COGEMA

December 8, 2004

License SUA-1341
Docket No. 40-8502

Mr. Gary Janosko, Chief
Fuel Cycle Facilities Branch
U.S. Nuclear Regulatory Commission
Mail Stop T-8A33
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738

RE: Response to Request for Additional Information, 2004 Surety Review
COGEMA Mining, Inc. Irigaray and Christensen ISL Projects

Dear Mr. Janosko:

Pursuant to comments made by our Project Manager, Ms. Elaine Brummett, COGEMA Mining, Inc. (COGEMA) hereby submits several revised pages for insertion into COGEMA's August 17, 2004 surety estimate. The revisions to the surety are described below.

- COGEMA had used a September 2003 Consumer Price Index (CPI) to calculate the inflation rate since the last estimate. NRC requested COGEMA to use the August 2003 CPI. This produces an inflation factor of 2.6% rather than the previously used 2.27%. Page 1 of the Reclamation Bond Assumptions and Table 1 of the Bond Estimate have been revised with this change.

- Worksheet 1 was inadvertently left out of the August 17, 2004 surety estimate submittal. A copy of Worksheet 1 is attached for insertion into the estimate.

- NRC has suggested that we submit a revised "Discussion of Assumptions" listing only the changes made to the worksheets since the submittal dated January 22, 2004. However, this bond estimate is supplied to both WDEQ and NRC, and the WDEQ has not seen all of the changes required by NRC in October 2003 and January 2004. To avoid duplication, we try to submit the same estimate to both agencies including all changes made since the last estimate. We ask that NRC not require us to make changes to the 16-page assumptions document specific to NRC's use only.

- NRC has asked for more detail for the miscellaneous costs for project management and administrative costs. Also, NRC requested that the 15% contingency be applied to the entire cost estimate, including the miscellaneous costs for project management, etc. The miscellaneous costs provided in Table 1 of the Bond Estimate are required by the WDEQ. We have now, in Table 1, broken out which of those costs apply to the NRC NUREG-1569 guidance, and have shown different percentages for NRC purposes. These are explained in detail on pages 1 and 2 of the Reclamation Bond Assumptions. Accordingly, revised pages 1 and 2 of the Reclamation Bond Assumptions and the revised Table 1 of the Bond Estimate

COGEMA Mining, Inc.
935 Pendell Blvd., P.O. Box 730, Mills, WY 82644 - Tel. : (307) 234-5019 - Fax : (307) 473-7306

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are included for insertion into the August 2004 estimate. Please note that the pages included for insertion into the Reclamation Bond Assumptions are numbered 1, 2 and 2a, and should replace pages 1 and 2. The revised Table 1 should replace the previous Table 1.

We hope that NRC's questions have been appropriately addressed. Please contact me if you require additional information.

Sincerely,

Donna L. Wichers
General Manager

cc: NRC – Elaine Brummett, Project Manager
NRC – Region IV

COGEMA Mining, Inc.
SUMMARY OF RECLAMATION/RESTORATION BOND ESTIMATE, 2004 - 2005
WDEQ PERMIT NO. 478/USNRC LICENSE SUA-1341
TABLE 1

