

CROW BUTTE RESOURCES, INC.

**86 Crow Butte Road
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July 14, 2009

Mr. Keith I McConnell, Deputy Director
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
Mailstop T8-F5
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Source Materials License SUA-1534
Docket No. 40-8943
Evaporation Pond 1 Liner Leak

Dear Mr. McConnell:

On June 18, 2009, routine evaporation pond monitoring results of Cameco Resources, Crow Butte Operation (CBO) Evaporation Pond 4, conductivity and water level readings from the north middle, northwest, southeast, and south middle underdrains indicated a potential pond liner leak. A sample was collected from all underdrains except the southwest (which contained no water on June 18) and analyzed for chloride, alkalinity, conductivity, sodium, and sulfate. The results of these samples indicated that the concentration of the indicator analytes in the underdrains were similar to the pond contents. Based upon these results, it was determined that a liner leak potentially existed in Pond 4.

Mr. Ronald Burrows, Program Manager was notified of the leak by email at 3:30 pm MDT on June 18, 2009. As required by License Condition 12.3, this report is submitted within 30 days of discovery of a liner leak and discusses analytical data, mitigative actions, and the results of those actions.

Upon confirmation of a liner leak, CBO began weekly sampling of the northeast, north middle, northwest, southeast, and south middle underdrains. CBO began sampling the southwest underdrain on June 25, 2009, due to a significant increase in the water level of this underdrain between the June 18 and June 25, 2009 inspections. These samples were analyzed for alkalinity, chloride, sodium, conductivity, and sulfate. Attachment 1 contains copies of the Weekly Evaporation Pond Underdrain Analysis forms and the analytical results from the CBO laboratory. Samples were obtained on June 18 and 25, and July 2 and 9, 2009.

In addition to weekly analysis of the underdrain, CBO obtained non-routine samples from pond

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monitor wells CPM-1 and CPM-2. CPM-1 and CPM-2 are completed in the first aquifer and are located downgradient of Pond 4 at the fenced restricted area boundary. The samples were obtained and analyzed for the indicator analytes on June 18 and 25, and July 2 and 9, 2009 to ensure that there was no indication of leakage in the secondary liner. Analytical results were consistent with historical sampling results and are contained in Attachment 2.

Upon confirmation of the liner leak on June 18, CBO began to lower the level of Pond 4 by pumping water to Pond 1. Concurrently, an immediate visual inspection of the pond liner was performed. During the initial inspection an old patch was identified that had a pin-hole leak approximately six inches above the water line near the north middle underdrain. Because of the substantial rise in the water level and conductivity measurements in a number of underdrains, this small hole was not believed to be the primary source of the water in the underdrain system. The liner was again inspected on the morning of June 19, 2009, after the pond level had been lowered several inches. During this inspection, a second failed patch was identified on the west side of the liner which covered a hole that was approximately 3" in diameter. The size of this hole is consistent with the underdrain water level changes observed on June 18, 2009. It appears as though the patches failed due to liner flex caused by daily summer temperature variation.

CBO continued to lower the water level so that the failed patches could be repaired and to expose more of the liner for inspection. Colorado Linings was contacted to make the repairs, and the repairs were completed on June 26, 2009. Since the liner has been repaired, CBO has continued to lower the water level and inspect regularly for liner tears. In total, the water level has been lowered from 5.6 feet on June 18 to a low of 4.5 feet on July 2, 2009. The underdrain levels have remained stable since June 26, 2009, but the level of Pond 4 has not risen to the level where CBO believes the leak occurred. The current water level is 4.6 feet and the leak occurred at a level of 5.6 feet.

CBO will now begin pumping the affected underdrains dry. When this is completed, clean water will be added to flush the underdrains. The underdrains will be pumped dry and allowed to refill. When this process is completed, a sample will be obtained and analyzed for the indicator analytes. If the concentrations remain elevated in the underdrains, the pond level will be lowered and inspections will be performed to determine whether there are other areas of potential liner leakage.

