PDR 040-8714
Return to URFO
467-55

Cleveland-Cliffs
Helping develop earth's resources to meet the world's needs.

Western Division

R. M. Tuthill, Manager-Uranium

1212 East "C" St.
P.O. Box 3140, Casper, WY 82602
Phone: 307 - 234-9133

04008714 201E

April 29, 1983

Mr. Frederick Ross
Uranium Recovery Licensing Branch
Division of Waste Management
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: SOURCE MATERIAL LICENSE NO. SUA-1352
DOCKET NO. 040-08714

Dear Mr. Ross:

Per our discussions on April 29, 1983 attached is the letter with exhibits that was recently submitted to the Wyoming DEQ.

Please phone if you should have any questions.

Sincerely,

Truman E. Louderback
Director of Environmental Affairs

TEL/vc
Attachments

FEE EXEMPT

DESIGNATED ORIGINAL

Certified By Mary C. Hood

00268
info only

Cleveland-Cliffs
Helping develop earth's resources to meet the world's needs.

Western Division

R. M. Tuthill, Manager-Uranium

300 Country Club Road
P.O. Box 3140, Casper, WY 82602
Phone: 307 - 234-9133

April 15, 1983

Mr. Glenn Mooney, Geologist
District IV Office
Land Quality Division
30 East Grinnel Street
Sheridan, Wyoming 82801

RE: RESEARCH AND DEVELOPMENT LICENSE NO. 3RD - COLLINS DRAW PROJECT

Dear Mr. Mooney:

Cleveland-Cliffs has received and reviewed your letter dated February 28, 1983, (attached Exhibit 1) in regard to the conclusions that the Land Quality Division and Water Quality Division staffs reached during the meeting on February 23, 1983. The conclusions contained in your letter are not in accordance with verbal and written agreements that were reached with the late Mr. Ackerman, LQD Administrator, and other LQD and WQD staff memebers. We are alarmed and very concerned with the lack of finality and the chronic continuation of additional requirements to complete groundwater restoration at Collins Draw.

On October 28, 1982, Mr. Jerry Laman of Cleveland-Cliffs sent a letter to Ms. Kathy Ogle, LQD (attached Exhibit 2) which proposed a program to complete groundwater restoration at Collins Draw. The restoration program was based on discussions and agreements with Mr. Ackerman and others during a meeting with Cleveland-Cliffs on October 25, 1982. In a letter dated November 1, 1982, from Mr. Ackerman to Mr. Laman, (attached Exhibit 3) Mr. Ackerman stated "..... I am responding since any official concurrence of DEQ-LQD is vested with the administrator." He concurred with the restoration program contained in Mr. Laman's letter. As reported in my letter dated January 4, 1983, (attached Exhibit 4) groundwater restoration has been completed in compliance with the restoration program agreed to.

We do not believe the conclusions reached during your meeting on February 23, 1983, are in accordance with previous discussions and agreements established with the LQD. However, in order to assist the proper officials in making a decision, each of your conclusions is further discussed below.

1) Cleveland-Cliffs concurs that restoration of ammonia has been adequate.

2) The quality of use standards for arsenic and selenium are not applicable to the groundwater at the Collins Draw Project. It is assumed that "the quality of use standards"

you refer to are the use suitability standards for Class I-Domestic groundwater from Table I Chapter VIII, Water Quality Rules and Regulations.

A memo from Mr. Garland, WQD to Mr. Beach, LQD dated July 9, 1982, classified the groundwater at Collins Draw as Class I-Domestic (attached Exhibit 5). On August 6, 1982, I sent a letter to Mr. Garland which contained 11 questions in regard to the groundwater classification (attached Exhibit 6). On August 9, 1982, Mr. Mancini, WQD phoned me and stated that the groundwater was classified per a request from the LQD and that Mr. Garland could not appropriately answer the questions (attached Exhibit 7). The same questions were then sent to Mr. Ackerman in a letter dated August 10, 1982 (attached Exhibit 8). A meeting with Mr. Ackerman was requested in order to receive answers to the questions and to determine the basis for the Class I designation. On August 20, 1982, a meeting was held with Mr. Ackerman, Mr. Mancini, and others to discuss the groundwater classification. During that meeting WQD representatives stated that WQD Chapter VIII regulations are not retroactive to License 3RD. During the meeting with LQD and WQD on October 25, 1982, WQD representatives again stated that Chapter VIII regulations were not retroactive to the Collins Draw Project.

Considering that the questions in regard to the original Class I designation were never answered, and considering that Chapter VIII standards are not applicable, your reference to Class I standards for arsenic and selenium appear to be unfounded.

Throughout the restoration phase of the project Cleveland-Cliffs has employed the best practicable technology to reduce the concentration of all groundwater quality parameters. This use of best practicable technology has been discussed and documented in the restoration reports. During meetings with you, Mr. Chancellor, Mr. Ackerman, and others, we have sought advice from the LQD and the WQD in regard to practicable restoration technologies. The LQD could not advise Cleveland-Cliffs of better practicable technologies. Selenium and arsenic did not appear to be parameters of concern to the LQD until the meeting on October 25, 1982. During that meeting Mr. Ackerman discussed the problems associated with reducing the concentration of these parameters, and concluded that there is no best practicable technology capable of reducing these parameters to Class I standards.

As discussed in the restoration reports, Cleveland-Cliffs has pumped groundwater from the production zone and discharged the water on the surface, in order to remove selenium and arsenic from the groundwater. However, solution mining has altered the mobility of these parameters, and we have been unable to reduce arsenic and selenium to baseline or Class I standards, using the best practicable technology.

During the meeting with Mr. Ackerman and others on October 25, 1982, Mr. Ackerman explained that Cleveland-Cliffs had an in situ research and development license and not a commercial mine permit. The legislature authorized research and development licenses to encourage the development of in situ mining. The R and D license would limit the project size in order to limit the potential impact of research efforts. Mr. Ackerman stated that if Cleveland-Cliffs were seeking a commercial permit, he would "hold our feet to the fire" to achieve Class I or baseline water quality. However, Cleveland-Cliffs was not requesting a commercial permit and, therefore, restoration requirements could be viewed differently.

