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KERR-McGEE NUCLEAR CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

July 26, 1974

RECEIVED JUL 29 1974

Mr. J. E. Rothfleisch
Materials Branch
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545

Dear Mr. Rothfleisch:

Please refer to your letter of June 27 transmitting the comments of the U.S. Department of Interior requesting that we respond to these comments by July 25. As we did in the initial response on June 20, we have prepared some complete answers and others are still being prepared. They will be forwarded to you no later than August 20.

The attachment responds to the comments made by the Department of Interior by the paragraph headings of their letter. Since few specific questions are asked, we have tried to respond in a meaningful matter to the narrative thrust of the inquiry.

If we can furnish additional or more detailed information, please let us know.

Sincerely yours,

W. J. Shelley, Director
Regulation and Control

WJS:ml

Attachment

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PDR ADOCK 04008027
C PDR

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ATTACHMENT

Answer to Comments by U.S. Dept. of the Interior,
June 18, 1974

The comments by the U.S. Department of Interior June 18, 1974, was based on the AEC's Draft Environmental Statement dated April 24, 1974. Some of the comments are answered by Kerr-McGee's several environmental reports.

Comments made will be referenced to the paragraph title of the subject letter.

Summary of Environmental Impacts

Solid waste contaminated with radioactive material has been buried in the area marked burial on page II-7 of the Draft Environmental Statement (DES). 304 kgs. of natural uranium containing approximately .1 Ci of activity has been buried in this area through December 1972 in accordance with 10 CFR 20.304. As required by this regulation, items buried have been covered to a minimum of 4 feet. Data on the geologic environment is further detailed in a report on near-surface geology now being prepared for other comments in the referenced letter.

Introduction

On October 18, 1973, the responsibility for the administration of waste discharge permits as noted by the Department of Interior was transferred from the Department of Army, Corps of Engineers, to the Environmental Protection Agency.

Land Use

The land owned by the Federal Government south of Interstate Highway 40 is now included in the Sequoyah National Wildlife Refuge as stated. However, while Kerr-McGee owns parcels of land south of Highway 40, the site definition as shown on page II-4 defines the site boundary as I-40.

The data submitted by the applicant on the levels of radioactive and chemical content of its effluent and subsequent dilution by the Illinois and Arkansas River indicate that no adverse environmental effects will occur as a result of the operation of the plant to the quality of the rivers nor the waterfowl that use this area.

Recreation

Kerr-McGee does not have the expertise to evaluate the impact of the plant on the recreational value and therefore requested the Department of Industrial Development to respond to this comment. Their response is attached and comments favorably upon the noninterference expected from the plant and its continued operation in the conservative manner which it has in the past. Kerr-McGee has stated that monitoring and control programs now in effect resulting in a "conservative" manner of operation will not be altered in the future. One of the attractions for retention of trained personnel for plant operations is the nearby presence of extensive recreational facilities.

Geology

Comments on this paragraph will be further discussed in the section now being prepared on near surface geology of the Sequoyah Site.

Ecology of Site and Environs

Since the section of the Applicant's Environmental Report on birds was prepared by Dr. William Carter of East Central State College, he has prepared the response to the Department of Interior's comments, and the response is attached.

Waste Heat

The maximum temperature rise shown in the 15 months recorded on page 7 of the Applicant's ER Supplemental June 1972 is 6.1^{o}.

STATE OF OKLAHOMA
Office of the Governor
DEPARTMENT OF INDUSTRIAL DEVELOPMENT
OKLAHOMA CITY, OKLAHOMA 73105

Ben Langdon, Director
405/521-2401

500 Will Rogers Building

July 10, 1974

Mr. Bill Shelley
Kerr McGee Nuclear Corporation
McGee Tower
Oklahoma City, OK 73102

Dear Mr. Shelley:

In answer to your inquiry as to the environmental impact of your plant, which is located on the Arkansas Waterway near Gore, we, as an organization involved in the industrial development of our state, do not see how your plant would effect the recreational value of the area as long as it operates in the same conservative manner that it has in the past.

While there will be an increasing number of tourists coming into that general area in the years ahead, we still do not see how your plant would in any way effect the value of the area from a tourist standpoint.

Several members of our staff have toured your plant facilities on numerous occasions and do not see how it is in any way harmful to the environment.

Sincerely,

Ben Langdon

Ben Langdon
Director

BL:ejj

STATUS OF BALD EAGLE

Page 20 of Fauna: Terrestrial Vertebrates
By Dr. William Carter

Sutton (1967, p. 116-118) considered the bald eagle, "irregularly common about large impoundments on Salt Plains and Wichita Mountains national wildlife refuges, and at Grand Lake, Ft. Gibson and Tenkiller Ferry Reservoir. Less common about other large impoundments."

As to use of the term "common", most field ornithologists use this to designate large numbers per unit area of available habitat while the term "uncommon" is used to designate small numbers per unit area. For use of terms see such standard works as:

Mengel, R. M., 1965.
The Birds of Kentucky, A.O.U. Ornith.
Monograph No. 3. p. 2-3.

Trautman, M. B., 1940.
The Birds of Buckeye Lake, Ohio.
Miscl. Publ. Museum of Zool.
U. of Mich., No. 44. p. 150-151.