			WDEQ Estimate	NRC Estimate
I	GROUNDWATER RESTORATION - Worksheet 1:		$3,124,253	$3,938,547
II	DECOMMISSIONING AND SURFACE RECLAMATION:			
A.	Process Plant(s) Equipment Removal and Disposal Worksheet 2		$212,081	$212,081
B.	Plant Building(s) Demolition and Disposal Worksheet 3		$734,007	$734,007
C.	Process Pond Sludge and Liner Handling Worksheet 4		$749,999	$749,999
D.	Well Abandonment Worksheet 5		$744,573	$744,573
E.	Wellfield Equipment Removal and Disposal Worksheet 6		$866,581	$866,581
F.	Topsoil Replacement and Revegation Worksheet 7		$732,131	$732,131
G.	Miscellaneous Reclamation Activities Worksheet 8		$121,836	$121,836
Sub Total - Decommissioning and Surface Reclamation			$4,161,208	$4,161,208
TOTAL RESTORATION AND RECLAMATION			$7,285,462	$8,099,755
Add 2.6% for inflation (CPI August 2003 of 184.6 through July 2004 CPI of 189.4)			$189,422	$210,594
	SUBTOTAL		$7,474,884	$8,310,349
Miscellaneous Costs Associated with Third Party Contractors				
		WDEQ / NRC		
	Project Design	2% / 1%		
	Contractor Profit & Mobilization	8% / 4%		
	Pre-construction Investigation	1%		
	Project Management	5% / 3%		
	On-site monitoring	0.5%		
	Site Security & Liability Assurance	1% / 0.5%		
	Longterm Administration	2%		
Subtotal miscellaneous additions to bond		19.5% / 8.5%	$1,457,602	$706,379.64
	SUBTOTAL		$8,932,486	$9,016,728
		WDEQ / NRC		
Contingency		4% / 15%	$357,299	$1,352,509
GRAND TOTAL RESTORATION AND RECLAMATION			$9,289,785	$10,369,238

Reclamation Bond Assumptions
Irigaray and Christensen Ranch ISL Projects
WDEQ Permit to Mine No. 478
NRC License SUA-1341
2004 Annual Report, August 2004

This year's bBond estimate is based upon last year's 2003 bond estimate where very detailed explanations were provided for the updated costs. For the most part, differences in last year's costs (August 2003) and this year's costs are not significant. Therefore for 2004, the 2003 cost estimate will be used with an inflation factor added to the Summary Table 1. This inflation rate equates to the difference between the current Consumer Price Index (all urban consumers) for July 2004 of 189.4 and the ~~September~~ August 2003 value of ~~185.2~~184.6 ~~(September is used as the starting point as all 2003 cost estimates were based on August 2003 dollars)~~. This equates to an inflation increase of ~~2.27~~2.6%. Additionally, changes made to the bond are base on October, 2003 and January 2004 costs, therefore inflating the overall estimate with an August CPI is conservative.

Costs in the bond estimate are thoroughly detailed and were developed by using either 1) COGEMA's actual costs, 2) a published reference source, or 3) quotes from local third-party contractors. The method by which unit rates and costs were derived is provided in the explanation for each worksheet, below.

Table 1 – Summary of Reclamation/Restoration Bond Estimate

Table 1 is a summary of costs from individual bond worksheets. Added to the grand total of estimated spending are "miscellaneous" costs associated with the hiring of a third part contractor to actually perform the work. The specific miscellaneous costs are a requirement of the Wyoming Department of Environmental Quality (WDEQ), as outlined in the WDEQ Land Quality Division's Guideline No. 12, "Standardized Reclamation Performance Bond Format and Cost Calculation Methods", page 11. The U.S. Nuclear Regulatory Commission (NRC) also requires similar miscellaneous costs in NUREG-1569 and further mandates that a standard contingency, in this case 15%, be added to the overall ~~estimate for contingency for unknowns~~bond cost. An explanation of the various miscellaneous costs and contingency for Table 1 are as follows.

Project Design

This is the cost for an independent firm to design the final reclamation project. This includes all design and engineering work through production of construction documents. Some surveying and redesign of the operator's reclamation plan to fit the current situation may be required. WDEQ reference sources place this category at 2 to 6.5% of the total bond cost. WDEQ typically uses 3%. COGEMA has been approved by WDEQ to use 2% for this category based on the details of our reclamation plan.

Although WDEQ requires the 2% for a final reclamation design, only 1% has been added for the NRC cost. The reclamation program has been in progress for 4 years, with groundwater restoration completion expected by early 2005, and completion of decommissioning in 2006. The program is far enough along that a firm would not be required to prepare an entire final reclamation project. The 1%, or $83,103, is sufficient to hire an engineering firm to complete a design to finish the project.

Contractor Profit & Mobilization

This percentage covers contractor costs typically not found in the basic unit rates.

