

**CAMECO RESOURCES
CROW BUTTE OPERATION**



**86 Crow Butte Road
P.O. Box 169
Crawford, Nebraska 69339-0169**

**(308) 665-2215
(308) 665-2341 – FAX**

September 20, 2023

Electronic Submittal

DOCUMENT CONTROL DESK, DIRECTOR
U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

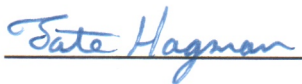
The enclosed report was provided to NDEE.

Class III UIC Permit NE0122611
August 2023 Monthly Restoration Report

Please find enclosed the Crow Butte Monthly Restoration Reports for Mine Units 2, 3, 4, 5, 6, 7 and 8. Mine Unit 6 first stability was taken in March. The reverse osmosis (RO) units continue to inject permeate and reductant into Mine Units 7 and 8.
Mine Units 2, 3, 4 and 5 remained in stability monitoring.

If you have any questions regarding this submittal, please feel free to contact me at (308) 665-2215, ext. 121.

Sincerely,
Cameco Resources
Crow Butte Operation



Tate Hagman
Restoration Manager

Enclosures: As Stated

cc: Tom Lancaster; Document Control Desk; Deputy Director, Division of Decommissioning – NRC
CBO - File
ec: CR – Electronic File
Kory Winters – NDEE Field Office
Daniel Kroll, UIC/ME Coordinator, NDEE

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
August 2023
Mine Unit 2

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment		X	
d. Wellfield Recirculatoin		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING THE MONTH: (Assay results attached)

No in-house samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
August 2023
Mine Unit 3

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment		X	
d. Wellfield Recirculation		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING THE MONTH: (Assay results attached)

No in-house samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
August 2023
Mine Unit 4

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment		X	
d. Wellfield Recirculatoin		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING THE MONTH: (Assay results attached)

No in-house samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
August 2023
Mine Unit 5

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment		X	
d. Wellfield Recirculatoin		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING THE MONTH: (Assay results attached)

No in-house samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
August 2023
Mine Unit 6

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment		X	
d. Wellfield Recirculatoion		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING THE MONTH: (Assay results attached)

No in-house samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
August 2023
Mine Unit 7

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment	X		IX and RO BL-17 P2125 P5268 CM4-14 P2144 P5271 CM4-15 P2197 P5278 I1975P P2219 I2183P P2316 I2185P P2384 I2429P P2476 P2037 P2505 P2038 P2523 P2040 P5230
d. Wellfield Recirculatoin		X	
e. Other (explain):		X	

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING THE MONTH: (Assay results attached)

BL-17	P2384
CM4-12	P2476
CM4-14	P2505
CM4-15	P2523
I1971P	P5230
I1975P	P5268
I2183P	P5271
I2185P	P5278
I2429P	
P2037	
P2038	
P2040	
P2125	
P2219	
P2316	

Mine Unit 7		Restoration Data											
Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL-17													
	7/19/2023	352	7.33	54	1.57	238	102	1084	7.91	672	-0.01	0.34	1.51
CM4-12													
	7/19/2023	517	28.78	121	8.75	416	334	2032	7.27	1260	0.10	0.87	0.08
CM4-14													
	7/19/2023	659	43.74	149	11.93	523	409	2498	7.46	1549	-0.01	2.00	0.35
CM4-15													
	7/19/2023	708	52.52	184	14.90	607	527	2882	7.29	1787	-0.01	0.67	0.35
I1971P													
	7/19/2023	643	39.10	131	9.92	493	375	2361	7.44	1464	-0.01	0.74	0.21
I1975P													
	7/19/2023	688	42.74	152	12.86	541	426	2574	7.5	1596	-0.01	2.65	0.20
I2183P													
	7/19/2023	501	41.52	134	8.93	416	342	2045	7.48	1268	-0.01	3.86	0.71
I2185P													
	7/19/2023	631	31.87	127	9.49	491	365	2284	7.62	1416	-0.01	1.51	2.11
I2429P													
	7/19/2023	382	23.90	174	6.54	408	359	2025	7.79	1256	-0.01	1.43	0.25
P2037													
	7/19/2023	0	136.20	0	40.31	1146	1165	5490	7.34	3404	0.09	10.89	0.08
P2038													
	7/19/2023	566	41.82	152	12.15	488	418	2384	7.31	1478	0.00	1.41	0.12
P2040													
	7/19/2023	678	52.84	182	17.38	584	520	2831	7.26	1755	-0.01	1.70	0.10
P2125													
	7/19/2023	561	28.86	139	8.14	498	419	2324	7.23	1441	0.09	1.75	0.06
P2219													
	7/19/2023	684	51.92	178	14.43	581	522	2823	7.34	1750	0.05	2.85	0.10
P2316													
	7/19/2023	539	46.52	112	10.77	389	306	1988	7.45	1233	-0.01	1.05	0.39
P2384													
	7/19/2023	519	37.01	144	10.63	445	394	2213	7.74	1372	0.01	2.57	0.38
P2476													
	7/19/2023	262	13.69	66	2.58	199	119	1001	7.52	621	0.04	0.34	0.49
P2505													
	7/19/2023	311	16.05	125	3.13	311	235	1544	8.02	957	-0.01	0.48	0.60
P2523													
	7/19/2023	216	6.85	39	1.31	151	66	725	7.26	450	-0.01	0.06	0.55

Mine Unit 7 Restoration Data

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P5230													
	7/19/2023	517	15.73	86	3.98	366	224	1696	7.78	1052	0.01	1.69	0.57
P5268													
	7/19/2023	282	12.62	38	2.78	163	77	832	7.92	516	-0.01	0.32	1.06
P5271													
	7/19/2023	579	28.61	120	7.86	435	304	2071	7.57	1284	-0.01	1.30	0.63
P5278													
	7/19/2023	429	19.14	59	3.71	271	150	1316	7.86	816	0.00	1.13	0.84