"The degrees of abundance, represented by the terms . . . . uncommon, common, . . . are purely relative as regards the different birds groups or species. In some groups, such as the vultures and hawks, a species was uncommon when between five and ten individuals were recorded in a season, and very common when one hundred and one to seven hundred individuals were recorded in a season." (Trautman, 1940, p. 151). Further, for vultures and hawks, the term common is used for 21-100 per season and/or for sighting 6-35 per field day in season as opposed to uncommon for 5-20 per season and/or 3-5 per field day in season (Trautman, 1940, p. 152).

The bald eagle tends to concentrate along some Oklahoma rivers, especially near large impoundments in the winter. Individuals may wander some distance. Concentrations may indeed occur at the Sequoyah Wildlife Refuge, but use of common vs. uncommon to describe numbers would vary from year to year and in light of cited standards for terms the use of uncommon seems appropriate for the population at the Facility and immediate area. Osprey is mentioned in the report, p. 3.

The average rate of 2.3 million mgd discharged into the Illinois River when the daily flow was as low as that quoted of 20 cps would result in a 5.6 dilution factor or a maximum temperature rise of 1.1°. As can be seen, the balance of the data indicates generally a lower temperature rise in the effluent system. Changes made in 1973 to reduce the rain water qualities accumulating in the raffinate ponds by the use of waste heat from the UNH evaporator condenser have further reduced the maximum temperature rise in the effluent stream. A 1.1° temperature rise in the Illinois River does not result in exceeding the maximum temperature of 68° established in the revised water quality criteria of the Oklahoma Water Resources Board.

Fluoride

The high fluoride concentration immediately west of the surface pond was caused by the transfer of quantities of lime - calcium fluoride sludge from the fluoride treatment system to the raffinate sludge pond in 1971. Part of this material dried and blew to the west contaminating the land surface. It is not expected that such a method of disposal will again occur since in 1973 the fluoride sludge was buried adjacent to the fluoride sludge pits and covered with quantities of soil to insure that no solid calcium fluoride was released to the atmosphere.

Adverse economic effect of excessive fluoride concentrations will occur on cattle. The presence of excess fluoride in forage will undoubtedly effect all herbivores grazing on the contaminated plants in the area. A wide area fluoride survey of soil and forage has been conducted by Kerr-McGee from approximately 5 miles west of the plant to 17 miles to the east along I-40 and nominal soil concentrations of 120-360 ppm have resulted in nominal forage concentrations of approximately 8-47 ppm on a dry basis.

Rupture of Waste Retention Pond Embankment

Water from the Illinois River at the time of the construction of the plant before the erection of Robert S. Kerr Reservoir did indeed tend to hug the east bank of the Arkansas and could be observed from the air to remain in an unmixed condition for several miles. Since the completion of the Robert S. Kerr Reservoir and especially the erection of a diversion dike by the Corp of Engineers across the Arkansas River and downstream for several hundred feet, this condition no longer exists. The Illinois River water does not appear to be separated as previously though one may be assume that a separation exists on the bottom of the river for some distance into the Arkansas due to density differences caused by differences of temperature.

The generation of windblown spray by prevailing winds has not been observed nor measured around the raffinate storage ponds due to the practice of maintaining a minimum of 3' of freeboard as can be seen by the attached graph which updates the instrument provided in Supplement #3 dated August 1973. The freeboard in the ponds have always been maintained at greater than 3'. It is evident that some wave action occurs in the ponds by the disturbance of the dike immediately above water level, but no impairment of plant growth has been observed due to windblown sprays.

Comments on the balance of this paragraph is contained in the special report on geology.

