December 7, 2005

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

In the Matter of	)	
	)	
HYDRO RESOURCES, INC.	)	Docket No. 40-8968-ML
P.O. Box 777	)	
Crownpoint, NM 87313	)	
	)	

NRC STAFF'S SUPPLEMENTAL BRIEF

INTRODUCTION

Pursuant to the Presiding Officer's Order of November 15, 2005[1], the NRC Staff files this supplemental brief regarding the definition of "background radiation" and the total effective dose equivalent (TEDE) determination under 10 C.F.R. Part 20 (hereinafter Part 20").

10 C.F.R. § 20.1301(a) requires each licensee to conduct operations so that:

> (1) The total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year, exclusive of the dose contributions from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released under Sec. 35.75, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with Sec. 20.2003 . . .

Therefore, Hydro Resources, Inc. (HRI), is required to conduct its proposed *in situ* leach (ISL) uranium mining operations at Church Rock Section 17 so that the TEDE is less than 0.1 rem, exclusive of the dose contributions from background radiation. Section 17 contains a former non-ISL uranium mine (the UNC mine) with surface spoilage from past mining activity. The Presiding Officer has directed the parties to provide a supplemental brief to aid in

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[1] "Order (Directing Parties to Supplement Briefing in Phase II Radiological Air Emissions Challenges to In Situ Leach Uranium Mining License)," dated November 15, 2005 (unpublished) (November 15 Order).

determining whether, based on 10 C.F.R. § 20.1301(a)(1), radiation from the old mine and its surface spoilage should be included in the TEDE. *See* November 15 Order, at 3.

Central to this question is the regulatory definition of "background radiation" found in 10 C.F.R. § 20.1003. For the purpose of Part 20,

> Background radiation means radiation from cosmic sources; naturally occurring radioactive material, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee. "Background radiation" does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

The Presiding Officer directed the parties to address three discrete issues: (1) a discussion of the meaning of the parenthetical in the first sentence of the regulatory definition of background radiation and its applicability to this case; (2) a discussion of whether the phrase "not under the control of the licensee" in the first sentence of the regulatory definition of background radiation was intended to apply to cosmic sources and naturally occurring radioactive material, or whether it was intended to apply only to fallout, and how it should be applied in this case; and (3) a discussion of whether the TEDE calculation was intended to include only radiation "from the licensed operation," and, if yes, how such a regulatory interpretation can be reconciled with the canon of construction that favors construing regulations to give import and significance to every term and phrase.

The Staff first discusses the pertinent regulatory history in Section I below. Section II addresses whether the TEDE requirement set forth in 10 C.F.R. § 20.1301(a)(1) is limited to radiation from the licensed operation. Finally, in Section III, the Staff addresses the two issues raised regarding the definition of background radiation.

As discussed in Section II below, pursuant to 10 C.F.R. § 20.1301(a)(1), the TEDE calculation is limited to radiation resulting "from the licensed operation." Because radiation from the UNC mine and its surface spoilage does not arise from HRI's licensed operation, there is no

requirement that HRI include such radiation in its TEDE calculation. Accordingly, the questions regarding the definition of background radiation are rendered moot, as suggested by the Presiding Officer. *See* November 15 Order at 3. However, as discussed in Section III below, even assuming the scope of the TEDE calculation were broader, these sources of radiation would nevertheless be excluded from the TEDE calculation because they meet the regulatory definition of background radiation. The radon parenthetical in the definition of background radiation excepts only radioactive material that is not naturally occurring, i.e., that is regulated by the NRC. The radioactive material in the UNC mine and its surface spoilage is naturally occurring, is not regulated by the Commission and is not excepted from background radiation.

DISCUSSION

I. Regulatory History of Part 20

A. The Original Language

The original 10 C.F.R. Part 20, promulgated in 1957, did not contain dose limits for the general public. Instead, it presented values for permissible concentrations of specific radionuclides in air and water and levels of radiation in unrestricted areas. 22 Fed. Reg. 551 (Jan. 29, 1957). Dose limits were inferred from these values. *See* Proposed Rule, 51 Fed. Reg. 1,112 (Jan. 9, 1986). In 1986, the NRC published a proposed rule to replace the old Part 20. The proposed 10 C.F.R. § 20.301 (Section 20.1301 in the final rule), "Dose Limits for Individuals Members of the Public," required licensees to maintain exposures to members of the public "from all known sources and operations, licensed and unlicensed, except for natural background, medical diagnosis and therapy, and radioactive material disposed in sanitary sewage" under 0.5 rem (5 mSv) per year.

