CAMECO RESOURCES
CROW BUTTE OPERATION

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May 9, 2013

Mr. Michael Linder, Director
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

Crow Butte Resources, Inc.
Class III Underground Injection Control (UIC) Permit Number NE0122611
Mine Unit 3 Restoration Status

Dear Mr. Linder:

In accordance with the approved Crow Butte Resources, Inc., d/b/a Cameco Resources – Crow Butte Operation (CBO), Groundwater Restoration Plan, CBO is submitting analytical data concerning the restoration of Mine Unit 3 at the Crow Butte Uranium Project. Split samples from all restoration wells were obtained with the Nebraska Department of Environmental Quality (NDEQ) on March 1, 2013. This data provides supporting documentation that restoration efforts have been successful in returning Mine Unit 3 to the approved restoration goals. Upon NDEQ approval, CBO plans to place Mine Unit 3 into the initial phase of stabilization restoration.

Commercial operation of Mine Unit 3 began in November 1992. The restoration plan for this mine unit was submitted to NDEQ on March 24, 1999 and was amended and approved by NDEQ in a letter dated February 13, 2008. Injection of lixiviant into this mine unit was ceased on July 22, 1999. Since that time period, the mine unit has been in IX and RO treatment with the following exceptions:

On August 9, 2007 the entire restoration circuit was shut down so that changes could be made to increase the flow through IX and RO treatment. During this time period the mine unit was in recirculation to maintain a hydrologic bleed until April 1, 2009, when IX treatment resumed in this mine unit. On May 26, 2009, the RO circuit was restarted and this mine unit was placed back into RO treatment.

In February 2009, Crow Butte contracted with a third party hydrogeologist to develop a restoration flow model for Mine Units 2 through 5. The groundwater flows at the facility were simulated using MODFLOW2000, a three-dimensional groundwater flow model

developed by the United States Geological Survey. The groundwater flow model was calibrated to pre-mining conditions using water level data collected prior to the mining activities in January 1983. Initial estimates of aquifer properties and boundary water levels were adjusted slightly as part of the model calibration process in order to achieve the best possible match between observed and simulated water levels. The calibrated groundwater flow model was used to optimize restoration in Mine Unit 3 given certain practical limitations on treatment rates, disposal capacity, and existing well injection and extraction rates. Based on this model, eight additional restoration wells were installed to remediate the excursion of lixiviant along the perimeter monitor well IJ-13.

Restoration was performed as described in the Groundwater Restoration Plan, utilizing groundwater sweep, treatment and recirculation. The total gallons used in each phase through the end of March 2013 are as follows:

Restoration Phase	Total Gallons	Pore Volumes
Sweep	13,351,100	.70
Treatment (IX)	781,420,810	40.97
Treatment (RO)	473,010,400	24.80*
Recirculation	61,796,520	3.24

*See attached Aqui-Ver, Inc. report for a detailed analysis and history of RO treatment.

CBO is required by the NDEQ UIC Permit to determine the baseline groundwater quality for a list of 27 water quality parameters. The baseline average for each well is determined for each parameter. These well averages are then used to determine the overall mine unit average for each parameter. Baseline for Mine Unit 3 was determined prior to mining operations and submitted for approval by the regulatory agencies.

NDEQ restoration goals are based upon state groundwater standards. For those parameters that have a numerical groundwater standard established in Title 118 of the NDEQ Rules and Regulations[1] or in other established documents, restoration must successfully return the groundwater to that standard. If the baseline preoperational mean for the mine unit exceeds the standard for any parameter, the restoration goal for that parameter is set at the baseline mean plus two standard deviations. Where no standard is established (calcium, potassium, magnesium and sodium) the restoration value is set at one order of magnitude above baseline mean. The restoration value for total carbonate shall not exceed 50% of the total dissolved solids.

[1] Title 118 – Ground Water Quality Standards and Use Classification, NDEQ July 29, 1996.

