

**CAMECO RESOURCES  
CROW BUTTE OPERATION**



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

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

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April 18, 2016

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

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

Class III UIC Permit NE0122611  
March 2016 Monthly Restoration Report

Dear Ms. Link:

Please find enclosed the March 2016 Monthly Restoration Reports for Mine Units 2, 3, 4, 5 and 6. The reverse osmosis (RO) units continue to inject permeate and reductant into Mine Units 4, 5, and 6 with groundwater sweep continuing in portions of the three mine units.

Mine Units 2 and 3 remain in stability monitoring.

If you have any questions regarding this submittal, please feel free to contact me at (308) 665-2215, ext. 114.

Sincerely,  
Cameco Resources  
Crow Butte Operation

Larry Teahon  
SHEQ Manager

Enclosures: As Stated

cc: Ron Burrows - NRC  
CBO - File  
ec: CR - Casper  
Nancy Harris - NDEQ Program Coordinator

CROW BUTTE MINE  
MONTHLY RESTORATION REPORT  
MARCH 2016  
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 samples were collected during the month.

CROW BUTTE MINE  
 MONTHLY RESTORATION REPORT  
 MARCH 2016  
 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 samples were collected during the month.

CROW BUTTE MINE  
 MONTHLY RESTORATION REPORT  
 MARCH 2016  
 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		RO and Reductant CM2-2, I539P, I546P, and I547P.
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:

CM2-4, P372, P392, I535P, I543P, I544P, I545P, P6023, P6024, and P6029.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

BL10, BL17, BL18, CM2-1, CM2-2, CM2-4, P372, P391, P392, I535P, I539P, I543P, I544P, I545P, I546P, I547P, P6023, P6024 and P6029.

# Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL-10	3/15/2016	256.0	3.72	37.0	0.73	143.8	65.9	769	8.37	526	0.036	1.208	0.415
BL-17	3/15/2016		80.34	364.0	21.13	977.9	924.6	4892	7.33	3305	0.478	6.031	1.610
BL-18	3/15/2016	352.0	15.13	110.0	1.68	236.2	132.4	1325	8.10	829	0.046	2.681	0.651
CM2-1	3/15/2016	444.0	38.98	156.0	8.66	326.9	252.6	1856	7.46	1147	0.030	0.896	0.072
CM2-2	3/8/2016		15.84		3.95	323.5	240.3					0.647	0.063
	3/15/2016	555.0	45.73	258.0	10.93	511.8	432.2	2648	7.53	1704	0.767	2.826	0.302
	3/22/2016		41.75		10.41	479.7	394.5					2.681	0.288
	3/29/2016		39.57		9.99	483.1	388.9					2.648	0.273
CM2-4	3/15/2016	380.0	16.17	146.0	3.99	324.8	255.9	1680	7.83	1055	0.009	0.689	0.062
I535P	3/8/2016		28.53		7.26	468.9	431.7					2.577	0.101
	3/15/2016	488.0	28.54	229.0	7.56	483.8	420.3	2446	7.77	1544	0.011	2.613	0.122
	3/22/2016		26.82		7.27	474.7	402.4					2.521	0.115
	3/29/2016		27.00		7.10	468.2	410.4					2.532	0.099
I539P	3/8/2016		20.58		5.52	382.4	275.0					2.109	0.180
	3/15/2016	458.0	21.07	172.0	5.59	383.3	289.6	1972	7.87	1215	0.011	2.135	0.183
	3/29/2016		21.18		5.67	388.0	285.6					2.145	0.162
I543P	3/8/2016		96.60		24.71	811.4	784.2					11.450	0.187
	3/15/2016	981.0	92.36	332.0	23.44	811.8	751.1	4114	7.26	2708	0.010	11.440	0.201
	3/22/2016		88.90		23.73	814.9	735.5					11.740	0.194
	3/29/2016		90.16		23.52	805.9	744.7					12.320	0.203
I544P													

# Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
	3/8/2016		102.10		25.00	728.1	738.3					9.621	0.392
	3/15/2016	910.0	107.10	371.0	26.67	785.0	771.7	4128	7.27	2715	0.007	10.610	0.423
	3/22/2016		98.39		25.60	758.2	720.2					10.000	0.402
	3/29/2016		99.31		25.57	755.5	722.7					9.871	0.396
I545P	3/8/2016		70.57		17.49	594.7	549.4					4.541	0.430
	3/15/2016	708.0	70.55	301.0	17.68	603.5	553.3	3255	7.29	2151	0.010	4.773	0.440
	3/22/2016		67.70		17.84	614.1	536.3					4.721	0.431
	3/29/2016		69.47		17.51	609.6	548.1					4.874	0.423
I546P	3/8/2016		106.80		26.93	855.8	802.7					3.501	0.071
	3/15/2016	908.0	110.90	467.0	27.20	881.4	842.5	4482	7.27	2961	0.003	3.751	0.103
	3/22/2016		209.20		52.83	1721.8	1604.7					7.265	0.193
	3/29/2016		105.00		26.53	885.8	803.0					3.643	0.091
I547P	3/8/2016		56.88		14.64	641.2	617.1					4.577	0.182
	3/15/2016	744.0	56.85	268.0	14.80	639.4	629.9	3356	7.21	2228	0.007	4.991	0.214
P372	3/8/2016		31.47		7.70	467.7	405.7					11.850	0.140
	3/15/2016	540.0	33.02	235.0	7.91	474.7	408.1	2493	7.37	1588	0.011	12.480	0.159
P391	3/15/2016	332.0	6.13	59.0	1.41	198.2	86.1	1020	8.43	615	0.025	1.038	0.197
P392	3/8/2016		86.88		21.52	780.8	758.6					6.012	0.309
	3/15/2016	844.0	90.56	318.0	21.45	714.6	704.2	3770	7.34	2531	0.005	6.288	0.320
P6023	3/8/2016		47.90		12.16	623.4	592.6					2.390	-0.004
	3/15/2016	686.0	49.62	230.0	12.67	632.2	626.1	3148	7.10	2068	0.366	2.729	0.038
	3/22/2016		45.43		12.00	614.8	576.8					2.567	0.037

# Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P6024	3/29/2016		45.21		11.53	601.2	585.7					2.483	0.029
	3/8/2016		71.95		17.13	677.9	641.4					1.691	-0.057
	3/15/2016	791.0	72.22	281.0	17.17	677.4	659.3	3480	7.24	2300	0.019	1.746	0.050
	3/22/2016		133.66		32.82	1318.1	1229.7					3.362	0.099
	3/29/2016		64.39		15.73	627.9	607.0					1.633	0.034
P6029	3/8/2016		183.10		43.01	1149.0	1202.0					10.750	0.064
	3/15/2016		186.40	460.0	43.73	1156.0	1280.0	5851	7.14	3676	0.008	11.700	0.097
	3/22/2016		178.40		44.08	1150.0	1206.0					10.720	0.100
	3/29/2016		176.20		44.15	1267.0	1353.0					11.600	0.106

CROW BUTTE MINE  
 MONTHLY RESTORATION REPORT  
 MARCH 2016  
 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		RO and Reductant I685P
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:  
 CPW-1, I693P, P694, P796, P837, P849, P1117, and P1207.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

CM2-9, CM2-10, CM3-1, CM3-3, CPW-1, I685P, I693P, I676P, I678P, P682, P683, I686P, I689P, P691, I692P, P694, I696P, P751, P789, P796, P837, P849, P889, P1060, P1117, I1126P, P1155, and P1207.



