

**CAMECO RESOURCES  
CROW BUTTE OPERATION**



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

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

---

August 21, 2019

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

ATTN: Document Control Desk, Director  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: Source Materials License SUA-1534  
Docket No. 40-8943  
SM8-28 Monitor Well Excursion - Final Report

Dear Document Control Desk:

On April 22, 2019, during routine biweekly water sampling of Cameco Resources, Crow Butte Operation (CBO) shallow monitor well SM8-28, the multiple parameter upper control limits (MCL) for conductivity and alkalinity were exceeded. As required by License Condition 11.1.5 of Source Materials License SUA-1534, a second sample was collected within 24 hours and analyzed for the three excursion indicator parameters. The results of the second sample exceeded the MCL's for conductivity and alkalinity.

The region around the CBO facility was subject to a major winter storm on March 14 and 15, 2019, in which the site received an estimated 18" of snowfall accompanied by up to 90 mph wind gusts. As a result, a significant amount of snowmelt impacted the area around the well. This was followed by a second significant winter storm on April 10 and 11, 2019. The snowmelt from this storm provided additional impact to this part of the well field. SM8-28 was placed on excursion status due to similar circumstances in 2010, 2011, 2015, 2016, and 2018. The site placed the well on a weekly sampling schedule, but no other corrective actions were taken. The parameters descended below excursion criteria as conditions have warmed and dried.

In accordance with License Condition 11.1.5 of the UIC permit, CBO increased the sampling frequency for SM8-28 to weekly. Weekly samples were obtained from April 22, 2019, to August 21, 2019. The samples collected on July 17, 24, and 31, as well as the samples collected on August 7, 14, and 21, 2019, were below the excursion criteria from License Condition 11.1.5 of the permit. Based on these results, CBO is removing SM8-28 from excursion status and is returning it to routine biweekly sampling. Attached are copies of the analytical data for each of

NM5520

# CROW BUTTE RESOURCES, INC.



---

**Document Control Desk, Director**

**August 21, 2019**

**Page 2**

the last six weekly samples and graphs for each parameter covering the period of April 4, 2019 through August 21, 2019.

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



Walt Nelson  
SHEQ Coordinator

Enclosures:      As Stated

cc:      NRC – Deputy Director  
         CBO - File

cc:      CBO



**Crow Butte Project**  
**Monitor Well Laboratory Report**

Sample Date: 07/17/2019

Analysis Date: 07/17/2019

Well ID	Alkalinity (mg/L)	Alk SCL	Alk MCL	Conductivity (µMho/cm)	Cond SCL	Cond MCL	Chloride (mg/L)	Cl SCL	Cl MCL
SM05-007	209	323	269	563	932	776	9.9	41	34
SM05-008	206	312	260	556	840	700	13	32	27
SM08-017	242	331	276	575	848	707	8.6	24	20
SM08-018	238	317	264	563	816	680	10	25	21
SM08-019	239	340	283	545	827	689	8.1	25	21
SM08-020	225	314	262	556	806	672	8.9	25	21
SM08-021	233	317	264	595	706	588	9.9	25	21
SM08-022	256	324	270	716	829	691	12	25	20
SM08-023	227	317	264	564	808	673	8.9	27	23
SM08-024	233	317	264	591	720	600	9.8	24	20
SM08-025	262	324	270	725	720	600	14	24	20
<del>SM08-028</del>	289	328	274	660	801	667	10	24	20
SM10-030	246	359	299	539	778	648	7.1	25	21
SM10-031	241	340	283	540	734	612	7.1	25	21
SM10-032	244	340	283	530	734	612	6.2	23	20

