

**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 16, 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
April 2016 Monthly Restoration Report

Dear Ms. Link:

Please find enclosed the April 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
Dave Carlson – NDEQ Field Office
CBO - File
cc: CR – Casper
Nancy Harris – NDEQ Program Coordinator

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
APRIL 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:

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

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4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

No samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
APRIL 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:

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

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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, I536P, 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:

BL-8, BL-9, CM2-4, P372, P392, I535P, I543P, I544P, I545P, P6023, P6024, and P6029.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

BL-8, BL-17, CM2-2, CM2-3, CM2-4, CM3-9, CM3-10, P372, P390, P392, P393, P394, P456, I508P, I526P, I535P, I536P, I539P, I543P, I544P, I545P, I546P, I548P, I549P, I551P, P6023, P6024 and P6029.

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
BL-17	4/12/2016		75.85	336	20.67	978.1	830.9	4934	7.35	3312		0.00	5.068	1.536
BL-8	4/12/2016	552	30.95	202	6.75	438.6	290.8	2405	7.76	1522	0.02	0.08	5.560	0.044
CM2-2	4/5/2016		38.88		9.78	482.8	396.8						2.686	0.279
	4/12/2016	515	37.29	238	9.29	466.0	343.1	2441	7.55	1541		0.01	2.419	0.272
	4/19/2016		37.69		9.13	433.6	323.5						2.361	0.259
CM2-3	4/12/2016	394	12.54	129	2.87	320.3	189.2	1675	8.07	1053		0.03	0.278	0.209
CM2-4	4/12/2016	383	16.95	148	4.28	338.9	239.7	1784	7.82	1110		0.02	0.628	0.046
	4/19/2016		17.32		4.20	322.5	232.2						0.636	0.041
CM3-10	4/12/2016	282	8.76	76	1.98	197.4	90.4	1056	7.93	636		0.02	0.433	0.163
CM3-9	4/12/2016	260	20.94	78	3.97	170.6	88.6	992	7.56	600	0.01	0.11	0.151	0.147
I508P	4/12/2016	345	8.95	89	1.60	244.9	117.1	1284	8.21	808	0.06	0.01	1.952	0.060
I526P	4/12/2016	326	21.78	82	3.55	197.1	112.3	1110	8.15	674		0.01	0.346	0.025
I535P	4/5/2016		26.63		7.03	459.6	411.3						2.546	0.117
	4/12/2016	473	25.52	217	6.83	452.0	356.2	2397	7.79	1517		0.00	2.362	0.098
	4/19/2016		25.54		6.67	433.3	344.1						2.371	0.111
I536P	4/12/2016	405	26.78	219	7.39	436.9	361.6	2352	7.97	1481		0.01	1.672	0.097
I539P	4/5/2016		21.23		5.67	383.1	305.6						2.133	0.181
	4/12/2016	470	21.41	174	5.83	391.3	264.2	2012	7.81	1239		0.01	2.056	0.169
	4/19/2016		21.30		5.66	369.2	250.8						2.069	0.159
I543P														

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
I544P	4/5/2016		92.68		23.92	797.3	792.8						13.310	0.212
	4/12/2016	972	89.47	330	24.14	816.0	702.4	4183	7.26	2811		0.00	12.120	0.165
	4/19/2016		87.04		22.22	736.6	640.7						11.180	0.168
	4/5/2016		96.60		24.07	713.2	734.9						9.815	0.410
	4/12/2016	879	101.00	346	26.28	767.0	697.2	4060	7.24	2684		0.00	9.505	0.413
	4/19/2016		104.60		26.21	728.0	668.2						9.910	0.382
I545P	4/5/2016		70.78		17.71	610.3	583.8						4.973	0.445
	4/12/2016	712	69.27	295	17.56	602.6	500.7	3301	7.27	2184		0.00	4.629	0.412
	4/19/2016		71.49		18.16	614.0	522.6						4.866	0.437
I546P	4/5/2016		103.60		25.86	846.6	807.8						3.629	0.109
	4/12/2016	893	99.13	438	24.79	817.0	714.1	4447	7.24	2940		0.03	3.402	0.067
	4/19/2016		102.70		24.49	807.6	723.8						3.392	0.078
I548P	4/12/2016	252	6.02	59	0.96	169.2	69.4	903	7.88	567		0.03	0.356	0.112
I549P	4/12/2016	321	13.61	87	2.64	250.4	150.2	1333	7.60	836		0.44	2.049	0.029
I551P	4/12/2016	427	16.63	102	3.72	309.5	181.2	1640	7.83	1035		0.03	3.406	0.429
P372	4/12/2016	517	31.33	229	7.76	461.1	345.4	2474	7.36	1578		0.04	11.680	0.126
	4/19/2016		32.32		7.88	473.7	358.9						11.440	0.150
P390	4/12/2016	289	7.71	81	1.71	220.2	116.6	1166	8.07	702		0.01	0.576	0.069
P392	4/12/2016	855	90.20	317	21.69	711.9	639.4	3838	7.31	2584		0.00	5.881	0.309
	4/19/2016		91.49		21.59	702.4	636.1						5.964	0.310
P393														