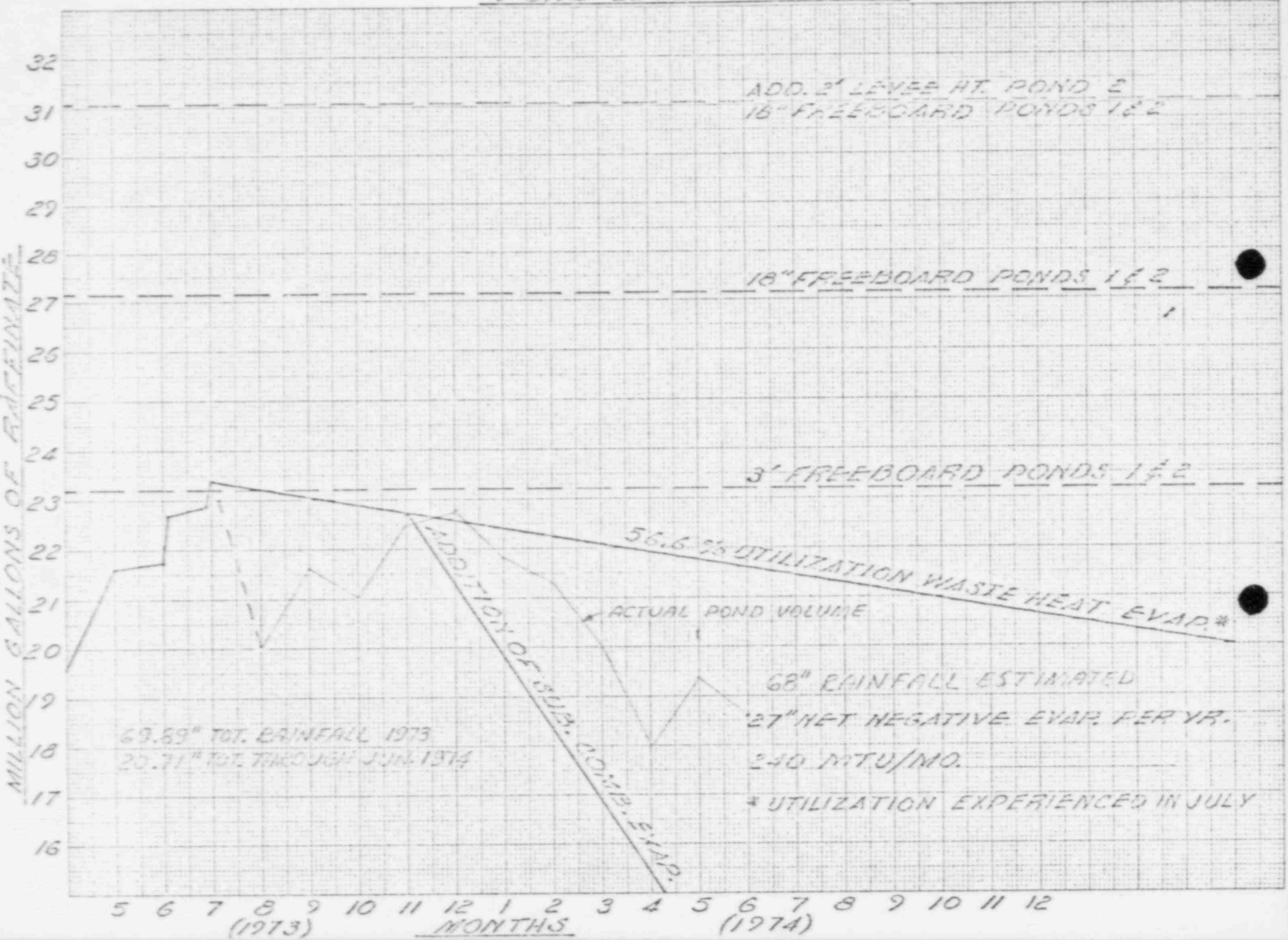
Pond Seepage

Please refer to the special report on subsurface geology.

Evaporating Pond

The inclusion of the discussion of evaporative ponds under Supplement #3 is intended to illustrate an alternate, not to

POND LEVEL vs. TIME



propose a method of disposal that should be considered. It is realized by Kerr-McGee that significant engineering work must first be accomplished by the applicant during further feasibility studies related to ground structure and cyclic variation of rainfall.

Environmental Monitoring Program

Kerr-McGee has taken no bottom samples of aquatic biota in the Illinois River near the point of effluent discharge. Investigation by consultants has found no data available on the effect of low level concentrations of effluent impurities on aquatic biota. Generally, observations made at low levels are qualitative and have been restricted to conclude that no apparent adverse impact exists. Analytical data on environmental samples through 1973 are attached on the following pages.

Irreversible and Irretrievable Commitments of Resources

The possibility of using the Camp Gruber site as a nuclear park near Muskogee was not announced until early 1974, consequently, no evaluation was made of the combined impact of the two plants on the affected stream segments.

It has been the applicant's observation that nuclear plants currently being planned, constructed or licensed include provision for closed system cooling water cycles or dry cooling towers as a method of releasing the large amounts of waste heat generated. The minimal temperature effects observed as a result of the Sequoyah lant would seem to preclude the possibility that additional plants in the area using the Arkansas River Waters as a heat sink would in any way result in an additive effect in view of current Oklahoma Water Quality Criteria Standards than control the effect of the single plant.

1973 ENVIRONMENTAL WATER SAMPLES
SURFACE
UNITED STATES TESTING RESULTS
RADIOACTIVE UNITS, α, β, Ra - pCi
CHEMICAL UNITS, NO_3^1, F, U - ppm

