CAMECO RESOURCES,
CROW BUTTE OPERATION

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April 12, 2013

Attn: Document Control Desk, 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

Subject: Source Materials License SUA-1534
Docket No. 40-8943
Commercial Evaporation Pond #1 Potential Liner Leak

Dear Deputy Director:

On March 13, 2013 routine evaporation pond monitoring results of Cameco Resources - Crow Butte Operation (CBO) Commercial Evaporation Pond #1, water level readings from the south middle underdrain indicated a potential pond liner leak. A sample was collected from the underdrain and analyzed for chloride, alkalinity, conductivity, sodium, and sulfate late in the afternoon on March 13, 2013. The sample was analyzed in the CBO laboratory on March 14, 2013, and these results indicated that the concentration of the indicator analytes in the underdrain were similar to the pond contents. Based upon these results, it was determined that a potential liner leak existed in Commercial Evaporation Pond #1.

When the lab results were obtained, Mr. Ron Burrows of the Nuclear Regulatory Commission (NRC) was notified by telephone on March 14, 2013 of the potential liner leak as required by License Condition 12.3. As required by License Condition 12.3, this report provides analytical data, monitoring results, mitigative actions, and the results of those actions.

Upon confirmation of the potential liner leak, CBO sampled the south middle underdrain contents. This sample was analyzed on March 14, 2013 for alkalinity, chloride, sodium, conductivity, and sulfate. Attachment #3 contains copies of the Weekly Evaporation Pond Underdrain Analysis Forms and attachment #1 the analytical results from the CBO laboratory on the sample obtained March 13, 2013.

In addition to analysis of the underdrain, CBO obtained samples from pond monitor wells CPM-1 and CPM-2. CPM-1 and CPM-2 are completed in the first aquifer and are located down gradient of Commercial Evaporation Pond #1 at the fenced restricted area boundary. The samples were obtained and analyzed for the

indicator analytes on March 25 and April 8 to ensure that there was no indication of leakage in the secondary liner. Analytical results, contained in Attachment #2, were consistent with historical sampling results indicating no breach in the secondary liner.

Upon confirmation of the potential liner leak, CBO began lowering the level of Commercial Evaporation Pond #1 by transferring contents to Commercial Evaporation Pond #3 to draw down the pond level. Concurrently, an immediate visual inspection of the pond liner was performed. Initial efforts to locate a leak were unsuccessful. The level of the pond was lowered from 5.6' to 2.9' following indications of a potential liner leak. The liner has been visually inspected from the embankment several times and from a boat at the edge of the water line when the pond water level reached its low of 2.9'. The liner appears to be in good condition and no breach in the liner has been identified. The south middle underdrain level was monitored closely in the days following the March 13th measurement. Measurements were taken on March 18, 20, 22, 25, 27, and 28. The level in the underdrain fluctuated between a reading of 6 and 8 inches for all of these measurements and the conductivity of the underdrain remained relatively constant. The level fluctuation is consistent with fluctuations often observed in the spring when frost leaves the ground. CBO believes the high conductivity water migrated into the south middle underdrain from the southwest underdrain, which had been impacted by an earlier leak. To remedy this issue, the southwest underdrain was pumped down, and then the south middle underdrain was pumped down. Following pumping the underdrains, both have maintained a level of "0" for the April 3 and April 12 level readings. CBO will continue to monitor the underdrain level and inspect the upper liner for tears.

Attachment #3 contains copies of the Commercial Pond Inspection Forms for the period of March 13, 2013 to April 12, 2013.

If you have any questions or require any further information, please do not hesitate to call me at (308) 665-2215 ext 114.

