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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF THE
GENERAL COUNSEL
ADJUDICATION STAFF

The Honorable Peter B. Bloch, Presiding Officer

In the Matter of)
)
HYDRO RESOURCES, INC.)
(2929 Coors Road, Suite 101)
Albuquerque, NM 87120)

Docket No. 40-8968-ML
ASLBP No. 95-706-01-ML

**HYDRO RESOURCES, INC.'S RESPONSE TO ENDAUM AND SRIC'S
BRIEF WITH RESPECT TO NEPA ISSUES CONCERNING PROJECT
PURPOSE AND NEED, COST/BENEFIT ANALYSIS, ACTION
ALTERNATIVES, NO ACTION ALTERNATIVE, NECESSITY TO
SUPPLEMENT EIS, MITIGATION. AND CUMULATIVE IMPACTS**

I. INTRODUCTION

Intervenors, Eastern Navajo Dine Against Uranium Mining ("ENDAUM") and Southwest Research and Information Center ("SRIC") (jointly hereinafter, "Intervenors") submitted, on February 19, 1999, their written presentation ("Brief") asserting that the Environmental Impact Statements ("EIS") prepared by the Nuclear Regulatory Commission ("NRC") Staff and the Environmental Reports ("ER") prepared by Hydro Resources, Inc. failed, for several reasons, to satisfy the National Environmental Policy Act ("NEPA"). HRI, licensee herein, respectfully submits, for the reasons set forth below, that Intervenors misapprehend NEPA's requirements, particularly as they apply to NRC Subpart L licensing proceedings, misconstrue the standards that an EIS or an ER must attain to satisfy NRC requirements in a Subpart L licensing proceeding, and baselessly speculate about potential project costs and benefits while mischaracterizing the

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facts as developed in the record. Intervenors have not shown that HRI and/or the NRC Staff have not adequately protected public health and safety or that HRI and/or NRC Staff have not adequately considered environmental issues. Accordingly, Intervenors' requested relief must be denied.

II. ARGUMENT

A. Intervenors Misapprehend NEPA's Requirements As They Apply To NRC Subpart L Proceedings.

1. NEPA requires federal agencies to take a "hard look" at the environmental consequences of a proposed project.

The National Environmental Policy Act of 1969 ("NEPA") was intended to establish a national commitment to ensuring and promoting environmental quality. See, generally, 115 Cong. Rec. 40,416 (1970) (Remarks of Sen. Jackson); 42 U.S.C. § 4331. To make certain that federal agencies incorporate this commitment into their decision-making, NEPA mandates specific "action-forcing" procedures. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 348 (1989) (citing remarks of Sen. Jackson, supra.). Foremost among these procedures is the Environmental Impact Statement ("EIS"). NEPA requires federal agencies to prepare an EIS for any proposal that would "significantly affect [] the quality of the human environment." Louisiana Energy Services, L.P., 47 N.R.C. 77, 87, citing 42 U.S.C. § 4332 (2)(C). The EIS is to describe the potential environmental impact of the proposed project and discuss reasonable alternatives. Id.; see also, 42 U.S.C. § 4332.

The primary purposes of an EIS are to force agencies to take a "hard look" at the environmental consequences of proposed projects and to allow the public to participate in the agency's decision-making process. Public Utilities Commission v. FERC, 900 F.2d

269, 282 (D.C. Cir. 1990); Louisiana Energy Services, L.P. 47 N.R.C. 77, 87 Robertson, supra. at 349-50. NEPA does not mandate that an agency evaluate “every impact or effect of its proposed action, but only the impact or effect on the environment.” LES, 47 N.R.C. 77, 88, citing Metropolitan Edison Co. v. People Against Nuclear Energy, 460 U.S. 766, 772 (1983).

- a. NRC has promulgated its own rules and policies for implementing NEPA.

“Determination of economic benefits and costs that are tangential to environmental consequences are within [a] wide area of agency discretion.” L.E.S. 47 N.R.C. 77, 89, citing South Louisiana Environmental Council, Inc. v. Sand, 629 F.2d 1005, 1011 (5th Cir. 1980). NRC promulgated its own regulations for implementing NEPA in 1984 at 49 Fed. Reg. 9352 et seq. These requirements are incorporated in NRC regulations at 10 C.F.R. Part 51. As discussed in the Preamble to NRC’s regulations, NRC intends that NEPA’s requirements be implemented in a manner that is sufficiently flexible to address appropriately the reasonably foreseeable risks posed by a particular project.

[T]he amount of detailed information needed to make a reasoned decision on each of the many issues presented varies substantially among issues but is in each case commensurate with the nature of the issue addressed. With respect to most issues, with the possible exception of those relating to radiological matters, information need not be presented in the same degree of detail as that furnished in support of the applicant’s proposal. In the review of alternative sites, for example, the Commission has found that reconnaissance-level information is adequate to assure that these alternatives are accorded substantial deference.

49 Fed. Reg. 9354 (March 12, 1984).

b. NRC NEPA review is guided by a “rule of reason.”

In promulgating its own regulations implementing NEPA, NRC clearly was mindful of the pronouncements of the courts regarding the nature and level of scrutiny required of the NEPA environmental review. “The courts have consistently held that the test of an agency’s NEPA obligation to consider alternatives is subject of a rule of reason.” 49 Fed. Reg. 9355. Citing the Supreme Court, the preamble to the regulations states:

The term “alternatives” is not self-defining. To make an impact statement something more than an exercise in frivolous boilerplate the concept of alternatives must be bounded by some notion of feasibility. As the Presiding Officer of Appeals of the District of Columbia Circuit has itself recognized:

There is reason for concluding that NEPA was not meant to require detailed discussion of the environmental effects of “alternatives” put forward in comments when these effects cannot be readily ascertained and the alternatives are deemed only remote and speculative possibilities. . . .
Natural Resources Defense Council v. Morton, 148 U.S. App. D.C. 5, 15-16, 458 F.2d 827, 837-838 (1972).

....

Common sense also teaches us that the “detailed statement of alternatives” cannot be found wanting simply because the agency failed to include every alternative device and thought conceivable by the mind of man. Time and resources are simply too limited to hold that an impact statement fails because the agency failed to ferret out every possible alternative, regardless of how uncommon or unknown that alternative may have been at the time the project was approved. . . .

Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 at 551 (1978); accord, Seacoast Anti-Pollution League v. Nuclear Regulatory Commission, 598 F.2d 1221 at

1223 (1st Cir. 1979). In a similar vein, the Fifth Circuit, in Sierra Club v. Morton, 510

F.2d 813 at 820 (5th Cir. 1975) stated:

The courts have approached their review of claims that congressionally specified detail of environmental effects was lacking in an EIS with a view that Congress did not intend to mandate perfection, or intend “for an impact statement to document every particle of knowledge that an agency might compile in considering the proposed action. (footnotes omitted).

Citing Sierra Club v. Morton, an NRC Appeal Board reasoned that alternatives likely to result in similar or greater harm than the proposed action need not be evaluated

As we read it, the NEPA mandate that alternatives to the proposed licensing action be explored and evaluated does not come into play in such circumstances – in short, there is no obligation to search out possible alternatives to a course which itself will not either harm the environment or bring into serious question the manner in which this country’s resources are being expended.

Portland General Electric Company (Trojan Nuclear Plant), 9 NRC 263 at 266 (1979).

NRC has adopted a like-minded view of the level of detail that must be reflected in the information presented in the EIS:

With respect to the requisite level of detailed information, the courts have held that the detail required “. . . is that necessary to establish that an agency in good faith objectivity has taken a sufficient look at the environmental consequences of a proposed action and at alternatives to that action.”

49 Fed. Reg. at 9355, citing Save Our Sycamore v. Metropolitan Atlanta, Etc., 578 F. 2d 573 at 576 (5th Cir. 1978). “Information has been considered sufficient if it permits a reasoned choice to be made among different courses of action and if it provides enough detail to enable those who did not have a part in compiling the information to understand

and consider meaningfully the pertinent environmental influences involved.” 49 Fed. Reg. 9355.

The overarching principle of NRC, indeed, all agency NEPA review, is “that the environmental review mandated by NEPA is subject to a ‘rule of reason’ and as such need not ‘include all theoretically possible environmental effects arising out of an action,’ but rather ‘may be limited to effects which are shown to have some likelihood of occurring.’” Northern States Power Company (Prairie Island Nuclear Generating Plant, Units 1 and 2), 7 N.R.C. 41, 1978 NRC LEXIS 117, *15 (1978); citing Long Island Lighting Co. (Shoreham Nuclear Power Station), 6 AEC 831, 836 (1973) (affirmed by unpublished order of the District of Columbia Circuit, November 7, 1976; remanded on other grounds). “The appropriate inquiry here, then, is not into whether it is ‘theoretically possible’ . . . [w]hat must be decided instead is whether it is reasonably probable . . .” Northern States Power Co., 1978 NRC LEXIS 117 at *17.

Thus, NRC and the courts have determined that NEPA requires that an EIS reflect a reasoned inquiry, commensurate with the anticipated level of risk, into the reasonably probably harms that may result from the proposed action

- c. NRC generally has concluded that ISL Projects do not require an EIS.

In-situ leach (“ISL”) uranium recovery has generally been recognized to be a relatively low-risk activity. “The potential for environmental impacts due to in-situ

uranium mining appears to be minor.”¹ In fact, HRI is aware of no other ISL licensee that has submitted an EIS in more than fifteen years.² In each case, NRC has granted licenses to conduct in-situ leach uranium mining on the basis of environmental assessments, having determined that an EIS was unnecessary and having issued a Finding of No Significant Impact (“FONSI”).³ This result is consistent with the “rule of reason” with which NEPA must be applied and the “risk-informed” decision-making advocated by NRC.⁴ An intervenor can force an EIS to be completed if they show that the proposed facility would significantly degrade the quality of the human environment. See Found. For Horses and Other Animals v. Babbit, 995 F. Sup. 1088 (C.D. Cal. 1998). Since there was no requirement to complete an EIS for an ISL mining project, ENDAUM and SRIC should be held to the same standard as an intervenor wishing to require that an EIS be prepared after a FONSI.

- d. HRI voluntarily chose to engage in the EIS process in this case to provide a more complete evaluation of potential environmental impacts.

