during negotiations with the Federal government.</p>	<p>April 22, 2008</p> <p>November 22, 2011</p> <p>January 30, 2012</p> <p>March 30, 2012</p>	The issue of Aboriginal Title is a complex legal issue beyond the scope of the present Project application. At a November 22, 2011 meeting, Les LaFleur indicated that CVRI might be willing to provide some type of letter of support on historical ties in the area and their relationship with Aboriginal Group B. On March 30, 2012 CVRI representatives made it quite clear that the issue of Aboriginal Group B and Aboriginal Title in the area was in no way under CVRI's jurisdiction, and CVRI would take no steps to "recognize" Aboriginal Group B Aboriginal Title in the region. The Provincial and Federal Crowns should be contacted to discuss this issue.

B	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
16	Employment Opportunities	Socio-economic development	increased employment for underemployed sector of Aboriginal society	environmental monitors	July 16, 2008; October 30, 2009; March 9, 2011; October 19, 2011	CVRI has been engaged with Aboriginal Group B for several years and has discussed this concern with employment opportunities at the mine on numerous occasions. Some of the proposed terms of the discussed final agreement include provisions aimed at improving employment opportunities for Aboriginal Group B members either directly or through support for contracting opportunities of Aboriginal owned businesses. The possibility of hiring part-time Aboriginal Group B environmental monitors has been discussed, as has been methodologies to encourage additional employment. Discussions regarding a final agreement between the parties are on-going, thus any specific terms in this regard have not been settled nor otherwise agreed to. CVRI encourages members of the Aboriginal community to apply for jobs at the mine, both for trade and general labour positions, and has taken some steps to assist or accommodate Aboriginal circumstances in their employment. That being said, CVRI will neither implement a general Aboriginal employment "quota" nor one directed specifically at Aboriginal Group B or any other potentially affected Aboriginal group. At the November 22, 2011 meeting Les LaFleur accepted resumes from 4 members of the Aboriginal Group B community to deliver to Human Resources at the Coal Valley Mine.
				Involve people in employment opportunities.	October 19, 2011	
				...for example how many people, how many of our people [Aboriginal Group] are employed? Yet it says you will hire local people first. Not too many of our people are hired directly or even the subcontractors that they work for. Sometimes those contractors they come and go but there is nothing there for our people but they are going to be there long after these other little guys, and go.	November 9, 2011	
				[Leader] expressed concern that when his people applied for jobs they did not get them	November 22, 2011	
				Concern about need for Aboriginal employment targets, i.e. quotas or affirmative action plan.	January 30, 2012	
				Expectation stated to be involved in employment opportunities, including as environmental monitors.	March 30, 2012	
17	Contracting Opportunities	Socio-economic development	development of Aboriginal owned business; increased employment for underemployed sector of Aboriginal society	Desire for the development of [Aboriginal Group] businesses and contracting opportunities expressed.	November 22, 2011	CVRI has been engaged with Aboriginal Group B for several years and has discussed this concern with contracting opportunities at the mine for Aboriginal owned businesses on numerous occasions. Some of the proposed terms of the discussed final agreement include provisions aimed at improving contracting opportunities for Aboriginal Group B businesses. Discussions regarding a final agreement between the parties are on-going, thus any specific terms in this regard have not been settled nor otherwise agreed to. At a November 22, 2011 meeting Les LaFleur indicated that if the Aboriginal Group B community established businesses, CVRI would be happy to work with those businesses to provide opportunity for their growth if available, bearing in mind that CVRI is unionized and outside contracting opportunities are limited. Opportunity for growth exists and will be investigated. Aboriginal Group B must continue to pursue options with other industrial players in the region. Using existing resources and working under an agreement between the parties if reached, CVRI expects to be able to make more positive impacts regarding Aboriginal Group B contracting opportunities in the future.
				Discussion of clause on contracting opportunities to be included in MOU including support for equipment purchase.	January 30, 2012	
				Expectation stated to be involved in contracting opportunities.	March 30, 2012	
18	Ceremonial Support	Cultural Awareness and Survival	enhance intra- and inter-community awareness and cultural education	[Aboriginal Group] requested funding to help support seasonal community ceremonial activities	November 22, 2011	As on numerous occasions in the past, CVRI continues to support Aboriginal Group B ceremonial and cultural programs through donations on an ad hoc basis, and will continue to do so in the foreseeable future. As part of the development of a corporate Aboriginal consultation plan, the formalization of such a funding program is one of the items under consideration.
19	Cultural Program Support	Cultural Awareness and Survival	enhance intra- and inter-community awareness and cultural education	[Aboriginal Group] indicated that any agreements should include programs for Aboriginal awareness, protocols, and education.	November 22, 2011	Representatives from CVRI have been engaged with members of their corporate team to move towards the development of a corporate Aboriginal consultation plan aimed at fostering better relationships with Aboriginal groups and increasing awareness of Aboriginal cultural and social issues among employees and shareholders. An agreement between Aboriginal Group B and CVRI may or may not provide specific provisions regarding this issue. However, CVRI is confident that the existing interim agreement, the consummation of a final agreement, and the development of a corporate Aboriginal consultation policy have served and will serve to meet the stated goal of increased awareness of Aboriginal culture and issues.
20	General Community Infrastructure Support	Community Development	enhance Aboriginal social programs and services	Request for and discussions of CVRI funding support for a new [Aboriginal Group] community centre.		As on numerous occasions in the past, CVRI continues to support Aboriginal Group B ceremonial and cultural programs through donations on an ad hoc basis, and has investigated ways in which it may be able to assist in this endeavour. Discussions are proceeding.

B	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
21	Prejudice and Discrimination	Community Development		If we have people working at the mine, one of things I want to see is that there is not the prejudice, from the workers against the native people that's important for me, and we want to have it in that agreement. I don't want anyone to make any racial comments when they come to work, the [Aboriginal Group].	November 9, 2011	Representatives from CVRI have been engaged with members of their corporate team to move towards the development of a corporate Aboriginal consultation plan aimed at fostering better relationships with Aboriginal groups and increasing awareness of Aboriginal cultural and social issues among employees and shareholders.
22	Impact Benefit Agreements, Compensation	Community Development	other	Long-term agreements and terms of an MOU have been discussed on numerous occasions.	October 19, 2011 and January 30, 2012	CVRI and Aboriginal Group B currently have an interim written agreement in place and are in discussions regarding a final agreement to replace the interim. CVRI has offered to enter into an MOU with Aboriginal Group B that provides some capacity for continued consultation, environmental monitoring, participation in reclamation activities, and employment and contracting assistance or opportunities. Contrary to some of the statements made by Aboriginal Group B representatives, the purposes of any such agreements are not to provide compensation for the use of the land and past and future disturbances. To date Aboriginal Group B representatives have countered with demands that go far beyond CVRI's legal or moral responsibilities. As the scope of that agreement as requested by Aboriginal Group B goes well beyond the Robb Trend and its potential impacts to Rights and traditional uses, it may not be possible to conclude such an agreement to both parties' satisfaction prior to Project approval or development.
				"...I must emphasize that the [Aboriginal Group] will not be in a position to comment on the EIA before the long term agreement is finalized, and may well be obliged to inform the appropriate regulators of the situation."	March 19, 2012	
				"Currently, the [Aboriginal Group], as represented by their [Leader], are in discussions with representatives of CVRI for the purpose of concluding a Memorandum of Understanding, and eventually an Impact Benefit Agreement. The intention is for these agreements to satisfactorily compensate the [Aboriginal Group] for use and enjoyment of their lands by CVRI and for all damages to traditional territory resulting from the actions of CVRI"	March 7, 2012	
				"The fact that such integration has not occurred in most provinces does not lessen the requirement for consultation and accommodation under the constitution and the case law nor the probability of project delays if appropriate accommodation, as demonstrated by a signed mutual benefits agreement executed by industry and the affected first nations, has not been ratified in earlier discussions."	May 25, 2012	

C	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Date Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
1	Potential Impact to Treaty or Aboriginal Rights	general traditional use concerns	general traditional use concerns	"Upon completion of the survey many areas within the project area were identified to have and to continue to support the three groups traditional use. In the modern day the use continues to support hunting/ gathering activities as well as ceremonial functions. Ceremonial herb gathering and the actual ceremonies are prominent in the area to this day. Much of the project area traverses the traditional and present day hunting area frequented by all three groups."	October 2007	CVRI has been consulting with Aboriginal Group C since 2006 regarding its proposed projects including the Robb Trend Project, and believes that its efforts on the delegated aspects of the consultation process can be considered well beyond reasonable in the assessment of adequacy. Through many discussions and two sets of traditional use studies and field visits, the community had opportunity to voice its concerns about the Project, which included concerns related to traditional use sites in the region and possibly associated with the Project area. The conclusion of the October, 2007 traditional use report states: "Through the collective and cooperative effort of the three [Aboriginal Groups] and Coal Valley Mine representatives, consultation has occurred that has led to the identification of culturally significant sites and livelihood component parts to current day practice. The mitigative measures determined by all parties gives comfort that, if followed, the three groups will see a continuation of availability for future exercise of their way of life. Any authorizations forthcoming are contingent upon written conformation by Coal Valley Resources Inc., of agreement to the mitigative measures and outstanding cost payment." Such written confirmation was provided by Mel Williams in December, 2007. The conclusion of the June 6, 2011 traditional use report states: "Through the site visits of the proposed access and haul roads, the [Aboriginal Group] Elders and Monitors, were not concern of any other impacts. During the reclamation from the Coal Valley Representatives, the elders observed the past reclamations done by the mine and their observations were satisfied, that the ground, and the seeding of the many type of trees looked very good. Consultation has occurred that has led to the identification of culturally significant sites and livelihood components parts to current day practice. The [Aboriginal Group] elders and Monitors determined by all parties give comfort that, if followed, the nations will see a continuation of availability for the future exercise of their way of life." In letters dated June 6, 2011 and December 7, 2007 the [Aboriginal Group] First Nation indicated that any impacts to culturally significant sites had been mitigated by CVRI through a meaningful consultation process, and provided its authorization for the Project to proceed. A written agreement is in place between the parties providing for continuing avoidance of some sites in the vicinity of Coal Valley operations important to Aboriginal Group C and continuing annual consultation on Coal Valley operations. CVRI continues to consult with Aboriginal Group C on the Robb Trend Project and its other operations. As discussed in some of the responses below and on other Aboriginal concern response tables, and as detailed in the Environmental Assessment, CVRI has a number of strategies in place to mitigate any Project effects on wildlife and the environment. To date, no Aboriginal Group has demonstrated that the development of the Project will have a particularly deleterious, non-mitigable effect on Rights to hunt, fish, and trap for food. CVRI does acknowledge that its Project will occupy Crown land otherwise available for the exercise of Rights and traditional uses for a period of time during mine development, operation, and reclamation. CVRI notes that access to proposed Project lands to pursue Rights and undertake traditional activities will not be restricted in the entire area upon Project approval and it will not be permanent, as it will mine the Robb Trend in stages over a 25-year period. The first stages will involve road construction as early as 2013, with the first mine pits opening in the center of the area as early as 2014, but with development of mining areas towards the southeast not until 2021, and in the areas west of the town of Robb not until 2027. The reclamation plans for the Robb Trend will incorporate Aboriginal traditional ecological knowledge, including that contributed by Aboriginal Group C, to return the land to a more natural, useable state once mining activities have ceased. Reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. A large proportion of the surrounding region, with similar plants, animals, and other resources, will remain accessible for the undertaking of Rights and traditional uses during the development of the Project.
				"Upon completion of the survey many areas within the project area were identified to have and continue to support [Aboriginal Group] Traditional Use. In the Modern day the use continues to support hunting/gathering activities as well as ceremonial functions. Ceremonial herb gathering and the actual ceremonies are prominent in the area to this day. Much of the project area traverses the traditional and present day hunting area frequented by several First Nations people."	June 6, 2011	
				There may also be a timing issue around use of ceremonial sites in the area. For example, there may be hunting activities during ceremonial times that will need to be accounted for in mine operations.	October 2, 2006	
2	Potential Impact to Treaty or Aboriginal Rights	Hunting	loss of access to specific hunting locations in Project area	"In the same area as the grave sites exists a current hunting area, with the presence of an integral part of moose habitat that can also be mitigated by the buffer area used to protect the grave sites."	October 2007	The October, 2007 traditional use report states that "To mitigate the impacts to the grave sites and moose habitat, it was suggested and agreed that an adjustment to the project of an agreed upon set back from the prescribed area is needed. This set back area for the moose habitat and graves sites are incorporated an indicated in a revised project area map. This map is provided as Attachment 1." These terms form part of the agreement between CVRI and Aboriginal Group C which led to the letters of December 7, 2007 and June 6, 2011 in which Aboriginal Group C indicated that any impacts to culturally significant sites had been mitigated by CVRI through a meaningful consultation process, and provided its authorization for the Project development to proceed.