The new 10 C.F.R. Part 20 was revised extensively before the final rule was published five years later. As promulgated in 1991, Part 20 contained dose limits for individual members of the public. 10 C.F.R. § 20.1301. The regulation read as follows:

> (a) Each licensee shall conduct operations so that:
> (1) The total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year, exclusive of the dose contribution from the licensee's disposal of radioactive material into sanitary sewerage in accordance with Sec. 20.2003 . . .

56 Fed. Reg. 23,398 (May 21, 1991). One change was of paramount importance for this discussion. The phrase "from all known sources and operations, licensed and unlicensed," which appeared in the proposed rule, was replaced with "from the licensed operation." To account for the reduction of the TEDE's scope, the dose limit was reduced from 0.5 rem to 0.1 rem. 56 Fed. Reg. 23,374.

The only exclusion included in the 1991 version of 10 C.F.R. § 20.1301(a) was that for the licensee's disposal of sanitary sewage. The exclusions for natural background and medical diagnosis and therapy that had appeared in the 1986 proposed rule were moved to 10 C.F.R. § 20.1002, "Scope," which explicitly excluded background radiation, exposure of patients to radiation for the purpose of medical diagnosis or therapy, and exposure to individuals from voluntary participation in medical research programs from all dose limits in Part 20. 56 Fed. Reg. 23,391.

The phrase "natural background exposure," which had been employed in the 1986 proposed rule was replaced with "background radiation" in the 1991 final version of the rule. 56 Fed. Reg. 23,365. This change was made "to include residual global fallout and ambient radon levels within the definition of 'background.'" *Id*. The definition of the regulation's new term was provided in 10 C.F.R. § 20.1003:

> Background radiation means radiation from cosmic sources; naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices. "Background radiation" does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

56 Fed. Reg. 23,392 (1991).

B. Subsequent Amendments

The phrase "or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee," was added to the definition of background radiation in 1997. 62 Fed. Reg. 39,087 (July 21, 1997) (Final rule). This amendment was part of a rulemaking focused on decommissioning, and was included so that "fallout from past nuclear accidents like Chernobyl which contribute to background radiation and are not under the control of the licensee are included in the definition." 59 Fed. Reg. 43,217 (Aug. 22, 1994) (Proposed rule).

10 C.F.R. § 20.1301 has been amended several times since 1991. These amendments added the exclusions cited by the Presiding Officer as being arguably rendered mere surplusage if the TEDE is limited to dose from the licensed operation. *See* November 15 Order at 3. The exclusions of dose from background radiation, from any medical administration the individual has received, and from voluntary participation in medical research programs were added to Section 20.1301(a)(1) in 1995. These sources of dose had previously been excluded from the scope of Part 20 in Section 20.1002. This change was made "for consistency and clarity." 60 Fed. Reg. 48,624 (Sept. 20, 1995).

Administration of radiopharmaceuticals is regulated under 10 C.F.R. Part 35, "Medical Use of Byproduct Material." While Section 20.1002, the scope provision of Part 20, excluded administrations for the purpose of medical diagnosis or therapy, a question had arisen as to whether a misadministration, i.e., a medical administration to an individual who was not supposed to receive a dose, would be covered by 10 C.F.R. § 20.1301(a)(1). 60 Fed. Reg. 48,623. The Commission issued this amendment to Section 20.1301(a)(1) to clarify that all medical administrations of radioactive materials should be regulated by Part 35. The medical language of the scope provision was changed from "for the purpose of medical diagnosis and therapy" to "any medical administration the individual has received," to clarify that

even misadministrations were not covered by Part 20. *See* 10 C.F.R. § 20.1002. For the sake of consistency and clarity, the same language was inserted into Section 20.1301(a). Also for clarity and consistency with the scope section, the exclusions of background radiation and of dose from voluntary participation in medical research programs were added to Section 20.1301(a)(1). *Id*. at 48623. Nothing substantively changed in Section 20.1301(a)(1) following this amendment. These sources of dose were already excluded by the scope provision. This change simply made that exclusion clearer.