As noted above, NRC has determined that proposed in-situ leach uranium recovery operations are low-risk activities unlikely to cause serious environmental harm. Consequently, NRC has not required EIS’ of ISL license applicants. Here, BIA, as the trustee for Navajo lands, pursuant to its own regulations requiring an EIS in connection with any lease of Navajo territory, required that an EIS be prepared as a part of its

¹ “Economic and environmental implications of leakage upon in-situ uranium mining,” Popielak, R.S. and Siegel, J., “Mining Engineering,” August 1987 at 804 (attached hereto as Exhibit 1).

² See , Pelizza Affidavit at 1, attached hereto Exhibit 2.

³ Id.

⁴ See, e.g., HRI’s Waste Disposal Brief.

standard procedure for approval of HRI's application to lease Unit 1. As discussed in greater detail in the Affidavit of Mark Pelizza⁵, HRI proposed to NRC that the EIS to be generated in conjunction with the Unit 1 lease application be expanded to provide a more detailed environmental evaluation of the entire Crownpoint Uranium Project ("CUP").

2. NRC took a "hard look" at the environmental consequences of the proposed Crownpoint Uranium Project.

- a. All reasonably foreseeable environmental consequences potentially associated with this project were evaluated.

HRI generated Environmental Reports and Technical Reports detailing, for each of the proposed mining sites, all reasonably foreseeable environmental consequences potentially associated with the project on each site. Information pertaining to ISL technology and the types of environmental impacts reasonably to be anticipated did not differ significantly from location to location, as the mining technology would not differ from one location to another. Of course, certain site specific information differed between sites separated by significant distances. Various regulatory agencies submitted requests for additional information ("RAIs") requesting information in addition to HRI's initial submittals. HRI responded to each of these requests.

The Bureau of Indian Affairs ("BIA"), Bureau of Land Management ("BLM") and the NRC collaborated in reviewing the materials submitted by HRI. These agencies sponsored scoping meetings and solicited public comments on the proposed CUP. In October 1994, these agencies jointly published the Draft Environmental Impact Statement ("DEIS") for the CUP. Hundreds of comments were received in response to

⁵ See Pelizza Affidavit at 2, attached hereto as Exhibit 2.

the DEIS. These comments were cataloged and responded to by the regulatory agencies.
See FEIS, Appendix A.

The FEIS, issued by the NRC in cooperation with the BIA and the BLM and published in February 1997, reevaluated the proposed license on the basis of comments received on the DEIS and in light of additional information that was generated subsequent to the issuance of the DEIS. In the course of this process, the regulatory agencies made numerous additional requests for information from HRI and HRI promptly responded to those requests. The final document consists of more than 300 pages, 30 figures, more than 70 tables, and voluminous data evaluating potential impacts to air, soil, surface waters, ground waters, ecology, land use, socioeconomics, aesthetics, cultural resources, health physics, and environmental justice. Close scrutiny of the FEIS makes clear that the regulatory agencies did indeed take a "hard look."

- b. The Presiding Officer previously reviewed the FEIS and deemed it adequate.

The Presiding Officer in this proceeding, Judge Peter B. Bloch, ruling on waste disposal issues after briefing by the Parties, considered Intervenors' assertions regarding the adequacy of the FEIS:

As the Staff argues, the FEIS has not been brought seriously into question by the arguments of the Intervenors. Page 30 of the Staff Response declares:

The 1997 FEIS contains over 250 pages of analysis, not including appendices. Even if all of the criticisms offered by ENDAUM and SRIC regarding the FEIS (*see* SRIC Disposal Brief at 38-53) were valid (which, as discussed below, they are not), their arguments would fall far short of establishing that the NRC failed to take the "hard look"

required by the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321 *et seq.* (NEPA).

Indeed, I have reviewed the FEIS carefully and I am impressed by its attention to technical detail and its thoughtful consideration of environmental risks. Intervenor has failed to demonstrate any significant deficiencies.

Hydro Resources, Inc., LBP 99-1 (February 3, 1999) (emphasis added). This was an accurate assessment of the FEIS on February 3 and remains an accurate assessment today. The FEIS prepared by NRC Staff in this matter is a thorough and thoughtful document that provides more information and more analytical detail than is warranted by the minimal risk associated with ISL mining.

3. NRC determined that the potential environmental consequences from the CUP were minimal.

The FEIS evaluates four alternatives: Alternative 1 (the proposed action), Alternative 2 (proposed action with modifications), Alternative 3 (NRC-staff recommended action, essentially the proposed action with additional health and safety measures required), and Alternative 4 (no action) and evaluates the potential environmental impacts associated with each alternative. NRC Staff based its evaluation on NEPA, as amended, and on NRC's "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions" (10 C.F.R. Part 51). FEIS at xxi.

NRC Staff concluded, after more than three years of study, that environmental/health and safety impacts from the staff-recommended proposal (Alternative 3 – the proposed action as modified by additional, staff-imposed groundwater requirements) were negligible or non-existent. FEIS at Sections 4.1-4.8. Specifically, the FEIS recites NRC Staff conclusions that air, soil, surface water and land use would endure no significant impacts from the project, and that groundwater, though

potentially subject to significant impacts, would suffer no ongoing impacts due to required mitigation measures. Id. As discussed immediately above, Presiding Officer Bloch previously in the course of this proceeding has noted his own careful scrutiny of the FEIS and has found that the thorough analysis set forth therein satisfies NEPA.

B. Intervenor Mischaracterize the Factual Record and Offer Baseless Speculation Regarding Project Costs and Benefits.

By their seventy-six page brief, Intervenor assert essentially this: the Environmental Reports (“ER”) issued by HRI and the FEIS issued by NRC Staff were, in Intervenor’s eyes, inadequate because either they omitted consideration of every conceivable occurrence of nature or humanity that may ever transpire or because the consideration given declined to employ the same variables that Intervenor would have employed. Intervenor’s arguments “fall far short of establishing that the NRC failed to take the “hard look” required by NEPA.” See Hydro Resources, Inc., LBP-99-1 (February 3, 1999) at 11.

1. An EIS was not required for this project.

At page 18 of their brief, Intervenor begin their argument with the misstatement that an EIS was required for this project “because it is a major federal licensing action that will significantly affect the quality of the human environment” Brief at 19. Intervenor go on to say, “HRI’s project will significantly affect the quality of the human environment by imposing a large industrial complex on a rural, agricultural community. . . .” Id. (emphasis added). These statements are ludicrous and are completely consistent with the manner in which Intervenor mischaracterize the facts throughout their brief. As discussed above, ISL uranium extraction is not considered a “major federal licensing

action that will significantly affect the quality of the human environment.” In fact, since approximately 1982, after gaining some experience with ISL mining, NRC determined that ISL mining was not a major federal action that would significantly affect the environment and, consequently, NRC has not required an EIS in conjunction with any ISL license application since. Characterizing HRI’s proposed CUP as “a large industrial complex” is quite amazing. The entire project consists of a 7800 square foot building at Church Rock to house the ion exchange unit, existing structures at Crownpoint for processing, monitoring wells outside of the production areas (which can be grazed around) and up to six acres of ponds for water retention and evaporation.⁶

2. The statement of purpose and need is adequate.

Intervenors’ complaint regarding the sufficiency of NRC’s “statement of purpose and need” seems an attempt to create an issue where none exists. Brief at 20-23. The NRC’s primary purpose in reviewing license applications is not to determine the economic, business, or other “validity” of the proposed project; NRC’s primary purpose is its “health and safety mission” Speech of NRC Chairman Jackson, October 26, 1998. “[T]he NRC input to a domestic energy strategy also is focused, not on promoting or discouraging the role of nuclear power as part of the domestic energy mix, but rather on ensuring safety in the civilian use of nuclear energy.” Speech of NRC Chairman Jackson, November 6, 1998. NRC Staff stated NRC’s regulatory purpose for its proposed action of issuing HRI a license and the need for NRC action as “to fulfill its

⁶ It bears mention that Intervenors’ statement “[T]he FEIS acknowledges the project will have significant impacts on the environment” (Brief at 19) also is not quite accurate. Review of the sections cited by Intervenors reveals that those sections discuss circumstances in which the project could have impacts if certain contingencies were to occur.

statutory responsibility to protect public health and safety and the environment in matters related to source nuclear material.” FEIS at 1-3. This is the purpose and need for NRC’s action. NRC is not required to evaluate U.S. or world uranium markets and/or assess the geopolitical implications of uranium production when issuing a license.

Intervenors’ complaint regarding HRI’s Environmental Reports is similarly misplaced. 10 C.F.R. § 51.45(b) states that the “environmental report shall contain a description of the proposed action, a statement of its purposes, a description of the environment affected” § 51.45(c) states that the “environmental report shall include an analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects.” The environmental reports generated by HRI comply with these requirements.

3. The cost-benefit analysis is adequate.

Pages 23 through 56 of Intervenors’ Brief complains that the cost-benefit analyses done in support of the project are inadequate. In support of their argument, Intervenors cite the LES case: “[M]isleading information on the economic benefits of a project, therefore, could skew an agency’s overall assessment of a project’s costs and benefits, and potentially ‘result in approval of a project that otherwise would not have been approved because of its adverse environmental effects.’” Brief at 23, citing LES, 47 NRC 77, 89, quoting Hughes River Watershed Conservancy v. Glickman, 81 F. 3d 437, 447-448 (4th Cir. 1996).

Most of what Intervenors have to say on this subject they have said, at length, previously. See, e.g., Intervenors' Brief on Financial and Technical Qualifications. As before, Messrs. Sheehan and Osterberg share their considered opinions regarding the future of supply and demand in world uranium markets. Mr. Osterberg (Brief at 28-36), in particular, offers a host of projections and predictions regarding the supply, demand, and pricing of uranium (id.); this, in some contrast to the expert opinions offered by Mr. Osterberg in LES, where the Commission's opinion notes: "[I]n actuality, much testimony in the record, particularly the testimony of CANT's expert, David E. Osterberg, stresses the inherent unpredictability of future market conditions and prices." LES, 47 NRC 77, 94 (citations to record omitted).⁷

The point, as Mr. Osterberg was candid enough to make in LES, is that the uranium market, perhaps more so than many commodities markets, is difficult to predict; projections are educated best guesses. Mr. Osterberg, himself, points out that projections rendered only a few years ago have generally proven inaccurate. Brief at 32. As was no doubt evident from Intervenors' and HRI's briefs on Financial and Technical Qualifications and the supporting affidavits of Messrs. Sheehan and Osterberg and Mr. Card, the parties' projections, based on essentially identical data, diverge by nearly 180 degrees. HRI submits, however, that any controversy regarding the "calculation" of project benefits can be reduced to two critical points: first, if HRI's projections prove

⁷ Mr. Osterberg now testifies that "the level of government intervention in the uranium market has declined, leading the market forces of supply and demand to have a predictable effect on uranium prices. Brief at 26, citing Osterberg Testimony at 36. Mr. Osterberg's expertise on the extent of government intervention in U.S. and/or international uranium markets is not apparent, nor is the justification for or the particular facts allegedly supporting this statement.

correct, then the benefits anticipated by the FEIS, including maintaining a viable domestic uranium supply, contributing to relatively clean generation of electricity, creating jobs, particularly for economically disadvantaged Navajo, and generating royalties and additional tax revenue, will be borne out and a significant public, as well as private, benefit will be realized. If Messrs. Sheehan and Osterberg are correct, and “operating costs of the project will exceed revenues, in this depressed uranium market, precluding any profits for HRI for the foreseeable future,” and “there is no need for additional uranium supply,” then Intervenors’ complaints become moot: any alleged harm to be weighed against the non-existent benefits will not occur because HRI will not go forward with the project. As has been stressed repeatedly throughout this proceeding, HRI will not (and cannot) go forward with this project so long as market conditions preclude profitable uranium recovery.

