

**CAMECO RESOURCES  
CROW BUTTE OPERATION**



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

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

---

February 9, 2021

USPS PRIORITY MAIL  
SIGNATURE CONFIRMATION

Sue Dempsey, Drinking Water and Groundwater Division Administrator  
Nebraska Department of Environment and Energy  
P.O. Box 98922  
Lincoln, NE 68509-8922

Class III UIC Permit NE0122611  
January 2021 Monthly Restoration Report

Dear Ms. Dempsey:

Please find enclosed the January 2021 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 Units 2, 4, 6 and 7.

Mine Unit 3 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. 117.

Sincerely,  
Cameco Resources  
Crow Butte Operation

Walter D. Nelson  
SHEQ Coordinator

Enclosures: As Stated

cc: ~~Ren Burrows~~ - NRC  
CBO - File  
cc: CR - Electronic File  
Kory Winters - NDEE Field Office  
Amanda Jones - NDEE Program Coordinator

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

January 2021

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		P97, P118, P119, I175P, I180P, I188P
d. Wellfield Recirculation		X	
e. Other (explain):			

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:

P97, P118, P119, I175P, I180P, I188P.

**Mine Unit 2 Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
I175P	1/12/2021	182	2.66	49	0.39	151	82	724	7.93	449	0.00	0.89	0.02
I180P	1/12/2021	210	3.34	60	0.54	187	105	862	7.93	534	0.00	0.80	0.07
I188P	1/12/2021	204	5.63	56	0.99	165	99	806	8.21	500	0.00	0.56	-0.02
P118	1/12/2021	204	4.11	66	0.74	187	113	882	7.74	547	0.01	0.88	-0.04
P119	1/12/2021	226	6.53	75	1.42	210	134	986	7.75	611	0.00	1.59	-0.05
P97	1/12/2021	295	8.91	85	2.04	242	150	1172	7.8	727	0.01	2.14	-0.05

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

January 2021

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 MONTH AND ASSAY RESULTS:

No in-house samples were collected during the month.

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

January 2021

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		BL-8, CM1-7, I536P, I538P, I544P, I548P, I549P, I550P, I551P, I552P
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-8, CM1-7, I536P, I538P, I544P, I548P, I549P, I550P, I551P, I552P.

**Mine Unit 4****Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL-8	1/12/2021	326	7.02	61	1.62	232	111	1088	8.05	675	-0.01	0.88	0.22
CM1-7	1/12/2021	312	10.74	76	1.98	255	157	1196	7.46	742		1.35	-0.03
I536P	1/12/2021	440	25.16	127	6.80	370	276	1810	7.89	1122	0.00	2.88	0.02
I538P	1/12/2021	347	14.42	109	3.59	302	194	1417	7.99	879	0.00	0.77	0.16
I544P	1/12/2021	413	15.89	92	4.25	317	223	1541	7.72	955	0.00	1.62	0.12
I548P	1/12/2021	461	20.26	109	5.72	379	274	1775	7.45	1101	0.00	0.74	0.07
I549P	1/12/2021	922	74.22	273	20.91	925	862	4096	7.19	2540	0.08	9.19	0.10
I550P	1/12/2021	670	45.07	184	12.39	619	522	2780	7.44	1724	0.00	4.01	0.23
I551P	1/12/2021	400	17.00	94	3.97	319	223	1523	7.52	944	0.01	1.80	0.28
I552P	1/12/2021	348	8.78	67	1.89	272	176	1244	7.66	771	0.01	1.79	0.52

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

January 2021

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		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 in-house samples were collected during the month.

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

January 2021

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		CM5-17, P1268, I1270P, I1274P, P1318, P1399, P1439, P1457, P1461, P1532, I1602P, P1612, P1625, P1628, P1658, P1843
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:

CM5-14, CM5-15, CM5-16, CM5-17, CM6-6, CM6-7, P1265, I1266P, I1267P, P1268, P1269, I1270P, I1272P, P1273, I1274P, I1285P, P1318, P1348, P1355, I1356P, I1357P, P1358, P1376, P1396, I1397P, I1398P, P1399, I1423P, P1426, P1439, P1446, P1457, P1461, P1494, P1532, I1581P, P1584, P1590, I1600P, I1601P, I1602P, P1611, P1612, P1624, P1625, P1628, P1663, I1667P, P1689, P1690, P1703, P1706, P1751, P1765, P1800, P1832, P1843.



