

**CAMECO RESOURCES  
CROW BUTTE OPERATION**



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February 18, 2009

United States Nuclear Regulatory Commission  
Region IV  
Material Radiation Protection Section  
611 Ryan Plaza Drive  
Suite 400  
Arlington, Texas 76011-4005

Subject:        Semiannual Radiological Effluent and Environmental Monitoring Report  
                 Source Materials License No. SUA-1534, Docket No. 40-8943

Dear Sir or Madam:

Enclosed please find one copy of the Semiannual Radiological Effluent and Environmental Monitoring Report for the Crow Butte Uranium Project. The report is provided in accordance with License Condition 12.1 of Source Materials License SUA-1534 and 10 CFR Part 40. This report covers the third and fourth quarters of 2008.

If you have any questions concerning the report, please feel free to call me at (308) 665-2215.

Sincerely,  
CAMECO RESOURCES

Larry Teahon  
Manager of Health, Safety and Environmental Affairs

cc:     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  
         U.S. Nuclear Regulatory Commission  
         Mailstop T8-F5  
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**CROW BUTTE URANIUM PROJECT  
RADIOLOGICAL EFFLUENT  
AND  
ENVIRONMENTAL MONITORING  
REPORT**

**for**

**THIRD AND FOURTH QUARTERS, 2008**

**USNRC Source Materials License SUA 1534**

2/18/09

**CAMECO RESOURCES  
CROW BUTTE OPERATION**



**Second Half 2008 Semiannual Radiological Effluent  
and Environmental Monitoring Report**

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## Second Half 2008 Semiannual Radiological Effluent and Environmental Monitoring Report

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### 1 WATER QUALITY MONITORING DATA

#### 1.1 Excursion Monitoring

Biweekly excursion monitoring in the shallow aquifer and perimeter monitor wells was continued in Mine Units 2 through 10 during the third and fourth quarters of 2008.

PR-8, PR-15, and IJ-13 remain on excursion status. These monitor wells are associated with Mine Units 2 and 3, which are currently undergoing groundwater restoration.

On September 26, 2006, Mine Unit 2 perimeter monitor well PR-15 was placed on excursion status. PR-15 is a baseline restoration well in Mine Unit 1 that was chosen to monitor the boundary of Mine Unit 2 following the approval of restoration. The current restoration activities in Mine Unit 2, adjacent to PR-15, include groundwater transfer and wellfield recirculation. IJ-13 and PR-8, two other baseline restoration wells from Mine Unit 1, have remained on excursion status since December 27, 2002 and December 23, 2003 respectively. Due to the geometry of Mine Units 2 and 3, CBR is of the opinion that PR-15 will continue to exhibit the same trend as IJ-13 and PR-8 until Mine Units 2 and 3 can be fully restored along the perimeter of Mine Unit 1.

Excursion reports have been submitted to NRC as required in License Condition 12.2. Complete excursion monitoring results are available on site for inspection. A summary table for monitor wells on excursion status during the second half of 2007 follows.

Monitor Well ID	Date On Excursion	Date Off Excursion	Biweekly Sampling Resumed	Causal Factor(s)
PR-8	23 Dec 03			Wellfield geometry
IJ-13	27 Dec 03			Wellfield geometry
PR-15	26 Sep 06			Wellfield geometry

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## **1.2 Water Supply Wells and Surface Water**

Summary sheets of quarterly radiological analytical data for the reporting period from all surface waters and water supply wells within one kilometer of the active wellfield boundary are included in Appendix A.

The reported radiological data are within the expected ranges for each well or stream. Samples were obtained from all sample locations with the exceptions noted in Appendix A.

## **2 OPERATIONAL**

### **2.1 Production Data Summary**

Mining operations continued through the third and fourth quarters of 2008. The average operating production flow rate was 4,100 gpm for the third quarter and 5,136 gpm for the fourth quarter. Injection and production totals from the totalizers and the calculated bleed totals for the reporting period are included in Appendix B.

The main injection trunkline is equipped with a continuous pressure sensor. The average and maximum injection pressures for each wellhouse are included in Appendix C in the Wellfield Injection Pressure table.

### **2.2 Wastewater Summary**

The total volume of wastewater discharged to the ponds was 2,543,657 gallons during the third quarter and 2,488,945 gallons during the fourth quarter. Currently, all five evaporation ponds contain wastewater.

Wastewater that is not disposed of in the evaporation ponds is injected into the Deep Disposal Well (DDW). Currently, the well is operated on a nearly continuous basis and 28,118,570 gallons of wastewater was injected into the well during the second half of 2008. A summary of the total volume of wastewater injected and the average radionuclide content is contained in Appendix D.

### **2.3 Effluent Release**

10 CFR §40.65 requires licensees to report quantities of radionuclides in liquid and gaseous effluent releases to the environment. In the Application for Renewal of Source Materials License SUA-1534, submitted December 1995, Table 7.3(A) presented calculations of the annual radon emissions for the Crow Butte Plant. These calculations assumed a  $7.04 \times 10^{-4}$  Curies/m<sup>3</sup> radon

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release from leaching operations and the radon release calculations for the second half of 2008 use this release rate estimate.

During the third quarter production occurred at an average flow rate of 4,100 gpm (15,520 lpm). Production was maintained continuously for 92 days during the third quarter with an operating factor of 100%. The production flow for the third quarter results in a calculated radon release of 1,042 Curies. During the fourth quarter production occurred at an average flow rate of 5,136 gpm (19,442 lpm). Production was maintained nearly continuously for 92 days during the fourth quarter with an operating factor of 97.5%. The production flow for the fourth quarter results in a calculated radon release of 1,273 Curies. Calculations for radon release from production operations are shown in Appendix E.

Additional wells were brought on line during the second half of 2008. Calculations for the start-up of 10.6 acres of a new wellfield are shown in Appendix E. The calculated radon released from start-up of 10.6 acres is 13 Curies.

The total radon emission due to leaching operations from the Crow Butte plant for the second half of 2008 was 2,328 Curies. This calculated release rate is comparable with the releases estimated in CBR's License Renewal Application.

Radon gas is also released from restoration activities. For restoration water that is treated by ion exchange only, the radon concentration is 0.697  $\mu\text{Ci/l}$ . Of the total restoration production flow it is assumed that 25% of the radon is released through wellfield loss and 10% of the remaining radon is released during pressurized ion exchange treatment. For water that is treated by reverse osmosis, it is assumed that 100% of the remaining radon is released. For water treated by reverse osmosis the radon concentration is 0.470  $\mu\text{Ci/l}$  after adjusting for wellfield loss and ion exchange loss.

During the second half of 2008, a total of 113,313,348 gallons (428,936,348 l) of restoration water was produced from Mine Units 2, 3, 4, and 5. Based upon an estimated radon concentration of 0.697  $\mu\text{Ci/l}$ , the total amount of radon in the restoration solution was calculated to be 299 Curies as shown in Appendix E. The estimated release of radon through wellfield loss at 25% of this total was 75 Curies. The plant loss for ion exchange treatment of the restoration water is estimated at 10% of the remaining radon, or 22 Curies.

Of the total amount of restoration water produced in the second half of 2008, 0 gallons (0 l) of the water was treated by reverse osmosis. An additional 1.0 acres of wellfields were placed in restoration during the second half of 2008. The calculated radon released from start-up of 1.0 acres is 1 Curie. Calculations for the start-up of 1.0 acres of a wellfield placed in restoration are shown in Appendix E.

