Appendices

Appendix A

Water Quality Certifications
2006 and 2009

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
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ANALYTICAL SUMMARY REPORT

February 05, 2009

Lidstone and Associates
4025 Automation Way Unit E
Fort Collins, CO 80525

Workorder No.: C09010389

Project Name: Not Indicated

Energy Laboratories, Inc. received the following 1 sample for Lidstone and Associates on 1/13/2009 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C09010389-001	Bus Pit	01/12/09 14:40	01/13/09	Aqueous	Metals by ICP/ICPMS, Dissolved Acidity, Total as CaCO3 Alkalinity QA Calculations Conductivity Sample Filtering Fluoride E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrite Nitrogen, Nitrate + Nitrite pH Radium 226, Dissolved Solids, Total Dissolved

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By: Stephanie Waldrop

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LABORATORY ANALYTICAL REPORT

Client: Lidstone and Associates
Project: Not Indicated
Lab ID: C09010389-001
Client Sample ID: Bus Pit

Report Date: 02/05/09
Collection Date: 01/12/09 14:40
DateReceived: 01/13/09
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	128	mg/L		1		A2310 B	01/19/09 14:24 / sp
Alkalinity, Total as CaCO3	ND	mg/L		1		A2320 B	01/15/09 13:01 / ljl
Carbonate as CO3	ND	mg/L		1		A2320 B	01/15/09 13:01 / ljl
Bicarbonate as HCO3	ND	mg/L		1		A2320 B	01/15/09 13:01 / ljl
Calcium	587	mg/L		1		E200.7	01/19/09 12:28 / rdw
Chloride	17	mg/L		1		E300.0	01/21/09 14:53 / ljl
Fluoride	2.2	mg/L		0.1		A4500-F C	01/20/09 10:39 / ljl
Magnesium	250	mg/L		1		E200.7	01/19/09 12:28 / rdw
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	01/16/09 11:01 / eli-b
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.05		E353.2	01/15/09 15:01 / eli-b
Nitrogen, Nitrite as N	ND	mg/L		0.1		A4500-NO2 B	01/14/09 14:45 / jal
Potassium	60	mg/L		1		E200.7	01/19/09 12:28 / rdw
Silica	24.3	mg/L		0.2		E200.7	01/19/09 12:28 / rdw
Sodium	73	mg/L		1		E200.7	01/19/09 12:28 / rdw
Sulfate	2640	mg/L		1		E300.0	01/26/09 15:28 / ljl
PHYSICAL PROPERTIES							
Conductivity	3840	umhos/cm		1		A2510 B	01/14/09 09:46 / dd
pH	3.84	s.u.		0.01		A4500-H B	01/14/09 09:46 / dd
Solids, Total Dissolved TDS @ 180 C	4030	mg/L		10		A2540 C	01/14/09 09:58 / ab
METALS - DISSOLVED							
Aluminum	14.2	mg/L	D	0.2		E200.7	01/19/09 12:28 / rdw
Arsenic	0.002	mg/L		0.001		E200.8	01/14/09 20:16 / sml
Barium	ND	mg/L		0.1		E200.8	01/14/09 20:16 / sml
Boron	0.1	mg/L		0.1		E200.7	01/19/09 12:28 / rdw
Cadmium	ND	mg/L		0.005		E200.8	01/14/09 20:16 / sml
Chromium	ND	mg/L		0.05		E200.8	01/14/09 20:16 / sml
Copper	0.03	mg/L		0.01		E200.8	01/14/09 20:16 / sml
Iron	1.47	mg/L		0.03		E200.7	01/19/09 12:28 / rdw
Lead	0.003	mg/L		0.001		E200.8	01/14/09 20:16 / sml
Manganese	8.37	mg/L		0.01		E200.8	01/14/09 20:16 / sml
Mercury	ND	mg/L		0.001		E200.8	01/14/09 20:16 / sml
Molybdenum	ND	mg/L		0.1		E200.8	01/14/09 20:16 / sml
Nickel	0.60	mg/L		0.05		E200.8	01/14/09 20:16 / sml
Selenium	0.014	mg/L		0.001		E200.8	01/14/09 20:16 / sml
Uranium	0.226	mg/L		0.0003		E200.8	01/14/09 20:16 / sml
Vanadium	ND	mg/L		0.1		E200.8	01/14/09 20:16 / sml
Zinc	0.27	mg/L		0.01		E200.8	01/14/09 20:16 / sml

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.

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LABORATORY ANALYTICAL REPORT

Client: Lidstone and Associates
Project: Not Indicated
Lab ID: C09010389-001
Client Sample ID: Bus Pit

Report Date: 02/05/09
Collection Date: 01/12/09 14:40
DateReceived: 01/13/09
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - DISSOLVED							
Radium 226	1.8	pCi/L				E903.0	01/22/09 02:52 / jah
Radium 226 precision (±)	0.26	pCi/L				E903.0	01/22/09 02:52 / jah
Radium 226 MDC	0.17	pCi/L				E903.0	01/22/09 02:52 / jah
DATA QUALITY							
A/C Balance (± 5)	1.49	%				Calculation	01/28/09 09:07 / kbh
Anions	55.5	meq/L				Calculation	01/28/09 09:07 / kbh
Cations	57.2	meq/L				Calculation	01/28/09 09:07 / kbh
Solids, Total Dissolved Calculated	3660	mg/L				Calculation	01/28/09 09:07 / kbh
TDS Balance (0.80 - 1.20)	1.10					Calculation	01/28/09 09:07 / kbh

Report Definitions:
RL - Analyte reporting limit.
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MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Lidstone and Associates
Project: Not Indicated

Report Date: 02/05/09
Work Order: C09010389

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2310 B										Batch: 080905_1_ACID-W
Sample ID: MBLK-1_080905		Method Blank				Run: ACIDITY_090119A				01/19/09 14:12
Acidity, Total as CaCO3		ND	mg/L	1						
Sample ID: LCS-1_080905		Laboratory Control Sample				Run: ACIDITY_090119A				01/19/09 14:16
Acidity, Total as CaCO3		5200	mg/L	1.0	104	80	120			
Sample ID: C09010505-001ADUP		Sample Duplicate				Run: ACIDITY_090119A				01/19/09 14:26
Acidity, Total as CaCO3		86.0	mg/L	1.0				0	10	
Method: A2320 B										Batch: R113441
Sample ID: MBLK-1	3	Method Blank				Run: MANTECH_090115A				01/15/09 11:08
Alkalinity, Total as CaCO3		ND	mg/L	0.2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS-1		Laboratory Control Sample				Run: MANTECH_090115A				01/15/09 11:15
Alkalinity, Total as CaCO3		200	mg/L	1.0	100	90	110			
Sample ID: C09010435-002AMS		Sample Matrix Spike				Run: MANTECH_090115A				01/15/09 13:23
Alkalinity, Total as CaCO3		997	mg/L	1.0	93	80	120			
Sample ID: C09010435-002AMSD		Sample Matrix Spike Duplicate				Run: MANTECH_090115A				01/15/09 13:32
Alkalinity, Total as CaCO3		1010	mg/L	1.0	102	80	120	1.1	20	
Method: A2510 B										Analytical Run: ORION555A_090114A
Sample ID: ICV2_090114_1		Initial Calibration Verification Standard								01/14/09 09:25
Conductivity		1410	umhos/cm	1.0	100	90	110			
Method: A2510 B										Batch: 090114_1_PH-W_555A-1
Sample ID: MBLK1_090114_1		Method Blank				Run: ORION555A_090114A				01/14/09 09:20
Conductivity		1	umhos/cm	0.2						
Sample ID: C09010389-001ADUP		Sample Duplicate				Run: ORION555A_090114A				01/14/09 09:47
Conductivity		3830	umhos/cm	1.0				0.3	10	
Method: A2540 C										Batch: 090114_1_SLDS-TDS-W
Sample ID: MBLK1_090114		Method Blank				Run: BAL-1_090114C				01/14/09 09:56
Solids, Total Dissolved TDS @ 180 C		8	mg/L	6						
Sample ID: LCS1_090114		Laboratory Control Sample				Run: BAL-1_090114C				01/14/09 09:56
Solids, Total Dissolved TDS @ 180 C		1010	mg/L	10	101	90	110			
Sample ID: C09010321-001AMS		Sample Matrix Spike				Run: BAL-1_090114C				01/14/09 09:57
Solids, Total Dissolved TDS @ 180 C		2520	mg/L	10	101	90	110			
Sample ID: C09010321-001AMSD		Sample Matrix Spike Duplicate				Run: BAL-1_090114C				01/14/09 09:57
Solids, Total Dissolved TDS @ 180 C		2550	mg/L	10	102	90	110	1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Lidstone and Associates
Project: Not Indicated

Report Date: 02/05/09
Work Order: C09010389

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-F C										Batch: R113616
Sample ID: MBLK-1		Method Blank				Run: MANTECH_090120A				01/20/09 10:27
Fluoride		ND	mg/L	0.05						
Sample ID: LCS-1		Laboratory Control Sample				Run: MANTECH_090120A				01/20/09 10:29
Fluoride		1.00	mg/L	0.10	100	90	110			
Sample ID: C09010460-001AMS		Sample Matrix Spike				Run: MANTECH_090120A				01/20/09 10:54
Fluoride		1.44	mg/L	0.10	102	80	120			
Sample ID: C09010460-001AMSD		Sample Matrix Spike Duplicate				Run: MANTECH_090120A				01/20/09 10:56
Fluoride		1.44	mg/L	0.10	102	80	120	0	10	
Method: A4500-H B										Analytical Run: ORION555A_090114A
Sample ID: ICV1_090114_1		Initial Calibration Verification Standard								01/14/09 09:22
pH		6.89	s.u.	0.010	100	98	102			
Method: A4500-H B										Batch: 090114_1_PH-W_555A-1
Sample ID: C09010389-001ADUP		Sample Duplicate				Run: ORION555A_090114A				01/14/09 09:47
pH		3.84	s.u.	0.010				0	10	
Method: A4500-NO2 B										Analytical Run: HACH DR3000_090114C
Sample ID: ICV-2		Initial Calibration Verification Standard								01/14/09 14:45
Nitrogen, Nitrite as N		1.07	mg/L	0.10	107	90	110			
Method: A4500-NO2 B										Batch: A2009-01-14_6_NO2_01
Sample ID: MBLK-1		Method Blank				Run: HACH DR3000_090114C				01/14/09 14:45
Nitrogen, Nitrite as N		ND	mg/L	0.003						
Sample ID: C09010389-001AMS		Sample Matrix Spike				Run: HACH DR3000_090114C				01/14/09 14:46
Nitrogen, Nitrite as N		0.0504	mg/L	0.10	106	80	120			
Sample ID: C09010389-001AMSD		Sample Matrix Spike Duplicate				Run: HACH DR3000_090114C				01/14/09 14:46
Nitrogen, Nitrite as N		0.0504	mg/L	0.10	106	80	120	0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Lidstone and Associates
Project: Not Indicated

Report Date: 02/05/09
Work Order: C09010389

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R113602
Sample ID: C08110535-008BMS	6	Sample Matrix Spike				Run: ICP3-C_090119A				01/19/09 12:04
Aluminum		0.534	mg/L	0.10	105	70	130			
Calcium		60.0	mg/L	1.0	100	70	130			
Iron		0.518	mg/L	0.030	101	70	130			
Magnesium		54.8	mg/L	1.0	100	70	130			
Potassium		60.8	mg/L	1.0	112	70	130			
Sodium		137	mg/L	1.0	96	70	130			
Sample ID: C08110535-008BMSD	6	Sample Matrix Spike Duplicate				Run: ICP3-C_090119A				01/19/09 12:23
Aluminum		0.693	mg/L	0.10	136	70	130	26	20	SR
Calcium		69.7	mg/L	1.0	119	70	130	15	20	
Iron		0.608	mg/L	0.030	119	70	130	16	20	
Magnesium		63.2	mg/L	1.0	116	70	130	14	20	
Potassium		62.8	mg/L	1.0	116	70	130	3.2	20	
Sodium		141	mg/L	1.0	103	70	130	2.6	20	
Sample ID: LRB	6	Method Blank				Run: ICP3-C_090119A				01/19/09 16:19
Aluminum		ND	mg/L	0.04						
Calcium		0.3	mg/L	0.02						
Iron		0.002	mg/L	0.0004						
Magnesium		0.4	mg/L	0.01						
Potassium		ND	mg/L	0.005						
Sodium		-0.06	mg/L							
Sample ID: LFB-ICP	6	Laboratory Fortified Blank				Run: ICP3-C_090119A				01/19/09 16:24
Aluminum		2.44	mg/L	0.10	95	85	115			
Calcium		26.7	mg/L	1.0	105	85	115			
Iron		2.57	mg/L	0.030	102	85	115			
Magnesium		26.5	mg/L	1.0	104	85	115			
Potassium		22.3	mg/L	1.0	89	85	115			
Sodium		25.5	mg/L	1.0	100	85	115			

Qualifiers:

RL - Analyte reporting limit.
R - RPD exceeds advisory limit.
ND - Not detected at the reporting limit.
S - Spike recovery outside of advisory limits.

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QA/QC Summary Report

Client: Lidstone and Associates
Project: Not Indicated

Report Date: 02/05/09
Work Order: C09010389

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: R113412
Sample ID: LRB	14	Method Blank				Run: ICPMS4-C_090114A				01/14/09 12:32
Arsenic		ND	mg/L	2E-05						
Barium		ND	mg/L	2E-05						
Cadmium		1E-05	mg/L	8E-06						
Chromium		ND	mg/L	2E-05						
Copper		ND	mg/L	1E-05						
Lead		ND	mg/L	1E-05						
Manganese		ND	mg/L	2E-05						
Mercury		4E-05	mg/L	3E-05						
Molybdenum		4E-05	mg/L	3E-05						
Nickel		ND	mg/L	2E-05						
Selenium		ND	mg/L	4E-05						
Uranium		ND	mg/L	7E-06						
Vanadium		ND	mg/L	7E-06						
Zinc		ND	mg/L	0.0002						
Sample ID: LFB	14	Laboratory Fortified Blank				Run: ICPMS4-C_090114A				01/14/09 12:38
Arsenic		0.0522	mg/L	0.0010	104	85	115			
Barium		0.0529	mg/L	0.0010	106	85	115			
Cadmium		0.0530	mg/L	0.0010	106	85	115			
Chromium		0.0522	mg/L	0.0010	104	85	115			
Copper		0.0530	mg/L	0.0010	106	85	115			
Lead		0.0521	mg/L	0.0010	104	85	115			
Manganese		0.0508	mg/L	0.0010	101	85	115			
Mercury		0.00516	mg/L	0.0010	102	85	115			
Molybdenum		0.0530	mg/L	0.0010	106	85	115			
Nickel		0.0521	mg/L	0.0010	104	85	115			
Selenium		0.0524	mg/L	0.0010	105	85	115			
Uranium		0.0495	mg/L	0.00030	99	85	115			
Vanadium		0.0522	mg/L	0.0010	104	85	115			
Zinc		0.0565	mg/L	0.0010	113	85	115			
Sample ID: C09010389-001BMS4	14	Sample Matrix Spike				Run: ICPMS4-C_090114A				01/14/09 20:22
Arsenic		0.0584	mg/L	0.0010	113	70	130			
Barium		0.0980	mg/L	0.10	115	70	130			
Cadmium		0.0565	mg/L	0.010	105	70	130			
Chromium		0.0570	mg/L	0.050	108	70	130			
Copper		0.0851	mg/L	0.010	103	70	130			
Lead		0.0597	mg/L	0.050	114	70	130			
Manganese		8.53	mg/L	0.010		70	130			A
Mercury		0.00548	mg/L	0.0010	109	70	130			
Molybdenum		0.0539	mg/L	0.10	107	70	130			
Nickel		0.642	mg/L	0.050		70	130			A
Selenium		0.0728	mg/L	0.0010	117	70	130			
Uranium		0.279	mg/L	0.00030		70	130			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

