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December 15, 2008

Mr. Keith I. McConnell, Deputy Director
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
2 White Flint, Mail Stop T7 E-18
Rockville, MD 20852-2738

Subject: License Amendment Request for Alternate Concentration Limits
Source Materials License SUA-1475
Groundwater Corrective Action Program
United Nuclear Corporation Church Rock Mill and Tailings Site

Dear Mr. McConnell:

United Nuclear Corporation (UNC) requests an amendment to Source Materials License SUA-1475, Condition 30. B., to apply Alternate Concentration Limits (ACLs) to two point-of-compliance (POC) wells within the Zone 1 hydrostratigraphic unit. The basis for this proposed amendment is the enclosed ACL application.

UNC proposes a potential point-of-exposure (POE) along a north-northwest trending vertical plane aligned through POC wells EPA-5 and EPA-7 in Section 1. This is located downgradient of and near the eastern boundary of Section 2. Designation of the potential POE along the eastern boundary of Section 2 (which contains the tailings disposal area) is not feasible because the two POC wells for which the ACLs are being requested (an ACL for nickel at well 604 and an ACL for total trihalomethanes [TTHMs] at well 614) are coincident with this same eastern boundary. The appropriateness of utilizing EPA-5 and EPA-7 as POEs is based on their proximity to the Section 2 boundary (located 250 feet and 190 feet east of the boundary, respectively) and their extensive histories of groundwater quality monitoring.

The main basis for proposing this POE is that POC wells 604 and 614 are located along the eastern property boundary of Section 2, which will eventually be turned over to DOE for long-term care. The need for ACLs in these two POC wells means that they cannot be designated as the POE, because as such there is no lateral distance over which natural processes can attenuate nickel and TTHMs. The latter issue was first raised in a general context in a letter from UNC to NRC (Earth Tech, 1999b) that proposed the following solution: eliminate Section 1 as a Zone 1 POE and designate the Zone 1 POE

along the northern UNC property boundary in Section 36. Followup communications with the NRC indicated that, at that time, they did not agree to eliminate Section 1 as a Zone 1 POE.

Given the need for ACLs in POC wells 604 and 614, UNC is herein proposing the POE through Section 1 wells EPA-7 and EPA-5. A very large body of historic groundwater quality data shows that natural processes successfully reduce the concentrations of the relevant constituents, to below the License groundwater protection standards (GWPS), over the lateral distances between the property boundary and EPA-7 and EPA-5.

NRC guidance for the selection of POEs is provided in *Staff Technical Position, Alternate Concentration Limits for Title II Uranium Mills, January 1996* (herein STP), which indicates (p. 7) that the POE, in most situations, will be located at the downgradient edge of the land that will be transferred to either the federal government or the State where the site is located, for long-term institutional control after the License is terminated. For the reasons described above, this is not strictly possible in the context of the enclosed ACL application.

UNC's proposed POE may be viewed as a type of "distant" POE in the context of the STP. NRC's review of this ACL application may determine that the ACL framework is not appropriate for this case. An alternate way to review this request for modified GWPS would be to submit it to the Commission as a special case outside the ACL framework, to be addressed and decided by the Commission on a case-by-case basis (STP, p. 8).

Existing Conditions

30.B. Comply with the following groundwater protection standards at point of compliance Wells GW-1, GW-2, GW-3, 632, EPA-23, EPA-28, and 509-D I the Southwest Alluvium; 614, 604, EPA-4, EPA-5, and EPA-7 in Zone 1; and 517, 613, 708, and 711 in Zone 3:

Arsenic = 0.05 mg/l, beryllium = 0.05 mg/l, cadmium = 0.01 mg/l, total trihalomethanes = 0.080 mg/l, gross alpha = 15.0 pCi/l, lead = 0.05 mg/l, lead-210 = 1.0 pCi/l, nickel = 0.05 mg/l, radium-226 and 228 = 5.0 pCi/l in Zone 3, 5.2 pCi/l in the Southwest Alluvium, and 9.4 pCi/l in Zone 1; selenium = 0.01 mg/l, thorium-230 = 5.0 pCi/l, uranium = 0.3 mg/l and vanadium = 0.1 mg/l.