Attachment 3 contains copies of the Commercial Pond Inspection Forms for the period of June 18 to July 9, 2006. Weekly analysis of the underdrain contents will be continued until CBO is confident that all leaks have been located and repaired.

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If you have any questions or require any further information, please do not hesitate to call me at (308) 665-2215 ext 117.

Sincerely,
CAMECO RESOURCES, CROW BUTTE OPERATION



Walter D. Nelson
Environmental Leadership Coordinator

Enclosures: As Stated

cc: Mr. Ronald Burrows – Project Manager
Mr. Steve Collings - CBO, Denver
CBO File



Attachment 1

Pond 4 Underdrain Analysis

10-Jul-09

SMLT/CK

	<u>Alk</u>	<u>Cl</u>	<u>Cond</u>	<u>SO₄</u>	<u>Na</u>
	mg/L	mg/L	µmhos	mg/L	mg/L
Pond #4 Contents	3825	71,615	151,500	6583	48682
Pond #4 NW	2750	54,598	122,100	4828	36,158
Pond #4 NE	2450	48,925	113,700	4474	33,144
Pond #4 NM	2300	53,889	120,600	4798	36,158
Pond #4 SE	2350	47,507	109,000	4259	31,541
Pond #4 SM	2000	50,343	114,300	4289	34,577
Pond #4 SW	3250	62,397	135,400	5706	42,085

02-Jul-09

SMLT/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #4 Contents	4100	80,478	161,200	7284	56,728
Pond #4 NW	2750	55,307	122,000	5042	38,986
Pond #4 NE	2500	52,470	117,500	4704	36,663
Pond #4 NM	2250	55,307	120,900	4919	38,380
Pond #4 SE	2350	46,443	107,000	4244	32,772
Pond #4 SM	2100	43,607	101,800	4013	31,004
Pond #4 SW	2700	61,688	134,100	5380	44,622

26-Jun-09

SMLT/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #4 Contents	3750	73,742	150,800	6144	48,057
Pond #4 NW	2900	62,397	128,000	5004	39,592
Pond #4 NE	2500	53,889	118,600	4528	35,855
Pond #4 NM	2400	60,625	129,900	5257	39,794
Pond #4 SE	2400	46,798	109,800	4148	31,959
Pond #4 SM	2000	51,052	112,600	4465	32,430
Pond #4 SW	3150	60,979	134,100	5669	41,915

18-Jun-09

SM/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #4 Contents	3500	47,507	144,100	6005	46,643
Pond #4 NW	1950	39,707	95,700	3562	27,101
Pond #4 NE	2200	44,671	106,500	3885	31,916
Pond #4 NM	2000	41,125	98,300	3708	28,282
Pond #4 SE	2300	42,544	100,300	3870	28,280
Pond #4 SM	1800	48,216	110,600	4253	31,714



Attachment 2

Pond Monitor Well CPM-1 and CPM-2 Analysis

10/Jul/09

SMLT/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> umhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Commercial Pond Monitor #1	200	5.1	440	13	14
Commercial Pond Monitor #2	185	5.8	420	14	12

02/Jul/09

SMLT/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> umhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Commercial Pond Monitor #1	201	5.5	440	14	15
Commercial Pond Monitor #2	186	5.6	420	15	14

26/Jun/09

SM/LT/CK

	<u>Alk</u>	<u>Cl</u>	<u>Cond</u>	<u>SO₄</u>	<u>Na</u>
	mg/L	mg/L	umhos	mg/L	mg/L
Commercial Pond Monitor #1	200	5.1	440	14	16
Commercial Pond Monitor #2	185	5.5	420	13	14

18/Jun/09

SM/CK

	<u>Alk</u>	<u>Cl</u>	<u>Cond</u>	<u>SO₄</u>	<u>Na</u>
	mg/L	mg/L	umhos	mg/L	mg/L
Commercial Pond Monitor #1	201	5.4	440	14	15
Commercial Pond Monitor #2	186	5.3	420	15	13