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Based upon the calculations shown in Appendix E, the total estimated semiannual radon emission for the second half of 2008 from restoration activities was 98 Curies. This resulted in a total estimated radon release from the Crow Butte project during the second half of 2008 of 2,427 Curies.

#### **2.4 Restoration**

Restoration was shut off on August 9, 2007 so that an upgrade could be made to the restoration circuit. Restoration activities resumed in Mine Units 2, 3, 4, and 5 during the second half of 2008 by recirculation of the mine units through IX columns to maintain a hydrologic bleed. Restoration injection and production totals are included in Appendix B. Restoration injection pressures are included in Appendix C.

### **3 ENVIRONMENTAL MONITORING**

#### **3.1 Air Monitor Stations**

Seven air monitoring stations are used to monitor the Crow Butte Plant. Ambient radon-222 concentrations and radionuclide concentrations in air for each monitoring site are listed in Appendix F.

All seven monitor stations had an ambient radon-222 concentration higher than the prior reporting period. The laboratory indicated that the track etch cups may have received some exposure during shipping or storage. It has been the site's practice to order a years supply of track etch cups at the end of each year. One set of the cups are kept in storage until they are set out in July. For the second half of 2009, a duplicate set of track etch cup will be ordered in June and set out with the cups that have been in storage as a cross check for potential exposure from storage.

The uranium concentration at AM-5 appeared elevated during the third quarter and was re-checked for accuracy. The fourth quarter results were more in line with the first and second quarter concentrations.

#### **3.2 TLD Monitors**

Environmental TLD monitors are located at each air monitoring station. The results of the area TLD monitors fall within the expected ranges and are listed in Appendix G.

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#### **3.3 Stream Sediments**

Sediment samples are collected from three locations on Squaw Creek (S-1, S-2, and S-5), two locations on English Creek (E-1, and E-5), and from three impoundments on English Creek (I-3, I-4, and I-5) on an annual basis during the fourth quarter. The results of sediment sampling for 2008 are included in Appendix H.

The concentration of natural uranium at the upper end of English Creek was above the regional background levels. CBR has noted these elevated concentrations in the English Creek drainage during preoperational monitoring, which indicates that these levels are anomalous natural background concentrations. Composite samples obtained from E-1 and E-2 as part of the preoperational sampling program from 1982 through 1986 had average results with elevated natural uranium (3.4 pCi/g) and lead-210 (1.4 pCi/g) when compared with the other surface water sample locations. Samples obtained in 1998 before mining operations began in this area showed similar elevated uranium concentrations.

This sample location is in a wetland area in the upper course of English Creek. The area has a large amount of organic matter and low water flows as compared with the other surface water sampling locations for the project. CBR believes that the upper courses of English Creek are an area with reducing conditions that favor deposition of radionuclides. Due to the drought conditions in this area, the streams and wetland areas have been dry. Appendix H contains a trend graph for English Creek sediment sample points since 1998 that shows the elevated uranium concentrations noted in past sediment samples.



**Appendix A**

**Private Well and Surface Water Radiological Monitoring Results**

**Third and Fourth Quarter, 2008**

**CROW BUTTE RESOURCES, INC.**

**PRIVATE WELL AND SURFACE WATER RADIOLOGICAL MONITORING RESULTS**

**THIRD QUARTER, 2008**

<b>SAMPLE ID</b>	<b>DATE SAMPLED</b>	<b>URANIUM mg/l</b>	<b>URANIUM µCi/ml</b>	<b>RADIUM-226 pCi/l</b>	<b>RADIUM-226 precision ±</b>
Well #8	08/08/08	0.0110	7.20E-09	ND	0.12
Well #11	08/15/08	0.0070	4.70E-09	0.25	0.15
Well #12	08/08/08	0.0035	2.40E-09	ND	0.11
Well #26	08/08/08	0.0049	3.30E-09	ND	0.13
Well #28	08/08/08	0.0053	3.60E-09	ND	0.120
Well #41	08/15/08	0.0061	4.10E-09	ND	0.13
Well #61	08/15/08	ND	ND	3	0.36
Well #63	08/15/08	0.0140	9.20E-09	0.24	0.14
Well #66	08/15/08	0.0140	9.60E-09	0.44	0.16
Well #125	08/15/08	0.0048	3.30E-09	ND	0.1
Well #129	08/19/08	0.0057	3.90E-09	ND	0.12
Well #131	08/15/08	0.0040	2.70E-09	ND	0.13
Well #133	08/15/08	0.0074	5.00E-09	0.47	0.17
Well #134	08/18/08	0.0071	4.80E-09	ND	0.1
Well #135	08/18/08	0.0140	9.60E-09	ND	0.14
Well #138	08/15/08	0.0180	1.20E-08	0.49	0.17
Well #140	08/08/08	0.0096	6.50E-09	ND	0.12
Well #435	08/15/08	0.0063	4.20E-09	ND	0.12
Drinking Water Well	08/18/08	0.0061	4.10E-09	ND	0.1
Stream S-1	08/08/08	0.0027	1.80E-09	ND	0.12
Stream S-2	08/08/08	0.0026	1.70E-09	ND	0.1
Stream S-5	08/08/08	STREAM DRY - NO SAMPLE TAKEN			
Stream E-1 & E-2	08/08/08	0.0098	6.70E-09	ND	0.11
Stream E-5	08/08/08	0.0047	3.20E-09	ND	0.12
Impoundment I-3	08/08/08	0.0160	1.10E-08	ND	0.1
Impoundment I-4	08/08/08	0.0180	1.20E-08	ND	0.1
Impoundment I-5	08/08/08	0.0008	2.00E-10	ND	0.11
<b>Reporting Limit</b>		<b>0.0003</b>	<b>2.00E-10</b>	<b>0.2</b>	<b>-</b>

ND-Not detected at the reporting limit

**CROW BUTTE RESOURCES, INC.**

**PRIVATE WELL AND SURFACE WATER RADIOLOGICAL MONITORING RESULTS**

**FOURTH QUARTER, 2008**

<b>SAMPLE ID</b>	<b>DATE SAMPLED</b>	<b>URANIUM mg/l</b>	<b>URANIUM <math>\mu</math>Ci/ml</b>	<b>RADIUM-226 pCi/l</b>	<b>RADIUM-226 precision <math>\pm</math></b>
Well #8	12/04/08	0.0156	1.10E-08	0.21	0.16
Well #11	12/05/08	WELL INOPERABLE - NO SAMPLE COLLECTED			
Well #12	12/04/08	WELL INOPERABLE - NO SAMPLE COLLECTED			
Well #26	11/21/08	0.0057	3.90E-09	ND	0.18
Well #28	12/04/08	0.0055	3.70E-09	0.260	0.160
Well #41	11/21/08	0.0062	4.20E-09	3.1	0.19
Well #61	11/21/08	ND	ND	0.21	0.18
Well #63	12/05/08	0.0071	4.80E-09	ND	0.2
Well #66	12/05/08	0.0183	1.20E-08	0.33	0.18
Well #125	12/05/08	0.0050	3.40E-09	ND	0.18
Well #129	12/04/08	0.0061	4.20E-09	ND	0.18
Well #131	12/05/08	0.0039	2.70E-09	ND	0.18
Well #133	12/05/08	0.0076	5.10E-09	ND	0.19
Well #134	12/04/08	0.0085	5.80E-09	0.91	0.16
Well #135	12/04/08	0.0152	1.00E-08	ND	0.18
Well #138	12/05/08	0.0162	2.00E-10	0.33	0.19
Well #140	12/04/08	0.0127	8.60E-09	0.26	0.16
Well #435	11/21/08	0.0066	4.50E-09	ND	0.18
Drinking Water Well	11/21/08	0.0068	4.60E-09	ND	0.17
Stream S-1	12/04/08	0.0035	2.30E-09	ND	0.16
Stream S-2	12/04/08	0.0035	2.40E-09	ND	0.16
Stream S-5	12/04/08	0.0044	3.00E-09	ND	0.17
Stream E-1 & E-2	12/02/08	0.0189	1.30E-08	0.58	0.16
Stream E-5	12/02/08	0.0076	5.20E-09	ND	0.25
Impoundment I-3	12/02/08	NO WATER IN IMPOUNDMENT - NO SAMPLE COLLECTED			
Impoundment I-4	12/02/08	0.0690	4.70E-08	ND	0.19
Impoundment I-5	12/02/08	0.0095	6.40E-09	ND	0.17
<b>Reporting Limit</b>		<b>0.0003</b>	<b>2.00E-10</b>	<b>0.2</b>	<b>-</b>