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QA/QC Summary Report

Client: Lidstone and Associates
Project: Not Indicated

Report Date: 02/05/09
Work Order: C09010389

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: R113412
Sample ID: C09010389-001BMS4	14	Sample Matrix Spike				Run: ICPMS4-C_090114A				01/14/09 20:22
Vanadium		0.0545	mg/L	0.10	108	70	130			
Zinc		0.316	mg/L	0.010		70	130			A
Sample ID: C09010389-001BMSD	14	Sample Matrix Spike Duplicate				Run: ICPMS4-C_090114A				01/14/09 20:29
Arsenic		0.0577	mg/L	0.0010	112	70	130	1.1	20	
Barium		0.0980	mg/L	0.10	114	70	130	0	20	
Cadmium		0.0562	mg/L	0.010	104	70	130	0.5	20	
Chromium		0.0575	mg/L	0.050	109	70	130	0.9	20	
Copper		0.0850	mg/L	0.010	103	70	130	0	20	
Lead		0.0596	mg/L	0.050	114	70	130	0.2	20	
Manganese		8.65	mg/L	0.010		70	130	1.5	20	A
Mercury		0.00553	mg/L	0.0010	110	70	130	1	20	
Molybdenum		0.0540	mg/L	0.10	108	70	130	0	20	
Nickel		0.640	mg/L	0.050		70	130	0.3	20	A
Selenium		0.0731	mg/L	0.0010	118	70	130	0.4	20	
Uranium		0.281	mg/L	0.00030		70	130	0.8	20	A
Vanadium		0.0546	mg/L	0.10	108	70	130	0	20	
Zinc		0.318	mg/L	0.010		70	130	0.5	20	A
Method: E300.0										Batch: R113715
Sample ID: LCS		Laboratory Control Sample				Run: IC1-C_090121A				01/21/09 14:07
Chloride		10.3	mg/L	1.0	103	90	110			
Sample ID: MBLK		Method Blank				Run: IC1-C_090121A				01/21/09 14:22
Chloride		ND	mg/L	0.02						
Sample ID: C09010463-001AMS		Sample Matrix Spike				Run: IC1-C_090121A				01/21/09 16:10
Chloride		53.2	mg/L	1.0	103	90	110			
Sample ID: C09010463-001AMSD		Sample Matrix Spike Duplicate				Run: IC1-C_090121A				01/21/09 16:26
Chloride		53.5	mg/L	1.0	103	90	110	0.7	20	
Method: E300.0										Batch: R113879
Sample ID: LCS		Laboratory Control Sample				Run: IC1-C_090126A				01/26/09 14:41
Sulfate		41.8	mg/L	1.0	104	90	110			
Sample ID: MBLK		Method Blank				Run: IC1-C_090126A				01/26/09 14:57
Sulfate		ND	mg/L	0.06						
Sample ID: C09010643-003AMS		Sample Matrix Spike				Run: IC1-C_090126A				01/26/09 16:29
Sulfate		389	mg/L	1.0	96	90	110			
Sample ID: C09010643-003AMSD		Sample Matrix Spike Duplicate				Run: IC1-C_090126A				01/26/09 16:45
Sulfate		389	mg/L	1.0	95	90	110	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

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QA/QC Summary Report

Client: Lidstone and Associates
Project: Not Indicated

Report Date: 02/05/09
Work Order: C09010389

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E350.1										Analytical Run: SUB-B123498
Sample ID: ICV	Initial Calibration Verification Standard									01/16/09 10:24
Nitrogen, Ammonia as N		5.52	mg/L	0.11	101	90	110			
Method: E350.1										Batch: B_R123498
Sample ID: MBLK	Method Blank					Run: SUB-B123498				01/16/09 10:25
Nitrogen, Ammonia as N		ND	mg/L	0.02						
Sample ID: LFB	Laboratory Fortified Blank					Run: SUB-B123498				01/16/09 10:26
Nitrogen, Ammonia as N		1.06	mg/L	0.10	107	90	110			
Sample ID: C09010250-001D	Sample Matrix Spike					Run: SUB-B123498				01/16/09 11:06
Nitrogen, Ammonia as N		0.963	mg/L	0.050	96	90	110			
Sample ID: C09010250-001D	Sample Matrix Spike Duplicate					Run: SUB-B123498				01/16/09 11:07
Nitrogen, Ammonia as N		0.958	mg/L	0.050	96	90	110	0.5	10	
Sample ID: B09010823-001EMS	Sample Matrix Spike					Run: SUB-B123498				01/16/09 11:22
Nitrogen, Ammonia as N		1.45	mg/L	0.050	96	90	110			
Sample ID: B09010823-001EMSD	Sample Matrix Spike Duplicate					Run: SUB-B123498				01/16/09 11:24
Nitrogen, Ammonia as N		1.46	mg/L	0.050	98	90	110	1	10	
Method: E353.2										Analytical Run: SUB-B123438
Sample ID: ICV	Initial Calibration Verification Standard									01/15/09 12:00
Nitrogen, Nitrate+Nitrite as N		35.9	mg/L	0.050	101	90	110			
Method: E353.2										Batch: B_R123438
Sample ID: MBLK	Method Blank					Run: SUB-B123438				01/15/09 12:01
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.002						
Sample ID: LFB	Laboratory Fortified Blank					Run: SUB-B123438				01/15/09 12:02
Nitrogen, Nitrate+Nitrite as N		0.971	mg/L	0.050	99	90	110			
Sample ID: B09010921-005CMS	Sample Matrix Spike					Run: SUB-B123438				01/15/09 14:59
Nitrogen, Nitrate+Nitrite as N		1.13	mg/L	0.050	95	90	110			
Sample ID: B09010921-005CMSD	Sample Matrix Spike Duplicate					Run: SUB-B123438				01/15/09 15:00
Nitrogen, Nitrate+Nitrite as N		1.13	mg/L	0.050	95	90	110	0.6	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Lidstone and Associates
Project: Not Indicated

Report Date: 02/05/09
Work Order: C09010389

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-3386
Sample ID: C09010272-001CMS	Sample Matrix Spike					Run: BERTHOLD 770-1_090115A			01/22/09	01:13
Radium 226		380	pCi/L		140	70	130			S
- Sample response is much larger than spike amount, therefore small variances in the sample adversely affected the recovery. The LCS and the RPD of the MS/MSD pair meets acceptance criteria; this batch is approved.										
Sample ID: C09010272-001CMSD	Sample Matrix Spike Duplicate					Run: BERTHOLD 770-1_090115A			01/22/09	01:13
Radium 226		380	pCi/L		146	70	130	0.1	13	S
- Sample response is much larger than spike amount, therefore small variances in the sample adversely affected the recovery. The LCS and the RPD of the MS/MSD pair meets acceptance criteria; this batch is approved.										
Sample ID: MB-RA226-3386	Method Blank					Run: BERTHOLD 770-1_090115A			01/22/09	08:29
Radium 226		-0.2	pCi/L							U
Sample ID: LCS-RA226-3386	Laboratory Control Sample					Run: BERTHOLD 770-1_090115A			01/22/09	08:29
Radium 226		7.6	pCi/L		99	70	130			

Qualifiers:

RL - Analyte reporting limit.
S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Lidstone & Associates	Project Name, PWS, Permit, Etc.: Bus 10, T	Sample Origin State: WY	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: 4025 Automation Way Bldg E Fort Collins CO 80525	Contact Name: Chuck Larson Phone/Fax: 307 850 7706	Email: CAL@Lidstone.com	Sampler: (Please Print)
Invoice Address: Same	Invoice Contact & Phone: Chris Lidstone 970 223 4705	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	DEQ Guideline 8	SEE ATTACHED	Normal Turnaround (TAT)
1 2 Gallons From The Bus #7	1-12-09	2:33 2:40	2 W			
2						
3						
4						
5						
6						
7						
8						
9						
10						

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: C09010389

Shipped by: hand

Cooler ID(s): Client

Receipt Temp: 2 °C

On Ice: Yes (No)

Custody Seal Y (NP)

Bottles/Coolers B C

Intact Y N

Signature Match Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Chuck LARSON	Date/Time: 1-13-09 11:50 Am	Signature:	Received by (print): K Ward	Date/Time: 1/13/09 1150	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: _____ Lab Disposal: X			Received by Laboratory:	Date/Time:	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Energy Laboratories Inc
Workorder Receipt Checklist

C09010389

Lidstone and Associates

Login completed by: Kimberly Humiston

Reviewed by:

Reviewed Date:

Date and Time Received: 1/13/2009 11:50 AM

Received by: kw

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature:	2°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Samples for dissolved metals and radiochemistry were subsampled, filtered and preserved with 2 mL HNO3 in lab upon receipt to pH <2. Nitrate was subsampled and preserved with 1/2mL H2SO4.

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CLIENT: Lidstone and Associates
Project: Not Indicated
Sample Delivery Group: C09010389

Date: 05-Feb-09

CASE NARRATIVE

ORIGINAL SAMPLE SUBMITTAL(S)
All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS
Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS
The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES
All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505
Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT
eli-r - Energy Laboratories, Inc. - Rapid City, SD
eli-t - Energy Laboratories, Inc. - College Station, TX

CERTFICATIONS:
USEPA: WY00002; FL-DOH NELAC: E87641; California: 02118CA
Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

ISO 17025 DISCLAIMER:
The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT

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LABORATORY ANALYTICAL REPORT

Client: Lidstone & Assoc
Project: East Gas Hills
Lab ID: C06090264-001
Client Sample ID: Buss Pit Sample

Report Date: 09/28/06
Collection Date: 09/05/06 12:50
DateReceived: 09/07/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Alkalinity, Total as CaCO3	ND	mg/L		1		A2320 B	09/11/06 16:58 / smd
Carbonate as CO3	ND	mg/L		1		A2320 B	09/11/06 16:58 / smd
Bicarbonate as HCO3	ND	mg/L		1		A2320 B	09/11/06 16:58 / smd
Calcium	575	mg/L	D	2		E200.7	09/22/06 17:33 / cp
Chloride	15	mg/L		1		E200.7	09/22/06 21:27 / cp
Fluoride	1.4	mg/L		0.1		A4500-F C	09/12/06 12:45 / th
Magnesium	221	mg/L		0.5		E200.7	09/22/06 21:27 / cp
Nitrogen, Ammonia as N	0.40	mg/L		0.05		A4500-NH3 G	09/12/06 09:47 / jal
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	09/08/06 10:42 / jal
Nitrogen, Nitrite as N	ND	mg/L		0.1		A4500-NO2 B	09/08/06 10:16 / jal
Potassium	52.3	mg/L		0.5		E200.7	09/22/06 21:27 / cp
Silica	20.0	mg/L		0.1		E200.7	09/22/06 21:27 / cp
Sodium	60.3	mg/L		0.5		E200.7	09/22/06 21:27 / cp
Sulfate	2470	mg/L	D	1		E200.7	09/22/06 17:33 / cp
PHYSICAL PROPERTIES							
Conductivity	3970	umhos/cm		1.0		A2510 B	09/08/06 15:56 / th
Hardness as CaCO3	2340	mg/L		6.5		A2340 B	09/25/06 11:48 / sec
pH	3.83	s.u.		0.01		A4500-H B	09/08/06 15:56 / th
Solids, Total Dissolved TDS @ 180 C	3830	mg/L		10		A2540 C	09/11/06 10:33 / th
METALS - DISSOLVED							
Aluminum	11.0	mg/L		0.1		E200.8	09/12/06 14:33 / bws
Arsenic	0.001	mg/L		0.001		E200.8	09/12/06 14:33 / bws
Barium	ND	mg/L		0.1		E200.8	09/12/06 14:33 / bws
Boron	ND	mg/L		0.1		E200.7	09/22/06 21:27 / cp
Cadmium	ND	mg/L		0.005		E200.8	09/12/06 14:33 / bws
Chromium	ND	mg/L		0.05		E200.8	09/12/06 14:33 / bws
Copper	0.04	mg/L		0.01		E200.8	09/12/06 14:33 / bws
Iron	1.30	mg/L		0.03		E200.7	09/22/06 21:27 / cp
Lead	ND	mg/L		0.05		E200.8	09/12/06 14:33 / bws
Manganese	7.76	mg/L		0.01		E200.8	09/12/06 14:33 / bws
Mercury	ND	mg/L		0.001		E200.8	09/12/06 14:33 / bws
Molybdenum	ND	mg/L		0.1		E200.8	09/12/06 14:33 / bws
Nickel	0.55	mg/L		0.05		E200.8	09/12/06 14:33 / bws
Selenium	0.017	mg/L		0.001		E200.8	09/12/06 14:33 / bws
Uranium	0.262	mg/L		0.0003		E200.8	09/12/06 14:33 / bws
Vanadium	ND	mg/L		0.1		E200.8	09/12/06 14:33 / bws
Zinc	0.25	mg/L		0.01		E200.8	09/12/06 14:33 / bws
RADIONUCLIDES - DISSOLVED							
Radium 226	1.9	pCi/L		0.2		E903.0	09/25/06 20:21 / trs
Radium 226 precision (±)	0.5	pCi/L				E903.0	09/25/06 20:21 / trs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Lidstone & Assoc
Project: East Gas Hills
Lab ID: C06090264-001
Client Sample ID: Buss Pit Sample

Report Date: 09/28/06
Collection Date: 09/05/06 12:50
DateReceived: 09/07/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
DATA QUALITY							
A/C Balance (± 5)	0.729	%				Calculation	09/25/06 10:33 / cp
Anions	51.9	meq/L				Calculation	09/25/06 10:33 / cp
Cations	52.7	meq/L				Calculation	09/25/06 10:33 / cp
Solids, Total Dissolved Calculated	3410	mg/L				Calculation	09/25/06 10:33 / cp
TDS Balance (0.80 - 1.20)	1.12	dec. %				Calculation	09/25/06 10:33 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Lidstone & Assoc
Project: East Gas Hills
Lab ID: C06090264-002
Client Sample ID: PRI 1