The second point is that the FEIS is intended to weigh reasonably anticipated benefits against reasonably foreseeable costs to determine if the project benefits outweigh the costs. Where, as here, the reasonably foreseeable project environmental costs are minimal and/or “the potential significant impacts of the proposed project can be mitigated,” then the quantum of benefit necessary to outweigh such costs is correspondingly small. Moreover, NRC, cognizant of the difficulties inherent in trying to predict uranium markets and the impracticality of a strictly formulaic approach, has stated that this ratio need not be proven with mathematical precision. “In short, the Board’s price projections reflect not ineluctable truth, but rather a plausible scenario . . . Giving disproportionate significance to the Board’s numerical price projections could prove misleading. ‘The appearance of precision . . . tends to divert scrutiny from the

difficult judgmental decisions involved in performing an accurate cost-benefit analysis and, specifically, in determining whether a genuine need for the facility exists.”⁸ LES, 47 NRC 77, 94, quoting Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-179, 7 AEC 159, 172 (1974).

a. The benefits of the CUP are described adequately.

The FEIS devotes five pages to discussing the benefits of the proposed CUP. FEIS at 5-1 – 5-6. Admittedly, the FEIS’ assessment of project benefits incorporates relatively optimistic assumptions regarding the market price of uranium. As discussed in the Affidavit of Joe Card attached to HRI’s Brief on Financial and Technical Qualifications, however, the price assumptions in the FEIS are within the range of those projected by reputable industry sources. See Affidavit of Joe Card, attached to HRI’s Financial and Technical Qualifications Brief.

The FEIS observes that, as a private venture, HRI’s proposed project would not “have a direct public purpose.” FEIS at 5-1. The FEIS goes on to state that the project would provide a domestic source of uranium which would be used to generate electricity and thus provide a public benefit. Id. Noting that “the viability of the (uranium mining) industry is a Federal concern and that there is a public interest in the uranium supply,” the FEIS concludes that the proposed project would have the public benefit of helping to offset a domestic supply deficit estimated at more than 30 million pounds annually. Id.

⁸ The NEPA statute does not mandate a cost-benefit analysis, however, NEPA is generally regarded as calling for some sort of weighing of the environmental costs against the economic, technical or other public benefits of a proposal. See e.g., Idaho By and Through Idaho Public Utilities Commission v. ICC, 35 F.3d 585, 595 (D.C. Cir. 1994). “The EIS need not, however, . . . contain a formal mathematical cost benefit analysis.” LES, 47 N.R.C. 77, 88; see also, Sierra Club v. Lynn, 502 F.2d 43, 61 (5th Cir. 1974) (“NEPA

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As related in the Affidavit of Mr. Card, industry sources estimate annual worldwide consumption at approximately 160 million pounds and annual worldwide production at 100 million pounds, leaving an annual deficit of 60 million pounds (or 30 million pounds more than estimated in the FEIS) to be filled by inventory on hand or new sources. Id. Thus, the public benefit of a stable domestic uranium industry and supply and the national security and relatively clean electricity provided thereby arguably are underestimated by the FEIS.

Intervenors devote pages 36-44 of their Brief assailing the “secondary” benefits of the CUP assessed in the FEIS. As they often do, Intervenors construct a house of cards on shaky premises:

There is no need for additional uranium supply. All that is left in the FEIS is its asserted secondary benefits of taxes, royalties and jobs. These secondary socioeconomic benefits alone cannot be used to outweigh environmental costs. LES 2, 47 NRC at 100. LES 2 overrules the line of appeals board cases that banned consideration of socioeconomic benefits, but affirmed Vermont Yankee’s holding that the agency should not find secondary benefits alone outweigh environmental costs. (citation omitted). Since there is no economic or technical need for HRI’s proposal, the socioeconomic benefits listed in section 5 cannot serve to justify licensing the project. Moreover, the Staff bases its conclusions about secondary benefits on many erroneous assumptions.

Brief at 36-37. First, Intervenors portray as fact their opinion that additional uranium supply is unneeded; this opinion, however, is not shared by HRI, NRC Staff, or other

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does not demand that every federal decision be verified by reduction to mathematical absolutes for insertion into a precise formula”), cert. denied, 422 U.S. 1049 (1975); 40 C.F.R. § 1502.23.

persons who actually work in the uranium and/or nuclear power industry. See FEIS at 5-1; Affidavit of Joe Card, attached to HRI's Brief on Financial and Technical Qualifications. Thus, the "secondary" benefits of taxes, royalties and jobs are in addition to the benefit of offsetting projected shortfalls in domestic uranium supply. Next, contrary to Intervenor's characterization, LES does not expressly "affirm() Vermont Yankee's holding that the agency should not find secondary benefits alone outweigh environmental costs." Brief at 36. Rather, in LES the Commission stated:

NEPA does not bar an examination of secondary benefits. Indeed, a CEQ guideline suggests their consideration, as do our own regulations. (citation omitted).

....

The Board does not seriously contend otherwise, but felt bound by a series of reactor decisions issued by our Appeal Board in the 1970s that arguably disclaimed authority to consider secondary benefits under NEPA. (citation omitted). These cases apparently rested on the proposition that an agency ought not find that a nuclear power reactor's benefits outweigh its environmental costs on the sole ground that it would create local jobs and tax revenues. See Vermont Yankee, ALAB-179, 7 AEC at 177. . . . In recent years several NRC environmental impact statements for materials facilities have included discussion of socioeconomic benefits, particularly when a particular project also involves socioeconomic costs (n.17. For example, the cost-benefit analysis in the recent FEIS for the Crownpoint Uranium Solution Mining Project, NUREG-1508 (Feb. 1997) at 5-1 through 5-6, details expected effects on employment, income, and tax revenues.). Insofar as some early Appeal Board cases might suggest a blanket prohibition against considering such benefits, we hereby overrule them.

In sum, we hold that a NEPA cost-benefit analysis, for either reactor or nonreactor facilities, appropriately may consider and balance socioeconomic effects, both negative and positive.

LES at 47 N.R.C. 77, 99-100. Thus, Intervenors' assertion that "secondary benefits alone cannot be used to outweigh environmental costs" arguably oversells the holding in LES. Moreover, Intervenors' opinion that the CUP is without public benefit, as discussed above, is mistaken. As reflected in the FEIS, the CUP is justified both by its primary and its secondary benefits.

Intervenors also take issue with each component of the asserted benefits, arguing that the "FEIS presumes an unreasonable production level," "an unreasonable price per pound," "unreasonable production costs," and inflated employment, royalties, and tax revenues. Intervenors' Brief 37-45. As has been discussed above and in HRI's Brief on Financial and Technical Qualifications, Intervenors' arguments regarding the valuation of benefits derived from the CUP rest entirely on the speculation of Messrs. Sheehan and Osterberg, neither of whom possess any experience in the uranium recovery industry beyond selling their opinions. As discussed above, to the extent that the CUP is likely to impose environmental harms (which NRC Staff (in the FEIS) and others expert in the field (in published papers) have deemed negligible and amenable to mitigation), those will occur only in tandem with the benefits described in the FEIS. If Sheehan and Osterberg have guessed correctly that this project cannot be profitable, then the project will not proceed and there will be no costs or benefits. If market conditions warrant going forward, then HRI will seek maximum production and the assumptions set forth in the FEIS are reasonably anticipated.

Intervenors' complaint that the FEIS employed an unreasonable price per pound (Brief at 38) is answered simply: the FEIS assumed the spot price per pound applicable

at the time the FEIS was being written. FEIS at 5-2. The spot price changes at least weekly and may move higher or lower at any time.

Intervenors' complaint that the FEIS employs unreasonable production costs (Brief at 39) likewise does not withstand much scrutiny. Intervenors rely principally on Sheehan Testimony to support this claim, but Sheehan's analysis again assumes that the price of uranium does not go up. As the price of uranium rises, the value of HRI's in-situ resource increases and more favorable long-term contracts become available. These factors allow HRI to attract investment capital at far more favorable rates than would be the case at the prices assumed by Sheehan. Again, the bottom line is this: HRI will only go forward with this project when it is profitable to do so. Intervenors' guesses about the uranium market and HRI's production costs essentially are irrelevant.

Intervenors argue that the FEIS' assessment of employment-related benefits is unreasonable because of its assumptions regarding the number of jobs created and the wages to be paid. Brief at 40. Intervenors point to the fact that HRI pays lower wages in Texas as evidence that the projected wage rates for New Mexico are unreasonably inflated. Id. Intervenors fail to recognize that the cost of living generally is higher in New Mexico (e.g., New Mexico has a state income tax). HRI's projected wage rates for the CUP reflect this fact. The projected total number of jobs created assumes projected profitability resulting in up to 150 full time positions. See FEIS at 4-96. Once the CUP is economically viable, employment will proceed as described in the FEIS. See Affidavit of Mark Pelizza at 3.

Intervenors' arguments regarding the Navajo Preference in Employment Act are irrelevant to HRI's private venture. Nevertheless, HRI has committed to hiring from the local Navajo community to the extent possible. FEIS at 4-96. HRI has developed a working relationship with the Crownpoint Institute of Technology and plans to use skilled local graduates as employees. See Affidavit of Mark Pelizza at 4.