ND-Not detected at the reporting limit

**Appendix B**

**Plant Production and Waste Totals**

**Third and Fourth Quarter, 2008**

WASTE VOLUME  
Third Quarter 2008

TOTALIZER	PLANT TO PONDS	PLANT TO DDW	RESTORATION TO DDW	CLEAN WATER INTO PLANT	DDW TOTAL INJECTED	TRUCKS TO POND
July	653,820	2,822,230	1,229,011	N/A	4,051,241	196,057
August	844,690	2,786,538	1,878,397	N/A	4,664,935	154,800
September	580,990	2,537,716	2,285,658	N/A	4,823,374	113,300
TOTAL GAL. EOQ	2,079,500	8,146,484	5,393,066	0	13,539,550	464,157

TOTAL 3rd QTR VOLUME DISCHARGED TO WASTE PONDS =	2,543,657 GALLONS
TOTAL 3rd QTR VOLUME DISCHARGED TO DEEP WELL=	13,539,550 GALLONS
TOTAL 3rd QTR VOLUME DISCHARGED TO WASTE PONDS + DPWELL =	16,083,207 GALLONS
TOTAL 3rd QTR VOLUME WF BLEED FROM WELLFIELDS=	15,619,050 GALLONS

**WELLFIELD BLEED**  
Third Quarter 2008

MONTH	July	August	September
BLEED	2.1%	2.0%	1.7%

## PLANT FLOW

Third Quarter 2008

AVERAGE OPERATING FLOW RATE=	4,100 GPM EOQ
TOTAL GALLONS PRODUCED=	543,228,609 GALLONS EOQ
TOTAL GALLONS INJECTED=	533,002,625 GALLONS EOQ

	TOTAL GALS. PRODUCED	TOTAL GALS. INJECTED	HOURS IN MONTH	HOURS IN PRODUCTION	AVERAGE PROD. GPM	AVERAGE COM INJ GPM	AVERAGE REST INJ GPM	HRS. DOWN TIME
Prev. YTD	1,013,356,162	998,623,558	4,368	4,343				25
July	170,725,112	167,249,062	744	744	3,824	3,747	222	0
August	183,966,398	180,335,170	744	744	4,121	4,040	315	0
September	188,537,099	185,418,393	720	720	4,364	4,292	370	0
EOQ TOTAL	543,228,609	533,002,625	2,208	2,208	4,100	4,023	301	0
YTD TOTAL	1,556,584,771	1,531,626,183	6,576	6,551	3,945	3,882	172	25

	TOTAL MUII GALS PRODUCED	TOTAL MUIII GALS PRODUCED	TOTAL MUIV GALS PRODUCED	TOTAL MUV GALS PRODUCED	MUII BLEED TO WASTE	MUIII BLEED TO WASTE	MUIV BLEED TO WASTE	MUV BLEED TO WASTE
Prev. YTD	0	6,419,278	13,478,093	21,451,338	0	254,379	2,011,911	11,066,995
July	0	1,056,545	3,966,695	6,094,054	0	42,078	458,552	728,398
August	0	216,213	4,182,708	11,528,904	0	8,332	1,233,325	637,223
September	0	512	4,126,072	14,156,895	0	512	939,355	1,346,189
EOQ TOTAL	0	1,273,270	12,275,475	31,779,853	0	50,922	2,631,232	2,711,810
YTD TOTAL	0	7,692,548	25,753,568	53,231,191	0	305,301	4,643,143	13,778,805

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**WASTE VOLUME**  
Fourth Quarter 2008

TOTALIZER	PLANT TO PONDS	PLANT TO DDW	RESTORATION TO DDW	CLEAN WATER INTO PLANT	DDW TOTAL INJECTED	TRUCKS TO POND
October	813,010	3,198,197	2,004,272	N/A	5,202,469	194,250
November	597,480	2,791,078	2,031,931	N/A	4,823,009	159,910
December	598,070	1,688,073	2,865,469	N/A	4,553,542	126,225
TOTAL GAL. EOQ	2,008,560	7,677,348	6,901,672	0	14,579,020	480,385

TOTAL 4th QTR VOLUME DISCHARGED TO WASTE PONDS =	2,488,945 GALLONS
TOTAL 4th QTR VOLUME DISCHARGED TO DEEP WELL=	14,579,020 GALLONS
TOTAL 4th QTR VOLUME DISCHARGED TO WASTE PONDS + DPWELL =	17,067,965 GALLONS
TOTAL 4th QTR VOLUME WF BLEED FROM WELLFIELDS=	16,587,580 GALLONS

**WELLFIELD BLEED**  
Fourth Quarter 2008

MONTH	October	November	December
BLEED	1.9%	1.7%	1.4%

## PLANT FLOW

AVERAGE OPERATING FLOW RATE=	5,136 GPM EQQ
TOTAL GALLONS PRODUCED=	680,367,152 GALLONS EQQ
TOTAL GALLONS INJECTED=	670,681,244 GALLONS EQQ

	TOTAL GALS. PRODUCED	TOTAL GALS. INJECTED	HOURS IN MONTH	HOURS IN PRODUCTION	AVERAGE PROD. GPM	AVERAGE COM INJ GPM	AVERAGE REST INJ GPM	HRS. DOWN TIME
Prev. YTD	1,556,584,771	1,531,626,183	6,576	6,551				25
October	220,324,909	216,313,702	744	744	4,936	4,846	392	0
November	217,740,706	214,352,148	720	702	5,040	4,962	481	18
December	242,301,537	240,015,394	744	744	5,428	5,377	512	0
EOQ TOTAL	680,367,152	670,681,244	2,208	2,190	5,136	5,063	461	18
YTD TOTAL	2,236,951,923	2,202,307,427	8,784	8,741	4,244	4,179	245	43

	TOTAL MUII GALS PRODUCED	TOTAL MUIII GALS PRODUCED	TOTAL MUIV GALS PRODUCED	TOTAL MUV GALS PRODUCED	MUII BLEED TO WASTE	MUIII BLEED TO WASTE	MUIV BLEED TO WASTE	MUV BLEED TO WASTE
Prev. YTD	0	7,692,548	25,753,568	53,231,191	0	305,301	4,643,143	13,778,805
October	467,024	11	3,884,743	15,140,682	93,421	-14,618	671,379	1,252,718
November	1,924,687	1,416,174	6,334,228	13,117,965	406,709	-78,628	1,304,190	399,660
December	2,304,406	3,648,233	6,332,516	13,414,081	872,640	194,658	1,031,495	766,676
EOQ TOTAL	4,696,117	5,064,418	16,551,487	41,672,728	1,372,770	101,412	3,007,064	2,419,054
YTD TOTAL	4,696,117	12,756,966	42,305,055	94,903,919	1,372,770	406,713	7,650,207	16,197,859