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P394	4/12/2016	448	98.26	169	12.77	302.6	278.1	2001	7.49	1232	0.00	0.02	0.070	0.044
	4/12/2016	316	30.03	116	4.90	246.4	169.5	1451	7.50	913	0.01	0.16	0.164	0.017
P456	4/12/2016	304	10.90	79	1.95	209.0	99.5	1123	8.06	678		0.24	0.753	0.045
P6023	4/5/2016		46.10		11.58	603.5	572.8						2.388	0.048
	4/12/2016	677	45.41	213	11.73	606.2	536.2	3112	7.11	2040		0.01	2.503	0.017
	4/19/2016		45.96		11.23	564.7	504.9						2.557	0.019
P6024	4/5/2016		64.87		15.32	637.3	600.5						1.629	0.065
	4/12/2016	745	63.72	252	15.71	653.9	552.8	3313	7.25	2196		0.03	1.550	0.028
	4/19/2016		64.76		15.28	615.0	536.2						1.522	0.017
P6029	4/5/2016		179.90		42.57	1151.0	1369.0						10.400	0.123
	4/12/2016		175.30	448	41.80	1143.0	1171.0	5937	7.10	3730		0.09	9.691	0.067
	4/19/2016		175.70		41.32	1088.0	1130.0						9.845	0.071

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
APRIL 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, and P1207.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

CPW-1, I685P, I693P, P694, P796, P837, P849, P1207, P6016, P6020, P6021, and P6022.

Mine Unit 5 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
CPW-1	4/5/2016		24.63		5.82	399.6	352.9						1.402	0.092
	4/12/2016	417	23.83	180	5.63	387.7	304.2	2043	7.93	1258	0.01	0.06	1.396	0.079
	4/19/2016		22.52		5.36	367.0	281.0						1.299	0.084
I685P	4/5/2016		20.64		5.62	462.3	442.0						2.686	0.377
	4/12/2016	462	20.62	201	5.54	457.9	376.0	2369	7.93	1497	0.01	0.01	2.627	0.374
	4/19/2016		20.88		5.54	446.2	371.6						2.589	0.378
I693P	4/12/2016	368	14.58	172	3.19	376.2	313.8	2004	8.02	1234		0.01	6.076	0.658
	4/19/2016		15.24		3.20	372.1	299.5						5.740	0.600
P1207	4/12/2016	199	5.78	42	1.03	128.5	64.7	703	8.67	491		0.01	0.283	0.570
P6016	4/12/2016	368	20.59	107	3.03	293.8	200.9	1588	7.98	1009		0.03	0.398	0.003
P6020	4/12/2016	327	20.98	213	4.25	389.7	334.9	2144	8.08	1317		0.09	0.043	0.002
P6021	4/12/2016	228	5.72	60	0.75	153.0	70.9	832	8.38	535		0.03	0.457	0.007
P6022	4/12/2016	204	7.31	55	1.36	154.1	94.8	844	8.25	536		0.39	0.175	0.007
P694	4/12/2016	321	10.79	134	2.77	299.4	213.8	1607	7.93	1018		0.07	0.988	0.135
	4/19/2016		11.20		2.93	301.7	212.7						1.005	0.156
P796	4/12/2016	373	18.60	149	4.19	354.5	280.1	1871	7.84	1157		0.02	0.740	0.014
P837	4/5/2016		17.36		4.19	316.3	274.0						1.180	0.172
	4/12/2016	325	14.98	124	3.73	301.2	225.5	1564	7.90	996		0.04	1.005	0.141
P849	4/12/2016	302	13.54	175	3.17	355.8	308.5	1897	7.92	1171		0.03	0.614	0.007
	4/19/2016		13.46		3.09	344.0	300.4						0.571	0.004

CROW BUTTE MINE

MONTHLY RESTORATION REPORT

APRIL 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, P1336, P1337, P1344, P1374, P1377, P1396, P1399, P1428, P1439, P1440, P1457, P1467, and P1701.
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, P1315, P1402, P1404, P1421, P1449, P1461, P1476, P1469, P1494, and P1568.