10 C.F.R. § 20.1301(a)(1) was amended again in 1997 when a similar issue arose regarding exposure to individuals who had been administered radioactive material. 62 Fed. Reg. 4,120 (Jan. 29, 1997). It was amended "to state specifically that the dose to individual members of the public from a licensed operation does not include doses received by individuals exposed to patients who were released by the licensed operation under the provisions of 10 CFR 35.75."[2] 62 Fed. Reg. 4,129. Once again, the amendment was not substantive, and instead was clarifying in nature, "to make clear that the Commission's policy is that patient release is governed by 10 CFR 35.75, not 10 CFR 20.1301." *Id*.

II. The TEDE Calculation Applies Only to Radiation "From the Licensed Operation"

As discussed in the regulatory history section above, the proposed rule's language, "from all known sources and operations, licensed and unlicensed" was replaced in the 1991 final version of 10 C.F.R. § 20.1301(a)(1) with the phrase "from the licensed operation." This change, along with the dose limit reduction from 0.5 rem to 0.1 rem, demonstrates the Commission's intent to reduce the scope of the TEDE. The Commission clearly intended its new lower dose limits to apply only to radiation from the licensed operation.

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[2] The phrase "under the provisions of" was replaced with "in accordance with the provisions of" in 2002. 67 Fed. Reg. 20250, 20270, 20370 (April 24, 2002).

The Statement of Consideration (SOC) for the original 10 C.F.R. § 20.1301 issued in 1991 reveals this intent to limit its application to doses from the licensed operation. As shown in the following excerpt from the SOC, the Commission contrasted this rule with the EPA's broader rule (which applies to "the total dose from all sources within the uranium fuel cycle") and made the distinction that the TEDE would not include doses that do not arise from the licensed operation, even doses from neighboring licensed activities:

> *Comment:* Inclusion of doses from other licensed or unlicensed radiation sources. Many commenters expressed and opinion that the dose should not be all-inclusive and should not include fallout from nuclear weapons tests, transportation of radioactive material, or other sources of radioactive material not under the control of the licensee.
> *Response:* The new lower dose limit for members of general public [which was described as a "reference level" in the proposed rule) applies only to doses from radiation and radioactive material under the licensee's control. The EPA's generally applicable environmental radiation limit for nuclear power operations (40 CFR part 190) does apply to the total dose from all sources within the uranium fuel cycle. However, in its practical implementation, the sources would have to be located within a few miles of each other for the combined dose contributions to be significantly different from the dose from either facility alone. The definition of "natural background" has been replaced by "background radiation," which means radiation from cosmic sources, naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices. This clarifies sources of radiation and radionuclides that can be excluded from evaluations of the dose from licensed activities.

56 Fed. Reg. 23,374-75 (emphases added).

The Presiding Officer raised the issue of the rule against surplusage (or redundancy). *See* November 15 Order at 3. This canon of construction favors construing regulations to give import and significance to every term and phrase and holds that in the "interpretation of any regulation . . . the entirety of the provision must be given effect," so as to not "render any part inoperative." *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-900, 28 NRC 275, 288 (citations omitted), *review declined*, CLI-88-1, 28 NRC 603 (1988); *Kerr-McGee Chemical Corporation* (West Chicago Rare Earths Facility), ALAB-944,

33 NRC 81, 133 (1991) (citing *Mountain States Tel. & Tel. Co. v. Pueblo of Santa Ana*, 472 U.S. 237, 249-50 (1985)).[3] If the dose limit is to include only doses from the licensed operation, why would the Commission list several exclusions for medical doses and other sources of radiation, which are clearly outside the scope of this proposed licensed operation, and give the misleading impression that the scope of the TEDE calculation is broader than "from the licensed operation"?

