

PATHFINDER

A Cogema Resources Company

December 26, 2002

Mr. Dan Gillen, Branch Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, Maryland 20852

Ref: Docket No. 40-6622, Source Material License No. SUA-442

Dear Mr. Gillen:

Pathfinder requests an amendment to the above referenced license to modify or delete various license conditions that have become obsolete in light of the current status of the Shirley Basin mill/tailings site. Each condition that we wish to address is itemized below with discussion.

- 1) **Condition 11.** Modify the first sentence to read: "For use in accordance with statements, representations, and conditions contained in Sections 4 and 5 of the licensee's application dated November 30, 1994, as modified by the submittal dated December 26, 2002, except where superseded by license conditions below."

Discussion: Section 4.2 of the November 30, 1994 submittal specifies daily visual inspections of the tailings dams, monthly surveys of the tailings ponds operating levels, and monthly monitoring of piezometers in the No. 5 embankment. With the exception of the two evaporation ponds referenced in Condition 37, there is no impounded tailings solution in ponds 4 and 5. It would be appropriate to eliminate daily inspections of the embankments. Daily visual inspection during the work week of the dikes surrounding the two evaporation ponds would continue. Due to the lack of ponded water, monthly surveys of the Nos. 4 and 5 pond liquid operating levels can be eliminated. Monthly surveys of the water levels in the two evaporation ponds would continue. Because of the lack of water, No. 5 embankment piezometer level monitor can be reduced to a bimonthly frequency (once every two months).

In recognition of the low exposure levels in recent years for full time site personnel, the radiation safety program should be modified as follows: Preparation of a semi-annual in house radiation safety report (Section 5.1.3 of the November 30, 1994 submittal) should be eliminated. The lack of a milling facility justifies the elimination of that report. The annual ALARA audit report would continue. The requirement of annual specialized radiation training for supervisory personnel (Section 5.3.4 of the November 30, 1994 submittal) should be deleted. Exposures do not warrant a continuation of such training.

NMSS01



There are no site security personnel as noted in Section 5.4 of the November 30, 1994 submittal. The reclamation status of the site with no milling facility has not warranted the presence of security personnel. Site security is limited to a locked gate controlling access when no company personnel are present.

The November 30, 1994 submittal incorporated a respiratory protection program. Such a program should be deleted. Based on general personnel exposures as well as those specific to the receipt of ISL waste shipments (the only activity with any potential for site personnel to come in contact with concentrated uranium), there is no further need for a respiratory protection program. Site personnel directly involved in the receipt of ISL shipments have been monitored for airborne exposures for a number of years now. The accumulated data demonstrate very low exposures during the receipt process and the lack of any need for a respiratory protection program.

Section 5.5.7 of the November 30, 1994 submittal outlined the environmental monitoring program for Shirley Basin. The present program includes air sampling for uranium, thorium-230, radium-226, lead-210, and radon. The enclosed Attachment 1 summarizes the air monitoring data for the past couple of years. Interim cover has been placed over the entire tailings system and the mill site, dramatically reducing the primary source of airborne radionuclides. Additionally, the completion of the balance of the windblown tailings cleanup in 1999 eliminated the other significant source term. Based on the accumulated data and the current site status, continuation of the environmental air sampling program should not be necessary. For similar reasons the environmental soils, vegetation, and direct radiation monitoring programs should also be terminated. See Attachment 1 for recent data on soils, vegetation, and direct radiation that supports the termination of the monitoring.

Section 5.5.7 of the November 30, 1994 also specifies an annual ALARA audit of the environmental monitoring program. In light of the current site status, and consistent with the proposed reduction of the environmental monitoring program, the annual environmental ALARA audit should be eliminated.

Interim stabilization procedures are discussed in Section 5.5.8 of the November 30, 1994 submittal. There is no further need for such procedures since the mill site and tailings have already been stabilized by an interim cover. Reference to interim stabilization procedures should be eliminated.

2) **Condition 31.** Delete.

Discussion: Since the site is in final reclamation with no further need to expand the tailings system, this condition is outmoded.

3) **Condition 32.** Delete.

Discussion: As noted above, the entire tailings system has been stabilized by an interim earthen cover, eliminating the need for this condition.



- 4) **Condition 34.** Modify by changing the radiation monitoring equipment calibration frequency to "...after repairs and at least annually or at the manufacturer's suggested interval, whichever is sooner,...". Eliminate the second paragraph which discusses calibrations and weekly checks of the pressure gauges used to determine air flow for environmental air samplers.