This percentage specifically covers contractor profit, overhead costs, mobilization costs to the site and demobilization costs after job completion. According to WDEQ, assorted references place this cost from 8% to 15% of the total bond cost. WDEQ typically uses 10%. COGEMA has been approved by the WDEQ to use 8% for this category.

For NRC purposes, this category has been reduced by half, to 4%. In NUREG-1569, NRC requires overhead costs for labor, equipment and contractor profit. Hourly rates are already included for labor and equipment, and these are third party estimates which already include overhead. Therefore the 4% is intended to cover contractor profit and mobilization/demobilization. As the ISL reclamation is not an equipment intensive type of reclamation, mobilization/demobilization costs should be minimal.

Pre-construction Investigation

This item addresses all fieldwork necessary to document and mitigate dangerous and/or quickly deteriorating conditions. Any assessment under this item will be based on the WDEQ's knowledge of specific site conditions and length of time between bond forfeiture (reason for a third party contractor) and initiation of the final reclamation project. WDEQ uses 1%, and has reference sources placing this cost between 1% and 2%. COGEMA has been asked by WDEQ to incorporate the 1% into our bond estimate.

No cost is included for NRC in this WDEQ required category. NRC required COGEMA to conduct a detailed site decommissioning plan, and a part of this plan was a site characterization. No areas of potential hazardous conditions were identified. We believe that this study qualifies as a pre-construction investigation.

Project Management

This category includes the costs for an independent firm to manage the final reclamation project. It includes complete oversight of all demolition, construction and reclamation activities. Examples would include supervision of groundwater restoration, wellfield piping and structures removal, plant buildings and equipment demolition, soil sampling, byproduct waste shipments, etc. References place this cost at 3% to 4%. WDEQ typically uses 3%. However, WDEQ has required a 4% project management cost for COGEMA due to the more technical aspects of groundwater restoration. Furthermore, at the suggestion of NRC, COGEMA has included a Radiation Safety Officer as part of the project management team, bringing the percentage for this estimate up to 5%.

NRC's project management in NUREG-1569 includes costs associated with project management; engineering design, review and change; mobilization; power during reclamation; quality control; radiological safety; and any other costs not included in other estimation categories. Engineering design and mobilization are included as separate miscellaneous cost items, above. Furthermore, COGEMA already includes line items in the bond for the utilities during reclamation and radiological safety (gamma surveys and soil analysis, byproduct load surveys). However, 1% is added to project management for an RSO ($83,103), and 2% is added for general project management ($166,206), for a total of 3% ($249,309) for the project management miscellaneous costs. This is consistent with references that place this cost at 3% to 4% of total project costs.

On-site Monitoring

This category covers the costs for any miscellaneous monitoring felt necessary by the WDEQ after the final reclamation is completed. Costs of this item typically vary, depending upon the volume of monitoring already included in the bond or the type of reclamation activity required. The WDEQ typically uses 0.5%, and this is what COGEMA is bonded for.

NRC license termination will occur at the end of the project, therefore no costs will be necessary after final reclamation is completed. WDEQ requires the 0.5% to cover any miscellaneous monitoring they may incur during the 5-year reclamation evaluation period prior to bond release.

Site Security & Liability Assurance

This category covers the cost for the WDEQ, or third party contractor, to provide any necessary site security measures during the reclamation program, and to purchase liability insurance to cover the timeframe of the reclamation program and full bonding period. WDEQ references place this cost at about 1% of the total bond amount. The WDEQ typically uses 1%, and this is what COGEMA is bonded for.

Because NRC does not have the same 5-year bonding period after reclamation is completed, only half of the 1% for site security and liability insurance is provided in this category.

Longterm Administration

This category applies to the period between completion of the reclamation project and final bond release which is a minimum 5 year period for uranium mines. During this time the WDEQ will incur administrative costs prior to the final bond release. WDEQ typically uses 1% to 2% for this category depending upon the scale or complexity of the reclamation and post-reclamation monitoring. WDEQ has required COGEMA to use 2%.

Again, because NRC will terminate the license after reclamation completion, there is no final bond release period of 5 years. There is no need for a percentage in this category.