Intervenors also take issue with the FEIS' projections for royalty payments and tax revenues resulting from the CUP. Brief at 42-45. Again, these benefits are based on projections assuming profitable operations. If uranium production cannot be conducted profitably, then HRI will not develop the CUP and discussion of benefits and costs becomes pointless. Intervenors' argue that specific taxes estimated in the FEIS may be miscalculated and that "local residents do not enjoy the full benefit of New Mexico state taxes." Brief at 44. Intervenors' arguments are difficult to fathom.

First, the FEIS, at page 3-63, states clearly that "The assessed value of uranium production for tax purposes is 50 percent of the sales price. . . . [M]ining property is taxed at 50 percent of the sales value of the ore. Additionally, this section of the FEIS states that "McKinley County receives a 0.25 percent gross receipts tax revenue as part of the gross receipts tax on goods and services collected by the State. . . . The Navajo Nation can levy taxes in an area outside the Navajo Reservation if the area is classified as being in 'Indian country.' Navajo taxes include a 5 percent business activities tax on business gross receipts. . . . This tax could be levied on uranium production off the Navajo Reservation if the production is determined to occur in 'Indian country.' . . . The State of New Mexico levies a 3.5 percent severance tax and a 0.75 percent natural resources tax on the sales price of uranium. . . . The town of Crownpoint receives public finding from

the Federal government, the Navajo Nation, the State of New Mexico, and McKinley County. For example, the Crownpoint Indian Health Care Facility is funded by the Federal government, water and wastewater services and police protection are provided by the Navajo Nation, and public education is provided by the State of New Mexico and McKinley County.” Id. The point is, the local population enjoys some tax revenue from each of the taxing authorities and each of the taxing authorities will or may be able to levy taxes on some portion of the CUP. Though Intervenors allude to the possibility of mistaken calculations, they are somewhat vague about exactly what about the FEIS calculation is mistaken. In any event, Intervenors do not seem to dispute that the local population is likely to enjoy some amount of tax revenue from the CUP; in light of the minimal environmental costs and the courts’ rejection of precise mathematical calculations under NEPA (see page 15, supra.), Intervenors’ argument is insufficient to invalidate the FEIS.

4. The FEIS adequately evaluates the environmental costs of the proposed CUP.

Intervenors argue at length that the FEIS underestimates the environmental costs of the proposed CUP. Brief at 45-54. More specifically, Intervenors assert that “[T]he FEIS appears to cut off its discussion of environmental costs. . . .” and suggest that the EIS fails to “‘consider and weigh’ environmental impacts and the mitigation alternatives available to reduce or avoid adverse environmental effects.” Brief at 45 (citation omitted). Intervenors then proceed to rehash, in summary form, the same arguments they previously have expounded at length regarding their views on alleged groundwater impacts (id. at 46), land use impacts (id. at 50-51), radioactive air emissions (id. at 51),

liquid waste disposal (id. at 51-52), cultural resource impacts (id.), and health impacts (id. at 52-53). Intervenors have fully briefed each of these concerns during the course of this proceeding. HRI does not believe that this presentation is intended to provide Intervenors the opportunity to relitigate issues that previously have been subjected to hundreds of pages of briefing and affidavit testimony. HRI believes that the FEIS' 127 pages devoted to evaluating environmental impacts adequately addresses all reasonably foreseeable environmental impacts. The FEIS concludes that the only "potential significant impacts of the proposed project (i.e., potential groundwater impacts) can be mitigated. . . ." FEIS at xxi.

Mindful that "Congress did not intend to mandate perfection, or intend 'for an impact statement to document every particle of knowledge that an agency might compile in considering the proposed action,'" (see p.5, supra.), HRI submits that the FEIS' assessment of environmental impacts withstands the scrutiny NEPA requires. Presiding Officer Bloch previously has so opined. See page 9, supra.

5. The FEIS and the ER's address the range of action alternatives and the no action alternative.

Intervenors allege that action alternatives and the no action alternative are inadequately evaluated. Brief at 56-60. Specifically, Intervenors suggest that additional alternatives should have been considered, focusing on the FEIS' failure to consider blending down HEU, which apparently is Intervenors' preferred alternative. Brief at 58. Intervenors make the case, and submit the statement of a Dr. Makhijani in support thereof, that blending down HEU would provide reactor fuel similar to the new yellowcake to be generated by the CUP, but in a more environmentally manner.

Intervenors also volunteer that blending down HEU will promote global security. Brief at 58-59. Intervenors' claims are speculative and are without merit.

First, NEPA does not require NRC to ferret out and evaluate every conceivable alternative, but merely to weigh all of the reasonable alternatives. See, e.g., Strycker's Bay Neighborhood Council v. Karlen, 444 U.S. 223, 227-28, 62 L.Ed. 2d 433, 100 S. Ct. 497 (1980); Davis v. Latschar, 1998 U.S. Dist. LEXIS 21086 (D.D.C., December 31, 1998). The agency must include only those environmental alternatives that are readily identifiable by the agency considering the time and resources available to complete the EIS. See Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827, 837 (D.C. Cir. 1972). The agency has discretion to decide when the information it has is sufficient to authorize a license. See State of Alaska v. Andrus, 580 F.2d 465 (D.C. Cir. 1978).

These cases are consistent with the understanding that the agency must make decisions while discounting remote or speculative possibilities. See id. The myriad national security geopolitical considerations that must be included in any reasoned comparison of this alternative to the chosen alternative cannot practically be considered in an FEIS. Moreover, such issues are well beyond NRC's jurisdiction; even if NRC were inclined to examine this alternative, it practically lacks the information access necessary to do so.

Finally, as HRI has raised so many times throughout this proceeding, Intervenors allude to the possibility that various environmental harms may be occasioned by this ISL project, but are unable to articulate any environmental harm, not readily remediated, that is reasonably likely to occur. HRI's sister company, URI, has operated in Texas for

nearly 20 years with a clean bill of health from the Texas regulatory agencies and consistent findings of no significant regulatory noncompliance and no significant environmental impacts. See, e.g., HRI's Brief on Financial and Technical Qualifications. For all of Intervenor's speculation about what environmental impacts might result from the proposed ISL project, they remain unable to point to any significant impact of ISL uranium recovery or to articulate any significant impact reasonably likely to result from the proposed project.

Intervenor complains that the no action alternative was not adequately addressed. Brief at p. 60. Even Intervenor cannot find much to say about this issue. They claim that "[t]he FEIS fails to explain the environmental benefits of the no-action alternative." Id. "The extent of the 'no-action' discussion is governed by a 'rule of reason.'" LES, 47 N.R.C. 77, 97; quoting Citizens Against Burlington, Inc. v. Busey, 938 F. 2d 190, 195 (D.C. Cir.), cert. denied, 502 U.S. 994 (1991). Courts have determined that there often is not much to say about the subject (a two-paragraph discussion is adequate where there was not much to say about the alternative; Farmland Preservation Association v. Goldschmidt, 611 F. 2d 233, 239 (8th Cir. 1979). Here, the no action alternative was addressed in such summary fashion. FEIS at 4-63. Because there are potentially an unlimited number of alternatives to most proposed facilities, general treatment of some is appropriate provided the EIS has taken the requisite "hard look" when the EIS is considered in its totality. See Strahan v. Linnon, 967 F. Supp. 581 (D. Mass. 1997).

NRC Staff was not required to supplement the DEIS or the FEIS nor to recirculate them for public comment.

Supplementation is governed by 10 C.F.R. § 51.72. ENDAUM and SRIC rely on § 51.72(a)(2) claiming that the FEIS contains “significant new circumstances or information” not included in the DEIS, thereby requiring supplementation and recirculation. Intervenors have failed to show that “significant new circumstances or information” required supplementation of the DEIS or the FEIS in this instance.

The standard for whether a supplemental EIS is required is based on the same “rule of reason” and “hard look” standards that are required for an EIS in the first instance. The policy behind the EIS process is to ensure that “the agency will not act on incomplete information only to regret its decisions after it is too late to correct.” See Marsh v. Oregon Natural Resources Council, 490 U.S. 360 (1989). The type of changes in a project that would trigger the need for supplementation and recirculation are those that will affect the quality of the human environment in a significant way that was not already considered. See id.

In Marsh, the Court acknowledged a policy first mentioned in Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc., 435 U.S. 519 (1978), that balances the need to ensure a FEIS reflects current information with the inevitable fact that any agency decision may not reflect the most current information. See Vermont Nuclear Power, at 554-555. “Not every change requires [a supplemental EIS]; only those changes that cause effects which are significantly different from those already studied require supplementary consideration.” Davis v. Latschar, *supra.*, 1998 U.S. Dist. LEXIS 21086 at *24; quoting Corridor H Alternatives, Inc. v. Slater, 982 F.Supp. 24, 30 (D.D.C. 1997).

Intervenors do not explain how the changes in the FEIS are different from the DEIS. They merely list the differences without demonstrating how the changes are significant. In their brief there is no connection drawn between the changes in the HRI project and any significant effect on the quality of the human environment beyond what has already been considered. Intervenors state that “the fact that the HRI license is to be a performance-based license . . . constitutes a substantial change in the proposed licensing action. . . .” Brief at 62-63. Intervenors make no attempt to explain why this is so.⁹ Intervenors state that action alternatives change from the DEIS to the FEIS and that this requires supplementation, noting that an alternative not evaluated in the draft “may be adopted in a final EIS, without further public comment, only if it is ‘qualitatively within the spectrum of alternatives that were discussed’ in the prior draft; otherwise a supplemental draft is needed.” Brief at 64-65, quoting DuBois v. United States Department of Agriculture, 102 F.3d 1273, 1292 (1st Cir., 1996).

Though Intervenors struggle valiantly to distinguish the two, the recommended alternative 3 in the FEIS clearly is “qualitatively within the spectrum” of alternative 2 in the DEIS. Both alternatives are essentially HRI’s proposed ISL project with a series of additional health and safety requirements imposed by NRC Staff. Intervenors fail to show how the recommended alternative is likely to “cause effects which are significantly

⁹ To the extent that Intervenors attempt to show how the performance-based license term is significant, HRI has addressed, at length, the merits of this position. See HRI’s Brief on Performance Based Licensing.

different from those already studied” in connection with DEIS alternative 2. Davis v. Latschar, supra., at *24.¹⁰

6. The FEIS adequately evaluates the impacts and consequences of the proposed mitigation measures.

Intervenors allege that the FEIS does not adequately evaluate impacts and consequences of proposed mitigation measures. Brief at 73. Specifically, Intervenors are unhappy with the detail of the evaluation provided for moving the Crownpoint water supply and allege that mitigative measures for land use impacts have negative socioeconomic impacts. Id. at 73-75. Intervenors’ criticism is misplaced.

