

# EXXON COAL and MINERALS COMPANY

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SAFETY, HEALTH & ENVIRONMENT

LINDA Z. KRUPNIK  
Manager

December 18, 1998

Docket No. 40-8102  
License No. SUA-1139

U. S. Nuclear Regulatory Commission  
Division of Waste Management, M.S. 5 E2  
ATTN: Joseph J. Holonich, Chief  
High Level Waste and Uranium  
Recovery Projects Branch  
Mail Stop T7J9  
11545 Rockville Pike  
Rockville, MD 20850

Dear Sir:

Exxon Corporation, c/o Exxon Coal and Minerals Company, possesses the Highland uranium tailings basin in Converse County, Wyoming under License No. SUA-1139. This submittal requests a license amendment changing the Highland tailings basin Ground Water Protection Limits (GPLs) for nickel (Ni), radium-226+228 (Ra-226+228) and natural uranium (UNAT) to the Alternate Concentration Limits (ACLs) found below.

In 1989 NRC approved the tailings basin reclamation plan and ECMC completed most of the reclamation. However, a small area of the basin has been only partially reclaimed due to operation of an evaporation pond associated with the ground water Corrective Action Program (CAP) and continued tailings consolidation. Continuation of the ground water recovery operation prevents completion of the final reclamation of the tailings basin.

ECMC submitted the CAP to the NRC Uranium Recovery Field Office on August 15, 1989, in response to a July 3, 1989, letter from the NRC. The CAP consisted of pumping five wells to remove Potentially Hazardous Constituents (PHCs) from the uppermost aquifer. The evaporation pond receives this well production.

NRC approved the CAP on August 18, 1989, with License Amendment 32 to License SUA-1139. ECMC began recovering ground water in accordance with the CAP in November of 1989. In 1990 NRC approved discontinuing pumping from one of the five wells due to very limited production. The system has recovered 16.6 million gallons through October 1998, and the aquifer has fallen substantially. Two of the four remaining recovery wells are now incapable of producing a significant volume of water due to the low ground water levels.

With License Amendment No. 44 issued November 16, 1994, the NRC approved suspension of CAP operations from December 15 through April 15 to avoid winter operations. The system now produces too little water to prevent pipeline freezing. In approving the annual shutdown,

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A DIVISION OF EXXON CORPORATION

Drawings in Files



NRC concluded turning off the wells during the winter would not pose a threat to the environment or to the health and welfare of the public.

Most of the PHCs have fallen to concentrations below the GPLs in the license. Ni and Ra 226+228 at one Point of Compliance (POC) well and UNAT at two POC wells still exceed the GPLs. However, the existing concentrations are not a hazard to the environment or the public. The Ni, Ra 226+228 and UNAT concentrations are not improving and are not expected to improve with continued operation of the CAP. Therefore, ECMC requests approval of the ACLs in the table found below. The monitoring data from the past four years including 1998 meet these ACLs.

ECMC has determined appropriate Health and Environmental Limits (HELs) at the Potential Points of Exposure (POEs) and extrapolated these to the POC wells through site specific attenuation factors. Derived Health and Environmental Limits (DHELs) were calculated for the POCs using the HELs and the attenuation factors. The proposed ACLs are at or below the DHEL concentrations as indicated in the table.

The CAP was approved by the NRC as being the method by which the PHC concentrations could be reduced to As Low As Reasonably Achievable (ALARA). With no improvement in the Ni, Ra 226+228 and UNAT concentrations occurring at the POCs, the ALARA concentrations have been demonstrated since there are no further reasonable corrections actions available.

Setting an ACL requires determining an ALARA concentration for each PHC for which an ACL is sought. In this ACL application, the ALARA concentrations reported are based on the mean concentrations at the POCs plus 1.96 times the standard deviation of the data for each PHC. The proposed ACLs equal the ALARA concentrations.