3	Potential Impact to Treaty or Aboriginal Rights	Fishing	removal of fish resources/habitat in Project area	How good is the fish habitat in the reclaimed lakes?	October 2, 2006	The lakes are newly made so fish habitat has to be established along the shoreline. The lakes are formed as a result of mine excavation that goes below the water table. When the mining is completed the excavation is allowed to fill with groundwater. The edge of the lakes are contoured, habitat (soil and water plants) is built along the shores of the lake to support fish and then the lakes are stocked. CVRI has studied the water quality of its end-pit lakes. There have now been three sets of limnological and ecological studies conducted on CVM end-pit lakes: the studies in the 1990s conducted on Lovett, Silkstone, and Stirling (Pit 24) lakes (Agbeti 1998, Mackay 1999); the 2006 studies conducted on Lovett, Silkstone, and Stirling (Pit 24) lakes plus Pit 35 and Pit 45 lakes (Hatfield 2008), and the current study. Taken together, the results of these studies indicate that there may be fewer constraints of water quality to the ecological viability of end-pit lakes in the CVM area than those described in End-Pit Lake Working Group (2004): 1. The concentration of a number of water quality variables, such as nutrients and major ions, are higher in end-pit lakes than in natural lakes, but these higher concentrations are not at levels that would affect the ecological viability of the end-pit lakes. 2. There have been relatively few instances of measured water quality variables, including metals, exceeding provincial or federal water quality guidelines. 3. The incidence of water quality guideline exceedance is not measurably greater in end-pit lakes than in natural lakes in the CVM area. 4. The trophic status of end-pit lakes is similar to that of natural lakes in the CVM area. The exception to this is dissolved oxygen. The results of this study indicate there are portions of end-pit lakes in all seasons sampled with concentrations of dissolved oxygen that are below provincial guidelines for the protection of aquatic life. The same is true of Fairfax Lake, the natural lake that was surveyed as part of this study. The depth patterns of dissolved oxygen in the lakes that were studied are related to processes of lake stratification and turnover.

C	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Date Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
4	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	removal of medicinal and food plant species in Project area	We are also concerned about the medicinal plants that might be disturbed during mining and whether they will remain.	October 2, 2006	<p>Discussion of proper mitigation efforts led to the agreement on the process as outlined in the October 2007 traditional land use report. The June 6, 2011 traditional use report also adds: "Throughout the project area the groups found and identified numerous medicinal herbs and berries. The [Aboriginal Group] people are very traditional, that they presently still use all the plants listed above. To ensure that specific medicinal herbs and ceremonial plants regain their true potency and values to the nations, a specific protocol was performed by the elders at the camp, so that all plants will regrow for the future of our children and their children." CVRI will account for medicinal plants identified by Aboriginal Group C and other FN communities that may be disturbed during the mining process to incorporate them into the reclamation process. "To ensure that impacts to specific medicinal herbs and ceremonial plants are properly mitigated, a progressive project impacts assessment will be implemented on an annual basis. The following regimen will be set into action: An annual, detailed activities impact map will be generated by CVM to show the actual disturbance area proposed. This map will be reviewed to determine proximity to any identified site.; CVM will provide a review of the plant list to determine rarity and risk potential.; Acceptable alternative sources of 'at risk rare' plants will be identified (if possible); if no other source for at risk plants are found transplantation options will be explored. Any transplanting attempt will follow appropriate aboriginal protocol.; In the event transplanting is not possible, avoidance will be applied to the operations planning. ; The process for mitigation of the herbs, plants, and estates may require a process of harvesting, nurturing, and replanting. Select members from each group would be contracted to participate in the transplanting activity incorporating all three groups protocols and ceremonial requirements. Follow-up plant survival review would be planned and conducted." These terms form part of the agreement between CVRI and Aboriginal Group C which led to the letters of December 7, 2007 and June 6, 2011 in which Aboriginal Group C indicated that any impacts to culturally significant sites had been mitigated by CVRI through a meaningful consultation process, and provided its authorization for the Project and continued Coal Valley development to proceed.</p> <p>CR #13 (Vegetation) of the Project Application discusses many plants identified to CVRI as important to the Aboriginal community. Aboriginal consultation meetings and field visits conducted by CVRI with First Nations and Aboriginal representatives resulted in the identification of a list of vegetation species which are valued by the Aboriginal groups for their uses, including those identified by Aboriginal Group C. The field surveys identified 88 TEK vegetation species which occur in the LSA (CR # 13, Appendix 5). Of the TEK vegetation species documented during field surveys, 8 are typically used for critical medicinal purposes, 20 are used for food, and 60 are used for other purposes. None of the TEK vegetation species are on Alberta's 2011 Tracking and Watch List, used to identify species that are rare or otherwise special in some way. TEK vegetation have a very high potential to occur in ecosite phase d1, e2, e3 and i1 and a high potential to occur in c3, e1 and j1 in the Foothills Natural Sub-regions (CR # 13, Table 4.7). These occurrences have been mapped and documented to identify species that are within the LSA and within the Project Footprint. In total 2,264.9 ha of ecosite phases with very high potential to support TEK vegetation will be removed by the Project Footprint, this area encompasses 22.4% of the very high potential area in the LSA. As well, in total 1,354.1 ha of ecosite phases with high potential to support TEK vegetation will be removed by the Project Footprint, high potential area encompasses 13.4% of the high potential area in the LSA. Fifty-four percent (5,467.0 ha) of areas which support TEK vegetation will be removed from the LSA by the Project Footprint. However, TEK vegetation Project effects at the LSA level do not necessarily lessen the accessibility of TEK vegetation for Aboriginal groups given that TEK vegetation is available in the RSA and region. The distribution of ecosite phases which support TEK vegetation will be accessible in the RSA following removal of ecosite phases by the Project Footprint in the LSA. It is assumed that ecosite phases within the LSA are similar in composition and distribution as those in the RSA; consequently, TEK vegetation will still be accessible in the RSA. Mitigation measures for TEK vegetation effects should include but will not be limited to the following:</p> <ul style="list-style-type: none"> • inviting Aboriginal groups to participate in designing mitigation measures which contribute to the sustainable management of TEK vegetation, and which compliment the re-vegetation measures proposed in the Application; • working with Aboriginal groups, who may be affected by the Project, to locate alternative areas where TEK vegetation is accessible during the life of the Project; and, • implementing a re-vegetation program which aims at the re-establishment of ecosites common to the pre-disturbed landscape. The re-establishment of pre-disturbance ecosites will, over time, again support TEK vegetation. <p>With the implementation of mitigation measures the Project is expected to have a limited spatial effect, and a moderate temporal effect. Potential Project effects are related to the attenuation of available TEK vegetation (vegetation used for medicinal, food and other uses) as a result of the removal of ecosite phases within the LSA. CVRI is committed on working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation. Accordingly, it is anticipated that the Planned Project effects on TEK vegetation will be local in extent and over the long term, all areas used for harvesting TEK vegetation will be re-established. CVRI will continue the consultation with the Aboriginal groups as information is brought forward regarding specific impacts to traditional uses as well as undertake further discussions with Aboriginal groups on specific impacts and mitigation measures. Negotiations with Aboriginal groups will also continue on a case by case basis for avoidance of specific plant species if possible. Not all of the Project area will be disturbed at one time. CVRI can work with local Aboriginal groups to identify periods of time in certain locations (undisturbed by mining and safe to access in which berry picking and medicinal plant gathering can occur.</p> <p>TEK vegetation have a very high potential to occur in ecosite phase d1, e2, e3 and i1 and a high potential to occur in c3, e1 and j1 in the Foothills Natural Sub-regions. These ecosites will be targeted in the reclamation process in order to provide the traditional knowledge and native plant species an environment suitable for survival. CVRI is committed on working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation.</p>
				Request to consider using [Aboriginal Group] members to replant during reclamation activities.	September 6, 2007	
				"Throughout the project area the three groups found and identified numerous medicinal herbs, ceremonial plants, and food source roots and berries. Mitigative measures for this component require strict adherence to [Aboriginal Group] custom, tradition, and method."	October 2007	
				Proper mitigation measures for plants, transplanting, ceremonies, rarity.	October 17, 2007	
				The October 2007 traditional use report includes the following list of important plants: Seneca snake root, soapberry (buffaloberry), Balsam fir, Alsike clover, Red baneberry, blueberries (low bush blueberries, high bush blueberries, huckleberries), raspberries, mountain cranberries, yarrow, wild strawberries, Labrador tea, cow parsnip, spiny wood fern, horsetail, fireweed, common bearberry, bunchberry, tamarack, Saskatoon, ox-eye daisy, lichen, moss fungus, lodgepole pine, twisted stalk, liverberry, juniper, false solomon seal, mooseberry, wild sarsparilla, clematis, mountain ash, bracted honeysuckle, gooseberry, wintergreen, wild mint, arrowhead, ratroot, poplar bark."	October 2007	
"For the purposes of identifying medicinal herbs, much of the plants were identified that these plants do grow in other areas also, the elders were not concerned due to the herbs they identified do grow back on their own by mother earth. The herbs are as follows: Seneca snake root, soapberry (buffaloberry), Balsam fir, Alsike clover, Red baneberry, low bush blueberries, high bush blueberries, huckleberries, raspberries, mountain cranberries, yarrow, wild strawberries, Labrador tea, cow parsnip, spiny wood fern, horsetail, fireweed, common bearberry, bunchberry, tamarack, Saskatoon root, ox eye daisy, lichen, mess fungus, lodgepole pine, twisted stalk liverberry, juniper, false solomon seal, mooseberries, wild sarsparilla, clematis, mountain ash, bracted honeysuckle, gooseberry, wintergreen, wild mint, arrowhead, ratroot, poplar bark."	June 6, 2011					
5	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	direct impact/removal of burials in Project area	There are some gravesites located in Range 14, Township 46, about 300 meters from the Pembina River that are protected.	October 2, 2006	<p>CVRI is aware of the gravesites mentioned during initial consultation near the Pembina River and will not be mining near that area as it is outside of the Project area in the vicinity of sites important to Aboriginal Group C and other Aboriginal communities. Traditional use studies by Aboriginal Group C in 2007 resulted in the recording of other burial sites closer to the Robb Trend Project area, but located outside of the currently proposed Project area. Discussions on the topic of important sites, most notably burials, resulted in the application not of a generic buffer zone but rather specific areas of avoidance for the sites in question. "To mitigate the impacts to the grave sites and moose habitat, it was suggested and agreed that an adjustment to the project of an agreed upon set back from the prescribed area is needed. This set back area for the moose habitat and graves sites are incorporated an indicated in a revised project area map. This map is provided as Attachment 1."</p> <p>These terms form part of the agreement between CVRI and Aboriginal Group C which led to the letters of December 7, 2007 and June 6, 2011 in which Aboriginal Group C indicated that any impacts to culturally significant sites had been mitigated by CVRI through a meaningful consultation process, and provided its authorization for the Project development to proceed. Regarding any unrecorded burials, if during operations possible burials are encountered in the Project area, CVRI is prepared to work with Aboriginal communities and regulators to confirm burial association and devise an appropriate avoidance or mitigation strategy. The presence of human remains or burials on Project lands, whether Aboriginal or not, is subject to Federal and Provincial laws and regulations including Section 182 of the Criminal Code, the Alberta Cemeteries Act, and potentially the Alberta Historical Resources Act. Knowingly disturbing human remains (improper interference) without legal authorization constitutes a criminal act, and knowingly disturbing burials, recorded or not, without legal authorization contravenes the Cemeteries Act and potentially the Historical Resources Act. In addition to moral duties, sanctions of both a criminal and financial nature for any actions provide significant impetus for CVRI to act swiftly and accordingly should potential burials be identified during development activities. Mine management will ensure that all supervisors and workers are aware of the legal and moral issues regarding possible burials.</p>
				Question regarding "sacred burial" sites and what is done.	August 9, 2007	
				Request to avoid grave sites near Robb Trend	September 6, 2007	
				Issue of buffer zones for important sites discussed.	October 17, 2007	
				"Grave sites have been identified in the south-central region of the project area. The project area is very close to the grave sites, therefore, discussions with Coal Valley Mine have lead to agreeable mitigative measure."	October 2007	

C	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Date Concern Raised	Proposed Proponent Mitigation, Accommodation, or Response
6	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	direct impact/removal of ceremonial locations in Project area	Below the Pembina River there is a Sundance site that we use annually, located just south of the former mine areas. This site is important to a number of First Nations who use this area, as was mentioned earlier.	October 2, 2006	The October 2007 traditional use report provides the UTM coordinates for several burials, campsites, and a "homestead." None of these sites are within the proposed Robb Trend permit area. The two burials recorded in 2007 nearest the Robb Trend have been mitigated through agreed-to avoidance as discussed above. The remaining sites are located well outside of the Robb Trend Project area. CVRI has maintained discussion with Aboriginal Group C regarding these sites, and has worked with them on continued avoidance or in some cases potential enhancements (campsites) of them. CVRI is aware of the location of the Sundance site in question. It is located well outside of the Project area and will not be disturbed by CVRI operations.
