



40-8502

February 4, 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

RE: 2003 surety related items.

Dear Mr. Janosko:

Enclosed is a copy of the September, 2003 Wyoming Dept. Of Environmental Quality (WDEQ) review of the WDEQ Annual Report and reclamation bond calculations. Section 9.5 of our NRC license No. SUA-1341 states that COGEMA "will provide NRC with copies of surety-related correspondence submitted to the State of Wyoming, a copy of the State's surety review, and the final approved surety arrangement". This item was inadvertently missed until a recent review indicated that the NRC had not been sent this document. I apologize for this discrepancy and we certainly will try to comply on this point in all future surety related correspondence with the State of Wyoming.

Please contact me if you have any additional questions regarding this item.

Sincerely,

A handwritten signature in cursive script that reads "Tom Nicholson".

Tom Nicholson
Environmental Specialist/RSO

: Attachment

cc: Donna Wichers/COGEMA

WP\2004REPT\NRC\suretyltr.wpd

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The State
of Wyoming

Copy: TBN
WWH



Department of Environmental Quality

1043 Coffeen Avenue, Suite D • Sheridan, Wyoming 82801

Dave Freudenthal, Governor

AIR QUALITY
(307) 672-6457
Fax (307) 674-6050

LAND QUALITY
(307) 672-6488
Fax (307) 672-2213

WATER QUALITY
(307) 672-6457
Fax (307) 674-6050



September 29, 2003

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

RE: Irigaray-Christensen Operations, Permit No. 478, Review of 2003 Annual Report

Dear Mrs. Wichers:

I have reviewed the 2003 Annual Report on the Irigaray and Christensen Ranch Operations as well as the reclamation bond calculations submitted with the Annual Report. Additional information is requested in one area regarding bird kill and for the excursion in Christensen monitor Well MW68s.

In the attached memo, I tentatively find the reclamation bond could be reduced to a total of \$11,673,742.00. This amount includes correction of a error in the bond estimate as discussed in the attached memo.

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

Sincerely,

Glenn Mooney
Glenn Mooney
Senior Geologist

\gm

Attachment

cc: Cheyenne File w/attach.
NRC-MD w/attach.

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MEMORANDUM

TO: File, COGEMA Mining Co's. Irigaray-Christensen Ranch In Situ Uranium Operations, Permit No. 478

FROM: Glenn Mooney *GM*

DATE: September 29, 2003

SUBJECT: Review of 2003 Annual Report

Introduction

A review was conducted of the Annual Report, covering the period July 1, 2002, to June 30, 2003, and received August 19, 2003.

Restoration work at COGEMA's operations consist 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.

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4. Stabilization monitoring

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.

April 2002 to present	RO injection phase ongoing in Christensen Ranch Unit 5
August 2002	Nine month stabilization phase completed in Irigaray Unit 6 Suspension of RO injection in Christensen Ranch Unit 3
November 2002	End of RO injection in Christensen Ranch Unit 4 H ₂ S reductant system begins operation at Christensen Ranch Addition of reductant begins in Christensen Ranch Unit 4, Module 2
November 22, 2002	Christensen Ranch Unit 5 Monitor Well 5MW54 declared on excursion status
December 16, 2002	Christensen Ranch Unit 5 Monitor Well 5MW8 declared on excursion status
January 2003	999,772 gallons of water discharged from NPDES Discharge Point 002 into Willow Creek
February 2003	Completion of groundwater sweep in Christensen Ranch Unit 6
March 2003	End of reductant addition in Christensen Ranch Unit 4 Module 2 which had begun in November 2002 Completion of RO injection phase completed in Christensen Ranch Units 2, 3 and 4

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March 5, 2003	Christensen Ranch Unit 2 Monitor Well MW68s declared on excursion status
April 2003	Reactivation of RO permeate and reductant addition in Christensen Ranch Unit 2, Module 4
April 16, 2003	Christensen Ranch Unit 2 Monitor Well MW68s declared off excursion status
April 17, 2003	Christensen Ranch Unit 5 Monitor Well 5MW54 declared off excursion status
May 5, 2003	Discovery of 20 dead birds in evaporation pond at Christensen. Birds are later identified as eared grebes.
May 2003	Wellfield equipment removal begun at Irigaray
May 21, 2003	Christensen Ranch Unit 5 Monitor Well 5MW54 declared on excursion status
June 2003	Dewatering of Irigaray ponds RA, RB and E begun
July 28, 2003	Christensen Ranch Unit 5 Monitor Well 5MW8 declared off excursion status
July 29, 2003	Land Quality Division removes Irigaray Shallow Sand Sand Monitor Wells and Deep Monitor Well DM-10 from excursion status

Environmental Problems

Section 3(g) of the Required Annual Report Information requests information on any environmental problem area. There was no mention here of the discovery in early May, 2003, of some 20 dead eared grebes in a Christensen evaporation ponds or of any correction actions taken or the final disposition of this incident.