WJ



# Crow Butte Project

## Monitor Well Laboratory Report

Sample Date: 07/24/2019

Analysis Date: 07/24/2019

Well ID	Alkalinity (mg/L)	Alk SCL	Alk MCL	Conductivity (µMho/cm)	Cond SCL	Cond MCL	Chloride (mg/L)	Cl SCL	Cl MCL
CM08-010	313	441	367	1851	3038	2532	178	315	263
CM08-011	318	446	372	1851	3053	2544	174	325	271
CM08-012	321	461	384	1873	3038	2532	175	305	254
CM10-001	316	469	391	1850	2822	2352	172	305	254
CM10-002	316	474	395	1846	2707	2256	172	262	218
CM10-003	312	474	395	1847	2736	2280	178	266	222
CM10-004	329	468	390	1935	2794	2328	191	288	240
CM10-005	339	464	386	2000	3082	2568	202	389	324
CM10-006	318	482	402	1843	2750	2292	169	281	234
CM10-007	318	482	402	1841	2765	2304	171	278	232
CM11-001	301	438	365	1846	2808	2340	176	297	247
CM11-002A	299	442	368	1844	2794	2328	177	285	238
CM11-003	317	439	366	1908	2693	2244	180	272	227
CM11-004	299	464	386	1827	2678	2232	176	268	223
CM11-005	298	451	376	1819	2664	2220	174	274	228
CM11-006	301	436	364	1821	2707	2256	175	269	224
CM11-007	297	432	360	1821	2707	2256	173	272	227
CM11-008	304	462	385	1872	2678	2232	177	274	228
CM11-009	294	439	366	1813	2765	2304	167	276	230
CM11-010	291	436	364	1816	2707	2256	174	284	236
CM11-011	302	433	361	1822	2736	2280	175	278	232
SM04-003	180	361	301	611	1251	1043	13	38	32
SM04-004	206	266	222	619	1099	916	14	62	52
SM08-025	259	324	270	721	720	600	14	24	20
<del>SM08-028</del>	279	328	274	641	801	667	9.2	24	20
SM10-001	298	469	391	705	994	828	13	37	31
SM10-002	231	338	282	539	763	636	8.7	24	20
SM10-003	250	386	322	559	821	684	7.9	24	20
SM10-004	246	346	288	543	778	648	6.7	24	20
SM10-005	244	350	292	542	763	636	7.8	23	19
SM10-006	308	501	418	717	1123	936	13	33	28
SM10-007	296	403	336	695	965	804	14	33	27



**Crow Butte Project**  
**Monitor Well Laboratory Report**

Sample Date: 07/31/2019

Analysis Date: 07/31/2019

Well ID	Alkalinity (mg/L)	Alk SCL	Alk MCL	Conductivity (µMho/cm)	Cond SCL	Cond MCL	Chloride (mg/L)	Cl SCL	Cl MCL
SM05-007	210	323	269	572	932	776	9.7	41	34
SM05-008	207	312	260	558	840	700	13	32	27
SM08-017	242	331	276	580	848	707	9.1	24	20
SM08-018	238	317	264	568	816	680	10	25	21
SM08-019	239	340	283	549	827	689	8.7	25	21
SM08-020	228	314	262	563	806	672	9.1	25	21
SM08-021	231	317	264	595	706	588	9.6	25	21
SM08-022	256	324	270	710	829	691	12	25	20
SM08-023	228	317	264	569	808	673	8.9	27	23
SM08-024	232	317	264	582	720	600	9.8	24	20
SM08-025	261	324	270	720	720	600	14	24	20
<del>SM08-028</del>	272	328	274	624	801	667	9.1	24	20
SM10-030	244	359	299	545	778	648	7.6	25	21
SM10-031	244	340	283	545	734	612	7.3	25	21
SM10-032	243	340	283	536	734	612	6	23	20



# Crow Butte Project

## Monitor Well Laboratory Report

Sample Date: 08/07/2019

Analysis Date: 08/07/2019

Well ID	Alkalinity (mg/L)	Alk SCL	Alk MCL	Conductivity (µMho/cm)	Cond SCL	Cond MCL	Chloride (mg/L)	Cl SCL	Cl MCL
CM08-010	315	441	367	1852	3038	2532	175	315	263
CM08-011	323	446	372	1865	3053	2544	172	325	271
CM08-012	325	461	384	1886	3038	2532	175	305	254
CM10-001	319	469	391	1867	2822	2352	179	305	254
CM10-002	317	474	395	1864	2707	2256	174	262	218
CM10-003	312	474	395	1856	2736	2280	173	266	222
CM10-004	332	468	390	1959	2794	2328	192	288	240
CM10-005	340	464	386	2015	3082	2568	202	389	324
CM10-006	318	482	402	1852	2750	2292	170	281	234
CM10-007	319	482	402	1856	2765	2304	170	278	232
CM11-001	302	438	365	1861	2808	2340	178	297	247
CM11-002A	300	442	368	1850	2794	2328	179	285	238
CM11-003	319	439	366	1919	2693	2244	183	272	227
CM11-004	301	464	386	1843	2678	2232	176	268	223
CM11-005	302	451	376	1832	2664	2220	177	274	228
CM11-006	302	436	364	1835	2707	2256	178	269	224
CM11-007	299	432	360	1829	2707	2256	176	272	227
CM11-008	308	462	385	1881	2678	2232	175	274	228
CM11-009	297	439	366	1829	2765	2304	172	276	230
CM11-010	300	436	364	1842	2707	2256	176	284	236
CM11-011	308	433	361	1845	2736	2280	179	278	232
SM04-003	181	361	301	609	1251	1043	12	38	32
SM04-004	206	266	222	621	1099	916	13	62	52
SM08-025	260	324	270	710	720	600	14	24	20
<del>SM08-028</del>	264	328	274	606	801	667	8.6	24	20
SM10-001	295	469	391	696	994	828	13	37	31
SM10-002	229	338	282	533	763	636	8.4	24	20
SM10-003	247	386	322	550	821	684	7.6	24	20
SM10-004	242	346	288	537	778	648	7.2	24	20
SM10-005	239	350	292	531	763	636	7	23	19
SM10-006	305	501	418	705	1123	936	14	33	28
SM10-007	294	403	336	690	965	804	13	33	27