3) This conclusion is difficult to comprehend considering that this excursion occurred approximately 1-1/2 years ago at a time when we were in the groundwater restoration phase; the excursion responded to corrective action; Collins Draw has not had a chronic history of groundwater excursions; and the DEQ has waited until completion of restoration (per the agreement with Mr. Ackerman) to show concern.

Excursion monitoring well number 238 is located within approximately 100 feet of the B Well Field, and this is approximately 1/2 the distance that monitor wells are normally spaced to detect excursions. This close spacing permitted immediate detection and monitoring of the excursion. An additional monitor well, Well 298, was drilled approximately 100 feet south of Well 238, along the axis of major transmissivity, where the excursion would be expected to migrate. By using the DEQ Well 238 excursion limits for Well 298, Well 298 has never been in a positive excursion condition as defined by License 3RD.

As explained previously in our letter to you dated January 20, 1983, pumping in the region of the excursion, with the use of surface discharge returned Well 238 to a nonexcursion condition. Considering the very slow rate of the natural groundwater movement (approximately 6 feet per

year) and the pumping with surface discharge creating an inflow toward the well field it is very doubtful that the excursion would have migrated any significant distance.

Considering that Well 298 would never have been in excursion, even though it is at an optimal location and distance, and considering the excursion at Well 238 has been corrected, why would any additional data or additional wells be warranted? Considering groundwater flow toward the well field due to pumping, why would an extensive excursion be predicted? Why has the LQD waited approximately 1-1/2 years to show concern? The basis of your conclusion considering the excursion monitoring data from Wells 238 and 298 is unfounded. The Collins Draw Project has not had a chronic history of excursions to warrant this conclusion.

During our meeting with Mr. Ackerman and others, on October 25, 1982, the excursion was briefly discussed and was not an issue of concern. Long-term monitoring of the monitor wells was also discussed and Mr. Ackerman decided that it was not warranted, considering the slow natural rate of groundwater movement. Therefore, in the program that was proposed to complete groundwater restoration and in Mr. Ackerman's letter of concurrence, the corrected excursion was not an issue which would affect Mr. Ackerman's decision to approve groundwater restoration at Collins Draw.

4) The eight license conditions do not require a stabilization period (attached Exhibit 9). The A-1 Well Field was in a post restoration stabilization phase from September 1, 1981, until approximately November 1, 1982. During this period of time there was no significant elevation or increase in the groundwater parameters. During discussions with Mr. Ackerman and others on October 25, 1982, long-term stabilization monitoring was discussed and it was decided that based on the stability of the A-1 Well Field and the slow rate of groundwater movement that further long-term stabilization monitoring was not warranted.

At the conclusion of the meeting with Mr. Ackerman on October 25, 1982, it was agreed that the reduction of the ammonia concentration in those wells that had ammonia in excess of 30 mg/l would be the final restoration step. It was further agreed that the final sampling would include sampling for three parameters: NH_3 as N, arsenic and selenium. This is the program that was agreed to in writing with Mr. Ackerman. Cleveland-Cliffs has completed groundwater restoration commitments and obligations, in a spirit

of cooperation with the understanding that this would be the final requirement prior to cementing and abandoning the wells. It definitely appears that either the conclusions reached during your meeting on February 23, 1983, do not have official administrative concurrence, or that the LQD is not abiding by the agreements established.

5) Per a letter dated January 10, 1983, from Tom Mueller, WQD, and a subsequent phone call we have completed WQD requirements per Permit 79-682 in regard to the leach field.

The only leach field license we received from the Land Quality Division was a hand written note from Dennis Morrow on April 25, 1980 (attached Exhibit 10). Cleveland-Cliffs has complied with all conditions of the LQD license. Since, we have completed all DEQ post-operation requirements except for surface reclamation, we cannot understand why the license has not been terminated.

Cleveland-Cliffs requests an official communication from, or a meeting with, Mr. Sundin and Mrs. Freudenthal to determine if we have complied with the agreements in regard to restoration at Collins Draw, and also complied with License 3RD, the Wyoming Environmental Quality Act, and the LQD and WQD rules and regulations.

Sincerely,

Truman E Louderback

Truman E. Louderback
Director of Environmental Affairs

TEL/vc
Attachments
cc w/attach: R. E. Sundin
Mrs. Nancy Freudenthal
J. A. Sundahl

LEGAL/DSW.701

EXHIBIT 1

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Environmental Quality

LAND QUALITY DIVISION

DISTRICT IV OFFICE

30 EAST GRINNELL STREET TELEPHONE 307-672-6488 SHERIDAN, WYOMING 82801

February 28, 1983

Mr. Truman Louderback
Director of Environmental Affairs
The Cleveland-Cliffs Iron Co.
P.O. Box 3140
Casper, Wyoming 82602

RE: Collins Draw In-Situ Project, RD3

Dear Mr. Louderback:

Members of the Land Quality and Water Quality Division staff met in Cheyenne on February 23, 1983 to discuss the status of wellfield restoration at the Collins Draw project.

The following conclusions were reached during the meeting:

1) Restoration of ammonia has been adequate to achieve the standard of 30 mg/L agreed upon during the meeting of October 25, 1982.

2) Restoration of arsenic and selenium has been inadequate. Additional restoration is required to reach the quality of use standards of .05 mg/L for arsenic and .01 mg/L for selenium.

   For any parameter not brought to the quality of use standards, Cleveland-Cliffs must demonstrate that they have used best practicable technology. Supporting data is required demonstrating that the "point of diminishing returns" was reached for each restoration technique. We would expect to see curves and charts to demonstrate the decline in efficiency as the total quantity of groundwater circulated increased.

3) There is concern that the extent of the excursion of lixiviant outside the wellfield area to the south was not all detected by monitoring wells numbers 238 and 298 nor was all the lixiviant recovered by pumping in the wellfield and the two monitor wells.