★

Please provide information for the Report on this incident.

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Excursions

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

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 were on excursion status the entire report period: SSM3, SSM18, SSM40, SSM41, SSM42 SSM43 and DM10. Because there appeared to be no practical and economic method of cleaning up the affected aquifers and because they remained in Class of Use, it was decided to administratively remove them from excursion status. Accordingly, in a July 29, 2003, letter from Rick Chancellor to Donna Wichers of COGEMA, Mr. Chancellor declared these wells off excursion status. The NRC is expected to follow suit soon.

Christensen Ranch

Monitor well 5MW54 in Christensen Mine Unit 5 was on excursion status from November 22, 2002, until April 17, 2003, went on excursion status again on May 21, 2003, and remains there. Monitor well 5MW8, also in Christensen Mine Unit 5, was on excursion status from December 17, 2002, to July 28, 2003.

★ The Report did not mention Christensen Ranch Unit 2 Monitor Well MW68s which went into excursion on March 5, 2003, and was declared off excursion status on April 16, 2003.

Monitoring Data

The report document contain a large amount of monitoring data. Information from the monitoring of approximately 327 monitor and trend wells is presented for a one-year period, July 2002 through June 2003 in Appendix 2. 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 well fields, samples are only taken quarterly. Samples taken are analyzed for the excursion parameters: chloride, specific conductance and total alkalinity, along

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with pH. The potentiometric elevations of the water in the wells are also measured just prior to sampling. Uranium levels are measured for those wells in excursion status.

The results of testing regional surface water and water wells for radiometric parameters are presented on Table 1. This information is required by the Nuclear Regulatory Commission (NRC).

Mechanical Integrity Testing

No mechanical integrity testing was conducted during the report period.

Surface Disturbances

There was no additional land disturbed during the report period.

A minor amount of reclamation work was carried out along an access road in Christensen Ranch Unit 5.

Bond

No application for bond release of costs associated with restoration of the Irigaray well fields has been received as of September 2003.

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 groundwater restoration of Christensen Ranch Units 7 and 8 as injection never occurred in either of these well fields. The estimate does show that a total of 391 wells were drilled in Unit 7 and the cost for abandonment of these wells was included. Costs for revegetation of disturbances in both these units were also included.
2. Review of the bond estimate found specific changes as follows:
 - a. Worksheet 1, Groundwater sweep, Plant and Office, Section I.A., Page 1
 - i) pumping efficiency at Christensen has been decreased from 0.75 Kwh/hp to 0.83 Kwh/hp.
 - ii) cost of power has been reduced from \$0.038/Kwh to \$0.0365/Kwh.
 - iii) costs for propane at \$1000/mo. for Irigaray and \$200/mo. for Christensen have been eliminated.
 - iv) \$500/mo. for telephone have been added.

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- v) costs for groundwater sweep for Irigaray Units 1 thru 9 and Christensen Units 2-5 have been added. Last year only costs for groundwater sweep at Christensen Unit 6 were shown.

- b. Worksheet 1, Groundwater sweep, Wellfield, Section I.B., Page 2
 - i) the horsepower of the pumps at Christensen was reduced from 5 to 3
 - ii) the number of pumps used was increased from 5 to 10
 - iii) pumping efficiency has been increased from 1.0 Kwh/hp to 0.83 Kwh/hp.
 - iv) cost of power has been reduced from \$0.038/Kwh to \$0.0365/Kwh.
 - v) costs for groundwater sweep for Irigaray Units 1 thru 9 and Christensen Units 2-5 have been added. Last year only costs for groundwater sweep at Christensen Unit 6 were shown

- c. Worksheet 1, Reverse Osmosis, Plant and Office, Section II..A., Page 2
 - i) pumping efficiency has been decreased from 0.73 Kwh/hp to 0.83 Kwh/hp.
 - ii) cost of power has been reduced from \$0.038/Kwh to \$0.0365/Kwh.
 - iii) the costs for sulfuric acid and sodium sulfate were removed.
 - iv) the cost of caustic soda was increased at Christensen and decreased at Irigaray
 - v) the cost of hydrogen sulfide reductant was removed from this section.
 - vi) the cost of repair and maintenance was reduced from \$0.279/Kgals to \$0.038/Kgals at Irigaray and from \$0.120/Kgals to \$0.101/Kgals at Christensen Ranch
 - vii) the cost of sampling and analysis was reduced at Irigaray at Christensen. Costs differ for each wellfield

- d. Worksheet 1, Reverse Osmosis, Wellfield, Section II.B., Page 3
 - i) the horsepower of the pumps at Christensen was reduced from 5 to 3
 - ii) the number of pumps used at Christensen was decreased from 62.4 to 25
 - iii) pumping efficiency has been increased from 1.0 Kwh/hp to 0.83 Kwh/hp. at Christensen
 - iv) cost of power at Christensen has been reduced from \$0.038/Kwh to \$0.0365/Kwh.
 - v) the cost of hydrogen sulfide reductant addition was added for all wellfields.

