

**CAMECO RESOURCES  
CROW BUTTE OPERATION**



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

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

---

May 23, 2019

**USPS PRIORITY MAIL  
SIGNATURE CONFIRMATION**

Marty Link, Water Quality Division Administrator  
Nebraska Department of Environmental Quality  
P.O. Box 98922  
Lincoln, NE 68509-8922

Class III UIC Permit NE0122611  
April 2019 Monthly Restoration Report

Dear Ms. Link:

Please find enclosed the April 2019 Monthly Restoration Reports for Mine Units 2, 3, 4, 5, 6 and 7. The reverse osmosis (RO) units continue to inject permeate and reductant into Mine Unit 6 as well as Mine Unit 7. Weather and operational issues have prevented the collection of the final stability individual well samples from Mine Units 3, 4, and 5.

Mine Unit 2 remained in stability monitoring.

If you have any questions regarding this submittal, please feel free to contact me at (308) 665-2215, ext. 117.

Sincerely,  
Cameco Resources  
Crow Butte Operation

A handwritten signature in black ink that reads "Walter D. Nelson".

Walter D. Nelson  
SHEQ Coordinator

Enclosures: As Stated

cc: Ron Burrows – NRC  
CBO - File  
cc: CR – Electronic File  
Kory Winters – NDEQ Field Office  
Amanda Jones – NDEQ Program Coordinator

**CROW BUTTE MINE**  
**MONTHLY RESTORATION REPORT**

April 2019

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 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 MONTH AND ASSAY RESULTS:**

No wells were sampled during the month.

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

April 2019

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	Weather and operational issues prevented the collection of restoration stability samples in April.

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 MONTH AND ASSAY RESULTS:

No in-house samples were collected during the month.

**CROW BUTTE MINE**  
**MONTHLY RESTORATION REPORT**

April 2019

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 Recirculation		X	
e. Other (explain):	X		Weather and operational issues prevented the collection of restoration stability samples in April.

**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 MONTH AND ASSAY RESULTS:**

No in-house samples were collected during the month.

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

April 2019

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 Recirculation		X	
e. Other (explain):	X		Weather and operational issues prevented the collection of restoration stability samples in April.

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

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

P1002

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

P1002.

# Mine Unit 5 Restoration Data

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P1002	4/9/2019	341	16.01	179	4.27	385	324	1996	7.99	1238	-0.01	1.12	0.243

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

April 2019

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		IX and RO P1265, I1267P, I1272P, P1314, P1315, P1377, P1402, P1428, P1494, P1625, P1628, P1676, P1690.
d. Wellfield Recirculation		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:

P1461, P1569.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

P1265, I1267P, I1272P, P1314, P1315, P1377, P1402, P1428, P1461, P1494, P1625, P1628, P1676, P1690.

**Mine Unit 6 Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
I1267P	4/9/2019	358	17.85	170	5.13	359	273	1863	7.83	1155	0.00	0.59	0.279
I1272P	4/9/2019	442	23.96	206	6.49	450	366	2341	7.83	1451	0.00	1.39	0.057
P1265	4/9/2019	389	18.79	171	5.11	383	303	1987	7.95	1232	0.00	0.62	0.029
P1314	4/9/2019	501	14.14	143	4.04	397	230	1954	8.05	1211	0.02	3.68	1.416
P1315	4/9/2019	449	22.70	206	6.18	459	358	2331	7.89	1445	0.02	0.57	0.191
P1377	4/9/2019	393	21.47	186	5.20	398	314	2075	7.79	1287	0.00	1.20	0.053
P1402	4/9/2019	425	14.84	143	3.81	373	252	1878	7.79	1164	0.04	1.96	0.308
P1428	4/9/2019	332	17.59	210	4.45	410	364	2164	7.87	1342	0.00	2.60	0.103
P1461	4/9/2019	369	19.69	212	5.36	443	386	2275	7.98	1411	0.00	1.77	0.417
P1494	4/9/2019	374	12.82	142	3.32	352	262	1826	7.92	1132	0.03	1.94	0.214
P1625	4/9/2019	401	15.79	139	4.44	350	235	1794	8.09	1112	0.00	2.44	1.198
P1628	4/9/2019	323	7.59	125	2.42	313	223	1600	8.39	992	-0.01	0.98	0.977
P1676	4/9/2019	634	30.86	299	9.69	645	493	3217	7.86	1995	-0.01	3.76	1.052
P1690	4/9/2019	359	11.12	115	3.02	298	189	1553	8.19	963	0.01	1.61	0.143



CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

April 2019

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, P1957, P1972, P1986, P2014, P2038, P2040, P2108, P2125, P2188, P2219, P2241, P2264, P2303, P2316, P2340, P2359, P2361, P2384, P2395, P2399, I2429P, P2470, P2476, I2502P, P2510, P2523, P2538, P2588, P2601, P2610, P2612, P2614, P2642, P2660, P5271, P5278, P5279.
d. Wellfield Recirculation		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 MONTH AND ASSAY RESULTS:

BL-17, P1569, P1957, P1972, P1986, P2014, P2038, P2040, P2108, P2125, P2188, P2241, P2264, P2303, P2316, P2340, P2359, P2361, P2384, P2395, P2399, P2401, I2429P, P2476, P2510, P2523, P2538, P2588, P2601, P2610, P2612, P2614, P2642, P2660, P5271, P5278, P5279

## Mine Unit 7 Restoration Data

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL-17	4/9/2019	962	56.92	336	16.71	843	665	4162	7.8	2580	-0.01	3.17	1.467
I2429P	4/9/2019	808	43.67	185	12.61	632	487	3077	7.47	1908	0.03	10.14	0.851
P1569	4/9/2019	498	35.48	241	9.43	504	426	2715	7.87	1683	0.02	0.41	0.087
P1957	4/9/2019	495	29.65	128	7.34	389	294	2047	7.18	1269	0.06	3.01	0.374
P1972	4/9/2019	752	56.93	234	16.77	701	642	3504	7.16	2172	0.05	4.66	0.652
P1986	4/9/2019	795	51.87	332	16.45	805	707	3860	7.52	2393	-0.01	5.51	1.007
P2014	4/9/2019	608	32.88	144	9.00	453	324	2338	7.29	1450	0.01	1.17	0.426
P2038	4/9/2019	1019	76.80	308	22.81	902	793	4314	7.24	2675	0.01	5.44	0.253
P2040	4/9/2019		102.60	366	32.28	1106	1032	5215	7.23	3233	0.00	7.61	0.147
P2108	4/9/2019	771	54.16	238	14.72	679	592	3442	7.25	2134	0.00	3.58	0.185
P2125	4/9/2019		107.50	410	29.90	1110	1092	5549	7.13	3440	0.18	9.87	0.128
P2188	4/9/2019	573	33.66	261	9.70	598	526	3015	7.77	1869	-0.01	7.71	1.036
P2241	4/9/2019	557	34.40	258	10.58	574	500	2967	7.95	1840	0.00	2.89	0.844
P2264	4/9/2019	427	20.94	134	5.99	349	249	1843	8.1	1143	0.00	0.76	0.565
P2303	4/9/2019	735	52.59	213	15.28	614	525	3120	7.24	1934	0.37	1.49	0.281
P2316	4/9/2019		117.30	429	35.24	1123	1103	5574	7.21	3456	-0.01	4.67	1.042
P2340	4/9/2019	791	63.74	226	17.86	671	583	3365	7.22	2086	0.12	2.76	0.172
P2359	4/9/2019		86.43	338	25.55	1042	962	4903	7.13	3040	0.03	10.92	0.349
P2361	4/9/2019		101.80	363	27.88	1094	1040	5184	7.5	3214	-0.01	7.16	0.718

**Mine Unit 7 Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P2384	4/9/2019	999	82.02	303	24.41	873	817	4303	7.34	2668	-0.01	4.11	0.884
P2395	4/9/2019	690	56.44	156	13.54	488	384	2600	7.47	1612	0.03	3.23	0.422
P2399	4/9/2019	689	57.97	184	14.34	560	485	2880	7.36	1786	0.01	11.96	0.694
P2401	4/9/2019	831		229				3612	7.23	2239			
P2476	4/9/2019	1089	77.26	40	24.64	999	897	4805	7.33	2979	0.00	3.52	1.31
P2510	4/9/2019	567	34.27	203	8.46	500	406	2574	7.54	1596	-0.01	2.90	0.711
P2523	4/9/2019	695	45.24	241	12.40	640	556	3235	7.57	2006	0.00	5.31	0.568
P2538	4/9/2019	688	44.21	184	12.42	550	439	2773	7.68	1719	-0.01	1.59	1.728
P2588	4/9/2019		94.01	390	28.87	1082	1021	5290	7.61	3280	-0.01	4.86	1.111
P2601	4/9/2019	665	47.03	284	12.91	642	538	3263	7.71	2023	0.05	1.99	0.855
P2610	4/9/2019		102.60	417	28.28	1085	980	5304	7.51	3288	0.00	4.87	1.17
P2612	4/9/2019	962	66.05	282	19.62	849	754	4095	7.44	2539	0.00	6.62	1.214
P2614	4/9/2019	682	51.42	265	15.44	619	533	3261	7.84	2022	0.00	1.31	0.259
P2642	4/9/2019	438	24.14	219	6.52	476	410	2463	8.19	1527	0.00	1.33	0.527
P2660	4/9/2019	867	74.87	267	19.45	767	701	3897	7.55	2416	0.00	2.91	0.531
P5271	4/9/2019	1103	61.27	328	17.34	695	621	4898	7.27	3037	0.00	4.46	0.94
P5278	4/9/2019	843	93.65	201	26.48	982	936	3290	7.87	2040	0.00	2.74	1.909
P5279	4/9/2019	635	48.32		12.79	659	515	6	6.98	4	0.00	12.54	1.303