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2201	Nitrate	< 0.2	1.4	0.6	0.4	0.9	0.3	0.9	0.1	0.41	0.4	0.4	0.4
	Fluoride	< 0.5	0.5	<0.5	0.7	< 0.5	<0.5	2.4	<0.5	< .5	<0.5	2.4	0.8
Ill. River	Gross α	9.	13.	5.4	8.	12.	4.	10.	5.	< 5.	<3.8	< 3.8	<8.
Upstream	Gross β	21.	13.9	<18.	14.	< 13.	<13.	13.	14.	< 14.	<5.7	< 5.9	< 22.
	Uranium	37.	< 10.	<10.	< 10.	16.	34.	12.	33.	75.	< 10.	35.	110.
	226 Ra			1.3			0.5			0.65			0.16
2202	Nitrate	<0.2	0.6	0.5	0.6	0.6	0.2	0.4	0.1	3.3	0.4	0.2	0.4
	Fluoride	<0.5	0.6	<0.5	0.8	0.7	0.5	< 0.5	0.5	0.93	< 0.5	1.4	1.1
Ill. River	Gross α	12.	14.	30.	22.	21.	4.	12.	138.	52.	7.7	8.6	<8.
Downstream	Gross β	24.	13.9	<18.	14.	13.	<13.	13.	34.	< 14.	7.2	16.2	< 22.
	Uranium	< 10.	20.	25.	24.	50.	23.	46.	290.	450.	.18	42.	38.
	226 Ra			0.38			0.5			0.46			0.79
2203	Nitrate	<0.2	1.1	0.8	0.5	0.4	0.3	0.7	0.4	0.23	0.6	0.2	0.4
	Fluoride	<0.5	2.1	<0.6	0.6	0.5	<0.5	< 0.5	0.6	0.78	0.7	1.1	1.2
Ark. River	Gross α	10.	99.	9.0	5.	15.	4.	13.	9.	< 5.	<3.8	7.2	14.
Upstream	Gross β	22.	11.	< 18.	14.	13.	13.	13.	14.	< 14.	<5.7	14.0	< 22.
	Uranium	< 10.	<10.	24.	<10.	21.	17.	17.	26.	30.	< 10.	34.	28.
	226 Ra			0.42			0.6			< 0.26			0.45
2204	Nitrate	< 0.2	0.8	0.8	0.6	0.4	0.3	0.6	0.4	0.25	0.6	0.2	0.4
	Fluoride	< 0.5	2.4	<0.5	0.8	0.5	<0.5	1.2	0.5	0.55	0.5	0.8	2.2
Ark. River	Gross α	9.	9.	14.	5.	12.	6.	14.	12.	5.	17.6	< 3.8	<8.
Downstream	Gross β	21.	13.9	< 18.	14.	13.	13.	13.	14.	14.	23.0	8.1	< 22.
	Uranium	<10.	10.	< 10.	22.	16.	13.	18.	18.	--	50.	36.	65.
	226 Ra			0.02			0.4			0.25			1.18

SURFACE-CONTINUED

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2205	Nitrate	5.1	1.6	1.9	1.1	0.2	< 0.2	0.2	0.2	0.27	4.6	1.0	0.7
	Fluoride	<0.5	1.4	<0.5	0.6	0.6	< 0.5	0.8	< 0.5	1.0	< 0.5	0.7	0.6
Farm Pond	Gross α	1.	13.	13.	7.	15.	6.	14.	6.	<5.	< 3.8	5.4	< 8.
East	Gross β	13.	13.9	<18.	14.	<13.	13.	13.	14.	<14.	< 5.7	< 5.9	<22.
	Uranium	<10.	<10.	11.	< 10.	17.	25.	13.	18.	<10.	< 10.	35.	52.
	226 Ra			0.75			0.6			<0.25			0.28
2206	Nitrate	0.6	0.9	0.4	< 0.4	<0.1	< 0.2	0.1	0.9	0.35	0.1	0.4	0.4
	Fluoride	0.5	1.3	<0.5	0.8	0.5	< 0.5	1.8	< 0.5	0.75	< 0.5	<0.5	<0.5
Farm Pond	Gross α	13.	35.	4.5	8.	20.	4.	17.	10.	<5.	< 3.8	11.3	16.
South	Gross β	25.	12.	<18.	14.	<13.	13.	13.	110.	<14.	< 5.7	9.9	<22.
	Uranium	320.	20.	29.	16.	20.	< 10.	28.	10.	<10.	40.	38.	29.
	226 Ra			0.68			0.4			<0.25			1.30
2207	Nitrate	2.4	2.5	3.0	--	5.0	1.8	0.8	1.1	6.2	2.0	2.4	2.0
	Fluoride	0.9	0.9	0.9	--	0.7	0.8	1.0	0.8	0.75	< 0.5	1.3	1.7
Facility	Gross α	473.	534.	640.	320.	420.	550.	577.	1460.	1945.	985.6	179.3	9.
Effluent	Gross β	100.	22.	700.	14.	<13.	68.	13.	14.	315.	1064.9	207.2	< 22.
	Uranium	611.	700.	980.	714.	685.	750.	1050.	2000.	3500.	1250.	1430.	1025.
	226 Ra			0.02			0.4			<0.27			< 0.09
2208	Nitrate	<0.2	0.2	0.6	0.6	0.6	0.6	0.7	0.5	0.58	0.5	0.2	0.4
	Fluoride	<0.5	0.9	< 0.5	0.6	< 0.5	< 0.5	1.0	< 0.5	< .5	<0.5	< 0.5	1.0
Tenkiller	Gross α	6.	4.	4.1	8.	10.	4.	9.	38.	< 5.	<3.8	5.0	16.
Raw Water	Gross β	18.	13.9	< 18.	14.	< 13.	13.	13.	14.	< 14.	7.7	9.5	< 22.
	Uranium	20.	30.	14.	< 10.	< 10.	38.	80.	< 10.	28.	10.	33.	38.
	226 Ra			0.18			0.7			< 0.25			0.51
2209	Nitrate	0.3	0.1	0.3	< 0.4	0.4	<0.2	0.1	0.1	0.10	0.4	0.3	0.4
	Fluoride	<0.5	1.6	< 0.5	0.8	< 0.5	<0.5	< 0.5	0.5	0.65	<0.5	1.3	0.5
Salt Fork	Gross α	8.	6.	4.5	7.	14.	4.	10.	24.	< 5.	32.4	10.8	23.
River	Gross β	20.	13.9	< 18.	14.	< 13.	13.	13.	14.	< 14.	60.4	10.4	< 22.
	Uranium	15.	<10.	15.	<10.	12.	30.	115.	< 10.	49.	18.	33.	32.
	226 Ra			0.02			0.6			< 0.25			0.18
Total Rainfall for Month (Inches)		2.90	2.25	8.54	8.55	5.46	12.7	2.78	2.54	8.10	4.71	7.36	4.00