Report Date: 09/28/06
Collection Date: 09/05/06 13:42
DateReceived: 09/07/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Alkalinity, Total as CaCO3	292	mg/L		1		A2320 B	09/11/06 17:09 / smd
Carbonate as CO3	ND	mg/L		1		A2320 B	09/11/06 17:09 / smd
Bicarbonate as HCO3	356	mg/L		1		A2320 B	09/11/06 17:09 / smd
Calcium	595	mg/L	D	2		E200.7	09/22/06 17:37 / cp
Chloride	6	mg/L		1		E200.7	09/22/06 21:30 / cp
Fluoride	0.4	mg/L		0.1		A4500-F C	09/12/06 12:47 / th
Magnesium	106	mg/L		0.5		E200.7	09/22/06 21:30 / cp
Nitrogen, Ammonia as N	0.26	mg/L		0.05		A4500-NH3 G	09/12/06 09:49 / jal
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	09/08/06 10:45 / jal
Nitrogen, Nitrite as N	ND	mg/L		0.1		A4500-NO2 B	09/08/06 10:17 / jal
Potassium	22.9	mg/L		0.5		E200.7	09/22/06 21:30 / cp
Silica	26.1	mg/L		0.1		E200.7	09/22/06 21:30 / cp
Sodium	20.5	mg/L		0.5		E200.7	09/22/06 21:30 / cp
Sulfate	1610	mg/L	D	1		E200.7	09/22/06 17:37 / cp
PHYSICAL PROPERTIES							
Conductivity	3100	umhos/cm		1.0		A2510 B	09/08/06 15:57 / th
Hardness as CaCO3	1920	mg/L		6.5		A2340 B	09/25/06 11:48 / sec
pH	6.95	s.u.		0.01		A4500-H B	09/08/06 15:57 / th
Solids, Total Dissolved TDS @ 180 C	2840	mg/L		10		A2540 C	09/11/06 10:33 / th
METALS - DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/12/06 14:41 / bws
Arsenic	ND	mg/L		0.001		E200.8	09/12/06 14:41 / bws
Barium	ND	mg/L		0.1		E200.8	09/12/06 14:41 / bws
Boron	ND	mg/L		0.1		E200.7	09/22/06 21:30 / cp
Cadmium	ND	mg/L		0.005		E200.8	09/12/06 14:41 / bws
Chromium	ND	mg/L		0.05		E200.8	09/12/06 14:41 / bws
Copper	ND	mg/L		0.01		E200.8	09/12/06 14:41 / bws
Iron	3.00	mg/L		0.03		E200.7	09/22/06 21:30 / cp
Lead	ND	mg/L		0.05		E200.8	09/12/06 14:41 / bws
Manganese	0.88	mg/L		0.01		E200.8	09/12/06 14:41 / bws
Mercury	ND	mg/L		0.001		E200.8	09/12/06 14:41 / bws
Molybdenum	ND	mg/L		0.1		E200.8	09/12/06 14:41 / bws
Nickel	ND	mg/L		0.05		E200.8	09/12/06 14:41 / bws
Selenium	0.002	mg/L		0.001		E200.8	09/12/06 14:41 / bws
Uranium	0.0065	mg/L		0.0003		E200.8	09/12/06 14:41 / bws
Vanadium	ND	mg/L		0.1		E200.8	09/12/06 14:41 / bws
Zinc	0.04	mg/L		0.01		E200.8	09/12/06 14:41 / bws
RADIONUCLIDES - DISSOLVED							
Radium 226	12.1	pCi/L		0.2		E903.0	09/25/06 20:21 / trs
Radium 226 precision (±)	1.1	pCi/L				E903.0	09/25/06 20:21 / trs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Lidstone & Assoc
Project: East Gas Hills
Lab ID: C06090264-002
Client Sample ID: PRI 1

Report Date: 09/28/06
Collection Date: 09/05/06 13:42
DateReceived: 09/07/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
DATA QUALITY							
A/C Balance (± 5)	0.664	%				Calculation	09/25/06 10:33 / cp
Anions	39.6	meq/L				Calculation	09/25/06 10:33 / cp
Cations	40.1	meq/L				Calculation	09/25/06 10:33 / cp
Solids, Total Dissolved Calculated	2560	mg/L				Calculation	09/25/06 10:33 / cp
TDS Balance (0.80 - 1.20)	1.11	dec. %				Calculation	09/25/06 10:33 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Lidstone & Assoc
Project: East Gas Hills
Lab ID: C06090264-003
Client Sample ID: GW5A

Report Date: 09/28/06
Collection Date: 09/05/06 16:54
DateReceived: 09/07/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	09/12/06 07:36 / smd
Carbonate as CO3	ND	mg/L		1		A2320 B	09/12/06 07:36 / smd
Bicarbonate as HCO3	146	mg/L		1		A2320 B	09/12/06 07:36 / smd
Calcium	206	mg/L		0.5		E200.7	09/22/06 21:33 / cp
Chloride	8	mg/L		1		E200.7	09/22/06 21:33 / cp
Fluoride	1.7	mg/L		0.1		A4500-F C	09/12/06 12:48 / th
Magnesium	50.5	mg/L		0.5		E200.7	09/22/06 21:33 / cp
Nitrogen, Ammonia as N	0.07	mg/L		0.05		A4500-NH3 G	09/12/06 09:51 / jal
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	09/08/06 10:52 / jal
Nitrogen, Nitrite as N	ND	mg/L		0.1		A4500-NO2 B	09/08/06 10:17 / jal
Potassium	20.3	mg/L		0.5		E200.7	09/22/06 21:33 / cp
Silica	31.4	mg/L		0.1		E200.7	09/22/06 21:33 / cp
Sodium	35.9	mg/L		0.5		E200.7	09/22/06 21:33 / cp
Sulfate	688	mg/L		1		E200.7	09/22/06 21:33 / cp
PHYSICAL PROPERTIES							
Conductivity	1560	umhos/cm		1.0		A2510 B	09/08/06 15:59 / th
Hardness as CaCO3	723	mg/L		6.5		A2340 B	09/25/06 11:48 / sec
pH	7.30	s.u.		0.01		A4500-H B	09/08/06 15:59 / th
Solids, Total Dissolved TDS @ 180 C	1180	mg/L		10		A2540 C	09/11/06 10:34 / th
METALS - DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/12/06 14:48 / bws
Arsenic	0.017	mg/L		0.001		E200.8	09/12/06 14:48 / bws
Barium	ND	mg/L		0.1		E200.8	09/12/06 14:48 / bws
Boron	ND	mg/L		0.1		E200.7	09/22/06 21:33 / cp
Cadmium	ND	mg/L		0.005		E200.8	09/12/06 14:48 / bws
Chromium	ND	mg/L		0.05		E200.8	09/12/06 14:48 / bws
Copper	ND	mg/L		0.01		E200.8	09/12/06 14:48 / bws
Iron	0.12	mg/L		0.03		E200.7	09/22/06 21:33 / cp
Lead	ND	mg/L		0.05		E200.8	09/12/06 14:48 / bws
Manganese	0.14	mg/L		0.01		E200.8	09/12/06 14:48 / bws
Mercury	ND	mg/L		0.001		E200.8	09/12/06 14:48 / bws
Molybdenum	ND	mg/L		0.1		E200.8	09/12/06 14:48 / bws
Nickel	ND	mg/L		0.05		E200.8	09/12/06 14:48 / bws
Selenium	ND	mg/L		0.001		E200.8	09/12/06 14:48 / bws
Uranium	0.0004	mg/L		0.0003		E200.8	09/12/06 14:48 / bws
Vanadium	ND	mg/L		0.1		E200.8	09/12/06 14:48 / bws
Zinc	0.02	mg/L		0.01		E200.8	09/12/06 14:48 / bws
RADIONUCLIDES - DISSOLVED							
Radium 226	1.3	pCi/L		0.2		E903.0	09/25/06 20:21 / trs
Radium 226 precision (±)	0.4	pCi/L				E903.0	09/25/06 20:21 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

LABORATORY ANALYTICAL REPORT

Client: Lidstone & Assoc
Project: East Gas Hills
Lab ID: C06090264-003
Client Sample ID: GW5A

Report Date: 09/28/06
Collection Date: 09/05/06 16:54
DateReceived: 09/07/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
DATA QUALITY							
A/C Balance (± 5)	-1.51	%				Calculation	09/25/06 10:34 / cp
Anions	17.0	meq/L				Calculation	09/25/06 10:34 / cp
Cations	16.5	meq/L				Calculation	09/25/06 10:34 / cp
Solids, Total Dissolved Calculated	1110	mg/L				Calculation	09/25/06 10:34 / cp
TDS Balance (0.80 - 1.20)	1.06	dec. %				Calculation	09/25/06 10:34 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Lidstone & Assoc
Project: East Gas Hills
Lab ID: C06090264-004
Client Sample ID: GW10A

Report Date: 09/28/06
Collection Date: 09/05/06 18:35
DateReceived: 09/07/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Alkalinity, Total as CaCO3	250	mg/L		1		A2320 B	09/12/06 07:38 / smd
Carbonate as CO3	ND	mg/L		1		A2320 B	09/12/06 07:38 / smd
Bicarbonate as HCO3	305	mg/L		1		A2320 B	09/12/06 07:38 / smd
Calcium	303	mg/L	D	2		E200.7	09/22/06 17:59 / cp
Chloride	4	mg/L		1		E200.7	09/22/06 21:37 / cp
Fluoride	0.9	mg/L		0.1		A4500-F C	09/12/06 12:52 / th
Magnesium	58.5	mg/L		0.5		E200.7	09/22/06 21:37 / cp
Nitrogen, Ammonia as N	0.13	mg/L		0.05		A4500-NH3 G	09/12/06 10:31 / jal
Nitrogen, Nitrate+Nitrite as N	0.2	mg/L		0.1		E353.2	09/08/06 10:55 / jal
Nitrogen, Nitrite as N	ND	mg/L		0.1		A4500-NO2 B	09/08/06 10:17 / jal
Potassium	16.8	mg/L		0.5		E200.7	09/22/06 21:37 / cp
Silica	20.6	mg/L		0.1		E200.7	09/22/06 21:37 / cp
Sodium	23.5	mg/L		0.5		E200.7	09/22/06 21:37 / cp
Sulfate	807	mg/L	D	1		E200.7	09/22/06 17:59 / cp
PHYSICAL PROPERTIES							
Conductivity	1910	umhos/cm		1.0		A2510 B	09/08/06 16:01 / th
Hardness as CaCO3	998	mg/L		6.5		A2340 B	09/25/06 11:48 / sec
pH	7.20	s.u.		0.01		A4500-H B	09/08/06 16:01 / th
Solids, Total Dissolved TDS @ 180 C	1500	mg/L		10		A2540 C	09/11/06 10:34 / th
METALS - DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/12/06 14:56 / bws
Arsenic	0.006	mg/L		0.001		E200.8	09/12/06 14:56 / bws
Barium	ND	mg/L		0.1		E200.8	09/12/06 14:56 / bws
Boron	ND	mg/L		0.1		E200.7	09/22/06 21:37 / cp
Cadmium	ND	mg/L		0.005		E200.8	09/12/06 14:56 / bws
Chromium	ND	mg/L		0.05		E200.8	09/12/06 14:56 / bws
Copper	ND	mg/L		0.01		E200.8	09/12/06 14:56 / bws
Iron	2.45	mg/L		0.03		E200.7	09/22/06 21:37 / cp
Lead	ND	mg/L		0.05		E200.8	09/12/06 14:56 / bws
Manganese	0.91	mg/L		0.01		E200.8	09/12/06 14:56 / bws
Mercury	ND	mg/L		0.001		E200.8	09/12/06 14:56 / bws
Molybdenum	ND	mg/L		0.1		E200.8	09/12/06 14:56 / bws
Nickel	ND	mg/L		0.05		E200.8	09/12/06 14:56 / bws
Selenium	0.001	mg/L		0.001		E200.8	09/12/06 14:56 / bws
Uranium	0.0199	mg/L		0.0003		E200.8	09/12/06 14:56 / bws
Vanadium	ND	mg/L		0.1		E200.8	09/12/06 14:56 / bws
Zinc	ND	mg/L		0.01		E200.8	09/12/06 14:56 / bws
RADIONUCLIDES - DISSOLVED							
Radium 226	6.8	pCi/L		0.2		E903.0	09/25/06 20:21 / trs
Radium 226 precision (±)	0.8	pCi/L				E903.0	09/25/06 20:21 / trs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Lidstone & Assoc
Project: East Gas Hills
Lab ID: C06090264-004
Client Sample ID: GW10A

Report Date: 09/28/06
Collection Date: 09/05/06 18:35
DateReceived: 09/07/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
DATA QUALITY							
A/C Balance (± 5)	-0.964	%				Calculation	09/25/06 10:34 / cp
Anions	22.0	meq/L				Calculation	09/25/06 10:34 / cp
Cations	21.6	meq/L				Calculation	09/25/06 10:34 / cp
Solids, Total Dissolved Calculated	1390	mg/L				Calculation	09/25/06 10:34 / cp
TDS Balance (0.80 - 1.20)	1.08	dec. %				Calculation	09/25/06 10:34 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

Appendix B

Correspondence

February 24, 2011

Mr. Tom Foertsch
Geologist
BLM Casper Field Office
2987 Prospector Drive
Casper, WY 82604

Re. Your Email and Attachment February 7, 2011

Dear Tom,

We are in receipt of your email and attachment of February 7, 2011 and are concerned that there appears to be a disconnection between the understanding, which we brought home from our meeting on January 26, 2011 and what appears to be a change in BLM attitude as presented in your attachment. I will try to address several of your points now in an effort to avoid further misunderstandings and prior to our preparation of the requested Plan of Operations. If our proposal as we presented it at the January meeting is not acceptable to BLM, let us know immediately and we will develop an alternate strategy.

Please understand that Cameco Resources (Cameco) is considering a significant investment in both time and money in an effort to cooperate with BLM on the backfill of the Buss Pit. Based on our own experience and our discussions with DEQ/LQD and DEQ/AML, we do not feel that the Buss Pit presents a significant environmental risk to wildlife or the general public. We have presented our willingness to backfill the Buss 1 Pit with available on site material and have identified a reclaimed spoil pile located on the western flank of the pit. This option will require the disturbance and reclamation of 32 acres of successful reclamation and over 850,000 cubic yards of material movement. As part of this effort we will replace 5 feet of suitable overburden in the upper overburden lift and will separately stockpile (double handle) and replace 12 inches of topsoil. The entire "redisturbance" will be revegetated and will be subject to another bond release period.

Before I proceed any further, let me clarify the setting of this proposed reclamation within the Gas Hills Uranium Mining District, much of which lies on BLM land. The area has been surface strip mined since the 1950s and all degrees of reclamation and lack of reclamation has taken place. Approximately 75% of the Gas Hills mining pits (Umetco, Pathfinder, TVA, ANC, Energy Fuels, Western Nuclear) intersected the historic ground water table and nearly 100% of the reclamation of these pits by the aforementioned companies included "non selective" backfill of the ground water flooded pits. A number of these pits had degenerated into acid lakes, some of which were reclaimed by AML, others by the companies. Cameco proposal is absolutely no different and in fact is a significant improvement over mining and reclamation standards that have been historically implemented in the Gas Hills. If BLM's goal is to eliminate the acidic lake condition at the Buss 1 Pit, we all agree that backfill will successfully achieve this goal.

However, before Cameco undertakes this backfill effort and as we stated in the meeting, clarification of all agency reclamation goals and more importantly the criteria for bond release is absolutely essential. As we discussed at the meeting there has been a history of misunderstandings and we clearly do not want to repeat the mistakes of the past.

Specifically, we will address all of your questions in more detail as part of the Plan of Operations submittal. However before we prepare that plan, Cameco has requested not only clarification, but concurrence from BLM that the following bullet list is not only understood, but acceptable to BLM and LQD. I would like to summarize and receive your agencies concurrence that if Cameco completes the backfill of the Buss Pit with material from the west spoil pile to a minimum elevation of 6675 as presented in the attached plan, BLM and LQD will agree to the following:

- Immediate release of reclamation liability on all other areas (roughly 400 acres) within the Buss/Russ Bengal complex;
- Immediate release of reclamation liability as it pertains to impacts to ground water;
- No increase in reclamation bond;
- Bond release standards based on surface reclamation success only;
- An agreement that a surface wetland (boggy area and/or a "salt sink") at the bottom of the backfilled impoundment is acceptable; and
- BLM's concurrence that a CAT EX would address NEPA requirements. If this is not an option and if an EA is required, Cameco wishes to initiate discussions on the NEPA-required investigations and more importantly the time table for review.

Agreement to the above conditions is paramount to our proceeding with the previously presented and enclosed proposal. I have attached a preliminary response to some of your more salient questions in your attachment to your February 7, 2011 email. I have also attached a figure documenting the proposed reclamation plan, which was presented by Cameco at our meeting on January 26, 2011.