				The October 2007 traditional use report provides the UTM coordinates for several burials, campsites, and a "homestead."	October 2007	
7	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	general impacts to water quality in Project area	What effect does coal mining have on nearby rivers? What kind of erosion is occurring as a result of mining?	October 2, 2006	Mining activities are expected to reduce high flows and low flows are expected to either remain the same, slightly decrease or slightly increase. Annual runoff may have modest variations dependent on mining activities at the time (e.g. pit dewatering). Temporary water diversions will also contribute to some slight variations in flow quantity for short periods of time. Instream flows will be maintained by bypass pumping. Depending on the extent of the disturbance footprint within the watershed the significance to flow quantity may remain the same, increase or decrease depending on the mine progression and seasonal variability. The CVM will be implementing a surface water management plan throughout the life of the Project. This plan includes the collection and treatment of mine affected water. All water affected by mining (sediment filled) will be treated in settling ponds prior to being released to the adjacent environment. Released water will comply with the approval conditions. No significant water quality changes are expected. CVRI, when the mine plan allows, practices progressive reclamation. As a mine area is completed reclamation can start with recontouring operations. Lands that have been recontoured and top soil placed upon can be seeded with an initial grass/legume seed mix to decrease erosion potential.
8	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	general impacts to environmental quality in Project area	During field traditional use studies, [Individual] indicated that no new specific concerns were identified as a result of the field work, but [Aboriginal Group] remains concerned about general environmental stewardship issues.	May 27, 2011	CVRI has proposed a number of mitigation measures in its Project Application to minimize potential environmental impacts associated with the development. Clearly, the Project will disturb large amounts of land through mining and associated activities. The careful implementation of proposed mitigation will alleviate potential direct and indirect impacts, but as noted, careful environmental stewardship will be required. CVRI will also use traditional ecological knowledge gathered through the participation of Aboriginal Group C and other Aboriginal groups to assist in reclamation activities, with the goal of returning Project areas to a state appropriate for the undertaking of Treaty Rights and traditional uses in the future. The development of the Project, particularly the development of the mine pits, soil and rock stockpiles, dumps, and roads, will definitely impact plants and animals in the disturbance zones. Through the mitigative measures proposed in the Project Application and discussed in this table, CVRI will limit those heaviest impacts to the disturbance zones, and minimize or eliminate any potential effects in adjacent or downstream areas. Through the reclamation activities also discussed, CVRI will return the land in the impact zones to a more productive state in the future. CVRI will complete longer-term monitoring on the impact to medicinal and other plants and for general environmental monitoring, and continue to consult with the Aboriginal communities regarding future development plans. CVRI will ensure that environmental factors and protection measures are taken into consideration during all phases, from planning to reclamation, of mine development. Technically proven and economically feasible measures will be taken which protect environmental quality for air, water, vegetation, wildlife and land resources. CVRI undertakes as a priority "pollution prevention" in preference to "pollution cleanup". Pollution prevention measures in place at CVRI include: <ul style="list-style-type: none"> • reuse and recycling of products; • substitution of products purchased with more "environmentally friendly" materials; • equipment modifications and improved operating efficiencies; and • conservation of materials and resources. CVRI is an active participant in many environmental and regulatory initiatives and will continue to be an active member of these programs during the operating life of the Project. Programs range from participation in regional programs such as the West Central Airshed Society (WCAS) and West Fraser's Forest Resources Advisory Group (FRAG), to provincial and national initiatives. The purpose of the Environmental Protection Program at the CVM is to first prevent and second to minimize adverse environmental impacts resulting from mine related operations. The program will be implemented in the Project area through the following on-site mechanisms: <ul style="list-style-type: none"> • adaptive management approach to environmental risk assessment; • Safety, Health and Environment Committee (SHE) comprised of key CVRI employees; • emergency response and wildfire control and prevention; • waste management program; • spill response and clean up procedures; • operating policy commitments; and • site reclamation.
9	Potential Impact to Aboriginal Heritage	Historical Resources	requests for information on location and nature of recorded Historical Resources in the Project area	If you do find an archaeological site what would you do?	October 2, 2006	The management of historical resources in Alberta is governed by the Historical Resources Act and administered by the Provincial Crown (Alberta Culture). Provincial authority to do so has been supported by past Supreme Court of Canada decisions, most notably Kitkatla Band v. British Columbia (2002 SCC 31). CVRI's consultants undertook a detailed Historical Resources Impact Assessment of the Robb Trend Project area, recording over 70 archaeological and historic period sites within or near the Project area as detailed in the earlier Supplemental Information Request responses. Any sites not recorded during these studies are covered under Section 31 of the Act, which requires a proponent to contact the government before proceeding with development should an unrecorded site be encountered and identified. Many of the recorded sites will not be impacted, and other sites are considered to be non-significant, in other words not worthy of further investigation prior to disturbance. Several significant sites are located in Project impact zones. As with its previously proposed mining extensions, CVRI has and will work closely with its consultants and the Historical Resources Management Branch to either avoid significant historical resources or to mitigate the impacts to them prior to development through additional data collection. Although CVRI has shared some general information regarding its Historical Resources Impact Assessment studies with both Aboriginal groups and the public, regulations under the Act limit information sharing on the part of CVRI and its consultants in order to help protect extant significant sites and any associated information and artifacts. Any questions regarding historical resources should be directed to the Head, Archaeological Survey of Alberta, Historical Resources Management Branch, Alberta Culture.
10	Employment Opportunities	Socio-economic development	increased employment for underemployed sector of Aboriginal society	Do you have labourer jobs?	October 2, 2006	CVRI encourages members of the Aboriginal community to apply for jobs at the mine, both for trade and general labour positions, and has taken some steps to assist or accommodate Aboriginal circumstances in their employment. That being said, CVRI will neither implement a general Aboriginal employment "quota" nor one directed specifically at Aboriginal Group C or any other potentially affected Aboriginal group.
				How many aboriginal people work at the mine site?	October 2, 2006	
				[Aboriginal Group] would like to have a person from the [Aboriginal Group] assigned to be the onsite monitor during mining, when it commences, to ensure that CVM lives up to the promises to protect, avoid or mitigate significant FN sites. CVM would pay that person to monitor their operations.	October 2, 2006	
11	Training Opportunities	Socio-economic development	increased employment for underemployed sector of Aboriginal society	What kind of training programs are there?	October 2, 2006	We do have some trades apprentice positions at the mine. There is on the job training for equipment operators. CVRI and Sherritt are in the process of developing a corporate Aboriginal consultation plan. One of the items under a consideration is a scholarship or bursary program designed to help Aboriginal students fund continuing education. When and if such a program is developed, CVRI anticipates that Aboriginal Group C members would have access to it.
12	Contracting Opportunities	Socio-economic development	development of Aboriginal owned business; increased employment for underemployed sector of Aboriginal society	Do you use mine equipment for reclamation or do you use contract people and equipment? We have a contracting company that provides heavy equipment and operators that is available for work at the mine.	October 2, 2006	The CVM uses mine equipment for the reclamation program. The availability of large machinery and experienced operators that are familiar to the site allows for an efficient and economic reclamation process. If the opportunity arises that a need for further machinery and operators the CVM will advertise for such a workforce and hiring will be based on experience, cost, safety and insurance. Les.....

D	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation or Response
1	Potential Impact to Treaty or Aboriginal Rights	general traditional use	general traditional use	<p>Environmental monitors noted in report that some use this area for hunting and noted that it was a good hunting location. Environmental monitors stated in TLU report "Area was prime location for traditional harvesting and hunting," and "Area used for hunting, berry picking and picking of medicinal plants"</p> <p>Environmental monitor stated in TLU report "Plenty of heritage resources will be destroyed for good."</p> <p>Environmental monitors stated in TLU report "Area was prime location for traditional harvesting and hunting" and "Area used for hunting, berry picking and picking of medicinal plants"</p>	<p>October 2011</p> <p>October 2011</p> <p>October 2011</p>	<p>CVRI has been consulting with Aboriginal Group D on the Robb Trend Project since 2006. In a number of venues CVRI has heard general statements such as this regarding the general impact to traditionally harvested types of resources in the Project area. No Aboriginal group consulted to date has demonstrated that access restrictions to the Project area will have a specific, particularly deleterious, non-mitigable effect on individual or collective abilities to undertake the Rights to hunt, fish, and trap for food on Crown lands as protected under Treaty or undertake other traditional pursuits. CVRI does acknowledge that its Project will occupy Crown land otherwise available for the exercise of Treaty Rights and traditional uses for a period of time during mine development, operation, and reclamation. CVRI notes that access to proposed Project lands to pursue Treaty Rights and undertake traditional activities will not be restricted in the entire area upon Project approval and it will not be permanent, as it will mine the Robb Trend in stages over a 25-year period. The first stages will involve road construction as early as 2013, with the first mine pits opening in the center of the area as early as 2014, but with development of mining areas towards the southeast not until 2021, and in the areas west of the town of Robb not until 2027. The reclamation plans for the Robb Trend will incorporate Aboriginal traditional ecological knowledge, including that contributed by Aboriginal Group D, to return the land to a more natural, useable state once mining activities have ceased. Reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. A large proportion of the surrounding region, with similar plants, animals, and other resources, will remain accessible for the undertaking of Treaty Rights and traditional uses during the development of the Project. One of the purposes of discussions with individual Aboriginal groups regarding community benefit agreements is an acknowledgement by both parties that proposed mining activities will restrict access to areas for general traditional uses, that the restriction may have a negative, unquantifiable impact on portions of the Aboriginal communities, but that those restrictions will not be permanent and can be mitigated through other opportunities, economic or otherwise, associated directly with the mining and reclamation activities, or in other areas such as educational programming. CVRI and Aboriginal Group D have entered into such a long-term agreement, including the Robb Trend Project area, as a result of previous and on-going consultation. This agreement provides mitigations or opportunities associated with on-going mining negotiated to specifically address future Project impacts. The withdrawal of a statement of concern submitted by Aboriginal Group D regarding previously proposed CVRI mine extensions, noting similar concerns, is a strong indication that the proposed mitigations and relationship established have addressed general concerns about impacts to Aboriginal Group D Treaty Rights and traditional uses in the Project area. Specific proposed mitigations surrounding Robb Trend Project impacts are detailed in many of the responses below.</p>
2	Potential Impact to Treaty or Aboriginal Rights	Hunting	displacement of game animals from Project area	<p>"In its' application, CVRI admits that the extension of the CVRI mine in the Traditional Territory will impact the wildlife in the area by disturbing the wildlife corridor, increasing noise in the area and affecting the water supply. These impacts on the wildlife directly limit the members' treaty right to hunt on the Traditional Territory"</p> <p>"Wildlife- The [Aboriginal Group] has additional concern regarding the impact of mining operations on surrounding wildlife. Particularly, the [Aboriginal Group] is concerned that there has been no short-term mitigation strategy prepared to address wildlife displacement, nor wildlife disturbance as a result of predicted noise effects of CVRI's mining operation. Further, the [Aboriginal Group] is concerned that CVRI has misstated the level of impact to wildlife as a result of the mining operations themselves. CVRI has presented no information regarding the effect of forest loss on birds and other wildlife, and there is no indication that any baseline health studies have been conducted on any animal populations in the affected areas. Finally, the [Aboriginal Group] is concerned that CVRI has provided no information regarding predicted timelines or levels of certainty that animals such as bears, lynx and marten will return to the affected areas following the successful abandonment of the mine expansion."</p>	<p>July 16, 2008</p> <p>July 16, 2008</p>	<p>Tasks that were completed during the wildlife assessment include:</p> <ul style="list-style-type: none"> • identify relative abundance, concentration areas, distribution patterns, and habitat associations of ungulates by means of winter aerial surveys, snow track-counts, and a spring pellet-browse survey; • identify small mammal, avian and amphibian presence, relative abundance and habitat association by means of snow track-counts, trapping small mammals, owl surveys, spring bird survey, breeding bird survey, migration survey, and amphibian survey; • compile a list of vertebrate species (excluding fishes) and identify their status as per the Committee on Endangered Wildlife in Canada (COSEWIC), the Canadian Endangered Species Conservation Council (CESCC 2006) and the General Status of Alberta Wild Species (ASRD 2005); • prepare a habitat map to identify the quantity and quality of habitat present in the Project Development Areas; • update wildlife use of the existing CVM by means of aerial survey, systematic monthly ground surveys, spring pellet-group counts, breeding bird survey and amphibian survey; • identify Valued Environmental Components for assessing the potential impact of the proposed development on ungulates, small mammals, birds and amphibians; • discuss biodiversity at the LSA and RSA scale; • review Traditional Use Studies (TUS) prepared for CVRI from a wildlife perspective; • discuss climate change with respect to changes in the Boreal-Cordilleran ecoregion that may affect wildlife; and • evaluate the potential impacts of the Project within a temporal and spatial perspective that incorporates existing and future demands by other users and developments by conducting a quantitative cumulative effects assessment for elk. <p>In order to reduce potential impacts to wildlife within the Project area, the following mitigation measures will take place:</p> <ul style="list-style-type: none"> • incorporate select native trees and shrubs such as alder and willow into re-vegetation activities; • maximize downed woody debris (stumps) through direct placement of top-soil and associated slash and stumps; • maintain and connect to core areas as many residual forest patches as possible; • maintain a 30 metre buffer zone of undisturbed natural habitat along well developed riparian corridors, where available; • plant coniferous trees at higher stem densities (>180 stems per acre); • continue to maintain hunting and firearm restrictions on the reclaimed areas of the Project including after mining has ceased and until hiding cover on the mines is equivalent to that of natural closed forest cover types.; and • maintain haul truck and regular vehicle speeds of <70 kph. <p>In order to evaluate and if need be adapt the mitigation measures, CVRI will also implement monitoring. Site wide monitoring will allow CVRI to determine the length of time it takes for wildlife to return to the landscape and what reclaimed landscape features are most desirable. All potential effects are noted to be reversible over the short-term or long-term depending on the type of effect. The withdrawal of a statement of concern submitted by Aboriginal Group D regarding previously proposed CVRI mine extensions, including this specific concern, is a strong indication that the proposed mitigations and relationship established have addressed general concerns about impacts to Treaty Rights and traditional uses in the Project area.