Well locations and operational specifics cannot be discussed in the FEIS because they cannot be known until well-siting actually is underway. Should this become necessary (i.e., should HRI decide to develop the Crownpoint mine zone), specific well locations will be surveyed and appropriate well specifications developed. Whatever the precise well locations, the FEIS does state that the replacement wells must “provide the same quantity of water. The new wells shall be located so that the water quality at each individual well head would not exceed EPA primary and secondary drinking water standards and a concentration of 0.44 mg/L uranium” FEIS at 4-62. The FEIS also states that well placement will be coordinated with all relevant federal and Navajo regulatory agencies. Id. HRI’s license incorporates these performance requirements. LC 10.27 requires that “[T]he new wells shall be located so that the water quality at each

¹⁰ Intervenors also devote four pages (Brief at 69-73) to discussing why the change in mining sequence between Section 8 and Section 17 allegedly is significant. This issue has been discussed, at length, in HRI’s briefs on groundwater impacts and on financial and technical qualifications. **Lisa – please dig out the page cites.** As discussed previously, this is a non-issue; mining sequence typically is not even addressed until detailed mining plans are drawn well after license issuance.

individual well head does not exceed the EPA's primary and secondary drinking water standards, **and** does not exceed a concentration of .44 mg/l (300 pCi/l) uranium, as a result of in situ leach uranium extraction activities at the unit 1 and Crownpoint sites. To determine the appropriate placement of the new wells, the licensee shall coordinate with the appropriate agencies and regulatory authorities, including BIA, NTUA, the Navajo Nation Department of Water Development and Water Resources, and the Navajo Nation EPA." LC 10.27 (emphasis added).

Intervenors' complaints that analysis of other mitigative measures is deferred and that land use mitigative impacts have negative socioeconomic impacts (Brief at 74-75) are speculative and somewhat misleading. In fact, the only example Intervenors offer of a "deferred" analysis of a mitigative measure is that HRI has not yet submitted a surety plan; Intervenors cite their financial assurance brief as support for this argument. Brief at 74. Intervenors' only example has previously been fully briefed by the parties and this Presiding Officer has determined that Intervenors' arguments were invalid or insufficient. See Partial Initial Decision on Financial Assurance, LBP-99-13 (March 9, 1999).

Intervenors' final argument, that the mitigative measures for land use impacts have negative socioeconomic impacts (Brief at 74-75). The only almost-specific example of such an impact cited by Intervenors is the suggestion that the CUP may somehow interfere with the abilities of Larry J. King and Mitchell Capitan to graze livestock. Brief at 75.¹¹

¹¹ Strangely, Intervenors do not actually claim that anyone is going to be harmed in any particular way by any aspect of the CUP. Rather, Intervenors state, without any specifics or any

Footnote continued on next page

The FEIS notes that potential impacts to land would be short-lived, consisting primarily of interference with grazing rights. FEIS at 4-118. The FEIS also notes that grazing rights permittees can be compensated for such temporary interference. Id. To the extent that Intervenors suggest that land use impacts are environmental justice issues (Brief at 75), such issues are addressed at length in HRI's Brief on Environmental Justice Issues filed this day.¹²

7. The FEIS Adequately Addresses Cumulative Impacts.

Defendant agrees with the Intervenors that, in conducting an EIS, NRC must evaluate the cumulative impacts of any license it grants. "Cumulative impact" is

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7. However, contrary to the assertions of Intervenors the FEIS adequately addresses the environmental impact of all past, present and reasonably foreseeable future actions on the site, whether federal, state, local or private activities. As such, both the cumulative impacts analysis and the FEIS as a whole are more than adequate.

Footnote continued from previous page

support, that "monetary compensation will not replace the social fabric torn by relocation" and that Messrs. King and Capitan "state that their lives would not be complete or 'free' without owning livestock." Brief at 75 (quoted word in original). These vague statements defy response and state no inadequacy of the FEIS.

- a. The cumulative impacts of the proposed Crownpoint project are adequately analyzed in the environmental impact statement.
 - (1) NRC Staff performed a meaningful cumulative impacts analysis of the proposed action.

NEPA requires “a meaningful cumulative-effects study” identifying:

(1) the area in which effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions – past, proposed, and reasonably foreseeable – that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate.

See Cabinet Mountains Wilderness/Scotchman’s Peak Grizzly Bears v. Peterson, 685 F.2d 678, 683-84 (D.C. Cir. 1982).

NRC Staff prepared a meaningful cumulative effects study. First, NRC Staff have clearly identified the areas in which the proposed project will be felt. The FEIS clearly describes the Church Rock site and outlines the total acreage that could be affected on the basis of past, present, and future activities. See e.g., FEIS ¶ 4.13.2. Secondly, NRC Staff have stated fully all of the impacts that are to be expected due to the proposal – the FEIS covers a significant breadth of cumulative impacts issues as it describes the potential cumulative impacts to air, geology and soil, groundwater, surface water, transportation

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¹² Mr. Capitan holds no grazing rights on HRI property. King holds a grazing permit on land including property for which HRI holds a surface use agreement with the Navajo Nation. Mr. King obtained his permit subsequent to the surface use agreement.

risk, health physics and radiological impacts, ecology, land use, socioeconomics, aesthetics, cultural resources, and environmental justice. See FEIS ¶ 4.13, pp. 4-120-127. Furthermore, NRC Staff considered a variety of other past, proposed and reasonably foreseeable actions that have or may impact the site – such as “ISL uranium mining; road construction and maintenance; irrigation, farming, and livestock grazing; urban and residential development; and State, Federal, and Tribal management of land, water and wildlife.” FEIS ¶ 4.13, p. 4-120. Finally, NRC Staff have evaluated the overall impact of potentially accumulating individual impacts. FEIS 4.13. In sum, NRC Staff have found that there are no adverse cumulative impacts from the proposed Project.

- (2) The cumulative radiological and health effects of the project are analyzed adequately in the FEIS.

Contrary to the assertions of the Intervenors, the FEIS adequately addresses the cumulative radiological and health effects of the Project. In fact, the FEIS adequately accomplishes each and every task Intervenors claim deficient. First, it presents an accurate and sufficient account of the history of uranium mining in the region. FEIS 4.13.6 (detailing the long history of uranium mining in New Mexico). It also contains adequately detailed information concerning existing and continuing radioactivity at the site, specifying that early mills resulted in large exposures to radioactivity but noting that the proposed activities will cause less significant releases of radioactivity. FEIS 4.13.6 at p. 4-124-25. It properly evaluates the health impacts of past uranium mining; and it provides an accurate picture of the impacts that the Project would have on radiation levels in the area. FEIS 4.13.6 at p. 4-124-25 (noting that the Project would make a minor contribution to cumulative impacts in terms of health physics and radiological impacts).

Therefore, the FEIS Health and Radiological Effects section of the cumulative impacts analysis satisfies NEPA.

- (3) The cumulative impacts of the project are adequately analyzed in the FEIS.

Despite Intervenor's contrived complaints regarding the groundwater cumulative impacts analysis, the FEIS analysis is sufficiently thorough to satisfy the "hard look" requirements of NEPA. The FEIS contains a substantial cumulative impacts groundwater analysis. FEIS 4.13.3 pp. 4-121-23. First, it adequately represents the impacts of past mining activities on ground water – "past actions that have contributed to cumulative impacts on groundwater in the region include the underground uranium mining" FEIS 4.13.3 p. 4-123 (explaining in detail associated events that may have affected groundwater quality during and since the underground mining). It also accurately depicts the impacts of the proposed project, conceding that the project would make a significant contribution to cumulative impacts in groundwater in the region but recognizing that license conditions imposed by NRC would mitigate these potential impacts. FEIS 4.13.3 pp. 4-121-22. Because any potential impacts will be mitigated, there is no merit to Intervenor's charge that the combined impact of past and proposed activities on groundwater are not adequately addressed. Therefore, the FEIS Ground Water Effects section of the cumulative impacts analysis satisfies NEPA.

- (4) The FEIS adequately analyzes the cumulative effects of the project on cultural resources.

Again, despite Intervenor's repeated attempts to raise this issue, the Court has ruled previously that HRI's activities at Church Rock Section 8 will not result in any

significant impacts to cultural resources. See Partial Initial Decision (Issues Related to the National Historic Preservation Act (NHPA), and the Native American Graves Protection and Repatriation Act (NAGPRA), and Cultural Resources, 49 NRC _____, slip op. In any event, the FEIS states specifically that “significant effects to cultural resources are not likely to result from the project” because “cultural resource sites would be protected zones where no activity would be allowed.” FEIS, 4.13.3 p. 4-126. Moreover, leases would “preclude other activities at the project sites, so that no cumulative impacts would occur to cultural resources.” Id. at p. 4-126-27. Therefore, the FEIS section pertaining to the cumulative impacts on cultural resources analysis also satisfies NEPA.

- (5) The cumulative impacts of the proposed Crownpoint project’s disposal of liquid waste are adequately analyzed in the environmental impact statement.

As the Intervenors know, the Court has *also* ruled previously on this issue.

The FEIS sets forth an adequate analysis of socioeconomic and infrastructure cumulative impacts of the proposed project.

The FEIS considers the positive contribution to cumulative socioeconomic impacts that the project would have in the region, such as long-term employment, wages, and tax revenues. FEIS 4.13.9 p. 4-126. In addition, the FEIS specifies that no major adverse impacts to housing or local infrastructure will result. NRC Staff state that they are not aware of any other proposed project that could create additional cumulative *adverse* effects. FEIS 4.13.9 p. 4-126. To the extent that there is to be any additional mining, the Staff states clearly that such activity would result in additional similar

positive benefits. Id. Intervenor have presented no evidence of any adverse effect that would have any effect on the surrounding community or that would not be adequately remediated by HRI.

III. CONCLUSION

For the foregoing reasons, the FEIS for the Crownpoint Uranium Project is adequate as it evidences NRC's hard look at the impacts of the proposed project. Accordingly, the Presiding Officer should deny Intervenor's request for relief.

Respectfully submitted this 25th day of March, 1999.