# Mine Unit 5 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
CM2-10	3/15/2016	376	19.57	125	3.64	297.8	235.9	1598	8.15	1013	0.032	12.050	0.327
CM2-9	3/15/2016	242	4.65	52	0.94	166.1	108.5	902	8.51	567	0.011	0.462	0.012
CM3-1	3/15/2016	207	4.85	33	0.52	127.3	75.0	692	8.43	485	0.068	0.320	0.443
CM3-3	3/15/2016	326	8.33	85	1.83	237.6	166.8	1257	8.18	784	0.018	3.876	0.391
CPW-1	3/8/2016		25.27		5.94	402.2	347.1					1.439	0.078
	3/15/2016	424	25.58	176	5.94	415.8	373.1	2082	7.96	1280	0.011	1.573	0.090
	3/22/2016		23.63		5.96	408.7	341.3					1.424	0.079
	3/29/2016		24.17		6.02	416.0	347.6					1.405	0.073
I1126P	3/15/2016	280	8.71	70	1.07	182.2	98.3	977	8.53	597	0.019	1.443	0.669
I676P	3/15/2016	462	18.96	176	4.19	393.2	325.5	2094	7.99	1288	0.040	4.574	0.246
I678P	3/15/2016	304	8.89	75	1.60	203.9	130.0	1121	8.40	676	0.012	3.247	0.458
I685P	3/15/2016	472	22.51	199	5.86	476.2	427.9	2426	7.98	1537	0.008	3.042	0.623
	3/22/2016		21.40		5.84	474.8	415.9					2.866	0.407
	3/29/2016		21.00		5.79	473.9	426.5					2.797	0.374
I686P	3/15/2016	305	17.91	186	2.90	340.6	322.8	1874	7.95	1158	0.035	1.112	0.137
I689P	3/15/2016	273	20.14	119	1.91	232.6	175.0	1255	8.42	779	0.018	1.271	0.220
I692P	3/15/2016	278	6.05	61	1.17	189.7	121.7	1016	8.35	612	0.026	1.927	0.421
I693P	3/8/2016		14.99		3.23	383.6	358.0					6.441	0.746
	3/15/2016	370	15.66	181	3.34	387.6	372.2	2031	8.07	1251	0.008	6.993	0.704
	3/22/2016		14.48		3.39	402.7	356.8					6.652	0.702
	3/29/2016		14.93		3.43	426.1	377.1					6.813	0.724
I696P	3/15/2016	250	10.44	155	1.86	291.4	283.1	1591	8.25	1010	0.017	0.916	0.084

# Mine Unit 5 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P1060	3/15/2016	206	13.47	83	1.94	176.1	151.6	1006	7.91	605	0.034	0.825	0.627
P1117	3/8/2016		13.97		3.62	367.1	349.2					1.780	0.106
	3/15/2016	330	14.64	177	3.84	421.8	396.6	1923	7.97	1187	0.013	1.968	0.166
P1155	3/15/2016	139	3.36	34	0.39	92.2	48.0	494	8.86	343	0.009	0.210	0.100
P1207	3/15/2016	195	4.23	39	0.71	125.9	67.2	671	8.79	470	0.013	0.301	0.717
P682	3/15/2016	147	4.32	35	0.42	93.2	50.8	534	8.73	356	0.059	0.385	0.381
P683	3/15/2016	154	3.48	39	0.52	106.2	59.3	575	8.34	365	0.011	0.493	0.266
P691	3/15/2016	225	11.76	65	2.07	157.7	110.8	890	8.23	564	0.013	0.498	0.078
P694	3/15/2016	287	8.46	113	2.02	255.6	204.8	1360	8.02	853	0.013	0.813	0.159
P751	3/15/2016	359	7.65	77	1.33	234.9	137.8	1230	8.39	739	0.127	7.587	0.348
P789	3/15/2016	302	16.69	184	3.79	356.4	345.7	1900	7.89	1173	0.030	1.150	0.060
P796	3/8/2016		19.59		4.39	368.4	327.5					0.859	0.019
	3/15/2016	374	19.95	164	4.38	371.1	324.2	1913	7.87	1181	0.011	0.867	0.028
P837	3/8/2016		17.62		4.28	323.2	272.9					1.120	0.175
	3/15/2016	336	16.26	131	4.05	319.6	270.3	1601	7.99	1014	0.016	1.194	0.162
	3/22/2016		17.13		4.25	324.5	261.0					1.169	0.158
	3/29/2016		17.51		4.20	318.8	269.6					1.155	0.151
P849	3/15/2016	301	14.44	188	3.22	362.2	348.1	1904	7.99	1175	0.010	0.651	0.024
P889	3/15/2016	297	15.47	193	3.03	341.6	329.0	1872	7.87	1157	0.011	3.905	0.217

CROW BUTTE MINE  
 MONTHLY RESTORATION REPORT  
 MARCH 2016  
 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		RO and Reductant P1314, P1318, P1336, P1337, P1344, P1374, P1377, P1396, P1399, P1428, P1439, P1440, P1457, and P1467.
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:

P1265, P1268, P1273, P1312, P1402, P1421, P1461, P1476, P1469, P1494, and P1704.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

P1265, P1268, P1312, P1314, P1336, P1337, P1344, P1374, P1377, P1396, P1399, P1402,  
 P1421, P1428, P1439, P1457, P1461, P1467, and P1469.

