



The State
of Wyoming



Department of Environmental Quality

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Jim Geringer, Governor

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January 14, 2002

40-8502

Mrs. Donna Wichers
COGEMA Mining, Inc.
P. O. Box 730
Mills, WY 82644

RE: Irigaray-Christensen Operations, Permit No. 478, Review of 2001 Annual Report

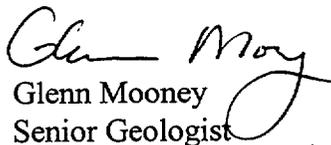
Dear Mrs. Wichers:

I have reviewed the 2001 Annual Report on the Irigaray and Christensen Ranch Operations as well as the reclamation bond calculations submitted with the Annual Report.

In the attached memo, I find the reclamation bond could be reduced to a total of \$13,575,000. A recommendation for reduction of the bond to this amount will be made to the Director.

Please feel free to call me if you have any questions.

Sincerely,


Glenn Mooney
Senior Geologist

\gm

Attachment

cc: R. Chancellor w/attach.
NRC-MD w/attach.

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WMS01
01-14-02
[Signature]

MEMORANDUM

TO: File, COGEMA Mining Co's. Irigaray-Christensen Ranch In Situ Uranium Operations

FROM: Glenn Mooney *GM*

DATE: January 14, 2002

SUBJECT: Review of 2001 Annual Report

Introduction

A review was conducted of the Annual Report, covering the period July 1, 2000, to June 30, 2001, and received August 20, 2001.

Restoration operations at COGEMA's operations consists of the following phases:

1. Groundwater sweep

The procedure removes the affected groundwater within the well field and replaces it with native groundwater from outside the mining zone. The affected water pumped from the well field is treated with reverse osmosis (RO) where the cleaned portion (permeate) is surface-discharged and the reject portion is disposed in evaporation ponds or deep well injection.

2. Reverse osmosis with permeate injection

Water from the well field is processed by a RO unit with the cleaned permeate reinjected into the well field and the reject portion disposed in evaporation ponds or deep well injection.

The use of chemical reductants is authorized by the restoration plan during this phase, but to date, their use has not been required.

3. Groundwater recirculation

Water from the well field is pumped from the recovery wells and reinjected into the mining zone aquifer through the injection wells. No treatment of the water is normally done. The effect is to insure the complete mixing of cleaned and partially cleaned groundwater. Up to one pore volume is involved in this procedure.

4. Stabilization monitoring

01-14-02
GM

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This is a nine-month-long period where the baseline wells are sampled for a full suite of chemical and radiological parameters at the beginning, at three-month intervals during and again at the end of the period for a total of four samples. This procedure is intended to demonstrate that the restoration effort has been complete and that the aquifer and ore zone have reached equilibrium.

Chronology

The following production and restoration milestones and other occurrences happened during the past report year.

March 2000	Limited groundwater sweep begins in Christensen Unit 5
June 23, 2000	All mining ceases
July 2000	Reverse/Osmosis (R/O) permeate injection suspended in Christensen Mine Unit 3, Module 3-1
	Groundwater sweep increased to 200gpm. in Christensen Unit 5
August 31, 2000	Recirculation phase of groundwater restoration ends in Irigaray Unit 8
September 2000	Groundwater sweep begins in Christensen Unit 6 at 50gpm.
October 2000	R/O permeate injection phase commenced in Christensen Mine Unit 2, Module 2-1
January 2001	Stabilization phase in Irigaray Mine Unit 9 ends and final samples taken
March 2001	R/O permeate injection phase commenced in Christensen Mine Unit 2, Modules 2-2 and 2-3
	R/O permeate injection suspended in Christensen Mine Unit 3, Modules 3-2 and 3-3
April 2001	R/O permeate injection phase commenced in Christensen Mine Unit 2, Module 2-4
	Total restoration flow at Christensen Ranch increased to 1000 gpm.
June 2001	Stabilization phase in Irigaray Mine Unit 8 ends and final samples taken
	R/O permeate injection phase commenced in Christensen Mine Unit 4, Module 4-3
	One pore volume of groundwater sweep reached in Christensen Ranch Unit 5 so sweep ends
	Groundwater sweep in Christensen Unit 6 increased to 200gpm from all modules

Excursions

A number of monitor wells at both the Irigaray and Christensen Ranch operations are or have been on excursion status.

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Excursion status in a monitor well at both Irigaray and Christensen Ranch is determined when two or more of the three excursion parameters, conductivity, chloride and total alkalinity, are found during biweekly sampling to be at or above a predetermined level known as the Upper Control Limit or UCL.

COGEMA files a monthly report listing those wells that have been in excursion status during the previous month.

Irigaray

The following monitor wells at Irigaray have remained on excursion status the entire report period: SSM3, SSM18, SSM40, SSM41, SSM42 SSM43 and DM10. In addition, M2 went on excursion status from August 9, 2000, to October 2, 2000, from February 5, 2001, to April 12, 2001, and again from May 31, 2001, to July 3, 2001.

With one exception, the wells on long-term excursion at Irigaray are completed into a shallow sand located above the ore zone aquifer. Most have been on excursion status for a number of years

The following Irigaray wells on long-term excursion status are as follows:

SSM3	This Mine Unit 2 well has been on excursion since August 30, 1999.
SSM18	This Mine Unit 8 well has been on excursion since September 13, 1996.
SSM40	This Mine Unit 8 well has been on excursion since August 16, 1996.
SSM41	This Mine Unit 4 well has been on excursion since Nov. 19, 1998.
SSM42	This Mine Unit 3 well has been on excursion since October 20, 1990.
SSM43	This Mine Unit 1 well has been on excursion since October 11, 1989.
DM10	This is a deep monitor zone well, having been completed in the nearest aquifer below the ore zone. This Mine Unit 6 well has been on excursion since February 2, 1994.

