



State of Utah

GARY R. HERBERT  
Governor

GREG BELL  
Lieutenant Governor

Department of  
Environmental Quality

Amanda Smith  
Executive Director

DIVISION OF RADIATION CONTROL  
Rusty Lundberg  
Director

February 6, 2012

**CERTIFIED MAIL**  
**(Return Receipt Requested)**

Chuck Wentz, Environmental Department Supervisor/RSO  
Rio Algom Mining L.L.C.  
P.O. Box 218  
Grants, NM 87020

Dear Mr. Wentz:

Subject: Radioactive Materials License UT 1900481 - DRC Transmittal of Final License Amendment No. 4

Enclosed is a copy of Amendment No. 4 to Radioactive Material License (RML) UT 1900481. License Amendment 4 revised Condition 4 and added License Condition 56. Please review the license in its entirety. The DRC looks forward to working with Rio Algom regarding the new work plan.

If you have any questions or concerns regarding the amendment, please contact John Hultquist at (801) 536-4250.

UTAH RADIATION CONTROL BOARD

Rusty Lundberg, Executive Secretary

RL/JH:jh

Cc: Billy Ray, Rio Algom (w/enclosure)

Enclosure

**UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF RADIATION CONTROL  
RADIOACTIVE MATERIAL LICENSE**

Pursuant to Utah Code Annotated, Title 19, Chapter 3 and the Utah Radiation Control Rules, Utah Administrative Code R313, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material designated below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This licensee is subject to all applicable rules, and orders now or hereafter in effect and to any conditions specified below.

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|            |                           |   |                              |
|------------|---------------------------|---|------------------------------|
|            | LICENSEE                  | ) | 3. License Number UT 1900481 |
|            |                           | ) | Amendment 4                  |
| 1. Name    | Rio Algom Mining, Limited | ) | *****                        |
|            | Liability Company         | ) | 4. Expiration Date           |
|            |                           | ) | February 1, 2013             |
| 2. Address | Rio Algom Mining LLC      | ) | *****                        |
|            | PO Box 218                | ) | 5. License Category 2-b      |
|            | Grants, NM 87020          | ) |                              |

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|   |                                     |  |
|---|-------------------------------------|--|
| 6. Radioactive material<br>(element and mass<br>number) | 7. Chemical and/or<br>physical form | 8. Maximum quantity<br>licensee may possess<br>at any one time |
| Natural Uranium   | Any                                 | Unlimited  |

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9. Authorized place of use: The licensee's former uranium milling facility located in San Juan County, Utah.
10. The licensee is hereby authorized to possess 11e.(2) byproduct material in the form of uranium waste tailings and other byproduct materials generated by the licensee's milling operations, as defined by Nuclear Regulatory Commission (NRC) Regulations, Code of Federal Regulations (CFR), Title 10, Part 20, Section 20.103 and the Utah Administrative Code (UAC) Section R313-12-3.
11. The licensee shall conduct activities in accordance with statements, representations, and conditions contained in the Licensee's NRC renewal application dated December 1982, as modified by July 2, 1992, and December 16, 1992 submittals to the NRC, except where superseded by modifying license conditions herein.

The Licensee shall comply with Section 6.0 of the license renewal application containing the emergency procedures to be followed in the event of an accident [as modified in the

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supplement submitted to the NRC by letter dated May 31, 1985]. Updating specific names and telephone numbers shall not require this Utah-issued license to be amended.

[Applicable NRC Amendments: 3, 9, 15, 16, 40, 42, 57]

12. DELETED by NRC Amendment No. 40.
13. DELETED by NRC Amendment No. 40.
14. The Licensee shall comply with the posing requirements specified within 10 CFR 20 1902 as incorporated by reference UAC R 313-15-902(5) until the final institutional controls and permanent markers have been erected as required by the September 2004, Draft Office of Legacy Management Long-Term Surveillance Plan for the Lisbon Valley, Utah (UMTRCA Title II) Disposal Site, (DOE-LM/G-J696-2004).  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendment: No. 57]
15. The results of sampling, analyses, surveys and monitoring; the results of calibration of equipment; reports on audits and inspections; all meetings and training courses required by this license; and any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified by the Executive Secretary, all such documentation records shall be maintained for a period of at least five (5) years.
16. DELETED by NRC Amendment No. 40.
17. DELETED by NRC Amendment No. 40.
18. DELETED by UDRC Amendment: 1
19. DELETED by NRC Amendment No. 57.
20. In order to ensure that no disturbance of cultural resources occurs in the future, the licensee shall have an archaeological and historical artifact survey of areas of its property, not previously surveyed, performed prior to their disturbance, including borrow areas to be used for reclamation cover. These surveys must be submitted to the Executive Secretary and no such disturbance shall occur until the licensee has received authorization from the Executive Secretary to proceed.

In addition, all work in the immediate vicinity of any buried cultural deposits unearthed during the disturbance of land shall cease until approval to proceed has been granted by the Executive Secretary.

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21. The licensee shall conduct an annual survey of land use (private residences, grazing areas, private and public potable water and agricultural wells, and non-residential structures and uses) in the area within five kilometers (3.1 miles) of the site property boundary and submit a report of this survey to the Executive Secretary. The report shall be submitted on or before December 31 annually. This report shall indicate any differences in land use from that described in the last report including the following: 1) providing references and/or a description of methods utilized to obtain information included in the report; 2) listing all water wells, owners, approved use, and contact information within the specified search radius; and 3) including information on an updated land use map to be included with the report.  
[Applicable UDRC Amendment: 1]
22. The results of all environmental monitoring required by this license shall be reported in accordance with UAC R313-24 (10 CFR 40, Section 40.65 incorporated by reference) using the NRC Form 484 "Sample Format for Detection Monitoring Data Report". All groundwater monitoring will be reported in accordance with License Condition 53. The reports shall be transmitted to the Executive Secretary.  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendment: 57, 66]
23. DELETED by NRC Amendment No. 40.
24. The Licensee shall comply with notification requirements of UAC R313-15 (10 CFR 20 as incorporated by reference). Incident and event notifications that require telephone notification shall be made to the Executive Secretary at (801) 536-4250 during normal business hours or after hours to the DEQ Duty Officer at (801) 536-4123.  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendment: 57]
25. Pursuant to UAC R313-24-3, before any license renewal, major amendment, or prior to engaging in any activity not previously assessed in the license application, subsequent approvals, amendments, or as modified by this license, the Licensee shall prepare and record an environmental analysis of such activity(s), describing the proposed action, a statement of its purposes and the environment affected. The environmental report shall present a discussion of the following: (a) an assessment of the radiological and nonradiological impacts to the public health from the activities to be conducted pursuant to the license or amendment; (b) an assessment of any impact on waterways and groundwater resulting from the activities conducted pursuant to the license or amendment; (c) consideration of alternatives, including alternative sites and engineering methods, to the activities to be conducted pursuant to the license or amendment; and (d) consideration of the long-term impacts including decommissioning, decontamination, and reclamation impacts, associated with activities to be

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conducted. The licensee shall obtain Executive Secretary-approval in the form of a license amendment.

[Applicable UDRC Amendment: 1]

26. DELETED by NRC Amendment No. 40.
27. The licensee shall have 30 days from the signatory date of this license to submit financial surety documents for Executive Secretary approval consistent with UAC R313-24-4 (10 CFR 40, Appendix A, Criterion 9 and 10 incorporated by reference), adequate to cover the estimated costs, if accomplished by a third party, for completion of the Executive Secretary-approved reclamation/decommissioning plan including; decommissioning and decontamination of the mill and mill site, reclamation of any tailings or waste disposal areas, ground-water restoration as warranted, and the long-term surveillance fee. Within 3 months of Executive Secretary-approval of a revised reclamation/decommissioning plan, the licensee shall submit for Executive Secretary review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly approved plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within 3 months of written Executive Secretary approval.

Annual updates to the surety amount, required by UAC R313-24 (10 CFR 40, Appendix A, Criteria 9 and 10, as incorporated by reference), shall be submitted to the Executive Secretary by June 30 of each year. Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency fee, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure. The basis for the cost estimate is the Executive Secretary approved reclamation/decommissioning plan or Executive Secretary approved revisions to the plan.

The licensee's approved surety, Irrevocable Letter of Credit issued by the Imperial Bank of Commerce, New York Branch, in favor of the Executive Secretary, shall be continuously maintained in an amount no less than \$2,214,366 for the purpose of complying with UAC R313-24, until a replacement is authorized by the Executive Secretary.

[Applicable UDRC Amendment: 1]

[Applicable NRC Amendments: 18, 22, 26, 33, 38, 45, 49, 51, 52, 54, 56, 58, 60, 62, 63, 64, 66]

28. Prior to termination of this license, the licensee shall provide for transfer of title to byproduct material and land, including any interests therein (other than land owned by the United States or the State of Utah), which is used for the disposal of such byproduct material or is essential to ensure the long term stability of such disposal site to the United States or the State of Utah.

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29. DELETED by NRC Amendment No. 61.
30. DELETED by NRC Amendment No. 57.
31. DELETED by NRC Amendment No. 40.
32. DELETED by NRC Amendment No. 40.
33. Written operating procedures shall be established for activities involving radioactive materials and will include monitoring, bioassay analyses, instrument calibrations, and emergency response. All written procedures required by this Condition shall be reviewed and approved in writing by the Radiation Safety Officer (RSO) before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the RSO shall perform a documented review of all existing operating procedures at least annually.  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendments: 40]
34. DELETED by NRC Amendment No. 40.
35. DELETED by NRC Amendment No. 40.
36. DELETED by NRC Amendment No. 40.
37. DELETED by NRC Amendment No. 40.
38. The licensee shall be required to use a Radiation Work Permit (RWP) issued by the RSO or designee for work or nonroutine maintenance jobs where the potential for exposure to radioactive material exists and for which no written procedures exist. The RWP shall at least describe the following:
- A. The scope of the work to be performed.
  - B. Any precautions necessary to reduce exposure to uranium and its daughters.
  - C. The supplemental radiological monitoring and sampling necessary before, during, and following completion of the work.
39. To ensure continued good radiation safety practices, the RSO or designee shall conduct monthly documented inspections of all active work areas in accordance with the program elements specified in Section 5.1.3 of the renewal application.  
[Applicable NRC Amendments: 9, 15, 40]

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40. The licensee shall submit a copy of the report documenting an annual ALARA audit committed to in Section 5.1.4 of the renewal application as modified by letter dated November 20, 1987. Submittals required by this condition shall be submitted to the Executive Secretary within one month of completion of the report.  
[Applicable NRC Amendments: 15, 40]
41. All workers shall be provided on-the-job training on the radiation safety aspects of the job to be performed prior to beginning work activities and annually thereafter. The on-the-job training, as well as all other training committed to in Section 5.3 of the renewal application, shall be documented.  
[Applicable NRC Amendments: 40]
42. DELETED by NRC Amendment No. 57.
43. The licensee shall perform and document function checks of the alpha survey meters prior to their use.
44. DELETED by UDRC Amendment: 1
45. The licensee shall comply with the following:
- A. DELETED by NRC Amendment No. 24.
  - B. A spillway channel shall be constructed in the left abutment of the lower tailings dam, as located in the licensee's April 10, 1992, submittal. The spillway shall have a 30-foot bottom width, 2H:1V side slopes and a crest elevation of 6645 feet.
  - C. DELETED by NRC Amendment No. 37.
  - D. DELETED by NRC Amendment No. 30.
  - E. DELETED by NRC Amendment No. 24.
  - F. DELETED by NRC Amendment No. 57.
  - G. Runoff from the upper tailings shall be diverted into the diversion ditch according to the methods described in the licensee's October 11, 1991, submittal. COMPLETE  
[Applicable UDRC Amendment: 1]
  - H. The evaporation pond on the upper impoundment shall be operated with a minimum freeboard of 2 feet in accordance with the licensee's August 15, 1990, submittal. COMPLETE