**Crow Butte Project**  
**Monitor Well Laboratory Report**

Sample Date: 08/14/2019

Analysis Date: 08/14/2019

Well ID	Alkalinity (mg/L)	Alk SCL	Alk MCL	Conductivity (µMho/cm)	Cond SCL	Cond MCL	Chloride (mg/L)	Cl SCL	Cl MCL
SM05-007	214	323	269	569	932	776	10	41	34
SM05-008	208	312	260	553	840	700	13	32	27
SM08-017	246	331	276	574	848	707	9.5	24	20
SM08-018	239	317	264	560	816	680	10	25	21
SM08-019	240	340	283	546	827	689	8.7	25	21
SM08-020	231	314	262	563	806	672	9.3	25	21
SM08-021	234	317	264	583	706	588	9.5	25	21
SM08-022	257	324	270	694	829	691	12	25	20
SM08-023	230	317	264	563	808	673	8.9	27	23
SM08-024	232	317	264	566	720	600	9.5	24	20
SM08-025	263	324	270	713	720	600	14	24	20
<del>SM08-028</del>	267	328	274	597	801	667	8.8	24	20
SM10-030	246	359	299	540	778	648	7.2	25	21
SM10-031	242	340	283	539	734	612	7.2	25	21
SM10-032	245	340	283	533	734	612	6	23	20



WJ

**Crow Butte Project**  
**Monitor Well Laboratory Report**

Sample Date: 08/21/2019

Analysis Date: 08/21/2019

Well ID	Alkalinity (mg/L)	Alk SCL	Alk MCL	Conductivity (µMho/cm)	Cond SCL	Cond MCL	Chloride (mg/L)	Cl SCL	Cl MCL
CM08-010	311	441	367	1848	3038	2532	178	315	263
CM08-011	318	446	372	1843	3053	2544	172	325	271
CM08-012	328	461	384	1883	3038	2532	176	305	254
CM10-001	315	469	391	1866	2822	2352	171	305	254
CM10-002	316	474	395	1864	2707	2256	175	262	218
CM10-003	309	474	395	1867	2736	2280	179	266	222
CM10-004	329	468	390	1954	2794	2328	191	288	240
CM10-005	340	464	386	2016	3082	2568	202	389	324
CM10-006	316	482	402	1853	2750	2292	170	281	234
CM10-007	317	482	402	1855	2765	2304	174	278	232
CM11-001	299	438	365	1854	2808	2340	177	297	247
CM11-002A	297	442	368	1837	2794	2328	177	285	238
CM11-003	314	439	366	1918	2693	2244	185	272	227
CM11-004	300	464	386	1844	2678	2232	178	268	223
CM11-005	297	451	376	1835	2664	2220	177	274	228
CM11-006	296	436	364	1822	2707	2256	176	269	224
CM11-007	296	432	360	1831	2707	2256	176	272	227
CM11-008	306	462	385	1880	2678	2232	180	274	228
CM11-009	294	439	366	1830	2765	2304	172	276	230
CM11-010	300	436	364	1849	2707	2256	178	284	236
CM11-011	305	433	361	1847	2736	2280	178	278	232
SM04-003	183	361	301	616	1251	1043	12	38	32
SM04-004	209	266	222	626	1099	916	14	62	52
SM08-025	264	324	270	710	720	600	13	24	20
SM08-028	261	328	274	591	801	667	8.4	24	20
SM10-001	298	469	391	701	994	828	14	37	31
SM10-002	231	338	282	534	763	636	8.8	24	20
SM10-003	254	386	322	565	821	684	7.7	24	20
SM10-004	247	346	288	544	778	648	6.8	24	20
SM10-005	245	350	292	541	763	636	7.2	23	19
SM10-006	290	501	418	677	1123	936	13	33	28
SM10-007	294	403	336	691	965	804	14	33	27



SM08-028