Sincerely,
CAMECO RESOURCES
CROW BUTTE OPERATION

Larry Teahon

Larry Teahon
SHEQ Manager

Enclosures: As Stated

cc: Mr. Ronald Burrows – NRC
CBO File
ec: CR - Cheyenne

Attachment #1

Commercial Evaporation Pond #1 South Middle Underdrain Analysis

3/13/2013

SM/LT/MO

	Alk	Cl	Cond	SO_4	Na
	mg/L	mg/L	µmhos	mg/L	mg/L
Pond 1 SM	1775	58,143	129,900	5535	35,070

Attachment #2

Pond Monitor Well CPM-1 and CPM-2 Analysis

3/25/2013

SM/LT/MO

	Alk	Cl	Cond	SO_4	Na
	mg/L	mg/L	umhos	mg/L	mg/L
Commercial Pond Monitor #1	203	12	470	14	20
Commercial Pond Monitor #2	187	6.3	420	13	18

4/8/2013

SM/LT/MO

	Alk	Cl	Cond	SO_4	Na
	mg/L	mg/L	umhos	mg/L	mg/L
Commercial Pond Monitor #1	202	12	460	15	20
Commercial Pond Monitor #2	186	6.2	420	15	17

Attachment #3

Commercial Pond Inspection Forms

CAMECO RESOURCES/CROW BUTTE OPERATION
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

W2

	COMMERCIAL PONDS	UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm
POND # 1 Depth = 17 feet	POND LEVEL	5.6				
	*FREEBOARD	11.4				
	NE UNDERDRAIN	0				
	NM UNDERDRAIN	18	77.1 ms	5.0		
	NW UNDERDRAIN	19	64.9 ms	5.0		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	6	81.0 ms	5.0		
	SW UNDERDRAIN	~~19~~ 9 -WO	62.4 ms	5.3		
POND # 3 Depth = 17.5 feet	POND LEVEL	3.8				
	*FREEBOARD	13.7				
	NE UNDERDRAIN	10	418.5 us	6.8		
	NM UNDERDRAIN	18	16.71 ms	3.3		
	NW UNDERDRAIN	19	52.1 ms	4.7		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	5				
	SW UNDERDRAIN	10	11.34 ms	4.7		
POND # 4 Depth = 17.5 feet	POND LEVEL	1.9				
	*FREEBOARD	15.6				
	NE UNDERDRAIN	15	2881 us	5.9		
	NM UNDERDRAIN	15	2125 us	5.7		
	NW UNDERDRAIN	8	2186 ms	6.1		
	SE UNDERDRAIN	19	20.59 ms	5.9		
	SM UNDERDRAIN	15	3189 us	5.4		
	SW UNDERDRAIN	16	9.98 ms	5.2		

R & D POND LEVELS (Depth = 15 ft)	
EAST LEVEL:	8.3
**EAST FREEBOARD:	6.7
EAST UNDERDRAIN:	0
WEST LEVEL:	5.7
**WEST FREEBOARD:	9.3
WEST UNDERDRAIN:	0

REMARKS:
*COMMERCIAL POND FREEBOARD = 5 FT MAX
** R&D POND FREEBOARD = 3 FT MAX
SAMPLER: B. Bass / R. Pelton
DATE: 3/13/13

CAMECO RESOURCES/CROW BUTTE OPERATION
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	4.2'				
	*FREEBOARD	12.8'				
	NE UNDERDRAIN	0				
	NM UNDERDRAIN	18	7.65 ms	5.1		
	NW UNDERDRAIN	19	62.7 ms	5.6		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	8	78.9 ms	4.9		
	SW UNDERDRAIN	9	62.1 ms	5.5		
POND # 3 Depth = 17.5 feet	POND LEVEL	5.4'				
	*FREEBOARD	12.1'				
	NE UNDERDRAIN	6	613 us	6.9		
	NM UNDERDRAIN	17	16.35 ms	4.0		
	NW UNDERDRAIN	19	53.6 ms	5.9		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	5				
	SW UNDERDRAIN	10	12.15 ms	4.6		
POND # 4 Depth = 17.5 feet	POND LEVEL	1.9'				
	*FREEBOARD	15.6'				
	NE UNDERDRAIN	16	2942 us	6.0		
	NM UNDERDRAIN	15	2218 us	5.9		
	NW UNDERDRAIN	9	22.4 ms	6.2		
	SE UNDERDRAIN	19	21.97 ms	6.0		
	SM UNDERDRAIN	16	3389 us	5.9		
	SW UNDERDRAIN	16	10.03 ms	5.3		

R & D POND LEVELS (Depth = 15 ft)
EAST LEVEL: 8.4
**EAST FREEBOARD: 6.6'
EAST UNDERDRAIN: 0
WEST LEVEL: 5.7
**WEST FREEBOARD: 9.3'
WEST UNDERDRAIN: 0

REMARKS: Windy!