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[Applicable UDRC Amendment: 1]

- I. The evaporation pond on the lower tailings pond shall be constructed in accordance with the licensee's February 3, and April 16, 1992, and February 24, 1993, submittals. The lower evaporation pond shall be operated with a minimum freeboard of 2 feet in accordance with the licensee's February 3, 1992, submittal. COMPLETE  
[Applicable UDRC Amendment: 1]
- J. DELETED by NRC Amendment No. 53.
- K. A construction report for the lower evaporation pond and as-built drawings of the upper and lower evaporation ponds shall be submitted to NRC within 3 months of completion of construction of the lower evaporation pond. COMPLETE  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendments: 13, 14, 17, 21, 24, 25, 28, 30, 37, 43, 46, 50, 53, 57]
46. DELETED by NRC Amendment No. 40.
47. DELETED by NRC Amendment No. 40.
48. DELETED by NRC Amendment No. 40.
49. DELETED by NRC Amendment No. 40.
50. DELETED by UDRC Amendment: 1
51. DELETED by NRC Amendment No. 57.
52. The licensee shall reclaim the tailings disposal area in accordance with the June 16, 1989, and March 4, 1992, submittals as revised by submittals dated August 16, 1989, March 13, 1992, August 14, 1992, November 17, 1992, November 18, 1992, November 20, 1992, April 1, 1993, and April 2, 1993, with the following exceptions:
- A. The licensee shall submit for NRC review and approval, the settlement data that demonstrate that 90 percent of the expected settlement is complete. COMPLETE  
[Applicable UDRC Amendment: 1]
- B. The licensee shall submit for Executive Secretary review and approval, data that confirm that the average depth of the stabilization layer below the evaporation ponds is equal to or greater than the average stabilization depth used in the modeling before constructing the remaining barrier.
- C. The licensee shall submit to the NRC by January 1, 1994, a plan to verify that the in place cover has not experienced excessive erosion or defects after it has been



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demonstrated that settlement is complete and before the radon barrier is considered final. The proposed plan must include a field testing program which contains a method to ensure that the appropriate minimum depths of clay and silt are in place over the disposal area. COMPLETE

[Applicable UDRC Amendment: 1]

- D. The licensee shall provide an analysis of the results of the testing program required in Section C above to verify the design conditions with respect to radon attenuation. The analysis shall be provided for Executive Secretary review and approval.
- E. DELETED by NRC Amendment No. 57.
- F. The licensee shall implement the erosion protection design submitted to the NRC on September 3, 2002, supplements dated March 1, 2004, and in accordance with the following conditions:
  - (1) DELETED by NRC Amendment No. 67.
  - (2) DELETED by NRC Amendment No. 67.
  - (3) DELETED by NRC Amendment No. 67.
  - (4) DELETED by NRC Amendment No. 67.
  - (5) DELETED by NRC Amendment No. 67.
  - (6) DELETED by NRC Amendment No. 67.
  - (7) DELETED by NRC Amendment No. 67.
  - (8) DELETED by NRC Amendment No. 67.
  - (9) DELETED by NRC Amendment No. 67.
  - (10) The licensee shall perform rock durability and gradation testing at the frequency recommended in the NRC issued guidance NUREG-1623, Design of Erosion Protection for Long-Term Stabilization, as amended, with the exception that if rock quantities for any size riprap are 5000 cubic yards or less, two gradation tests at the 1/3 and 2/3 points of placement are acceptable.
  - (11) The licensee shall perform tests to verify that the bedrock formation in the lower dam spillway and diversion channels is sufficiently competent to resist erosion. Erosion resistant bedrock shall be determined by refusal of a power augur drilling vertically, using a carbide steel bit. Tests will be performed on a maximum of 20-foot centers. Alternatively, if the licensee can document that the bedrock is massive and relatively uniform, testing on 50-foot centers shall be acceptable.

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- (12) The licensee shall provide a program for inspecting the filter and riprap layers to assure proper sizing and gradation. The program shall include a procedure for measuring the thicknesses of the in place rock on a minimum 50-foot grid system and at any and all locations that do not appear to meet the specifications.
- G. All of the reclamation plan requirements shall be incorporated into a single document and provided to the Executive Secretary no later than 3 months after Executive Secretary approval of the erosion protection design. This document shall contain only the plans and specifications that will be used to construct the reclamation plan.
- H. A completion report including as-built drawings, verifying that reclamation of the site has been performed according to the approved plan, must be provided within 6 months of the completion of construction. The report must also include summaries of results of the quality assurance and control testing to demonstrate that the approved specifications were met. The completion report and drawings shall be certified by a Utah-licensed Professional Engineer.  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendments: 4, 6, 7, 8, 44, 47, 53, 55, and 67]
53. The licensee shall implement a ground water compliance monitoring program containing the following:
- A. Monitor background wells MW-5 and MW-13; trend wells EF-6, RL-1, RL-3, EF-8, ML-1, H-63, and LW-1; point of compliance (POC) wells EF-3A and OW-UT-9; and point of exposure (POE) wells RL-4, RL-5, and RL-6 for uranium, molybdenum, selenium, arsenic, pH, total dissolved solids, chloride, sulfate, bicarbonate, and water levels (depth to groundwater and groundwater elevation). Monitoring will occur in accordance with the monitoring schedule in 53.G.
1. The north aquifer background concentrations (in mg/L) for MW-5 are: arsenic = 0.05, molybdenum = 0.07, selenium = 0.01, and uranium = 0.01.
- The south aquifer background concentrations (in mg/L) for MW-13 are: arsenic = 0.066, molybdenum = 0.05, selenium = 0.01, and uranium = 0.02.  
[Applicable NRC Amendments: 59, 66]
- B. Protect ground water quality at the facility for at least 200 years (thru year 2205) by maintaining contaminant concentrations in each well equal to or below the maximum concentrations specified in Tables 1, 2, and 3 of this License, except as provided under License Condition 53.C.

**TABLE 1: POINT OF COMPLIANCE (POC) WELLS<sup>5</sup>**

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| Well    | Other<br>ACLs (mg/L) <sup>1</sup>                       | Uranium ACL (mg/L) <sup>1</sup> |
|---------|---|---------------------------------|
| EF-3A   | Molybdenum = 23.34<br>Selenium = 0.93<br>Arsenic = 3.06 | 96.87                           |
| OW-UT-9 | Molybdenum = 58.43<br>Selenium = 0.10<br>Arsenic = 2.63 | 101.58                          |

**TABLE 2: POINT OF EXPOSURE (POE) WELLS<sup>6</sup>**

| Well | Uranium Compliance Limit (mg/L) |
|------|---------------------------------|
| RL-4 | 0.32 <sup>2</sup>               |
| RL-5 | 0.32 <sup>2</sup>               |
| RL-6 | 0.32 <sup>2</sup>               |

**TABLE 3: TREND WELLS<sup>6</sup>**

| Well | Uranium Target Action Level (mg/L) |
|------|------------------------------------|
| EF-6 | 3.9 <sup>3</sup>                   |
| EF-8 | 0.30 <sup>3</sup>                  |
| ML-1 | 0.26 <sup>3</sup>                  |
| RL-1 | 42.1 <sup>4</sup>                  |
| RL-3 | 37.3 <sup>4</sup>                  |
| H-63 | 0.06 <sup>4</sup>                  |
| LW-1 | 0.028 <sup>7</sup>                 |

<sup>1</sup> ACLs represent the 95-percent upper confidence limit of historical sampling data from 1990 through 2003, with the exception of selenium in OW-UT-9, which is based on the Health Risk Concentration Limit (see page 60 of Response to Request for Additional Information (RAI) (Komex, October 13, 2003)). These values only apply to wells located in the area of greatest impact (EF-3A and OW-UT-9).

<sup>2</sup> Compliance Limits are based on contaminant transport model predictions, as found in the February 2004 dose assessment used to support the ACL Application (Application for Alternate Concentration Limits Source Materials License SUA-1119, RAMC Lisbon Facility, La Sal, Utah, Lewis Water Consultants, Inc., March 1, 2001). These levels apply to POE wells that are projected to become impacted in the future (RL-4, RL-5, and RL-6).

<sup>3</sup> Target Action Levels are based on the contaminant transport model predictions, as found in the Best Estimate Concentration Curve in 200 years as presented on Figures 2-10 in the Long-Term Groundwater Monitoring Plan (Komex, February 19, 2004) for wells with increasing predicted uranium concentration trends in 200 years (EF-6, EF-8, and ML-1).

<sup>4</sup> Target Action Levels are based on contaminant transport model predictions as represented by the Best Estimate Concentration Curve as presented on Figures 2-10 in the Long-Term Groundwater Monitoring Plan (Komex, February 19, 2004) for wells with decreasing predicted uranium concentration trends in 200 years (RL-1, RL-3, and H-63).

<sup>5</sup> Wells predicted by Licensee to have a decreasing contaminant concentration trend with time.

<sup>6</sup> Wells predicted by Licensee to have an increasing contaminant concentration trend time; with the exception of well H-

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63 which was predicted to have an increasing trend, followed by a decreasing concentration.

7 Target Action Level for ground water well LW-1 is based on the Proposed Action Limit Letter from Rio Algom to DRC dated February 12, 2009 and received by DRC on March 16, 2009. The letter includes an attachment from Worley Parsons which provides the statistical analysis of 9 background monitoring results (Shapiro-Wilk Normality Test and development of the target action level by calculation of mean + 2 standard deviations.

C. Probable out of compliance status (POOC) is defined as any one sample analysis result in excess of any contaminant concentration specified in Tables 1, 2, or 3 of this license. If a POOC event occurs the licensee shall:

- (1) Notify the Executive Secretary of the POOC status within 30 days of the initial detection (receipt of data);
- (2) Initiate quarterly ground water sampling for the exceeded parameters in the well indicating the exceedence, unless the Executive Secretary determines that other periodic sampling is appropriate, for two quarters or until the compliance status of the facility can be determined.