</p> <p>According to CR #7, Marten are listed as "Secure" by the Alberta Fish and Wildlife Division (2010), and winter tracking surveys from 2007 to 2011 indicate normal to above-normal marten densities throughout the RSA. Those surveys also indicate that marten trail densities in areas with past timber harvest were as high or higher than in areas without timber harvest. Based on the results of the wildlife studies it was concluded that marten will possibly avoid some high quality habitat during blasting and coal hauling during active mining, but this will be short to medium-term effect with limited demographic consequences. While marten utilize reclaimed mine habitats, at this point in natural succession they are reliant on remnant forest stands embedded within the CVM footprint. The following mitigation measures are recommended to increase marten habitat suitability and use of reclaimed mine lands: Marten use of regenerating stands may be enhanced with the occurrence of dense shrub and coniferous regeneration (Poole et al. 2004; Thompson et al. 2008). Selected native shrubs and trees should be planted to increase security cover for marten and their prey (varying hare, red squirrel, voles and mice).</p> <p>According to CR #7, the main potential causes of lynx mortality arising from the Project are: 1) vehicle collisions from coal haul; and, 2) fur harvest. Unlike cougars, lynx are not a big game species in Alberta. Therefore, increased legal hunting pressure due to improved human access will not likely occur. Trapping of lynx is quota-based and recent lynx harvest has not been excessive. Vehicle speeds are reduced on mines to <70 kph further reducing the likelihood of vehicle collisions. Overall, it is predicted that development of the Project is unlikely to cause an increase in direct lynx mortality. After the immediate maximum effect of construction, the losses of lynx habitat are predicted to be ameliorated over time by natural aging of existing forests and regeneration of forest on reclaimed lands. Succession of early post-seral clear cuts and Project reclamation to young forest with abundance hare populations are the main reasons for projected increases in quality lynx habitat. Planned timber harvest in the RSA will provide an optimal mix of regenerating forest and older forest that lynx need for forage and reproduction (denning). Surface coal mining will offer the same conditions if mitigation measures recommended are followed; and, habitat supply projections for lynx predict that supply of high and very high quality lynx habitat will significantly increase from baseline to T50 in the RSA (277% in Embarras BMU and 193% in Lendrum BMU) largely because of planned timber harvest, beetle salvage and surface coal mining.</p> <p>Please see response to #3 below for a discussion of bear populations.</p> <p>The withdrawal of a statement of concern submitted by Aboriginal Group D regarding previously proposed CVRI mine extensions, including this specific concern, is a strong indication that the proposed mitigations and relationship established have addressed general concerns about impacts to Treaty Rights and traditional uses in the Project area.</p>

D	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation or Response
				Environmental monitor stated in TLU report "Migrating will be destroyed."	October 2011	Consultants Report 14 states that variety of wildlife use on undisturbed and reclaimed habitat associated with coal leases during and after the mining phase has been documented. Wildlife have colonized new habitat created by reclamation of coal mines (MacCallum 2003). Activity associated with mining is predictable and focused. Animals are not subject to random and varied human disturbance with the MSL. These conditions allow animals to colonize the reclaimed landscape. The MSL associated with the CVM has provided a secure environment for wildlife and is instrumental in maintain regional ungulate populations especially in the Critical Wildlife Habitat associated with the Lovett Ridge. Initial displacement of the existing wildlife community on the Project LSA by active mining will be followed relatively quickly by colonization of wildlife species appropriate to the stage of succession reached by the regenerated plant community. Because the development is relatively narrow and small in area, species representative of the initially undisturbed habitats are expected to continue to be represented in the final landscape. Designing complexity into the landscape (lakes, ponds, wetlands, variety in vegetation community and topography) will support wildlife diversity. Given that appropriate habitats are established and movement opportunities are designed into the Project disturbance by colonizing newly available habitat and incorporating it into their daily and seasonal activities. Species composition on the reclaimed LSA will be similar, but changed, in response to the addition of lakes, ponds and other habitat features into the final landscape. Species composition of the wildlife communities will change over time in response to vegetation development and maturation. Migration will not be destroyed, but affects to habitat (removal) will shift the community composition of birds. Bird species associated with grasslands, waterbodies and forest edge communities will pre-dominate the initial reclaimed landscape. The removal of forest habitat will eliminate trees and foraging habitat for some of the species that might stop to hunt (raptors) or rest in the disturbance area.
				Environmental monitor stated in TLU report "Plenty of animal use land to survive and most of it is open areas."	October 2011	
3	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	direct impact on spiritual animals	Stated that Grizzly Bears are a spiritual animal and [Aboriginal Group] is concerned on how the Grizzly population will be addressed	October 5, 2011	<p>Grizzly bears will likely be displaced from portions of the Project mine footprint and permit area during the active mining period. Displacement will result from construction noise and blasting. At some point shortly after reclamation grizzly bears will be attracted to the herbaceous forage and ungulates on the Project mine footprint as was observed on the Luscar, Gregg River and CVM reclaimed mine areas. The mined lands will not act as a serious barrier to grizzly bears, with the possible exception of during active blasting and hauling. In the case of regional and cumulative grizzly bear mortality, the proposed Project is unlikely to add significantly to regional mortality. The greatest threat to regional grizzly bear populations is human-caused mortality caused by legal and illegal hunting, self-defence kills by ungulate hunters, and vehicle/train collisions. Any land use that results in increased access or use of access by individuals carrying firearms is a threat to grizzly bear population persistence. Any roads with vehicle speeds greater than 70 kph also have potential to result in increased grizzly bear mortality. Sources of domestic garbage at the CVM are contained in appropriate secure containers and transported to the licensed landfill in Hinton as per the Approval conditions. Problem bear actions at mines in the Coal Branch region are of extremely limited occurrence.</p> <p>Grizzly bears actively select habitats and foods that provide them with the greatest possible net digestible energy (Hamer and Herrero 1983, Pritchard and Robbins 1989). Mining and subsequent reclamation of the existing CVM has significantly changed landscape structure, composition and food production in the permit area for grizzly bears. Mining and reclamation at the CVM has resulted in removal of tree canopies, leading to increases in availability of high energy herbaceous plant material (clover, thistles, legumes) and an increase in ungulates (elk, deer) responding to increased forage and edge habitat. There is strong evidence to suggest that ungulates and plants used for reclamation are sought and used extensively by grizzly bears occurring in the vicinity of the CVM area. Similar findings were observed in the existing Luscar and Gregg River mines (Stevens and Duval 2005; Kansas and Symbaluk 2011). Bears using the reclaimed Luscar and Gregg River mine lands were on average larger than bears in an adjacent un-mined Subalpine and the Gregg/Luscar permit block was considered to be an attractive habitat for grizzly bears and a source for enhanced cub production (Kansas 2005). If similar reclamation measures are used on the Project then impacts on grizzly bears from a habitat alteration perspective will likely be positive within 10 years post-construction.</p> <p>In the case of regional and cumulative grizzly bear mortality, the proposed Project is unlikely to add significantly to regional mortality. This assertion is based on the fact that carrying of firearms is not permitted within any mine permit areas and traffic speed control is practiced. It is further supported by the fact that no grizzly bear mortalities have occurred on mine permit areas in 40+ years in the Coal Branch region (Symbaluk 2008). This does not diminish the seriousness of cumulative effects on grizzly bear mortality in the RSA and broader Yellowhead region.</p>
4	Potential Impact to Treaty or Aboriginal Rights	Trapping	impact on trapping	Elder stated "Us [Aboriginal Group] people used to go up there and trap, we were her before [other Aboriginal Groups], those are our traditional lands."	July 17, 2009	<p>A total of 22 Registered Fur Management Areas (RFMAs) overlap in whole or in part with the RSA. Fur harvest return information for the period 1985 to 2001 was obtained from Alberta Sustainable Resource Development for the RFMA. Fur returns for 17 different species were reported. This included red squirrel (13,348), muskrat (3,649), beaver (3,401), marten (1,796), weasel spp. (1,531), coyote (896), wolf (236), lynx (133), mink (128), fisher (50), red fox (47), black bear (18), badger (14), striped-skunk (7), wolverine (6), river otter (4) and raccoon (1). The average numbers of captures per year per trap line for Valued Environmental Component (VEC) species were: lynx (0.42), marten (5.17), fisher (0.16), and wolf (0.71). RFMAs 1516, 2619 and 2256 will be directly affected by the proposed development of the Project permit area. Over a 16 year period, RFMA 1516 reported an average number of lynx (0.4/year), fisher (0.19), marten (5.4/year) captures and reported below average wolf captures (0/year). Over a 15 year period, RFMA 2256 reported above average marten (8.5/year), and fisher (0.13) captures and below average lynx (0.3/year) and wolf (0.1/year) captures. Over a 17 year period, RFMA 2619 reported below average capture rates for lynx (0.2/year), marten (1.2), fisher (0.12), and wolf (0.6). Caution must be used when interpreting this data. Capture rates can vary widely and may reflect trapper effort and fur prices as much as it does of animal abundance. Capture rates can also reflect the size of the RFMA. Habitat loss will be short-term as reclamation will target replacing habitat features important in maintaining wildlife populations. Contact and discussions have been held with people holding Registered Fur Management Area rights. Where required, agreements have been reached and compensation provided. Trapping is likely to continue in the RSA. Harvest levels are difficult to predict and are dependant largely on fur prices, RFMA tenure and levels of industrial activity. It is reasonable to assume that future trapping levels will occur at average levels from 1985 to 2001. As noted above, Project development will occur over time, and access to mine areas to undertake Treaty Rights to trap will be restricted in active mining areas for a period of time. However, areas surrounding the Project will still be available to undertake Treaty trapping rights, and Project development and reclamation will be complete by 2060, returning those lands for trapping uses.</p>
				Question raised by member of whether studies are done to show that re-stocked fish are edible.	August 10, 2006	<p>Silkstone and Lovett Lakes are stocked with rainbow trout by AESRD. However, CVRI has studied the water quality of its end-pit lakes. There have now been three sets of limnological and ecological studies conducted on CVM end-pit lakes: the studies in the 1990s conducted on Lovett, Silkstone, and Stirling (Pit 24) lakes (Agbeti 1998, Mackay 1999); the 2006 studies conducted on Lovett, Silkstone, and Stirling (Pit 24) lakes plus Pit 35 and Pit 45 lakes (Hatfield 2008), and the current study. Taken together, the results of these studies indicate that there may be fewer constraints of water quality to the ecological viability of end-pit lakes in the CVM area than those described in End-Pit Lake Working Group (2004):</p> <ol style="list-style-type: none"> 1. The concentration of a number of water quality variables, such as nutrients and major ions, are higher in end-pit lakes than in natural lakes, but these higher concentrations are not at levels that would affect the ecological viability of the end-pit lakes. 2. There have been relatively few instances of measured water quality variables, including metals, exceeding provincial or federal water quality guidelines. 3. The incidence of water quality guideline exceedance is not measurably greater in end-pit lakes than in natural lakes in the CVM area. 4. The trophic status of end-pit lakes is similar to that of natural lakes in the CVM area. <p>The exception to this is dissolved oxygen. The results of this study indicate there are portions of end-pit lakes in all seasons sampled with concentrations of dissolved oxygen that are below provincial guidelines for the protection of aquatic life. The same is true of Fairfax Lake, the natural lake that was surveyed as part of this study. The depth patterns of dissolved oxygen in the lakes that were studied are related to processes of lake stratification and turnover.</p> <p>CVRI can also offer the following information with respect to edibility of fish in the region. The predicted exposure to methyl mercury is associated with Risk Quotient (RQ) values greater than 1.0 for the resident group in the multiple pathway assessment. The maximum RQ value of 1.3 for the resident group is not predicted to change from the Baseline Case to Application Case. The Project is not expected to measurably increase methyl mercury-related health risks in the region. Methyl mercury is the form of mercury that is of greatest concern with respect to accumulation in biological organisms, and subsequent consumption by people (Health Canada 2007). Food intake is the primary route of exposure to mercury compounds in humans, with fish and seafood being the most significant contributors to human exposure (ATSDR 1999). For the resident group, the highest RQ value was predicted for the toddler life stage, where 100% of the estimated daily intake of methyl mercury is attributable to local fish consumption. The methyl mercury concentration (i.e., 95UCLM) in fish used in the HHRA is 0.11 mg/kg wet weight. This concentration is below the subsistence fish consumption guideline of 0.2 mg/kg recommended by Health Canada (2007). The fish consumption rates used in the HHRA represent rates cited by Health Canada (2007) for subsistence fish consumers for all types of fish. No adjustments for local fish consumption preferences were applied, suggesting that the consumption rates used may be conservative. At present, there is no consumption advisory on fish caught from the Embarras or McLeod River within the RSA for the Project (Government of Alberta 2011). Additional factors that may have contributed to the overestimation of the health risks are:</p> <ul style="list-style-type: none"> • the estimated daily intakes and associated RQ values are based on the assumption that people rely on locally caught fish as a part of their diet; • the exposure limit used in this assessment (0.1 µg/kg/day) is based on developmental impairment in children. Health Canada (2007) cites a TDI of 0.2 µg/kg/day for methyl mercury. When compared to the Health Canada TDI, the RQ values for the resident toddler is reduced to 0.7; • it is important to note that any nutritional benefits associated with eating fish from the RSA were not accounted for in the characterization of the potential health risks; and • the predicted RQ values for methyl mercury remain consistent across the Baseline and Application Case for the resident group. This suggests that the Project is not expected to increase methyl mercury-related health risks in the region.