Discussion: Radiation monitoring equipment calibration on an annual frequency versus a semi-annual schedule is adequate, particularly in light of the current site status and the limited personnel exposures. If the environmental air sampling program is terminated as suggested above, the air flow calibration language in the latter portion of Condition 34 is no longer needed.

- 5) **Condition 37.** Delete the first sentence which discusses minimum freeboards for the No. 4 and No. 5 tailings impoundments.

Discussion: The tailings system has been stabilized by interim covering, and final reclamation of the ponds is scheduled, pending attainment of consolidation and revised plan approval by the NRC. Solution is no longer stored in the ponds (exclusive of the two solution storage/evaporation ponds discussed later in Condition 37), making the freeboard requirement unnecessary. The language referring to the two temporary evaporation ponds should be retained.

- 6) **Condition 38.** Delete.

Discussion: If the proposed modifications to the environmental and effluent monitoring program presented above are acceptable to the NRC, the program will be limited to ground water and surface water monitoring which will be addressed in Condition 47 upon approval of ACLs for the site. There will be no further need for Condition 38.

- 7) **Condition 41.** Delete.

Discussion: The embankments no longer function to store solution, and the solid tailings have been subject to active dewatering for a number of years by pumping from wells installed in the tailings. The contaminated solution resulting from the tailings dewatering is stored in the aforementioned two evaporation ponds. The monitoring of the dikes surrounding the two evaporation ponds is covered by submittals to the NRC referenced in Condition 37.

- 8) **Condition 43.** Delete.

Discussion: The Emergency Response Plan is specific to an operating mill and tailings facility. Considering the very remote possibility under current site conditions of any failure of a tailings embankment that might prompt initiation of an emergency response plan, maintenance of such a plan is unnecessary. There is no other potential scenario at the site that would qualify as an emergency requiring initiation of a response plan.



9) **Condition 44.** Delete.

Discussion: With an environmental monitoring plan reduction as proposed above, the only environmental sampling will be related to ground water and surface water monitoring specific to the anticipated ACLs. An EPA-certified laboratory will be doing all water sample analyses, and their internal quality assurance/quality control program should be sufficient.

10) **Condition 50.** Modify Condition 50A(3) to change the target completion date for the radon barrier placement to December 31, 2006, and condition 50B(1) to change the target completion date for the erosion protection placement to December 31, 2006.

Discussion: Upon evaluation of the latest tailings settlement monument data, it appears unlikely that the required tailings consolidation will be attained in time to meet the current radon barrier and erosion protection placement target completion dates. The additional time should allow the attainment of the required consolidation before final cover placement begins. Considering the present stabilized nature of the site, a delay of one year in completing the erosion protection will not present any significant added risk to the public health and safety, and the environment. Pathfinder plans to continue active dewatering of the tailings by pumping to attain consolidation in a timely manner. There are no other proven and economically viable options for meeting the needed consolidation in a shorter time frame.

11) **Condition 52.** Modify to reference the organization chart enclosed with this submittal.

Discussion: The organization structure has undergone some changes since the last submittal (Attachment 2).

Please advise us if there is any thing we can do to further aid the NRC during the review of this request.

Sincerely,

T. W. Hardgrove
Operations Manager

Enclosures

Cc: C. Cain, USNRC Region IV
D. L. Wichers
B. G. Bonifas

Shirley Bear Mine - SUA-442 Environmental Data Summary - 2000 - 2002

Airborne Samples Location	Oct 1, 2000		Oct 2, 2000		Oct 3, 2000		Oct 4, 2000		Oct 1, 2001		Oct 2, 2001		Oct 3, 2001		Oct 4, 2001		Oct 1, 2002		Oct 2, 2002		Avg				
	U-net	Re-226	Th-230	Pb-210	U-net	Re-226	Th-230	Pb-210																	
2R	100	0.04	1.20	0.09	75	0.66	2.9	0.24	0.87	0.04	3.4	0.27	2.1	0.16	1.6	0.11	0.11	0.15	0.01	0.15	0.01	0.22	0.02	1.22	0.811
4R	0.60	0.16	0.41	0.05	1.5	0.05	0.05	0.05	0.29	0.05	0.69	0.05	0.64	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
7R	0.72	0.17	0.27	0.06	0.76	0.06	0.06	0.06	0.39	0.01	1.6	0.06	0.53	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
10R	0.83	0.17	1.20	0.08	4.5	0.33	2.2	0.17	0.59	0.03	2	0.11	1.4	0.09	1.4	0.09	1.4	0.09	1.3	0.1	1.8	0.13	1.722	0.116	
Avg	100	0.04	1.20	0.09	75	0.66	2.9	0.24	0.87	0.04	3.4	0.27	2.1	0.16	1.6	0.11	0.11	0.15	0.01	0.15	0.01	0.22	0.02	1.22	0.811