Out of compliance status (OOC) is defined as two consecutive exceedences of any contaminant concentration specified in Tables 1, 2 or 3 of this license in any well. If an out of compliance event occurs, the licensee shall:

- (1) Verbally notify the Executive Secretary within 24 hours of discovery of the event; followed by a written notice within 5 days of verbal notification;
- (2) Initiate monthly ground water sampling for the exceeded parameter in the well indicating the exceedence unless the Executive Secretary determines that other periodic sampling is appropriate, until the event is resolved to the Executive Secretary's satisfaction;
- (3) Prepare and submit within 30 days of discovery a plan and schedule to evaluate and assess the source of the exceedence and possible actions needed to restore and maintain compliance with License Condition 53.B. Such actions may include, but are not limited to:
  - a. Re-evaluation of the ground water flow and contaminant transport models used to set the compliance limits and target action levels;
  - b. Additional site investigation and characterization, and investigation of potential contamination sources; and

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- c. Active ground water remediation as deemed necessary by the Executive Secretary.
- D. DELETED by NRC Amendment No. 66.
- E. DELETED by NRC Amendment No. 66.
- F. The Licensee shall comply with all requirements found in the Utah Ground Water Quality Protection Rules (UAC R317-6).
- G. Submit, for Executive Secretary approval, Ground Water Monitoring Reports in accordance with the following sampling and reporting schedule:

| <b>Table 4: Semi-Annual Ground Water Monitoring Reporting Schedule</b><br><i>To Be Followed Until the Year 2012</i> |                 |                        |
|---|-----------------|------------------------|
| <b>Semi-Annual Sample Period</b>  | <b>Period</b>   | <b>Report Due Date</b> |
| First   | January – June  | September 1            |
| Second  | July – December | March 1                |

| <b>Table 5: Annual Ground Water Monitoring Reporting Schedule</b><br><i>To Be Followed Thereafter</i> |                    |                        |
|---|--------------------|------------------------|
| <b>Annual Sample Period</b>   | <b>Period</b>      | <b>Report Due Date</b> |
| Annual  | January – December | March 1                |

Failure to submit the reports by the due date shall be deemed as noncompliance with this license. Said monitoring reports shall include, but are not limited to, the following minimum information:

- (1) Sampling Methodology
  - (2) Field Parameter Measurements
  - (3) Laboratory Information, the lower limit of detection shall be lower than the ACL
  - (4) Data Evaluation
  - (5) Figures - Groundwater Contour Map, Uranium Concentration versus the Predicted Concentration for compliance wells, Isoconcentration Map for each of the following constituents: arsenic, molybdenum, selenium, and uranium.
  - (6) Data Tables summarizing recent and historic monitoring data
  - (7) Concentration vs. Time Plots for compliance wells
  - (8) Appendices –copies of field measurements, laboratory analytical reports and chain-of-custody documentation shall be included
- H. The licensee shall provide written notification to the Executive Secretary a minimum of 30 days before installation of borings or wells that could potentially intercept the shallow groundwater contaminant plume.

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54. In accordance with submittals dated February 21, March 31, May 19, September 28, 1989, and January 10, 1990, the licensee is authorized to dispose of a maximum of 70,000 cubic yards of coal ash, contaminated mill wastes, soil, waste rock, and Bisco Lake sediment within the location shown in the licensee's March 31, 1989, submittal. Materials will be disposed of according to procedures described in the March 31, 1989, submittal. The disposal shall be completed by March 31, 1991, and shall be documented. COMPLETE  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendments: 2, 5, 11, 16, 23, 24, 25, 31, 57]
55. The licensee shall complete site reclamation in accordance with an approved reclamation plan. The ground-water compliance monitoring plan shall be conducted as authorized by License Condition No. 53 in accordance with the following schedule.
- A. To ensure timely compliance with target completion dates established in the Memorandum of Understanding with the Environmental Protection Agency (56 FR 55432, October 25, 1991), the licensee shall complete reclamation to control radon emissions as expeditiously as practicable, considering technological feasibility, in accordance with the following schedule:
- (1) Windblown tailings retrieval and placement on the pile - September 30, 1993. COMPLETE
  - (2) Placement of the interim cover to decrease the potential for tailings dispersal and erosion - December 31, 1992. COMPLETE
  - (3) Placement of final radon barrier designed and constructed to limit radon emissions to an average flux of no more than 20 pCi/m<sup>2</sup> sec above background - December 31, 1996, for areas not covered by the evaporation ponds and by December 31, 2014 for the area under the evaporation ponds.  
[Applicable UDRC Amendment: 1]
- B. Reclamation, to ensure required longevity of the covered tailings and ground-water protection, shall be completed as expeditiously as is reasonably achievable, in accordance with the following target dates for completion:
- (1) Placement of erosion protection as part of reclamation to comply with UAC R313-24 (10 CFR Part 40 Criterion 6 of Appendix A, incorporated by reference). Target completion date is December 31, 2015.
  - (2) Projected completion of ground-water corrective actions to meet performance objectives specified in the ground-water corrective action plan, as amended by

**UTAH DIVISION OF RADIATION CONTROL  
RADIOACTIVE MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License # UT 1900481  
Amendment 4

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subsequent submittals. Target completion date is December 31, 2015.

COMPLETE

[Applicable UDRC Amendment: 1]

- C. Any license amendment request to revise the completion dates specified in Section A must demonstrate that compliance was not technologically feasible (including inclement weather, litigation which compels delay to reclamation, or other factors beyond the control of the licensee).
- D. Any license amendment request to change the target dates in Section B above must address added risk to the public health and safety and the environment, with due consideration to the economic costs involved and other factors justifying the request such as delays caused by inclement weather, regulatory delays, litigation, and other factors beyond the control of the licensee. A delay in placing erosion protection due to inadequate settlement of the tailings is not an acceptable reason for revising Section B(1) above unless the licensee provides analyses which demonstrate that available practical methods will not significantly accelerate settlement.
- [Applicable NRC Amendments: 41, 44, 57]
56. The licensee shall submit a work plan and schedule or before December 16, 2011 for Executive Secretary review and approval. The purpose of this work plan and schedule is to collect additional field data in the area of the former uranium mill property and provide an analysis of the existing data to be used for subsequent technical evaluation of the Licensee's Application for Alternate Concentration Limits and Long Term Ground Water Monitoring Plan (Approved by the U.S. Nuclear Regulatory Commission May 11, 2004, License No. SUA-1119, Amendment 66). The work plan and schedule shall include, but is not limited to, a detailed description of the activities, equipment, procedures, performance objectives, decision criteria, timelines, and deliverables involved for the following activities):
- A. Installation of 7 new groundwater monitoring wells completed down to a depth equal to or below the upper geologic contact of the Brushy Basin Shale Member. All well screens must fully penetrate the saturated interval of the Burro Canyon Formation. The licensee shall provide a written notice at least 14 calendar days prior to drilling and well installation activities to allow the Executive Secretary or a representative to observe all drilling and well installation activities.
- B. Submit As-Built Reports for the wells installed for Executive Secretary approval within 60 calendar days of well completion, and at a minimum will include the following information:
- (1) Geologic Logs - that detail all soil and rock lithologies and physical properties of all subsurface materials encountered during drilling. Said logs shall be prepared by a

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License # UT 1900481  
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Professional Geologist licensed by the State of Utah.

- (2) Well Completion Diagram - that detail all physical attributes of the well construction, including:
    - a. Total depth and diameters of boring,
    - b. Depth, type, diameter, and physical properties of well casing and screen, including well screen slot size,
    - c. Depth intervals, type and physical properties of annular filterpack and seal materials used,
    - d. Design, type, diameter, and construction of protective surface casing, and
    - e. Survey coordinates prepared by a State of Utah licensed engineer or land surveyor, including horizontal coordinates and elevation of water level measuring point, as measured to the nearest 0.01 foot.
  - (3) Aquifer Permeability Data - including field data, data analysis, and interpretation of slug test, aquifer pump test or other hydraulic analysis to determine local aquifer hydraulic conductivity in each well.
  - (4) The licensee shall provide at least a 14 calendar day written notice to allow the Executive Secretary to observe all drilling and well installation activities.
  - (5) In the event the Executive Secretary determines that additional information is required, this information will be submitted within a time frame approved by the Executive Secretary.
- C. Collection of 2 site borings to determine the dry zone in the project area,
  - D. Evaluation of the current groundwater monitoring program used at the project site,
  - E. Analysis of groundwater levels since cessation of the corrective action pumping, and
  - F. Evaluation of data used for site background concentrations of Uranium in the project area. Appropriateness of background evaluation (historical and current) will include the determination of groundwater age using appropriate isotopic analyses (eg. chlorofluorocarbons, tritium, sulfur hexafluoride).

Draft Findings Report of all field activities shall be submitted for Executive Secretary review within 90 calendar days after completion of field activities.

[Applicable UDRC Amendment: 4]



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Amendment 4

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**UTAH RADIATION CONTROL BOARD**

Rusty Lundberg  
Rusty Lundberg, Executive Secretary

2/6/2012  
Date

**Public Participation Summary**  
**RADIOACTIVE MATERIALS LICENSE (RML) NO. UT1900481**  
**AMENDMENT 4**  
**Rio Algom Mining L.L.C.**  
**P.O. Box 218**  
**Grants, NM 87020**  
**Lisbon Operations**  
**San Juan County, Utah**

**January, 2012**

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| Attachment 1 | Public Comments for the Rio Algom License Amendment 4  |
| Attachment 2 | February 1, 2012 Rio Algom License Amendment 4 Final -<br>Redline/Strikeout Version Showing Additional Changes to the License<br>After the Public Comment Period |

Introduction

The purpose of this document is to summarize public comments received by the Utah Division of Radiation Control (DRC) regarding the Rio Algom Mining, LLC (hereafter Rio Algom) former uranium mill facility in the Lisbon Valley, San Juan County, Utah. One set of written comments were received from the public during the comment period that ended on Friday, January 20, 2012 (see Attachment 1). Each of these comments are listed below in italics, followed by a DRC response.

**Comments from Ms. Sarah Fields on October 8, 2011**

*RE: Comments on Amendment 4 to Radioactive Material License UT19000481, Condition 56 for the Rio Algom Mining L.L.C. Lisbon Valley Uranium Mill Facility*

*Dear Mr. Lundberg:*

*Below please find the comments on Amendment 4 to Radioactive Material License UT19000481, Condition 56 for the Rio Algom Mining L.L.C. Lisbon Valley Uranium Mill Facility. These comments are submitted by the Uranium Watch and Living Rivers, Moab, Utah.*

**1. BACKGROUND**

*According to the Division of Radiation Control (DRC) notice, "The amended License Condition 56 shall require the licensee to submit a work plan and schedule by December 16, 2011, for Executive Secretary review and approval." The purpose of this work plan and schedule is to collect additional field data in the area of the former uranium mill property and provide an analysis of the existing data to be used for subsequent technical evaluation of the Licensee's Application for Alternate Concentration Limits and Long Term Ground Water Monitoring Plan (Approved by the U.S. Nuclear Regulatory Commission, May 11, 2004, License No. SUA-1119, Amendment 66).*

**2. COMMENTS**

**2.1. Timeliness.** *The DRC should have proposed License Amendment 4 at a much earlier date, and prior to the date by which Rio Algom Mining LLC (Rio Algom) was required to submit the Work Plan and Schedule. As it was, by the time the DRC issued the notice of an opportunity to comment on the work plan and schedule and made the public aware that there were problems with the uranium concentrations at the Mill, Rio Algom had already developed and submitted the Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Valley Facility, Rio Algom Mining LLC, dated December 13, 2011. According to the DRC's Statement of Basis for Amendment 4, Rio Algom and the DRC discussed confirmatory actions to be undertaken in response to increasing*

*uranium concentrations in early 2011 and on October 13, 2011, agreed that a Work Plan and Schedule for the additional field work would be submitted to DRC by December 16, 2011. The DRC waited over 2 months to initiate a public comment period and make the draft license amendment and Statement of Basis available.*

**DRC Response:** Substantive Comment.

The DRC agrees, the public comment period should have begun in a more timely manner. However, DRC staff were unavailable at the time as they were working on other activities for other Licensees, consequently the Rio Algom documents for the License Amendment were delayed.