Contingency

Contingency is included in the bond estimate to cover unknown conditions that could occur during the reclamation project. The WDEQ references place this cost at 2% to 5% of the total bond cost. Under normal circumstances WDEQ uses 4%, which has been incorporated into this bond revision. NRC requires a contingency of 15% regardless of the detail of the bond estimate, so COGEMA has incorporated the 15%.

WDEQ Reference Sources: The reference sources used by WDEQ to establish the ranges of percentages used in the miscellaneous items are:

- Means Heavy Construction Cost Data (current edition), R.S. Means Company, Inc., Kingston MA
- Means Site Work Cost Data (current edition), R.S. Means Company, Inc.
- Building Construction Cost Data (current edition), R.S. Means Company, Inc.
- Handbook for Calculation of Reclamation Bond Costs, 1987, Department of Interior, Office of Surface Mining Reclamation and Enforcement, Washington, D.C.
- Wyoming DEQ Abandoned Mine Land Program contracting and reclamation practices and cumulative experience.

COGEMA Mining, Inc.
2004 Restoration and Reclamation Costs
Wyoming Operations
WORKSHEET 1

GROUNDWATER RESTORATION

	Ingaray Mine Unit(s) #1 Thru #5	Ingaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
Technical Assumptions:									
Wellfield Area (Ft^2)	522720	784080	890000	798944	510088	1210968	2021243	1332936	1600000
Wellfield Area (Acres)	12.00	18.00	20.43	18.34	11.71	27.80	46.40	30.6	36.7
Affected Ore Zone Area (Ft^2)	522720	784080	890000	798944	550193	1346004	2058344		
Avg Completed Thickness (Ft)	15.0	18.0	11.0	10.0	12.7	19.9	21.8		
Affected Volume:									
Factor For Vertical Flare	20%	20%	20%	20%	20%	20%	20%		
Factor For Horizontal Flare	20%	20%	20%	20%	20%	20%	20%		
Total Volume (Ft^3)	11290752	20323353.6	14097600	11504793.6	10061929.6	38593685.7	64615534.85		
Porosity	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%		
Gallons Per Cubic Foot	7.48	7.48	7.48	7.48	7.48	7.48	7.48		
Gallons Per Pore Volume	21958254.49	39524858.1	27417012.5	22374522.6	19568440.7	75057000	125664292.2		
Number of Wells in Unit(s)									
Production Wells	150	274	153	185	105	217	202	155	
Injection Wells	310	330	173	277	128	277	244	170	
Monitor Wells	150	165	50	46	44	70	65	66	
Baseline Water Quality wells (prod or inj)	19	27	24	19	15	25	47		
Average Well Spacing (Ft)	35	35	85	70	85	85	100	100	
Average Well Depth (Ft)	250	250	345	300	430	450	520	550	
I GROUNDWATER SWEEP									
A. PLANT & OFFICE									
Operating Assumptions:									
Flowrate (gpm)	200	200	200	200	200	200	200		
PV's Required	4	1	1	1	1	1	1		
Total Gallons For Treatment	87833017.96	39524858.1	27417012.5	22374522.6	19568440.7	75057000	125664292.2		
Total KGals for Treatment	87833	39525	27417	22375	19568	75057	125664		
Cost Assumptions:	127358								
Power									
Avg Connected Hp	51.30	51.30	40.00	40.00	40.00	40.00	40.00		
Kwh's/Hp	1.00	1.00	0.83	0.83	0.83	0.83	0.83		
$/Kwh	$0.051	$0.051	$0.0365	$0.0365	$0.0365	$0.0365	$0.0365		
Gallons Per Minute	200	200	200	200	200	200	100		
Gallons Per Hour	12000	12000	12000	12000	12000	12000	6000		
Cost Per Hour	2.62	2.62	1.21	1.21	1.21	1.21	1.21		
Cost Per Gallon	0.00022	0.00022	0.00010	0.00010	0.00010	0.00010	0.00020		
Cost Per KGal ($)	$0.218	$0.218	$0.101	$0.101	$0.101	$0.101	$0.202		
Chemicals									
Antiscalent ($/Kgals)	$0.0947	$0.0947	$0.0947	$0.0947	$0.0947	$0.0947	$0.0947		
Elution ($/KGals)	$0.099	$0.099	$0.099	$0.099	$0.099	$0.099	$0.099		
Repair & Maintenance ($/KGals)	$0.0379	$0.0379	$0.0379	$0.0379	$0.0379	$0.0379	$0.0379		
Analysis ($/KGals)	$0.032	$0.102	$0.131	$0.127	$0.115	$0.050	$0.056		
Total Cost Per KGal	$0.482	$0.552	$0.464	$0.460	$0.448	$0.383	$0.490		
Total Treatment Cost	$42,342	$21,621	$12,718	$10,291	$8,758	$28,713	$61,534		
Utilities									
Power ($/Month)	$65	$65	$65	$65	$65	$65	$65		
Telephone ($/Month	$500	$500	$500	$500	$500	$500	$500		
Time For Treatment									
Minutes For Treatment	439165	197624	137085	111873	97842	375285	628321		
Hours For Treatment	7319	3294	2285	1865	1631	6255	10472		
Days For Treatment	305	137	95	78	68	261	436		
Average Days Per Month	30.4	30.4	30.4	30.4	30.4	30.4	30.4		
Months For Treatment	10.0	4.5	3.1	2.6	2.2	8.6	14.3		
Utilities Cost ($)	$5,665	$2,549	$1,768	$1,443	$1,262	$4,841	$8,105		
TOTAL PLANT & OFFICE COST	$48,007	$24,171	$14,487	$11,734	$10,020	$33,554	$69,639	$0	$0