[1]Nitrate reported as nitrogen on all tables.

1973 ENVIRONMENTAL WATER SAMPLES
SEEPAGE WELLS
UNITED STATES TESTING RESULTS
RADIOACTIVE UNITS, α, β, Ra - pCi
CHEMICAL UNITS, NO_3^1, F, U - ppm

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2301	Nitrate	39.	38.	33.	21.	14.	3.7	2.4	1.3	--	--	0.1	0.1
	Fluoride	1.1	2.0	1.6	1.4	0.7	0.8	1.8	1.6	--	--	2.6	2.4
Basin No. 1	Gross α	212.	53.	2.5	17.	120.	95.	30.	260.	--	--	5.9	16.
North	Gross β	30.	13.9	< 18.	14.	<13.	13.	13.	14.	--	--	9.5	< 22.
	Uranium	131.	140.	68.	35.	135.	140.	55.	280.	--	--	67.	37.
	226 Ra			0.32			0.4						0.21
2302	Nitrate	26.	67.	70.	104.	24.	22.	32.8	18.0	24.6	17.5	6.0	6.0
	Fluoride	< 0.5	1.0	0.9	1.2	1.0	0.7	1.3	1.0	1.0	< 0.5	1.7	1.2
Basin No. 1	Gross α	18.	10.	8.1	15.	23.	11.	24.	15.	23.	67.1	9.5	10.
South	Gross β	30.	13.9	< 18.	14.	<13.	13.	13.	14.	< 14.	73.4	7.2	< 22.
	Uranium	13.	30.	37.	< 10.	16.	21.	32.	< 10.	97.	42.	115.	40.
	226 Ra			0.91			0.6			< 0.26			0.99
2303	Nitrate	48.	44.	145.	29.	11.5	1.9	3.4	3.9	4.6	6.0	2.3	2.9
	Fluoride	--	< 0.5	1.1	0.5	1.0	0.7	2.2	1.4	1.3	0.9	1.5	0.9
Raffinate	Gross α	6.	74.	5.9	9.	26.	27.	21.	24.	15.	5.4	< 3.8	< 8.
Pond No. 1	Gross β	18.	13.9	< 18.	14.	<13.	13.	13.	14.	< 14.	< 5.7	< 5.9	< 22.
North	Uranium	< 10.	30.	< 10.	24.	44.	58.	140.	< 10.	36.	27.	155.	33.
	226 Ra			0.66			0.6			< 0.25			1.02
2305	Nitrate	0.3	0.3	< 0.4	0.6	0.1	0.2	0.2	0.3	.47	0.4	0.1	0.1
	Fluoride	6.5	1.3	1.1	0.7	0.7	0.9	1.4	1.0	1.2	0.6	0.5	0.6
Raffinate	Gross α	28.	76.	31.	22.	38.	17.	104.	26.	< 5.	8.1	< 3.8	< 8.
Pond No. 1	Gross β	40.	13.9	< 18.	14.	< 13.	13.	13.	14.	< 14.	15.3	< 5.9	< 22.
South	Uranium	44.	40.	22.	45.	50.	70.	40.	40.	30.	45.	73.	28.
	226 Ra			0.35			0.12						< 0.08