*COMMERCIAL POND FREEBOARD = 5 FT MAX

** R&D POND FREEBOARD = 3 FT MAX

SAMPLER: Bass - Pelton

DATE: 3-20-2013

CAMECO RESOURCES/CROW BUTTE OPERATION
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	3.0'				
	*FREEBOARD	14.0'				
	NE UNDERDRAIN	0				
	NM UNDERDRAIN	19	79.4 ms	5.4		
	NW UNDERDRAIN	18	63.7 ms	5.2		
	SE UNDERDRAIN	1				
	SM UNDERDRAIN	8	79.0 ms	5.3		
	SW UNDERDRAIN	5				
POND # 3 Depth = 17.5 feet	POND LEVEL	6.6'				
	*FREEBOARD	10.9'				
	NE UNDERDRAIN	6	1017 us	7.5		
	NM UNDERDRAIN	18	15.96 ms	5.0		
	NW UNDERDRAIN	19	54.8 ms	6.9		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	5				
	SW UNDERDRAIN	11	11.87 ms	6.9		
POND # 4 Depth = 17.5 feet	POND LEVEL	1.8				
	*FREEBOARD	15.7				
	NE UNDERDRAIN	16	3261 us	6.6		
	NM UNDERDRAIN	16	2220 us	6.9		
	NW UNDERDRAIN	10	2.364 ms -wo	6.8		
	SE UNDERDRAIN	17	19.34 ms	6.5		
	SM UNDERDRAIN	13	3605 us	6.6		
	SW UNDERDRAIN	23	8.146 ms	5.8		

R & D POND LEVELS (Depth = 15 ft)	
EAST LEVEL:	8.4'
**EAST FREEBOARD:	6.6'
EAST UNDERDRAIN:	0
WEST LEVEL:	5.7'
**WEST FREEBOARD:	9.3'
WEST UNDERDRAIN:	0

REMARKS:

*COMMERCIAL POND FREEBOARD = 5 FT MAX

** R&D POND FREEBOARD = 3 FT MAX

SAMPLER: B. Bass

DATE: 3/27/13

CAMECO RESOURCES/CROW BUTTE OPERATION
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	2.9				
	*FREEBOARD	14.1				
	NE UNDERDRAIN	0				
	NM UNDERDRAIN	19	81.0 ms	5.5		
	NW UNDERDRAIN	18	64.1 ms	5.2		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	0				
	SW UNDERDRAIN	0				
POND # 3 Depth = 17.5 feet	POND LEVEL	6.7				
	*FREEBOARD	10.8				
	NE UNDERDRAIN	6	1032 us	7.3		
	NM UNDERDRAIN	18	14.74 ms	5.1		
	NW UNDERDRAIN	19	55.7 ms	6.7		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	5				
	SW UNDERDRAIN	10	11.01 ms	6.8		
POND # 4 Depth = 17.5 feet	POND LEVEL	1.9				
	*FREEBOARD	15.6				
	NE UNDERDRAIN	16	3294 us	6.7		
	NM UNDERDRAIN	16	2271 us	7.0		
	NW UNDERDRAIN	10	2418 us	6.9		
	SE UNDERDRAIN	17	20.02 ms	6.5		
	SM UNDERDRAIN	13	3631 us	6.7		
	SW UNDERDRAIN	22	9.10 ms	6.0		

R & D POND LEVELS (Depth = 15 ft)
EAST LEVEL: 8.4
**EAST FREEBOARD: 6.6
EAST UNDERDRAIN: 0
WEST LEVEL: 5.7
**WEST FREEBOARD: 9.3
WEST UNDERDRAIN: 0