To detect any further escaped lixiviant, we are considering requiring Cleveland-Cliffs to drill and complete as many as three (3) monitor wells in this area.

However, before this decision is made, we request additional information on the subsurface geology in the area south of the wellfield. Geologic cross-sections, geophysical (electric) logs, and geologists' logs from any exploration drill holes for this area should be submitted to enable our offices to determine the likelihood of zones of permeability extending from the wellfield to the south and also aid us in the siting of any possible further monitor well or wells.

Any information classifiable as a trade secret submitted may be considered confidential at your request.

4) After restoration has been achieved to the aforementioned values and all other parameters except ammonia have been brought to a minimum quality of use standard, a stabilization period as per the license conditions will be instituted.

During the period of stabilization, monitoring for the full Guideline 8 parameters will be required.

5) Regarding restoration and reclamation of the leachfield, the Department will work with the NRC to insure minimum duplication of effort.

If you have any questions, please contact this office.

Sincerely,

Glenn Mooney

Glenn Mooney
Geologist

GM:kn

xc: John Linehan, NRC
Dick Lennox, WQD
Kathy Mueller-Ogle

C. Steve Lange

EXHIBIT 2

Cleveland-Cliffs
Helping develop earth's resources to meet the world's needs.

Western Division

R. M. DeGabriele, General Manager, Western Operations
R. M. Tuthill, Manager-Uranium
R. W. Riedel, Assistant to the General Manager
E. D. Lindquist, Assistant Manager Special Projects

300 Country Club Road
P.O. Box 3140
Casper, Wyoming 82602-3140
Phone: 307-234-9133

October 28, 1982

Ms. Kathy Ogle
Land Quality Division
Wyoming Department of Environmental Quality
Equality State Bank Building
401 West 19th Street
Cheyenne, Wyoming 82002

Dear Kathy:

Re: Collins Draw License RD3

As per our meeting October 25 and later telephone conversation October 26, 1982, the plan to identify individual wells with elevated concentrations of ammonia is as follows:

1. All wells in the A-1 Well Field and B Well Field will be sampled and assayed for ammonia (NH_3 as N), arsenic, and selenium. The groundwater samples will be collected by pumping the wells.

2. The wells with ammonia (NH_3 as N) elevated above approximately 30 mg/l will be identified as "hot spots." Efforts will be made to reduce these "hot spots" through surface discharge, dispersion and dilution.

3. Once the "hot spots" have been reduced to approximately 30 mg/l, restoration activities will cease.

4. All raw laboratory data concerning all the wells in the A-1 and B Well Fields sampled during this phase will be provided to you. No averaging of data by Cleveland-Cliffs for the DEQ is planned, as per our meeting of October 25, 1982.

After providing our best efforts in regard to reducing the "hot spots," some wells will be selected by consultation between you and Cleveland-Cliffs and will be sampled and analyzed again for ammonia (as N), to confirm reduction of the high ammonia (as N) concentrations and to complete restoration. We understand these selected wells may or may not be the 16 wells already proposed by Cleveland-Cliffs on November 16, 1981, and that the DEQ may do the well sampling. However, it is also understood that it is not necessary to sample and analyze every well in the well field in order to bring the groundwater restoration at Collins Draw to an end.

Your prompt review and approval of the above discussed program would be appreciated. To decrease your paperwork and assist your response, I have included a review response form below.

Sincerely,

CLEVELAND-CLIFFS

Jerry T. Laman
Chief Metallurgist

JTL:ceg

C: R. M. Tuthill
T. E. Louderback
D. J. Wodek
J. A. Sundahl, Godfrey and Sundahl

Certified Mail #P 201 406 597

Date _____

Reviewed on this date Cleveland-Cliffs proposed groundwater sampling and restoration program, as contained in the above letter and found them to be acceptable.

Signed _____

Title _____

JTL2/LQ

EXHIBIT 3

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Environmental Quality

LAND QUALITY DIVISION

401 WEST 19TH STREET TELEPHONE 307-777-7756 CHEYENNE, WYOMING 82002

November 1, 1982

Jerry T. Laman
Chief Metallurgist
Cleveland-Cliffs
300 Country Club Road
P.O. Box 3140
Casper, WY 82602-3140

RECEIVED
NOV - 8 1982
CLIFFS
CASPER, WYOMING

RE: Collins Draw - R&D #3

Dear Mr. Laman:

With regard to your letter of October 28, 1982 addressed to Kathy Ogle of my staff, I am responding since any official concurrence of DEQ-LQD is vested with the administrator.

I concur with your outlined program with the following two clarifications. The "hot spots" referred to should be reduced to at least 30mg/l or lower using best practicable technology. Likewise arsenic and selenium should be brought down as far as best practicable technology allows. The decision as to the number and location of wells to be sampled upon completion of restoration cannot be made until the identification and clean-up of hot spots is completed.

If you have any questions regarding this response, please feel free to contact me.

Sincerely,

W. C. Ackerman

W.C. Ackerman
Administrator

WCA:KMO:kv

cc: District IV

EXHIBIT 4

Cleveland-Cliffs
Helping develop earth's resources to meet the world's needs.

Western Division

R. M. DeGabriele, General Manager, Western Operations
R. M. Tuthill, Manager-Uranium
R. W. Riedel, Assistant to the General Manager

300 Country Club Road
P.O. Box 3140
Casper, Wyoming 82602-3140
Phone: 307-234-9133

January 4, 1983

Mr. W. C. Ackerman, Administrator
Land Quality Division
Wyoming Department of Environmental Quality
Equality State Bank Building
401 West 19th Street
Cheyenne, WY 82002

Dear Mr. Ackerman:

Re: Research and Development License No. 3RD
Collins Draw Project

Pursuant to our meeting with you on October 25, 1982, a letter dated October 28, 1982, was submitted to the Land Quality Division which contained a plan for the completion of groundwater restoration at Collins Draw. The plan included the sampling of all wells in the A-1 and B Well Fields; analyses of the samples for ammonia, arsenic, and selenium; further restoration at those wells where ammonia concentrations were in excess of 30 mg/l ("hot spots"); and subsequent post restoration sampling and analyses to confirm reduction of the high ammonia concentrations and completion of restoration.