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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before Administrative Judges:
Peter B. Bloch, Presiding Officer
Thomas D. Murphy, Special Agent

DOCKETED
USNRC

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OFFICE OF THE SECRETARY
RULEMAKING AND
ADJUDICATIONS STAFF

In the Matter of:)
)
)

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_____)

Docket No. 40-8968-ML
ASLBP No. 95-706-01-ML

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing documents, HYDRO RESOURCES, INC.'S RESPONSE TO ENDAUM AND SRIC'S BRIEF WITH RESPECT TO NEPA ISSUES CONCERNING PROJECT PURPOSE AND NEED, COST/BENEFIT ANALYSIS, ACTION ALTERNATIVES, NO ACTION ALTERNATIVE, NECESSITY TO SUPPLEMENT EIS, MITIGATION, AND CUMULATIVE IMPACTS, in the above-captioned proceeding were sent to the following by overnight mail on this 25th day of March, 1999.

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EXHIBIT I

Figure 5 shows the representation of a more complicated ventilation system (Krupinski, 1974) by isometric diagram. The system is a multishaft (multiopening) one, so nodes #1 and #34 were added. The canonical diagram for this ventilation network (created with computer assistance) is presented in Fig. 7.

As was mentioned previously, when the nodes have their coordinates assigned according to the pressure distribution in the mine, a canonical diagram can be used to plot the potential diagram of a given ventilation network. Figure 3 shows the potential diagram of the mine ventilation system in Fig. 1.

Using the techniques described here, together with an intelligent plotter, canonical diagrams can be used for data presentation, as shown in Fig. 8.

Conclusion

Canonical diagrams are another approach to representing a mine ventilation network. They offer a number of advantages over the currently used methods. The user of canonical diagrams can apply them as a starting point in:

- studying and planning ventilation networks;
- controlling and stabilizing the flows in MVN;

- planning effective and economic preventive measures for controlling the distribution of smoke;
- preparing and presenting data for further computer analysis of MVN.

By using the suggested method, the construction of network diagrams can be substantially simplified. Input data used by the authors is already available; no additional information is required to carry out necessary computations.

Mine ventilation services may use canonical diagrams as a tool to improve management of ventilation systems. ■

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Economic and environmental implications of leakage upon in situ uranium mining

R.S. Popielak and J. Siegel

Abstract — A computer model was used to simulate the effect of leakage through confining beds on a hypothetical in situ leach operation in an aquifer with a thin mineralized section. The simulations were used to assess economic and potential environmental implications of leakage on an in situ leach operation. Four scenarios were modeled — three representing cases with different degrees of confinement, and the fourth representing a stratified ore zone under a low degree of confinement. The model simulated the travel path and travel time of lixiviant given the hydraulic conditions prescribed in each scenario.

The results show that the travel path and travel times vary by about 10% for confinement ranging from nearly impermeable (essentially no leakage) to an extremely low level (thin confinement with a permeability about equal to that of the aquifer) for isotropic aquifer conditions. The aquifer thickness contacted by the lixiviant varied from 85% to 90%. Horizontally, 55% to 60% of the aquifer was contacted. The flow paths in the stratified aquifer were reduced in the

vertical direction and expanded horizontally. In five percent of the aquifer thickness was contacted vertically with 88% contacted horizontally. In through time for lixiviant traveling at mid-depth aquifer increased two times when the leakage increased from nearly zero to a value representative of thin and highly permeable confinement.

Leakage affects the economics of in situ mining (1) increasing the time required to leach out the ore and (2) increasing the thickness of the ore zone to be restored. The potential for environmental impacts appears to be minor. In all four simulation lixiviant did not contact the confining strata. Remediation would be limited to cleanup of the ore zone within the thickness contacted by lixiviant and the radius of the lixiviant that traveled farthest from the production cell.

Introduction

One condition that should be addressed in design of an in situ uranium mine is the degree of confinement of the ore zone aquifer by upper and lower strata of low permeability known as aquitards. If an aquifer is bounded by aquitards that offer a low level of confinement, then the steady-state drawdown due to production from a single well will be less than would be expected from a totally confined aquifer. This is because leakage through the aquitards is an additional source of water to the well (Freeze and Cherry, 1979).

R.S. Popielak, member SME, and J. Siegel are project supervisor and project engineer, respectively, with Canonie Engineers, Englewood, CO. SME preprint 85-204, SME-AIME Annual Meeting, New York, NY, February 1985. Manuscript January 1985. Discussion of this paper must be submitted, in duplicate, prior to Oct. 31, 1987.

In an in situ uranium mine, leakage into or out of the ore zone aquifer through the aquitards due to pumping and injection of lixiviant causes drawdowns or head buildups to be less than what would be expected in totally confined aquifers. Therefore, hydraulic gradients along the flow paths traveled by lixiviant are reduced. Lixiviant travel distances and times between the injection wells and the production well correspondingly increase, and the time required to leach the aquifer increases. Economical operation of the mine will then usually be a trade-off between employing more wells at a shorter spacing, increasing the over-pumping ratio, or both, to reduce operation and restoration time. The potential for environmental impacts is also affected by leakage. Increased travel distances increase the volume of aquifer contacted by lixiviant and the potential for lixiviant contacting the confining zone. Both conditions make the restoration process more difficult and time-consuming.

This paper demonstrates the simulated effect of leakage on a hypothetical in situ leach operation with three different magnitudes of confinement leakage. A fourth case examines the effects of stratification of the ore zone aquifer on the flow pattern and lixiviant travel times.

Computer simulation

The steady-state potentiometric head distribution in a leaky aquifer penetrated by a constantly discharging, partially penetrating production well was given analytically by Hantush (1964). In formulating the equation for flow, the measure of resistance to flow in the aquitard to resistance to flow in the aquifer is quantified by the leakage factor, B, where:

$$B = [K_z b / (K' b')]^{1/2} [L]$$

where K_z = vertical hydraulic conductivity of aquifer [L/t]

b = thickness of aquifer [L]

b' = thickness of aquitard [L]

K' = vertical hydraulic conductivity of aquitard [L/t]

If the leakage factor is high, the influence of leakage on the aquifer response to pumping is small. Conversely, a low value of the leakage factor indicates a high influence of leakage upon the aquifer response. If the aquifer is isotropic, the product $K_z b$ is equal to its transmissivity.

The computer program TRACER3D (McKee et al., 1982) was used to calculate lixiviant travel paths and travel times resulting from the injecting and pumping wells in the in situ leach operation that follows. This program performs numerical integration and series summation to obtain the analytical solution of drawdown by Hantush (1964), and it superimposes the results for drawdown for an arbitrary number and arrangement of pumping/injection wells.

The velocity vector of a fluid particle in the aquifer is calculated using the head distribution solved for, and the incremental travel distance and travel time are calculated for a discreet time step. The procedure continues at each successive particle location until the particle reaches a production well. At that point, the total flow path, travel distance, and travel time of the particle are known.

Scenarios modeled

The hypothetical operation consists of a single 12-m (40-ft) square five-spot production cell (Fig. 1). The mineralized section is in the middle of the aquifer. The pumping and injection wells partially penetrate the 24-m (80-ft) thick aquifer. The screened interval of the pumping well is equal to the thickness of the mineralized section of the aquifer, and the screened interval of the injection wells is equal to one-half the thickness of the mineralized section. The aquifer is horizontally isotropic with a hydraulic conductivity of 0.01 mm/sec (0.02 in. per min) and porosity of 25%.

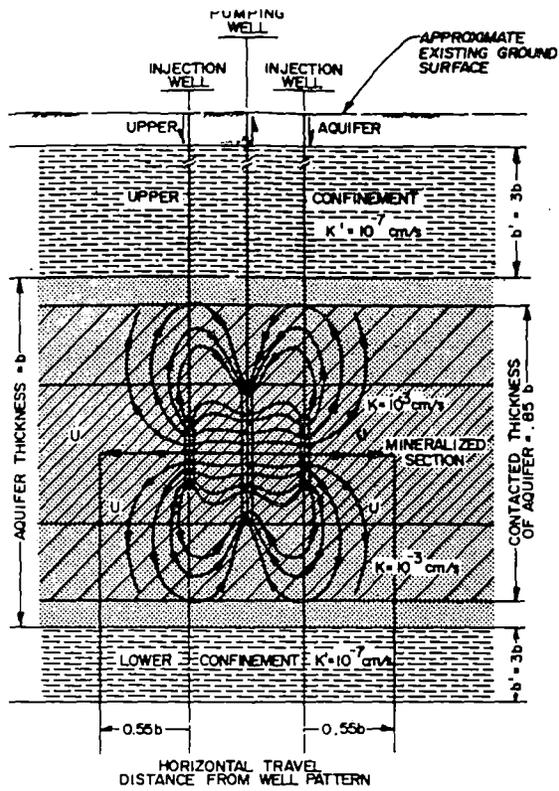
Four scenarios of aquifer/aquitard geometry and vertical permeability contrast were modeled to compare the path of lixiviant in the aquifer and its average breakthrough time. These scenarios are shown in Fig. 2. The breakthrough time is calculated for a lixiviant travel path in a plane at mid-depth of the aquifer when injected into a steady-state system and allowed to travel for one year.

The leakage factors resulting from the aquifer/aquitard interrelations range from B equal to 4.2 km (13,780 ft) (approaching infinity), which is representative of a totally confined, nonleaky aquifer; to 134 m (440 ft) (a typical leaky system with regard to confinement thickness and permeability), representative of in situ leach operations in Wyoming; to 17.4 m (57 ft) (approaching zero), representative of thin confinement and permeability on the order of that of the aquifer. The fourth scenario demonstrates the effect of stratification of the ore zone aquifer on the flow pattern and lixiviant travel times under high leakage conditions. To accomplish this, scenario C was remodeled with the vertical permeability of the aquifer equal to one-tenth of the horizontal permeability. The permeability of the aquitard was reduced 10 times to maintain the same leakage factor.