Please notify me of your agency concurrence with the above at your convenience. Our goal is to address your questions in more detail and complete the Plan of Operations by April 29, 2011. A mutual understanding is an essential element of our ability to achieve that schedule.

Sincerely,

Tom Young
Vice President of Operations
Cameco Resources, Inc.

Attachments

cc. Mark Moxley, DEQ/LQD
Brian Wood, DEQ/LQD
Joe Meyer, BLM
Cathy Cook, BLM
Jean Lawlor, Cameco
Chris Lidstone, Lidstone and Associates, Inc.

ATTACHMENT A

Although we intend to address your requested questions (email attachment on February 7, 2011) in the Plan of Operations, as requested, this attachment summarizes our response to several of your more important questions.

1. Backfill material will originate from the west spoil pile. Cameco does not intend to characterize the material within this pile any further than what was completed in 1993 and 1994. Based on the three drill holes and sampling completed at that time, the spoils material appear acceptable. Cameco will excavate an average of 5 to 10 feet into native below the spoil pile. Based on our past experience, this upper lift of native will be suitable.

2. Cross Section A-A' from the Lidstone report identifies the geology on the south highwall and not the west spoil pile area. As noted in #1 above, Cameco does not guarantee the quality of the backfill, but will present the limited drilling data that were analyzed in 1993. Sulfides may be present in the native lift, but the elevation 6680 on the west wall is not stratigraphically equivalent to the elevation 6680 on the south wall. Cameco will not perform any analysis of the backfill that is being returned to the water table. They will perform short list (DEQ/LQD overburden suitability) analysis on the final 5 foot lift that lies immediately below the topsoil zone. There are other sources of backfill, but such sources will increase overall disturbance acreage and haul distance significantly. This site was selected based on 1993 drilling data, haul distance, and final reclamation considerations including a final geomorphically stable surface.

3. Cameco will treat the water with lime from the dewatered pit (approximately 34 million gallons) and pump it to the Buss 3 pit. The water will return naturally to the backfilled pit. This pumping pattern is exactly how the 1994-1995 plan worked and as discussed in the meeting, the water will return to the Buss 1 pit over a period of 1 to 5 years. If it doesn't return, the backfilled pit will be recharged by upgradient ground water and the Buss 3 pit will remain a surface body of water until the water either evaporates or seeps away.

4. The Lidstone report identified a post mining water table recovery to an elevation of 6685 based of historical regional ground water table. Prior to the 2009 report, the Gas Hills was subjected to nearly 8 years of drought and the water table reached and then remained below the 6650 elevation (1998-2006)- as identified on Figure 12 of the Lidstone report. Since the completion of the 2009 report there have been two very wet years in the Gas Hills, yet the water table has not risen. On September 29, 2010 the water level within the Buss 1 Pit was measured at 6646.7. This clearly indicates that the ground water recovery has reached an equilibrium state (12 years at steady state condition). Even under a backfill scenario, neither Lidstone nor Cameco feel that the ground water recovery data support the 6686 +/- 20 feet elevation predicted in the report. The proposed backfill to 6675 is 28 feet higher than the current ground water recovery elevation and all evidence points to this being a static recovery elevation.

5. At the meeting on January 26, 2011, both Lidstone and Moxley stated that the floor of the backfilled pit will likely be a salt sink. This means salts will likely accumulate on the floor and within the root zone of plants due to capillary rise and translocation from adjacent lands through runoff processes. Cameco will endeavor to plant more salt tolerant species at this location and replace a stratum of coarse material at the

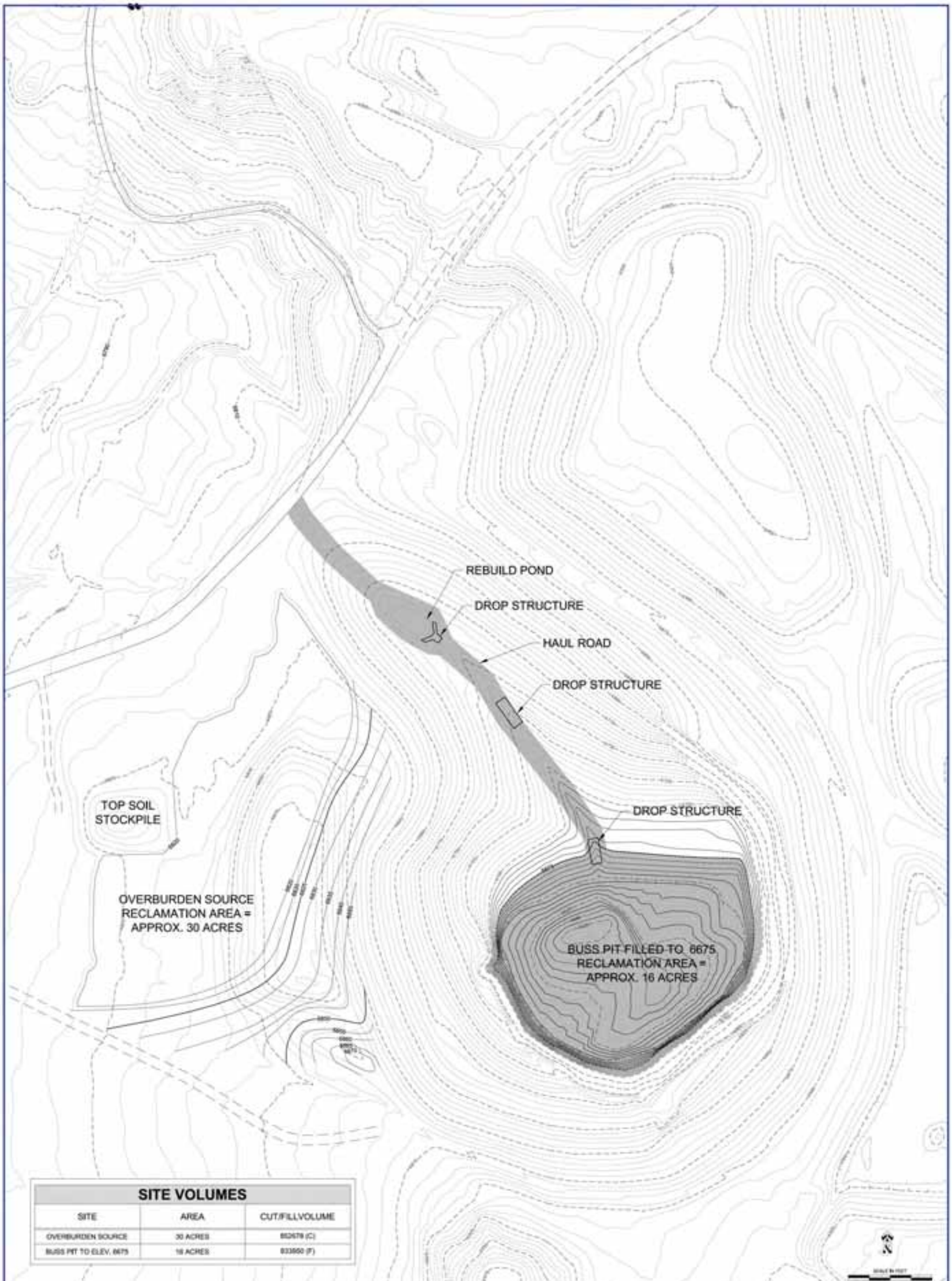
overburden/topsoil interface, but will not guarantee the success of vegetation at this location. This condition at the floor of the pit (substandard revegetation success) must be acceptable to BLM.

6. Besides being a salt sink, the floor of the pit may develop wetland characteristics. There is no guarantee as to the viability of this wetland because essentially there will be a surface water and possibly a ground water inflow component and only evapotranspiration as an outflow component. Again, it is understood by all parties that this surface condition is acceptable.

7. Lidstone and Cameco predict that ground water at this site will be degraded for a period of time. There is no reason to believe that it will remain acidic, but there will be an increase in Total Dissolved Solids, elevated metals and elevated sulfates. This condition will likely persist until several pore volumes of upgradient ground water have passed through the backfill. Based on past experience, ground water, though degraded, will remain with a livestock class of use. All parties (including DEQ) understand this and Cameco does not plan to model the reaction chemistry, drill any monitor wells specific to this project, nor do they plan to collect water samples defining the post reclamation ground water quality. Cameco will not line the walls of the pit or in any way treat the acid forming condition of the adjacent highwalls.

8. Mine Unit 4 baseline ground water quality will be determined by Cameco during their Hydrologic Unit Testing Program. DEQ/LQD will be part of this decision-making process and speculation regarding the impact of this backfill program is not relevant to this Plan of Operations.

9. Radon emanation standards for the Buss Pit are not relevant to this Plan of Operations. This is not an §11E-2 facility. However in response to your question, there will be a minimum of 5 feet of suitable overburden (likely a native lift) overlying the unclassified backfill that is placed in the pit. Material quality control for this final lift will be by field methods (hand held scintillometer). Radon emanation will likely not be a problem.



SITE VOLUMES

SITE	AREA	CUT/FILLVOLUME
OVERBURDEN SOURCE	30 ACRES	852678 (C)
BUSS PIT TO ELEV. 6675	16 ACRES	833950 (F)

BUSS PIT RECLAMATION

D/D
CHECKED BY
APPROVED BY

BUSS PIT
BACKFILL ALTERNATIVE

FIGURE 1

REVISIONS:

GENERAL NOTES

LEGEND

EXISTING GROUND (CONTOUR INTERVAL 5 FT.)

6825
PROPOSED GROUND (CONTOUR INTERVAL 5 FT.)

AREA OF ADDITIONAL DISTURBANCE

Department of the Interior
Bureau of Land Management
Casper District

MEETING REGISTER

Meeting Title: Cameco Buss Pit Date: 9/14/10

Meeting Time: From: 1000 To: _____

	NAME	OFFICE		WILL YOU TAKE PHONE CALLS?	
1.	Jayne Cook	BLM 261-7503	✓	YES	NO
	Contact Info				
2.	Mark Mody	WDEQ 332-3047	✓	YES	NO
	Contact Info				
3.	Brian Wood	WDEQ 332-3047	✓	YES	NO
	Contact Info	~~Sue Meyer BLM 261-7600~~			
4.	Sue Meyer	BLM 261-7600		YES	✓ NO
	Contact Info	Tom Young Cameco Resources 307-316-7545			
5.				YES	NO
	Contact Info	Jack Palmer			
6.	[illegible]	307-778-4226	✓	YES	NO
	Contact Info				
7.	JEAN LAWLOR, CAMECO RESOURCES CASPER		✓	YES	NO
	Contact Info	307-237-2128, x313; jean-lawlor@cameco.com			
8.	Patrick Moore			YES	✓ NO
	Contact Info	307 261-7530 patrick_moore@blm.gov			
9.				YES	NO
	Contact Info				
10.				YES	NO
	Contact Info				
11.				YES	NO
	Contact Info				
12.				YES	NO
	Contact Info				
13.				YES	NO
	Contact Info				
14.				YES	NO
	Contact Info				
15.				YES	NO
	Contact Info				

NOTE: Completed form should be given to receptionist prior to start of meeting.

Rec'd fr
BLM Casper
9/14/10

Briefing

Cameco Buss I Pit Acid Lake

SUMMARY

Power Resources, Inc. (now Cameco dba Power Resources, Inc. (PRI)) reclaimed the Buss Pit Area, in 1994 and 1995 under LQD Permit to Mine No. 438 and BLM Plan of Operations WYW-127579. The reclamation plan included a final impoundment at the Buss I Pit. Since completion of reclamation, the pH of the nine acre Buss I Pit lake has dropped from 7.4 to 3.8.

PRI has recently requested final bond release because they feel they have met their obligations under the reclamation plan. Wyoming Department of Environmental Quality (WDEQ) District II agrees with PRI's request and has requested BLM's concurrence. The site is not eligible for remediation under the State Abandoned Mine Land (AML) program.

BLM Casper Field Office (CFO) disagrees with PRI and WDEQ requests, and considers the Buss I pit acid lake unnecessary or undue degradation with the potential to adversely affect wildlife and groundwater.

BLM CFO's preferred course of action would be to ask PRI to modify their Plan of Operations under pre-2001 43 CFR 3809.1-7. The unforeseen circumstances causing the Buss I acid pit lake is or may become of such significance that modification of the plan is essential in order to prevent unnecessary or undue degradation. The provisions of the current 3809 regulations would apply to the portion of the operations that are modified as per 43 CFR 3809.433(b). The mine plan modification would address mitigation of the acid pit lake as well as prevention of future acid generation that could affect surface and groundwater. PRI's bond amount would also have to be increased accordingly.

HISTORY

The Buss I Pit, located in Section 27, T 33 N, R 89 W, Natrona County, East Gas Hills uranium mining district, was last mined by Tennessee Valley Authority (TVA) in May 1981. Dewatering of the pit continued through 1982. Previous mine operators include private individuals, the Two States Mining Company, the Vanadium Exploration Company of America, Federal Resources, and Federal American Partners

PRI purchased the property containing the Buss I Pit from TVA in September 1993. As part of PRI's acquisition of the Buss Area, TVA transferred their 1978 reclamation obligations to PRI.

T. Foertsch

9-8-10

The 1978 reclamation plan, WDEQ Permit to Mine No. 438, was the last approved mine and reclamation plan for the Buss area. PRI submitted a revised reclamation plan to WDEQ and BLM in November 1993 that included a final impoundment at the Buss I pit. The plan was bonded for $5,279,264. This revised reclamation plan was the first 3809 Plan of Operations for the site submitted to BLM for approval.

Excerpts from PRI's revised plan state:

> "The focal point of the PRI acquisition was the development of a reclamation plan for the Buss area which would maximize access to the existing reserves via in situ mining methods which PRI currently utilizes on similar ore reserves in other locations in Wyoming."
>
> "The Buss I impoundment and lake is an integral aspect in the reclamation plan and design. In addition, the reclamation plan has taken all appropriate means to ensure the maintenance of water quality within livestock standards by;
>
> 1. Special handling of mine spoil materials.
> 2. Minimizing surface evaporative area."
>
> "There is no economically feasible alternative if the reclamation plan for the Buss I Pit in the event that water quality or quantity do not meet these success criteria."

Industry standard acid/base accounting does not appear to have been conducted to evaluate the balance between acid neutralization potential from lime versus acid production potential from pyrite on the material involved in the revised reclamation plan.

On February 24, 1994, BLM CFO approved the new reclamation plan in a letter to PRI stating:

> "We have reviewed your revised reclamation plan, as presented to us on February 15, 1994. My staff feels that you have satisfactorily answered all our concerns and questions generated by both WDEQ and the BLM. We concur with your new revisions and have sent a letter of recommendation to WDEQ, recommending approval to commence the reclamation on the above-referenced plan, with the right to make comments or changes to the plan if they should arise."

Since plan of operations WYW127579 was approved in 1993, it is subject to the pre-2001 43 CFR 3809 regulations which state:

- Pertinent Federal and State water quality standards and laws regarding pollution control must be complied with as per 3809.2-2(b)

- 3809.1-3(d)(2) require the proper disposal of deleterious substances and 3809.1-3(d)(4)(iii) calls for measures to isolate, remove or control toxic materials as part of reclamation
- Plans of operation are to include information about measures to be taken to prevent unnecessary and undue degradation (as per 3809.1-5(c)(5))
- Unnecessary and undue degradation includes failure to comply with environmental protection statutes (3809.0-5(k)).
- At any time during operations, the AO may request the operator to modify the plan (3809.1-7(a))

If a plan modification is filed, the provisions of the current 3809 regulations would apply to the portion of the operations that are modified (as per the 10-1-2009 edition of the Title 43 regulations, see 3809.433(b)).