SEEPAGE WELLS-Continued

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2306	Nitrate	1.7	1.3	--	0.7	0.7	0.8	0.4	0.3	.16	0.3	1.8	1.8
	Fluoride	<0.5	<0.5	--	<0.5	2.0	0.5	0.6	0.7	.55	<0.5	1.1	0.7
Carlisle F.	Gross α	8.	14.	6.8	5.	9.	7.	17.	12.	< 5.	26.1	9.0	10.
Pond South	Gross β	20.	2.	18.	14.	< 13.	13.	13.	14.	<14.	34.2	9.0	< 22.
	Uranium	< 10.	10.	--	185.	< 10.	15.	17.	25.	30.	62.	58.	37.
	226 Ra			0.68			0.12			< 0.26			1.64
2307	Nitrate	0.4	0.2	--	<0.4	0.4	< 0.2	0.8	0.4	.31	0.6	0.2	0.[illegible]
	Fluoride	2.8	3.0	--	2.5	2.5	1.8	3.4	2.6	2.6	2.1	2.4	2.7
Fault Well	Gross α	5.	.3	8.6	5.	4.	4.	5.	33.	< 5.	<3.8	7.2	9.
	Gross β	17.	13.9	<18.	14.	< 13.	13.	13.	14.	<14.	11.7	9.0	< 22.
	Uranium	40.	30.	--	45.	34.	68.	50.	82.	37.	38.	62.	72.
	226 Ra			0.78			0.12			<0.25			< 0.09
2308	Nitrate	0.2	0.1	0.9	0.3	0.7	0.5	0.6	0.2	--	0.2	0.1	0.1
	Fluoride	< 0.5	< 0.5	< 0.5	1.4	0.7	< 0.5	0.9	< 0.5	--	< 0.5	0.9	< 0.5
Residence	Gross α	18.	8.	7.2	11.	12.	4.	9.	5.	--	< 3.8	12.6	14.
Well	Gross β	30.	13.9	<18.	14.	13.	13.	13.	14.	--	< 5.7	11.7	< 22.
	Uranium	< 10.	70.	<10.	130.	14.	16.	18.	< 10.	--	12.	25.	29.
	226 Ra			1.3			0.12						< 0.09
2309	Nitrate	< 0.2	0.4	<0.4	1.2	0.5	< 0.2	0.3	0.1	.38	0.3	0.1	0.1
	Fluoride	< 0.5	0.7	<0.5	1.7	0.6	0.8	0.6	< 0.5	0.6	< 0.5	2.4	0.7
Carlisle	Gross α	5.	.3	7.2	5.	14.	11.	21.	18.	7.	< 3.8	8.1	11.
School Well	Gross β	17.	13.9	< 18.	14.	< 13.	13.	13.	14.	< 14.	8.6	10.4	< 22.
	Uranium	13.	50.	15.	<10.	18.	26.	22.	100.	< 10.	20.	36.	25.
	226 Ra			0.36			0.3			< 0.24			0.[illegible]
2310	Nitrate	0.3	0.7	< 0.4	0.5	0.4	< 0.2	<0.1	0.1	.34	0.4	2.0	2.0
	Fluoride	< 0.5	0.8	0.7	0.6	1.8	0.7	1.4	1.1	1.1	0.6	0.9	1.2
Raffinate	Gross α	23.	12.	19.	16.	20.	20.	30.	14.	< 5.	< 3.8	8.1	< 8.
Pond No. 2	Gross β	35.	13.9	<18.	14.	< 13.	13.	13.	14.	<14.	5.7	9.0	< 22.
	Uranium	18.	20.	15.	34.	20.	22.	32.	57.	30.	26.	65.	22.
	226 Ra			0.18			0.12			< 0.25			1.31

SEEPAGE WELLS-Continued

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2311	Nitrate	10.	12.	6.6	3.8	2.5	1.6	0.3	0.1	.14	0.1	0.1	0.1
	Fluoride	< 0.5	< 0.5	< 0.5	0.9	1.8	1.1	1.2	< 0.5	< 0.5	< 0.5	1.5	< 0.5
Raffinate	Gross α	34.	14.	9.9	13.	23.	8.	42.	26.	< 5.	10.4	13.5	< 8.
Pond No. 2	Gross β	46.	13.9	<18.	14.	< 13.	13.	13.	14.	< 14.	17.6	20.3	< 22.
	Uranium	30.	20.	<10.	28.	20.	32.	31.	44.	30.	38.	75.	35.
	226 Ra			0.02			0.4			< 0.24			0.2[illegible]
2312	Nitrate	<0.1	0.2	< 0.4	<0.4	0.3	0.3	0.6	0.1	.07	0.1	<0.1	0.1
	Fluoride	<0.5	0.5	0.5	0.8	0.8	1.2	1.1	0.8	0.8	< 0.5	0.7	2.1
Raffinate	Gross α	14.	8.	13.	6.	10.	18.	21.	22.	< 5.	9.9	8.6	11.
Pond No. 2	Gross β	26.	13.9	<18.	14.	< 13.	13.	13.	14.	<14.	19.4	17.1	< 22.
	Uranium	<10.	20.	31.	235.	< 10.	60.	18.	33.	<10.	32.	45.	26.
	226 Ra			0.29			0.6			0.44			< 0.08
2313	Nitrate	0.1	0.2	1.9	5.5	3.2	2.9	3.6	4.3	.70	0.4	0.4	0.3
	Fluoride	2.6	0.6	< 0.5	1.5	0.7	0.6	< 0.5	< 0.5	< 0.5	<0.5	0.9	0.8
Raffinate	Gross α	42.	29.	22.	25.	24.	7.	23.	18.	< 5.	4.1	<3.8	12.
Pond No. 2	Gross β	54.	13.9	<18.	14.	< 13.	13.	13.	14.	< 14.	11.3	<5.9	< 22.
	Uranium	55.	40.	29.	50.	43.	28.	22.	25.	< 10.	68.	55.	27.
	226 Ra			0.85			0.3			< 0.25			
2314	Nitrate	0.7	0.3	3.3	1.9	0.7	0.2	0.3	0.4	.56	0.6	0.1	0.4
	Fluoride	1.0	0.9	< 0.5	0.8	0.7	0.8	0.6	0.8	0.6	0.6	0.7	0.7
Raffinate	Gross α	43.	42.	26.	24.	29.	27.	30.	29.	14.	< 3.8	6.8	12.
Pond No. 2	Gross β	55.	13.9	<18.	14.	< 13.	13.	13.	14.	< 5.	6.8	< 5.9	< 22.
	Uranium	41.	40.	32.	130.	31.	49.	40.	30.	40.	110.	75.	24.
	226 Ra			0.66			0.4			< 0.25			< 0.0[illegible]
2315	Nitrate	22.	34.	24.	1[illegible].	<7.	12.6	11.0	21.	12.6	15.9	4.0	10.0
	Fluoride	< 0.5	0.8	< 0.5	0.6	1.7	1.1	< 0.5	< 0.5	< 0.5	< 0.5	2.0	0.6
Raffinate	Gross α	6.	0.3	7.2	6.	16.	8.	19.	12.	< 5.	18.5	< 3.8	9.
Pond No. 2	Gross β	18.	13.9	<18.	14.	< 13.	13.	13.	14.	< 14.	23.0	< 5.9	< 22.
	Uranium	<10.	10.	15.	28.	15.	28.	22.	< 10.	45.	80.	78.	29.
	226 Ra			0.40			0.6			< 0.25			0.72