				Question raised by member as to what studies could be read to learn about the health of fish in the Coal Valley Mine lakes.	August 10, 2006	The fisheries report completed for the Project application focused primarily on watercourses (creeks, streams, rivers, tributaries) and not on the CVM end pit lakes which consists of Silkstone and Lovett. These two lakes are stocked by ESRD. See above.

D	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation or Response
				Questioned if the project would have any impact on fish	March 25, 2008	Aquatic resources issues related to construction, operation, and reclamation of the Project were generally linked to potential changes to physical habitat components, changes in flow regimes, changes in surface water quality, and changes in resource access. Measures to reduce or mitigate potential effects were identified using proven strategies and combined expertise of professionals. Potential local effects on the fisheries Valuable Environmental Component's (VEC) associated with direct habitat loss or alteration are expected to be fully mitigated with properly implemented mitigation strategies. CR #2 (Section 5.4) of the Project application provides details of the numerous mitigation strategies proposed to protect fish resources, in the areas of surface water management and erosion control, haulroad crossing construction, stream diversions, management of stream flows, public access restrictions, and habitat enhancement. Therefore, no cumulative effects on fisheries VECs associated with direct habitat loss or alteration are expected. Potential adverse effects relate primarily to direct physical habitat alteration/loss, changes in surface water hydrology and water quality issues. With mitigation there will be an insignificant impact on the fisheries VEC's. CVRI is currently working with the Department of Fisheries and Oceans Canada (DFO) in creating a conceptual compensation plan to be able to uphold the principle of 'No Net Loss' to fish habitat.
				"Q4. Will CVRI commit to provide the [Aboriginal Group] an annual report on monitoring of fish and fish habitat?"	April 2008	As stated in the application, in order to monitor the effectiveness of the planned mitigation measures, CVRI will: <ul style="list-style-type: none"> • monitor flows and TSS at all settling ponds; • conduct regular inspections of all drainage works; • expand the existing CVM aquatics monitoring program to include additional benthic macroinvertebrate sample sites; • implement a water quality monitoring program for the life of the Project designed to meet the requirements of the Project approval; • conduct long term monitoring of flow in each main creek to document critical low flow conditions during pit filling periods and to define the need for any bypass pumping to maintain in-stream flows; • monitor components of the compensation plan, (i.e., fish habitat enhancement structures) post-construction to assess the effectiveness of the compensation and to identify modifications that will be made (if necessary); • evaluate end pit lakes to assess fish use, biological productivity, water quality, and other physical properties (i.e. thermal regime); • implement TSS/turbidity monitoring during instream work if deemed necessary due to site conditions or timing of works; and • monitor downstream flows to ensure instream flow needs are met. This monitoring information will be publically available within the CVRI – CVM Annual Report that is submitted to ESRD.
				"Q.1. What is the time frame for implementing the Fish habitat Compensation Plan?"	April 2008	CVRI is currently working with the Department of Fisheries and Oceans Canada (DFO) in creating a conceptual compensation plan to be able to uphold the principle of 'No Net Loss' to fish habitat. This plan will be required to be approved and implemented prior to disturbance. Any operational works that require a harmful alteration, disruption and destruction (HADD) of fish habitat will require to be applied for with DFO. The compensation plan will be referred to in establishing site specific compensation related to each working (crossing, diversion).

D	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation or Response
5	Potential Impact to Treaty or Aboriginal Rights	Fishing	direct impact on health of fish, fish habitat, and edibility	"Q.5. Does CVRI intend to monitor the water quality of all streams in the McLeod River system for increases in phosphorous levels? If so, what measures will they take to prevent eutrophication?"	April 2008	<p>CVRI will monitor watercourses within the watersheds to be affected by the Project. Within the Hydrology and Surface Water Quality reports in the Application, a number of monitoring programs are listed including:</p> <ul style="list-style-type: none"> • continue monitoring programs already in place at the existing CVM mine (i.e., flow and TSS at settling ponds, regular inspections of all drainage works, and upstream and downstream water quality sampling); • document the effect of mine operations on long term flow regimes in order to document critical low flow conditions during pit filling periods and define the need for any bypass pumping to maintain in-stream flows; • establish flow monitoring stations 2-3 years in advance of commencement of Project operations in each watershed; • conduct periodic runoff and drainage control monitoring (adjust the capacity of or relocate sump systems and drainage works as mining proceeds); • conduct ongoing monitoring, operations, and maintenance as outlined in the water management plan with periodic reviews and adjustments; • monitor adjacent undisturbed areas to ensure surface runoff from disturbed areas does not occur; and • monitor surface water quality in natural watercourses, both upstream and downstream of Project activities as required in the EPEA approval.
				"Q30. Notwithstanding that elevated concentration of nitrogen compounds downstream of active mines may be below surface water quality guidelines, what is the effect on fish and the benthic environment?"	April 2008	<p>Several studies addressing elevated nitrogen levels in surface waters from mining activities were summarized in Hackbarth (1999) and MEMS (2005); the main findings reported in these documents are as follows:</p> <p>1) While increased levels of nitrogen (nitrate) were noted in streams receiving discharges from settling ponds, these increases were inconsistent with data from the Erith, Pembina and Embarras Rivers downstream of the mines which indicated concentrations often at or below detection limits; 2) Studies conducted in the Lovett River by Alberta Environment and Water (AEW) found significantly higher concentrations of nitrogen in areas downstream of mining, although the elevated concentrations were less than surface water quality guidelines; 3) Release of nitrogen from explosives does not necessarily occur in the same year as the explosives were used but depends on factors such as hydrological cycle, form and intensity of precipitation, drainage exposure, aspect of waste dump, quantity of water and watershed characteristics; and 4) While nitrogen release increases rapidly with mining, the total quantity of nitrogen drops relatively quickly following the first freshet after blasting is completed and then continues to release over a period of five to ten years.</p> <p>A review of nitrate and ammonia concentrations in surface waters used in the Project application report found that:</p> <p>1) most of the measured concentrations of ammonia were below the detection limit in both watercourses downstream of existing mines (100% of measured ammonia concentrations were below detection limits) and watercourses not downstream of existing mines (97% of measured ammonia concentrations were below detection limits); 2) many of the measured concentrations of nitrate were below the detection limit in both watercourses downstream of existing mines (80% of measured nitrate concentrations were below detection limits) and watercourses not downstream of existing mines (40% of measured nitrate concentrations were below detection limits); and 3) there was no significant difference in the concentration of nitrates in watercourses downstream of existing mines (n=5) compared with the concentration of nitrates in watercourses not downstream of existing mines (n=18, t-test, p = 0.25).</p> <p>Nitrogen release to the aquatic environment will be minimized through a number of mitigation measures already in use at existing coal mines in the area:</p> <p>1) The use of explosives with less slurry to reduce the amount of nitrogen compounds released; 2) Minimization of water contact with explosives. Nitrogen compounds found in explosives are water soluble and water control activities (dewatering of pit areas, use of diversion ditches and interceptor ditches) will ensure the driest conditions possible for mining and blasting operations; and 3) Explosives will be properly stored to prevent contact with surface waters.</p> <p>The residual (after mitigation) effects of the Project on surface water quality via increases in nitrogen caused by the use of explosives containing ammonium nitrate are assessed as Insignificant in the LSA:</p> <p>1) Geographic Extent – Local, within the LSA; 2) Duration – Long, as release of nitrogen compounds from mine waste dumps have been documented to occur from five to ten years after the use of explosives; 3) Frequency – Periodic, as explosives will be used intermittently but repeatedly during the life of the Project; 4) Reversibility – the effect is assessed as Reversible, Long-term because effects have been documented as diminishing with time; 5) Magnitude – Low, as while increases in concentration of nitrogen compounds downstream of active mines has been documented in a number of cases, elevated concentrations have more often than not been below surface water quality guidelines; 6) Project Contribution – Negative, there will be some effect of use of nitrogen-based explosives on surface water quality; 7) Direction – the residual change in the surface water quality in the receiving watercourses will be Negative; and 8) Probability of Occurrence – High. Because the potential effects of using nitrogen-based explosives on surface water quality in the LSA are assessed as Insignificant for the Application Case, potential effects of the use of nitrogen-based explosives in the Project on surface water quality in the RSA are also assessed as Insignificant for the Application Case.</p>
				"Fisheries- CVRI has indicated that a Fish Habitat Conservation Plan will be put in place to accommodate concerns regarding fisheries, but does not indicate any time frame for implementing this program. Further, there is no indication that CVRI will provide monitoring reports to the [Aboriginal Group], or that it will consult with the [Aboriginal Group] should any concerns regarding the Fish Habitat Compensation Plan arise. Lastly, the potential for elevated phosphorous levels in downstream waterways as a result of CVRI's operations is of concern to the [Aboriginal Group]. Despite this, CVRI has no indicated whether any regular testing will be done to monitor such contaminants, or to deal with possible adverse effects, such as eutrophication, should they arise."	July 16, 2008	Responses have been provided above. The withdrawal of a statement of concern submitted by Aboriginal Group D regarding previously proposed CVRI mine extensions, including this specific concern, is a strong indication that the proposed mitigations and relationship established have addressed general concerns about impacts to Treaty Rights and traditional uses in the Project area.