The Federal Water Pollution Control Act (30 USC 1151) applies to "waters of the United States, including the territorial seas." These waters are defined as "...includes only those relatively permanent, standing or continuously flowing bodies of water "forming geographic features" that are described in ordinary parlance as "streams[,] ... oceans, rivers, [and] lakes." and probably do not apply to the man made pit lake.

Wyoming surface water standards apply to the pit lake. Surface waters are defined as: "Surface waters of the state" means all perennial, intermittent and ephemeral defined drainages, lakes, reservoirs, and wetlands which are not man-made retention ponds used for the treatment of municipal, agricultural or industrial waste; and all other bodies of surface water, either public or private which are wholly or partially within the boundaries of the state. Nothing in this definition is intended to expand the scope of the Environmental Quality Act, as limited in W.S. 35-11-1104."

WDEQ determines what Surface Water Class and Use the pit lake falls under and is likely Class 4. Class 4 is: Agriculture, Industry, Recreation and Wildlife. Class 4 waters are waters, other than those designated as Class 1, where it has been determined that aquatic life uses are not attainable pursuant to the provisions of Section 33 of these regulations. Uses designated on Class 4 waters include recreation, wildlife, industry, agriculture and scenic value.

In Wyoming, standards for pH are: (a) For all Wyoming surface waters, wastes attributable to or influenced by the activities of man shall not be present in amounts which will cause the pH to be less than 6.5 or greater than 9.0 standard units. (b) For all Class 1, 2 and 3 waters, effluent attributable or influenced by human activities shall not be discharged in amounts which change the pH to levels which result in harmful acute or chronic effects to aquatic life, directly or in

conjunction with other chemical constituents, or which would not fully support existing and designated uses.

Reclamation activities commenced in April 1994 and continued through January 1995. During this period, 4.7 million cubic yards of material movement occurred, including partial backfill of the Buss I Pit. After winter cessation of operations, PRI contractors returned to the site in June 1995 and completed reclamation. The area was topsoiled and seeded by October 1995. Monitoring of the area, including water level recovery and Buss I water quality commenced following reclamation.

On April 3, 1996 BLM WO issued IM 96-97, *Acid Rock Drainage (ARD) Policy for Activities Authorized Under 43 CFR 3802/3809.* In this policy, BLM believes that unmitigated ARD constitutes unnecessary or undue degradation. The policy also states that the release of a reclamation bond does not equate with release of reclamation or other liabilities.

Based on information in CFO files, deterioration of water quality in the Buss I Pit lake was first referenced in correspondence dated July 6, 2004 from WDEQ regarding PRI's Annual Inspection Report review.

Later WDEQ correspondence dated November 2, 2004, declining PRI's request for final bond release says:

> "PRI should evaluate the performance of the Buss pit lake, as well as other small impoundments in the reclaimed area (for example, the Buss III, Cap, and Bengal ponds). This should include evaluation of the underlying causes for the acidification of the Buss pit lake and potential remediation options. It is recognized the Buss I pit was an extension of a prelaw pit and that PRI was not obligated to guarantee the success of the impoundment. However the reclamation plan anticipated that the water quality would be within WDEQ livestock standards." The plan also states "There is no economically feasible alternative for the Buss pit in the event that water quality or quantity do not meet the success criteria." At this point in time it is incumbent on PRI to provide an objective evaluation of both these assumptions."

On June 9, 2009, BLM CFO received a copy of the latest WDEQ Annual Inspection Report. The report mentioned that revegetation has been successful and erosion problems have been fairly minor on the entire area. However the report stated that the pit lake has become acidified (pH 3.8) and is not suitable as a water source for livestock or wildlife. The WDEQ report said that four remaining issues must be addressed prior to final bond release, one of which was to submit a final report on the condition of the Buss Pit Lake, including an evaluation of possible remediation options to address the water quality issues. WDEQ has released the majority of

the Buss reclamation bond and currently has a remaining bond of $126,000, solely to ensure success of revegation and to repair erosion.

On July 7, 2009, BLM CFO received a copy of a report from Cameco, *Evaluation of Water Level and Water Quality at the Reclaimed Buss I Reservoir* prepared by Lidstone and Associates, Inc. The report summarized mining history; reviews of overburden data, adjacent ground water quality, geological, and geophysical data; impacts of regional drought conditions, sulfide oxidation along exposed highwall and benches within the Buss I Pit, and remediation alternatives. The report concludes that the acid pit lake was caused by the unforeseen circumstances of groundwater flowing through previously unrecognized oxidizing sulfides present in the pit bottom and in the exposed pit highwall.

Lidstone's report presents four alternatives for remediating the acid pit lake which included no action, lime treatment, neutralization and bioremediation, and pit backfill. The report states "Because of potential impacts to wildlife and down gradient ground water, PRI does not consider a no action alternative to be a viable option."

Although declining liability for further mitigation, PRI's preferred alternative would be to treat approximately 100 million gallons of acidified water with approximately 750 tons of lime either in place or as a pump and discharge effort. The pit would then be backfilled approximately 20 feet higher than the predicted ground water table with approximately 1.45 million cubic yards of clean backfill material. CFO's rough estimate for the cost of this alternative would be on the order of $4-5 million. This alternative does not address continued acid generation likely from exposed sulfides in the Buss I Pit walls above the backfill.

Data received in the 2009 Lidstone report show that from 1996 to 1999 the pH of the pit lake dropped from 7.4 to 4.5 and has continued to slowly decrease to 3.8 in 2009. Other constituents in the water currently appear to meet livestock water quality. The pit bottom was at approximately 6600' elevation prior to reclamation, the water level in the lake was at 6645' elevation in 2009, and is expected to ultimately recover to 6686' elevation. The lake was approximately 9 acres of surface area in 2009 and would ultimately reach approximately 17 acres when the water table fully recharges.

On May 19, 2010, a meeting was held at CFO with all the interested parties. PRI, WDEQ LQD District II, BLM, and Lidstone Associates were all in agreement that the water quality in the Buss I Pit lake has not achieved the success criteria proposed in PRI's revised reclamation plan.

Cameco and WYDEQ LQD District II however, felt that PRI had met its obligations under its reclamation plan and have requested BLM's concurrence for release of the final bond. Mark Moxley, WDEQ LQD District II Supervisor felt that if BLM concurred on bond release, site

remediation of the acid pit lake could be conducted under the State Abandoned Mine Land (AML) program. The statement on AML eligibility was in error.

On May 24, 2010, CFO had a phone conversation with Bill Locke, WDEQ AML Program Manager in Lander. Mr. Locke said that the Buss I pit would likely not be eligible for State AML funding due to the date of the pit last being mined. Furthermore, if the site was eligible, AML funding would have to approved by the State legislature.

A site visit was scheduled on July 7, 2010 attended by PRI, BLM, WDEQ, and Lidstone representatives. WDEQ's Bill Locke reiterated that the Buss pit site was not eligible for funding under the State AML program.

Conversations with PRI and WDEQ during the site visit, indicated that they were satisfied with current site conditions. WDEQ and Lidstone felt that any work at the site to correct surface water quality would adversely affect the established vegetation and groundwater quality.

An email from WDEQ on July 9, 2010 in response to CFO's questions on PRI's reclamation adequacy says:

> "We are satisfied with PRI's evaluation. We do not believe that there is a reasonable option for remediating the pit lake water quality. The pit lake does not meet WDEQ water quality standards for livestock use. Specifically the pH is low and aluminum is elevated. This information was included in the 7/09 Lidstone Report.
>
> LQD's position on the Buss Pit Lake is summarized as follows:
> 1. The DEQ and BLM approved the PRI reclamation plan in 1994 that specifically did not include any guarantee of suitable water quality in the pit lake.
> 2. PRI completed the reclamation of the Buss Pit area in 1995 in accordance with the approved plan.
> 3. The pit has become acidified and is not a suitable source of water for livestock and/or wildlife use.
> 4. The 400+ ac. of reclamation surrounding the pit lake is acceptable in all respects.
> 5. There are a number of other nearby sources of suitable water for livestock and wildlife.
> 6. The highwall adjacent to the pit lake supports an occupied golden eagle nest.
> 7. The pit lake is self-contained and does not pose any threat to offsite surface water resources.
> 8. Due to it being an evaporative sink with minimal surface inflow, the pit lake does not pose a significant threat to off-site groundwater resources.
> 9. We are ready to approve final bond release pending BLM concurrence.

Of course we all wish that the pit lake was not acid. This is unfortunate, but I think that PRI's reclamation plan clearly acknowledged this potential outcome. The plan was designed to reclaim the affected lands, including some old pre-law disturbance, in a reasonable and financially responsible manner. The plan is not open-ended. It clearly defines PRI's responsibilities. It also represents a contract between DEQ, BLM and PRI. In our view, the terms of the contract have been satisfied by PRI. It is now incumbent on DEQ and BLM to fulfill our responsibility and release the reclamation bond. We are requesting BLM concurrence at this time."

CFO cannot concur with WDEQ's request for release the reclamation bond based on the many reasons stated above. CFO's preferred course of action would be to ask PRI to modify their Plan of Operations under pre-2001 43 CFR 3809.1-7. The unforeseen circumstances causing the Buss I acid pit lake is or may become of such significance that modification of the plan is essential in order to prevent unnecessary or undue degradation. The provisions of the current 3809 regulations would apply to the portion of the operations that are modified as per 43 CFR 3809.433(b). The mine plan modification would address mitigation of the acid pit lake as well as prevention of future acid generation that could affect surface and groundwater. PRI's bond amount would also have to be increased accordingly.

Rec'd fr. BLM Casper 9/14/10

IM96-79

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

WASHINGTON, D.C. 20240

April 2, 1996

In Reply Refer To:

3802, 3809 (320, 360)

EMS TRANSMISSION 4/3/96

Instruction Memorandum No. 96-79

Expires: 9/30/97

To: AFOs

From: Director

Subject: Acid Rock Drainage Policy for Activities Authorized under 43 CFR 3802/3809

PROGRAM AREA: Mining Law Administration, Surface Management

ISSUE: Mines which include sulfide mineralization may have the potential to generate low pH waters. These waters can cause severe environmental problems unless planned for from the initial stages of development. As part of the Bureau of Land Management's (BLM) implementation of the surface management regulations at 43 CFR Subparts 3802 and 3809, the BLM has identified and sometimes requires that particular measures be taken to reduce the potential for mining operations on public lands to generate acid rock drainage (ARD). This policy statement is designed to ensure that such consideration be uniformly applied across lands managed by the BLM. To that end, it discusses how BLM personnel should consider and, in appropriate cases, apply such measures.

BACKGROUND: The Mining Law of 1872, as amended, allows for the mining of locatable or hardrock minerals on public lands open to mineral entry under regulations prescribed by law. The BLM administers such mining activities under the surface management regulations

at 43 CFR Subparts 3802 and 3809. The BLM surface management program began in the

early 1980's, following promulgation of the regulations in 1981. The BLM's surface management activities include processing Notices and Plans of Operations, conducting

National Environmental Policy Act analyses, and inspection and enforcement of locatable mineral exploration and mining activities.

The mid 1980's saw a shift in industry focus from uranium to gold and other precious metals. This modern "gold boom" brought with it a significant increase in the number of exploration

and mining operations on public lands, including gold mining operations which use sodium cyanide solution to leach microscopic gold from low grade ores (i.e., cyanide heap leach

mines). At the same time that the BLM's surface management workload increased as a result

2

of the "gold boom", so too did both internal and external criticism of the BLM's management of locatable mineral activities on the public lands.

The BLM's efforts to strengthen the surface management program began under the previous

two Administrations. In response to a 1986 General Accounting Office (GAO) report,

Interior Should Ensure Against Abuses from Hardrock Mining, a BLM Bonding Task Group

was established to investigate bonding and other surface management issues. Its final report, issued in 1987, determined that while industry compliance generally was good, additional guidance would benefit both industry and the BLM. The report recommended changes to the existing BLM bonding and inspection and enforcement policies, and modifications of portions of the surface management regulations. In 1989, a subsequent report by the BLM Mining

Law Administration Task Force recommended that the BLM strengthen its surface

management program by expanding its bonding and cyanide management requirements and increasing its inspection and enforcement activities. In late 1989, in response to the recommendations of these investigations, the BLM issued its Surface Management Initiative. The Initiative included new inspection frequency requirements for cyanide heap leach and

other mines (Instruction Memorandum (IM) 90-59, Revised Inspection Policy).

The large number of heap leach mines using sodium cyanide raised concerns on the part of

both BLM and the public over potential adverse environmental impacts, including wildlife mortalities and ground and surface water impacts. The unexpected loss of large numbers of migratory birds in leach solutions and tailings ponds served to focus attention on this

problem. In 1990, the BLM developed a policy for managing mining operations which use cyanide (IM-90-566, Cyanide Management Policy). The Cyanide Management Policy

provided guidance to BLM field officials and served to standardize the BLM's management

of cyanide operations on the public lands. The policy received praise from the GAO in its

1991 report Increased Attention Being Given to Cyanide Operations. The BLM also

established a BLM Cyanide Advisory Committee to provide technical guidance and assistance to the BLM field offices in implementing the provisions of the IM. In 1992, the role of the Committee was expanded to include other environmental issues related to modern hardrock mining.

As the shallow oxide ores have been depleted at many major gold operations on the public

lands, mining has continued into the underlying sulfide deposits. In addition, proposals for

new mines involving sulfide ores have been submitted to the BLM. Because of the increased potential for development of acid rock drainage at some mines on public lands, requests for assistance from field office personnel, and the need to ensure consistency throughout the

BLM, the Committee recommended that the BLM develop guidance specifically addressing ARD.

Instruction Memoranda No. 93-493, July 16, 1993, and No. 94-209, June 2, 1994, requested input from BLM field offices on the Draft Acid Rock Drainage Policy for locatable mineral activities. Comments were received from both BLM and non-BLM sources. Many of these responses resulted in modifications to the ARD Policy. As part of BLM's efforts to improve

3

its administration of the surface management regulations, BLM invites further comments on

this policy guidance and other aspects of the surface management program.

One issue raised during the reviews related to the impacts of the ARD Policy on Notice-level exploration activities. The ARD Policy was specifically designed to exclude the majority of exploration activities. However, in some cases, exploration activities, whether conducted pursuant to a Notice or a Plan of Operations, which would result in widespread disturbance or which occur in areas of known potential for ARD development or sensitive resources would

be subject to ARD review.

A representative of a hardrock mining company has raised the question of whether BLM has authority to issue this policy guidance without compliance with the rulemaking provision of

the Administrative Procedure Act (APA), 5 U.S.C. 553. Because this policy guidance is interpretive rather than legislative in nature, and is a fine tuning of BLM's implementation of existing regulations in order to increase consistency and uniformity, no APA rulemaking procedures are required. The BLM's authority to issue this policy guidance is derived from

the requirements of the surface management regulations at 43 CFR Subparts 3802 and 3809, which implement, in part, section 302(b) of the Federal Land Policy and Management Act (FLPMA), 43 U.S.C. 1732(b). Section 302(b) directs the Secretary of the Interior to take

any action, by regulation or otherwise, to prevent unnecessary or undue degradation of the public lands.