**2.2. Availability of Documents.**

*2.2.1. The Statement of Basis for Amendment 4 is based on and references several documents related to the establishment of Alternate Concentration Limits for the groundwater at the Lisbon Valley facility. At the time of issuance of the notice there was not even a webpage established for the Lisbon Valley Mill at the DRC website. The DRC should have posted the documents referenced in the Statement of Basis on the DRC website. This would have included the relevant Nuclear Regulatory Commission Documents; February 7, 2011, letter from the DRC to Rio Algom and other relevant correspondence; June 1, 2011, Action Plan; August 10, 2011, technical Memorandum; and the 2010 1st Semi-Annual Groundwater Stability Report and subsequent Semi-Annual Groundwater Stability Reports. An interested member of the public should not have to rely on a Utah Government Records Access and Management (GRAMA) request to obtain documents relevant to a notice of opportunity to comment on a DRC licensing action.*

**DRC Response:** Substantive Comment.

The Statement of Basis and License Amendment 4 were posted on the DRC homepage during the Public Comment Period. The DRC admits that historically there has not been a webpage specifically for Rio Algom; however, as of December 27, 2011 a specific webpage has been created for all the Uranium Mills located in Utah. Denison Mines' (USA) White Mesa Uranium Mill webpage went live on November 22, 2011 and Rio Algom's and Uranium One's webpages went live on December 27, 2011. All documents associated with licensing actions will be placed on the Rio Algom webpage.

The DRC is currently undergoing an initiative to make documents more readily available to the public on the DRC's website. It is currently unknown when this might happen. In the interim, interested parties can request information that is not currently available on the DRC's website through the existing GRAMA records request processes in Utah Code Annotated Title 63G, Chapter 2 or inspect the files at the DRC.

*2.2.2. The Supplemental Site Assessment outlines a number of actions and submittals that will be completed over the next year. The DRC must make any future plans, reports, summaries, data, models, analyses, and other documents pertinent to the Groundwater*

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*Compliance status at the Lisbon Valley Facility available on the DRC website in a timely manner.*

**DRC Response:** Substantive Comment.

The Supplemental Site Assessment is currently under review by the DRC. All corresponding documents regarding the Supplemental Site Assessment will be placed on the new Rio Algom webpage when they become available in a timely manner.

*2.2.3. There are a number of proposals, expansions, and ongoing regulatory issues related to uranium mining and milling and a nuclear reactor project in southeast Utah. These involve opportunities for the public to comment and the obligation of citizens to become informed and address the failures of regulatory agencies to properly administer and enforce state and federal regulation. It is a lot to cover. The DRC (and other Department of Environmental Quality (DEQ) divisions) purposely makes this public participation process much more difficult by failing to routinely post relevant licensing documents on their website. When the DRC puts up a notice of an opportunity to comment on a licensing decision, a member of the public should not have to pay to play; that is, pay for pertinent records, which can only be accessed via a GRAMA request or a long trip to Salt Lake City. Clearly, the DRC is not really interested in having informed public comment and public participation in their regulatory and licensing decisions. I look back to Radiation Control Board meetings several years ago when I was told that the DEQ was in the process of setting up an electronic document control system so that licensing and permitting documents could be routinely be made publicly available. If the Utah Division of Oil, Gas & Mining can make permitting records associated with mining operations routinely available, why can't the DRC?*

**DRC Response:** Non-Substantive Comment.

Please see the DRC response for Comment 2.2.1 above on page 3.

**2.3. Action Plan.**

*2.3.1. According to the December 2011 Supplemental Site Assessment, the Action Plan contemplated by the DRC in February 2011 would address certain performance objectives (POs). The POs relate to the existing Alternate Concentration Limits (ACLs) approved by the NRC in 2004 (just prior to Utah's assumption of primacy for the site) and the Long-Term Long Term Groundwater Monitor Plan (LTGMP). At this time, it appears that the purpose of these additional site investigations is to provide a basis for tweaking the existing ACLs and adjusting the LTGMP. The DRC must clarify the scope of the purpose of the continuing investigations into the groundwater dynamics at the Lisbon Valley site. The DRC must also consider expanding the scope of such POs.*

**DRC Response:** Substantive Comment.

The February 7, 2011 Confirmatory Action Letter from the DRC to Rio Algom, included three performance objectives, as follows:

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1. *Justify whether the current RL-1 data set is or is not sufficient to depict the U concentration trend;*
2. *Conclude with definitive evidence whether the Lisbon Valley Facility is operating within or outside of the analyzed condition of the Nuclear Regulatory Commission (NRC) approved "Application for Alternate Concentration Limits" (Approved May 11, 2004), and LTGMP, and;*
3. *Determine whether the ACL model should be revisited/revised to account for more recent data.*

Per ongoing discussion amongst DRC Representatives, Rio Algom Representatives, and the newly contracted Rio Algom Consultant (Montgomery and Associates), the scope and intention of these performance objectives are being developed and expanded through discussion and document reviews. Ultimately, the specifics will be included in an action plan, prepared by Rio Algom, for the investigation, which has been reviewed and approved by the Executive Secretary. The Supplemental Site Assessment is currently under DRC review. The assessment is being developed to identify where data gaps existed during the original modeling, and will include a comprehensive approach to filling those data gaps through review of existing documents and data, and generation of new data through field work. This includes a review of the existing ground water monitoring network, renewed efforts to characterize the local hydrogeology/geology, and revised groundwater modeling utilizing this updated site characterization. Conclusions regarding the types of corrective actions needed regarding the ACL evaluation and action plan (e.g. Additional Monitoring Requirements, Active Remediation, ACL Revisions, etc.) will be determined after the results of the evaluation have been generated and reviewed.

*2.3.2. The December 2011 Supplemental Site Assessment calls into question some of the assumptions and data that may have been used to justify the establishment of ACLs and to set the ACL limits in 2004. It calls into question some of the determinations made by the NRC and the State of Utah when the ACLs were approved. These assumptions and determinations include:*

- *Cessation of active groundwater remediation (pump and treat);*
- *Allowing groundwater contamination at the site to migrate and naturally degrade over time and distance;*
- *Location of Point(s) of Compliance;*
- *Assumption that groundwater contaminant levels would degrade to acceptable levels prior to migrating to the point of exposure (POE), i.e., property boundary;*
- *Human dose from all viable pathways will not exceed the criteria in subpart E of 10 CFR part 20 (25 mrem/year);*
- *The ACL approach is the only economical alternative that will be protective of human health and the environment;*
- *Only uranium will migrate past the property boundary above background levels for the above stated constituents during the 1,000 year compliance period;*

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- *Establishment of a 1,000 year compliance period;*
- *Assumption that that of the hazardous constituents in the groundwater contaminant plume (arsenic, selenium, molybdenum, and uranium) only uranium will migrate past the long-term care boundary;*
- *Cost benefit ratios associated with active remedial alternatives;*
- *The uranium plume will intersect the boundary in approximately 500 to 1000 years but will be at levels consistent with the class of use and will not present a significant risk to human health or the environment; and*
- *It is technically impracticable and economically unfeasible to remediate the groundwater to background.*

*The DRC and the public must revisit these assumptions and determinations associated with the cessation of an active Groundwater Corrective Action Plan, the establishment of the ACLs, and the Long-Term Long Term Groundwater Monitor Plan.*

**DRC Response:** Substantive Comment.

The commenter is mistaken. The DRC was not involved initially in approving the ACLs for the Rio Algom former uranium mill property. Regulatory requirements for groundwater monitoring at the site are discussed in Utah Radioactive Material License No. UT19000481. The License includes concentration limits based on prior approvals of the ACLs by the U.S. Nuclear Regulatory Commission (NRC). These are described in a May 11, 2004 License Amendment 66 (Source Materials License SUA-1119). The state of Utah obtained primacy from the NRC to administer the Uranium Mill program in Utah in August 2004, and as part of this transfer of authority, the DRC included the conditions previously approved by the NRC in the License.

After the State of Utah gained authority to administer the Uranium Mill program, the DRC voiced concerns regarding the approved ACL concentrations. Therefore, the groundwater monitoring compliance requirements and limits were subsequently revised and included in an amendment of the License on March 6, 2006 (Amendment 2). All changes to the concentration limits were based on ground water concentration breakthrough curves generated in a groundwater transport model and included in the Long-Term Groundwater Monitoring Plan. DRC essentially changed the concentration limits from concentrations predicted by *maximum breakthrough concentration curves*, to concentrations predicted by *best estimate breakthrough curves*. This resulted in significantly lower concentration limits in the License for all monitoring wells, as well as specifying concentration limits for three monitoring well classes (background, compliance and trend).

However, the DRC will consider your comments during its review of the Supplemental Site Assessment.

**2.4. Data.** *According to the December 2011 Supplemental Site Assessment, after 2004 the amount of groundwater monitoring data collected at the site decreased, so that some*

*relevant data was not available when the increased uranium became apparent. Therefore, the DRC must assure that, in the future, Rio Algom continues to monitor the groundwater at a level that will provide ongoing relevant data over time.*

**DRC Response:** Substantive Comment.

Since 2004, there has been less sampling data available at the site because a number of monitoring wells were abandoned after pumping at the site stopped. Therefore, this useful data was lost. These wells were abandoned before the State of Utah obtained primacy from the NRC to administer the Uranium Mill program in Utah in August 2004. As part of the Supplemental Site Assessment, Rio Algom will be required to install a number of new monitoring wells which will give us more relevant data points to review.

**2.5. Evaporation ponds.**

*2.5.1. The Supplemental Site Assessment discusses the need to assess groundwater near the tailings, but does not specifically discuss the need to characterize groundwater that may be impacted by the evaporation ponds that existed during and after the Mill operations. The map of the 2010 Groundwater Level Contours in Burro Canyon Aquifer (Figure 4, page 22) shows two evaporation ponds on the tailings impoundment and some unidentified ponds to the east of the southern portion of the tailings impoundment that are both on and off the site. There is no information regarding the current status of the evaporation ponds and other ponds. That information should be provided in the Site Assessment.*

**DRC Response:** Substantive Comment.

The evaporation ponds located on the tailing impoundments and the previously “unidentified ponds” to the east of the southern portion of the tailings impoundment no longer exist at the facility. Bisco Lake and the other “unidentified ponds” were drained in 1990 and the evaporation ponds located on the tailing impoundments were removed after groundwater pumping at the facility ended.

However, the DRC will consider your comments during its review of the Supplemental Site Assessment.

*2.5.2. In 2000 the NRC published at Federal Register Notice of a request to amend the Mill's license for the milestone for the completion of the final radon barrier for the area under the evaporation ponds. The requested milestone and milestone currently in License Condition 55 A.(3) is December 31, 2014. If Rio Algom has not been able to place a final radon barrier on the area under the evaporation ponds, it is because that area is still be in the process of drying out. Therefore, the area is a potential source of continuing ground water contamination. This situation should be discussed in any site assessment.*

**DRC Response:** Substantive Comment.

Milling activities at the facility ceased in January 1989 and the site is in closure mode. Reclamation was completed in 2000 at the site and the final Mill Decommissioning Report



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was approved by NRC in May 2001. The final report also included soil decommissioning and verification for the site.