- e. Worksheet 1, Waste Disposal Well, Section III, Page 4
 - i) pumping efficiency has been reduced from 0.75 Kwh/hp to 0.83 Kwh/hp.
 - ii) cost of power has been reduced from \$0.038/Kwh to \$0.0365/Kwh.
 - iii) the cost of antiscalent has been increased from \$0.226/Kgals to \$0.237/Kgals.

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- iv) the cost of sulfuric acid was increased from \$0.28/Kgals to \$0.534/Kgals.
- f. Worksheet 1, Stabilization Monitoring, Section IV, Page 5
 - i) the cost of power has been reduced from \$1000/month to \$240/month by using a portable generator instead of line power
 - ii) Sampling and analysis costs have been increased from \$3600/set to \$3800/set.
 - iii) the costs of power and telephone were added, totaling \$565/month.
- g. Worksheet 1, Restoration of Excursion Wells, Section VII, Page 5
 - i) this section was eliminated following DEQ/LQD's removal of the long term excursion wells at Irigaray from excursion status on July 29, 2003. This resulted in a savings of \$400,000.
- h. Worksheet 1, Groundwater Restoration, Summary, Page 5
 - i) Credits for the groundwater sweeps already completed were added, eliminating these costs for all wellfield units.
 - ii) The grand total for groundwater restoration dropped from \$5,499,554 to \$4,000,780.
- i. Worksheet 2, Plant Equipment Removal and Disposal, Sections I and II, Page 1
 - i) decontamination costs have been reduced from \$550/load to \$535/load.
 - ii) dismantling and loading costs have been reduced from \$715/load to \$650/load.
- j. Worksheet 2, Plant Equipment Removal and Disposal, Sections I and II, Page 1
 - i) the grand total for Plant Equipment Removal and Disposal has dropped from \$212,109 to \$205,103.
- k. Worksheet 3, Building Demolition and Disposal, Page 1
 - i) cost of demolition has been increased from \$0.131/ft³ to \$0.165/ft³.
 - ii) cost of gutting has been increased.
 - iii) cost of disposal has been changed from \$35.70/ton to \$12.00/cubic yard resulting in a significant decrease.

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- i. Worksheet 3, Concrete Decontamination, Demolition and Disposal, Page 1

 - i) decontamination costs have been reduced from \$0.17/ft² to \$0.134/ft².
 - ii) demolition costs have been raised from \$1.887/ft² to \$3.05/ft².
 - iii) on-site disposal costs have been raised from \$0.049/ft³ to \$0.23/ft³.

- m. Worksheet 3, Contaminated Soil Removal and Disposal, Page 2

 - i) the cost of removal using a front end loader has been raised from \$50.00/hr to \$75.00/hr.

- n. Worksheet 3, Building Demolition and Disposal, Concrete Decontamination, Demolition and Disposal and Contaminated Soil Removal and Disposal, Page 2

 - i) the grand total for this section has increased from \$587,632 to \$720,777.

- o. Worksheet 4, Pond Reclamation Cost, Page 1

 - i) the cost of sludge removal has been raised from \$238.00 to \$240.00 per ton.
 - ii) the cost of labor crew pond liner handling has been reduced from \$120/hr. to \$90/hr.
 - iii) the total cost of pond reclamation has barely changed, rising from \$1,258,180 to \$1,258,692.

- p. Worksheet 5, Well Plugging and Abandonment, Page 2

 - i) the amount of bentonite chips needed per well has been reduced from 11.6 ft³ to 11.4 ft³.
 - ii) the cost of gravel has been raised from \$17.53/cy. to \$20.00/cy.
 - iii) the cost of labor has been reduced from \$70.00/hr. to \$60.00/hr.
 - iv) the cost of a backhoe w/operator has been raised from \$35.00/hr. to \$38.50/hr.
 - v) the cost per well abandonment at Irigaray has dropped from \$186.69 to \$181.63 and from \$198.32 to \$194.89 at Christensen and the total cost of well abandonment dropped from \$760,261 to \$744,573.
 - vi) the grand total for well plugging and abandonment has decreased from \$760,261 to \$744,573.

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- q. Worksheet 6, Well Equipment and Disposal, Section I, Wellfield Piping Removal, Sections A and B, Page 1
 - i) the cost of removal has been increased from \$0.193/ft. to \$0.203/ft.
 - ii) the cost for decontamination has been reduced from \$550.00 to \$535.00 per load.