[illegible]

## **Appendix C**

### **Wellfield Injection Pressures**

**Third and Fourth Quarter, 2008**

**WELLFIELD INJECTION PRESSURE - PSI**  
**Third Quarter 2008**

	WF HOUSE #3		WF HOUSE #4		WF HOUSE #5		WF HOUSE #6		WF HOUSE #7	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	9	13	0	0	0	0	7	24	26	30
August	7	17	0	0	0	0	7	68	3	26
September	5	60	0	0	0	0	5	6	0	0
AVERAGE	7	60	0	0	0	0	7	68	10	30
	WF HOUSE #8		WF HOUSE #9		WF HOUSE #10		WF HOUSE #11		WF HOUSE #12	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	2	16	66	80	0	6	0	0	67	80
August	0	0	67	75	0	5	0	0	69	75
September	0	8	70	77	0	0	0	0	72	76
AVERAGE	1	16	68	80	0	6	0	0	69	80
	WF HOUSE #13		WF HOUSE #14		WF HOUSE #15		WF HOUSE #16		WF HOUSE #17	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	63	76	0	14	0	0	0	5	20	20
August	63	71	0	0	0	2	1	19	18	20
September	66	70	0	0	0	0	0	0	9	19
AVERAGE	64	76	0	14	0	2	0	19	16	20
	WF HOUSE #18		WF HOUSE #19		WF HOUSE #20		WF HOUSE #21		WF HOUSE #22	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	75	84	83	92	71	81	62	68	90	96
August	66	72	76	81	66	72	38	58	90	95
September	63	79	73	79	65	70	27	60	92	95
AVERAGE	68	84	77	92	67	81	42	68	90	96
	WF HOUSE #23		WF HOUSE #24		WF HOUSE #25		WF HOUSE #26		WF HOUSE #27	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	0	0	0	0	0	0	0	9	0	0
August	0	0	0	0	0	0	5	74	0	0
September	2	56	0	0	0	0	0	0	0	0
AVERAGE	1	56	0	0	0	0	2	74	0	0
	WF HOUSE #28		WF HOUSE #29		WF HOUSE #30		WF HOUSE #31		WF HOUSE #32	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	2	60	59	68	53	56	28	40	38	40
August	0	0	58	62	53	57	26	31	38	42
September	0	0	57	64	51	59	25	35	37	44
AVERAGE	1	60	58	68	53	59	26	40	38	44
	WF HOUSE #33		WF HOUSE #34		WF HOUSE #35		WF HOUSE #36		WF HOUSE #37	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	43	93	91	93	91	95	90	93	91	94
August	38	41	88	94	91	93	87	88	91	92
September	38	50	83	87	91	95	89	96	89	90
AVERAGE	39	93	87	94	91	95	89	96	90	94
	WF HOUSE #38		WF HOUSE #39		WF HOUSE #40		WF HOUSE #41		WF HOUSE #42	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	91	93	92	95	91	94	92	95	93	96
August	91	94	92	94	87	93	92	95	92	95
September	92	93	90	93	85	95	91	99	89	99
AVERAGE	91	94	91	95	88	95	92	99	91	99
	WF HOUSE #43		WF HOUSE #44		WF HOUSE #45		WF HOUSE #46		WF HOUSE #46A	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	91	94	89	92	85	90	83	88	88	98
August	91	93	89	96	84	90	82	86	88	99
September	89	99	84	92	79	88	83	85	88	93
AVERAGE	90	99	87	96	83	90	83	88	88	99
	WF HOUSE #47		WF HOUSE #47A		WF HOUSE #48		WF HOUSE #49		WF HOUSE #51	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	44	85	23	42	80	89	80	91	90	91
August	36	68	18	32	78	81	62	71	87	88
September	23	30	4	15	78	85	72	99	87	89
AVERAGE	34	85	15	42	79	89	71	99	87	91



**WELLFIELD INJECTION PRESSURE - PSI**  
Fourth Quarter 2008

	WF HOUSE #3		WF HOUSE #4		WF HOUSE #5		WF HOUSE #6		WF HOUSE #7	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	4	12	0	0	12	70	22	67	2	55
November	5	13	0	0	12	54	37	68	0	0
December	29	48	0	0	1	18	34	45	1	26
AVERAGE	13	48	0	0	8	70	31	68	1	55
	WF HOUSE #8		WF HOUSE #9		WF HOUSE #10		WF HOUSE #11		WF HOUSE #12	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	0	0	68	77	0	0	0	0	71	78
November	12	32	60	78	3	76	0	0	72	76
December	27	36	62	77	0	4	0	0	69	77
AVERAGE	13	36	64	78	1	76	0	0	71	78
	WF HOUSE #13		WF HOUSE #14		WF HOUSE #15		WF HOUSE #16		WF HOUSE #17	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	64	72	2	57	0	0	0	0	10	15
November	66	70	0	0	2	72	0	14	14	16
December	35	72	0	0	0	0	0	0	7	14
AVERAGE	55	72	1	57	1	72	0	14	10	16
	WF HOUSE #18		WF HOUSE #19		WF HOUSE #20		WF HOUSE #21		WF HOUSE #22	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	62	78	70	77	63	66	79	86	90	92
November	63	76	72	77	64	70	79	81	8	91
December	64	83	72	80	72	95	79	81	3	86
AVERAGE	63	83	72	80	66	95	79	86	34	92
	WF HOUSE #23		WF HOUSE #24		WF HOUSE #25		WF HOUSE #26		WF HOUSE #27	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	2	58	0	0	0	0	30	99	0	0
November	0	0	0	0	0	0	91	95	2	74
December	0	2	0	0	68	99	84	91	0	2
AVERAGE	1	58	0	0	23	99	68	99	1	74
	WF HOUSE #28		WF HOUSE #29		WF HOUSE #30		WF HOUSE #31		WF HOUSE #32	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	43	80	42	69	61	64	36	61	47	50
November	59	64	28	94	62	65	37	47	49	52
December	57	92	61	65	60	65	34	44	47	50
AVERAGE	53	92	44	94	61	65	36	61	48	52
	WF HOUSE #33		WF HOUSE #34		WF HOUSE #35		WF HOUSE #36		WF HOUSE #37	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	47	50	85	88	91	97	88	94	89	92
November	50	53	85	92	91	93	85	89	94	99
December	48	52	85	87	73	96	84	86	92	94
AVERAGE	48	53	85	92	85	97	86	94	91	99
	WF HOUSE #38		WF HOUSE #39		WF HOUSE #40		WF HOUSE #41		WF HOUSE #42	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	91	93	86	90	81	87	93	99	93	98
November	93	97	88	93	84	89	95	98	94	97
December	95	97	89	92	87	95	95	96	95	96
AVERAGE	93	97	88	93	84	95	94	99	94	98
	WF HOUSE #43		WF HOUSE #44		WF HOUSE #45		WF HOUSE #46		WF HOUSE #46A	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	92	97	92	96	89	92	84	88	89	94
November	94	98	94	97	92	95	85	90	89	92
December	95	96	94	97	90	94	86	96	91	94
AVERAGE	94	98	93	97	90	95	85	96	90	94
	WF HOUSE #47		WF HOUSE #47A		WF HOUSE #48		WF HOUSE #49		WF HOUSE #51	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	67	76	46	83	81	85	68	90	87	96
November	72	75	37	80	78	83	71	90	83	97
December	73	90	34	78	78	80	70	96	78	80
AVERAGE	71	90	39	83	79	85	70	96	81	97