*2.6. License Condition 55A(3). License Condition 55 A.(3) states that the milestone for the placement of the final radon barrier for areas not covered by the evaporation ponds at the Mill is December 31, 1996. However, the 2000 NRC Federal Register Notice noticed a license amendment request that proposed to modify LC 55 A.(3) to change the completion date for placement of the final radon barrier on the pile to December 31, 2000, for the area not covered by the evaporation pond.3 It is likely that that new milestone was approved by the NRC and incorporated into License Condition 55 A.(3). Be that as it may, it is now 2012, so that the final radon barrier for the area not covered by the evaporation pond should have been completed. If it has been completed, that fact should be reflected in the License.*

**DRC Response:** Substantive Comment.

As stated in the response to Comment 2.5.2, Reclamation was completed at the site in 2000 and the final Mill Decommissioning Report was approved by NRC in May 2001.

DRC agrees there may be opportunities for improvement to the wording found in License Condition 55. License Condition 55 may be updated as part of the Rio Algom License Renewal Application which will be submitted later this year.

*2.7. License Condition 55 B.(1). License Condition 55 B.(1) establishes an enforceable milestone for the placement of erosion protection: "Placement of erosion protection as part of reclamation to comply with UAC R313- 24 (10 CFR Part 40 Criterion 6 of Appendix A, incorporated by reference). Target completion date is December 31, 2015." The Supplemental Site Assessment should evaluate the potential impacts to groundwater due to the placement, or lack of placement, of the erosion protection at the former Mill site.*

**DRC Response:** Substantive Comment.

Comment Noted. The DRC will consider your comments during its review of the Supplemental Site Assessment.

**2.8. Groundwater Corrective Action.**

*2.8.1. According to the 2004 Federal Register Notice regarding the establishment of ACLs, Rio Algom ceased the active groundwater remediation (pump and treat). Therefore, the DRC and Rio Algom must revisit the conclusion that an active groundwater remediation is not feasible or practical.*

**DRC Response:** Substantive Comment.

Please see the DRC response for Comment 2.3.1 above on pages 3 and 4.

*2.8.2. License Condition 55 B.(2) states: "Projected completion of ground-water corrective actions to meet performance objectives specified in the ground-water corrective action plan,*

Public Participation Summary  
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*as amended by subsequent submittals. Target completion date is December 31, 2015.  
COMPLETE"*

*The DRC must determine whether the information provided in the most recent groundwater sampling events and the information that will be gathered in the Supplemental Site Assessment activities warrant a reevaluation of performance objectives of the groundwater corrective actions, whether past performance objectives are currently being met. It may be necessary to amend the license to establish 1) new performance objectives, 2) the means to meet those objectives, and 3) new groundwater corrective action target date(s).*

**DRC Response:** Substantive Comment.

Please see the DRC response for Comment 2.3.1 above on pages 3 and 4.

## **Additional DRC License Changes Since Close of Public Comment Period**

After the public comment period, the DRC made one additional change to the License, which is discussed below. A red-line strikeout version of the Final Permit is included as Attachment 2 to show the most recent change.

### **License 4 - Expiration Date**

The License expiration date has been changed to February 1, 2013. The Licensee will be required to submit a License Renewal Application in accordance with Utah Administrative Code R313-22-36.

Public Participation Summary  
January 2012

**Public Comments**

January 19, 2012: Sarah Fields, representing Uranium Watch and Living Rivers, Written comments (Received via email January 19, 2012)

**References**

Lewis Water Consultants, Inc., Prepared for Rio Algom, February 23, 2001, "Application for Alternate Concentration Limits, RAMC Lisbon Facility, La Sal, Utah."

Utah Division of Radiation Control, November 23, 2004, "Draft 11e.(2) Byproduct Material License #UT1000481 - RIO ALGOM: PROJECT DOCUMENT REVIEW RECORD," unpublished regulatory document 9 pp.

Utah Division of Radiation Control, November 2011, "Statement of Basis for Rio Algom License Amendment 4 for the former uranium mill." unpublished regulatory document, 4 pp, 1 Appendix.

# **ATTACHMENT 1**

Public Comments for  
Rio Algom Radioactive Materials License  
Amendment #4

# Uranium Watch

76 South Main Street, # 7 | P. O. Box 344  
Moab, Utah 84532  
435-259-9450

January 19, 2012

Via electronic mail

Mr. Rusty Lundberg  
Director  
Division of Radiation Control  
195 N. 1950 West  
Salt Lake City, Utah 84116  
[rlundberg@utah.gov](mailto:rlundberg@utah.gov)

RE: Comments on Amendment 4 to Radioactive Material License UT19000481,  
Condition 56 for the Rio Algom Mining L.L.C. Lisbon Valley Uranium Mill Facility

Dear Mr. Lundberg:

Below please find the comments on Amendment 4 to Radioactive Material License UT19000481, Condition 56 for the Rio Algom Mining L.L.C. Lisbon Valley Uranium Mill Facility. These comments are submitted by the Uranium Watch and Living Rivers, Moab, Utah.

## 1. BACKGROUND

According to the Division of Radiation Control (DRC) notice, "The amended License Condition 56 shall require the licensee to submit a work plan and schedule by December 16, 2011, for Executive Secretary review and approval." The purpose of this work plan and schedule is to collect additional field data in the area of the former uranium mill property and provide an analysis of the existing data to be used for subsequent technical evaluation of the Licensee's Application for Alternate Concentration Limits and Long Term Ground Water Monitoring Plan (Approved by the U.S. Nuclear Regulatory Commission, May 11, 2004, License No. SUA-1119, Amendment 66).

## 2. COMMENTS

**2.1. Timeliness.** The DRC should have proposed License Amendment 4 at a much earlier date, and prior to the date by which Rio Algom Mining LLC (Rio Algom) was

required to submit the Work Plan and Schedule. As it was, by the time the DRC issued the notice of an opportunity to comment on the work plan and schedule and made the public aware that there were problems with the uranium concentrations at the Mill, Rio Algom had already developed and submitted the *Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Valley Facility, Rio Algom Mining LLC*, dated December 13, 2011. According to the DRC's Statement of Basis for Amendment 4, Rio Algom and the DRC discussed confirmatory actions to be undertaken in response to increasing uranium concentrations in early 2011 and on October 13, 2011, agreed that a Work Plan and Schedule for the additional field work would be submitted to DRC by December 16, 2011. The DRC waited over 2 months to initiate a public comment period and make the draft license amendment and Statement of Basis available.

## **2.2. Availability of Documents.**

2.2.1. The Statement of Basis for Amendment 4 is based on and references several documents related to the establishment of Alternate Concentration Limits for the groundwater at the Lisbon Valley facility. At the time of issuance of the notice there was not even a webpage established for the Lisbon Valley Mill at the DRC website.

The DRC should have posted the documents referenced in the Statement of Basis on the DRC website. This would have included the relevant Nuclear Regulatory Commission Documents; February 7, 2011, letter from the DRC to Rio Algom and other relevant correspondence; June 1, 2011, Action Plan; August 10, 2011, technical Memorandum; and the 2010 1st Semi-Annual Groundwater Stability Report and subsequent Semi-Annual Groundwater Stability Reports.

An interested member of the public should not have to rely on a Utah Government Records Access and Management (GRAMA) request to obtain documents relevant to a notice of opportunity to comment on a DRC licensing action.

2.2.2. The Supplemental Site Assessment outlines a number of actions and submittals that will be completed over the next year. The DRC must make any future plans, reports, summaries, data, models, analyses, and other documents pertinent to the Groundwater Compliance status at the Lisbon Valley Facility available on the DRC website in a timely manner.

2.2.3. There are a number of proposals, expansions, and ongoing regulatory issues related to uranium mining and milling and a nuclear reactor project in southeast Utah. These involve opportunities for the public to comment and the obligation of citizens to become informed and address the failures of regulatory agencies to properly administer and enforce state and federal regulation. It is a lot to cover. The DRC (and other Department of Environmental Quality (DEQ) divisions) purposely makes this public participation process much more difficult by failing to routinely post relevant licensing documents on their website. When the DRC puts up a notice of an opportunity to comment on a licensing decision, a member of the public should not have to pay to play; that is, pay for pertinent records, which can only be accessed via a GRAMA request or a

long trip to Salt Lake City. Clearly, the DRC is not really interested in having informed public comment and public participation in their regulatory and licensing decisions. I look back to Radiation Control Board meetings several years ago when I was told that the DEQ was in the process of setting up an electronic document control system so that licensing and permitting documents could be routinely be made publicly available. If the Utah Division of Oil, Gas & Mining can make permitting records associated with mining operations routinely available, why can't the DRC?

### **2.3. Action Plan.**

2.3.1. According to the December 2011 Supplemental Site Assessment, the Action Plan contemplated by the DRC in February 2011 would address certain performance objectives (POs). The POs relate to the existing Alternate Concentration Limits (ACLs) approved by the NRC in 2004 (just prior to Utah's assumption of primacy for the site) and the Long-Term Long Term Groundwater Monitor Plan (LTGMP). At this time, it appears that the purpose of these additional site investigations is to provide a basis for tweaking the existing ACLs and adjusting the LTGMP. The DRC must clarify the scope of the purpose of the continuing investigations into the groundwater dynamics at the Lisbon Valley site. The DRC must also consider expanding the scope of such POs.

2.3.2. The December 2011 Supplemental Site Assessment calls into question some of the assumptions and data that may have been used to justify the establishment of ACLs and to set the ACL limits in 2004.<sup>1</sup> It calls into question some of the determinations made by the NRC and the State of Utah when the ACLs were approved. These assumptions and determinations include:

- Cessation of active groundwater remediation (pump and treat);
- Allowing groundwater contamination at the site to migrate and naturally degrade over time and distance;
- Location of Point(s) of Compliance;
- Assumption that groundwater contaminant levels would degrade to acceptable levels prior to migrating to the point of exposure (POE), i.e., property boundary;
- Human dose from all viable pathways will not exceed the criteria in subpart E of 10 CFR part 20 (25 mrem/year);
- The ACL approach is the only economical alternative that will be protective of human health and the environment;
- Only uranium will migrate past the property boundary above background levels for the above stated constituents during the 1,000 year compliance period;
- Establishment of a 1,000 year compliance period;

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<sup>1</sup> Finding of No Significant Impact and Notice of Availability of the Environmental Assessment Addressing a License Amendment Request to Approve Rio Algom Mining LLC's Application for Alternate Concentration Limits at its Lisbon Uranium Mill Tailings Impoundment Located in San Juan County, UT; 69 Fed. Reg. 22100; April 23, 2004.



- Assumption that that of the hazardous constituents in the groundwater contaminant plume (arsenic, selenium, molybdenum, and uranium) only uranium will migrate past the long-term care boundary;
- Cost benefit ratios associated with active remedial alternatives;
- The uranium plume will intersect the boundary in approximately 500 to 1000 years but will be at levels consistent with the class of use and will not present a significant risk to human health or the environment; and
- It is technically impracticable and economically unfeasible to remediate the groundwater to background.

The DRC and the public must revisit these assumptions and determinations associated with the cessation of an active Groundwater Corrective Action Plan, the establishment of the ACLs, and the Long-Term Long Term Groundwater Monitor Plan.