POC WELL	PHC	GPL	DHEL	ALARA	PROPOSED ACL	HIGHEST MEASUREMENT SINCE 1994
125	UNAT (pCi/l)	0.43	NA	59	59	28.9
175	Ni (mg/l)	0.02	1.8	1.8	1.8	1.7
175	Ra 226 & 228 (pCi/l)	5.0	27	24	24	13.4
177	UNAT (pCi/l)	0.43	1290	71	71	57.5

NA means not applicable. There is no POE associated with Well 125.

The proposed ACLs do not pose a substantial present or potential hazard to human health or the environment. With NRC approval of the ACLs, the ground water monitoring results will meet the NRC limits. ECMC proposes decommissioning the CAP upon approval of the ACLs. The remaining tailings basin reclamation could be completed when the CAP evaporation pond is dry and tailings consolidation meets the license requirement. The wells would be reclaimed after a successful two-year post-corrective action-monitoring period.

The attached report, "Supporting Information for Alternate Concentration Limit Application", provides detailed information on the Highland tailings basin, ground water levels and quality, the CAP and the ACLs.

The NRC provided comments on a 1995 ACL application. The NRC comments and the ECMC responses that are all incorporated into the supporting document are summarized below:

- Provide human health and wildlife hazard assessments for exposure to surface water from Highland Reservoir, the creek that runs through the tailings basin and the North Fork of Box Creek.

These are primarily addressed in Section 2.3.2.3 (Possible Points of Exposure) of the Hazard Assessment. The measured concentrations of Ra 226+228, selenium and UNAT in Highland Reservoir are not the results of tailings basin seepage. The reservoir is regulated under the Highland Mining Permit from the Wyoming Department of Environmental Quality.

There is no hydrologic connection between the tailings basin seepage and the other surface water areas. No creek runs through the tailings basin. The unnamed tributary to the North Fork of Box Creek that once existed west of the tailings basin dam is filled with mine overburden, tailings and the tailings basin compacted earthen dam. The unnamed tributary still exists east of the tailings basin dam, but ground water from the uppermost aquifer does not reach it now, nor will it reach it in the future. The same is true for the North Fork of Box Creek.

- Provide and Justify Point of Exposure Locations

These are primarily addressed in Section 2.3.2.3 (Possible Points of Exposure) of the Hazard Assessment.

- Provide Point of Compliance Justifications

ECMC did not propose the POCs locations. On December 29, 1988, the NRC selected four wells to be POCs (Amendment No. 27) from all the wells for which data were presented by ECMC. These four POC wells lie to the north, south, east and west of the center of the ponded water once held within the tailings basin. This pond created the seepage mound below the basin that has now largely dissipated. The four wells are within the area ECMC has proposed to be deeded to the state or federal government for perpetual monitoring.

- Provide Basis for Projected Attenuation Rates in Ground Water

This subject is primarily discussed in Section 2.3.6.1 (Basis for Attenuation Factors) of the Hazard Assessment. By the early 1990s the advance of the PHCs had essentially ceased as predicted in a 1982 study by Exxon Production Research Company. Therefore, simple ratios created by dividing the concentrations of the PHCs at the POEs by the concentrations at the corresponding POCs provide suitable attenuation factors.

- Designate Site Area for Perpetual Monitoring

This is found on Figure 1.2. The site area is labeled "Proposed Perpetual Monitoring Area."

- Revisit Proposed Well 125 ACL Value Since Proposal Is Lower Than ALARA Value

The proposed ACL value now equals the ALARA value (see Table E-1 in the Executive Summary).

- Revisit Location of Chloride Seepage Front

This subject is introduced on page 1-17 in Section 1.3.2 (Hydrologic Setting) of the General Information. The subject is dealt with in detail in Section 3 of Appendix 3 (Highland Tailings Basin Ground Water Study).

The NRC letter of March 13, 1997, asked ECMC to include a new corrective action assessment in the ACL application. This review is provided in Appendix 7 of the Supporting Information.

If you have any questions regarding this application, please contact David Range of my staff at (713) 978-5438.

Yours truly,



LZK:DMR\dmr

Enclosure (5 copies)

cc: D. M. Range w/o Enclosure

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