- r. Worksheet 6, Well Equipment and Disposal, Section II, Production Well Pumps, Sections A-C, Page 2
 - i) the cost of removal has been increased from \$21.44 to \$22.50 per well
 - ii) decontamination costs have been reduced from \$550.00 to \$435.00 per load
 - iii) the costs of removal of tubing has been increased from \$0.024/ft. to \$0.025/ft.

- s. Worksheet 6, Well Equipment and Disposal, Section III, Surface Trunkline Piping, Sections A and B, Page 3
 - i) the cost of removal has been increased from \$0.143/ft. to \$0.146/ft.
 - ii) decontamination costs have been reduced from \$550.00 to \$435.00 per load

- t. Worksheet 6, Well Equipment and Disposal, Section IV, Buried Trunkline, Sections A and B, Page 4
 - i) the cost of removal has been increased from \$2.80/ft. to \$3.12/ft.
 - ii) decontamination costs have been reduced from \$550.00 to \$435.00 per load

- u. Worksheet 6, Well Equipment and Disposal, Section V, Manholes, Sections A and B, Page 5
 - i) the cost of removal has been decreased from \$130.00/ea. to \$117.00/ea.
 - ii) decontamination costs have been reduced from \$550.00 to \$435.00 per load

- v. Worksheet 6, Well Equipment and Disposal, Page 5
 - i) the grand total for this section has increased from \$832,873 to \$850,720.

- w. Worksheet 7, Topsoil Replacement and Revegetation, Section I, Process Plant and Building, Section A, and Section II, Ponds, Section A, Page 1
 - i) the cost of grading has been decreased from \$50.00/ac. to \$38.45/ea.

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- ii) the subtotal for Ponds is incorrect. The first two columns total \$87,152.00, not \$71,361.00.

- x. Worksheet 7, Topsoil Replacement and Revegetation, Section III, Wellfields, Sections A and C, Page 2
 - i) the cost of grading has been decreased from \$50.00/ac. to \$38.45/ea.
 - ii) handling costs have been raised from \$200.00/load to \$240.00/load.

- y. Worksheet 7, Topsoil Replacement and Revegetation, Section IV, Roads, Section A, Page 2
 - i) the cost of grading has been decreased from \$50.00/ac. to \$38.45/ea.

- z. Worksheet 7, Topsoil Replacement and Revegetation, Section V, Other, Section A, Page 3
 - i) the cost of grading has been decreased from \$50.00/ac. to \$38.45/ea.

- aa. Worksheet 7, Topsoil Replacement and Revegetation, Page 3
 - i) the grand total for Topsoil and Revegetation Costs has dropped from \$757,774 to \$753,148. However, with the error noted in w(ii) above, the actual costs would have risen to \$768,938.

- bb. Worksheet 8, Miscellaneous Reclamation, Section IV, Transformer Removal and Disposal, Page 1
 - i) the cost of removal and disposal of a transformer has been increased from \$2428/ea. to \$2500/ea.

- cc. Worksheet 8, Miscellaneous Reclamation, Section IX, Utilities, Page 1
 - i) power costs have been reduced from as much as \$2380/month to \$65/month for all wellfield units.

- dd. Worksheet 8, Miscellaneous Reclamation, Page 1
 - i) the grand total for Miscellaneous Reclamation has dropped from \$155,926 to \$129,778.

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3. This estimate again assumes credit for most well field restoration work already carried out, such as Irigaray Units 1 through 9 and Christensen Ranch Units 2 and 3.

Credit has been taken for groundwater sweep in all well field units.

4. The estimate includes \$200,000 to cover plugging of the two deep disposal wells.
5. COGEMA set the amount of contingencies totaling 34.5%, the same as last year.
6. As requested last year, a detailed list of assumptions around which the estimate was constructed was supplied. The assumptions discuss in some detail the reasons for increasing or decreasing the costs, many of which are listed above.
7. A tentative grand total for the bond comes to \$11,673,742.00, including the correction of the error plus contingency discussed in Section 2.w(ii) above. This is a decrease of \$2,021,988 from the current bond of \$13,695,730.

Conclusions

* Review of the 2003 Annual Report for Permit No. 478 found that groundwater restoration has ceased at Irigaray Ranch and continues at Christensen Ranch. The Report supplies adequate information in nearly all areas. One exception is the discovery in early May of 2003 of some birds killed in a Christensen evaporation pond. Additional information is requested on this incident.

* The Report did not mention Christensen Ranch Unit 2 Monitor Well MW68s which went into excursion on March 5, 2003, and was declared off excursion status on April 16, 2003. Record of this excursion should also be added to the Report.

Review of the bond estimate found nearly all areas acceptable. Correction of one error is requested.

\gm