Your letter in reply, dated November 1, 1982, concurred with the proposed restoration plan and further clarified that the "hot spots" should be reduced to at least 30 mg/l or lower by using best practicable technology, and that arsenic and selenium should be reduced to the extent allowable by best practicable technology. Your letter also stated that the number and location of wells to be sampled upon completion of restoration could not be determined until after the "hot spots" were identified and restored.

Cleveland-Cliffs has completed groundwater restoration in compliance with the proposed plan and your letter dated November 1, 1982. After our meeting on October 25, all wells were sampled by pumping and the samples were analyzed for ammonia, arsenic, and selenium. As shown on the attached Table 1, under the heading Initial Sampling, samples from 14 of the wells contained ammonia concentrations in excess of 30 mg/l. After sampling, best practicable technology was used to reduce the ammonia concentrations at the "hot spots" to below 30 mg/l. In addition, the best practicable technology has been used to reduce arsenic and selenium in the groundwater to the extent allowable.

During restoration, the 14 wells that had exhibited elevated ammonia concentrations were again sampled and the water was analyzed. As shown in Table 1, under the heading Remedial Restoration Sampling, it was determined that the higher ammonia concentrations were reduced to below 30 mg/l.

In December, after restoration had been terminated, all wells in the A-1 and B Well Fields were again sampled to ascertain completion of restoration. The analysis of those samples, as shown in Table 2, documents that the ammonia concentration in all wells has been reduced to below 30 mg/l, and that arsenic and selenium concentrations have been reduced as low as best practicable technology allows. Restoration has been completed according to the proposed plan and your letter dated November 1, 1982.

Attached are the raw laboratory analytical data from the sampling and analysis discussed above.

Cleveland-Cliffs requests your authorization to cement the in situ mine production and monitor wells and to begin plant demobilization and surface reclamation. If, as previously discussed, the Land Quality Division desires to sample the groundwater in the A-1 and B Well Fields to confirm completion of restoration, we further request that this sampling be conducted as soon as practicable. Could this sampling be conducted during the week of January 17, 1983?

Pumps have been installed in those wells that were proposed for sampling in my letter dated november 16, 1981, which accompanied the A-1 Well Field Groundwater Restoration Report. These are the same wells as shown in Table 2, that were sampled by pumping. We do not have sufficient equipment to install pumps in all wells.

Your review of the enclosed data at your earliest convenience would be greatly appreciated. If you should have any questions in regard to the completed restoration program, please contact me personally.

Sincerely,

CLEVELAND-CLIFFS

Truman E. Louderback
Director of Environmental Affairs

TEL:ceg

C: Mr. Richard A Chancellor
Land Quality Division
Wyoming Department of Environmental Quality
30 East Grinnell Street
Sheridan, Wyoming 82801

BC: J. A. Sundahl
S. A. Lange

DAILY/TEL

TABLE 1

Restoration Sampling

Initial Sampling						Remedial Restoration Sampling					
Well No.	Date	NH_3	As	Se	Sample Type	Well No.	Date	NH_3	As	Se	Sample Type
190	11-05	6.5	0.013	0.026	P						
231	11-01	<0.05	<0.001	0.059	P						
*232	10-27	50.3	0.484	0.224	P	232	11-16	2.20	0.008	0.015	P
*233	10-27	84.9	0.220	1.456	P	233	11-17	2.20	0.008	0.044	P
234	10-27	14.0	0.103	0.282	P						
*237	10-27	91.0	0.079	2.110	P	237	11-09	4.0	0.004	0.084	P
*242	10-27	32.2	0.196	0.130	P	242	11-10	1.38	0.005	0.008	P
*243	10-29	44.8	0.003	2.430	P	243	11-12	<0.05	0.005	0.015	P
244	11-08	2.7	0.007	0.022	P						
*246	10-27	69.6	0.748	2.432	P	246	11-10	5.95	0.011	0.156	P
247	10-30	21.0	0.038	0.153	P						
248	11-03	7.4	0.016	0.390	P						
249	11-08	2.2	0.011	0.510	P						
252	10-27	26.6	0.064	0.234	P						
253	11-08	8.5	0.012	0.046	P						
*254	10-27	47.3	0.440	0.221	P	254	11-11	<0.05	<0.001	<0.001	P
255	11-01	21.0	<0.001	0.747	P						
258	11-01	6.5	0.001	0.396	P						
260	11-09	<0.05	0.001	0.020	P						
261	11-01	0.33	<0.001	0.052	P						
262	11-01	0.57	<0.001	0.029	P						
*265	11-05	47.6	0.012	1.680	P	265	11-17	<0.05	0.002	0.002	P
273	11-03	4.0	0.008	0.148	P						
*275	11-04	63.0	0.016	5.20	P	275	11-16	<0.05	<0.001	<0.001	P
276	11-08	3.0	0.008	0.042	P						
277	11-08	9.9	0.004	0.044	P						
*278	11-04	36.4	0.014	0.770	P	278	11-15	0.15	0.002	<0.001	P
280	11-02	<0.05	<0.001	<0.001	P						
281	11-03	5.7	0.009	0.080	P						
*282	11-03	35.0	0.015	0.430	P	282	11-15	<0.05	<0.001	<0.001	P
283	11-03	<0.05	<0.001	<0.001	P						
*284	11-02	40.6	0.017	0.570	P	284	11-12	<0.05	0.002	<0.001	P
*285	10-27	77	0.297	2.304	P	285	11-09	3.3	0.007	0.170	P
*286	11-02	47.6	0.013	1.460	P	286	11-12	<0.05	0.002	0.027	P
287	11-04	7.4	0.013	0.480	P						
288	11-08	18.7	0.015	0.750	P						
290	11-01	<0.05	<0.001	<0.001	P						
291	11-05	16.8	0.016	0.106	P						
292	11-05	7.4	0.015	0.300	P						
293	11-03	15.1	0.013	0.158	P						
296	11-03	3.6	0.008	0.144	P						
297	10-27	17.5	0.220	2.080	P						
303	11-04	7.4	0.013	0.154	P						

*Wells that ammonia levels must be reduced.