SEEPAGE WELLS-Continued

LOCATION	ANALYSIS	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2316	Nitrate	0.1	< 0.2	1.0	0.7	.08	0.2	< 0.1	0.1
	Fluoride	0.6	0.6	1.0	0.6	< 0.5	0.5	1.5	< 0.5
Settling	Gross α	25.	7.	35.	11.	< 5.	5.9	6.8	12.
Basin No. 1	Gross β	< 13.	13.	13.	14.	< 14.	13.1	< 5.9	< 22.
	Uranium	55.	35.	43.	60.	< 10.	80.	33.	37.
	226 Ra		0.9			< 0.25			1.01
2317	Nitrate	0.7	< 0.2	1.2	0.4	.04	0.1	< 0.1	0.1
	Fluoride	1.6	0.7	< 0.5	0.7	0.6	< 0.5	1.7	< 0.5
Raffinate	Gross α	26.	14.	30.	19.	< 5.	< 3.8	10.4	16.
Pond No. 2	Gross β	< 13.	13.	13.	14.	< 14.	7 2	< 5.9	< 22.
	Uranium	16.	19.	19.	42.	< 10.	60.	30.	34.
	226 Ra		0.3			< 0.24			0.38
2318	Nitrate	0.7	< 0.2	0.6	0.5	.05	0.2	< 0.1	0.1
	Fluoride	1.6	0.6	0.6	0.8	< 0.5	< 0.5	1.9	1.0
Raffinate	Gross α	21	16.	23.	5.	9.	< 3.8	5.4	< 8.
Pond No. 2	Gross β	< 13.	13.	13.	14.	< 14.	16.2	7.7	< 22.
	Uranium	17.	23.	29.	42.	< 10.	95.	60.	41.
	226 Ra		0.6			< 0.24			0.44
2319	Nitrate	0.1	< 0.2	0.6	0.1	.12	0.1	0.1	0.1
	Fluoride	1.2	0.7	0.7	< 0.5	1.0	< 0.5	< 0.5	0.6
Raffinate	Gross α	22.	6.	21.	15.	< 5.	3.8	8.1	8.
Pond No. 2	Gross β	< 13.	13.	13.	14.	< 14.	10.8	< 5.9	< 22.
	Uranium	< 10.	38.	19.	34.	30.	85.	28.	28.
	226 Ra		0.4			< 0.24			0.32

[1]Nitrate reported as Nitrogen on all tables.

Wells listed above added in April 1973 with concrete caps to prevent contamination from surface runoff.

1973 ENVIRONMENTAL SOIL SAMPLES

UNITED STATES TESTING RESULTS
ALL UNITS-ppm

LOCATION	ANALYSIS	Mar.	June	Sept.	Dec.
2403	Fluoride	58.	40.	58.	29.
South 1000'	Uranium	1.3	0.6	2.0	1.0
2404	Fluoride	27.	140.	44.	39.
West 1000'	Uranium	28.	0.4	3.8	2.5
2405	Fluoride	42.	100.	31.	21.
North 1000'	Uranium	3.0	1.5	0.5	1.2
2406	Fluoride	50.	110.	51.	57.
East 1000'	Uranium	1.6	0.8	0.9	0.9