Attachment 3

Commercial Pond Inspection Forms

7/9

CROW BUTTE RESOURCES, INC.
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

COMMERCIAL PONDS		UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm
Depth = 17 feet	POND # 1	POND LEVEL	9.4'		28.3 °C	
		*FREEBOARD	7.6'			
		NE UNDERDRAIN	0			
		NM UNDERDRAIN	0			
		NW UNDERDRAIN	7	72.3 ms	14.7	
		SE UNDERDRAIN	0			
		SM UNDERDRAIN	0			
	SW UNDERDRAIN	9	90.9 ms	16.7		
Depth = 17.5 feet	POND # 3	POND LEVEL	10.0'		27.7 °C	
		*FREEBOARD	7.5'			
		NE UNDERDRAIN	4			
		NM UNDERDRAIN	7	20.1 ms	12.6	
		NW UNDERDRAIN	5			
		SE UNDERDRAIN	0			
		SM UNDERDRAIN	4			
	SW UNDERDRAIN	7	510 us	13.8		
Depth = 17.5 feet	POND # 4	POND LEVEL	4.6'		26.8 °C	
		*FREEBOARD	12.9'			
		NE UNDERDRAIN	16	98.9 ms	19.5	
		NM UNDERDRAIN	19	103.1 ms	15.0	
		NW UNDERDRAIN	20	110.8 ms	20.4	
		SE UNDERDRAIN	21	95.8 ms	21.0	
		SM UNDERDRAIN	30	96.8 ms	15.4	
	SW UNDERDRAIN	58	122.3 ms	19.8		

R & D POND LEVELS (Depth = 15 ft)	
EAST LEVEL:	8.2'
**EAST FREEBOARD:	6.8'
EAST UNDERDRAIN:	0"
WEST LEVEL:	8.4'
**WEST FREEBOARD:	6.6'
WEST UNDERDRAIN:	2.5"

REMARKS: Plant Waste 24.75 °C
*COMMERCIAL POND FREEBOARD = 5 FT MAX
** R&D POND FREEBOARD = 3 FT MAX
SAMPLER: Bass / Pelton
DATE: 7/9/09

CROW BUTTE RESOURCES, INC.
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

WJD
7/2/09

COMMERCIAL PONDS		UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm
Depth = 17 feet POND # 1	POND LEVEL	9.4'				
	*FREEBOARD	7.6'				
	NE UNDERDRAIN	0				
	NM UNDERDRAIN	0				
	NW UNDERDRAIN	7	73.9 ms	14.2		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	0				
	SW UNDERDRAIN	9	89.6 ms	15		
Depth = 17.5 feet POND # 3	POND LEVEL	10'				
	*FREEBOARD	7.5				
	NE UNDERDRAIN	4				
	NM UNDERDRAIN	7	20.90 ms	12.4		
	NW UNDERDRAIN	5				
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	4				
	SW UNDERDRAIN	6	519 µs	13.5		
Depth = 17.5 feet POND # 4	POND LEVEL	4.5'				
	*FREEBOARD	13.0'				
	NE UNDERDRAIN	18	99.0 ms	18.2		
	NM UNDERDRAIN	20	103.9 ms	14.7		
	NW UNDERDRAIN	14	111.6 ms	18.8		
	SE UNDERDRAIN	22	93.1 ms	18.4		
	SM UNDERDRAIN	32	107.1 ms	14.4		
	SW UNDERDRAIN	58	119.1 ms	18.3		

R & D POND LEVELS (Depth = 15 ft)	
EAST LEVEL:	7.9'
**EAST FREEBOARD:	7.1'
EAST UNDERDRAIN:	2.8'
WEST LEVEL:	8.1'
**WEST FREEBOARD:	6.9'
WEST UNDERDRAIN:	0