**Mine Unit 6 Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
CM5-14	1/12/2021	339	25.97	230	5.25	452	409	2203	8.1	1366	0.01	0.03	-0.08
CM5-15	1/12/2021	323	9.39	62	1.57	236	125	1094	8.07	678	0.03	1.12	0.01
CM5-16	1/12/2021	358	10.02	94	2.13	292	175	1359	8.28	843	0.09	1.58	0.36
CM5-17	1/12/2021	417	15.98	117	3.84	383	267	1727	8.04	1071	0.05	0.29	-0.04
CM6-6	1/12/2021	220	15.66		3.75	404	392	493	8.35	306	0.02	-0.01	-0.05
CM6-7	1/12/2021	217	18.22		3.93	393	387	514	8.4	319	0.03	0.05	-0.07
I1266P	1/12/2021	223	6.05	69	1.06	191	114	918	8.56	569	0.01	0.76	0.33
I1267P	1/12/2021	272	6.63	87	1.49	239	154	1138	8.26	706	0.02	0.66	0.04
I1270P	1/12/2021	320	8.42	74	1.77	242	131	1161	8.38	720	0.00	1.01	1.67
I1272P	1/12/2021	412	18.55	149	4.24	406	304	1894	7.91	1174	0.04	0.28	-0.05
I1274P	1/12/2021	453	12.86	144	3.25	426	301	1991	7.81	1234	0.00	1.48	0.15
I1285P	1/12/2021	382	5.31	74	1.02	281	130	1280	8.43	794	0.01	2.51	0.47
I1356P	1/12/2021	182	2.80	59	0.28	154	79	766	8.29	475	0.03	0.29	0.00
I1357P	1/12/2021	315	22.65	154	4.92	359	329	1780	7.34	1104	0.33	1.68	-0.05
I1397P	1/12/2021	288	8.57	91	1.14	261	162	1226	8.28	760	0.05	1.67	0.19
I1398P	1/12/2021	286	10.48	83	2.10	254	161	1168	8.34	724	0.00	0.60	0.28
I1423P	1/12/2021	286	6.70	90	1.38	259	168	1218	8.28	755	0.01	1.66	0.66
I1581P	1/12/2021	304	12.66	170	3.35	386	327	1862	8.3	1154	0.00	0.87	0.14
I1600P	1/12/2021	312	6.14	79	0.83	247	136	1187	8.42	736	0.14	4.39	0.50

**Mine Unit 6****Restoration Data**

Well-ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
I1601P	1/12/2021	342	5.81	93	1.29	285	157	1306	8.61	810	0.12	3.29	2.39
I1602P	1/12/2021	227	4.04	63	0.92	185	103	905	8.28	561	0.00	0.30	0.17
I1667P	1/12/2021	317	25.17	134	5.29	315	264	1580	8.17	980	0.03	0.46	0.07
P1265	1/12/2021	303	9.52	111	2.44	302	223	1428	8.22	885	0.00	0.53	-0.02
P1268	1/12/2021	311	5.68	71	1.20	241	128	1120	8.36	694	0.00	1.04	2.86
P1269	1/12/2021	230	3.58	55	0.52	183	101	876	8.14	543	0.01	0.38	0.07
P1273	1/12/2021	424	10.54	135	2.66	385	264	1800	7.88	1116	0.06	3.97	0.00
P1318	1/12/2021	276	4.72	75	1.01	225	132	1077	8.35	668	0.00	0.49	1.03
P1348	1/12/2021	205	3.31	63	0.52	173	94	843	8.22	523	0.16	0.22	0.17
P1355	1/12/2021	421	11.64	107	2.85	357	216	1625	8.17	1008	0.01	3.08	0.34
P1358	1/12/2021	210	3.46	67	0.62	180	90	871	8.41	540	0.11	0.71	0.53
P1376	1/12/2021	171	2.42	63	0.23	157	82	742	8.12	460	0.01	0.12	0.04
P1396	1/12/2021	278	13.64	157	3.45	353	326	1742	8.14	1080	0.01	0.04	-0.07
P1399	1/12/2021	476	25.58	161	6.02	465	352	2142	7.73	1328	0.01	1.58	0.12
P1426	1/12/2021	336	14.98	171	3.68	389	331	1880	7.99	1166	0.10	2.02	-0.06
P1439	1/12/2021	474	10.25	108	2.84	371	211	1698	8.08	1053	0.00	1.88	1.17
P1446	1/12/2021	268	20.62	192	4.21	401	395	1947	8.14	1207	0.05	0.03	-0.06
P1457	1/12/2021	393	5.20	87	1.42	310	163	1400	8.52	868	0.00	0.73	2.34
P1461	1/12/2021	415	18.03	169	4.73	433	357	2085	8.05	1293	0.00	1.23	0.25