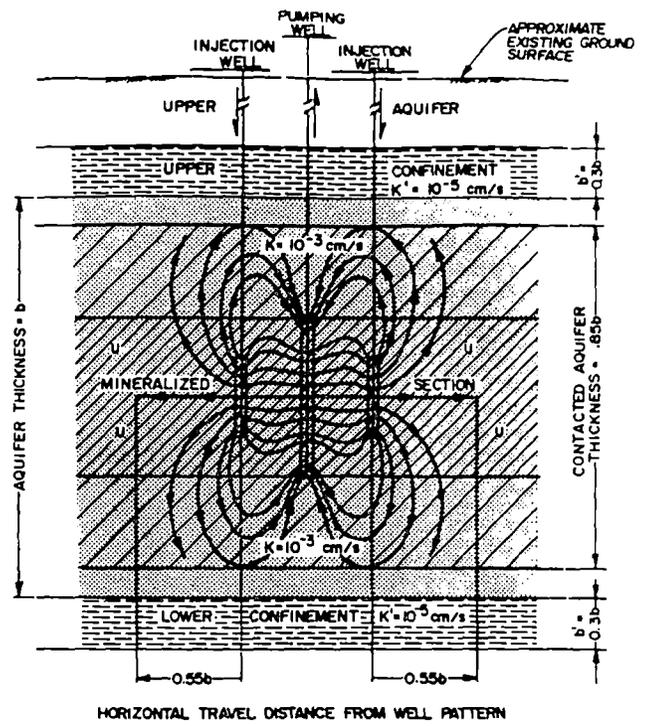
Results

Figure 2 and Table 1 are the basis for the following discussion of the effect of leakage on lixiviant travel distances and times for the hypothetical in situ leach operation. For each of the scenarios presented in Fig. 2, the streamlines of 18 lixiviant particles are shown entering each injection well at nine uniformly spaced vertical intervals. The initial flow direction is directly toward and away from the production well. Due to conditions of symmetry, the lixiviant streamline that travels farthest from the production well will be the one that enters the injection well at mid-depth of the aquifer, and whose initial direction is away from the production well. Table 1 reports the average breakthrough time for lixiviant streamlines initiated at mid-depth of the aquifer in eight uniformly distributed directions around each injection well. This average discounts the farthest-traveled streamline, since it did not return to the production well in the given time of operation.

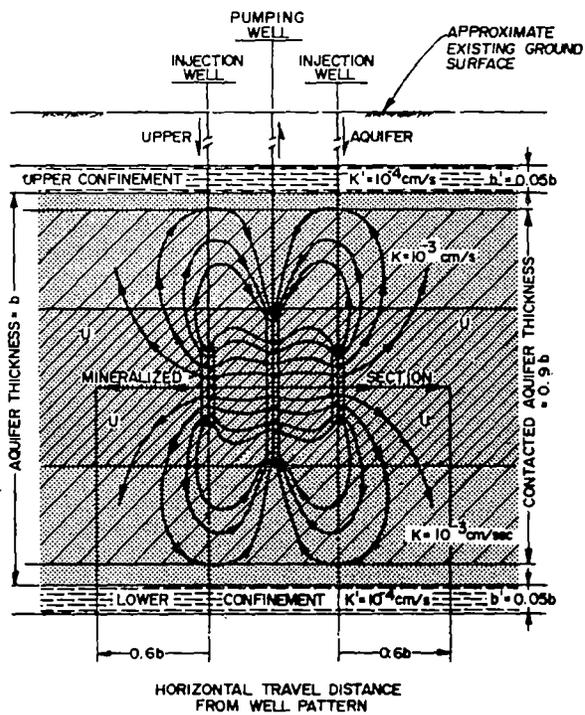
As shown in Table 1, the difference in lixiviant flow characteristics between scenario A, condition of near impermeable confinement, and scenario B, a typically encountered field condition, is negligible. The average breakthrough time for lixiviant at mid-depth of the aquifer differs by four-tenths of a day. The thickness of aquifer contacted by lixiviant and maximum distance traveled by the lixiviant away from the production well in the horizontal plane remains unchanged.



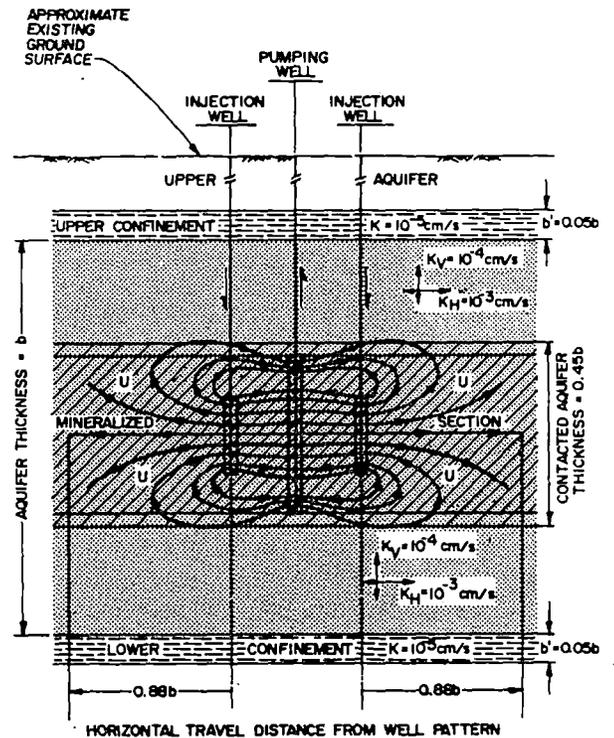
SCENARIO A
IMPERMEABLE CONFINEMENT
 B = 4222 m (13,850 ft)



SCENARIO B
LEAKY CONFINEMENT
 B = 134 m (440 ft)

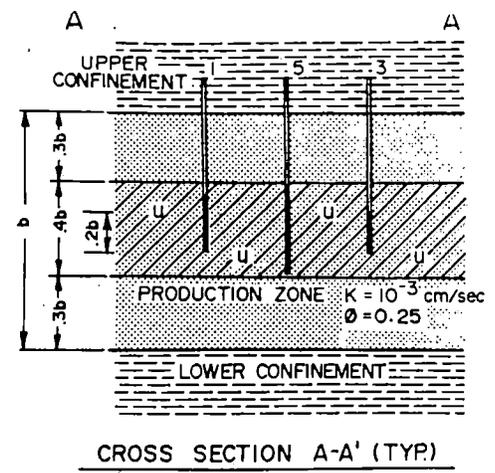
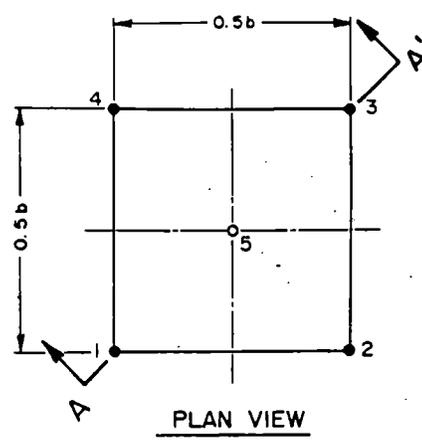


SCENARIO C
THIN AND HIGHLY PERMEABLE CONFINEMENT
 B = 17.4 m (57 ft.)



SCENARIO D
STRATIFIED ORE ZONE AQUIFER
 B = 17.4 m (57 ft.)

Fig. 2 — Comparison of lixiviant flow patterns



- LEGEND:**
- INJECTION WELL
 - PRODUCTION WELL
 - | WELL SCREEN

WELL DESIGNATION	FLOW RATE, l/min. (+ = INJECTION) (- = PRODUCTION)
1	+ 19
2	+ 19
3	+ 19
4	+ 19
5	- 78

FLOW RATES DURING MINING

Fig. 1 — Five-spot pattern and aquifer cross section for computer simulations

Table 1 — Comparison of Affected Aquifer Dimensions and Lixiviant Travel Distances and Times Under Four Conditions of Aquitard Leakage

Scenario	Confinement Thickness (% of Aquifer Thickness)	Confinement Permeability (cm/sec)	Leakage Factor (m)	Aquifer Thickness Contacted by Lixiviant (%)	Maximum Horizontal Travel Distance (% of Aquifer Thickness)	Average Breakthrough Time to Production Well for Lixiviant Traveling at Mid-Depth of Aquifer (days)
A	300	10 ⁻⁷	4222	85	55	32.7
B	24	10 ⁻⁵	134	85	55	33.1
C	5	10 ⁻⁴	17.4	90	60	71.6
D	5	10 ⁻⁵	17.4	45	88	4.9*

* This breakthrough time represents an average for only five of eight modeled streamlines that returned to the production well in the time of operation.

Results for scenario C, a condition of high leakage, show the first significant influence of leakage on aquifer flow characteristics. Flow lines, shown in Fig. 2, tend to depart from the production cell. Affected aquifer dimensions increase. The average lixiviant breakthrough time at mid-depth of the aquifer is 71.6 days, about twice that of scenarios A and B. This is due to reduction of hydraulic gradients along flow paths, which is in turn due to dissipation of aquifer drawdown and head buildup by leakage through the aquitards. Some options to strengthen the weakened potential field in this case include increasing the overpumping ratio or shortening the well spacing.

Sedimentary aquifers encountered at in situ mining sites often have a greater capacity to transmit flow horizontally rather than vertically. Scenario D was modeled to show the effect of this phenomenon under the high leakage conditions of scenario C. The results (Fig. 2) reveal a greatly reduced limit of vertical movement of lixiviant as compared to scenario C. This is accompanied by a substantial increase in the maximum lixiviant travel distance away from the production well in the horizontal plane at mid-screen, reflecting the tendency for lixiviant to move laterally as

opposed to vertically. The reported average breakthrough time for lixiviant at mid-depth of the although substantially less than for all p scenarios, represents an average for only five modeled streamlines that returned to the pro well in the time of operation. This reduced recovery can be economically balanced by the reduced vertical extent of aquifer to restore, ularly if this cell is at the periphery of a nu such internally repeated cells in the well field.

In all scenarios modeled, the lixiviant did n the confinement. This result is important restoration of an aquitard contacted by lixiv be very difficult due to the ion exchange pote the clay/silt particles in the confinement. Cert in the lixiviant may be adsorbed onto the clay n and may be difficult to recover during rest This result is attributable at least in part to the cial effect of having a limited vertical exten within a thick aquifer. Under these condi appears that the environmental impact pote in situ mining is limited to the ground water mined aquifer only.

Summary

The effect of aquitard leakage on in situ uranium mining was studied by examining lixiviant flow patterns and travel times in an aquifer having a limited vertical extent of mineralization compared to its thickness. Simulations show that leakage does not cause flow characteristics in the aquifer to be substantially different than those that would occur under conditions of totally impermeable confinement until the confinement becomes (1) extremely thin, and (2) of a permeability within an order of magnitude less than that of the aquifer. Under such conditions, some options to strengthen the weakened potential field caused by leakage include increasing the overpumping ratio or shortening the well spacing. Both are economic trade-offs to reduce operational time and to limit the extent of the aquifer contacted by the lixiviant. If the ore zone aquifer exhibits stratification such that its permeability is greater in the horizontal direction than

vertical, the thickness of aquifer contacted by lixiviant is greatly reduced. This feature, of course, also depends on having a thin mineralized section.