The regulations at 43 CFR 3809.1-3(d) define the standards for operations and reclamation which apply to mining activities carried out under Notices, as well as those covered by Plans of Operations (43 CFR 3809.1-5(c)(5)). Operators are required to dispose of "all tailings, dumps, deleterious materials or substances, and other waste produced by the operations...so as to prevent unnecessary or undue degradation", to reclaim disturbed areas "[a]t the earliest feasible time...by taking reasonable measures to prevent or control on-site and off-site damage of the Federal lands", and to notify the authorized officer "when reclamation of the disturbed area has been completed...so that an inspection of the area can be made" (43 CFR 3809.1-3(d)(2), (d)(3), and (d)(5)). Reclamation is defined to include, among other things,

"[m]easures to control erosion...and water runoff", and "[m]easures to isolate, remove, or control toxic materials" (43 CFR 3809.1-3(d)(4)(ii) and (iii)). The collection and submission of waste characterization and mitigation information by the operator or applicant in

accordance with BLM's regulations and the ARD Policy are necessary in order for the BLM

to evaluate the adequacy of the operator's proposed operations and reclamation measures in

light of these regulatory standards, and to determine the amount of any bonding required by BLM pursuant to 43 CFR 3809.1-9, which directs BLM to consider the cost of reclamation in setting the bond amount. Although the regulations in 43 CFR Subpart 3802 are stated in

more generic terms, they too authorize BLM to include appropriate environmental protection

and reclamation measures in an approved plan of operations in order to prevent undue or unnecessary degradation and to prevent impairment of the suitability of lands under review

for inclusion in the Wilderness System, and contain similar bonding requirements (43 CFR 3802.1, 3802.2 and 3802.3-1(b)). Acid rock drainage is exactly the type of impacting agent

4

these requirements were designed to address. Failure to take the steps needed to prevent or control ARD during operations and at reclamation would constitute unnecessary and undue degradation.

The ARD Policy is analogous to BLM's Cyanide Management Policy which has been in place for several years and was developed to prevent unnecessary or undue degradation at gold

mines using cyanide or other leach solutions. The guidance and practices set forth in the

ARD policy have been used by some BLM offices for several years in the evaluation and monitoring of mining proposals and operations in implementing the surface management regulations. The intent of the ARD Policy is to ensure that the 43 CFR Subparts 3802 and

3809 regulations are implemented in a uniform and consistent manner across the public lands managed by BLM.

Many of the waste characterization tests identified in the ARD Policy have come to be

accepted practices by industry leaders and are routinely used throughout the western United States and foreign countries in order to assure proper material handling for environmental protection. For example, operators of large mines on the public lands in Montana are required by the Montana Department of Environmental Quality and the BLM to conduct waste characterization sufficient to identify potentially acid-generating materials, construct

appropriate waste disposal facilities, and monitor facilities to ensure that the proposed

measures are effective in preventing unnecessary or undue degradation. It is the BLM's

intent to ensure that such reasonable measures to carry out existing regulations are employed uniformly on all public lands managed by the BLM.

Some respondents questioned why the release of the bond does not equate with the release of liability. This is not a change from the existing situation. The reclamation bond is an enforcement tool to assure compliance with the approved reclamation plan. It is not intended to represent the limits of liability. The operator remains responsible for carrying out all reclamation requirements until reclamation has been completed, regardless of any such release (43 CFR 3802.3-2(h), 3809.0-6, and 3809.1-1). Some comments also raised the issue of

double bonding by both the states and the BLM. A statement has been added to the ARD

Policy to clarify that the BLM will not require double bonding of operations with a potential

for ARD; however, in the event that a state reclamation bond does not cover the full cost of reclamation at an operation with the potential for ARD, BLM will require an additional bond for the uncovered amount.

Another issue that was raised implied that ARD should only be addressed under the Clean

Water Act (CWA) authority and analogous state programs and that the BLM's policy

guidance would be unnecessarily duplicative. The CWA covers point source discharges to the navigable waters of the United States. ARD may exist as a point source discharge and be subject to CWA permitting. However, ARD can and, in fact, commonly does occur through contact between water and minerals in the subsurface other than through point sources as

5

defined in the CWA. For example, the reaction of acidic materials in waste dumps or tailings with infiltrating water may hamper revegetation measures, making it important to prevent or minimize the generation of acidity within such materials. The BLM will be better able to accomplish this goal with the information provided by the operator or applicant pursuant to

the ARD Policy. For example, the BLM may determine that a mining plan would result in unnecessary removal or inappropriate disposal of acidic materials which could lead to more

ARD than if a different plan were followed. The CWA permitting program is essential to addressing the discharge of ARD, but it is equally important to limit the initial acid

generation and migration. This will be done under the terms of the ARD Policy, and could

not be accomplished solely through the CWA permitting program.

Pursuant to 43 CFR 3809.3-1(c), the Interagency Coordination section in the ARD Policy addresses agreements with appropriate state agencies to incorporate equivalent state standards and requirements and minimize duplication. The BLM is not by its adoption or

implementation of the ARD Policy superseding or replacing any equivalent state measures or authorities (43 CFR 3809.3-1(a)). BLM and the states will continue to coordinate their regulatory responsibilities and joint permitting functions under Memoranda of Understanding

and other agreements.

Additional comments are welcome from both BLM and non-BLM sources on the contents of this ARD Policy.

POLICY: Effective immediately, it is the responsibility of the authorized officer to ensure

that operations conducted under the 43 CFR Subparts 3802 and 3809 Surface Management Regulations are consistent with Attachment 1, Bureau of Land Management Acid Rock

Drainage Policy.

TIMEFRAMES: The attached ARD Policy is effective upon receipt of this IM. All new operations are subject to this policy. Existing operations should be reviewed to assure compliance with the ARD Policy. In the event that operations are not in compliance with the ARD Policy, it may be appropriate to require a modification to the operating and reclamation plans in accordance with the provisions of 43 CFR Subpart 3802 or 3809.

BUDGET IMPLICATIONS: This policy becomes part of the BLM Surface Management Initiatives. It may represent an increase in effort by the BLM in some field offices and

should be planned for through the budget process.

MANUAL/HANDBOOK SECTION: Affects Manual and Handbook Sections 3809 and 3042. Future revisions to the BLM Solid Minerals Reclamation Handbook H-3042-1 will

incorporate additional detailed information and references.

6

COORDINATION: Usual contacts.

CONTACT PERSONS: W. Hord Tipton, Assistant Director, Resource Use and Protection, (202) 208-4201; Jinx Fox, Rehabilitation, Restoration & Reclamation Team, (202) 452-0354; Dave Williams, Butte District Office, (406) 494-5059, or Scott Haight, Lewistown District Office (406) 538-7461.

Signed

Authenticated

W. Hord Tipton
Assistant Director
Resource Use and Protection

Robert M. Williams
Directives Team,WO530

1 Attachment

1 - Bureau of Land Management Acid Rock Drainage Policy (6 pp.)

BUREAU OF LAND MANAGEMENT

ACID ROCK DRAINAGE POLICY

Acid rock drainage (ARD) has historically been the most significant environmental problem associated with the mining of ores which contain sulfide minerals. ARD is caused by the oxidation of sulfide minerals, producing acid and heat. The low pH effluent associated with this reaction can liberate metals and result in a variety of associated environmental problems including severe reductions in surface and ground water quality, loss of fishery habitats in receiving streams, failure of revegetation efforts on toxic materials, and die-off of existing vegetation. Because of the potential severity of these environmental impacts, the Bureau of Land Management (BLM) believes that unmitigated ARD constitutes unnecessary or undue degradation.

The following procedures will guide the BLM in managing existing and proposed mining and milling operations which may have the potential to generate ARD on public lands. The BLM State Offices may supplement this policy with additional detailed guidance.

1. Waste Characterization and Management. Mine waste, overburden, ore, and wall rock characterization must be conducted by the operator or applicant, with the data collected used to determine proper handling, disposal, and reclamation measures. This characterization must be based on the physical and geochemical properties of the mine material and the site-specific environmental conditions. The BLM's processing of all Notices and Plans of Operations covering mining operations must include a review for appropriate material characterization. Materials identified as potentially acid-forming will require development of control, treatment, monitoring, and reclamation measures to mitigate the impacts of ARD so as to prevent unnecessary or undue degradation of the public lands. ARD review is not necessary for exploration activities, unless such activities would result in widespread disturbance or occur in areas of known potential for ARD development or near sensitive resources.

The following procedures will be used to review such Notices and Plans of Operations:

a. Review for ARD potential is required by the BLM offices when processing Notices or Plans of Operations covering mining operations or the above-mentioned exploration activities. Assertions by the operator which are not supported by technical data or, in selected cases (e.g., certain placer deposits), regional data which indicate that materials are not acid-generating are not adequate to satisfy this review requirement, nor are assertions that the annual precipitation is too low for ARD development. ARD can occur in low precipitation regions. ARD prediction must be fully integrated with operational procedures, facility design, and environmental monitoring programs throughout the project life. It may be necessary

and advantageous to begin initial waste and ore ARD characterization for anticipated mining projects during the advanced exploration/development stage.

Attachment 1-1

b. Preliminary waste characterization by the operator or applicant involves the evaluation of waste rock units at the site. The general geologic relationships, waste rock lithology, mineralogy and alteration, sulfide morphology and distribution, distribution of rock units with the potential to neutralize acid production (e.g., carbonates), baseline hydrology, and physical waste rock and process material properties are all examples of information which is valuable at this stage for predicting potential development of ARD.

Advanced waste characterization by the operator or applicant is necessary when the site characterization work has identified a potential ARD problem. Such an advanced waste characterization program may include a comprehensive program of static and/or kinetic testing:

i. Static predictive testing for acid producing potential

Static tests are a fairly quick and inexpensive preliminary determination of the potential for acid production. Typically, samples can be run in less than a week with costs from $20 to $150 per sample. All Notices or Plans of Operations covering mining activities in areas of known or suspected ARD potential should be evaluated by means of static testing.

Static tests attempt to predict acid producing potential based on the acid generating and acid neutralizing minerals present in the sample. Acid generating values are generally expressed as Acidification Potential (AP) and acid neutralizing values are expressed as Neutralization Potential (NP). The Net Neutralization Potential (NNP) equals the NP minus the AP. Hence, a negative NNP number demonstrates that acid producing potential exceeds acid neutralizing potential. It is important to note that static tests make assumptions about acid generation and neutralization which may not be realistic in the weathering environment. It is generally agreed that where the NP values are three times larger than the AP values, and the NNP is greater than +20, the sample will not be acid generating. Where this is not the case, there is uncertainty which may require further evaluation by kinetic testing. Static prediction procedures should normally include analyses for paste pH, total sulfur, sulfide sulfur, and/or pyritic sulfur in determining the AP.

ii. Kinetic predictive testing

Kinetic tests are used as an attempt to duplicate in a laboratory how the waste will behave in the weathering environment. Kinetic tests are considerably more time consuming and expensive than static tests. Where static test results are uncertain, it is important to conduct kinetic tests in order to develop effective waste handling and reclamation procedures. Some typical kinetic tests include: humidity cells, column leach tests, field test piles, and test plots. Time to complete a kinetic test can range from several days to several months. Costs are highly variable and may range from $1,500 to $4,000 per sample for long-term kinetic tests.

Attachment 1-2

iii. Other predictive models

There are an increasing number of relatively sophisticated predictive models which rely on geochemical

and geostatistical analysis of ore and waste materials to develop contaminant mass transport models on a site-specific basis. These models can often help define the expected impacts of mine development prior to the preparation of National Environmental Policy Act (NEPA) documentation and can also help form the basis for site-specific monitoring programs. These predictive technologies are generally used to supplement earlier static or kinetic characterization results.

c. Waste management or handling plans

If the initial waste characterization by the operator or applicant confirms the potential for ARD, the Notice or Plan of Operations must include mitigation measures to prevent or control ARD. If the authorized officer does not agree that the mitigation measures will prevent or control ARD, the authorized officer should request a modification of the Notice or Plan of Operations to include appropriate measures.

Virtually all ARD control technologies involve prevention or control of the oxidation of sulfide minerals. If this is not possible, then the focus typically shifts to controlling the migration of any potential ARD and, as a last resort, treatment until applicable standards have been met. Treatment of ARD effluent is often a long-term commitment and should be considered the option of last resort. Oxidation of sulfides present in the waste can be reduced or eliminated by one or a combination of the following source control methods:

i. The exclusion of oxygen through the use of reclamation covers, seals, or permanent subaqueous deposition.

ii. The exclusion of water through the use of reclamation covers, seals, underdrains, and the diversion of run-on surface water away from the waste material.

iii. The use of bactericides to inhibit bacteria which tend to catalyze the oxidation reaction. The use of bactericides is generally temporary in nature and must be used in conjunction with other ARD abatement measures.

iv. The selective handling of the ARD generating component of the mine wastes through isolation or removal. This results in a concentration of sulfide minerals which then require consideration on their own.

v. The use of base additives to neutralize acid generating materials.

If the oxidation of sulfides can not be completely prevented, which is often the case, potential migration of ARD, whether on or off the site, must be controlled or prevented. Methods

Attachment 1-3

which may accomplish this typically include variations of the methods noted above

and are highly site specific.

2. Reclamation. Proposed reclamation measures must assure successful final reclamation and be adequate to prevent unnecessary or undue degradation that may result from ARD. Concurrent reclamation or mitigation which minimizes the exposure of acid generating waste to the weathering processes is desirable for facilities with the potential to develop ARD. Such measures include selective

materials handling and bottom-up waste rock repository construction.

The BLM encourages applied research by the operator or applicant on ARD identification, control, and reclamation issues at individual mine sites. This includes the use of test plots to field test reclamation measures prior to closure, the development of predictive methods and modeling, new technologies for prevention of ARD reactions and ARD migration, and both passive and active treatment technologies.

In some cases, it is necessary to collect and treat ARD effluent. However, operations proposing long-term treatment and release of ARD should be evaluated closely by the BLM for alternate measures. Long-term or perpetual treatment proposals are generally the least desirable reclamation or remediation alternatives. Operations with reclamation measures which rely solely on active water treatment of ARD discharges without attempting source control may not meet the BLM's mandates for multiple use, successful reclamation, or prevention of unnecessary or undue degradation.

While the industry itself has a strong incentive to limit long-term treatment, long-term water treatment may be an option on a case-by-case basis. Examples of situations where treatment may be a viable option include where it is necessary to encourage or authorize remining of unreclaimed acidic materials with existing ARD and as an interim measure while better technical solutions are developed. Again, alternative options, including initial prevention through source control, must be thoroughly investigated prior to consideration of long-term treatment proposals.

3. NEPA Process. BLM field offices shall use the NEPA process to evaluate all potential environmental impacts of a proposed plan-level operation and develop stipulations which will prevent unnecessary or undue degradation. This analysis should include an evaluation of the ARD potential, the imposition of appropriate monitoring and mitigation measures, and the disclosure of anticipated residual impacts.

Attachment 1-4

4. Bonding and Financial Guarantees.

a. Portions of mine facilities on the public lands that are subject to the BLM bonding requirements and that contain acid-generating materials are to be bonded for 100% of the cost to implement the approved reclamation measures. The bond should be periodically

reviewed for adequacy of coverage throughout the mine life (e.g., every 2 to 5 years). This

coverage includes construction and maintenance costs for any treatment facilities necessary to meet state and federal water quality standards.

b. To ensure that adequate funds are available for operations involving long-term treatment, the authorized officer should determine whether it may be appropriate to establish trust funds or alternative funding measures.

c. The BLM will not require an additional bond where the state holds a reclamation bond which is determined by the BLM to cover 100% of the cost to implement the approved reclamation measures and where such bond is available to the Secretary. In the event that a state bond does not cover 100% of the cost to implement the approved reclamation measures, BLM will require an additional bond for the uncovered amount.

d. The release of a reclamation bond does not equate with release of reclamation or other liabilities.