1973 ENVIRONMENTAL VEGETATION SAMPLES
UNITED STATES TESTING RESULTS
ALL UNITS-ppm

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2503	Uranium	7.3	9.2	0.8	1.0	1.05	1.4	0.68	.8	4.7	1.4	3.1	1.8
South 1000'	Fluoride	<4.	<10.	<4.	<3.	<2.	3.	<2.	2.5	3.	7.0	<3.	<3.
2504	Uranium	9.7	12.5	1.2	1.2	0.48	1.6	<0.1	2.8	5.0	1.4	1.6	5.
West 1000'	Fluoride	31.	<10.	12.	<3.	3.	3.	<2.	1.5	9.	2.2	<3.	<3.
2505	Uranium	20.7	2.5	1.2	1.0	0.45	1.2	0.52	1.2	3.6	4.8	4.7	2.4
North 1000'	Fluoride	<4.	<10.	<4.	<3.	<2.	2.	3.	1.6	3.	4.0	14.	<3.
2506	Uranium	4.3	3.1	1.0	1.0	0.80	1.4	1.7	1.4	1.2	1.4	1.3	1.9
East 1000'	Fluoride	14.	<10.	<4.	<3.	11.	3.	2.	4.0	5.	3.4	<3.	<3.
2507	Uranium	3.2	1.2	0.8	1.4	0.93	2.2	0.42	1.4	0.4	0.6	1.8	1.0
South 6000'	Fluoride	4.	<10.	<4.	<3.	4.	4.	<2.	<1.5	5.	5.0	<3.	<3.
2508	Uranium	16.7	0.80	0.6	0.4	0.24	0.7	0.65	0.4	0.6	1.1	1.0	0.4
West 6000'	Fluoride	29.	<10.	<4.	<3.	<2.	4.	2.	<1.5	9.	2.0	<3.	13.
2509	Uranium	2.9	2.3	0.8	1.1	0.80	1.4	2.5	0.6	0.5	0.5	1.8	2.0
North 6000'	Fluoride	<4.	<10.	<4.	<3.	<2.	6.	2.	4.5	2.	1.0	<3.	<3.
2510	Uranium	2.4	0.85	0.6	2.0	0.63	1.6	1.4	1.2	0.5	0.6	2.0	2.9
East 6000'	Fluoride	4.	<10.	<4.	<3.	<2.	25.	2.	2.4	1.	<1.	<3.	<3.

Forced Evaporation and Nitrate Decomposition

The proposed processes for complete nitrate decomposition involving a kiln or fluidbed reactor were considered to the same depth as the possibility of total evaporation as discussed above. Further development and engineering work must be scheduled to investigate these possible processes and significantly reduce the probability of uncontrolled fume or dust releases through a system of engineered safeguards. It is Kerr-McGee's opinion from work done with similar processes in other chemical operations that such a catastrophic release from the process described is extremely unlikely. It would be expected that an environmental statement would be required for this installation at the time an application was made for a license amendment.

Note: Page 6 - "Rupture of Waste Retention Pond Embankment"

A copy of the letter from the Chief, Engineering Division, Tulsa District, Corps of Engineers, Dept. of Army, is attached describing the drawing, #2870-C33-1/1.2, dated December 1971 which shows a diversion dike extending S 49°0'W from the east bank of the Arkansas River from approximately 2400 ft. NW of the I-40 bridge, 1500 ft. into the bed of the river, then S 42°14'E for a distance of approximately 1500 ft. terminating at a point 450 ft. north of the I-40 bridge. The drawing further shows cross sections of the dike and information as to rip-rapping along the west side of the Arkansas River. The obvious intention of this dike is to scour the channel to reduce the amount of dredging necessary.

DEPARTMENT OF THE ARMY
TULSA DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 61
TULSA, OKLAHOMA 74102

SWTED-DG

8 June 1972

Mr. W. J. Shelley
Kerr-McGee Corporation
Nuclear Division
Kerr-McGee Building
Oklahoma City, Oklahoma 73102

Dear Mr. Shelley:

I am inclosing a map of the area that you discussed with Mr. L. A. Martin 6 June 1972. You will find the stone fill dike you asked about to be structure 362.7L and is located on the left (north) side of the river between Highway I-40 crossing and the mouth of the Illinois River. The contractor for this bank stabilization work has not completed the contract work, however the major remaining portion is along the right (south) bank. If I may be of further assistance, please let me know.

Sincerely yours,

B. R. Mihoffay

for/M. W. DEGEER
Chief, Engineering Division

1 Incl
As stated

AEC FORM 703
(4-71)

U.S. ATOMIC ENERGY COMMISSION

MATERIALS DATA INPUT

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[redacted]

DOCKET NUMBER		MAIL CONTROL NO.	DATE REQUEST REC'D		PROGRAM CODE (PRIMARY)
040-08027	[redacted]	00338	02-22-74	[redacted]	

SECONDARY PROGRAM CODES:

#1	#2	#3	#4	#5

INDIVIDUAL LICENSEES

NAME	NAME
NAME	NAME
NAME	NAME

ORGANIZATION LICENSEE

ORGANIZATION NAME: Kerr- McGee Nuclear Corp.

DEPARTMENT OR BUREAU:

TYPE OF ORGANIZATION: U. S. GOVERNMENT AGENCY / EDUCATIONAL INSTITUTION / MEDICAL INSTITUTION / X INDUST / OTHER

ADDRESS

BUILDING, STREET	CITY	STATE	ZIP CODE
	Oklahoma City	OK	73125

APPLICANT'S COMMUNICATION DATED:	CLASSIFICATION	ASSIGNED TO:	RESULTING AMD. NO.
02-20-74	U		

ENCLOSURES:

Test Report

UNCLASSIFIED DESCRIPTION:

Ltr. req a extension of Amendments #2 & #3 for the growing period of 1974 ...

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NAME	DATE	NAME	DATE
Rouse 2 extras	02-26-74		

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