This canon, however, is not dispositive, for "as one rule of construction among many, albeit an important one, the rule against redundancy does not necessarily have the strength to turn a tide of good cause to come out the other way." *Gutierrez v. Ada*, 528 U.S. 250 (2000). More importantly, as demonstrated below, this canon is unnecessary to interpret 10 C.F.R. § 20.1301(a)(1). Each of the phrases following "exclusive of the dose contributions from," have their own meaning and significance that can be read consistently with the interpretation of Section 20.1301(a)(1) to apply only to doses from the licensed operation. The TEDE applies only to dose from the licensed operation, but not all licensed operations are covered, and not all aspects of those licensed operations that are covered are to be included in the TEDE.

The only exclusion in the 1991 final version of 10 C.F.R. § 20.1301(a)(1) was for doses from the licensee's disposal of radioactive material into sanitary sewage in accordance with Section 20.2003. This exclusion limits, rather than expands, the scope of the dose limit calculation. In other words, the regulation is limited to doses from the licensed operation, but only part of the licensed operation, not that part involving the disposal of sanitary sewage. The plain reading of this exclusion is consistent with limiting the TEDE to dose from the licensed operation.

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[3] Following a settlement, the *Kerr-McGee* decision was vacated as moot by the Commission. CLI-96-2, 43 NRC 13, 15 (1996).

Background radiation and all three medical exclusions currently found in 10 C.F.R. § 20.1301(a)(1) are explicitly excluded from the scope of Part 20. 10 C.F.R. § 20.1002. Part 20 simply does not apply to dose from background or from the medical administration of radiopharmaceuticals. Two of the medical administration scenarios and background radiation have been excluded by the scope provision (10 C.F.R. § 20.1002) since the final rule was promulgated in 1991. That provision makes it clear that those sources of radiation were not to be included in the TEDE.

When evaluating an ISL facility, the discussion of doses from medical administration seems to imply that the scope of 10 C.F.R. § 20.1301 flies far afield of "from the licensed operation." However, from the perspective of a health care provider, medical administrations are the heart of the licensed operation. These medical exclusions clarify that the dose from medical administrations should be dealt with under Part 35. Much like the sanitary sewage exclusion, these exclusions simply limit the scope of the phrase "from the licensed operation."

The phrase "background radiation" was added to 10 C.F.R. § 20.1301(a) in 1995, when medical administration and voluntary participation in medical research were added. 60 Fed. Reg. 48,624. As discussed above, this did not cause any substantive change. Background radiation and the two medical scenarios were already excluded from the dose limits by the scope provision in Section 20.1002. The Commission simply decided to move all of the exclusions from the scope provision into the dose limit provision for the sake of clarity and consistency. Just as with the medical exclusions, the exclusion of background radiation does not expand the scope of the TEDE calculation. It merely clarifies the meaning of "from the licensed operation." In other words, Section 20.1301(a)(1) is not concerned with radon emanating from uranium deposits under a uranium mill or reactor. It is concerned with radon emanating from the uranium being processed or utilized in that licensed operation.

This interpretation is supported by the language used by the Commission in describing the final medical amendment to the rule in 1997. 62 Fed. Reg. 4,120 (Jan. 29, 1997). Section 20.1301(a) was amended "to state specifically that the dose to individual members of the public from a licensed operation does not include doses received by individuals exposed to patients who were released by the licensed operation under the provisions of 10 CFR 35.75." *Id*. at 4129 (emphasis added). Employing the rule against surplusage in this regulation is inappropriate because each of the "surplus" phrases has its own independent significance. The TEDE calculation was only intended to include dose from the licensed operation.

The radiological emissions from the UNC mine and its surface spoilage pre-exist any dose that HRI's proposed ISL mining operation at the site may later produce. Therefore, these existing emissions certainly do not arise from HRI's licensed operation. Accordingly, these existing emissions are not properly included in HRI's TEDE calculation. As the Presiding Officer suggested, this determination renders the two remaining issues regarding the definition of background radiation moot. Once it has been determined that the radiation from the UNC mine and its surface spoilage are not to be included in the TEDE calculation for HRI's proposed operation, there is no need to also exclude it from the TEDE as background radiation. However, as demonstrated below, the radiological emissions from the UNC mine do meet the regulatory definition of background radiation, and would be excluded accordingly, if necessary.