REMARKS: Bluish & warm

Done Monthly

*COMMERCIAL POND FREEBOARD = 5 FT MAX

** R&D POND FREEBOARD = 3 FT MAX

SAMPLER: Bass - Patton

DATE: 4-3-2013

CAMECO RESOURCES/CROW BUTTE OPERATION
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	3.5'				
	*FREEBOARD	13.5'				
	NE UNDERDRAIN	0"				
	NM UNDERDRAIN	19"	81.0 ms	6.5°		
	NW UNDERDRAIN	20"	52.6 ms	6.3°		
	SE UNDERDRAIN	0"				
	SM UNDERDRAIN	0"				
	SW UNDERDRAIN	0"				
POND # 3 Depth = 17.5 feet	POND LEVEL	7.0'				
	*FREEBOARD	10.5				
	NE UNDERDRAIN	7"	816 us	7.5°		
	NM UNDERDRAIN	18"	14.93 ms	5.6°		
	NW UNDERDRAIN	19"	53.6 ms	7.5°		
	SE UNDERDRAIN	0"				
	SM UNDERDRAIN	5"				
	SW UNDERDRAIN	11"	11.66 ms	7.6°		
POND # 4 Depth = 17.5 feet	POND LEVEL	Snow on Liner				
	*FREEBOARD	Snow on Liner				
	NE UNDERDRAIN	17"	4.97 ms	8.3°		
	NM UNDERDRAIN	17"	1970 us	8.5°		
	NW UNDERDRAIN	11"	2717 us	8.5°		
	SE UNDERDRAIN	17"	19.47 ms	7.7°		
	SM UNDERDRAIN	13"	3733 us	8.4°		
	SW UNDERDRAIN	24"	13.18 ms	7.5°		

R & D POND LEVELS (Depth = 15 ft)	
EAST LEVEL:	Snow on Liner
**EAST FREEBOARD:	Snow on Liner
EAST UNDERDRAIN:	0"
WEST LEVEL:	Snow on Liner
**WEST FREEBOARD:	Snow on Liner
WEST UNDERDRAIN:	6"

REMARKS: Friday Inspection. No inspection on Wednesday due to blizzard conditions.

*COMMERCIAL POND FREEBOARD = 5 FT MAX

** R&D POND FREEBOARD = 3 FT MAX

SAMPLER: Walter D Nelson

DATE: 4/12/13

NRC FORM 253 (9-96)

U.S. NUCLEAR REGULATORY COMMISSION

MESSENGER/COURIER RECEIPT

DATE OF REQUEST: 4-22-13	CONTROL NUMBER:		
TO: RON BURROWS	OFFICE: FSME	BUILDING: TWFN	ROOM NUMBER: T-8F5
FROM: CROW BUTTE RESOURCES	OFFICE: ADM	BUILDING: OWFN	ROOM NUMBER: P1-37

DESCRIPTION

7010 0780 0000 1422 4596

MESSENGER/COURIER SIGNATURE

MESSENGER/COURIER	DATE RECEIVED
	TIME RECEIVED
MESSENGER/COURIER	DATE RECEIVED
	TIME RECEIVED

RECIPIENT'S SIGNATURE

RECIPIENT: Debbie Miller	DATE RECEIVED
	TIME RECEIVED: 2:50

SENDER:
1. Complete "DATE OF REQUEST," "TO:," "FROM:," and unclassified "DESCRIPTION" blocks.
2. Obtain MESSENGER/COURIER signature, date received, and time received in first blocks provided.
3. Retain "SENDER'S SUSPENSE COPY."

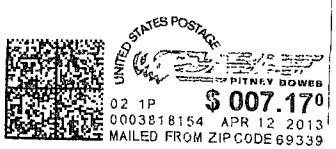
MESSENGER/COURIER:
1. Deliver package to recipient or next messenger/ courier enroute to addressee.
2. Obtain MESSENGER/COURIER or RECIPIENT signature, date received, and time received in the appropriate blocks provided.

RECIPIENT:
1. Provide signature, date received, and time received in the appropriate blocks.
2. Retain RECIPIENT'S COPY.
3. Return original to mesenger/courier immediately, who will return it to the sender.

NRC FORM 253 (9-96)

RECIPIENT'S COPY

7010 0780 0000 1422 4596



Cameco

CAMECO RESOURCES
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Mr. Ron Burrows, Project Manager
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