Sample Type: P - Purged
E - Bailed

12/20/82
DJW/WM

TABLE 2

Final Restoration Sampling

Well No.	Date	NH_3	As	Se	Sample Type
190	12-09	13.8	0.015	0.112	P
231	12-09	1.51	0.005	0.126	P
232	12-10	1.68	0.006	0.010	P
233	12-09	5.70	0.015	0.058	P
234	12-14	0.85	0.006	0.025	P
237	12-09	2.38	0.009	0.126	P
242	12-09	0.57	0.012	0.101	P
243	12-09	0.20	0.002	0.005	B
244	12-09	0.85	0.003	0.010	B
246	12-09	4.50	0.008	0.019	P
247	12-09	0.36	0.003	0.004	B
248	12-09	11.60	0.076	0.223	P
249	12-09	<0.05	0.002	0.014	B
252	12-09	27.00	0.008	0.166	P
253	12-09	0.24	0.002	0.004	B
254	12-09	0.85	0.009	0.018	P
255	12-09	21.00	0.009	0.792	B
258	12-10	13.80	0.006	0.230	B
260	12-10	<0.05	0.002	0.021	P
261	12-09	0.85	0.003	0.030	B
262	12-10	5.70	0.009	0.094	B
265	12-11	<0.05	<0.001	0.002	B
273	12-10	1.51	0.002	0.002	B
275	12-11	<0.05	<0.001	<0.001	B
276	12-14	2.20	0.011	0.054	P
277	12-10	6.50	0.005	0.030	P
278	12-11	<0.05	0.002	<0.001	B
280	12-10	<0.05	0.002	0.003	B
281	12-10	<0.05	0.002	0.002	B
282	12-10	<0.05	0.002	<0.001	B
283	12-10	<0.05	0.002	0.005	B
284	12-10	<0.05	0.002	0.002	B
285	12-09	0.85	0.015	0.162	P
286	12-10	<0.05	0.002	0.003	B
287	12-10	0.27	0.002	0.007	B
288	12-10	<0.05	<0.001	0.001	B
290	12-10	0.20	0.002	0.006	B
291	12-13	<0.05	<0.001	0.001	B
292	12-10	<0.05	0.002	0.001	B
293	12-10	<0.05	0.002	0.003	B
296	12-09	2.70	0.002	0.006	B
297	12-09	0.74	0.096	1.220	P
303	12-13	<0.05	0.002	<0.001	B

Sample Type: P - Pumped
B - Bailed

12/20/82
DJW/WM

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company DATE: November 15, 1982

Sample type Water W. O. No. 3684

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

ANALYSIS:		NH3	As	Se
Well #232	10-27-82	50.3	0.484	0.224
Well #233	10-27-82	84.9	0.220	1.456
Well #234	10-27-82	14.0	0.103	0.282
Well #237	10-27-82	91.0	0.079	2.110
Well #242	10-24-82	32.2	0.196	0.130
Well #243	10-29-82	44.8	0.003	2.430
Well #246	10-27-82	69.6	0.748	2.432
Well #247	10-30-82	21.0	0.038	0.153
Well #252	10-27-82	26.6	0.064	0.234
Well #254	10-27-82	47.3	0.440	0.221
Well #285	10-27-82	77.0	0.297	2.304
Well #297	10-27-82	17.5	0.220	2.080

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company DATE: November 15, 1982

Sample type Water W. O. No. 3685

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

ANALYSIS:		NH3	As	Se
Well #190	11-5-82	6.5	0.013	0.026
Well #231	11-1-82	<.05	<.001	0.059
Well #248	11-3-82	7.4	0.016	0.390
Well #255	11-1-82	21.0	<.001	0.747
Well #258	11-1-82	6.5	0.001	0.396
Well #261	11-1-82	0.33	<.001	0.052
Well #262	11-1-82	0.57	<.001	0.029
Well #265	11-5-82	47.6	0.012	1.680
Well #273	11-3-82	4.0	0.008	0.148
Well #275	11-4-82	63.0	0.016	5.200
Well #278	11-4-82	36.4	0.014	0.770
Well #280	11-2-82	<.05	<.001	<.001
Well #281	11-3-82	5.7	0.009	0.080
Well #282	11-3-82	35.0	0.015	0.430
Well #283	11-3-82	<.05	<.001	<.001
Well #284	11-2-82	40.6	0.017	0.570
Well #286	11-2-82	47.6	0.013	1.460
Well #287	11-4-82	7.4	0.013	0.480
Well #290	11-1-82	<.05	<.001	<.001
Well #291	11-5-82	16.8	0.016	0.106
Well #292	11-5-82	7.4	0.015	0.300
Well #293	11-3-82	15.1	0.013	0.158
Well #296	11-3-82	3.6	0.008	0.144
Well #303	11-4-82	7.4	0.013	0.154

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company DATE: November 15, 1982

Sample type Water W. O. No. 3686

Analysis in Milligrams per Liter

ANALYSIS:		NH3	As	Se
Well #244	11-8-82	2.7	0.007	0.022
Well #249	11-8-82	2.2	0.011	0.510
Well #253	11-8-82	8.5	0.012	0.046
Well #276	11-8-82	3.0	0.008	0.042
Well #277	11-8-82	9.9	0.004	0.044
Well #288	11-8-82	18.7	0.015	0.750

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company

DATE: November 15, 1982

Sample type Water

W. O. No. 3667

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

ANALYSIS:		NH3	As	Se
Well #237	11-9-82	4.0	0.004	0.084
Well #242	11-10-82	1.38	0.005	0.008
Well #246	11-10-82	5.95	0.011	0.156
Well #260	11-9-82	<.05	0.001	0.020
Well #285	11-9-82	3.30	0.007	0.170