## **Appendix D**

### **Deep Disposal Well Injection Radiological Data**

**Third and Fourth Quarter, 2008**

**Crow Butte Uranium Mine**  
**Deep Disposal Well Injection Radiological Data**

Month	Total Gallons Injected	Average Natural Uranium (mg/l)	Total Natural Uranium Injected (mg)	Total Natural Uranium Injected (uCi)	Average Radium- 226 (pCi/l)	Total Radium- 226 Injected (uCi)
July-08	4,051,240	4	6.13E+07	4.15E+04	698	1.07E+04
August-08	4,664,934	5	8.83E+07	5.98E+04	775	1.37E+04
September-08	4,823,374	6	1.10E+08	7.42E+04	753	1.37E+04
October-08	5,202,468	5	9.85E+07	6.67E+04	693	1.36E+04
November-08	4,823,009	4	7.30E+07	4.94E+04	763	1.39E+04
December-08	4,553,541	6	1.03E+08	7.00E+04	741	1.28E+04
Totals	28,118,566		5.34E+08	3.62E+05		7.85E+04

**Appendix E**  
**Radon Release Calculations**  
**Third and Fourth Quarter, 2008**

### Radon Effluent Release Calculation (Production and Startup)

#### Third Quarter 2008 Radon Release from Leaching Operations:

<i>Curies/M3</i>	<i>Production Flow (liters)</i>	<i>Radon-222 Decay Constant</i>	<i>Operating Days</i>	<i>Operating Factor</i>	<i>M3/liter conversion</i>	<i>Hours/Day Conversion</i>	<i>Minutes/Hour Conversion</i>	<i>Total Radon Release from Leaching</i>
7.04E-04	15,520	0.72	92	100.0%	0.001	24	60	1,042

#### Fourth Quarter 2008 Radon Release from Leaching Operations:

<i>Curies/M3</i>	<i>Production Flow (liters)</i>	<i>Radon-222 Decay Constant</i>	<i>Operating Days</i>	<i>Operating Factor</i>	<i>M3/liter conversion</i>	<i>Hours/Day Conversion</i>	<i>Minutes/Hour Conversion</i>	<i>Total Radon Release from Leaching</i>
7.04E-04	19,442	0.72	92	97.5%	0.001	24	60	1,273

#### Second Half 2008 Radon Release From Startup:

<i>Curies/M3</i>	<i>Total Acres of New Wellfield</i>	<i>Meter3/Acre Conversion</i>	<i>Orebody Thickness (meters)</i>	<i>Porosity</i>	<i>Total Radon Release from Startup</i>
7.04E-04	10.6	4,074	1.52	0.29	13

**Total Estimated Radon Release from Production:**

**2,328**

### Radon Effluent Release Calculation (Restoration)

#### Second Half 2008 Radon Release From Restoration:

<i>Total Restoration Flow (liters)</i>	<i>Microcuries/liter</i>	<i>Curies/Microcurie</i>	<i>Production Potential</i>	
428,936,348	0.697	1.00E-06	299	
Wellfield Loss (25% of Production Potential):				75
Ion Exchange Loss (10% of Production Potential minus Wellfield Loss):				22
Reverse Osmosis Loss (100% of remaining activity at 0.470 microcuries/liter)				0
<i>Total Reverse Osmosis Flow (liters)</i>	<i>Microcuries/liter</i>	<i>Curies/Microcurie</i>		
0	0.470	1.00E-06		

#### Second Half 2008 Radon Release From Startup of New Restoration:

<i>Curies/M3</i>	<i>Total Acres of New Wellfield</i>	<i>Meter3/Acre Conversion</i>	<i>Orebody Thickness (meters)</i>	<i>Porosity</i>	<i>Total Radon Release from Startup</i>
7.04E-04	1.0	4074	1.52	0.29	1

**Total Estimated Radon Release from Restoration:**

**98**

**Total Estimated Radon Release, Second Half 2008:**

**2,427**

**Appendix F**  
**Environmental Air Monitoring Results**  
**Third and Fourth Quarter, 2008**

**Crow Butte Resources, Inc.**  
Crow Butte Uranium Project

**Track Etch Cup Ambient Radon Concentrations**

*Air Monitoring Station  
No.*

*Period: July 7, 2008 to December 31, 2008*

	Gross Count	Average Radon Concentration (x 10 <sup>-9</sup> µCi/ml)	Accuracy (x 10 <sup>-9</sup> µCi/ml)	Percent Effluent Concentration
AM-1	266.0	1.5	0.09	15.0%
AM-2	354.0	2.0	0.11	20.0%
AM-3	374.0	2.1	0.11	21.0%
AM-4	463.0	2.6	0.12	26.0%
AM-5	431.0	2.4	0.12	24.0%
AM-6	367.0	2.1	0.11	21.0%
AM-8	337.0	1.9	0.10	19.0%
AB-1 (AM-1 Duplicate)	287.0	1.6	0.09	16.0%
AB-2 (AM-2 Duplicate)	358.0	2.0	0.11	20.0%
AB-6 (AM-6 Duplicate)	382.0	2.2	0.11	22.0%
LLD (x 10 <sup>-9</sup> µCi/ml)				0.2
Effluent Concentration Limit, 10 CFR 20 App B Column 2:				10



### HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES  
PROJECT: 4th Quarter 2008 Environmental Air Composites  
REPORT DATE: February 5, 2009  
SAMPLE ID: AM-1

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08040257-001 01/02/2008 - 04/02/2008 Air Volume in mLs 5.56E+09		<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	8.86E-15	1.15E-15	2.00E-15	6.00E-13	1.48E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08070537-001 04/02/2008 - 06/20/2008 Air Volume in mLs 4.79E+09		<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		<sup>226</sup> Ra	< 1.00E-16	1.46E-16	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	5.68E-15	3.41E-15	2.00E-15	6.00E-13	9.47E-01

NOTE: Pb210 calculation conservatively based on MDC result.

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08100227-001 07/07/2008 - 10/03/2008 Air Volume in mLs 5.23E+09		<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		<sup>226</sup> Ra	< 1.00E-16	5.74E-17	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	1.57E-14	3.63E-15	2.00E-15	6.00E-13	2.61E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C09010057-001 10/03/2008 - 12/31/2008 Air Volume in mLs 4.33E+09		<sup>nat</sup> U	1.16E-16	N/A	1.00E-16	9.00E-14	1.28E-01
		<sup>226</sup> Ra	< 1.00E-16	7.39E-17	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	2.38E-14	1.18E-14	2.00E-15	6.00E-13	3.97E+00

LLD's are from Reg. Guide 4.14

\*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2

Year for Natural Uranium

Week for Radium-226

Day for Lead-210





### HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES  
PROJECT: 4th Quarter 2008 Environmental Air Composites  
REPORT DATE: February 5, 2009

SAMPLE ID: AM-2

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08040257-002 01/02/2008 - 04/02/2008 Air Volume in mLs 5.15E+09		$^{235}\text{U}$	1.36E-16	N/A	1.00E-16	9.00E-14	1.51E-01
		$^{226}\text{Ra}$	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	1.20E-14	1.38E-15	2.00E-15	6.00E-13	2.00E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08070537-002 04/02/2008 - 07/07/2008 Air Volume in mLs 5.46E+09		$^{235}\text{U}$	1.47E-16	N/A	1.00E-16	9.00E-14	1.63E-01
		$^{226}\text{Ra}$	< 1.00E-16	1.28E-16	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	1.30E-14	3.17E-15	2.00E-15	6.00E-13	2.17E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08100227-002 07/07/2008 - 10/03/2008 Air Volume in mLs 4.94E+09		$^{235}\text{U}$	1.82E-16	N/A	1.00E-16	9.00E-14	2.02E-01
		$^{226}\text{Ra}$	< 1.00E-16	4.05E-17	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	1.78E-14	3.85E-15	2.00E-15	6.00E-13	2.97E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C09010057-002 10/03/2008 - 12/31/2008 Air Volume in mLs 4.95E+09		$^{235}\text{U}$	1.42E-16	N/A	1.00E-16	9.00E-14	1.57E-01
		$^{226}\text{Ra}$	< 1.00E-16	6.67E-17	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	1.76E-14	1.03E-14	2.00E-15	6.00E-13	2.93E+00