The potential for environmental impacts due to in situ uranium mining appears to be minor. In all four scenarios modeled where the confinement ranged from nearly impermeable to very leaky, the lixiviant did not contact the aquitards. Restoration would be limited to cleanup of the ore zone aquifer within the thickness contacted by lixiviant and within the radius of the farthest-traveled lixiviant away from the production well. ■

References

- Freeze, R.A., and Cherry, J.A., 1979, *Groundwater*, Prentice-Hall, Inc., Englewood Cliffs, NJ, p. 604.
- Hantush, M.S., 1964, "Hydraulics of Wells," *Advances in Hydroscience*, V.T. Chow, ed., Vol. 1, Academic Press, New York, pp. 281-432.
- McKee, C.R., Bumb, A.C., and Bennett, R., 1982, "Tracer 3D (Fortran)," In-Situ, Inc., Laramie, WY.

TECHNICAL NOTE

Increased value of refined high sulfur coal

P.R. Dugan

Abstract — Sulfur removal from high sulfur coal has several objectives including: a) reduction of the atmospheric load that contributes to the problem of acid precipitation; b) reduction of ash, which contributes to decreased energy transfer in boilers, as well as ash disposal; and c) alleviation of the social and economic dislocations related to uneven geographical distribution of sulfur in coal reserves. Cost in relation to the value of refined coal will govern the development of an emerging coal refining industry. Estimation of the premium paid by power companies for coal with a low sulfur content is a good estimate of the value that will be added as the result of refining. Estimates of premiums paid in 1984 are \$28.65/t (\$26 per st) for reduction of total sulfur from 3% to 1% S and greater than \$28.65/t (\$26 per st) for removal below 1% sulfur.

Introduction

The ultimate objectives and interest in removing sulfur from high sulfur coal include: a) reducing the atmospheric load that contributes to acid precipitation; b) reducing ash, which contributes to decreased energy transfer in boilers and the problem of ash disposal; and c) alleviating the social and economic dislocations related to uneven geographical distribution of sulfur in coal reserves.

P.R. Dugan is currently with the Department of Biotechnology, Idaho National Engineering Laboratory, Idaho Falls, ID (formerly a professor, Department of Microbiology, The Ohio State University, Columbus, OH). SME preprint 86-361, SME Fall Meeting, St. Louis, MO, September 1986. Manuscript July 1986. Discussion of this paper must be submitted, in duplicate, prior to Oct. 31, 1987.

The cost of sulfur removal in relation to the value of refined coal will govern the development of an emerging coal refining industry. The value of refined lower sulfur coal will be influenced by the national commitment to the environment as well as economic considerations.

The technology and scientific basis are available to accomplish desulfurization, and several processes exist that are more or less effective. These include mechanical, chemical, and microbiological methods. The microbial processes available for removing various sulfur forms can be summarized as those that solubilize the insoluble sulfur content via oxidative and hydrolytic reactions (Dugan, 1986, 1984).

Nearly all of the sulfur in coal, whether organic or pyritic, is in a chemically reduced form. The oxidation of sulfur, whether partially oxidized to an intermediate product or completely oxidized to sulfate, results in the formation of acid. The amount of acid produced will depend on both the amount of sulfur oxidized and the extent to which sulfide is oxidized toward sulfate. The refining process will allow acid to be contained and treated rather than uncontrolled escape into the atmosphere.

Coal is chemically and mineralogically heterogeneous. Its quality relative to content of sulfur, carbon, nitrogen, oxygen, and mineral contaminants (ash), as well as its energy value, varies considerably. The organic sulfur content of Appalachian high sulfur coal varies between 0.04% to more than 5%. It consists of varying percentages of aliphatic and aromatic thiols, aliphatic and aryl sulfides, and simple and complex thiophenes. Virtually all coal deposits in the eastern US contain a mixture of mineral sulfur (predominantly iron sulfides) and a heterogeneous distribution of organic sulfur forms.

EXHIBIT II

March 23, 1999

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

The Honorable Peter B. Bloch, Presiding Officer

In the Matter of)

HYDRO RESOURCES, INC.)
(2929 Coors Road, Suite 101)
Albuquerque, NM 87120)

) Docket No. 40-8968-ML
) ASLBP No. 95-706-01-ML
)
)

AFFIDAVIT OF MARK S. PELIZZA
PERTAINING TO ENVIRONMENTAL REPORTS

Before me, the undersigned notary on this day appeared Mark S. Pelizza, a person known or identified to me, and who after being duly sworn deposes and says the following:

A. Personal

My name is Mark S. Pelizza; I am over the age of 18 years, have never been convicted of a felony and am otherwise fully competent to make this affidavit. The factual matters set out herein are within my personal knowledge or my corporate knowledge within my official capacity as set out herein. The opinions set out herein are based upon data and analytic techniques reasonably and customarily used by qualified environmental professionals to form opinions and draw scientific inferences for the purposes of important health, safety, environmental and regulatory decisions.

B. Professional Qualifications

I am Vice President of Health, Safety and Environmental Affairs with Uranium Resources, Inc., parent company to HRI, Inc. and URI, Inc. I have served in this position for three years. Prior to being named Vice President, I served Uranium Resources, Inc. as Environmental Manager with similar corporate environmental responsibilities. I have been employed with Uranium Resources, Inc. for nearly 19 years. I have been employed as a health, safety and environmental professional with the in situ uranium industry for 21 years. I have taken an active leadership role with various professional trade organizations in developing the current in situ uranium industry rules, regulations and policies, cooperating with federal and state regulatory agencies in doing so. In support of my background a current resume is attached.

During my employment with Uranium Resources, Inc., I have personally supervised all radiological and non-radiological occupational health, safety and environmental programs for operations conducted by HRI/URI in New Mexico, Texas, and Wyoming. This includes radiological and non-radiological occupational and environmental baseline data collection, operational programs, restoration/reclamation programs and regulatory liaison. I have been Uranium Resources, Inc., primary managerial support representative for all environmental litigation. As such I have first hand knowledge of the technical issues that were addressed in ENDAUM and SRIC's Brief and Expert Opinion Pertaining to Water Quality Issues

I have personally supervised all radiological and non-radiological health, safety and environmental permitting activities associated with HRI since the company and the Crownpoint Uranium Project was conceived. In this capacity all environmental studies, reports, papers, permit and license applications and regulatory requirements have either been completed by me or under my supervision. I have been HRI's representative at numerous public presentations regarding the project over the past decade. I have been HRI's regulatory liaison throughout the project. Given this background I have a first hand knowledge of the Crownpoint Uranium Project developmental history, and the general environmental framework under which HRI will be required to operate.

C. Materials Prepared

All of the submittals that are shown within Attachment A of SUA-1508 were either prepared by me or under my direct supervision. I prepared the Crownpoint Uranium Project Consolidated Operations Plan Revision 2.0, August 17, 1997. (COP Rev. 2.0)

D. Expert Opinion

1. Except for the CUP, Modern ISL Mines are Subjected to Environmental Assessments.

In Table 1 below I have listed all of the modern commercial ISL mines that have been licensed by NRC since 1980. For each listing I have placed the approximate date that the Draft Environmental Impact Statement or Environmental Assessment was completed.

Table 1 – Modern Commercial ISL Projects Licensed by NRC

Project Name	Docket No.	State	DEIS Date	Env.Assessment Date
Teton Project	40-8781	Wyoming	June, 1982	None
Irigary Ranch Project	40-8102	Wyoming	None	May, 1987
Highland Project	40-8857	Wyoming	None	July, 1987
Christensen Ranch	40-8502	Wyoming	None	April, 1988
Crow Butte Project	40-8943	Wyoming	None	December, 1988
Ruth and North Butte Project	40-8958 and 40-8981	Wyoming	None	December, 1990

Project Name	Docket No.	State	DEIS Date	Env. Assessment Date
Smith Ranch Project	40-8964	Wyoming	None	October, 1991
Crownpoint Project	40-8968	New Mexico	October, 1994	None

NRC has been regulating ISL operations, predominantly in the state of Wyoming since the 1970's. Most of the earlier projects were pilot scale operations where industry and NRC gained knowledge of the potential environmental impacts. As the ISL technology matured, it became apparent that the sodium carbonate/bicarbonate leach solution presented minimal operational/restoration problems, that this technology presented very low risk to groundwater resources, and has therefore become universally applied to modern operations. As a result of the ISL industry experience learned by NRC, it was generally concluded in the EA's listed above that ISL uranium recovery was a low risk activity. The resulting environmental evaluations have evolved from full Environmental Impact Statement (EIS) reviews to a more streamline environmental Assessment (EA) with a requisite Finding Of No Significant Impact (FONSI). This is readily apparent in Table 1 above, where the last EIS conducted was for the Teton Project in 1982 with all subsequent reviews being completed in conjunction with an EA (and FONSI).

2. An EIS was Conducted for the CUP primarily to Meet BIA Lease Requirements
 In 1988, HRI had planned that NRC would conduct an EA for the Churchrock location. The ISL technology proposed for the Churchrock site suggested that an EA (and FONSI) would be consistent with NRC reviews elsewhere. Subsequent to the initial Churchrock application, in 1989 HRI amended its NRC license application to include the Crownpoint location. An EA (and FONSI) for both locations were still anticipated. It was not until HRI reached agreement on lease terms with the Bureau of Indian Affairs (BIA) in 1992 that the Company learned that an EIS would be required for the purpose of BIA approval of the leases on Allotted lands. As a result, HRI encouraged the three cooperating Federal agencies regulating this project, to conduct a joint EIS as a means to streamline the review process. HRI believed it was most appropriate to move forward with the most conservative environmental procedural review rather than waste time negotiating a more streamlined review, such as an EA, that ultimately may not be acceptable to all agencies. BIA procedural regulation; not a NRC finding which triggered the EIS in the first place.

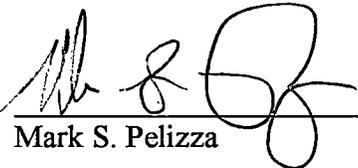
3. As the CUP becomes economically viable, employment will proceed as described in the FEIS.

4. HRI has established a close working relationship with the Crownpoint Institute of Technology. HRI plans to employ CIT graduates, to the extent possible, to fill skilled positions (e.g., electricians, plumbers) at the CUP.

FURTHER AFFIANT SAYETH NOT.

I swear under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Dated this 23rd day of March, 1999.


Mark S. Pelizza

Voluntarily signed and sworn to before me this 23rd day of March, 1999, by the signer, whose identity is personally known to me or was proven to me on satisfactory evidence.


NOTARY PUBLIC

STATE OF TEXAS
COUNTY OF DALLAS

My Commission Expires: 04-08-99