*Percent of 10CFR20 Appendix B, Table II, Column 1 limit, adjusted for background at 4R

Pathfinder Mines Corporation
 Shirley Basin Mine
 Source Material License SUA-442

EXTERNAL RADIATION SUMMARY

Location:	2R	4R(backgrd.)	7R	10R
Average Exposure Rate (mR/qtr.)				
Qtr. 1, 2000	50	47.5	45	45
Qtr. 2, 2000	60	55	55	45
Qtr. 3, 2000	37.5	32.5	30	30
Qtr. 4, 2000	37.5	22.5	30	30
Qtr. 1, 2001	30	32.5	30	25
Qtr. 2, 2001	0	0	0	0
Qtr. 3, 2001	48	45	45	45
Qtr. 4, 2001	55	53	50	48
Qtr. 1, 2002	52.5	52.5	50	47.5
Qtr. 2, 2002	77.5	72.5	70	70
AVERAGE	28	26	25	24
AVG.-AVG. Backgrd.	2	--	0	0

Pathfinder Mines Corporation
Shirley Basin Mine
Source Material License SUA-442
Semi-annual Effluent Monitoring Report

Soil

Qtr: 3rd, 2000
 Sample Date: 8/23/00

Location	Radio-nuclide	Concent. uCi/g	Error Est. uCi/g	LLD uCi/g
2R	U-nat	2.70E-07	—	1.00E-08
	Ra-226	3.97E-06	2.20E-07	1.00E-08
	Th-230	8.13E-06	3.70E-07	1.00E-08
	Pb-210	2.37E-06	4.40E-07	5.00E-08
4R	U-nat	2.30E-07	—	1.00E-08
	Ra-226	1.48E-06	1.40E-07	1.00E-08
	Th-230	4.30E-07	1.80E-07	1.00E-08
	Pb-210	5.00E-07	3.60E-07	5.00E-08
7R	U-nat	1.00E-07	—	1.00E-08
	Ra-226	1.61E-06	1.40E-07	1.00E-08
	Th-230	3.90E-07	7.00E-08	1.00E-08
	Pb-210	5.00E-08	—	5.00E-08
10R	U-nat	3.20E-07	—	1.00E-08
	Ra-226	3.11E-06	2.00E-07	1.00E-08
	Th-230	2.92E-06	2.40E-07	1.00E-08
	Pb-210	9.30E-07	3.70E-07	5.00E-08

Sample Type: grab, annual.

Location of Sample Points: Soil collected from sites adjacent to each ambient air monitor.

Pathfinder Mines Corporation
 Shirley Basin Mine
 Source Material License SUA-442
 Semi-annual Effluent Monitoring Report

Soil

Qtr. 3rd, 2001
 Sample Date: 9/12/01

Location	Radio-nuclide	Concent. uCi/g	Error Est. uCi/g	LLD uCi/g
2R	U-nat	1.83E-06	—	1.35E-08
	Ra-228	2.70E-06	2.00E-07	1.00E-08
	Th-230	4.80E-06	3.00E-07	1.00E-08
	Pb-210	1.50E-06	3.00E-07	5.00E-08
4R	U-nat	2.17E-06	—	1.35E-08
	Ra-226	1.90E-06	1.00E-07	1.00E-08
	Th-230	1.30E-06	1.80E-07	1.00E-08
	Pb-210	1.10E-06	3.00E-07	5.00E-08
7R	U-nat	9.48E-07	—	1.35E-08
	Ra-228	1.80E-06	1.00E-07	1.00E-08
	Th-230	7.90E-07	1.50E-07	1.00E-08
	Pb-210	6.00E-07	1.00E-07	5.00E-08
10R	U-nat	8.39E-06	—	1.35E-08
	Ra-226	5.10E-06	2.00E-07	1.00E-08
	Th-230	6.50E-06	3.90E-07	1.00E-08
	Pb-210	2.60E-06	3.00E-07	5.00E-08

Sample Type: grab, annual.