LLD's are from Reg. Guide 4.14

\*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2

Year for Natural Uranium

Week for Radium-226

Day for Lead-210



### HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES  
PROJECT: 4th Quarter 2008 Environmental Air Composites  
REPORT DATE: February 5, 2009  
SAMPLE ID: AM-3

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08040257-003 01/02/2008 - 04/02/2008 Air Volume in mLs 5.24E+09		<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	1.98E-14	1.77E-15	2.00E-15	6.00E-13	3.31E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08070537-003 04/02/2008 - 07/07/2008 Air Volume in mLs 5.57E+09		<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		<sup>226</sup> Ra	< 1.00E-16	1.26E-16	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	1.13E-14	3.09E-15	2.00E-15	6.00E-13	1.88E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08100227-003 07/07/2008 - 10/03/2008 Air Volume in mLs 5.01E+09		<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		<sup>226</sup> Ra	< 1.00E-16	5.99E-17	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	1.90E-14	3.79E-15	2.00E-15	6.00E-13	3.16E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C09010057-003 10/03/2008 - 12/31/2008 Air Volume in mLs 4.19E+09		<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		<sup>226</sup> Ra	< 1.00E-16	7.64E-17	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	2.77E-14	1.22E-14	2.00E-15	6.00E-13	4.62E+00

LLD's are from Reg. Guide 4.14

\*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2

Year for Natural Uranium

Week for Radium-226

Day for Lead-210



### HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES  
PROJECT: 4th Quarter 2008 Environmental Air Composites  
REPORT DATE: February 5, 2009  
SAMPLE ID: AM-4

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08040257-004 01/02/2008 - 04/02/2008 Air Volume in mLs 5.70E+09		$^{235}\text{U}$	2.46E-16	N/A	1.00E-16	9.00E-14	2.73E-01
		$^{226}\text{Ra}$	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	1.50E-14	1.49E-15	2.00E-15	6.00E-13	2.50E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08070537-004 04/02/2008 - 07/07/2008 Air Volume in mLs 5.66E+09		$^{235}\text{U}$	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		$^{226}\text{Ra}$	< 1.00E-16	1.24E-16	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	7.96E-15	2.98E-15	2.00E-15	6.00E-13	1.33E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08100227-004 07/07/2008 - 10/03/2008 Air Volume in mLs 4.33E+09		$^{235}\text{U}$	2.77E-16	N/A	1.00E-16	9.00E-14	3.08E-01
		$^{226}\text{Ra}$	< 1.15E-16	1.15E-16	1.00E-16	9.00E-13	< 1.28E-02
		$^{210}\text{Pb}$	1.82E-14	4.39E-15	2.00E-15	6.00E-13	3.04E+00

\* Note: The Ra226 results reported as less than MDC from recheck analysis.

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C09010057-004 10/03/2008 - 12/31/2008 Air Volume in mLs 4.43E+09		$^{235}\text{U}$	1.81E-16	N/A	1.00E-16	9.00E-14	2.01E-01
		$^{226}\text{Ra}$	< 1.00E-16	7.68E-17	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	2.55E-14	9.04E-15	2.00E-15	6.00E-13	4.25E+00

LLD's are from Reg. Guide 4.14

\*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2

Year for Natural Uranium

Week for Radium-226

Day for Lead-210



### HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES  
PROJECT: 4th Quarter 2008 Environmental Air Composites  
REPORT DATE: February 5, 2009  
  
SAMPLE ID: AM-5

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08040257-005 01/02/2008 - 04/02/2008 Air Volume in mLs 5.12E+09		$^{235}\text{U}$	3.12E-16	N/A	1.00E-16	9.00E-14	3.47E-01
		$^{226}\text{Ra}$	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	1.46E-14	1.54E-15	2.00E-15	6.00E-13	2.44E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08070537-005 04/02/2008 - 07/07/2008 Air Volume in mLs 5.43E+09		$^{235}\text{U}$	2.03E-16	N/A	1.00E-16	9.00E-14	2.25E-01
		$^{226}\text{Ra}$	< 1.00E-16	1.29E-16	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	7.72E-15	3.11E-15	2.00E-15	6.00E-13	1.29E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08100227-005 07/07/2008 - 10/03/2008 Air Volume in mLs 4.22E+09		$^{235}\text{U}$	1.45E-14	N/A	1.00E-16	9.00E-14	1.61E+01
		$^{226}\text{Ra}$	< 1.00E-16	7.11E-17	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	1.14E-14	4.27E-15	2.00E-15	6.00E-13	1.90E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C09010057-005 10/03/2008 - 12/31/2008 Air Volume in mLs 5.15E+09		$^{235}\text{U}$	1.94E-16	N/A	1.00E-16	9.00E-14	2.16E-01
		$^{226}\text{Ra}$	< 1.00E-16	6.22E-17	1.00E-16	9.00E-13	< 1.11E-02
		$^{210}\text{Pb}$	2.82E-14	7.77E-15	2.00E-15	6.00E-13	4.69E+00

LLD's are from Reg. Guide 4.14

\*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2

Year for Natural Uranium

Week for Radium-226

Day for Lead-210



### HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES  
PROJECT: 4th Quarter 2008 Environmental Air Composites  
REPORT DATE: February 5, 2009  
SAMPLE ID: AM-6

Quarter/Date Sampled Air Volume	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08040257-006 01/02/2008 - 04/02/2008 Air Volume in mLs 5.44E+09	$^{235}\text{U}$	1.29E-16	N/A	1.00E-16	9.00E-14	1.43E-01
	$^{226}\text{Ra}$	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
	$^{210}\text{Pb}$	1.50E-14	1.52E-15	2.00E-15	6.00E-13	2.50E+00

Quarter/Date Sampled Air Volume	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08070537-006 04/02/2008 - 07/07/2008 Air Volume in mLs 5.69E+09	$^{235}\text{U}$	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
	$^{226}\text{Ra}$	< 1.00E-16	1.23E-16	1.00E-16	9.00E-13	< 1.11E-02
	$^{210}\text{Pb}$	4.94E-15	2.92E-15	2.00E-15	6.00E-13	8.23E-01

Quarter/Date Sampled Air Volume	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C08100227-006 07/07/2008 - 10/03/2008 Air Volume in mLs 5.23E+09	$^{235}\text{U}$	5.92E-16	N/A	1.00E-16	9.00E-14	6.58E-01
	$^{226}\text{Ra}$	< 1.00E-16	5.73E-17	1.00E-16	9.00E-13	< 1.11E-02
	$^{210}\text{Pb}$	1.45E-14	3.44E-15	2.00E-15	6.00E-13	2.42E+00

Quarter/Date Sampled Air Volume	Radionuclide	Concentration $\mu\text{Ci/mL}$	Error Estimate $\mu\text{Ci/mL}$	L.L.D. $\mu\text{Ci/mL}$	Effluent Conc.* $\mu\text{Ci/mL}$	% Effluent Concentration
C09010057-006 10/03/2008 - 12/31/2008 Air Volume in mLs 5.35E+09	$^{235}\text{U}$	1.12E-16	N/A	1.00E-16	9.00E-14	1.25E-01
	$^{226}\text{Ra}$	< 1.38E-16	1.38E-16	1.00E-16	9.00E-13	< 1.54E-02
	$^{210}\text{Pb}$	1.46E-14	7.47E-15	2.00E-15	6.00E-13	2.43E+00

\* Note: The Ra226 results reported as less than MDC.