				"Further, the environmental impacts on the natural fauna located on the Traditional Territory limit the treaty right to fish and gather on these lands."	July 16, 2008	As previously indicated, access to the Project area to undertake Treaty fishing rights will be restricted during development, but that access to proposed Project lands to pursue Treaty Rights and undertake traditional activities will not be restricted in the entire area upon Project approval and it will not be permanent. The Project is not expected to have a negative effect on fish, with mitigation measures in place such as the "No Net Loss" (NNL) compensation plan. The Project is expected to have no effect on fish in the surrounding area, which will remain available for undertaking Treaty fishing rights. Activities associated with the Project that have potential to directly impact fish habitat and, consequently, fish populations will not extend into the RSA. The impacts to fish populations as a result of the mining and pit filling is expected to be minimal since it is assumed that downstream flows will be managed to adhere to instream flow guidelines (AENV 2011). In general, peak flows will be reduced and low flows will be increased. This attenuating effect may have some impact on fish habitat composition and could also benefit fish populations by reducing the intensity of high flow events that can adversely affect fish, particularly during the early life stages. Potential changes in surface water quality in the RSA were assessed as insignificant (Section E.11, CR# 11) and are not expected to significantly impact fish populations in the RSA. No additional access to water bodies in the RSA is expected to occur as a result of the Project. The withdrawal of a statement of concern submitted by Aboriginal Group D regarding previously proposed CVRI mine extensions, including this specific concern, is a strong indication that the proposed mitigations and relationship established have addressed general concerns about impacts to Treaty Rights and traditional uses in the Project area.
				"Q.2 How much time will fish be affected by stream diversions?"	April 2008	<p>CVRI has proposed to implement a surface water management plan throughout the life the Project. The following mitigation is related to implementing successful diversions:</p> <ul style="list-style-type: none"> • consider sensitive periods during construction planning by either planning construction to avoid these periods or implementation of site specific mitigation (i.e., redd surveys, fish salvage, sediment monitoring); • isolate the instream work site if flowing water is present at time of construction; • complete fish rescue and release from isolated areas where required; • implement sediment and erosion controls prior to work and maintenance during the work phase until the site has been stabilized; • implement measures to minimize introduction of deleterious substances during construction including cleaning, servicing, and fuelling of equipment well away from water bodies; • revegetate disturbed areas around crossing sites; • reclaim streambed and stream banks as appropriate; • maintain downstream flows; • use appropriate sizing of diversion channels and/or pump; • armour and/or line channels or use of flumes where appropriate; • place and stockpile excavated materials in a location that is well away from the channel route; • divert flow gradually into constructed channels to minimize potential erosion and mobilization of sediment; • construct open channel diversions that allow for the movements of fish; and • develop and implement a stream flow management plan for each diversion to maintain instream flows. <p>In essence, if all mitigation measure of the surface water management plan are followed, fish species will not be negatively affected by stream diversions.</p>
				"The existence of the different medicinal plant life and trees is highly valuable knowledge, especially to the [Aboriginal Group] because many of our people travel all over Alberta, British Columbia and into United States to gather some of the medicinal plants that exist in this area."	2007	A total of 88 species or classes of plant/fungi that are important to Aboriginal groups have been identified in the Project area. The distribution of ecosite phases which support TEK vegetation will be accessible in both the RSA following removal of ecosite phases by the Project Footprint in the LSA. With the implementation of mitigation measures the Project is expected to have a limited spatial effect, and a insignificant temporal effect. Potential Project effects are related to the attenuation of available TEK vegetation (vegetation used for medicinal, food and other uses) as a result of the removal of ecosite phases within the LSA. As a generic statement, all Aboriginal groups consulted are concerned that CVRI take steps to ensure that native plant species are included in reclamation plans rather than solely agronomic species as have been often utilized in the past.

D	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation or Response
6	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	direct impact/removal of medicinal and food plant gathering locations in Project area	"Future construction activities in mine operations and hauling activities in project area will cause some impact to wildlife and medicinal plant life in the proposed areas."	2007	The development of the Project, particularly the development of the mine pits, soil and rock stockpiles, dumps, and roads, will definitely impact plants and animals in the disturbance zones. Through the mitigative measures proposed in the Project Application and discussed in this table, CVRI will limit those heaviest impacts to the disturbance zones, and minimize or eliminate any potential effects in adjacent or downstream areas. Through the reclamation activities also discussed, CVRI will return the land in the impact zones to a more productive state in the future. CVRI will complete longer-term monitoring on the impact to medicinal and other plants and for general environmental monitoring, and continue to consult with the Aboriginal communities regarding future development plans.
				"It was indicated that there are a lot of different medicinal plant life and berry patches in the area that is of high value to the native peoples of the area."	2007	CR #13 (Vegetation) of the Project Application discusses many plants identified to CVRI as important to the Aboriginal community. Aboriginal consultation meetings and field visits conducted by CVRI with First Nations and Aboriginal representatives resulted in the identification of a list of vegetation species which are valued by the Aboriginal groups for their uses. The field surveys identified 88 TEK vegetation species which occur in the LSA (CR # 13, Appendix 5). Of the TEK vegetation species documented during field surveys, 8 are typically used for critical medicinal purposes, 20 are used for food, and 60 are used for other purposes. None of the TEK vegetation species are on Alberta's 2011 Tracking and Watch List, used to identify species that are rare or otherwise special in some way. TEK vegetation have a very high potential to occur in ecosite phase d1, e2, e3 and i1 and a high potential to occur in c3, e1 and j1 in the Foothills Natural Sub-regions (CR # 13, Table 4.7). These occurrences have been mapped and documented to identify species that are within the LSA and within the Project Footprint. In total 2,264.9 ha of ecosite phases with very high potential to support TEK vegetation will be removed by the Project Footprint, this area encompasses 22.4% of the very high potential area in the LSA. As well, in total 1,354.1 ha of ecosite phases with high potential to support TEK vegetation will be removed by the Project Footprint, high potential area encompasses 13.4% of the high potential area in the LSA. Fifty-four percent (5,467.0 ha) of areas which support TEK vegetation will be removed from the LSA by the Project Footprint. However, TEK vegetation Project effects at the LSA level do not necessarily lessen the accessibility of TEK vegetation for Aboriginal groups given that TEK vegetation is available in the RSA and region. The distribution of ecosite phases which support TEK vegetation will be accessible in the RSA following removal of ecosite phases by the Project Footprint in the LSA. It is assumed that ecosite phases within the LSA are similar in composition and distribution as those in the RSA; consequently, TEK vegetation will still be accessible in the RSA. Mitigation measures for TEK vegetation effects should include but will not be limited to the following:
				"There is some concern, as the elders indicated there are a lot of different types of medicinal plant growth in the area, which do not exist near or around the [Aboriginal Group] community."	2007	<ul style="list-style-type: none"> • inviting Aboriginal groups to participate in designing mitigation measures which contribute to the sustainable management of TEK vegetation, and which compliment the re-vegetation measures proposed in the Application; • working with Aboriginal groups, who may be affected by the Project, to locate alternative areas where TEK vegetation is accessible during the life of the Project; and, • implementing a re-vegetation program which aims at the re-establishment of ecosites common to the pre-disturbed landscape. The re-establishment of pre-disturbance ecosites will, over time, again support TEK vegetation. <p>With the implementation of mitigation measures the Project is expected to have a limited spatial effect, and a moderate temporal effect. Potential Project effects are related to the attenuation of available TEK vegetation (vegetation used for medicinal, food and other uses) as a result of the removal of ecosite phases within the LSA. CVRI is committed on working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation. Accordingly, it is anticipated that the Planned Project effects on TEK vegetation will be local in extent and over the long term, all areas used for harvesting TEK vegetation will be re-established.</p>
				Environmental monitors stated in TLU report "Area was prime location for traditional harvesting and hunting."; "The area is very important to the community for harvesting and gathering."; "area is very important to the community for history, harvesting and gathering."; "Large amounts of traditional medicines, roots, and berries. Pristine location."; "This whole area is to be mined and severely negatively impacted by the development, I collect traditional medicines in this area every year."; "Medicines and berry area very important to the community."; "The whole area is to be stripped and mined. Go to this area every year for harvesting and gathering."; "Area used for hunting, berry picking and picking of medicinal plants."	October 2011	The above response indicates that important plants will still be available in the region outside of Project direct impact zones. In addition, also as noted above, not all of the Project area will be disturbed at one time. CVRI can work with local Aboriginal groups to identify periods of time in certain locations (undisturbed by mining and safe to access) in which berry picking and medicinal plant gathering can occur. Hunting within the mine permit boundary cannot occur as carrying firearms within the permit boundary is restricted for safety reasons.
				Environmental monitor stated in TLU report as a recommendation "To avoid this area so that the berries and medicines are not polluted."	October 2011	<p>The development of the Project, particularly the development of the mine pits, soil and rock stockpiles, dumps, and roads, will definitely impact plants and animals in the disturbance zones. Through the mitigative measures proposed in the Project Application and discussed in this table, CVRI will limit those heaviest impacts to the disturbance zones, and minimize or eliminate any potential effects in adjacent or downstream areas. Through the reclamation activities also discussed, CVRI will return the land in the impact zones to a more productive state in the future. CVRI will complete longer-term monitoring on the impact to medicinal and other plants and for general environmental monitoring, and continue to consult with the Aboriginal communities regarding future development plans. CVRI will ensure that environmental factors and protection measures are taken into consideration during all phases, from planning to reclamation, of mine development. Technically proven and economically feasible measures will be taken which protect environmental quality for air, water, vegetation, wildlife and land resources.</p> <p>CVRI undertakes as a priority "pollution prevention" in preference to "pollution cleanup". Pollution prevention measures in place at CVRI include:</p> <ul style="list-style-type: none"> • reuse and recycling of products; • substitution of products purchased with more "environmentally friendly" materials; • equipment modifications and improved operating efficiencies; and • conservation of materials and resources. <p>CVRI is an active participant in many environmental and regulatory initiatives and will continue to be an active member of these programs during the operating life of the Project. Programs range from participation in regional programs such as the West Central Airshed Society (WCAS) and West Fraser's Forest Resources Advisory Group (FRAG), to provincial and national initiatives. The purpose of the Environmental Protection Program at the CVM is to first prevent and second to minimize adverse environmental impacts resulting from mine related operations. The program will be implemented in the Project area through the following on-site mechanisms:</p> <ul style="list-style-type: none"> • adaptive management approach to environmental risk assessment; • Safety, Health and Environment Committee (SHE) comprised of key CVRI employees; • emergency response and wildfire control and prevention; • waste management program; • spill response and clean up procedures; • operating policy commitments; and • site reclamation.
				"Water is a real concern in their community but the medicinal value of plants is more paramount." and under what [Aboriginal Group] wants "[Aboriginal Group] can prove lack of access to medicinal plants and wants to be accommodated for that."	February 13, 2013	As noted above, not all of the Project area will be disturbed at one time, and medicinal plants will still be available in the region and non-impact Project areas. CVRI can work with local Aboriginal groups to identify periods of time in certain locations (undisturbed by mining and safe to access) in which berry picking and medicinal plant gathering can occur. CVRI will accommodate the temporary loss of access to medicinal plants in the Project area through the discussed mitigation strategies that will employ Aboriginal TEK in the reclamation process to ensure many of these plants re-establish in disturbed areas.

D	Concern Raised by Aboriginal Group	Potentially Affected Right or Use	Potential Effect	Stated Concern	Dates Concern Raised	Proposed Proponent Mitigation, Accommodation or Response
7	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	reclamation	Chief stated "Do indigenous herbs get put back? The elders have a great interest in traditional herbs. Do you study them before-hand", and "I must stress again the importance of the plants, not just to people but to the animals as well, we need to see the plants growing back in the same areas found now."	January 15, 2007	Aboriginal consultation meetings and field visits conducted by CVRI with Aboriginal representatives resulted in the identification of a list of vegetation species which are valued by the Aboriginal groups for their uses. The field surveys identified 88 TEK vegetation species which occur in the LSA. CVRI is committed to working with Aboriginal groups to design and implement re-vegetation programs that target and support TEK vegetation. CVRI will continue consultation with the local Aboriginal groups regarding future development plans as well as undertake further discussions on specific impacts and mitigation measures. CVRI was asked to use traditional knowledge and native plant species in the reclamation process and are currently looking further into this process. TEK vegetation have a very high potential to occur in ecosite phase d1, e2, e3 and i1 and a high potential to occur in c3, e1 and j1 in the Foothills Natural Sub-regions. These ecosites will be targeted in the reclamation process in order to provide the traditional knowledge and native plant species an environment suitable for survival.