5. Inspections. Operations with the potential for the development of ARD will be inspected by BLM surface management personnel at least quarterly (i.e., no fewer than 4 times a year). The inspections should be related to specific objectives that should not be left solely to the operator, such as monitoring the effectiveness of compliance measures. Where the potential for the development of ARD or the risk to resource values is high, inspections should be scheduled when any potential ARD problems are most likely to be readily apparent (e.g., during initial spring snowmelt and immediately after major precipitation events).

6. Training. The review and inspection of operations should only be performed by qualified personnel with training or expertise in inspection and enforcement, safety, and mining and milling practices. Training should include ARD evaluation, monitoring, and mitigation. Such training may be obtained through BLM courses, workshops, and conferences and/or non-BLM sources.

7. Operator Monitoring Plans. Monitoring plans for ground and surface waters, from pre-disturbance baseline conditions through closure and final reclamation, are to be required for all mine facilities with the potential to produce ARD. Water quality monitoring and material sampling are essential elements of a compliance program designed to prevent

unnecessary or undue degradation of public lands and resources and can help provide early indications of ARD development. If not included as part of the description of activities for a Plan of Operations or Notice, these can be required of the operator or applicant as a condition of approval for a Plan of Operations or a condition of acceptance of a complete Notice.

Monitoring plans will be highly site specific, but should include details on the parameters to

be analyzed, monitoring locations, monitoring frequency, and contingency plans. Baseline or pre-disturbance water quality should be documented in order to identify ARD resulting from previous mining activities, as well as any natural waters in unmined areas which have the

chemical characteristics of ARD. Monitoring plans will be reviewed for adequacy during the Notice or Plan of Operations review. Results from operational monitoring must be reported to the BLM authorized officer and/or appropriate state agency. The BLM will coordinate with States to ensure that adequate long-term monitoring of ground and surface waters is performed for those mine units or facilities generating, or with the potential to generate, ARD and to ensure that duplicative requirements are not being imposed. Geotechnical monitoring may also be required for structural stability of various mine facilities.

8. Quality Assurance. Engineering designs, maps, and cross-sections of the proposed facilities and waste disposal units must be submitted for Plans of Operations and may be required for Notice-level operations in order to adequately describe or identify the type of the operations proposed and how they will be conducted. In the absence of any similar State requirement, the authorized officer may require the operator to provide independent verification by a registered, professional engineer that the facilities are constructed according to the approved design plan.

9. Interagency Coordination. Surface management of mining operations on the public lands which have the potential to generate ARD is the responsibility of BLM and the states. The BLM has developed operating agreements with most of the states in which public lands are managed by the BLM. The BLM will continue to coordinate with state and other federal agencies to avoid duplication and increase the

effectiveness of Notice and Plan of Operations review, approval, and inspection and enforcement activities. The BLM state offices shall review existing operating agreements or Memoranda of Understanding to assure that this policy is reflected in those agreements to the extent not inconsistent with state requirements.

Attachment 1-6

email from
T Foertsch
2/7/11

Buss Pit POO Modification

Some BLM concerns from your presentation on Jan 26, 2011 that should be addressed in your modified Plan of Operations.

Alternative 1:

A single treatment to neutralize the acid pit lake water without backfilling would not be acceptable to BLM for bond release due to the likelihood of future treatments required to maintain acceptable surface water quality.

Alternative 2:

Backfilling would be acceptable for bond release if approved by BLM and WDEQ.

Water treatment:

Would the pit lake water be treated with lime prior to pumping, during backfilling or both?

Dewatering of the Buss 1 pit into another pit:

How much water would be pumped from the Buss 1 pit? What is the location, land status, holding and infiltration capacity of other pit compared to the volume pumped from Buss 1? If pumping concurrently while backfilling Buss 1 what are chances of other pit sealing off from suspended sediment, preventing adequate dewatering of Buss 1? A plan to completely dewater Buss 1 pit prior to backfilling should be considered as an alternative.

Backfill material:

Backfill material would be removed from an area west of the Buss 1 pit to a depth of 6820 elev. Cross section A-A' shows pyritic material with low carbonate content occurring above this elevation. What would be the quality of the backfill and any amendments placed in the pit with respect to acid/base accounting? Describe the testing and quality control program that would insure meeting the criteria. Are there any alternative sources of backfill available?

Groundwater:

Previous data anticipates water will rebound to 6685 elev. PRI's proposes to backfill to the 6675 elev. Is the elevation difference based on reevaluation of prior water level data or dependent on water evaporation from wetland? Is there any groundwater information that post-dates the 2009 Lidstone report? What amount of subsidence would be expected in the backfill? What would be depth of water in the wetland? What is confidence level that water level will not ultimately rebound to 6685 and how would it be mitigated if it did?

Wetland water quality:

What would be the primary source of the wetland water, ground water or surface water runoff? Most wetlands used to mitigate metals are in an open system with an inflow and outflow. This proposal is for a closed evaporative system. How would sulfides exposed in the pit walls affect wetland water quality? What would be the chemistry of wetland water in such an evaporative system? Is there any literature with case history supporting the benefits of wetland created by partial backfill? How is radon addressed in the backfill proposal?

Groundwater:

The proposal will likely temporarily affect groundwater quality in the vicinity of the backfilled pit. WYDEQ indicated that they would accept these groundwater affects. What would these affects be? The operator should include such as an indicator of reclamation success and what further remediation they would institute if WDEQ-WQD does not buy-off on groundwater quality. How will these affects to groundwater affect baseline data to be gathered for the proposed Mine Unit 4 adjacent to Buss 1 pit. Are the aquifers connected or separate? To what criteria would Mine Unit 4 groundwater be restored to after ISL mining? Would the Buss 1 pit area be included in the aquifer exemption?

Soils & Vegetation:

What are the plans for topsoil & revegetation of the pit bottom and borrow areas? What would be the chemistry of the pit bottom soils over time in an evaporative environment?

NEPA:

The POO modification and alternatives would need an Environmental Assessment analysis. A CX is applicable only in cases of approvals of minor modifications to or minor variances from activities described in an approved exploration plan.

Cameco needs to include all salient information under 3809.401. The review and approval of a modification is the same as if it were a newly filed plan under the post-1/20/2001 3809 regs, so they need to disclose how the modification of the reclamation plan is helping to avoid the creation of unnecessary or undue degradation (meets the applicable performance standards at 3809.420).

Disclose what is known or not known about the pre-existing ground and surface water quality (baseline) and what is known or not known about what changes to ground and surface water quality have resulted due to past uranium mining.

For the EA, it's recommend releasing it for a 30 day public review period along with a draft FONSI, so the disclosure to the public of the reclamation plan modification for 30 day per 3809.411(c) would be fulfilled.

Release of liability vs. release of bond:

43 CFR 3809.592 says - Does release of my financial guarantee relieve me of all responsibility for my project area?

(a) Release of your financial guarantee under this subpart does not release you (the mining claimant or operator) from responsibility for reclamation of your operations should reclamation fail to meet the standards of this subpart.

(b) Any release of your financial guarantee under this subpart does not release or waive any claim BLM or other persons may have against any person under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., or under any other applicable statutes or regulations.

TRF 2-3-11

Appendix C

Calculations Supporting Lime Requirement

FROM: Jim Clay

January 24, 2011

TO: Tom Young

CC: Larry Reimann, Jean Lawlor

SUBJECT: Quantity of limestone needed to neutralize acidity in waters of Buss pit

Recent analytical data proved by Energy Labs, Inc. reveals that water taken from the Buss pit has a pH of 3.84 and a total acidity of 128 mg/L (expressed as $CaCO_3$). The procedure used to determine the total acidity involves titrating the sample to an endpoint pH of 8.3. From the volume and molarity of the solution used to titrate the sample, the equivalent amount of $CaCO_3$ needed to raise the pH of a liter of sample to the end point (8.3) can be calculated. That amount is the total acidity, and the calculation is done as follows:

(1 gallon) X (3.785 liters/gallon) X (128 mg $CaCO_3$/liter)X (1 gm/1000 mg) X (1 pound $CaCO_3$/453.6 gm $CaCO_3$) X 1000000 gallons of pit water = 1068 pounds of $CaCO_3$ per million gallons of pit water.

The weight percent calcium carbonate in limestone varies widely by source. Coal-fired power plants often use limestone for the removal of SO_2 from stack effluents, and the limestone for such an application is typically specified as having 90% or more $CaCO_3$. So the mass of limestone required is going to be little more than the equivalent amount of $CaCO_3$.

Appendix D

Historical Drilling Data

1993
* Drill Holes that intersect overburden borrow area.

TABLE III.2.1 - BUSS DRILL DATA SHORT LIST

DH	#	FROM	TO	%LIME	pH	AS	FE	MO*	SE*	eRA226
DH	1	0	255							2.48
DH	2	5	15	1.19	7.67	0.252	40.5	0.20*	0.220	9.6
DH	2	15	50	2.07	7.82	0.298	40.4	0.20*	0.144	4.0
DH	3	0	25	1.65	7.86	0.308	50.5	0.24	0.214	5.0
DH	3	25	50	1.14	7.86	0.396	92.2	0.20*	0.128	
DH	4	0	10	0.5	7.04	0.156	149.7	0.20*	0.442	13.1
DH	4	10	50	0.99	7.84	0.402	52.6	0.20*	0.198	4.2
DH	5	0	20	0.85	8.11	0.876	56.5	0.20*	0.034	2.9
DH	5	20	45	1.16	8.01	0.192	11.1	0.20*	0.020	3.1
DH	6	0	20	0.73	8.07	0.214	20.2	0.20*	0.020	2.9
DH	6	20	40	1.92	7.96	0.192	16.4	0.20*	0.078	3.2
DH	7	0	20	1.22	8.10	0.192	25.4	0.20*	0.006	2.4
DH	7	20	50	1.18	7.95	0.180	14.5	0.20*	0.008	2.1
DH	8	0	20	1.61	8.03	0.464	45.1	0.20*	0.946	9.5
DH	8	20	45	0.65	8.12	0.308	18.5	0.20*	0.118	4.8
DH	9	0	10	0.01	2.82	0.314	456.0	0.20*	0.302	16.2
DH	9	10	30	0.86	7.74	0.344	43.0	0.20*	0.668	6.0
DH	9	30	60	0.86	8.00	0.292	19.1	0.20*	0.056	2.9
DH	10	0	15	0.14	5.34	0.586	205.0	0.20*	0.252	11.7
DH	10	15	40	0.95	7.78	0.370	16.9	0.20*	0.140	3.4
DH	10	40	60	0.43	8.04	0.242	23.9	0.20*	0.016	2.4
DH	11	0	15	0.11	4.91	0.752	392.0	0.20*	0.436	14.4
DH	11	15	50	0.81	7.60	0.426	24.5	0.20*	0.120	3.5
DH	12	0	15	1.46	8.05	0.294	35.4	0.20*	0.558	16.8
DH	12	15	30	1.23	7.82	0.214	31.9	0.20*	0.238	5.4
DH	12	30	40	0.69	7.89	0.394	20.7	0.20*	0.556	8.9
DH	13	0	15	0.85	7.82	0.270	20.3	0.20*	0.084	3.2
DH	13	15	40	0.37	7.96	0.138	11.2	0.20*	0.036	2.8
DH	14	0	10	1.18	8.02	0.162	9.8	0.20*	0.002*	2.8
DH	14	10	20	1.35	7.80	0.134	16.3	0.20*	0.002*	3.3
DH	14	20	55	0.03	5.69	0.202	23.6	0.20*	0.002*	2.6
DH	15	0	25	0.56	7.80	0.220	16.0	0.20*	0.002*	3.0
DH	15	25	65	0.44	7.77	0.418	12.7	0.20*	0.180	3.2
DH	16	0	55	0.54	7.83	0.218	15.5	0.20*	0.002	3.1
DH	16	55	75	0.72	7.69	0.486	25.6	0.20*	0.060	4.1
DH	17	0	25	0.15	5.50	0.122	55.3	0.20*	0.108	3.5
DH	17	25	65	0.91	7.57	0.532	25.9	0.20*	0.224	5.2
DH	17	65	82	0.61	7.87	0.510	31.6	0.20*	0.390	3.0
DH	18	0	55	0.26	7.60	0.462	46.8	0.20*	0.088	3.4
DH	19	0	35	1.26	7.88	0.158			0.012	3.0
DH	20	0	20	1.8	7.49	0.048	12.1	0.20*	0.002*	2.1
DH	21	0	35	2.01	7.73	0.096	18.5	0.20*	0.002	2.7
DH	21	35	65	0.76	7.90	0.064	19.4	0.20*	0.026	3.7
DH	21	65	80	0.01	5.42	0.140	9.0	0.20*	0.002*	1.1
AVERAGE				0.89	7.44	0.30	52.83	0.01	0.17	4.97
WDEQ STANDARD					6-8	2.000		1	0.1	20.0
DETECTION LIMIT								0.20*	0.002*	

TABLE III.2.2 - BUSS DRILL DATA LONG LIST

	DH	#	FRO	TO	CA	MG	NA	SAR	COND	AL	B	CU	PB	MN
*	DH	2	5	15	31.1	34.90	0.43	0.07	4.14	0.20*	0.20*	0.84	2.52	43.40
*	DH	2	15	50	29.1	9.67	1.70	0.39	2.95	0.31	0.20*	1.04	2.92	4.44
	DH	8	0	25	28.1	7.75	0.87	0.21	2.63	0.20*	2.20	1.04	2.92	6.82
	DH	11	0	15	24.3	10.10	0.61	0.15	2.99	1.02	0.20*	2.14	0.10	30.30
	DH	13	0	15	24.1	6.17	4.26	1.10	2.86	0.64	0.20*	1.24	3.18	5.80
	DH	16	0	55	9.0	1.92	2.91	1.25	1.40	0.20*	0.20*	2.10	2.80	1.04
	DH	19	0	35	5.8	1.83	1.22	0.62	0.94	0.20*				
	AVG				21.64	10.33	1.71	0.54	2.56	0.28	0.31	1.20	2.06	13.11

WDEQ STANDARD											5		10	
BELOW DETECTION LIMIT										0.20*	0.20*			

* Overburden drill holes that intersect overburden borrow site

TABLE III.2.3 - MINE SPOIL SUMMARY

LOCATION	HOLES	%LIME	pH	AS	FE	MO	SE	eRA226	DESTINATION
BUSS A - UPPER	2,4	0.85	7.36	0.20	95.1	0.00	0.331	11.35	DISPOSAL BUSS A PIT
BUSS A - LOWER	2,3,4	1.46	7.85	0.35	58.9	0.06	0.171	3.28	BUSS I BACKFILL
BUSS - UPPER	9,10,11,12	0.43	5.28	0.49	272.1	0.00	0.387	14.78	DISPOSAL CAP/BUSS
BUSS - LOWER	8,9,10,11,12	0.90	7.89	0.34	27.1	0.00	0.318	5.19	REMAIN IN PLACE
BUSS - LOWER	5,6,7	1.07	7.89	0.30	43.3	0.00	0.101	4.23	BUSS I BACKFILL
SOUTH CAP	13	0.61	7.89	0.20	15.8	0.00	0.060	2.99	BUSS III
CAP H. W.	14	0.85	7.17	0.17	16.6	0.00	0.000	2.89	CAP PIT BACKFILL
CAP SPOIL	15,16,17	0.56	7.43	0.36	26.1	0.00	0.138	3.58	CAP BACKFILL/SLOPE
BUSS H. W.	1,18,20,21	0.81	6.02	0.14	17.6	0.00	0.019	2.56	BUSS I BACKFILL
N. TOPSOIL	19	1.26	7.88	0.16			0.012	2.97	TOPSOIL PLACEMENT
W. TOPSOIL		1.31	7.12				0.002	4.00	TOPSOIL PLACEMENT

overburden drill holes that intersect overburden borrow site

Appendix E

Seed Mix

TABLE RP 3-1

PERMANENT SEED MIXTURE

COMMON NAME	SCIENTIFIC NAME	VARIETY	LBS. PLS
*Western Wheatgrass	Agropyron smithii	Rosana	3.00
*Thickspike Wheatgrass	Agropyron dasystacum	Critana	3.00
*Slender Wheatgrass	Agropyron trachycaulum	Pryor	3.00
Ricegrass	Oryzopsis hymenoides	Nespar	2.00
Green Needlegrass	Stipa viridula	Lodorm	2.00
**Sheep Fescue	Festuca ovina		2.00
Gardner Saltbush	Atriplex gardneri		0.75
Cicer Milkvetch	Astragalus cicer	Lutana	0.50
Shadscale Saltbush	Atriplex confertifolia		0.50
Big Sage	Artemisia tridentate		0.50
***Antelope Bitterbrush	Purshia tridentate		0.50
TOTAL LBS. PLS/ACRE			17.75

* Streambank Wheatgrass (Elymus lanceolatus) or Bluebunch Wheatgrass (Agropyron spicatum) may be added to or substituted for any of the listed wheatgrass species as long as the total wheatgrass mix does not exceed 10 lbs. PLS per acre.