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company

Sample type Water

DATE: December 7, 1982
Date Rec'd 11/16/82
W. O. No. 3678

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

Sample No.	NH3	As	Se
1. #232 11-16-82	2.20	0.008	0.015
2. #275 11-16-82	<.05	<.001	<.001
3. #278 11-15-82	0.15	0.002	<.001
4. #282 11-15-82	<.05	<.001	<.001

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company

DATE: December 7, 1982
Date Rec'd 11/15/82
W. O. No. 3677

Sample type Water

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

Sample No.	NH3	As	Se
1. #243 11-12-82	<.05	0.005	0.015
2. #254 11-11-82	<.05	<.001	<.001
3. #284 11-12-82	<.05	0.002	<.001
4. #286 11-12-82	<.05	0.002	0.027

WAMCO LAB

P. O. Box 2953 -- Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company

DATE: December 7, 1982
Date Rec'd 11/17/82
W. O. No. 3689

Sample type Water

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

Sample No.	NH3	As	Se
1. #233 11-17-82	2.20	0.008	0.044
2. #265 11-17-82	<.05	0.002	0.002

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company

DATE: December 15, 1982
Date Rec'd 12/13/82
W. O. No. 3737

Sample type Restoration Sampling

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

Sample No.	As	Se	NH3
1. 190 12/9/82	0.015	0.112	13.80
3. 231 12/9/82	0.005	0.126	1.51
3. 233 12/9/82	0.015	0.058	5.70
4. 237 12/9/82	0.009	0.126	2.38
5. 242 12/9/82	0.012	0.101	0.57
6. 243 12/9/82	0.002	0.005	0.20
7. 244 12/9/82	0.003	0.010	0.85
8. 246 12/9/82	0.008	0.019	4.50
9. 247 12/9/82	0.003	0.004	0.36
10. 248 12/9/82	0.076	0.223	11.60
11. 249 12/9/82	0.002	0.014	<.05
12. 252 12/9/82	0.008	0.166	27.00
13. 253 12/9/82	0.002	0.004	0.24
14. 254 12/9/82	0.009	0.018	0.85
15. 255 12/9/82	0.009	0.792	21.00
16. 261 12/9/82	0.003	0.030	0.85
17. 285 12/9/82	0.015	0.162	0.85
18. 296 12/9/82	0.002	0.006	2.70
19. 297 12/9/82	0.096	1.220	0.74

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company

Sample type Restoration Sampling

DATE: December 15, 1982
Date Rec'd 12/10/82
W. O. No. 3733

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

Sample No.			As	Se	NH3
1.	273	12-10-82	0.002	0.002	1.51
2.	280	12-10-82	0.002	0.003	<.05
3.	281	12-10-82	0.002	0.002	<.05
4.	283	12-10-82	0.002	0.005	<.05
5.	284	12-10-82	0.002	0.002	<.05
6.	286	12-10-82	0.002	0.003	<.05
7.	287	12-10-82	0.002	0.007	0.27
8.	290	12-10-82	0.002	0.006	0.20

WAMCO LAB

P. O. Box 2953 - Casper, WY 82602

ANALYSIS REPORT

COMPANY: Cleveland Cliffs Iron Company

DATE: December 15, 1982
Date Rec'd 12/15/82
W. O. No. 3744

Sample type Restoration Series

Analysis in Milligrams per Liter
Limits of Detection are Noted Following Less Than Mark (<)

Sample No.			As	Se	N:13
1.	232	12/10/82	0.006	0.010	1.68
2.	234	12/14/82	0.006	0.025	0.85
3.	258	12/10/82	0.006	0.230	13.80
4.	260	12/10/82	0.002	0.021	<.05
5.	262	12/10/82	0.009	0.094	5.70
6.	265	12/11/82	<.001	0.002	<.05
7.	275	12/11/82	<.001	<.001	<.05
8.	276	12/14/82	0.011	0.054	2.20
9.	277	12/10/82	0.005	0.030	6.50
10.	278	12/11/82	0.002	<.001	<.05
11.	282	12/10/82	0.002	<.001	<.05
12.	288	12/10/82	<.001	0.001	<.05
13.	291	12/13/82	<.001	0.001	<.05
14.	292	12/10/82	0.002	0.001	<.05
15.	293	12/10/82	0.002	0.003	<.05
16.	303	12/13/82	0.002	<.001	<.05

EXHIBIT 5

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Environmental Quality

Water Quality Division

1111 EAST LINCOLNWAY CHEYENNE, WYOMING 82002 TELEPHONE 307 777-7781

MEMORANDUM

TO: Gary Beach, Review and Analysis Supervisor
Land Quality Division

FROM: William L. Garland, Administrator wlg
Water Quality Division

DATE: July 9, 1982

SUBJECT: Cleveland Cliffs, Collins Draw, RD3 file

REFERENCE: (a) Your memorandum dated June 17, 1982; Determination of groundwater quality of use for in situ mining projects.
(b) Groundwater Restoration Report Collins Draw In situ Uranium Mining Research and Development Project May 21, 1982.

In response to your memorandum dated June 17, 1982, reference (a), a review of the material available concerning the Collings Draw In situ R and D license RD3 was conducted inorder to determine the proper groundwater classification.

The classification process used was to compare the "background" or baseline parameter averages, as submitted in reference (b), for both the A-1 and the B well fields with the maximum allowable Underground Water Classification concentrations as listed in Table I of Chapter VIII Water Quality Rules and Regulations. The result of the comparision on a parameter by parameter basis indicates that only two parameters exceeded the allowable Class I levels; they are Iron at 0.73 mg/l vice 0.3 mg/l and Radium at 21.6 pCi/l vice 5.0 pCi/l. Based on current technology both the iron and radium concentrations are treatable to within domestic water standards; therefore, the suitable use of the groundwater in question is classified: Class I - Domestic.

JUL 12

83
7/12

A detailed review of the post-restoration status of water quality parameters listed in reference (b) indicates that 21 of 38 parameters for Well Field A-1 and 17 of 34 parameters for Well Field B still exceed baseline average concentrations. However, when examining these same parameters for suitability of use criteria the following tables indicate which parameters exceed the Class I - Domestic levels. Where no standard applies baseline is used as the goal, these parameters are also included.