**2.4. Data.** According to the December 2011 Supplemental Site Assessment, after 2004 the amount of groundwater monitoring data collected at the site decreased, so that some relevant data was not available when the increased uranium became apparent. Therefore, the DRC must assure that, in the future, Rio Algom continues to monitor the groundwater at a level that will provide ongoing relevant data over time.

## **2.5. Evaporation ponds.**

2.5.1. The Supplemental Site Assessment discusses the need to assess groundwater near the tailings, but does not specifically discuss the need to characterize groundwater that may be impacted by the evaporation ponds that existed during and after the Mill operations. The map of the 2010 Groundwater Level Contours in Burro Canyon Aquifer (Figure 4, page 22) shows two evaporation ponds on the tailings impoundment and some unidentified ponds to the east of the southern portion of the tailings impoundment that are both on and off the site. There is no information regarding the current status of the evaporation ponds and other ponds. That information should be provided in the Site Assessment.

2.5.2. In 2000 the NRC published at *Federal Register* Notice of a request to amend the Mill's license for the milestone for the completion of the final radon barrier for the area under the evaporation ponds.<sup>2</sup> The requested milestone and milestone currently in License Condition 55 A.(3) is December 31, 2014. If Rio Algom has not been able to place a final radon barrier on the area under the evaporation ponds, it is because that area is still be in the process of drying out. Therefore, the area is a potential source of continuing ground water contamination. This situation should be discussed in any site assessment.

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<sup>2</sup> Rio Algom Mining Corporation; Request to Revise a Site-Reclamation Milestone; 65 Fed. Reg. 5407; February 4, 2000.

**2.6. License Condition 55A(3).** License Condition 55 A.(3) states that the milestone for the placement of the final radon barrier for areas not covered by the evaporation ponds at the Mill is December 31, 1996. However, the 2000 NRC *Federal Register* Notice noticed a license amendment request that proposed to modify LC 55 A.(3) to change the completion date for placement of the final radon barrier on the pile to December 31, 2000, for the area not covered by the evaporation pond.<sup>3</sup> It is likely that that new milestone was approved by the NRC and incorporated into License Condition 55 A.(3). Be that as it may, it is now 2012, so that the final radon barrier for the area not covered by the evaporation pond should have been completed. If it has been completed, that fact should be reflected in the License.

**2.7. License Condition 55 B.(1).** License Condition 55 B.(1) establishes an enforceable milestone for the placement of erosion protection: "*Placement of erosion protection as part of reclamation to comply with UAC R313- 24 (10 CFR Part 40 Criterion 6 of Appendix A, incorporated by reference). Target completion date is December 31, 2015.*"

The Supplemental Site Assessment should evaluate the potential impacts to groundwater due to the placement, or lack of placement, of the erosion protection at the former Mill site.

## **2.8. Groundwater Corrective Action.**

2.8.1. According to the 2004 Federal Register Notice regarding the establishment of ACLs, Rio Algom ceased the active groundwater remediation (pump and treat). Therefore, the DRC and Rio Algom must revisit the conclusion that an active groundwater remediation is not feasible or practical.

2.8.2. License Condition 55 B.(2) states: "*Projected completion of ground-water corrective actions to meet performance objectives specified in the ground-water corrective action plan, as amended by subsequent submittals. Target completion date is December 31, 2015. COMPLETE*"

The DRC must determine whether the information provided in the most recent groundwater sampling events and the information that will be gathered in the Supplemental Site Assessment activities warrant a reevaluation of performance objectives of the groundwater corrective actions, whether past performance objectives are currently being met. It may be necessary to amend the license to establish 1) new performance objectives, 2) the means to meet those objectives, and 3) new groundwater corrective action target date(s).

Thank you for providing this opportunity to comment.

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<sup>3</sup> Rio Algom Mining Corporation; Request to Revise a Site-Reclamation Milestone; 65 Fed. Reg. 5407; February 4, 2000.

Rusty Lundberg/DRC  
January 19, 2012

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Sincerely,

Sarah M. Fields  
Program Director  
Uranium Watch

John Weisheit  
Conservation Director  
Living Rivers  
PO Box 466  
Moab, Utah 84532

## **ATTACHMENT 2**

Rio Algom RML Amendment #4  
Redline/Strikeout Version  
February 6, 2012

**UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF RADIATION CONTROL  
RADIOACTIVE MATERIAL LICENSE**

Pursuant to Utah Code Annotated, Title 19, Chapter 3 and the Utah Radiation Control Rules, Utah Administrative Code R313, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material designated below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This licensee is subject to all applicable rules, and orders now or hereafter in effect and to any conditions specified below.

\*\*\*\*\*

|            |                           |   |                              |
|------------|---------------------------|---|------------------------------|
|            | LICENSEE                  | ) | 3. License Number UT 1900481 |
|            |                           | ) | Amendment 4                  |
| 1. Name    | Rio Algom Mining, Limited | ) | *****                        |
|            | Liability Company         | ) | 4. Expiration Date           |
|            |                           | ) | <u>February 1, 2013</u>      |
| 2. Address | Rio Algom Mining LLC      | ) | *****                        |
|            | PO Box 218                | ) | 5. License Category 2-b      |
|            | Grants, NM 87020          | ) |                              |

Deleted:  
Deleted:

\*\*\*\*\*

|   |                                     |  |
|---|-------------------------------------|--|
| 6. Radioactive material<br>(element and mass<br>number) | 7. Chemical and/or<br>physical form | 8. Maximum quantity<br>licensee may possess<br>at any one time |
| Natural Uranium   | Any                                 | Unlimited  |

\*\*\*\*\*

9. Authorized place of use: The licensee's former uranium milling facility located in San Juan County, Utah.
10. The licensee is hereby authorized to possess 11e.(2) byproduct material in the form of uranium waste tailings and other byproduct materials generated by the licensee's milling operations, as defined by Nuclear Regulatory Commission (NRC) Regulations, Code of Federal Regulations (CFR), Title 10, Part 20, Section 20.103 and the Utah Administrative Code (UAC) Section R313-12-3.
11. The licensee shall conduct activities in accordance with statements, representations, and conditions contained in the Licensee's NRC renewal application dated December 1982, as modified by July 2, 1992, and December 16, 1992 submittals to the NRC, except where superseded by modifying license conditions herein.

The Licensee shall comply with Section 6.0 of the license renewal application containing the emergency procedures to be followed in the event of an accident [as modified in the supplement submitted to the NRC by letter dated May 31, 1985]. Updating specific names and telephone numbers shall not require this Utah-issued license to be amended.

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[Applicable NRC Amendments: 3, 9, 15, 16, 40, 42, 57]

12. DELETED by NRC Amendment No. 40.
13. DELETED by NRC Amendment No. 40.
14. The Licensee shall comply with the posing requirements specified within 10 CFR 20.1902 as incorporated by reference UAC R 313-15-902(5) until the final institutional controls and permanent markers have been erected as required by the September 2004, Draft Office of Legacy Management Long-Term Surveillance Plan for the Lisbon Valley, Utah (UMTRCA Title II) Disposal Site, (DOE-LM/G-J696-2004).  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendment: No. 57]
15. The results of sampling, analyses, surveys and monitoring; the results of calibration of equipment; reports on audits and inspections; all meetings and training courses required by this license; and any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified by the Executive Secretary, all such documentation records shall be maintained for a period of at least five (5) years.
16. DELETED by NRC Amendment No. 40.
17. DELETED by NRC Amendment No. 40.
18. DELETED by UDRC Amendment: 1
19. DELETED by NRC Amendment No. 57.
20. In order to ensure that no disturbance of cultural resources occurs in the future, the licensee shall have an archaeological and historical artifact survey of areas of its property, not previously surveyed, performed prior to their disturbance, including borrow areas to be used for reclamation cover. These surveys must be submitted to the Executive Secretary and no such disturbance shall occur until the licensee has received authorization from the Executive Secretary to proceed.

In addition, all work in the immediate vicinity of any buried cultural deposits unearthed during the disturbance of land shall cease until approval to proceed has been granted by the Executive Secretary.

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21. The licensee shall conduct an annual survey of land use (private residences, grazing areas, private and public potable water and agricultural wells, and non-residential structures and uses) in the area within five kilometers (3.1 miles) of the site property boundary and submit a report of this survey to the Executive Secretary. The report shall be submitted on or before December 31 annually. This report shall indicate any differences in land use from that described in the last report including the following: 1) providing references and/or a description of methods utilized to obtain information included in the report; 2) listing all water wells, owners, approved use, and contact information within the specified search radius; and 3) including information on an updated land use map to be included with the report.  
[Applicable UDRC Amendment: 1]
  22. The results of all environmental monitoring required by this license shall be reported in accordance with UAC R313-24 (10 CFR 40, Section 40.65 incorporated by reference) using the NRC Form 484 "Sample Format for Detection Monitoring Data Report". All groundwater monitoring will be reported in accordance with License Condition 53. The reports shall be transmitted to the Executive Secretary.  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendment: 57, 66]
  23. DELETED by NRC Amendment No. 40.
  24. The Licensee shall comply with notification requirements of UAC R313-15 (10 CFR 20 as incorporated by reference). Incident and event notifications that require telephone notification shall be made to the Executive Secretary at (801) 536-4250 during normal business hours or after hours to the DEQ Duty Officer at (801) 536-4123.  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendment: 57]
  25. Pursuant to UAC R313-24-3, before any license renewal, major amendment, or prior to engaging in any activity not previously assessed in the license application, subsequent approvals, amendments, or as modified by this license, the Licensee shall prepare and record an environmental analysis of such activity(s), describing the proposed action, a statement of its purposes and the environment affected. The environmental report shall present a discussion of the following: (a) an assessment of the radiological and nonradiological impacts to the public health from the activities to be conducted pursuant to the license or amendment; (b) an assessment of any impact on waterways and groundwater resulting from the activities conducted pursuant to the license or amendment; (c) consideration of alternatives, including alternative sites and engineering methods, to the activities to be conducted pursuant to the license or amendment; and (d) consideration of the long-term impacts including decommissioning, decontamination, and reclamation impacts, associated with activities to be

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conducted. The licensee shall obtain Executive Secretary-approval in the form of a license amendment.

[Applicable UDRC Amendment: 1]

26. DELETED by NRC Amendment No. 40.
27. The licensee shall have 30 days from the signatory date of this license to submit financial surety documents for Executive Secretary approval consistent with UAC R313-24-4 (10 CFR 40, Appendix A, Criterion 9 and 10 incorporated by reference), adequate to cover the estimated costs, if accomplished by a third party, for completion of the Executive Secretary-approved reclamation/decommissioning plan including; decommissioning and decontamination of the mill and mill site, reclamation of any tailings or waste disposal areas, ground-water restoration as warranted, and the long-term surveillance fee. Within 3 months of Executive Secretary-approval of a revised reclamation/decommissioning plan, the licensee shall submit for Executive Secretary review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly approved plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within 3 months of written Executive Secretary approval.

Annual updates to the surety amount, required by UAC R313-24 (10 CFR 40, Appendix A, Criteria 9 and 10, as incorporated by reference), shall be submitted to the Executive Secretary by June 30 of each year. Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency fee, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure. The basis for the cost estimate is the Executive Secretary approved reclamation/decommissioning plan or Executive Secretary approved revisions to the plan.

The licensee's approved surety, Irrevocable Letter of Credit issued by the Imperial Bank of Commerce, New York Branch, in favor of the Executive Secretary, shall be continuously maintained in an amount no less than \$2,214,366 for the purpose of complying with UAC R313-24, until a replacement is authorized by the Executive Secretary.