III. Radon From The UNC Mine And Its Surface Spoilage is Naturally Occurring Radioactive Material Under The Definition Of Background Radiation

A. The Radon Parenthetical Only Applies to Material Regulated by the Commission

As discussed in the regulatory history section, the phrase "background radiation," which appeared in the final rule, replaced the proposed rule's phrase, "natural background exposure." The purpose of this change was "to include residual global fallout and ambient radon levels within the definition of 'background.'" 56 Fed. Reg. 23,365. The Commission clearly intended

ambient radon to be included as background radiation and "it is an elementary canon of construction that we cannot interpret federal statutes to negate their own stated purposes." Exxon Nuclear Company (Nuclear Fuel Recovery and Recycling Center), ALAB-447, 6 NRC 873, 878 (1977). The same surely holds for the federal regulations at issue here.

Radon is a radioactive gas formed by the radioactive decay of radium. Radium is a member of the naturally-occurring uranium-238 radioactive decay chain. Radionuclides from this decay chain are found in natural background in various concentrations in most soils and rocks. 62 Fed. Reg. 39,082. All source materials naturally decay into radon, regardless of whether the source material is considered naturally occurring radioactive material (NORM). Most, if not all, radon of regulatory concern is a decay product of source or special nuclear material. The rule against surplusage, while unnecessary for the interpretation of 10 C.F.R. § 20.1301(a)(1), is applicable to the "background radiation" definition. In order to give import and significance to the phrase, "including radon," the parenthetical must be read as not including all source material. Otherwise, the exception will swallow the rule.

The Presiding Officer raised the question of why byproduct material is not included in the parenthetical. *See* November 15 Order at 3. The answer to this question helps to illuminate the purpose of the radon parenthetical. The phrase "including radon" modifies the earlier phrase "naturally occurring radioactive material." The radon parenthetical then, must be read in light of the initial phrase, "naturally occurring radioactive material." It is an attempt to explain what radon should not be considered NORM. Byproduct material by definition, cannot be NORM. 10 C.F.R. § 20.1003. It is the result of human activities, such as the production or utilization of special nuclear material or of the processing of uranium or thorium ore for their source material content. Atomic Energy Act (AEA) §§ 11(e)(1-2). The definitions of source and special nuclear material, by contrast, do not necessarily exclude NORM. Source material is defined as "uranium, thorium, or any other material which is determined by the Commission . . .

to be source material." AEA § 11(z). Special nuclear material is defined as "plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission . . . determines to be special nuclear material." AEA § 11(aa).

Unlike the definition of byproduct material, which reads in terms of processes, and thus cannot include NORM, the definition of source material is entirely content oriented. Uranium and thorium are source material, regardless of origin. Thus the term "source material" can include both NORM and non-NORM material. The definition of special nuclear material is a hybrid of the other two definitions. It is certainly process oriented with respect to enriched uranium, which can not be NORM. However, with respect to plutonium and any other material which the Commission determines to be special nuclear material, it is content oriented, and could theoretically include material that is NORM.

While the Statement of Consideration (SOC) for the 1991 final rule does not explain the meaning of the radon parenthetical, the most logical explanation is that its purpose was to clarify that radon as a decay product of material that is not NORM (i.e., radioactive material that is regulated by the Commission) cannot be NORM and is not to be considered background radiation under this definition. There was no need to include byproduct material in the parenthetical because, by definition, it cannot be considered NORM. Thus, the source material to which the parenthetical refers, and excepts from NORM, is source material regulated by the Commission. Radon that is a decay product of NORM (source materials not regulated by the Commission) is still NORM, and still background radiation. There are several substances that fit under the broad definition of source material and yet are not regulated by the Commission. For instance, the Atomic Energy Act does not grant the Commission authority to regulate source material until it is removed "from its place of deposit in nature." AEA § 62, 42 U.S.C. § 2092.