REMARKS: *see day Done Monthly*

*COMMERCIAL POND FREEBOARD = 5 FT MAX
 ** R&D POND FREEBOARD = 3 FT MAX

SAMPLER: *Rellom*
 DATE: *7-2-09*

CROW BUTTE RESOURCES, INC.
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

COMMERCIAL PONDS	UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm
POND # 1 Depth = 17 feet	POND LEVEL	8.7'			
	*FREEBOARD	9.3'			
	NE UNDERDRAIN	0			
	NM UNDERDRAIN	0			
	NW UNDERDRAIN	6'	72.2 ms	14.1	
	SE UNDERDRAIN	0			
	SM UNDERDRAIN	0			
	SW UNDERDRAIN	9	88.1 ms	14.9	
POND # 3 Depth = 17.5 feet	POND LEVEL	10.1'			
	*FREEBOARD	7.5'			
	NE UNDERDRAIN	4			
	NM UNDERDRAIN	7	2140 ms	13.7	
	NW UNDERDRAIN	5			
	SE UNDERDRAIN	0			
	SM UNDERDRAIN	4			
	SW UNDERDRAIN	6	582 us	13.1	
POND # 4 Depth = 17.5 feet	POND LEVEL	5.2'			
	*FREEBOARD	12.3'			
	NE UNDERDRAIN	16	100.3 ms	17.6	
	NM UNDERDRAIN	19	101.8 ms	14.3	
	NW UNDERDRAIN	19	73.5 ms	17.5	
	SE UNDERDRAIN	22	91.4 ms	18.3	
	SM UNDERDRAIN	32	103.3 ms	14.3	
	SW UNDERDRAIN	60	111.3 ms	18.1	

R & D POND LEVELS (Depth = 15 ft)	
EAST LEVEL:	8.1'
**EAST FREEBOARD:	6.9'
EAST UNDERDRAIN:	2.5"
WEST LEVEL:	8.1'
**WEST FREEBOARD:	6.9'
WEST UNDERDRAIN:	0"

REMARKS: Hot + Windy
*COMMERCIAL POND FREEBOARD = 5 FT MAX
** R&D POND FREEBOARD = 3 FT MAX
SAMPLER: Pelton / Bass
DATE: 6/25/09

W.D.
6/18/09

CROW BUTTE RESOURCES, INC.
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

COMMERCIAL PONDS		UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm
Depth = 17 feet	POND # 1	POND LEVEL	8.4'			
		*FREEBOARD	8.6'			
		NE UNDERDRAIN	0			
		NM UNDERDRAIN	0			
		NW UNDERDRAIN	6	71.7 ms	13.6	
		SE UNDERDRAIN	0			
		SM UNDERDRAIN	0			
		SW UNDERDRAIN	9	85.3 ms	13.9	
Depth = 17.5 feet	POND # 3	POND LEVEL	10.0'			
		*FREEBOARD	7.5'			
		NE UNDERDRAIN	4			
		NM UNDERDRAIN	7	21.36 ms	12.4	
		NW UNDERDRAIN	5			
		SE UNDERDRAIN	0			
		SM UNDERDRAIN	4			
		SW UNDERDRAIN	5			
Depth = 17.5 feet	POND # 4	POND LEVEL	5.6'			
		*FREEBOARD	11.9'			
		NE UNDERDRAIN	16	99.5 ms	16.9	
		NM UNDERDRAIN	14	101.6 ms	13.7	
		NW UNDERDRAIN	15	74.9 ms	17.3	
		SE UNDERDRAIN	22	111.8 ms	17.6	
		SM UNDERDRAIN	32	103.4 ms	13.6	
		SW UNDERDRAIN	0			

R & D POND LEVELS (Depth = 15 ft)	
EAST LEVEL:	8.1'
**EAST FREEBOARD:	8.1 6.9
EAST UNDERDRAIN:	2.5"
WEST LEVEL:	8.1'
**WEST FREEBOARD:	7.0
WEST UNDERDRAIN:	0

REMARKS:
Windy
*COMMERCIAL POND FREEBOARD = 5 FT MAX
** R&D POND FREEBOARD = 3 FT MAX
SAMPLER: B. Bass
DATE: 6/18/09