



Department of Environmental Quality



To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Matt Mead, Governor

John Corra, Director

August 4, 2011

Mahesh Vidyasagar
ExxonMobil Environmental Services
12450 Greenspoint Drive
GSC-GP6-1004
Houston, Texas 77060

RE: Permit No. 218C, License No. SUA-1139, Highland Reclamation Project, License Amendment Application.

Dear Mahesh:

The Land Quality Division (LQD) received a copy of the license amendment application on May 13, 2011. Please see attachment summary for more details.

If you have questions, please contact Anna Krzyszowska-Waitkus at (307) 777-6284 or Lowell Spackman at (307) 777-7052.

Sincerely,

Anna Krzyszowska-Waitkus
Soil Scientist
Land Quality Division
Department of Environmental Quality

Cc: Tom McLaughlin, Mail Stop: T-8F5, Washington, DC 20555

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RE: Permit 218C, License No. SUA-1139, Highland Reclamation Project, License Amendment Application

From: Anna Krzyszowska-Waitkus and Steve Ingle, Land Quality Division (LQD) of the Department of Environmental Quality (DEQ)

Date: August 1, 2011

Below is a summary of the application as reviewed by the LQD staff. ExxonMobil Corporation requested an amendment to its United States Nuclear Regulatory Commission (NRC) License No. SUA-1139 for the Highland Uranium Mill Site. ExxonMobil requests that NRC approve new proposed alternate concentration limits for the Southeast Drainage and that the Pit Lake and surroundings will be included in the proposed long term surveillance boundary (LTSB) for eventual transfer to the United States Department of Energy (DOE) for long-term surveillance and monitoring. To support the request Exxon has submitted current and historical data from the tailings site and mine area. Exxon has also included a corrective action assessment.

The application included the following goals:

- Modification of the existing Alternate Concentration Limits (ACLs) at an existing Point of Compliance (POC) well and the proposed POC well
 - Present practicable corrective actions and evaluate the site specific conditions for present and potential hazards to human health
 - Modification the groundwater monitoring program in License Condition 33
 - o New Point of Exposure (POE) monitoring locations for ACLs
 - o Expansion of the long-term surveillance boundary to include the Highland Pit Lake and the Southeast Drainage
- There are four historical, existing POC wells around the tailings impoundment: 176, 177, 125, and 175. Additional three wells (MFG-1, MFG-2, and MFG-3) were installed in 2004 at the southeast toe of the tailing area.
- Uranium in MFG-1 was above the Maximum Contaminant Level (MCL) value of 0.03 mg/L. No 11e.(2) byproduct material and constituents of concern were identified in other wells. Well MFG-1 is proposed as the new Southeast Drainage POC well. An ACL of 0.7 mg/l for uranium is proposed for this well. Groundwater uranium concentrations at this well have ranged from 0.13 to 0.39 mg/l.
- Well TT-7 (located where the Southeast Drainage meets North Fork Box Creek) is proposed as a new POE monitoring well for the Southeast Drainage.
- Updated ACLs are requested for well 175 (located between the reclaimed tailings impoundment and the Pit Lake and backfill pits). The concentration of uranium in this well has been increasing

since 2003 and now exceeds the 0.03 mg/l. The application proposes an ACL of 3 mg/l of uranium in this well.

- Re-evaluation of the Conceptual Site Model (CSM) determined that uranium, selenium, sulfate, and chloride from 11e.(2) byproduct material originating in the tailings impoundment have entered the Highland Pit Lake causing the concentration of uranium and selenium to be above their MCL's. The evolution of the groundwater models is presented in Appendix A. The discussion of the modeling efforts leading up to the currently accepted 2007 groundwater model is a good assessment of the previous modeling efforts. The current 2007 model shows that 11e.(2) byproduct material has reached the Highland Pit Lake and a second plume extends to the southeast drainage and the North Fork of Box Creek. ExxonMobil proposes to revise the long term surveillance boundary (LTSB) for the Highland site to include the Pit Lake and areas immediately around the Pit Lake.
- The Pit Lake is proposed to be established as a Point of Exposure (POE) monitoring location-annual sampling as a single shallow depth is proposed. Sampling of the Pit Lake has indicated that the water quality does not vary substantially with depth and it is the shallow depths that have greatest potential for ecological exposure.
- The evaluation of remediation of water quality impacts to the Pit Lake included active and passive, as well as in-situ and ex-situ treatment technologies. The results of these studies showed that although the engineered solutions are possible, they would require continued maintenance and periodic replacement. The only practicable corrective action is the implementation of institutional controls over the area including the Pit Lake within the proposed LTSB. More detailed information including the cost of the specific treatment is included in Appendix E.
- Exxon performed an As Low As Reasonably Achievable (ALARA) analysis as part of their determination that the use of institutional controls and relocation of the POC was the preferred option. The proposed action has a cost per person-rem averted dose significantly greater than \$2,000, and therefore the proposed alternative is as low as reasonably achievable (ALARA).

Steve Ingle has one comment on the proposal from the LQD: Does the uranium isotope ratio study have enough samples to provide confidence in the results?