Further, there are two definitions of source material in both Part 20 and Part 40. One definition of source material is uranium or thorium, or any combination thereof. The second definition of source material is ores that contain, by weight, 0.05 percent of uranium or thorium, or any combination thereof. 10 C.F.R. § 20.1003; 10 C.F.R. § 40.4. Any material containing less than 0.05 percent uranium or thorium by weight is exempt from NRC regulation. 10 C.F.R. § 40.13(a). Any unprocessed or unrefined ore is also exempt from NRC regulation. 10 C.F.R. § 40.13(b). Most rocks and soils include some level of uranium or thorium, but most of these are considered to be NORM, as they are neither the result of processing uranium or thorium, nor do they contain ore of sufficient weight percent (0.05 percent) to be regulated by the NRC as source material. *See* Affidavit of Christepher McKenney, Staff Exhibit 1 to August 5 Response, at ¶ 8. Radon as a decay product of this type of material should be considered NORM and thus should be fall under the rubric of background radiation.

The definition of background radiation manifests a clear intent that at least some radon be considered naturally occurring radioactive material. Reading the parenthetical to mean that radon as a decay product of all source material is not NORM ignores this express intent because that interpretation would except all radon. Some set of source material must be read out of the exception. The most logical interpretation of parenthetical exception is that it clarifies that only radon that is a decay product of NORM is to be considered NORM. As a corollary, radon as a decay product of materials that are regulated by the Commission, and thus are not NORM, is to be excepted from this definition of background radiation.

B. The Phrase “Not Under the Control of the Licensee” Does Not Apply to the Antecedent Phrase “Naturally Occurring Radioactive Materials”

As discussed above, the original version of the definition of background radiation did not include the phrase “not under the control of the licensee.” The phrase “or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the

control of the licensee," was added in 1997. 62 Fed. Reg. 39,087 (Final Rule). This 1997 amendment introducing this language was part of a larger rulemaking that focused on decommissioning. The language was included so that "fallout from past nuclear accidents like Chernobyl which contribute to background radiation and are not under the control of the licensee are included in the definition." 59 Fed. Reg. 4,3217 (Proposed Rule). The Commission did "not believe it [wa]s reasonable for licensees to be required to remediate material over which they have no control and which is present at comparable levels in the environment both on and off the site." *Id.*

The regulatory history of the phrase "not under the control of the licensee" demonstrates that it was only intended to be applied to Chernobyl-like fallout. Therefore, the Presiding Officer should find that this phrase has no bearing on whether material is "naturally occurring radioactive material." The naturally occurring radioactive materials in and above the UNC mine are not the result of fallout from past nuclear accidents like Chernobyl. Therefore, whether they are under the control of the licensee is not germane.

C. Radioactive Material At The UNC Mine And Its Surface Spoilage Are Naturally Occurring Radioactive Materials

As discussed in the Staff's August 5 response,[4] NORM generally includes primordial material such as uranium left undisturbed in nature. NRC Staff's Response at 22 (citing SECY-01-0057). Radioactive material in the UNC mine on Section 17 is NORM because it has not been removed from its place in nature. A subset of NORM is technologically enhanced naturally occurring radioactive material (TENORM), which includes primordial material whose radioactivity has been concentrated or exposed as a result of mining. *Id*. Section 17's surface spoilage is TENORM. As such, it is naturally occurring radioactive material and fits under the

[4] NRC Staff's Response to Intervenor's Presentation on Radiological Air Emissions, (August 5, 2005).

definition of background radiation in 10 C.F.R. § 20.1003.

As demonstrated in the Staff's August 5 Response, this NORM and TENORM contain source material that is not regulated by the Commission. The NORM still underground is exempted from Commission regulation by Section 62 of the AEA because it has not been removed from its place of deposit in nature.

The surface spoilage is also not regulated by the Commission. There are no materials present on the ground surface of Section 17 exceeding the 0.05 percent weight (500 ppm) uranium threshold. *See* Affidavit of Christepher McKenney, Staff Ex. 1 ¶¶ 9-10. Therefore, there is no source material of the type regulated by the Commission on the surface of Section 17. Further, part 40 also exempts this material from regulation:

> Any person is exempt from the regulations in this part and from the requirements for a license set forth in Section 62 of the [AEA] to the extent that such person receives, possesses, uses, or transfers unrefined and unprocessed ore containing source material; provided, that, except as authorized in a specific license, such person shall not refine or process such ore.