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
August 2023
Mine Unit 8

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment	X		IX and RO I2671P P2900 P3266 P3734 I2688P P2908 P3268 P3876 I2791 P2912 P3277 P6108 I3699P P2952 P3284 P6110 P2696 P2965 P3287 P6127 P2698 P2977 P3356 P2700 P3189 P3358 P2724 P3208 P3390 P2825 P3246 P3415 P2897 P3253 P3698
d. Wellfield Recirculatoin		X	
e. Other (explain):		X	

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING THE MONTH: (Assay results attached)

CM6-27	P2825	P3358
CM8-23	P2845	P3390
CM8-24	P2900	P3698
CM8-25	P2908	P3735
I2671P	P2952	P3876
I2674P	P2977	
I2675P	P3189	
I2688P	P3208	
I2697P	P3246	
I2791P	P3266	
I3699P	P3268	
P2696	P3277	
P2698	P3284	
P2700	P3287	
P2724	P3356	

Mine Unit 8		Restoration Data											
Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
CM6-27													
	7/19/2023	328	9.24	102	2.14	291	191	1381	8.46	856	0.00	0.20	0.07
CM8-23													
	7/19/2023	335	14.83	158	3.78	371	297	1799	8.15	1115	0.00	-0.01	-0.02
CM8-24													
	7/19/2023	358	18.40	173	4.85	390	297	1912	8.08	1185	0.01	0.05	-0.02
CM8-25													
	7/19/2023	320	13.86	133	3.62	332	250	1598	8.2	991	0.01	0.08	-0.02
I2671P													
	7/19/2023	420	6.66	109	1.82	346	202	1575	8.4	977	-0.01	2.01	0.90
I2674P													
	7/19/2023	446	9.74	119	2.62	375	247	1699	8	1053	-0.01	4.41	1.14
I2675P													
	7/19/2023	472	12.63	126	3.62	402	249	1784	7.97	1106	-0.01	4.42	0.50
I2688P													
	7/19/2023	439	11.79	123	3.48	364	230	1703	8.11	1056	0.00	2.15	0.65
I2697P													
	7/19/2023	623	13.91	168	4.93	536	354	2379	8.02	1475	-0.01	5.41	1.23
I2791P													
	7/19/2023	483	29.32	181	7.41	468	363	2242	7.65	1390	0.07	2.29	0.01
I3699P													
	7/19/2023	687	40.97	277	11.08	707	567	3193	7.74	1980	-0.01	4.45	0.33
P2696													
	7/19/2023	315	7.43	103	2.06	292	189	1349	7.84	836	0.00	2.57	0.31
P2698													
	7/19/2023	620	19.95	213	6.70	599	424	2653	7.85	1645	-0.01	3.53	0.71
P2700													
	7/19/2023	560	37.50	265	10.30	599	476	2835	7.75	1758	-0.01	1.03	0.11
P2724													
	7/19/2023	462	8.79	137	3.05	403	263	1854	8.21	1149	-0.01	2.69	1.26
P2825													
	7/19/2023	382	12.47	111	3.34	321	202	1521	8.09	943	-0.01	1.31	1.12
P2845													
	7/19/2023	469	24.11	181	6.31	448	326	2145	7.93	1330	-0.01	0.92	1.34
P2900													
	7/19/2023	354	12.00	112	3.75	313	215	1495	7.87	927	-0.01	1.98	0.41
P2908													
	7/19/2023	336	8.03	85	2.06	270	169	1279	8.19	793	-0.01	2.71	0.27

Mine Unit 8		Restoration Data											
Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P2952	7/19/2023	540	25.24	192	6.87	505	377	2381	7.96	1476	0.00	4.07	0.20
P2977	7/19/2023	233	11.56	52	1.69	173	92	851	8.06	528	-0.01	0.43	0.09
P3189	7/19/2023	459	37.93	198	8.78	464	404	2289	7.8	1419	0.03	0.98	0.02
P3208	7/19/2023	456	16.02	152	4.35	432	307	2000	8.07	1240	0.00	1.94	0.20
P3246	7/19/2023	383	9.43	110	2.75	335	209	1538	7.82	954	0.02	4.33	0.46
P3266	7/19/2023	462	10.17	118	3.22	394	253	1750	8.13	1085	0.00	2.57	0.77
P3268	7/19/2023	372	8.54	98	2.42	320	192	1437	7.94	891	-0.01	2.79	0.77
P3277	7/19/2023	533	15.08	178	4.86	500	336	2234	7.9	1385	-0.01	3.27	0.53
P3284	7/19/2023	522	18.16	177	5.50	500	368	2241	7.62	1389	0.01	1.69	0.12
P3287	7/19/2023	389	8.69	96	2.56	323	187	1451	8.31	900	-0.01	1.94	0.52
P3356	7/19/2023	242	7.48	91	1.49	245	171	1156	7.91	717	-0.01	0.29	0.01
P3358	7/19/2023	295	9.92	114	2.39	305	234	1432	8.03	888	-0.01	2.45	0.25
P3390	7/19/2023	453	20.18	129	4.81	399	274	1837	7.79	1139	-0.01	2.96	0.12
P3698	7/19/2023	431	17.59	138	4.78	389	267	1801	7.98	1117	-0.01	1.82	0.55
P3735	7/19/2023	963	61.94	0	19.98	1031	917	4683	7.66	2903	-0.01	9.61	0.49
P3876	7/19/2023	406	10.67	115	2.81	362	239	1611	8.02	999	-0.01	3.71	0.74