CBRLicenseRenPEm Resource

From: CrowButte-LicenseRenewal Resource
Sent: Friday, February 27, 2009 12:43 PM
To: CBRLicenseRenPEm Resource
Subject: I196 Restoration Review
Attachments: I196 Denial.pdf

Hearing Identifier: CrowButteUR_LicenseRenewal_Public
Email Number: 44

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Subject: I196 Restoration Review
Sent Date: 2/27/2009 12:42:54 PM
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From: CrowButte-LicenseRenewal Resource

Created By: CrowButte-LicenseRenewal.Resource@nrc.gov

Recipients:
"CBRLicenseRenPEm Resource" <CBRLicenseRenPEm.Resource@nrc.gov>
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I196 Denial.pdf	3394000	

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 10, 1999

Mr. Michael L. Griffin
Manager of Environmental and Regulatory Affairs
Crow Butte Resources, Inc.
86 Crow Butte Road
P.O. Box 169
Crawford, NE 69339-0169

SUBJECT: WELL I-196-5 RESTORATION, LICENSE CONDITION 10.3 C, SOURCE MATERIAL LICENSE SUA-1534, CROW BUTTE URANIUM PROJECT, NEBRASKA

Dear Mr. Griffin:

The U.S. Nuclear Regulatory Commission (NRC) staff have decided that groundwater contaminated by the casing failure of Well I-196-5 has not been restored in accordance with License Condition 10.3 C. This letter and its enclosure (Technical Evaluation Report) document the results of NRC staff's review of the amendment request.

On March 29, 1996, Well I-196-5 failed a mechanical integrity test. Subsequent testing identified a leak in the well casing at a coupling 40 feet below ground level. Crow Butte Resources (CBR) drilled wells around Well I-196-5 and identified contaminated groundwater in a shallow aquifer in the Upper Brule Formation. On April 25, 1996, CBR began pumping water from the shallow aquifer to clean up the contaminated groundwater.

In an April 29, 1998, letter, CBR stated that the shallow aquifer contaminated by Well I-196-5 had been remediated, and that on approval from the Nebraska Department of Environmental Quality, CBR would plug all of the shallow wells. However, in a July 8, 1998, letter, NRC requested that CBR not plug and seal the shallow wells in the area of I-196-5 until NRC staff had reached a decision on the acceptability of the shallow aquifer remediation and CBR had supplied additional information to NRC.

NRC staff requested that:

1. Additional justification should be provided to show achievement of the restoration goal described in License Condition 10.3.

2. Justification should be provided to support use of particular shallow aquifer wells as background wells.

3. A description of the hydrologic stratigraphy should be provided.

4. The potential for contamination in the upper aquifer should be discussed.

5. The potential for the shallow aquifer to be used as a source of water should be addressed.

CBR responded to these requests for information in a letter dated August 7, 1998, and supplied further information in letters dated February 16, 1999, and March 31, 1999. From a review of these letters and letters submitted by CBR on April 25, 1996, and May 29, 1996, it was observed that the excursion occurred 40 feet below the surface in a shallow water-bearing silty sandstone, which is a part of the Upper Brule Formation. The excursion occurred as the result of a casing coupling failure in Well I-196-5 located in Mine Unit 2. The possibility of vertical excursions from Well I-196-5 at this time is virtually nil. This is because Well I-196-5 is not being used either for injection or production and because Mine Unit 2 is on groundwater restoration status. Wells within one kilometer of the CBR facility use aquifers in the Upper Brule Formation as a source of water. Therefore, it is possible that the Upper Brule Formation around well I-196-5 could be used as a future source of groundwater.

In response to the discovery of the casing leak, CBR installed fifteen wells to determine the areal extent of contamination. In addition to uranium, all the wells were sampled for the upper control limit parameters (chloride, sodium, sulfate, conductivity, and total alkalinity). Six wells were identified as contaminated and nine wells were identified as uncontaminated. Wells were identified as contaminated or uncontaminated based on water-quality data obtained from the first groundwater samples taken from each well. For example, chloride concentrations in the contaminated wells ranged from 110 to 576 ppm, and in the uncontaminated wells from 1.5 to 9 ppm.

The well classification was further supported by water quality data obtained during aquifer clean-up activities. Groundwater restoration consisted of pumping wells in the center of the contamination so that uncontaminated water flowed in from all directions. During this period, the water quality of the contaminated wells improved, while the water quality of the uncontaminated wells remained relatively unchanged. This is what would be expected if water obtained from the wells was uncontaminated.

In its March 31, 1999, letter CBR state that over 5,000,000 gallons have been pumped to restore the I-196-5 excursion area. CBR also provided graphs of uranium and upper control limit parameter concentrations that demonstrate it would require a very large restoration effort to provide even a small further reduction in the concentration of those parameters.

However, in addition to that consideration, to show compliance with the primary restoration goal described in License Condition 10.3 C, a larger list of water-quality parameters must be evaluated than uranium and the upper control limit parameters. CBR presented average values for these "groundwater restoration parameters" collected from five wells that were completed in the Upper Brule Aquifer and are a part of the environmental sampling program. CBR chose these wells to represent average baseline concentrations for the "groundwater restoration parameters," because the upper control limit parameters from these wells were similar to the concentrations of the upper control limit parameters for the uncontaminated wells. CBR also presented water quality data obtained from Well 196a in April 1998. This is the well closest to

Well I-196-5 and, historically, has exhibited some of the highest concentrations of excursion constituents.

License Condition 10.3 C defines the primary restoration goal as the average of the baseline water quality. Using the average baseline data from the five environmental sampling wells as the primary restoration goal, NRC staff observes that sodium, potassium, bicarbonate, sulfate, fluoride, total dissolved solids, alkalinity, arsenic, and uranium concentrations from well 196a exceed the primary restoration goal.