**Mine Unit 6 Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P1494	1/12/2021	287	4.09	61	0.75	220	106	1026	8.23	636	0.03	0.81	0.45
P1532	1/12/2021	384	13.49	159	3.39	415	344	1992	7.78	1235	0.00	0.30	-0.09
P1584	1/12/2021	273	6.35	90	0.96	248	170	1216	8.61	754	0.01	1.30	0.50
P1590	1/12/2021	249	7.69	79	1.35	212	121	1012	8.34	627	0.07	4.64	0.00
P1611	1/12/2021	308	13.93	178	3.60	397	355	1890	8.08	1172	0.05	2.19	0.43
P1612	1/12/2021	299	4.97	61	0.95	222	122	1065	8.49	660	-0.01	0.80	0.99
P1624	1/12/2021	204	5.08	60	0.78	164	79	816	8.44	506	0.00	0.40	0.06
P1625	1/12/2021	307	9.38	96	2.35	277	174	1273	8.14	789	-0.01	1.10	0.66
P1628	1/12/2021	309	7.33	106	2.01	290	192	1379	8.34	855	-0.01	0.70	0.42
P1663	1/12/2021	282	3.27	59	0.69	218	106	995	8.7	617	0.03	1.60	0.78
P1689	1/12/2021	304	18.84	217	4.37	434	380	2034	8.25	1261	0.01	0.85	-0.01
P1690	1/12/2021	222	6.34	108	1.36	242	177	1173	8.48	727	0.00	0.33	0.01
P1703	1/12/2021	248	17.59	89	3.27	218	153	1100	8	682	0.19	1.67	0.02
P1706	1/12/2021	285	2.37	49	0.41	204	90	931	8.76	577	0.01	1.26	1.71
P1751	1/12/2021	161	5.78	59	0.80	144	82	720	7.84	446	0.12	-0.04	-0.02
P1765	1/12/2021	414	7.78	96	1.86	341	191	1508	8.35	935	0.29	1.49	0.42
P1800	1/12/2021	290	9.88	101	1.50	273	181	1287	8.3	798	0.00	1.58	0.12
P1832	1/12/2021	385	9.89	83	2.51	300	163	1388	8.33	861	0.00	1.96	0.39
P1843	1/12/2021	352	8.38	119	2.28	334	216	1541	8.35	955	0.00	2.11	1.22

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT

January 2021

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, CM3-7, CM4-14, CM4-15, CM4-16, CM4-17, CM4-18, I1971P, I1973P, I1975P, I1978P, I1982P, I1985P, P1986, P2038, P2040, P2103, P2125, I2183P, I2185P, P2188, P2197, P2216, P2226, I2244P, P2264, P2316, P2384, I2429P, P2468, P2470, P2476, P2505, P2510, P2523, P2538, P2540, P2601, P2610, P2612, P2614, P2615, P2624, P2660, P5220, P5230, P5250, P5283.
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, CM3-7, CM4-12, CM4-13, CM4-14, CM4-15, CM4-16, CM4-17, CM4-18, I1971P, I1973P, I1978P, I1982P, I1985P, P1986, P2038, P2040, P2125, I2183P, I2185P, P2188, P2216,

P2226, I2244P, P2264, P2316, P2384, I2429P, P2468, P2470, P2476, P2481, P2505, P2510,  
P2523, P2540, P2601, P2610, P2612, P2614, P2615, P2624, P2660, P5230, P5250, P5283.

**Mine Unit 7 Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL-17	1/12/2021	680	27.59	200	7.87	572	388	2649	7.87	1642	0.00	1.03	1.38
CM3-7	1/12/2021	398	21.49	164	5.34	421	329	1925	8.11	1194	0.00	0.24	0.16
CM4-12	1/12/2021	454	21.44	101	5.54	370	269	1719	7.56	1066	0.12	1.04	0.04
CM4-13	1/12/2021	534	26.49	120	7.58	437	348	2057	7.55	1275	0.06	1.36	0.04
CM4-14	1/12/2021		114.40	342	35.29	1127	1118	4815	7.44	2985	0.00	2.30	0.34
CM4-15	1/12/2021	892	66.00	259	19.63	796	717	3777	7.28	2342	-0.01	2.88	0.51
CM4-16	1/12/2021	1046	92.59	340	28.78	1055	1018	4669	7.21	2895	0.00	2.23	0.14
CM4-17	1/12/2021	1034	111.10	401	33.80	988	942	4685	7.24	2905	0.04	0.57	-0.06
CM4-18	1/12/2021	570	38.22	183	10.38	482	362	2333	7.63	1446	0.00	0.52	0.34
I1971P	1/12/2021	802	56.82	183	15.59	687	599	3090	7.5	1916	0.00	2.17	0.10
I1973P	1/12/2021	821	50.59	177	12.49	672	546	3075	7.49	1907	-0.01	5.37	0.49
I1978P	1/12/2021	574	49.23	117	11.05	439	349	2081	7.43	1290	-0.01	1.57	0.37
I1982P	1/12/2021	419	23.29	110	4.94	355	248	1660	7.43	1029	0.00	1.96	0.66
I1985P	1/12/2021	417	32.90	76	4.94	266	175	1400	7.72	868	0.00	0.74	0.49
I2183P	1/12/2021	669	46.32	168	11.21	593	501	2669	7.35	1655	-0.01	6.96	0.76
I2185P	1/12/2021		97.39	322	30.46	1173	1147	5131	7.32	3181	0.00	8.79	2.12
I2244P	1/12/2021	255	14.05	147	3.45	301	249	1519	7.42	942	0.00	0.69	0.31
I2429P	1/12/2021	520	29.12	142	8.45	456	359	2141	7.62	1327	0.00	5.39	0.50
P1986	1/12/2021	607	39.51	239	12.31	618	545	2903	7.69	1800	0.00	1.74	0.57