COGEMA Mining, Inc.
2004 Restoration and Reclamation Costs
Wyoming Operations
WORKSHEET 1

GROUNDWATER RESTORATION	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
I GROUNDWATER SWEEP (Continued)									
B. WELLFIELD									
Cost Assumptions:									
Power									
Avg Flow/Pump (gpm)	3.86	3.86	20	20	20	20	20		
Avg Hp/Pump	1.50	1.50	3.00	3.00	3.00	3.00	3.00		
Avg # of Pumps Required	51.8	51.8	10.0	10.0	10.0	10.0	10.0		
Avg Connected Hp	77.8	77.8	25	25	25	25	25		
Kwh's/Hp	1.000	1.000	0.830	0.830	0.830	0.830	0.830		
$/Kwh	$0.051	$0.051	$0.0365	$0.0365	$0.0365	$0.0365	$0.0365		
Gallons Per Minute	200	200	200	200	200	200	200		
Gallons Per Hour	12000	12000	12000	12000	12000	12000	12000		
Cost Per Hour ($)	$3.97	$3.97	$0.76	$0.76	$0.76	$0.76	$0.76		
Cost Per Gallon ($)	$0.0003	$0.0003	$0.0001	$0.0001	$0.0001	$0.0001	$0.0001		
Cost Per KGal ($)	0.331	0.331	0.063	0.063	0.063	0.063	0.063		
Repair & Maintenance ($/KGals)	$0.289	$0.289	$0.289	$0.289	$0.289	$0.289	$0.289		
Total Cost Per KGal	$0.620	$0.620	$0.353	$0.353	$0.353	$0.353	$0.353		
TOTAL WELLFIELD COST	$54,426	$24,492	$9,665	$7,887	$6,898	$26,459	$44,298	$0	$0
TOTAL GROUND WATER SWEEP COST	$102,433	$48,862	$24,152	$19,622	$16,918	$60,012	$113,937	$0	$0
II REVERSE OSMOSIS									
A. PLANT & OFFICE									
Operating Assumptions:									
Flowrate (gpm)	300	300	500	500	500	500	500		
PV's Required	3.0	5.0	5.0	5.0	5.0	5.0	5.0		
Total Gallons For Treatment	65874763.47	197624290	137085062	111872613	97842203.3	375285000	628321460.9		
Total KGals for Treatment	65875	197624	137085	111873	97842	375285	628321		
Feed to RO (gpm)	300	300	500	500	500	500	500		
Permeate Flow (gpm)	240	240	375	375	375	375	375		
Brine Flow (gpm)	60	60	125	125	125	125	125		
Average RO Recovery	80.0%	80.0%	75.0%	75.0%	75.0%	75.0%	75.0%		
Cost Assumptions:									
Power									
Avg Connected Hp	120.00	120.00	560.00	560.00	560.00	560.00	560.00		
Kwh's/Hp	1.000	1.000	0.830	0.830	0.830	0.830	0.830		
$/Kwh	$0.051	$0.051	$0.0365	$0.0365	$0.0365	$0.0365	$0.0365		
Gallons Per Minute	300	300	500	500	500	500	500		
Gallons Per Hour	18000	18000	30000	30000	30000	30000	30000		
Cost Per Hour ($)	$6.12	$6.12	$16.97	$16.97	$16.97	$16.97	$16.97		
Cost Per Gallon ($)	$0.00034	$0.00034	$0.00057	$0.00057	$0.00057	$0.00057	$0.00057		
Cost Per KGal ($)	$0.340	$0.340	$0.568	$0.568	$0.568	$0.568	$0.568		
Chemicals									
Caustic Soda ($/KGals)	$0.018	$0.018	$0.018	$0.018	$0.018	$0.018	$0.018		
Antiscalent ($/Kgals)	$0.0947	$0.0947	$0.0947	$0.0947	$0.0947	$0.0947	$0.0947		
Elution ($/Kgals)	$0.099	$0.099	$0.099	$0.099	$0.099	$0.099	$0.099		
Repair & Maintenance ($/KGals)	$0.038	$0.038	$0.038	$0.038	$0.038	$0.038	$0.038		
Sampling & Analysis ($/KGals)	$0.077	$0.039	$0.090	$0.122	$0.092	$0.039	$0.032		
Total Cost Per KGal ($)	$0.667	$0.629	$0.905	$0.937	$0.907	$0.854	$0.847		
Total Pumping Cost ($)	$43,940	$124,319	$124,089	$104,788	$88,752	$320,397	$531,949		
Utilities									
Power ($/Month)	$65	$65	$65	$65	$65	$65	$65		
Propane ($/Month	$500	$500	$500	$500	$500	$500	$500		
Time For Treatment									
Minutes For Treatment	219583	658748	274170	223745	195684	750570	1256643		
Hours For Treatment	3660	10979	4570	3729	3261	12510	20944		
Days For Treatment	152	457	190	155	136	521	873		
Average Days Per Month	30.4	30.4	30.4	30.4	30.4	30.4	30.4		
Months For Treatment	5.0	15.0	6.3	5.1	4.5	17.1	28.7		
Utilities Cost ($)	$2,825	$8,475	$3,560	$2,882	$2,543	$9,662	$16,216		
TOTAL PLANT & OFFICE COST	$46,765	$132,794	$127,648	$107,670	$91,294	$330,059	$548,165	$0	$0

COGEMA Mining, Inc.
2004 Restoration and Reclamation Costs
Wyoming Operations
WORKSHEET 1