# MU6 Restoration Data

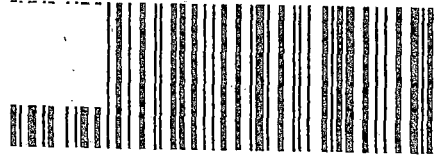
Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1265	3/8/2016			48.38	12.57	624.5	560.2						0.412	0.049
	3/15/2016			50.21	12.60	633.9	570.2					0.07	0.488	0.089
	3/22/2016			48.91	12.91	633.3	582.2						0.498	0.090
	3/29/2016			50.30	12.92	622.7	574.1						0.486	0.070
P1268	3/8/2016			60.99	17.23	895.1	715.8						7.660	1.644
	3/15/2016			65.37	17.49	899.2	730.4					0.03	8.180	1.678
	3/22/2016			54.65	15.74	858.8	698.8						7.717	1.757
	3/29/2016			56.19	15.64	894.1	703.8						8.108	1.813
P1312	3/8/2016			66.81	17.83	1010.0	766.8						15.900	0.979
P1314	3/8/2016			35.02	10.40	702.5	528.3						5.390	1.294
	3/15/2016			35.13	10.32	693.0	550.2					0.23	5.839	1.325
	3/22/2016			38.85	11.81	765.9	588.5						4.904	1.262
	3/29/2016			41.57	12.83	865.3	669.9						5.591	1.368
P1336	3/8/2016			30.78	8.09	613.8	443.2						9.065	1.066
	3/15/2016			29.72	7.44	569.9	428.2					0.60	9.103	1.117
	3/22/2016			26.15	7.05	558.5	387.5						8.454	1.144
	3/29/2016			32.40	8.77	623.7	468.7						8.903	0.864
P1337	3/8/2016			11.14	3.17	368.5	227.3						3.540	1.225
	3/15/2016			9.54	2.62	320.9	192.0					0.07	3.410	1.387
	3/22/2016			17.90	3.97	318.2	189.2						3.077	1.486
	3/29/2016			22.84	5.71	423.7	302.1						3.251	1.184
P1344	3/8/2016			26.85	7.88	554.1	414.9						3.785	1.280
	3/15/2016			27.15	7.94	549.8	415.1					0.13	3.874	1.339
P1374	3/8/2016			29.96	8.78	712.8	534.5						9.614	1.102
	3/15/2016			30.31	8.47	692.9	515.0					0.08	10.490	1.178
P1377	3/8/2016			50.98	11.98	674.7	631.6						4.610	0.162