It also appears that sodium and uranium may exceed the secondary goal based on the class-of-use standards established by the Nebraska Department of Environmental Quality (NDEQ), as described in the license application and the NRC Environmental Assessment dated February 1998. However, this cannot be confirmed because CBR has not been consistent in its description of the class-of-use standards established by NDEQ. Inconsistences occur between the August 7, 1998, letter and a February 17, 1999, letter to NRC on the restoration status of Mine Unit 1. These inconsistences are as follows:

	Water Quality Standards August 7, 1998, Letter	Water Quality Standards February 17, 1999, Letter
Cadmium (mg/l)	0.005	0.01
Molybdenum (mg/l)	0.04	1.00
Nickel (mg/l)	0.01	0.15
Selenium (mg/l)	0.05	0.01
Sodium (mg/l)	20.00	4,122.00
Sulfate (mg/l)	250.00	375.00
Radium (pCi/L)	5.00	584.00
Uranium (pCi/L)	0.02	5.00

In any case, license SUA-1534 gives approval only for restoration to the primary goal. Restoration to another goal is outside the scope of the license and would require a license amendment.

Based on its review, the staff concludes that the groundwater contaminated by the failure of Well I-196-5 has not been restored in accordance with License Condition 10.3 C and, therefore, denies the request to amend the license to state that the groundwater has been restored. An applicant for a license amendment who is issued a notice of denial has a right, under 10 CFR 2.103(b)(2), to demand a hearing to dispute the notice of denial. You have twenty (20) days from the date of this letter to dispute the findings of this denial.

If CBR wishes to amend the license, it should reapply and make an adequate demonstration of how the groundwater has been restored to comply with License 10.3 C or justify the application of

alternative goals. If you have any questions concerning this letter, or wish to discuss acceptable ways CBR could demonstrate compliance with License Condition 10.3 C, or amend the license, please contact the NRC Project Manager, Mr. William Ford, at (301) 415-6630.

Sincerely,

King Stablein

N. King Stablein, Acting Chief
Uranium Recovery and
Low-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 40-8934
License No. SUA-1534

Enclosure: As stated

cc: H. Borchert, RCPD, NE
NDEQ
PDR, NE

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Sincerely,

[Signed by]

N. King Stablein, Acting Chief
Uranium Recovery and
Low-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 40-8934
License No. SUA-1534

Enclosure: As stated

cc: H. Borchert, RCPD, NE
NDEQ
PDR, NE

Case Closed: L51665

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TECHNICAL EVALUATION REPORT

DATE: April 22, 1999

DOCKET NO.: 40-8943

LICENSE NO.: SUA-1534

LICENSEE: Crow Butte Resources, Inc.

FACILITY: Crawford, Nebraska

PROJECT MANAGER: William Ford

TECHNICAL REVIEWERS: William Ford

SUMMARY AND CONCLUSIONS:

In letters dated dated April 25, 1996, May 29, 1996, August 7, 1998, February 16, 1999, and March 31, 1999, Crow Butte Resources (CBR) requested agreement from NRC that the groundwater in the Upper Brule aquifer contaminated by the failure of Well I-196-5 has been restored in accordance with license condition 10.3 C. This Technical Evaluation Report documents the results of the U.S. Nuclear Regulatory Commission (NRC) staff's review of the amendment request.

Based upon information provided by the licensee, NRC staff denies the license amendment request. The staff's decision is based upon the requirements of License Condition 10.3 C, which requires restoration of the groundwater to baseline water quality.

DESCRIPTION OF LICENSEE'S AMENDMENT REQUEST:

License Condition 10.3 states "Groundwater restoration goals shall be established on a parameter-by-parameter basis, and the primary goal of restoration shall be to return the groundwater quality, on a mine unit average, to baseline conditions. The licensee shall conduct ground-water restoration activities in accordance with the groundwater restoration plan submitted by letter dated November 26, 1996." To remove a restored area from the NRC surety requirement of License Condition 9.5 and declare it successfully restored, the license has to be amended. The licensee has requested that NRC confirm that groundwater in the shallow aquifer of the Upper Brule Formation contaminated by the failure of well I-196-5 has been restored in accordance with License Condition 10.3 C .

TECHNICAL EVALUATION:

To show achievement of the restoration goal described in License Condition 10.3 C, CBR presented water quality data for the "groundwater restoration parameters." CBR presented average values for the "groundwater restoration parameters" collected from 5 wells that were completed in the Upper Brule Aquifer and are a part of the environmental sampling program. CBR chose these wells to represent average baseline concentrations for the "groundwater restoration parameters," because the upper control limit parameters from these wells were similar to the concentrations of the upper control limit parameters for the uncontaminated wells. CBR also presented water quality data obtained from Well 196a in April 1998. This is the well closest to Well I-196-5 and, historically, has exhibited some of the highest concentrations of excursion constituents.

License Condition 10.3 C defines the primary restoration goal as the average of the baseline water quality. Using the average baseline data from the 5 environmental sampling wells as the primary restoration goal, NRC staff observes that sodium, potassium, bicarbonate, sulfate, fluoride, total dissolved solids, alkalinity, arsenic, and uranium concentrations from well 196a exceed the primary restoration goal. Therefore, CBR has not demonstrated compliance with License Condition 10.3 C, and the amendment request is denied.

Summary

As discussed above, the staff denies the request to amend License SUA-1534. The staff suggests that if CBR wishes to amend the license, it should reapply and make an adequate demonstration of how the groundwater has been restored to comply with License Condition 10.3 C or justify the use of alternative groundwater restoration goals.

Environmental Impact Evaluation

Denial of this amendment request will not result in increased environmental impacts.