Christensen Ranch

Monitor well 5MW43 in Christensen Mine Unit 5 was on excursion status from March 22, 2001, to April 12, 2001.

Monitoring Data

The annual report document contains a large amount of monitoring data. Information from the monitoring of 327 monitor and trend wells is presented for a six-month period, January through

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July, 2001. Data from the other six months is presented in the Semiannual Report submitted in late February. Samples are taken monthly from monitor wells not in excursion status. For those wells in excursion status, samples are taken weekly. For monitor wells located in or adjacent to restored wellfields, samples are only taken quarterly. Samples taken are analyzed for the excursion parameters: chloride, specific conductance and total alkalinity, along with pH and uranium. The potentiometric elevations of the water in the wells are also measured just prior to sampling.

The results of testing regional surface water and water wells for radiometric parameters was presented on Table 2. This information is required by the Nuclear Regulatory Commission (NRC).

Mechanical Integrity Testing

Results of mechanical integrity testing (MIT) for the period are presented in Appendix 6. Fifty-eight (58) wells, all in Christensen Unit 6, were tested with only two failed casings found.

Surface Disturbances

There was no additional land disturbed during the report year. No reclamation was conducted during the report year.

Bond

A detailed bond estimate was included with the Annual Report. Some aspects of the bond estimate are:

1. The estimate does not include any costs for restoration of Christensen Ranch Units 7 and 8 as injection never occurred in either of these wellfields.
2. The estimate assumes no credit for wellfield restoration work already carried out, such as Irigaray Units 1 through 9 or Christensen Ranch Units 2 and 3. This is proper since credit cannot be given for restoration work without going through an incremental bond release procedure.

The estimate changes in for Christensen Ranch, but not Irigaray, the kilowatt-hours per horsepower from 1.00 to 0.75. This is not acceptable as it essentially assumes 100% efficiency in electric motor operation.

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The Gorman-Rupp Pumps Engineering Data handbook gives the formula for calculating the amount of electrical energy consumed by an electric motor as:

$$\frac{\text{No. Working Hours X 0.746 X H.P. of Motor}}{\text{Efficiency of Motor}} = \text{Kwh consumed at motor terminals}$$

Since the overall estimate is otherwise adequate, COGEMA will not be requested to change this figure at this time, but wait until the 2001-2002 Annual Report and bond estimate to correct this number.

3. COGEMA has revised the groundwater restoration costs in several areas by updating the estimate based on the actual methods and processes now in use. Some of the changes include the elimination of costs for barium chloride, hydrogen sulfide, hydrochloric acid, sulfuric acid, and addition of costs for antiscalent, sodium sulfate and elution.
4. COGEMA continues to include the \$400,000 I added, beginning in 1998, for cleanup of the monitor wells in long term excursion status at Irigaray. This amounts to \$300,000 for the six shallow sand monitor wells plus \$100,000 for the deep monitor well for an additional bond cost of \$400,000.
5. The estimate shows a cost of \$12.00 per cubic yard for disposal of demolition debris at the Edgerton landfill.
6. The estimate continues to show disposal of radiologically contaminated material at Pathfinder's NRC-licensed Shirley Basin mill tailings pond at a cost of \$11.00 per cubic foot.
7. The estimate continues to show a cost for disposal of radiologically contaminated concrete and soil at Pathfinder's NRC-licensed Shirley Basin mill tailings pond at \$3.70 per cubic foot.
8. The estimate includes \$200,000 to cover plugging of the two deep disposal wells.
9. COGEMA set the amount of contingency at a total of 34.5%, an increase over the 21.5% contingency used over the past several years. The increase comes with increase of Project Management Costs from 3% to 5% and Unknowns, or Contingency as it is termed in this year's COGEMA estimate, from 4% to 15%.

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Bond Estimate

1.	Groundwater Restoration		\$5,072,033
	A.	Cost of shallow sand and deep well clean-up	\$400,000
		Subtotal Groundwater Restoration	\$ 5,472,033
2.	Decommissioning and Surface Reclamation		
	A.	Process plants equipment removal and disposal	\$ 212,109
	B.	Plant buildings demolition and disposal	\$ 587,632
	C.	Process pond sludge and liner handling	\$ 1,305,536
	D.	Well abandonment	\$ 769,221
	E.	Wellfield equipment removal and disposal	\$ 832,873
	F.	Topsoil replacement and revegetation	\$ 757,774
	G.	Miscellaneous reclamation activities	\$ 155,926
		Subtotal Decommissioning and Surface Reclamation	\$ 4,621,071
		Subtotal Restoration and Reclamation	\$ 10,093,103
	Contingency		
	Project Design	2%	
	Contractor profit and mobilization	8%	
	Preconstruction Investigation and Stabilization	1%	
	Project management	5%	
	On-site monitoring	0.5%	
	Site security and liability insurance	1%	
	Long-term admin. and accounting	2%	
	Unknowns	<u>15%</u>	
	Total Contingency	34.5%	\$ 3,482,121
			\$ 13,575,224
		Say	\$13,575,000

The current bond is in the amount of \$15,018,000.

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Conclusions

Review of the 2001 Annual Report for Permit No. 478 found that mining has ceased both at Irigaray Ranch and at Christensen Ranch.

Restoration of groundwater is in full swing at Christensen and has ended at Irigaray.

There has been no progress in clean up of the shallow zone aquifer at Irigaray where four monitor wells have been in long-term excursion status. The same is true of DM10, a deep zone monitor well which has also been in excursion status for an extended time

The bond estimate was revised in a number of areas, generally downward, except for the Unknowns portion of the Contingency section where a significant increase was added. A recommendation will be made to accept the bond amount proposed by COGEMA.

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