GROUNDWATER RESTORATION	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
II REVERSE OSMOSIS (Continued)									
B. WELLFIELD									
Cost Assumptions:									
Power									
Avg Flow/Pump (gpm)	3.86	3.86	20.00	20.00	20.00	20.00	20.00		
Avg Hp/Pump	1.50	1.50	3.00	3.00	3.00	3.00	3.00		
Avg # of Pumps Required	77.7	77.7	25.0	25.0	25.0	25.0	25.0		
Avg Connected Hp	116.6	116.6	75.0	75.0	75.0	75.0	75.0		
Kwh's/Hp	1.000	1.000	0.830	0.830	0.830	0.830	0.830		
$/Kwh	$0.051	$0.051	$0.0365	$0.0365	$0.0365	$0.0365	$0.0365		
Gallons Per Minute	300	300	500	500	500	500	500		
Gallons Per Hour	18000	18000	30000	30000	30000	30000	30000		
Cost Per Hour ($)	$5.95	$5.95	$2.27	$2.27	$2.27	$2.27	$2.27		
Cost Per Gallon ($)	$0.0003	$0.0003	$0.0001	$0.0001	$0.0001	$0.0001	$0.0001		
Cost Per KGal ($)	$0.330	$0.330	$0.078	$0.078	$0.078	$0.078	$0.078		
Repair & Maintenance ($/KGals)	$0.289	$0.289	$0.289	$0.289	$0.289	$0.289	$0.289		
Total Cost Per KGal	$0.619	$0.619	$0.365	$0.365	$0.365	$0.365	$0.365		
TOTAL WELLFIELD COST	$40,797	$122,391	$50,000	$40,804	$35,687	$136,881	$229,172	$0	$0
Add for 1 PV of Hydrogen Sulfide gas reductant $0.863 per Kgal	$18,950	$34,110	$23,661	$19,309	$16,888	$64,774	$108,448		
TOTAL REVERSE OSMOSIS COST	$106,512	$289,295	$201,309	$167,783	$143,869	$531,714	$885,785	$0	$0

COGEMA Mining, Inc.
2004 Restoration and Reclamation Costs
Wyoming Operations
WORKSHEET 1

GROUNDWATER RESTORATION	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
III WASTE DISPOSAL WELL									
Operating Assumptions:									
Annual Evaporation Capacity (Gals)			1,917,612	1,917,612	1,917,612	1,917,612	1,917,612		
Avg. Monthly Evap. Capacity (Gals)			159,801	159,801	159,801	159,801	159,801		
Total Disposal Requirement									
RO Brine Total Gallons			34,271,266	27,968,153	24,460,551	93,821,250	157,080,365		
RO Brine Total KGallons			34,271	27,968	24,461	93,821	157,080		
Brine Concentration Factor			60%	60%	60%	60%	60%		
Total Concentrated Brine (Gals)			20,562,759	16,780,892	14,676,330	56,292,750	94,248,219		
Months of RO Operation			6.3	5.1	4.5	17.1	28.7		