LLD's are from Reg. Guide 4.14

\*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2

Year for Natural Uranium

Week for Radium-226

Day for Lead-210



### HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES  
PROJECT: 4th Quarter 2008 Environmental Air Composites  
REPORT DATE: February 5, 2009  
SAMPLE ID: AM-8

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08040257-007 01/02/2008 - 04/02/2008 Air Volume in mLs 5.25E+09		<sup>nat</sup> U	3.24E-16	N/A	1.00E-16	9.00E-14	3.60E-01
		<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	1.04E-14	1.28E-15	2.00E-15	6.00E-13	1.74E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08070537-007 04/02/2008 - 07/07/2008 Air Volume in mLs 5.46E+09		<sup>nat</sup> U	1.83E-16	N/A	1.00E-16	9.00E-14	2.04E-01
		<sup>226</sup> Ra	< 1.00E-16	1.47E-16	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	1.18E-14	3.15E-15	2.00E-15	6.00E-13	1.96E+00

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08100227-007 07/07/2008 - 10/03/2008 Air Volume in mLs 4.89E+09		<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
		<sup>226</sup> Ra *	< 3.48E-16	3.48E-16	1.00E-16	9.00E-13	< 3.86E-02
		<sup>210</sup> Pb	1.82E-14	3.88E-15	2.00E-15	6.00E-13	3.03E+00

\* Note: The Ra226 could not be reanalyzed. Remaining volume was lost in reanalysis, results reported as less than MDC from original analysis.

Quarter/Date Sampled Volume	Air	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C09010057-007 10/03/2008 - 12/31/2008 Air Volume in mLs 4.79E+09		<sup>nat</sup> U	2.92E-16	N/A	1.00E-16	9.00E-14	3.25E-01
		<sup>226</sup> Ra *	< 1.00E-16	8.56E-17	1.00E-16	9.00E-13	< 1.11E-02
		<sup>210</sup> Pb	2.34E-14	8.35E-15	2.00E-15	6.00E-13	3.90E+00

LLD's are from Reg. Guide 4.14

\*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2

Year for Natural Uranium

Week for Radium-226

Day for Lead-210

**Appendix G**  
**Environmental TLD Monitoring Results**  
**Third and Fourth Quarter, 2008**

# LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (708) 755-7000 Facsimile: (708) 755-7016

## ENVIRONMENTAL / LOW LEVEL DOSIMETRY REPORT

### ADDRESS

CROW BUTTE RESOURCES  
ATTN : RHONDA GRANTHAM  
PO BOX 169  
CRAWFORD, NE 69339

### ACCOUNT NO. SERIES CODE

306192  
CRAWFORD  
REPORT

### FOR EXPOSURE PERIOD

07/01/2008

### NET CUMULATIVE TOTALS (MILLIREMS)

LOCATION ID NUMBER	IDENTIFIER (CLIENT SUPPLIED)	NOTE CODE	EXPOSURE OF DOSIMETER (MILLIREMS AMBIENT DOSE EQUIVALENT)	CALENDAR QUARTER	YEAR TO DATE	PERMANENT	ADJUST- MENTS	NUMBER OF DOSIMETERS REPORTED	INCEPTION DATE OF PERM. TOTAL
			GROSS						
			NET						
000X9	DEPLOY		36.6						
01001	AM-1		42.7	6.1	17.8	17.8			/ /
01002	AM-2		50.7	14.1	29.1	29.1			/ /
01003	AM-6		44.4	7.8	23.3	23.3			/ /
01008	AM-8		50.0	13.4	34.4	34.4			/ /
01009	AM-3		45.3	8.7	22.8	22.8			/ /
01010	AM-4		41.7	5.1	15.5	15.5			/ /
01011	AM-5		45.8	9.2	18.6	18.6			/ /

Q.C. Release	Process No.	Reported Date	Date Processed	Date Received	Minimum Detectable Dose In This Process, Millirems Ambient Dose Equivalent	ONLY PAGE
am	281007	12/29/2008	12/18/2008	10/07/2008	0.10	1



# LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (708) 755-7000 Facsimile: (708) 755-7016

## ENVIRONMENTAL / LOW LEVEL DOSIMETRY REPORT

### ADDRESS

CROW BUTTE RESOURCES  
ATTN : RHONDA GRANTHAM  
PO BOX 169  
CRAWFORD, NE 69339

### ACCOUNT NO. SERIES CODE

306192

### FOR EXPOSURE PERIOD

10/01/2008

### NET CUMULATIVE TOTALS (MILLIREMS)

LOCATION ID NUMBER	IDENTIFIER (CLIENT SUPPLIED)	NOTE CODE	EXPOSURE OF DOSIMETER (MILLIREMS AMBIENT DOSE EQUIVALENT)	CALENDAR QUARTER	YEAR TO DATE	PERMANENT	ADJUST- MENTS	NUMBER OF DOSIMETERS REPORTED	INCEPTION DATE OF PERM. TOTAL
			GROSS						
			NET						
00000	TRANSIT CONTROL		26.8						
000X9	DEPLOY CONTROL		27.8						
01001	AM-1		32.6	4.8	22.6	22.6		1	/ /
01002	AM-2		33.0	5.1	34.2	34.2		1	/ /
01003	AM-6		30.9	3.0	26.3	26.3		1	/ /
01008	AM-8		35.3	7.5	41.9	41.9		1	/ /
01009	AM-3		31.7	3.8	26.6	26.6		1	/ /
01010	AM-4		34.2	6.4	21.9	21.9		1	/ /
01011	AM-5		33.4	5.6	24.2	24.2		1	/ /

Q.C. Release	Process No.	Reported Date	Date Processed	Date Received	Minimum Detectable Dose In This Process, Millirems Ambient Dose Equivalent	ONLY PAGE
an	374001	01/14/2009	01/13/2009	01/08/2009	0.10	1

**Appendix H**  
**Sediment Monitoring Results**  
**Fourth Quarter, 2008**



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Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

## LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources  
Project: Annual Sediment Samples 2008  
Lab ID: C08081280-008  
Client Sample ID: Stream E-1

Report Date: 11/09/08  
Collection Date: 08/08/08  
Date Received: 08/29/08  
Matrix: Sediment

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS - TOTAL</b>							
Uranium	19.3	mg/kg-dry		0.5		SW6020	09/16/08 21:58 / sml
Uranium, Activity	13.0	pCi/g-dry		0.3		SW6020	09/16/08 21:58 / sml
<b>RADIONUCLIDES - TOTAL</b>							
Lead 210	0.9	pCi/g-dry		0.2		E909.0M	10/22/08 08:56 / dm
Lead 210 precision (±)	0.1	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Lead 210 MDC	0.2	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Radium 226	0.3	pCi/g-dry		0.08		E903.0	09/23/08 15:02 / evm
Radium 226 precision (±)	0.09	pCi/g-dry				E903.0	09/23/08 15:02 / evm
Radium 226 MDC	0.08	pCi/g-dry				E903.0	09/23/08 15:02 / evm