[Applicable UDRC Amendment: 1]

[Applicable NRC Amendments: 18, 22, 26, 33, 38, 45, 49, 51, 52, 54, 56, 58, 60, 62, 63, 64, 66]

28. Prior to termination of this license, the licensee shall provide for transfer of title to byproduct material and land, including any interests therein (other than land owned by the United States or the State of Utah), which is used for the disposal of such byproduct material or is essential to ensure the long term stability of such disposal site to the United States or the State of Utah.



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29. DELETED by NRC Amendment No. 61.
  30. DELETED by NRC Amendment No. 57.
  31. DELETED by NRC Amendment No. 40.
  32. DELETED by NRC Amendment No. 40.
  33. Written operating procedures shall be established for activities involving radioactive materials and will include monitoring, bioassay analyses, instrument calibrations, and emergency response. All written procedures required by this Condition shall be reviewed and approved in writing by the Radiation Safety Officer (RSO) before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the RSO shall perform a documented review of all existing operating procedures at least annually.  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendments: 40]
  34. DELETED by NRC Amendment No. 40.
  35. DELETED by NRC Amendment No. 40.
  36. DELETED by NRC Amendment No. 40.
  37. DELETED by NRC Amendment No. 40.
  38. The licensee shall be required to use a Radiation Work Permit (RWP) issued by the RSO or designee for work or nonroutine maintenance jobs where the potential for exposure to radioactive material exists and for which no written procedures exist. The RWP shall at least describe the following:
    - A. The scope of the work to be performed.
    - B. Any precautions necessary to reduce exposure to uranium and its daughters.
    - C. The supplemental radiological monitoring and sampling necessary before, during, and following completion of the work.
  39. To ensure continued good radiation safety practices, the RSO or designee shall conduct monthly documented inspections of all active work areas in accordance with the program elements specified in Section 5.1.3 of the renewal application.  
[Applicable NRC Amendments: 9, 15, 40]

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40. The licensee shall submit a copy of the report documenting an annual ALARA audit committed to in Section 5.1.4 of the renewal application as modified by letter dated November 20, 1987. Submittals required by this condition shall be submitted to the Executive Secretary within one month of completion of the report.  
[Applicable NRC Amendments: 15, 40]
41. All workers shall be provided on-the-job training on the radiation safety aspects of the job to be performed prior to beginning work activities and annually thereafter. The on-the-job training, as well as all other training committed to in Section 5.3 of the renewal application, shall be documented.  
[Applicable NRC Amendments: 40]
42. DELETED by NRC Amendment No. 57.
43. The licensee shall perform and document function checks of the alpha survey meters prior to their use.
44. DELETED by UDRC Amendment: 1
45. The licensee shall comply with the following:
- A. DELETED by NRC Amendment No. 24.
  - B. A spillway channel shall be constructed in the left abutment of the lower tailings dam, as located in the licensee's April 10, 1992, submittal. The spillway shall have a 30-foot bottom width, 2H:1V side slopes and a crest elevation of 6645 feet.
  - C. DELETED by NRC Amendment No. 37.
  - D. DELETED by NRC Amendment No. 30.
  - E. DELETED by NRC Amendment No. 24.
  - F. DELETED by NRC Amendment No. 57.
  - G. Runoff from the upper tailings shall be diverted into the diversion ditch according to the methods described in the licensee's October 11, 1991, submittal. COMPLETE  
[Applicable UDRC Amendment: 1]
  - H. The evaporation pond on the upper impoundment shall be operated with a minimum freeboard of 2 feet in accordance with the licensee's August 15, 1990, submittal. COMPLETE

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- [Applicable UDRC Amendment: 1]
- I. The evaporation pond on the lower tailings pond shall be constructed in accordance with the licensee's February 3, and April 16, 1992, and February 24, 1993, submittals. The lower evaporation pond shall be operated with a minimum freeboard of 2 feet in accordance with the licensee's February 3, 1992, submittal. COMPLETE  
[Applicable UDRC Amendment: 1]
- J. DELETED by NRC Amendment No. 53.
- K. A construction report for the lower evaporation pond and as-built drawings of the upper and lower evaporation ponds shall be submitted to NRC within 3 months of completion of construction of the lower evaporation pond. COMPLETE  
[Applicable UDRC Amendment: 1]  
[Applicable NRC Amendments: 13, 14, 17, 21, 24, 25, 28, 30, 37, 43, 46, 50, 53, 57]
46. DELETED by NRC Amendment No. 40.
47. DELETED by NRC Amendment No. 40.
48. DELETED by NRC Amendment No. 40.
49. DELETED by NRC Amendment No. 40.
50. DELETED by UDRC Amendment: 1
51. DELETED by NRC Amendment No. 57.
52. The licensee shall reclaim the tailings disposal area in accordance with the June 16, 1989, and March 4, 1992, submittals as revised by submittals dated August 16, 1989, March 13, 1992, August 14, 1992, November 17, 1992, November 18, 1992, November 20, 1992, April 1, 1993, and April 2, 1993, with the following exceptions:
- A. The licensee shall submit for NRC review and approval, the settlement data that demonstrate that 90 percent of the expected settlement is complete. COMPLETE  
[Applicable UDRC Amendment: 1]
- B. The licensee shall submit for Executive Secretary review and approval, data that confirm that the average depth of the stabilization layer below the evaporation ponds is equal to or greater than the average stabilization depth used in the modeling before constructing the remaining barrier.
- C. The licensee shall submit to the NRC by January 1, 1994, a plan to verify that the in place cover has not experienced excessive erosion or defects after it has been demonstrated that settlement is complete and before the radon barrier is considered final.

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The proposed plan must include a field testing program which contains a method to ensure that the appropriate minimum depths of clay and silt are in place over the disposal area. COMPLETE

[Applicable UDRC Amendment: 1]

- D. The licensee shall provide an analysis of the results of the testing program required in Section C above to verify the design conditions with respect to radon attenuation. The analysis shall be provided for Executive Secretary review and approval.
- E. DELETED by NRC Amendment No. 57.
- F. The licensee shall implement the erosion protection design submitted to the NRC on September 3, 2002, supplements dated March 1, 2004, and in accordance with the following conditions:
  - (1) DELETED by NRC Amendment No. 67.
  - (2) DELETED by NRC Amendment No. 67.
  - (3) DELETED by NRC Amendment No. 67.
  - (4) DELETED by NRC Amendment No. 67.
  - (5) DELETED by NRC Amendment No. 67.
  - (6) DELETED by NRC Amendment No. 67.
  - (7) DELETED by NRC Amendment No. 67.
  - (8) DELETED by NRC Amendment No. 67.
  - (9) DELETED by NRC Amendment No. 67.
  - (10) The licensee shall perform rock durability and gradation testing at the frequency recommended in the NRC issued guidance NUREG-1623, Design of Erosion Protection for Long-Term Stabilization, as amended, with the exception that if rock quantities for any size riprap are 5000 cubic yards or less, two gradation tests at the 1/3 and 2/3 points of placement are acceptable.
  - (11) The licensee shall perform tests to verify that the bedrock formation in the lower dam spillway and diversion channels is sufficiently competent to resist erosion. Erosion resistant bedrock shall be determined by refusal of a power augur drilling vertically, using a carbide steel bit. Tests will be performed on a maximum of 20-foot centers. Alternatively, if the licensee can document that the bedrock is massive and relatively uniform, testing on 50-foot centers shall be acceptable.
  - (12) The licensee shall provide a program for inspecting the filter and riprap layers to assure proper sizing and gradation. The program shall include a procedure for

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measuring the thicknesses of the in place rock on a minimum 50-foot grid system and at any and all locations that do not appear to meet the specifications.

- G. All of the reclamation plan requirements shall be incorporated into a single document and provided to the Executive Secretary no later than 3 months after Executive Secretary approval of the erosion protection design. This document shall contain only the plans and specifications that will be used to construct the reclamation plan.
- H. A completion report including as-built drawings, verifying that reclamation of the site has been performed according to the approved plan, must be provided within 6 months of the completion of construction. The report must also include summaries of results of the quality assurance and control testing to demonstrate that the approved specifications were met. The completion report and drawings shall be certified by a Utah-licensed Professional Engineer.

[Applicable UDRC Amendment: 1]

[Applicable NRC Amendments: 4, 6, 7, 8, 44, 47, 53, 55, and 67]

53. The licensee shall implement a ground water compliance monitoring program containing the following:

- A. Monitor background wells MW-5 and MW-13; trend wells EF-6, RL-1, RL-3, EF-8, ML-1, H-63, and LW-1; point of compliance (POC) wells EF-3A and OW-UT-9; and point of exposure (POE) wells RL-4, RL-5, and RL-6 for uranium, molybdenum, selenium, arsenic, pH, total dissolved solids, chloride, sulfate, bicarbonate, and water levels (depth to groundwater and groundwater elevation). Monitoring will occur in accordance with the monitoring schedule in 53.G.

1. The north aquifer background concentrations (in mg/L) for MW-5 are: arsenic = 0.05, molybdenum = 0.07, selenium = 0.01, and uranium = 0.01.

The south aquifer background concentrations (in mg/L) for MW-13 are: arsenic = 0.066, molybdenum = 0.05, selenium = 0.01, and uranium = 0.02.

[Applicable NRC Amendments: 59, 66]

- B. Protect ground water quality at the facility for at least 200 years (thru year 2205) by maintaining contaminant concentrations in each well equal to or below the maximum concentrations specified in Tables 1, 2, and 3 of this License, except as provided under License Condition 53.C.

| TABLE 1: POINT OF COMPLIANCE (POC) WELLS <sup>5</sup> |                                   |                                 |
|---|-----------------------------------|---------------------------------|
| Well  | Other<br>ACLs (mg/L) <sup>1</sup> | Uranium ACL (mg/L) <sup>1</sup> |
|   |                                   |                                 |

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|         |   |        |
|---------|---|--------|
| EF-3A   | Molybdenum = 23.34<br>Selenium = 0.93<br>Arsenic = 3.06 | 96.87  |
| OW-UT-9 | Molybdenum = 58.43<br>Selenium = 0.10<br>Arsenic = 2.63 | 101.58 |

**TABLE 2: POINT OF EXPOSURE (POE) WELLS<sup>6</sup>**

| Well | Uranium Compliance Limit (mg/L) |
|------|---------------------------------|
| RL-4 | 0.32 <sup>2</sup>               |
| RL-5 | 0.32 <sup>2</sup>               |
| RL-6 | 0.32 <sup>2</sup>               |

**TABLE 3: TREND WELLS<sup>6</sup>**

| Well | Uranium Target Action Level (mg/L) |
|------|------------------------------------|
| EF-6 | 3.9 <sup>3</sup>                   |
| EF-8 | 0.30 <sup>3</sup>                  |
| ML-1 | 0.26 <sup>3</sup>                  |
| RL-1 | 42.1 <sup>4</sup>                  |
| RL-3 | 37.3 <sup>4</sup>                  |
| H-63 | 0.06 <sup>4</sup>                  |
| LW-1 | 0.028 <sup>7</sup>                 |

<sup>1</sup> ACLs represent the 95-percent upper confidence limit of historical sampling data from 1990 through 2003, with the exception of selenium in OW-UT-9, which is based on the Health Risk Concentration Limit (see page 60 of Response to Request for Additional Information (RAI) (Komex, October 13, 2003)). These values only apply to wells located in the area of greatest impact (EF-3A and OW-UT-9).