Average Monthly Reqm't (Gallons)			3,263,930	3,290,371	3,261,407	3,291,974	3,283,910		
Monthly Balance for DDW (Gals)			3,104,129	3,130,570	3,101,606	3,132,173	3,124,109		
Total WDW Disposal (Gallons)			19,556,013	15,965,907	13,957,226	53,560,153	89,661,930		
Total WDW Disposal (KGals)			19,556	15,966	13,957	53,560	89,662		
Cost Assumptions:									
Power									
Avg Connected Hp			100.00	100.00	100.00	100.00	100.00		
WDW Avg Connected Hp			180.00	180.00	180.00	180.00	180.00		
Kwh's/Hp			0.830	0.830	0.830	0.830	0.830		
$/Kwh			$0.0365	$0.0365	$0.0365	$0.0365	$0.0365		
Gallons Per Minute			150	150	150	150	150		
Gallons Per Hour			9000	9000	9000	9000	.9000		
Cost Per Hour ($)			$8.48	$8.48	$8.48	$8.48	$8.48		
Cost Per Gallon ($)			$0.0009	$0.0009	$0.0009	$0.0009	$0.0009		
Cost Per KGal ($)			$0.943	$0.943	$0.943	$0.943	$0.943		
Chemicals ($/Kgals)									
RO Antiscalent ($/Kgals)			$0.190	$0.190	$0.190	$0.190	$0.190		
WDW Antiscalent ($/Kgals)			$0.237	$0.237	$0.237	$0.237	$0.237		
Sulfuric Acid ($/Kgals)			$0.534	$0.534	$0.534	$0.534	$0.534		
Corrosion Inhibitor			$0.000	$0.000	$0.000	$0.000	$0.000		
Algacide			$0.111	$0.111	$0.111	$0.111	$0.111		
Repair & Maint ($/Kgals)			$0.077	$0.077	$0.077	$0.077	$0.077		
Total Cost Per KGal			$2.092	$2.092	$2.092	$2.092	$2.092		
TOTAL WASTE DISPOSAL WELL COST			$40,902	$33,393	$29,192	$112,022	$187,529	$0	$0
IV STABILIZATION MONITORING									
Operating Assumptions:									
Time of Stabilization (mos)	9	9	9	9	9	9	9		
Frequency of Analysis (mos)	3	3	3	3	3	3	3		
Total Sets of Analysis	3	3	3	3	3	3	3		
Cost Assumptions:									
Generator Rental per sample set	$280	$280	$280	$280	$280	$280	$280		
Analytical costs per set	$2,850	$4,050	$3,600	$2,850	$2,250	$3,750	$7,050		
Total Sampling & Analysis Cost ($)	$9,390	$12,990	$11,640	$9,390	$7,590	$12,090	$21,990		
Utilities (Power + Telephone per month)	$565	$565	$565	$565	$565	$565	$565		
Total Utilities Cost ($)	$5,085	$5,085	$5,085	$5,085	$5,085	$5,085	$5,085		
TOTAL STABILIZATION COST	$14,475	$18,075	$16,725	$14,475	$12,675	$17,175	$27,075	$0	$0