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All parameters in Mine Unit 3 have met the NDEQ restoration goals on a mine unit average. CBO obtained composite samples from the restoration wells on March 1, 2013. This sampling indicated that all parameters met the restoration goals.

The attached table provides analytical data for the Mine Unit 3 restoration wells. The results for all parameters are from the March 2013 composite sampling.

Based upon the analytical results, CBO believes that restoration efforts have been successful in restoring Mine Unit 3 to the approved restoration goals. Split sampling will be performed with the NDEQ upon approval from the department to begin stability monitoring. At that time, Mine Unit 3 will be shut in for the stabilization phase of restoration.

If you have any questions or require further information, please do not hesitate to contact me at (307) 316-7601.

Sincerely,
CAMECO RESOURCES
CROW BUTTE OPERATION

William Goranson /TAR
William Goranson, President
Crow Butte Resources, Inc.

Attachment: As Stated

cc: Shar Sapp – NDEQ Chadron Office
Nancy Harris – NDEQ Lincoln Office
Ron Burrows - NRC
CBO - File
ec: CR - Cheyenne

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Mine Unit 3 Restoration Results

Parameter	Title 118 Groundwater Standard [2]	MU-3 Baseline Mean	MU-3 Standard Deviation	MU-3 NDEQ Restoration Value [3]	MU-3 Average Water Quality March 2013
Ammonium (mg/L)	10.0	<0.329	N/A	10.0	0.09
Arsenic (mg/L)	0.05	<0.001	N/A	0.05	0.046
Barium (mg/L)	1.0	<0.1	N/A	1.0	<0.1
Cadmium (mg/L)[1]	0.005	<0.01	N/A	0.005	<0.005
Chloride (mg/L)	250.0	197.6	16.7	250.0	40.0
Copper (mg/L)	1.0	<0.0108	N/A	1.0	<0.01
Fluoride (mg/L)	4.0	0.719	0.05	4.0	0.70
Iron (mg/L)	0.3	<0.05	N/A	0.3	0.07
Mercury (mg/L)	0.002	<0.001	N/A	0.002	<0.001
Manganese (mg/L)	0.05	<0.01	N/A	0.05	0.01
Molybdenum (mg/L)	1.0	<0.1	N/A	1.0	<0.1
Nickel (mg/L)	0.15	<0.05	N/A	0.15	<0.05
Nitrate (mg/L)	10.0	<0.0728	N/A	10.0	<0.1
Lead (mg/L)	0.05	<0.05	N/A	0.05	0.001
Radium (pCi/L)	5.0	165	222.5	611.0	64.0
Selenium (mg/L)	0.05	<0.00115	N/A	0.05	<0.005
Sodium (mg/L)	N/A	428	27.6	4280	138.0
Sulfate (mg/L)	250.0	377.0	13.4	404.0	75.0
Uranium (mg/L)	5.0	0.115	0.158	5.0	0.6020
Vanadium (mg/L)	0.2	<0.1	N/A	0.2	0.2
Zinc (mg/L)	5.0	<0.0131	N/A	5.0	<0.01
pH (Std. Units)	6.5 - 8.5	8.37	0.3	6.5 – 8.5	8.04
Calcium (mg/L)	N/A	13.3	3.1	133.0	7.0
Total Carbonate (mg/L)	N/A	358.7	24.8	592.0	208.0
Potassium (mg/L)	N/A	13.9	4.0	139	5.0
Magnesium (mg/L)	N/A	3.5	0.9	35.0	1.0
TDS (mg/L)	N/A	1183.0	47.4	1183.0	420.0

[1] Standard for Cadmium lowered in modification to UIC permit dated March 9, 2001 following NDEQ approval of Mine Unit 1 restoration.

[2] Title 118 numerical standards in effect at the time the Notice of Intent was filed with the NDEQ.

[3] Restoration values based on Title 118 numerical standards and well field averages at the time the Notice of Intent was submitted to the NDEQ.

N/A = Not Applicable