Justification

Section 4.2 of NUREG-1620 (p.4-21) states that acceptable GWPS for hazardous constituents may be either:

- a) Commission-approved background concentrations
- b) MCLs, or
- c) Alternate concentration limits

UNC's enclosed ACL application demonstrates that constituent concentrations in Zone 1 are As Low As Reasonably Achievable (ALARA). The proposed ACLs are ALARA considering practicable corrective actions. In this case, it is not possible to designate the POE along the eastern boundary of Section 2, because the two wells for which ACLs are proposed are along this same boundary. The proposed POE is through POC wells EPA-5 and EPA-7 in Section 1. The extensive history of site groundwater monitoring shows that the proposed ACLs will be protective of human health and the environment at the proposed POE.

Proposed Amendment Text

30.B. Comply with the following groundwater protection standards at point of compliance Wells GW-1, GW-2, GW-3, 632, EPA-23, EPA-28, and 509-D I the Southwest Alluvium; 614, 604, EPA-4, EPA-5, and EPA-7 in Zone 1; and 517, 613, 708, and 711 in Zone 3:

Arsenic = 0.05 mg/l, beryllium = 0.05 mg/l, cadmium = 0.01 mg/l, total trihalomethanes = 0.080 mg/l **(with the exception of 0.3 mg/L in Well 614 in Zone 1)**, gross alpha = 15.0 pCi/l, lead = 0.05 mg/l, lead-210 = 1.0 pCi/l, nickel = 0.05 mg/l **(with the exception of 0.4 mg/L in Well 604 in Zone 1)**, radium-226 and 228 = 5.0 pCi/l in Zone 3, 5.2 pCi/l in the Southwest Alluvium, and 9.4 pCi/l in Zone 1; selenium = 0.01 mg/l, thorium-230 = 5.0 pCi/l, uranium = 0.3 mg/l and vanadium = 0.1 mg/l.

As of September 1997 United Nuclear Corporation became a wholly-owned, indirect subsidiary of the General Electric Company. GE Corporate Environmental Programs has been retained through a separate administrative services agreement to assist United Nuclear both technically and administratively with environmental issues at the Church Rock site. Please contact me if you have any questions.

Sincerely,



Roy S. Blickwedel, P.G.

Remedial Project Manager

Corporate Environmental Programs

Enclosures: ACL Application, Zone 1 of the Upper Gallup Sandstone Formation (2 copies)

cc: Yolande J.C. Norman, NRC (with enclosure)
Larry Bush, UNC (with enclosure)
Mark Purcell, EPA (pdf copy)
Diana Malone, NNEPA (pdf copy)
Earle Dixon, NMED (pdf copy)

Document Transmittal

1315 W. College Ave. Ste 100, State College, PA
16801

814-231-2170

Fax 814-231-2174

To: Yolande ^J C. Norman, US NRC

Date: 12-29-08

Project No: 56007747

RE: Submittal of Alternate

Concentration Limits application, Church

Rock tailings site, New Mexico

Attention:

We are sending herewithin:

☐ Drawings

☒ Documents

☐

Copies	Description
1	Zone 1 Alternate Concentration Limits application, United
	Nuclear Corporation's Church Rock tailings site, New Mexico

These are transmitted as checked below:

☐ For Your Use

☐ For Review & Comment

☐ Contractor Coordination Req'd

☐ As Requested

☒ For Approval

☐ Drawing Revision Forthcoming

☐

Remarks: The hard copy has a CD with the document as a pdf. Two additional hard copies have been
mailed to Keith McConnell, US NRC.

Copies to:

Keith McConnell, NRC (2 hard copies w/ CD)

Mark Purcell, EPA (pdf only)

Earle Dixon, NMED (pdf only)

Diane Malone, NNEPA (pdf only)

Larry Bush, UNC (hard copy w/ CD)

Roy Blickwedel, GE (hard copy w/ CD)

Very truly yours,

N.A. Water Systems

by: Mark Jancin