<sup>2</sup> Compliance Limits are based on contaminant transport model predictions, as found in the February 2004 dose assessment used to support the ACL Application (Application for Alternate Concentration Limits Source Materials License SUA-1119, RAMC Lisbon Facility, La Sal, Utah, Lewis Water Consultants, Inc., March 1, 2001). These levels apply to POE wells that are projected to become impacted in the future (RL-4, RL-5, and RL-6).

<sup>3</sup> Target Action Levels are based on the contaminant transport model predictions, as found in the Best Estimate Concentration Curve in 200 years as presented on Figures 2-10 in the Long-Term Groundwater Monitoring Plan (Komex, February 19, 2004) for wells with increasing predicted uranium concentration trends in 200 years (EF-6, EF-8, and ML-1).

<sup>4</sup> Target Action Levels are based on contaminant transport model predictions as represented by the Best Estimate Concentration Curve as presented on Figures 2-10 in the Long-Term Groundwater Monitoring Plan (Komex, February 19, 2004) for wells with decreasing predicted uranium concentration trends in 200 years (RL-1, RL-3, and H-63).

<sup>5</sup> Wells predicted by Licensee to have a decreasing contaminant concentration trend with time.

<sup>6</sup> Wells predicted by Licensee to have an increasing contaminant concentration trend time; with the exception of well H-63 which was predicted to have an increasing trend, followed by a decreasing concentration.

<sup>7</sup> Target Action Level for ground water well LW-1 is based on the Proposed Action Limit Letter from Rio Algom to DRC dated February 12, 2009 and received by DRC on March 16, 2009. The letter includes an attachment from

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Worley Parsons which provides the statistical analysis of 9 background monitoring results (Shapiro-Wilk Normality Test and development of the target action level by calculation of mean + 2 standard deviations.

C. Probable out of compliance status (POOC) is defined as any one sample analysis result in excess of any contaminant concentration specified in Tables 1, 2, or 3 of this license. If a POOC event occurs the licensee shall:

- (1) Notify the Executive Secretary of the POOC status within 30 days of the initial detection (receipt of data);
- (2) Initiate quarterly ground water sampling for the exceeded parameters in the well indicating the exceedence, unless the Executive Secretary determines that other periodic sampling is appropriate, for two quarters or until the compliance status of the facility can be determined.

Out of compliance status (OOC) is defined as two consecutive exceedences of any contaminant concentration specified in Tables 1, 2 or 3 of this license in any well. If an out of compliance event occurs, the licensee shall:

- (1) Verbally notify the Executive Secretary within 24 hours of discovery of the event; followed by a written notice within 5 days of verbal notification;
  - (2) Initiate monthly ground water sampling for the exceeded parameter in the well indicating the exceedence unless the Executive Secretary determines that other periodic sampling is appropriate, until the event is resolved to the Executive Secretary's satisfaction;
  - (3) Prepare and submit within 30 days of discovery a plan and schedule to evaluate and assess the source of the exceedence and possible actions needed to restore and maintain compliance with License Condition 53.B. Such actions may include, but are not limited to:
    - a. Re-evaluation of the ground water flow and contaminant transport models used to set the compliance limits and target action levels;
    - b. Additional site investigation and characterization, and investigation of potential contamination sources; and
    - c. Active ground water remediation as deemed necessary by the Executive Secretary.
- D. DELETED by NRC Amendment No. 66.

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- E. DELETED by NRC Amendment No. 66.
- F. The Licensee shall comply with all requirements found in the Utah Ground Water Quality Protection Rules (UAC R317-6).
- G. Submit, for Executive Secretary approval, Ground Water Monitoring Reports in accordance with the following sampling and reporting schedule:

| <b>Table 4: Semi-Annual Ground Water Monitoring Reporting Schedule</b><br><i>To Be Followed Until the Year 2012</i> |                 |                        |
|---|-----------------|------------------------|
| <b>Semi-Annual Sample Period</b>  | <b>Period</b>   | <b>Report Due Date</b> |
| First   | January – June  | September 1            |
| Second  | July – December | March 1                |

| <b>Table 5: Annual Ground Water Monitoring Reporting Schedule</b><br><i>To Be Followed Thereafter</i> |                    |                        |
|---|--------------------|------------------------|
| <b>Annual Sample Period</b>   | <b>Period</b>      | <b>Report Due Date</b> |
| Annual  | January – December | March 1                |

Failure to submit the reports by the due date shall be deemed as noncompliance with this license. Said monitoring reports shall include, but are not limited to, the following minimum information:

- (1) Sampling Methodology
  - (2) Field Parameter Measurements
  - (3) Laboratory Information, the lower limit of detection shall be lower than the ACL
  - (4) Data Evaluation
  - (5) Figures - Groundwater Contour Map, Uranium Concentration versus the Predicted Concentration for compliance wells, Isoconcentration Map for each of the following constituents: arsenic, molybdenum, selenium, and uranium.
  - (6) Data Tables summarizing recent and historic monitoring data
  - (7) Concentration vs. Time Plots for compliance wells
  - (8) Appendices –copies of field measurements, laboratory analytical reports and chain-of-custody documentation shall be included
- H. The licensee shall provide written notification to the Executive Secretary a minimum of 30 days before installation of borings or wells that could potentially intercept the shallow groundwater contaminant plume.

54. In accordance with submittals dated February 21, March 31, May 19, September 28, 1989, and January 10, 1990, the licensee is authorized to dispose of a maximum of 70,000 cubic yards of coal ash, contaminated mill wastes, soil, waste rock, and Bisco Lake sediment within the



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location shown in the licensee's March 31, 1989, submittal. Materials will be disposed of according to procedures described in the March 31, 1989, submittal. The disposal shall be completed by March 31, 1991, and shall be documented. COMPLETE

[Applicable UDRC Amendment: 1]

[Applicable NRC Amendments: 2, 5, 11, 16, 23, 24, 25, 31, 57]

55. The licensee shall complete site reclamation in accordance with an approved reclamation plan. The ground-water compliance monitoring plan shall be conducted as authorized by License Condition No. 53 in accordance with the following schedule.
- A. To ensure timely compliance with target completion dates established in the Memorandum of Understanding with the Environmental Protection Agency (56 FR 55432, October 25, 1991), the licensee shall complete reclamation to control radon emissions as expeditiously as practicable, considering technological feasibility, in accordance with the following schedule:
- (1) Windblown tailings retrieval and placement on the pile - September 30, 1993. COMPLETE
  - (2) Placement of the interim cover to decrease the potential for tailings dispersal and erosion - December 31, 1992. COMPLETE
  - (3) Placement of final radon barrier designed and constructed to limit radon emissions to an average flux of no more than 20 pCi/m<sup>2</sup> sec above background - December 31, 1996, for areas not covered by the evaporation ponds and by December 31, 2014 for the area under the evaporation ponds.  
[Applicable UDRC Amendment: 1]
- B. Reclamation, to ensure required longevity of the covered tailings and ground-water protection, shall be completed as expeditiously as is reasonably achievable, in accordance with the following target dates for completion:
- (1) Placement of erosion protection as part of reclamation to comply with UAC R313-24 (10 CFR Part 40 Criterion 6 of Appendix A, incorporated by reference). Target completion date is December 31, 2015.
  - (2) Projected completion of ground-water corrective actions to meet performance objectives specified in the ground-water corrective action plan, as amended by subsequent submittals. Target completion date is December 31, 2015. COMPLETE  
[Applicable UDRC Amendment: 1]
- C. Any license amendment request to revise the completion dates specified in Section A must demonstrate that compliance was not technologically feasible (including inclement

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- weather, litigation which compels delay to reclamation, or other factors beyond the control of the licensee).
- D. Any license amendment request to change the target dates in Section B above must address added risk to the public health and safety and the environment, with due consideration to the economic costs involved and other factors justifying the request such as delays caused by inclement weather, regulatory delays, litigation, and other factors beyond the control of the licensee. A delay in placing erosion protection due to inadequate settlement of the tailings is not an acceptable reason for revising Section B(1) above unless the licensee provides analyses which demonstrate that available practical methods will not significantly accelerate settlement.
- [Applicable NRC Amendments: 41, 44, 57]
56. The licensee shall submit a work plan and schedule or before December 16, 2011 for Executive Secretary review and approval. The purpose of this work plan and schedule is to collect additional field data in the area of the former uranium mill property and provide an analysis of the existing data to be used for subsequent technical evaluation of the Licensee's Application for Alternate Concentration Limits and Long Term Ground Water Monitoring Plan (Approved by the U.S. Nuclear Regulatory Commission May 11, 2004, License No. SUA-1119, Amendment 66). The work plan and schedule shall include, but is not limited to, a detailed description of the activities, equipment, procedures, performance objectives, decision criteria, timelines, and deliverables involved for the following activities):
- A. Installation of 7 new groundwater monitoring wells completed down to a depth equal to or below the upper geologic contact of the Brushy Basin Shale Member. All well screens must fully penetrate the saturated interval of the Burro Canyon Formation. The licensee shall provide a written notice at least 14 calendar days prior to drilling and well installation activities to allow the Executive Secretary or a representative to observe all drilling and well installation activities.
- B. Submit As-Built Reports for the wells installed for Executive Secretary approval within 60 calendar days of well completion, and at a minimum will include the following information:
- (1) Geologic Logs - that detail all soil and rock lithologies and physical properties of all subsurface materials encountered during drilling. Said logs shall be prepared by a Professional Geologist licensed by the State of Utah.
  - (2) Well Completion Diagram - that detail all physical attributes of the well construction, including:
    - a. Total depth and diameters of boring,

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- b. Depth, type, diameter, and physical properties of well casing and screen, including well screen slot size,
  - c. Depth intervals, type and physical properties of annular filterpack and seal materials used,
  - d. Design, type, diameter, and construction of protective surface casing, and
  - e. Survey coordinates prepared by a State of Utah licensed engineer or land surveyor, including horizontal coordinates and elevation of water level measuring point, as measured to the nearest 0.01 foot.
- (3) Aquifer Permeability Data - including field data, data analysis, and interpretation of slug test, aquifer pump test or other hydraulic analysis to determine local aquifer hydraulic conductivity in each well.
- (4) The licensee shall provide at least a 14 calendar day written notice to allow the Executive Secretary to observe all drilling and well installation activities.
- (5) In the event the Executive Secretary determines that additional information is required, this information will be submitted within a time frame approved by the Executive Secretary.
- C. Collection of 2 site borings to determine the dry zone in the project area,
- D. Evaluation of the current groundwater monitoring program used at the project site,
- E. Analysis of groundwater levels since cessation of the corrective action pumping, and
- F. Evaluation of data used for site background concentrations of Uranium in the project area. Appropriateness of background evaluation (historical and current) will include the determination of groundwater age using appropriate isotopic analyses (eg. chlorofluorocarbons, tritium, sulfur hexafluoride).

Draft Findings Report of all field activities shall be submitted for Executive Secretary review within 90 calendar days after completion of field activities.

[Applicable UDRC Amendment: 4]

**UTAH RADIATION CONTROL BOARD**

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Rusty Lundberg, Executive Secretary

Date