				"Comment 17: The Application should describe how the Proponent intends to consult with the [Aboriginal Group] on reclamation activities, including the selection of plants for re-vegetation."	April 11, 2007	
				Questioned if reclamation beyond planting trees and grass would bring the project area back to its natural state	March 25, 2008	
				Elder questioned "In 35 years, did you ever have Native involvement in replanting."	July 17, 2009	CVRI in the past have hired Aboriginal based companies on a contract basis for seeding and replanting operations. Future reclamation will provide further opportunities for the Aboriginal community to be engaged in commerce with the CVM in relation to revegetation.
				Raised questions regarding reclamation such the length of time for reclamation of mushrooms, tree fungi, various plants. Question of whether reclamation will introduce new/different plants, question of how the reclaimed landscape will look like, question of previous reclamation studies, question of time line for establishment of trees and succession and interest in keeping up to date with berry plot reclamation	October 21, 2011	The revegetation program proposed for the Project area will use experiences gained over the years at the CVM. Vegetation species will be selected to match site-specific conditions (slope position and exposure) that are consistent with the land use objectives; watershed, timber, wildlife, fisheries and aesthetics/recreation. Three seed mixes are currently being utilized at CVM; the standard mix was formulated for use in drier upland areas, the wetland mix is formulated for the revegetation of lower lying wetter sites and constructed wetlands and a native seed mix formulated to facilitate native succession. Traditional value plants will be identified in respect to their possible use as revegetation species. The revegetation program will plant the dominant tree species; either a conifer or deciduous species. Where reclamation stock is available suitable understory species will be inter-planted with the tree seedlings. Initial grass/legume seeding will be undertaken during the first growing season following minesoil placement. Fertilizing will be completed in the same year (and may be repeated once more on some sites within the next five years). Planting or seeding of native herbaceous stock and planting of woody species (shrubs and trees) will be completed by the fourth growing season following coversoil replacement. Woody species planting will only be done when the ground cover has become fully established and has progressed beyond the initial heavy growth phase. Vegetation on the reclaimed landscape will continue to change after the reclamation activities have been completed. Some of the species in the initial seed mix will not persist, allowing other native species to ingress. Many native species will establish from roots or seed in the replaced soil, and other species will ingress from surrounding areas. As noted above, reclamation activities will occur as mining in each pit area is finished, with all revegetation occurring within 5 years, and certification of reclamation (i.e. finding that vegetation and habitat returning to a productive state as expected) in 15-20 years. Thus, the first lands mined in the Robb Trend should be returning for use as the last lands are being mined. Those last areas mined should have reclamation certification by 2060; the earliest lands mined will have been returned for use well before that time. Given the timelines of forest succession, precise timelines for the development of a "climax community" in reclaimed areas are difficult to predict, but this "successional reclamation" process (Polster, 1989) will continue for several decades.
				noted his intent to continue on the TLU TEK aspects and involvement in the reclamation process. He mentioned transplanting TEK vegetation species as possibilities.	March 15, 2012	See responses above. CVRI is responsible, by regulation, to complete a satisfactory reclamation process. This includes various standards for soil, vegetation, and land use capability such as commercial forestry and wildlife values. The existing agreement between CVRI and Aboriginal Group D provides opportunity for Aboriginal Group D to participate in planning and monitoring of on-going reclamation.
				requested information on reclamation plans.	May 15, 2012	Section F of the Project Application supplied to Aboriginal Group D provides a detailed overview of the Reclamation Plan. More site specific reclamation plans will be developed at the Licensing stage of the Project once the Permit is approved.
				Listed under issue "Reclamation does not return disturbed areas to original state. Pre-planning of reclamation requires input from [Aboriginal Group] technicians who deal with the retention and dissemination of the datasets collected during the annual TEK research. Certain information can be made available with pertinent support from GIS technicians provided through capacity building initiatives supported by the governmental departments involved here such as the Agency, MPMO, etc and the proponent." and under what [Aboriginal Group] wants "[Aboriginal Group] participation and inclusion in reclamation activities including planning and operations is essential to attempt to mitigate the impacts of the decimation that will occur here. The proponent must be able to incorporate digital information housed within the GIS database of the [Aboriginal Group] who would retain full proprietary rights to the information collected. Dissemination of information will require an information sharing agreement."	February 13, 2013	CVRI notes that courts have interpreted jurisprudence to indicate that the protection of a right does not guarantee its exercise in an "unspoiled wilderness" or in one particular location (Halfway River 1999: 140-141). That being said, CVRI's reclamation objective for the CVM is to reclaim mined lands to meet equivalent land capability with the intended end land uses, including the exercise of Treaty Rights to hunt, fish, and trap. The achievement of this objective assures that mining is a temporary use of the land. An ecosystem based management approach has been used for the development of this reclamation plan. Ecosystem management is a process that aims to conserve major ecological processes and re-establish natural resources while meeting the socio-economic and cultural needs of current and future generations. CVRI continues to investigate the role of traditional plants in the reclamation process. CVRI is working with local aboriginal groups to identify plants that have traditional value. Local Aboriginal groups inspected the Project area and have identified resources used by their people. They have provided a list of plant species observed in the Project area used for a variety of medicinal and other purposes. The Aboriginal groups consulted are concerned that CVRI should take steps to ensure that native plant species are included in reclamation planning. Traditional value plants will be identified in respect to their possible use as revegetation species. CVRI funded Aboriginal Group D traditional use studies of the Project lands in 2007 and 2011, and has agreed to further studies on its operations in the future where necessary. Any discussions regarding the use of GIS or data sharing agreements on future studies is on-going, as are discussions regarding direct Aboriginal Group D participation in reclamation field activities.
[Individual] listed under issue "CVRI suggestion that valued vegetation can be relocated and transplanted into other sites. [Aboriginal Group] does not agree that these plants can be relocated or transplanted successfully. Community residents will have to go further away to find the plants (e.g. Valerian Root). ANSN recommends that all digitized information be developed in a GIS system that is financially supported by the proponent and the Agency, NRCAN, DFO, MPMO, Environment, Health and Transport Canada and other interested provincial departments. A responsible effort must be displayed by those departments who have a preference to ascertain materials mentioned here. The departments who intend to review certain (TEK) material are accountable to provide the necessary resources to collect the appropriate baseline information provided in the TEK research. and "The Agency will have to concede to funding support of the TEK research required for the current application." and under what [Aboriginal Group] wants "The vegetation can never be relocated as each plant grows in an integral state with other plants. The area that is being developed will eliminate any access to traditional livelihood and the sustenance that has been gathered in these areas. There is medicinal value in the vegetation that exists here and it will never be replaced or relocated due to its complete decimation. The foliage has to be accounted for within this footprint. Gain confirmation from the Agency that additional resources will be identified to support the collection of the digital information relative to TEK research."	February 13, 2013	Many of the answers above provide specific information related to the studies of Aboriginal knowledge of plant resources, and the incorporation of this information into reclamation plans, or access restrictions to the Project area and its potential effects on Treaty rights. Among Aboriginal individuals, opinions vary widely on the best approaches to use for helping medicinal plants return, with transplanting seen by many as a viable option. It is also noted that many of these plants may colonize disturbed areas from directly adjacent undisturbed patches. CVRI has sponsored Aboriginal Group D field investigations and reports for Mercoal West, Yellowhead Tower, and Robb Trend. Subsequently CVRI sponsored Aboriginal Group D field investigations and report for Robb Trend West and the Access Corridors. This work was complementary to the previous Robb Trend investigations. [Individual] has repeatedly expressed his personal dissatisfaction with the methodology applied in these earlier studies which had been completed under the oversight of the lands consultation department. CVRI is unwilling to "redo" this baseline work. The existing agreement includes provisions for on-going "annual" reviews of discrete land disturbance areas with respect to further detailing of "land use." CVRI is following provisions of this agreement as is evident in the on-going plans for "field review" of the 2013/2014 disturbance areas in Yellowhead Tower. CVRI cannot comment on the requests for funding for traditional use studies from Federal and Provincial agencies, but is aware that the Province has funded traditional use programs at over 45 First Nations over the last 10 years. We understand that Alexis has participated in this process.				

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8	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	Loss of Access	"Q.35 The EA report states that human use of reclaimed areas will be monitored and an access management plan developed (E 294). When are these activities expected to occur? And, will this prevent First Nations people from exercising their Treaty and Aboriginal rights?"	April 2008	Controlled public access may be permitted in or through those areas of the Mineral Surface Lease (MSL) where mining activities have been completed but are not actively occurring, which are distant from mining operations, and where wildlife values would not be jeopardized. Within active mining and reclamation operations, no public access will be permitted for safety reasons (for CVRI employees and the public). After reclamation activities have been completed and the vegetation cover is established and self-sustaining, limited access may be considered. Access may only be permitted through selected reclaimed areas on designated trails. This will accommodate those persons interested in gaining access to areas in behind the MSL. This system is similar to that currently in place on areas of the CVM (e.g., the trail to Silkestone and Lovett Lakes; access to Lovettville). Time limitations to trail use may apply, as determined through government and public consultations. As reclaimed lands receive reclamation certification, and the MSL is dropped, greater levels of human use on certain areas of the reclaimed landscape may be considered. The reintroduction of human activities will be deliberately planned so that environmental conditions on the reclaimed sites and wildlife patterns are considered. Land and access management at this phase would be the responsibility of the provincial land management agencies. CVRI will continue to work with First Nation groups to maintain to Treaty and Aboriginal rights.
9	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	direct impact/removal of ceremonial locations in Project area	"the large size of the CVRI development limits the use of the land for traditional ceremonies and may jeopardize grounds that are sacred to the [Aboriginal Group]."	July 16, 2008	CVRI is fully prepared to work with Aboriginal communities to avoid specific ceremonial locations identified or undertake other mitigative options where such are identified. Aboriginal Group D has provided no information that would indicate the presence of any ceremonial locations within the Robb Trend Project area. No Aboriginal group consulted to date has indicated that access restrictions to the Project area will have a specific, particularly deleterious, non-mitigable effect on individual or collective abilities to undertake traditional pursuits such as ceremonies. CVRI notes that access to proposed Project lands to undertake traditional pursuits such as the performance of ceremonies will not be restricted in the entire area upon Project approval as noted in response #1 above. The withdrawal of a statement of concern submitted by Aboriginal Group D regarding previously proposed CVRI mine extensions, including this specific concern, is a strong indication that the proposed mitigations and relationship established have addressed general concerns about impacts to Treaty Rights and traditional uses in the Project area.
10	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	direct impact/removal of burials in Project area	Councillor requested information regarding known grave sites within the CVM permit area and proposed expansion areas	August 10, 2006	CVRI is aware that in the past government agencies and corporations have not been particularly sensitive or responsive to Aboriginal concerns about the disturbance of burials. To date no Aboriginal group has notified CVRI of the location of a burial within the Robb Trend Project area. Some Aboriginal burials and non-Aboriginal burials in the general area are known to CVRI, the locations of which are privy to those who have identified their locations. CVRI has previously modified its proposed Robb Trend permit area removing some known burials from the Project lands, none of which are associated with Aboriginal Group D. CVRI is fully prepared to work with Aboriginal communities to avoid burials identified or undertake other mitigative options. If during operations possible burials are encountered, CVRI is prepared to work with Aboriginal communities and regulators to confirm burial association and devise an appropriate avoidance or mitigation strategy. The presence of human remains or burials on Project lands, whether Aboriginal or not, is subject to Federal and Provincial laws and regulations including Section 182 of the Criminal Code, the Alberta Cemeteries Act, and potentially the Alberta Historical Resources Act. Knowingly disturbing human remains (improper interference) without legal authorization constitutes a criminal act, and knowingly disturbing burials, recorded or not, without legal authorization contravenes the Cemeteries Act and potentially the Historical Resources Act. In addition to moral duties, sanctions of both a criminal and financial nature for any actions provide significant impetus for CVRI to act swiftly and accordingly should potential burials be identified during development activities. Mine management will ensure that all supervisors and workers are aware of the legal and moral issues regarding possible burials.