Report  
Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources  
Project: Annual Sediment Samples 2008  
Lab ID: C08081280-004  
Client Sample ID: Stream E5

Report Date: 11/09/08  
Collection Date: 08/08/08  
Date Received: 08/29/08  
Matrix: Sediment

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS - TOTAL</b>							
Uranium	2.8	mg/kg-dry		0.5		SW6020	09/16/08 21:26 / sml
Uranium, Activity	1.9	pCi/g-dry		0.3		SW6020	09/16/08 21:26 / sml
<b>RADIONUCLIDES - TOTAL</b>							
Lead 210	1.4	pCi/g-dry		0.2		E909.0M	10/22/08 08:56 / dm
Lead 210 precision (±)	0.1	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Lead 210 MDC	0.2	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Radium 226	0.6	pCi/g-dry		0.1		E903.0	09/23/08 15:02 / evm
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	09/23/08 15:02 / evm
Radium 226 MDC	0.1	pCi/g-dry				E903.0	09/23/08 15:02 / evm

Report Definitions:  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources  
Project: Annual Sediment Samples 2008  
Lab ID: C08081280-005  
Client Sample ID: Stream S-1

Report Date: 11/09/08  
Collection Date: 08/08/08  
Date Received: 08/29/08  
Matrix: Sediment

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS - TOTAL</b>							
Uranium	0.8	mg/kg-dry		0.5		SW6020	09/16/08 21:30 / sml
Uranium, Activity	0.5	pCi/g-dry		0.3		SW6020	09/16/08 21:30 / sml
<b>RADIONUCLIDES - TOTAL</b>							
Lead 210	0.4	pCi/g-dry		0.2		E909.0M	10/22/08 08:56 / dm
Lead 210 precision (±)	0.1	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Lead 210 MDC	0.2	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Radium 226	0.3	pCi/g-dry		0.09		E903.0	09/23/08 15:02 / evm
Radium 226 precision (±)	0.09	pCi/g-dry				E903.0	09/23/08 15:02 / evm
Radium 226 MDC	0.09	pCi/g-dry				E903.0	09/23/08 15:02 / evm

Report  
Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources  
Project: Annual Sediment Samples 2008  
Lab ID: C08081280-006  
Client Sample ID: Stream S-2

Report Date: 11/09/08  
Collection Date: 08/08/08  
Date Received: 08/29/08  
Matrix: Sediment

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS - TOTAL</b>							
Uranium	1.0	mg/kg-dry		0.5		SW6020	09/16/08 21:50 / sml
Uranium, Activity	0.7	pCi/g-dry		0.3		SW6020	09/16/08 21:50 / sml
<b>RADIONUCLIDES - TOTAL</b>							
Lead 210	0.5	pCi/g-dry		0.2		E909.0M	10/22/08 08:56 / dm
Lead 210 precision (±)	0.1	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Lead 210 MDC	0.2	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Radium 226	<0.08	pCi/g-dry	U	0.08		E903.0	09/23/08 15:02 / evm
Radium 226 precision (±)	0.05	pCi/g-dry				E903.0	09/23/08 15:02 / evm
Radium 226 MDC	0.08	pCi/g-dry				E903.0	09/23/08 15:02 / evm

Report Definitions:  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources  
Project: Annual Sediment Samples 2008  
Lab ID: C08081280-007  
Client Sample ID: Stream S-5

Report Date: 11/09/08  
Collection Date: 08/08/08  
Date Received: 08/29/08  
Matrix: Sediment

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS - TOTAL</b>							
Uranium	0.9	mg/kg-dry		0.5		SW6020	09/16/08 21:54 / sml
Uranium, Activity	0.6	pCi/g-dry		0.3		SW6020	09/16/08 21:54 / sml
<b>RADIONUCLIDES - TOTAL</b>							
Lead 210	0.6	pCi/g-dry		0.2		E909.0M	10/22/08 08:56 / dm
Lead 210 precision (±)	0.1	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Lead 210 MDC	0.2	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Radium 226	0.3	pCi/g-dry		0.09		E903.0	09/23/08 15:02 / evm
Radium 226 precision (±)	0.08	pCi/g-dry				E903.0	09/23/08 15:02 / evm
Radium 226 MDC	0.09	pCi/g-dry				E903.0	09/23/08 15:02 / evm

Report  
Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources  
Project: Annual Sediment Samples 2008  
Lab ID: C08081280-001  
Client Sample ID: Impoundment I3

Report Date: 11/09/08  
Collection Date: 08/08/08  
Date Received: 08/29/08  
Matrix: Sediment

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS - TOTAL</b>							
Uranium	6.8	mg/kg-dry		0.5		SW6020	09/16/08 21:14 / sml
Uranium, Activity	4.6	pCi/g-dry		0.3		SW6020	09/16/08 21:14 / sml
<b>RADIONUCLIDES - TOTAL</b>							
Lead 210	<0.2	pCi/g-dry	U	0.2		E909.0M	10/22/08 08:56 / dm
Lead 210 precision (±)	0.1	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Lead 210 MDC	0.2	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Radium 226	0.8	pCi/g-dry		0.09		E903.0	09/23/08 15:02 / evm
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	09/23/08 15:02 / evm
Radium 226 MDC	0.09	pCi/g-dry				E903.0	09/23/08 15:02 / evm

Report  
Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources  
Project: Annual Sediment Samples 2008  
Lab ID: C08081280-002  
Client Sample ID: Impoundment I4

Report Date: 11/09/08  
Collection Date: 08/08/08  
Date Received: 08/29/08  
Matrix: Sediment

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS - TOTAL</b>							
Uranium	12.0	mg/kg-dry		0.5		SW6020	09/16/08 21:18 / sml
Uranium, Activity	8.1	pCi/g-dry		0.3		SW6020	09/16/08 21:18 / sml
<b>RADIONUCLIDES - TOTAL</b>							
Lead 210	1.3	pCi/g-dry		0.2		E909.0M	10/22/08 08:56 / dm
Lead 210 precision (±)	0.1	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Lead 210 MDC	0.2	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Radium 226	0.3	pCi/g-dry		0.09		E903.0	09/23/08 15:02 / evm
Radium 226 precision (±)	0.09	pCi/g-dry				E903.0	09/23/08 15:02 / evm
Radium 226 MDC	0.09	pCi/g-dry				E903.0	09/23/08 15:02 / evm

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources  
Project: Annual Sediment Samples 2008  
Lab ID: C08081280-003  
Client Sample ID: Impoundment I5

Report Date: 11/09/08  
Collection Date: 08/08/08  
Date Received: 08/29/08  
Matrix: Sediment

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS - TOTAL</b>							
Uranium	1.5	mg/kg-dry		0.5		SW6020	09/16/08 21:22 / sml
Uranium, Activity	1.0	pCi/g-dry		0.3		SW6020	09/16/08 21:22 / sml
<b>RADIONUCLIDES - TOTAL</b>							
Lead 210	0.4	pCi/g-dry		0.2		E909.0M	10/22/08 08:56 / dm
Lead 210 precision (±)	0.1	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Lead 210 MDC	0.2	pCi/g-dry				E909.0M	10/22/08 08:56 / dm
Radium 226	0.2	pCi/g-dry		0.09		E903.0	09/23/08 15:02 / evm
Radium 226 precision (±)	0.08	pCi/g-dry				E903.0	09/23/08 15:02 / evm
Radium 226 MDC	0.09	pCi/g-dry				E903.0	09/23/08 15:02 / evm

Report  
Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

### English Creek Sediment Uranium Concentration