# MU6 Restoration Data

Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1396	3/15/2016			48.60	11.55	660.5	637.3					0.20	4.670	0.174
	3/22/2016			46.20	11.02	649.3	604.3						4.181	0.178
	3/29/2016			48.12	11.38	674.5	633.3						4.183	0.172
	3/8/2016			17.75	4.35	378.4	357.4						0.314	0.079
	3/15/2016			18.12	4.36	379.3	369.3					0.11	0.251	0.085
P1399	3/22/2016			16.80	4.22	378.5	352.2						0.235	0.061
	3/29/2016			16.88	4.11	373.8	343.9						0.235	0.080
	3/8/2016			69.23	15.76	761.2	670.4						4.493	0.339
	3/15/2016			71.19	15.95	762.9	674.3					0.10	4.725	0.370
	3/22/2016			66.91	16.13	771.4	638.3						4.394	0.429
P1402	3/29/2016			66.73	15.67	798.5	691.5						4.388	0.424
	3/8/2016			73.90	17.89	1011.0	806.7						16.210	0.123
	3/15/2016			71.68	17.27	1004.0	819.6					0.01	17.400	0.122
	3/22/2016			67.91	16.56	961.2	765.9						16.210	0.135
	3/29/2016			65.89	15.60	930.1	740.9						15.890	0.129
P1421	3/8/2016			19.55	4.56	399.2	334.9						2.410	0.500
	3/15/2016			19.94	4.59	392.9	352.5					0.24	2.003	0.479
	3/22/2016			23.84	6.08	429.9	369.5						1.778	0.372
	3/29/2016			28.56	6.92	470.7	411.3						2.017	0.214
	P1428	3/8/2016			23.36	5.16	433.0	399.3						4.251
3/15/2016				24.74	5.59	446.8	422.8					0.03	4.278	0.193
3/22/2016				23.87	5.70	448.1	403.0						3.810	0.210
3/29/2016				24.40	5.70	438.8	405.6						3.610	0.212
P1439		3/8/2016			45.38	13.86	970.5	723.8						9.516
	3/15/2016			45.21	13.05	890.9	675.1					0.05	9.403	1.055
	3/22/2016			42.09	12.57	861.8	635.2						9.068	1.099
	3/29/2016			40.30	11.84	841.0	612.2						9.021	1.157
	P1457	3/15/2016			32.19	10.82	843.3	642.9					0.19	4.978

# MU6 Restoration Data

Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1461	3/22/2016			40.47	15.35	1024.0	718.7						1.800	1.640
	3/29/2016			35.93	13.43	950.1	694.7						1.701	1.643
	3/8/2016			26.38	6.71	516.6	496.6						3.590	0.728
	3/15/2016			27.53	7.03	524.3	527.5				0.01		3.885	0.749
	3/22/2016			27.00	7.38	539.4	513.6						3.682	0.737
P1467	3/29/2016			27.89	7.56	559.3	517.0						3.620	0.727
	3/15/2016			45.05	15.76	1026.0	744.9					0.42	2.791	1.614
	3/22/2016			32.95	11.67	849.4	661.2						7.092	1.109
	3/29/2016			35.67	12.21	879.0	682.0						7.590	1.139
P1469	3/8/2016			62.03	17.18	888.7	685.2						2.571	0.608
	3/15/2016			62.23	17.16	858.9	705.8					0.85	2.662	0.668
	3/22/2016			58.25	17.21	865.7	695.8						2.441	0.660
	3/29/2016			59.12	16.88	883.7	683.3						2.352	0.645



7015 0640 0003 5038 6642



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NRC FORM 253 (6-15)		U.S. NUCLEAR REGULATORY COMMISSION		DATE OF REQUEST	CONTROL NUMBER
<b>MESSENGER/COURIER RECEIPT</b>				4-20-16	
TO: Ron Burrows		OFFICE NMSS	BUILDING TWFN	ROOM NUMBER 8F5	
FROM: Cameco Resources		OFFICE ADM	BUILDING OWFN	ROOM NUMBER P1-C10	
DESCRIPTION: USPS Certified envelope 7015-0640-0003-5038-6642		MESSENGER/COURIER SIGNATURE			
		MESSENGER/COURIER		DATE RECEIVED	
		MEC		4-20	
				TIME RECEIVED 1:30 pm	
		MESSENGER/COURIER		DATE RECEIVED	
		TIME RECEIVED			
		RECIPIENT'S SIGNATURE			
		RECIPIENT		DATE RECEIVED	
				TIME RECEIVED 2:57	
<b>SENDER:</b>		<b>MESSENGER/COURIER:</b>		<b>RECIPIENT:</b>	
1. Complete "DATE OF REQUEST," "TO:," "FROM:," and unclassified "DESCRIPTION" blocks.		1. Deliver package to recipient or next messenger/courier enroute to addressee.		1. Provide signature, date received, and time received in the appropriate blocks.	
2. Obtain MESSENGER/COURIER signature, date received, and time received in first blocks provided.		2. Obtain MESSENGER/COURIER or RECIPIENT signature, date received, and time received in the appropriate blocks provided.		2. Retain RECIPIENT'S COPY.	
3. Retain "SENDER'S SUSPENSE COPY."				3. Return original to messenger/courier immediately, who will return it to the sender.	