Location of Sample Points: Soil collected from sites adjacent to each ambient air monitor.

Pathfinder Mines Corporation
Shirley Basin Mine
Source Material License SUA-442
Semi-annual Effluent Monitoring Report

Vegetation Quarter: 3rd, 2000
 Sample Date: 8/23/00

Location	Radio-nuclide	Conc. uCi/kg	Error Est. uCi/kg	LLD uCi/kg
2R	Ra-226	7.40E-05	6.00E-06	4.20E-07
	Pb-210	8.00E-05	3.50E-05	2.10E-06
4R	Ra-226	8.10E-05	1.00E-05	8.30E-07
	Pb-210	3.60E-04	8.00E-06	4.20E-06
7R	Ra-226	1.20E-04	1.00E-05	5.60E-07
	Pb-210	2.60E-04	5.00E-05	2.80E-06
10R	Ra-226	2.20E-04	2.00E-05	8.30E-07
	Pb-210	4.10E-04	8.00E-05	4.20E-06

Sample Type: grab, annual.

Location of Sample Points: Vegetation is collected from the vicinity of each air monitor.

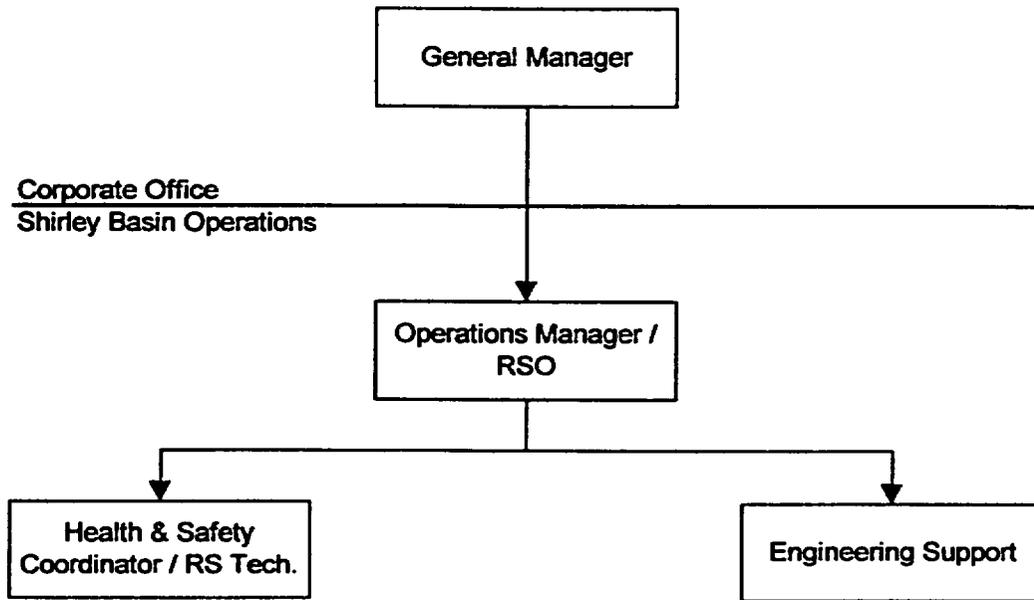
Pathfinder Mines Corporation
Shirley Basin Mine
Source Material License SUA-442
Semi-annual Effluent Monitoring Report

Vegetation **Quarter: 3rd, 2001**
 Sample Date: 9/12/01

Location	Radio-nuclide	Conc. uCi/kg	Error Est. uCi/kg	LLD uCi/kg
2R	Ra-226	1.60E-04	1.82E-05	1.60E-06
	Pb-210	6.89E-05	2.33E-05	7.80E-06
4R	Ra-226	5.40E-05	1.00E-05	3.30E-06
	Pb-210	1.73E-04	4.97E-05	1.70E-05
7R	Ra-226	9.00E-05	8.50E-06	2.10E-06
	Pb-210	1.06E-04	3.08E-05	1.00E-05
10R	Ra-226	1.50E-04	2.04E-05	1.90E-06
	Pb-210	2.38E-04	2.97E-05	9.50E-06

Sample Type: grab, annual.
Location of Sample Points: Vegetation is collected from the vicinity of each air monitor

Attachment 2



**PATHFINDER Mines Corporation
Shirley Basin Mine**

**Figure 5-1
Organizational Chart**