** Idaho Fescue (Festuca idahoensis) may be substituted for Sheep Fescue at 2 lbs. PLS per acre.

*** Winterfat (Krascheninnikovia lanata) may be substituted for Antelope Bitterbrush at 0.5 lbs. PLS per acre.

The stated seeding reates are for Pure Live Seed (PLS). Percent PLS is the total of multiplying germination plus dormant or hard seeds by the percent purity.

If any of the above seed or approved substitutes become unavailable or cost prohibitive, reasonable substitutions may be made with prior approval of LQD and BLM.

If more locally adapted varieties of certified seed become available, they may be substituted with prior approval of LQD and BLM

Appendix F

Response to BLM (Tom Foertsch) Questions

Buss Pit POO Modification

Some BLM concerns from your presentation on Jan 26, 2011 that should be addressed in your modified Plan of Operations.

Question: Alternative 1:

A single treatment to neutralize the acid pit lake water without backfilling would not be acceptable to BLM for bond release due to the likelihood of future treatments required to maintain acceptable surface water quality.

Response:

Cameco acknowledges BLM's concerns and recognizes from correspondence that execution of any CR alternative has certain risks and that no alternative will guarantee protection of both the surface and ground water regime. CR presented three alternatives over the course of several meetings: (1) Risk Assessment; (2) In situ treatment with lime; (3) and Backfill. In an effort to conclude this long term liability (18 years since CR's acquisition of the TVA liability), CR presented a backfill alternative at the January 26, 2011 meeting with an understanding that the intent of this commitment was to eliminate the long term liability of the Buss site. It appeared based on subsequent correspondence that BLM was not willing to accept the inevitable risk associated with backfill and that the risk would remain with CR (CR letter to BLM on February 24, 2011 and BLM response on March 15, 2011).

Understanding that mitigation of the acid conditions is the primary BLM concern, CR has prepared a two step plan- which includes (1) a one-time treatment (base additive) to neutralize both acid generating materials and the acid pit lake itself. This neutralization plan incorporates the use of excess lime as an additive and commits to a long term monitoring plan to address "success". Further CR has quantified the definition of "success" and by maintaining a long term cone of depression has prevented the migration of waters offsite. This technology is acknowledged in BLM "Acid Rock Memo: IM96-79)" as a waste management or handling plan. (2) an Alternative Plan to complete backfill of the site should the one time treatment of the waters fail. The implementation of the Alternative Plan will also include a second water treatment.

Question: Alternative 2:

Backfilling would be acceptable for bond release if approved by BLM and WDEQ.

Response:

Acknowledged.

Question: Water treatment:

Would the pit lake water be treated with lime prior to pumping, during backfilling or both?

Response:

CR will treat the water with lime during pumping operations. This will allow mixing of the water with the lime before it returns to the Pit. The initial phase effort includes mixing of the lime at either the Buss A stockpond or the Buss 3 Pit. The second phase pump and treat effort (if required) will out of necessity require that the pumped water be delivered to the Buss 3 Pit. In either case, the treated water will return naturally to the backfilled pit. This latter (Buss 3) pumping pattern is exactly how the 1994-1995 plan worked and as discussed in the meeting, the water will return to the Buss 1 pit over a period of 1 to 5 years. If it doesn't return, the backfilled

pit will be recharged by upgradient ground water and the Buss 3 pit will remain a surface body of water until the water either evaporates or seeps away.

Question: Dewatering of the Buss 1 pit into another pit:

How much water would be pumped from the Buss 1 pit? What is the location, land status, holding and infiltration capacity of other pit compared to the volume pumped from Buss 1? If pumping concurrently while backfilling Buss 1 what are chances of other pit sealing off from suspended sediment, preventing adequate dewatering of Buss 1? A plan to completely dewater Buss 1 pit prior to backfilling should be considered as an alternative.

Response:

Under the primary plan modification, CR anticipates pump and treat of 50-75 million gallons. Under the alternate plan, CR anticipates pump and treat of 34 million gallons. The Buss A stockpond will not be used as a holding pond, but only as a vessel to mix lime with the water of the pit. The water will overflow the spillway and will flow down the designed drainage, over several rock structures and return to the pit. The Buss 3 Pit is a far larger pit and is designed to contain the ½ PMP from a large watershed above the Pit. It has more than adequate capacity to contain all of the water from the Buss 1 Pit and did so during the original 1994-1995 pumping operation. CR considered and has acknowledged complete dewatering and treatment under the primary plan modification. Under the backfill option, geochemical processes (including dilution, advection, dispersion and coprecipitation) associated with the backfill will assist in ameliorization of the acid conditions of the groundwater.

Question: Backfill material:

Backfill material would be removed from an area west of the Buss 1 pit to a depth of 6820 elev. Cross section A-A' shows pyritic material with low carbonate content occurring above this elevation. What would be the quality of the backfill and any amendments placed in the pit with respect to acid/base accounting? Describe the testing and quality control program that would insure meeting the criteria. Are there any alternative sources of backfill available?

Response:

Cross Section A-A' from the Lidstone report identifies the geology on the south highwall and not the west spoil pile area. CR has presented with the Buss Pit POO Modification drilling data and analyses from 1993 as well as TVA data from 1978. All these data suggest that the backfill will be suitable for placement below the water table. Furthermore a similar source (predominantly the west dump) was used in the 1994 backfilling plan and as presented in the Lidstone 2009 report and on Figure 4 of this Plan Modification, the backfill resulted in an initial "bump" in pH. This occurred because of CR's selective placement of this "higher percent lime" backfill. Sulfides may be present in the native lift, but the elevation 6680 on the west wall is not stratigraphically equivalent to the elevation 6680 on the south wall. CR does not intend to perform any additional analysis of the backfill that is being returned to the water table. They will perform short list (DEQ/LQD Guideline 1 overburden suitability) analysis on the final five foot lift that lies immediately below the topsoil zone. There are other sources of backfill, but such sources will increase overall disturbance acreage and haul distance significantly. This site was selected based on 1993 drilling data, haul distance, and final reclamation considerations.

Question: Groundwater:

Previous data anticipates water will rebound to 6685 elev. PRI's proposes to backfill to the 6675 elev. Is the elevation difference based on reevaluation of prior water level data or dependent on

water evaporation from wetland? Is there any groundwater information that post-dates the 2009 Lidstone report? What amount of subsidence would be expected in the backfill? What would be depth of water in the wetland? What is confidence level that water level will not ultimately rebound to 6685 and how would it be mitigated if it did?

Response:

Earlier planning studies (Lidstone and Associates, Inc., 2009) indicated that a backfill option should be completed to an elevation 20 feet above the proposed water table recovery elevation. The 1993 PRI Plan of Operations (WYW 127579) identified a post mining water table recovery to an elevation of 6686 based on historical information provided by TVA and incorporated into the PRI 1993 submittal (Permit 438-A2). The information was considered the best available information in 1993. The 2009 LA report incorporated all of the PRI well drilling information (over 40 wells within the area) and reviewed the 1973-1978 TVA drilling and identified a water table within the Buss area ranging from 6610 to 6690. LA noted (page 5 of that report) that "faulting and fracturing appeared to influence the water table locally". LA predicted that the water would stabilize between 6650 and 6660 in that report and presented two backfill options (backfill to 6660 and 6700 feet AMSL). Since even the completion of that report, all data suggest that the free water table has reached and will remain near the 6650 elevation as it has between 1998 and 2010. Since the completion of the 2009 report there have been two very wet years in the Gas Hills, yet the water table has not risen. This information is presented on Figure 4 of this report and clearly indicates that the groundwater recovery has reached and remained at an equilibrium state for over 12 years. Even under a backfill scenario, neither LA nor CR feel that the groundwater recovery data support the 6686 feet elevation predicted in the report. The proposed backfill elevation to 6675 is 28 feet higher than the current groundwater recovery elevation, which all evidence supports as steady state. Once a backfill plan is implemented, one would anticipate a higher level of groundwater recovery. However the data do not support that such a recovery will exceed 28 feet.

By allowing an additional 15+/- years of study and analysis, CR and BLM will have confirmation of the information presented in the above paragraph.

Question: Wetland water quality:

What would be the primary source of the wetland water, ground water or surface water runoff? Most wetlands used to mitigate metals are in an open system with an inflow and outflow. This proposal is for a closed evaporative system. How would sulfides exposed in the pit walls affect wetland water quality? What would be the chemistry of wetland water in such an evaporative system? Is there any literature with case history supporting the benefits of wetland created by partial backfill? How is radon addressed in the backfill proposal?

Response:

The source of wetland water will be a combination of both surface water and shallow groundwater. There is no guarantee as to the viability of this wetland but there will be a surface water and possibly a groundwater inflow component and only evapotranspiration as an outflow component. Wetland characteristics are anticipated, but a true wetland (water, soils and vegetation) is not guaranteed. At the meeting on January 26, 2011, both Lidstone and Moxley stated that the floor of the backfilled pit will likely be a salt sink. This means salts will likely accumulate on the floor and within the root zone of plants due to capillary rise and translocation from adjacent lands through runoff processes. To prevent sodication of soils and in an effort to create a viable and acceptable vegetated cover, CR has committed to plant more salt tolerant

species at this location and replace a stratum of coarse material at a 24 inch depth. This stratum will allow drainage of surface water and flushing of salts below the root zone and will prevent the capillary rise of salts from ground water into the root zone.

This wetland is not intended to mitigate metals but is a consequential result of a pit backfill plan. Sulfides exposed in the pit walls will be buried by fill and will not directly affect the wetland. CR is not aware of any direct literature addressing this condition, but directs BLM's attention to a similar reclamation at the George Pit, Sagebrush Pit, Sunset Pit and the K-Pits- all in the Gas Hills.

With respect to radon emanation, BLM should bear in mind that the Buss Pit is not an §11E-2 facility. CR does not expect radon to be a problem and past experience in the Gas Hills indicates that this will be the case. The natural ore deposits are buried 175+/- feet below the floor of the backfilled impoundment (under the backfill option). In any case, CR has committed to a minimum of 5 feet of suitable overburden (likely a native lift) overlying the unclassified backfill that is placed in the pit. Material quality control for this final lift will be by field methods (hand held scintillometer). Radon emanation will not be a problem.

Question: Groundwater:

The proposal will likely temporarily affect groundwater quality in the vicinity of the backfilled pit. WYDEQ indicated that they would accept these groundwater affects. What would these affects be? The operator should include such as an indicator of reclamation success and what further remediation they would institute if WDEQ-WQD does not buy-off on groundwater quality. How will these affects to groundwater affect baseline data to be gathered for the proposed Mine Unit 4 adjacent to Buss 1 pit. Are the aquifers connected or separate? To what criteria would Mine Unit 4 groundwater be restored to after ISL mining? Would the Buss 1 pit area be included in the aquifer exemption?

Response:

Under the primary proposed modification, CR will eliminate the acid water of the Buss Lake through base additives. Because the lake will remain a ground water sink, its quality will reflect the quality of the upgradient groundwater in the area. If degradation of the lake impoundment occurs and the pH drops below 6.5 s.u. for three consecutive years, CR has committed to backfill the lake impoundment. The act of backfilling will affect the groundwater quality and there is sufficient data to predict post mining ground water quality. Essentially groundwater will not remain acidic, but there will be an increase in Total Dissolved Solids, elevated metals and elevated sulfate. This condition will likely persist until several pore volumes of upgradient ground water have passed through the backfill. Based on past experience, ground water, though degraded, will remain with a livestock class of use. As the pH rises certain metals like aluminum and iron will precipitate as hydrous oxides and will begin to seal the pore spaces within the fill matrix and the walls of the backfilled pit. This will reduce the overall permeability of the backfill and will slow groundwater movement out of the backfilled area. This will enhance the process of dilution since native groundwater will move more quickly and will represent a higher percentage of the downgradient groundwater.

CR would hope to reach an agreement with DEQ in advance of the implementation of the backfill option; that post reclamation groundwater quality is not a bond release criterion. The basis for this agreement is the nature of the Gas Hills groundwater and the history of all past reclamation projects. All parties (including DEQ and Lander BLM) have addressed these conditions in the past. CR's modified Plan of Operations does not intend to drill any monitor wells specific to this project,

nor do they plan to collect water samples defining the post reclamation ground water quality. CR will not line the walls of the pit or in any way treat the acid forming condition of the adjacent highwalls.

Mine Unit 4 baseline ground water quality will be determined by CR during their Hydrologic Unit Testing Program. DEQ/LQD will be part of this decision making process and speculation regarding the impact of this backfill program is not relevant to this Plan of Operations.

Question: Soils & Vegetation:

What are the plans for topsoil & revegetation of the pit bottom and borrow areas? What would be the chemistry of the pit bottom soils over time in an evaporative environment?

Response:

All disturbed areas, including haul roads, borrow areas and final backfill will be ripped and disked prior to topsoil placement. CR will test the upper 3 feet of overburden to ensure suitability. CR will commit to replace 12 inches of topsoil (74,000 CY) over suitable subsoil or overburden. Within the pit bottom area CR will commit to placing a 6 inch layer of gravel (9000 CY) at a depth of 24 inches (below the topsoil and the upper lift of suitable overburden). The reclamation site will be drill seeded with the seed mix presented in Appendix E of this Plan Modification. CR recommends more salt tolerant species near the floor of the pit and upland seed mix commensurate with the current and successful seed mix. Drop structures will be rebuilt where appropriate.

Question: NEPA:

The POO modification and alternatives would need an Environmental Assessment analysis. A CX is applicable only in cases of approvals of minor modifications to or minor variances from activities described in an approved exploration plan. For the EA, it's recommend releasing it for a 30 day public review period along with a draft FONSI, so the disclosure to the public of the reclamation plan modification for 30 day per 3809.411(c) would be fulfilled.

Response:

CR acknowledges this comment.

Question: Release of liability vs. release of bond:

43 CFR 3809.592 says - Does release of my financial guarantee relieve me of all responsibility for my project area?

(a) Release of your financial guarantee under this subpart does not release you (the mining claimant or operator) from responsibility for reclamation of your operations should reclamation fail to meet the standards of this subpart.

(b) Any release of your financial guarantee under this subpart does not release or waive any claim BLM or other persons may have against any person under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. 9601 *et seq., or under any other applicable statutes or regulations.*

Response:

CR acknowledges this comment.