**Mine Unit 7****Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P2038	1/12/2021	680	44.48	173	12.93	587	508	2785	7.39	1727	0.00	2.30	0.07
P2040	1/12/2021	848	63.74	228	20.63	757	709	3592	7.49	2227	-0.01	3.66	0.05
P2125	1/12/2021	370	16.96	77	2.64	275	188	1318	7.47	817	0.04	0.83	0.01
P2188	1/12/2021	333	16.69	76	2.34	252	162	1243	7.58	771	0.00	0.58	0.71
P2216	1/12/2021	379	31.16	192	7.20	419	368	2060	7.89	1277	0.00	3.02	0.47
P2226	1/12/2021	591	22.12	138	6.97	477	338	2247	7.55	1393	0.00	2.39	0.49
P2264	1/12/2021	279	15.53	130	3.88	308	246	1471	7.51	912	0.01	0.55	0.30
P2316	1/12/2021	817	74.85	187	19.95	697	642	3155	7.47	1956	-0.01	6.88	0.70
P2384	1/12/2021	762	61.56	200	17.97	662	618	3193	7.38	1980	0.00	2.87	0.52
P2468	1/12/2021	380	17.11	144	4.50	388	302	1808	7.79	1121	0.00	0.82	0.91
P2470	1/12/2021	422	28.42	149	6.32	386	319	1929	7.76	1196	0.00	1.09	0.52
P2476	1/12/2021	653	44.73	179	13.41	569	491	2754	7.58	1707	0.01	1.65	0.61
P2481	1/12/2021	900	47.03	248	14.37	801	663	3666	7.55	2273	-0.01	3.09	1.43
P2505	1/12/2021	322	18.36	154	3.87	342	278	1715	7.65	1063	-0.01	0.40	0.48
P2510	1/12/2021	405	24.93	163	5.44	413	332	1942	8.03	1204	-0.01	1.27	0.62
P2523	1/12/2021	492	35.37	135	9.25	397	313	1991	7.65	1234	-0.01	3.98	0.41
P2540	1/12/2021	393	34.18	98	5.32	287	204	1488	7.71	923	0.00	1.05	0.42
P2601	1/12/2021	390	21.85	189	5.61	440	374	2077	7.96	1288	0.04	0.39	0.60
P2610	1/12/2021	828	47.69	216	13.75	719	579	3279	7.54	2033	0.00	4.27	1.10

**Mine Unit 7 Restoration Data**

Well ID	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P2612	1/12/2021	466	20.55	108	5.11	375	269	1811	7.7	1123	0.01	1.89	0.88
P2614	1/12/2021	370	17.79	132	4.60	335	255	1648	7.99	1022	0.00	0.46	0.17
P2615	1/12/2021	305	14.36	75	3.06	242	163	1167	7.94	724	0.02	0.34	0.88
P2624	1/12/2021	369	13.32	101	3.39	312	209	1457	7.94	903	0.00	0.39	0.96
P2660	1/12/2021	595	35.97	157	9.09	508	421	2396	7.83	1486	0.00	2.19	0.38
P5230	1/12/2021	605	30.39	126	7.87	485	386	2297	7.48	1424	0.09	4.08	0.39
P5250	1/12/2021	680	43.75	191	12.33	587	484	2829	7.6	1754	0.00	1.72	1.27
P5283	1/12/2021	845	56.11	206	16.83	748	650	3359	7.7	2083	0.01	5.09	1.40