10 C.F.R. § 40.13(b) (emphases added). In promulgating 10 C.F.R. § 40.13(b), the Atomic Energy Commission stated in pertinent part as follows:

> The [Atomic Energy] Act does not . . . require a license for the mining of source material, and the proposed regulations, as in the case of the current regulations, do not require a license for the conduct of mining activities. Under the present regulation, miners are required to have a license to transfer the source material after it is mined. Under the proposed regulation . . . the possession and transfer of unrefined and unprocessed ores containing source material would be exempted.

25 Fed. Reg. 8,619 (Sept. 7, 1960).

The phrase "unrefined and unprocessed ore" in 10 C.F.R. § 40.13(b) is defined in 10 C.F.R. § 40.4 as meaning "ore in its natural form prior to any processing, such as grinding, roasting or beneficiating, or refining." The existing UNC uranium mine spoils on and under Section 17 are "unrefined and unprocessed ore" – *i.e.*, "ore in its natural form prior to any

processing, such as grinding, roasting or beneficiating, or refining." Thus, even though HRI may be said to possess unrefined and unprocessed ore stemming from the presence of the old UNC uranium mine and its spoils on Section 17 – and even though such ore is source material under one definition – such material is exempt from the 10 C.F.R. Part 40 licensing requirements pursuant to 10 C.F.R. §§ 40.13(a) and (b).

Because the radioactive material in the mine at Church Rock Section 17 is NORM that is not regulated by the Commission and the surface spoilage is TENORM that is not regulated by the Commission, the radon emanating therefrom is not part of HRI's required TEDE calculations. Such radon is a decay product of NORM, specifically source material that is not regulated by the Commission. Therefore, this radon does not fall under the parenthetical exception and is background radiation, which is specifically excluded from the TEDE calculation under 10 C.F.R. § 20.1301(a)(1).

CONCLUSION

Only radiation from the licensed operation must be included in the TEDE. Radon emanating from the radioactive material left over from the UNC mine is not from HRI's proposed operation and should not be included in its TEDE. Assuming *arguendo*, that the scope of 10 C.F.R. § 1301(a)(1) is broader than "from the licensed operation," radon emanating from these materials would still be excluded from the TEDE as background radiation. This radon would not be excepted from the definition of background radiation because the material at the UNC mine is naturally occurring radioactive material.

Respectfully submitted,

/RA/

Steven C. Hamrick
Counsel for NRC Staff

Dated at Rockville, Maryland
this 7th day of December, 2005

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

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	)	
HYDRO RESOURCES, INC.	)	Docket No. 40-8968-ML
P.O. Box 777	)	
Crownpoint, NM 87313	)	
	)	

NOTICE OF APPEARANCE

Notice is hereby given that the undersigned attorney herewith enters an appearance in the above-captioned matter. In accordance with 10 C.F.R. § 2.314(b), the following information is provided:

Name:	Steven C. Hamrick
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Admissions:	State of Maryland
Name of Party:	NRC Staff

Respectfully submitted,

/RA/

Steven C. Hamrick
Counsel for NRC Staff

Dated at Rockville, Maryland
this 7th day of December, 2005

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NUCLEAR REGULATORY COMMISSION

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	)	
HYDRO RESOURCES, INC.	)	Docket No. 40-8968-ML
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	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S SUPPLEMENTAL BRIEF" and "NOTICE OF APPEARANCE" of Steven C. Hamrick in the above-captioned proceeding have been served on the following by deposit in the United States mail; through deposit in the Nuclear Regulatory Commission's internal system as indicated by an asterisk (*), and by electronic mail as indicated by a double asterisk (**) on this 7th day of December, 2005.

Administrative Judge, E. Roy Hawkens * **
Presiding Officer
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Mail Stop T-3 F23
Washington, D. C. 20555
Email: erh@nrc.gov

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