Table 1 - A-1 Well Field Concentrations (mg/l)

Parameter	Class I Std.	Baseline Avg.	Post restoration Average Submitted
TDS	500	414	635
Sulfate	250	159	251
Ammonia	0.5	0.18	31.4
Arsenic	0.05	<0.01	0.11
Selenium	0.01	<0.01	0.76
Radium (pCi/l)	5.0	21.6	162.70
No numerical standard in Chapter VIII			
Vanadium	-	<0.05	.37
Potassium	-	7	35
Carbonate	-	8.1	102
Sodium	-	106	163
Magnesium	-	2.8	4.4

Table 2 - B Well Field Concentrations (mg/l)

Parameter	Class I	Baseline Avg.	Latest Results as of 3/24/82
TDS	500	414	782
Sulfate	250	159	342
Ammonia	0.5	0.18	119
Selenium	0.01	<0.01	0.72
Uranium	5.0	.05	8.2
Radium (pCi/l)	5.0	21.6	74±4
pH	6.0-9.0	-	9.33
No numerical standards in Chapter VIII			
Potassium	-	7	129
Carbonate	-	8.1	188
Vanadium	-	<0.05	1.10

As a final step the State Engineers Well Study was reviewed to determine "prior use" of groundwater. Results of this review indicate that the only wells permitted in the immediate vicintiy (1 mile) were industrial use or miscellaneous monitor wells. The nearest domestic well permitted is located

2+ miles north of the well field area, an additional stock well is also located 2+ miles north of the well field. The closest stock well is located approximately 2800 feet from the well field (this well does not show up in the State Engineers records but was reported by reference (b)).

In accordance with applicable Rules and Regulations each parameter must be returned to either baseline concentration or quality of use (Class I) concentrations inorder for groundwater restoration to be considered complete. Since the above information indicates that this has not in fact occurred the conclusion is that groundwater restoration has not been completed for either Well Fields A-1 or B at the Collins Draw In situ Uranium Mining Research and Development Project.

cc: Cleveland Cliffs, Collins Draw, RD3 File

EXHIBIT 6

Cleveland-Cliffs

Helping develop earth's resources to meet the world's needs.

Western Division

R. M. DeGabriele, General Manager, Western Operations
R. M. Tuthill, Manager-Uranium
R. W. Riedel, Assistant to the General Manager
E. D. Lindquist, Assistant Manager-Special Projects

300 Country Club Road
P.O. Box 3140
Casper, Wyoming 82602-3140
Phone: 307-234-9133

August 6, 1982

Mr. William L. Garland, Administrator
Water Quality Division
Wyoming Department of Environmental Quality
1111 East Lincolnway
Cheyenne, Wyoming 82002

Dear Mr. Garland:

Re: Requested Meeting to Discuss
Groundwater Classification

Yesterday and today, I have attempted to contact you to schedule a meeting at your earliest convenience. A meeting was tentatively scheduled by your secretary for 1:00 pm Thursday, August 12, 1982. During subsequent discussions with Tony Mancini, he suggested that the meeting be conducted on Wednesday, August 11, when Richard Lennox could also attend. I will attempt to contact you by phone on Monday to confirm a meeting for either Wednesday or Thursday.

The purpose of the meeting is to discuss the groundwater classification for the Collins Draw Project as contained in your memo to Gary Beach, Land Quality Division, dated July 9, 198?. Respectfully, the following questions and comments are being provided to assist you in your preparation for the meeting.

1. Why do Chapter VIII Water Quality Rules and Regulations apply to the Collins Draw Project?

2. Please reference and quote the applicable Rules and Regulations that require that each parameter must be returned to either background (baseline) concentration or quality of use (Class I) concentrations in order for groundwater restoration to be considered complete.

3. For what reason is the water not classified as industrial?

4. What statutory or regulatory basis exists for classifying the aquifer by ambient water quality?

5. Please define the ambient water quality for the Collins Draw production zone at the time Chapter VIII became effective.

6. Does the ambient quality of the groundwater have any concentration in excess of any of the standards for Class I groundwater per Table I, Chapter VIII?

7. Please demonstrate compliance with W.S. 35-11-302 (a) (vi). What consideration was given by the DEQ to the technical practicability and economic reasonableness of treating ambient water quality?

8. Please reference and discuss the current technologies by which both iron and radium at Collins Draw ambient concentrations are treatable to within Class I standards. What current technically practicable, economically reasonable, and radiologically safe water treatment methods and services are available to domestic water users to remove excess radium from drinking water in southwest Campbell County, Wyoming?

9. Why wasn't the groundwater classification made prior to or during review of the "A-1 Well Field Groundwater Restoration Report," dated November 13, 1981?

10. Would the DEQ consider Cleveland-Cliffs to be in violation if baseline was not achieved? If so, why?

11. What does the DEQ believe should now be done to complete restoration if Class I or baseline quality cannot be achieved, for what time period and at what cost?

We would appreciate your consideration of the above questions and comments, and your response to these issues during our requested meeting. Those people planning to attend the meeting for Cleveland-Cliffs are John A. Sundahl, Attorney, Godfrey and Sundahl; and Richard M. Tuthill, Manager-Uranium, R. Blain Andrus, Corporate Attorney, and myself, all of Cleveland-Cliffs.

Respectfully yours,

CLEVELAND-CLIFFS

Truman E Louderback

Truman E. Louderback
Director of Environmental Affairs

TEL:ceg

XC: Mr. A. J. Mancini

TEL2/WLG

EXHIBIT 7

Cleveland-Cliffs

Helping develop earth's resources to meet the world's needs.