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	4/12/2016			48.33	12.60	610.5	506.1					0.02	0.493	0.064
	4/19/2016			45.86	12.14	589.3	486.1						0.489	0.080
P1268	4/5/2016			52.90	15.18	837.2	704.5						7.851	1.751
	4/12/2016			52.37	15.19	835.2	614.4					0.00	7.675	1.761
	4/19/2016			49.67	14.32	795.4	588.0						7.357	1.678
P1312	4/12/2016			64.18	17.37	984.9	731.2					0.03	15.140	1.030
	4/19/2016			50.64	13.88	834.0	605.5						13.470	0.981
P1314	4/5/2016			42.06	12.32	784.9	634.4						4.741	1.219
	4/12/2016			38.69	12.04	770.0	554.3					0.03	4.846	1.219
	4/19/2016			38.55	11.62	723.0	523.7						4.806	1.148
P1336	4/5/2016			33.81	9.34	662.4	518.5						8.980	0.765
	4/12/2016			32.95	9.26	678.0	472.9					0.04	8.471	0.731
	4/19/2016			25.31	6.73	571.8	379.3						7.342	0.710
P1337	4/5/2016			27.01	7.05	510.1	405.0						3.548	0.928
	4/12/2016			24.84	7.33	546.3	388.4					0.01	3.716	0.796
	4/19/2016			45.04	10.70	624.1	528.4						3.868	0.193
P1344	4/12/2016			34.84	9.31	548.1	401.0					0.00	3.997	0.719
	4/19/2016			20.36	5.64	413.0	271.5						2.659	0.715
P1374	4/12/2016			27.35	8.07	658.0	436.3					0.10	9.900	1.193
	4/19/2016			25.96	7.61	639.3	427.9						8.741	1.102
P1377	4/5/2016			48.50	11.35	668.0	647.3						4.310	0.170
	4/12/2016			48.57	11.61	670.2	580.8					0.01	4.350	0.148
	4/19/2016			18.21	5.28	469.6	307.9						3.334	0.758
P1396	4/5/2016			16.52	4.03	361.8	350.4						0.216	0.098
	4/12/2016			16.10	3.99	362.3	306.8					0.02	0.230	0.078
	4/19/2016			15.71	3.89	349.1	294.4						0.241	0.087

MU6 Restoration Data

Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1399	4/5/2016			70.01	16.28	780.0	684.9						4.488	0.379
	4/12/2016			68.30	15.50	740.6	602.0					0.05	4.067	0.332
	4/19/2016			65.81	15.33	723.7	582.7						4.145	0.294
P1402	4/5/2016			58.70	14.56	871.8	731.3						15.630	0.150
	4/12/2016			54.64	13.56	839.5	621.4					0.08	13.790	0.122
	4/19/2016			53.02	12.58	770.5	563.3						12.200	0.119
P1421	4/5/2016			30.40	7.44	501.2	456.2						2.505	0.202
	4/12/2016			26.00	6.51	475.5	383.8					0.04	2.790	0.181
	4/19/2016			20.27	4.94	398.4	315.2						2.536	0.208
P1428	4/5/2016			25.13	5.79	434.7	430.1						3.718	0.203
	4/12/2016			27.43	6.40	463.8	402.3					0.02	4.677	0.168
	4/19/2016			28.83	6.74	475.9	415.0						5.260	0.154
P1439	4/5/2016			38.20	11.36	805.8	612.3						8.952	1.231
	4/12/2016			37.38	11.15	798.8	536.1					0.00	8.181	1.168
	4/19/2016			37.46	10.86	775.5	532.4						7.419	1.008
P1457	4/12/2016			33.09	11.86	897.8	617.5					0.02	1.733	1.449
	4/19/2016			30.12	11.14	841.6	575.9						1.625	1.428
P1461	4/5/2016			28.18	7.43	529.2	534.6						3.609	0.693
	4/12/2016			27.44	7.29	528.1	468.8					0.01	3.488	0.654
	4/19/2016			27.15	7.06	507.7	449.4						3.353	0.651
P1467	4/5/2016			34.71	11.93	848.4	674.3						7.547	1.155
	4/12/2016			33.23	11.87	848.9	604.9					0.00	6.946	1.140
	4/19/2016			33.32	11.53	835.9	600.3						6.962	1.121
P1469	4/5/2016			53.85	15.68	796.5	692.5						2.223	0.618
	4/12/2016			54.69	15.88	828.6	616.1					0.01	2.175	0.633
	4/19/2016			52.34	14.99	768.3	568.5						2.196	0.601