COGEMA Mining, Inc.
2004 Restoration and Reclamation Costs
Wyoming Operations
WORKSHEET 1

GROUNDWATER RESTORATION	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
V LABOR (Irigaray and Christensen Combined)									

Cost Assumptions	Cost/Hour	Hours/Year	Cost
Crew:			
1 Supervisor	$25.00	2080	$52,000
4 Operators	$20.00	2080	$166,400
2 Maintenance	$20.00	2080	$83,200
2 Vehicles	$12.00	2080	$49,920
Cost per Year			$351,520
Time Required - Years (See Figure 1)	1.6		
TOTAL RESTORATION LABOR COST	$562,432		

	Irigaray Mine Unit(s) #1 Thru #9	Christensen Mine Unit #2 Thru #4	Total Christensen & Irigaray
VI RESTORATION CAPITAL REQUIREMENTS			
I Deep Disposal Well(s) - new		$0	
II Plug and Abandon CR DW-1		$73,950	
III Plug and Abandon CR 18-3		$66,250	
IV 500 GPM Reverse Osmosis Unit		$0	
Total	$0	$140,200	

	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8	TOTAL
SUMMARY:										
I GROUNDWATER SWEEP	$102,433	$48,862	$24,152	$19,622	$16,918	$60,012	$113,937	$0		
II REVERSE OSMOSIS	$106,512	$289,295	$201,309	$167,783	$143,869	$531,714	$885,785	$0		
III WASTE DISPOSAL WELL	$0	$0	$40,902	$33,393	$29,192	$112,022	$187,529	$0		
IV STABILIZATION	$14,475	$18,075	$16,725	$14,475	$12,675	$17,175	$27,075	$0		
SUB TOTAL	$223,419	$356,232	$283,088	$235,273	$202,654	$720,923	$1,214,327	$0		$3,235,915
V LABOR										$562,432
VI CAPITAL										$140,200
TOTAL GROUNDWATER RESTORATION COST										$3,938,547
Credit for Completion of Groundwater Sweep (WDEQ	$102,433	$48,862	$24,152	$19,622	$16,918	$60,012	$113,937	$0		$385,937
Credit for Completion of Reverse Osmosis (WDEQ)	$106,512	$289,295								$395,807
Credit Completion of Stabilization Monitoring (WDEQ	$14,475	$18,075								$32,550
Credit Subtotal	$223,419	$356,232	$24,152	$19,622	$16,918	$60,012	$113,937	$0	$0	$814,293
GRAND TOTAL WDEQ	$0	$0	$258,936	$215,651	$185,735	$660,910	$1,100,389	$0	$0	$3,124,253
GRAND TOTAL NRC (no credi	$223,419	$356,232	$283,088	$235,273	$202,654	$720,923	$1,214,327	$0	$0	$3,938,547