Western Division

R. M. DeGabriele, General Manager, Western Operations
R. M. Tuthill, Manager-Uranium
R. W. Riedel, Assistant to the General Manager
E. D. Lindquist, Assistant Manager-Special Projects

300 Country Club Road
P.O. Box 3140
Casper, Wyoming 82602-3140
Phone: 307-234-9133

August 10, 1982

Mr. A. J. Mancini
Water Quality Division
Wyoming Department of Environmental Quality
1111 East Lincolnway
Cheyenne, Wyoming 82002

Dear Mr. Mancini:

Re: Cancellation of Requested Meeting to Discuss Groundwater Classification

The purpose of this letter is to provide documentation of your phone call to me on August 9, 1982.

Mr. Garland and you have received and discussed the letter and letter copy I had sent dated August 6, 1982. You stated that we should not meet to discuss the questions contained in the letter because Mr. Garland could not appropriately answer the questions since he was not involved in issuing the license. You recommended that we should meet with Mr. Ackerman to have our questions answered.

I informed you that I had sent our letter to Mr. Garland as Cleveland-Cliffs believes Mr. Ackerman's restoration decision was based on Mr. Garland's memo, which classified the groundwater.

You stated that the classification was made in response to a specific request from the Land Quality Division. It was discussed that WQD had not become involved in in situ mining at the time our license was issued. Therefore, Mr. Garland could not appropriately answer the questions or discuss our restoration requirements.

I informed you that I would attempt to arrange a meeting with Mr. Ackerman to have our questions answered, and that I would probably request that the WQD attend the meeting.

If there is additional information this letter should contain, or if you are not in agreement with portions of this letter, would you please add your comments, initial or sign, and return a copy to us?

Thank you for your input and cooperation.

Sincerely,

CLEVELAND-CLIFFS

Truman E. Louderback

Truman E. Louderback
Director of Environmental Affairs

TEL:ceg

XC: Mr. W. L. Garland, Water Quality Division
Mr. W. C. Ackerman, Land Quality Division

TEL2/AJM

EXHIBIT 8

Cleveland-Cliffs
Helping develop earth's resources to meet the world's needs.

Western Division

R. M. DeGabriele, General Manager, Western Operations
R. M. Tuthill, Manager-Uranium
R. W. Riedel, Assistant to the General Manager
E. D. Lindquist, Assistant Manager Special Projects

300 Country Club Road
P.O. Box 3140
Casper, Wyoming 82602-3140
Phone: 307-234 9133

August 10, 1982

Mr. W. C. Ackerman, Administrator
Land Quality Division
Wyoming Department of Environmental Quality
Equality State Bank Building
401 West 19th Street
Cheyenne, Wyoming 82002

Dear Mr. Ackerman:

As soon as practical, Cleveland-Cliffs requests a meeting with you to discuss the groundwater restoration requirements for the Collins Draw Project as contained in your letter dated July 21, 1982 and the attached memo from Mr. Garland to Mr. Beach dated July 9, 1982. Your letter states that we have not restored the groundwater to the minimum required, which is the premining quality of use. In the memo from Mr. Garland to Mr. Beach, it is stated that the suitable use of the groundwater is classified as Class I - Domestic.

Since the Water Quality Division made the classification, and Cleveland-Cliffs believes that your decision is based on this classification, I recently requested a meeting with Mr. Garland to discuss the basis for this classification. The attached letter dated August 6, 1982, which contained numerous questions, was sent to Mr. Garland to assist him in his preparation for the meeting. These are issues that were to be discussed during the meeting.

On August 9, 1982, I received a phone call from Mr. Mancini of the Water Quality Division. He stated that Mr. Garland could not answer our questions, and that we should meet with you to have our questions answered. The telephone communication is reported in the attached letter to Mr. Mancini, dated August 10, 1982.

We would appreciate your consideration of the questions that are contained in the letter that was sent to Mr. Garland, and your response to these issues

during our requested meeting. It is requested that the appropriate representatives of the Wyoming Department of Environmental Quality attend the meeting to discuss both restoration and water classification. I will personally phone you to arrange a meeting time and date.

Respectfully yours,

CLEVELAND-CLIFFS

Truman E. Louderback

Truman E. Louderback
Director of Environmental Affairs

TEL/prh

xc: Mr. Robert E. Sundin, Director
Wyoming Department of Environmental Quality
Mr. W. L. Garland, Administrator
Water Quality Division
Mr. A. J. Mancini
Water Quality Division
Mr. Richard Chancellor
Land Quality Division

TEL2/WCA

EXHIBIT 9

THE STATE OF WYOMING)
) ss
DEPARTMENT OF ENVIRONMENTAL QUALITY)

This is to certify that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:
This license grants only the right to affect the lands described in Appendix "C" of the application.

1. Should any buried cultural materials be encountered during the course of construction, the Office of the Wyoming State Archeologist will be contacted immediately.
2. The use of the leach field for disposal of the reverse osmosis waste stream brine is not approved by the Land Quality Division at this time.
3. Before every injection well is placed into service, it must pass a packer test or an alternate test approved by the Land Quality Division to verify the casing integrity. Records should be kept of each test and included in a log of all operations performed on each individual well. Cleveland Cliffs shall thoroughly research well casing and completion methods to determine "best" techniques for safety and fluid control. Periodic updates of this research shall be placed in the annual report.
4. Cleveland Cliffs shall monitor injection pressures and investigate the effects of surge, water hammer, or other stresses induced by pressure changes in the pipe and well system. Results of the investigation shall be reported periodically in the annual report.
5. Baseline shall be the target for restoration. Cleveland Cliffs shall make a best attempt to restore baseline or lower concentrations of chemical constitutents in the groundwater. If baseline concentrations are not met, Cleveland Cliffs shall consult with the Land Quality Division.
6. Cleveland Cliffs shall honor any request for data or information made by the Land Quality Division involving the research and development parts of the mining operations.
7. The Land Quality Division shall be notified of a positive excursion if uranium and ammonia both exceed their excursion limits as defined in the application.

EXHIBIT 10

Following our 25 April 1980 meeting,
Cleveland Cliffs Iron Co. is given
approval to operate process wastewater
drain field at the Collins Draw
ISL Mine, License No. RD3 as per
conditions discussed today and in
previous documents.

Dennis Morro
DENNIS MORR