				Stated "their must be some burial sites out there, didn't get info from [other Aboriginal Group]", Stated "[other Aboriginal Group] found some burials which are ours actually, haven't told us where they are." Expressed that [Aboriginal Group] would need to get info on burial sites.	March 25, 2008	
				Chief Cameron stated that [Aboriginal Group] needs constant monitoring and brought up concern from the [other Aboriginal Group] remains. The Chief stated "if we come across a gravesite, have to do protocols, someone has to be there full-time"	July 17, 2009	
				Elder complained about the remains of [other Aboriginal Group] and was sad to see what happened to the burials	July 17, 2009	
				In reference to protection of burial sites Elder stated "we need to have something in paper between white man and Chief, grave sites vs. burial sites"	July 17, 2009	
				Community Member Stated "I'm concerned about the Pembina River and water quality since it flows to the [Aboriginal Group] Community at [location]."	August 10, 2006	Mining associated with the Project will approach the Pembina River area from the west. A 15 to 20 m high escarpment is located on the west side of the river. CVRI identifies this escarpment as the limit of the river floodplain as the escarpment is formed from intact bedrock. The river meanders within a floodplain below this high embankment. The proposed 'disturbance boundary' will be positioned 30 m from the rim of the escarpment. A 30 m setback value was utilized as a reasonable assumption based on past practice in similar situations. The setback was applied from the edge of the 'break' of the river floodplain embankment which increases the buffer from the actual current river flow position. The excavation 'rim' of the nearest Pit (Val d'Or) is positioned to be at least 115 m from the actual Pembina River position. All necessary mitigation measures will also be in place including a robust water management plan and silt fencing protecting the Pembina from any potential sediment loading from the mine disturbance. The Project effect on the Pembina River will be insignificant.
				"The protection of the water bodies is of great importance as both wildlife and aquatic resources depend on it, as well the medicinal plants that grow near water to survive,"	2007	The surface hydrology assessment presents proposed water management plans and addresses the potential impact of the Project on: <ul style="list-style-type: none"> the quantity of surface water flow and stream behaviour during high, average and low flow conditions; and sediment concentrations in local and regional streams. Various water management and sediment control measures will be implemented for the Project during operations, reclamation, and closure, including: 1) Water from pit dewatering operations will be directed to settling impoundments for treatment prior to discharge of surface waters. In impoundments, pit water will mix with surface runoff. If necessary, flocculants will be used to enhance the rate of settlement of suspended solids. Impoundment discharges will be subject to conditions in the EPEA approval; 2) Release of water pollutants from the site such as oil and grease is controlled. With the installation of oil booms on the impoundments and immediate containment of oil in the event of a spill, there is little danger of these materials contaminating surface waters. Components of the water handling system will be designed according to the governmental specification and the systems will be operated in accordance with regulatory approval requirements; and Water from pit dewatering operations will be directed to settling impoundments for treatment prior to discharge of surface waters. In impoundments, pit water will mix with surface runoff. If necessary, flocculants will be used to enhance the rate of settlement of suspended solids. Impoundment discharges will be subject to conditions in the EPEA approval; 3) Installation of surface runoff collection and treatment systems to control groundwater seepage from road cuts and surface runoff from disturbed areas. Surface runoff will be directed to settling impoundments for removal of settleable solids; and 4) All mine-affected water will be treated prior to its release in to the receiving waters to reduce potential effects from loading of suspended sediments and potential effects of water quality variables typically associated with suspended sediments (e.g., total aluminum and total iron). CVRI will pay particular attention to selenium (see below). The mine wastewater treatment program similar to the one currently in use at the CVM will be established to minimize downstream siltation and minimize downstream effects on surface water quality; 5) With respect to selenium, the CVM will continue an effective water quality monitoring program including a focus on selenium concentrations. The objective will be to observe water quality relative to baseline values to identify any changes over time. Should a significant increase in selenium levels be noted an investigation will be undertaken to identify possible sources and mitigation plans will be implemented; 6) Where necessary, interim erosion/sediment control measures will be utilized until long-term protection can be effectively implemented; 7) Minimization of the time interval between clearing/grubbing and subsequent earthworks, particularly at or in the vicinity of watercourses or in areas susceptible to erosion; 8) Slope grading and stabilization techniques will be adopted. Slopes will be contoured to produce moderate slope angles to reduce erosion risk. Other stabilization techniques used to control erosion include: ditching above the cutslope to channel surface runoff away from the cutslope, leaving buffer (vegetation) strips between the construction site and a watercourse, placing large rock rip rap to stabilize slopes; 9) Whenever possible, construction activities in close proximity to watercourses will be carried out during periods of relatively low surface runoff in late fall, winter and early spring (from October to April). A 30 m buffer (vegetation) strip will be left between construction sites and watercourses except at stream crossings and diversions; 10) Temporary measures to control erosion before a vegetation cover is reestablished, including: diversion ditches, drainage control, check dams, sediment ponds, sumps and mulches; 11) Installation of surface runoff collection and treatment systems to control groundwater seepage from road cuts and surface runoff from disturbed areas. Surface runoff will be directed to settling impoundments for removal of settleable solids; 12) 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. This means that all stream crossings constructed by the Project will meet regulatory requirements for protection of fish resources and aquatic habitat; this will also effectively mitigate against effects on surface water quality

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11	Potential Impact to Treaty or Aboriginal Rights	Traditional Use	general impacts to water quality in Project area	What effects will the reduction in water quantity on water courses be?	April 2008	Mining activities are expected to reduce high flows, and low flows are expected to either remain the same, slightly decrease or slightly increase. Annual runoff may have modest variations dependent on mining activities at the time (e.g. pit dewatering). Temporary water diversions will also contribute to some slight variations in flow quantity for short periods of time. Instream flows will be maintained by bypass pumping. Depending on the extent of the disturbance footprint within the watershed the significance to flow quantity may remain the same, increase or decrease depending on the mine progression and seasonal variability. Dewatering of the groundwater around or in the mine pits, to permit mining, increases surface flows. This is usually a minor flow component of the overall surface runoff rate from an area. The magnitude of the flows is small and regulated by pumps. If the sump or dewatering area is well laid out and separated from active mining, the effect on sediment loads can be negligible. Impoundments such as settling ponds or end pit ponds or lakes generally reduce downstream peak flows as a result of storage. Increases in low flows can result from a more gradual release of the water stored in the impoundment. Depending upon their size, pond evaporation losses may be significant at times but is near balanced with direct precipitation on an annual basis. Depending upon their size and efficiency, impoundments can reduce sediment loads significantly. End pit ponds will reduce flows when initially filling but can provide opportunities for enhancement. For open water bodies (lakes, ponds and to some extent wetlands), lake evaporation essentially replaces evapotranspiration in equation (1) above with groundwater having both an inflow and outflow component. After initial filling and stabilization of the groundwater level, such that the net regional groundwater recharge is the same as pre-mining, it may be assumed that groundwater inflow equals outflow on an average annual basis. It should be noted that even large differences in net groundwater inflow/outflow for the water bodies typically will have minor net surface flow impacts because of the small areas of the ponds relative to the basin sizes and the smaller groundwater flow component compared to the surface runoff component. Diversions will be sized and designed to convey peak flows safely considering the life of the diversion. As a result, water diversions do not impound water or cause losses due to infiltration (if lined) and, if returned to the same stream, will not affect the magnitude of downstream flows. All defined watercourse crossings will be designed, and constructed, to meet or exceed the regulatory requirements for approval under the provincial Water Act and the federal Fisheries Act and Navigable Waters Protection Act. If appropriately designed and constructed, these crossings will have negligible effect on flows or sediment loads to the streams.
				"What about water diversions, do you return to natural path?"	March 25, 2008	As currently planned, the Project will require approximately 15 diversions around active mine areas. Many of the diversion systems are temporary and may only be in place for about one year until backfilling and reclamation can take place. Some of the diversions will be permanent installations that will be integrated with the end pit lake development. When possible, stream channels will be reclaimed to close proximity of the original channel. Meanders and channel variability will be included in the reclamation plans. Construction plans for planned diversions will be refined as Project plans are developed and will include detailed plans to mitigate adverse effects to aquatic resources. General mitigation measures that will be employed during the construction and operation of diversion channels will include: <ul style="list-style-type: none"> • maintenance of downstream flow and monitoring to ensure instream flow needs are met; • appropriate sizing of diversion channels and/or pump systems based on the design life of the diversion and considering ramifications of greater than design runoff; • armouring and/or lining of channels or use of flumes where appropriate; • installation of silt fences and/or other erosion control measures on areas immediately adjacent to open channel diversions; • placement and stockpiling of excavated materials in a location that is well away from the channel route; • gradual diversion of flow into constructed channels to minimize potential erosion and mobilization of sediment; • fish rescue and release (fish salvage) of sections or channel that will be abandoned due to diversion or in watercourses that will be diverted into a different drainage basin (i.e. BKTR in PET1); • implementation of TSS/turbidity monitoring during instream work if deemed necessary due to site conditions or timing of works; • consideration of sensitive periods during construction planning by either planning construction to avoid these periods or implementation of site specific mitigation (ie. redd surveys, fish salvage, sediment monitoring); and • construction of open channel diversions that allow for the movements of fish. If diversions are deemed to be impassable and are impeding important spawning migration then a fish relocation programs will be implemented whereby fish will be trapped and relocated to appropriate habitat upstream of the impediment.
				"Surface Water-The CVRI application states that water from impoundment areas will be periodically released into local stream systems, and further that the discharges will at times exceed provincial guidelines. The [Aboriginal Group] has received no information regarding which elements may be expected to exceed guidelines, nor the extent to which such guidelines will be exceeded. Further, the [Aboriginal Group] proposed that alternative means of blasting be used to lessen environmental impacts in the proposed mine expansion area."	July 16, 2008	Settling ponds (impoundments) will be constructed to collect local runoff from haul roads, spoil pile areas, sumps, and pit dewatering operations. Runoff from Project operations can be controlled by routing to settling ponds before being released to external watersheds. Precipitation in excess of the design storm event, or unusual short-term sediment generation events, may occur. Design of controlled outflows for this type of event will provide an effective level of sediment control. In instances where volumes exceed the holding capacity of the impoundment, sediment may be expected to exceed provincial guidelines (elevated TSS levels) for short periods of time. All mine-affected water will be treated prior to its release in to the receiving waters to reduce potential effects from loading of suspended sediments and potential effects of water quality variables typically associated with suspended sediments (e.g., total aluminum and total iron). CVRI will pay particular attention to selenium (see below). The mine wastewater treatment program similar to the one currently in use at the CVM will be established to minimize downstream siltation and minimize downstream effects on surface water quality; With respect to selenium, the CVM will continue an effective water quality monitoring program including a focus on selenium concentrations. The objective will be to observe water quality relative to baseline values to identify any changes over time. Should a significant increase in selenium levels be noted an investigation will be undertaken to identify possible sources and mitigation plans will be implemented. See response #5 above for a discussion of blasting and nitrogen associated with the Project. The withdrawal of a statement of concern submitted by Aboriginal Group D regarding previously proposed CVRI mine extensions, including this specific concern, is a strong indication that the proposed mitigations and relationship established have addressed general concerns about impacts to Treaty Rights and traditional uses in the Project area.
				Chief asked how mining is going to impact the Pembina River?	July 17, 2009	See response above.
				Environmental monitor stated in TLU report "Respect natural water sources and do not contaminate as animals and plants use these sources for sustenance."	October 2011	CVRI has developed a Water Management Plan to contain all mine affected water. These mine affected waters are directed to impoundments where they are treated with an approved flocculant. Prior to release into the receiving watercourse all water must meet the Approval water quality guidelines. In an event of a registered storm event some short term exceedences are allowed. This section provides numerous responses and proposed mitigations CVRI will implement to protect the water.
				Environmental monitor stated in TLU report "Plenty of water sources will be destroyed lots of springs in area of the valley"	October 2011	Watercourses will be affected due to the development of the Project. Watercourses that require to be diverted will be reclaimed to similar conditions prior to disturbance. No identified and established watercourse will be "completely destroyed". CVRI is currently working with DFO on completing a conceptual compensation plan for the entire project which identifies the watercourses that will be affected and what compensation will be required. Groundwater sources may be affected for short periods of time but it is expected and has been documented in past mine areas that groundwater levels should return to baseline conditions. It has been demonstrated that significant drawdown of groundwater levels does not typically extend 100 m beyond a mine pit. Additionally, these declines in water table have been shown to be temporary. Seepages which develop on the landscape after mining may provide mineral licks for ungulates. These should be identified as permanent features in the final reclaimed landscape.