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NUCLEAR REGULATORY COMMISSION
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Before Administrative Judges:

E. Roy Hawkens, Presiding Officer
Dr. Richard F. Cole, Special Assistant
Dr. Robin Brett, Special Assistant

In the Matter of	Docket No. 40-8968-ML
HYDRO RESOURCES, INC. P.O. Box 777 Crownpoint, New Mexico 87313	ASLBP No. 95-706-01-ML August 21, 2006

FINAL PARTIAL INITIAL DECISION

(Phase II Challenges To In Situ Leach Mining Materials License Regarding Adequacy of Environmental Impact Statement)

I. INTRODUCTION

This proceeding involves challenges by multiple intervenors to a 10 C.F.R. Part 40 license application by Hydro Resources, Inc. (HRI) to perform in situ leach (ISL) uranium mining at four sites in McKinley County, New Mexico: Sections 8 and 17 in Church Rock, and Crownpoint and Unit 1 in Crownpoint. In November 1994, the NRC Staff issued a "Notice of Opportunity for Hearing" concerning the license application, and timely requests for hearing were filed by the Eastern Navajo Diné Against Uranium Mining, the Southwest Research and Information Center, Grace Sam, and Marilyn Morris [hereinafter referred to collectively as the Intervenors]. Under the Commission's then-existing regulations,[1] the Administrative Judge appointed as the Presiding Officer held the hearing requests in abeyance until the Staff completed its review of HRI's license application.

[1] This case is being litigated pursuant to the NRC's since-superseded procedural rules in 10 C.F.R. Part 2, Subpart L, which were amended in 2004. See Changes to Adjudicatory Process, 69 Fed. Reg. 2182 (Jan. 14, 2004). The new rules – which apply only to proceedings noticed on or after February 13, 2004 – do not apply here.

On January 5, 1998, the Staff granted HRI's request for a license (SUA-1508), and shortly thereafter, in May 1998, the then-Presiding Officer granted the Intervenors' hearing requests. This protracted litigation followed.

Although HRI has held its license for eight years, it has not yet started mining operations at any of the four sites due, in part, to profitability concerns related to the fluctuating price of uranium. This proceeding nevertheless has moved forward, focusing first – in what was characterized as Phase I – on issues specific to mining operations at Section 8, because HRI stated that it eventually would begin mining operations there.

In February 2004, the then-Presiding Officer completed adjudicating the Intervenors' Phase I challenges to HRI's license (LBP-04-03, 59 NRC 84 (2004)), and the Commission, on appeal, sustained the validity of HRI's license insofar as it relates to prospective mining operations at Section 8 (CLI-04-33, 60 NRC 581 (2004); see also CLI-04-39, 60 NRC 657 (2004)).

This proceeding then entered Phase II, which involves the Intervenors' challenges to HRI's license insofar as it authorizes mining at the other three sites – Section 17, Unit 1, and Crownpoint. For litigative efficiency, the Intervenors' Phase II challenges were grouped into the following four categories and briefed separately: (1) groundwater protection and restoration, and surety estimates; (2) cultural resources; (3) radiological air emission controls; and (4) adequacy of the environmental impact statement.

This decision resolves the issues embodied in the fourth, and final, category of Phase II challenges – i.e., adequacy of the environmental impact statement.[2] The Intervenors claim that

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[2] The claims brought by the Intervenors in the three prior categories of Phase II challenges did not provide a basis for invalidating HRI's license. See LBP-05-17, 62 NRC 77 (2005) (rejecting claims pertaining to groundwater protection and restoration, and surety estimates), pet. for review denied, CLI-06-01, 63 NRC 1 (2006); LBP-05-26, 62 NRC 442 (2005) (rejecting claims pertaining to cultural resources), pet. for review denied, CLI-06-11, 63 NRC 483 (2006); LBP-06-01, 63 NRC 41 (rejecting claims pertaining to radiological air emission controls), aff'd, CLI-06-14, 63 NRC __ (slip op.) (May 16, 2006).

HRI's license to perform ISL uranium mining at Section 17, Unit 1, and Crownpoint is invalid because the environmental impact statement prepared by the NRC Staff: (1) fails adequately to evaluate the cumulative environmental impacts; (2) contains an invalid statement of purpose and need for the project; (3) provides an insufficient analysis of alternatives; (4) fails to evaluate the impact of proposed mitigation measures; and (5) requires supplementation and recirculation for public comment. For the reasons set forth below, I find – with the concurrence of Dr. Richard Cole and Dr. Robin Brett, who have been appointed as Special Assistants – that HRI and the NRC Staff have demonstrated that the Intervenors' challenges relating to the adequacy of the environmental impact statement do not provide a basis for invalidating HRI's license.

II. BACKGROUND

The Intervenors contend that HRI's license to perform ISL uranium mining at Section 17, Unit 1, and Crownpoint is invalid because the environmental impact statement for those sites fails to satisfy governing statutory and regulatory requirements. To fully understand the issues, it is helpful to be acquainted with: (1) the pertinent portions of the National Environmental Policy Act and its implementing regulations; and (2) the relevant administrative proceedings in this case. These topics are addressed below.

A. THE NATIONAL ENVIRONMENTAL POLICY ACT AND ITS IMPLEMENTING REGULATIONS

The National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321-4370f, has two principal objectives. First, it ensures that an agency considers every significant aspect of the environmental impact of a proposed action (Baltimore Gas & Elec. Co. v. NRDC, 462 U.S. 87, 97 (1983)). Second, it ensures that the agency informs the public that it has, in fact, considered environmental concerns in its decisionmaking process (ibid.).

To effect these cardinal goals, NEPA requires a federal agency, before taking any action "significantly affecting the quality of the human environment," to prepare a "detailed statement" (i.e., an environmental impact statement) – which must be made available to the public – discussing, inter alia, the environmental impact of the proposed action and possible alternatives (42 U.S.C. § 4332(2)(C) (2000)). An agency's preparation and public dissemination of the environmental impact statement serves to fulfill NEPA's twin aims, because the "'detailed statement' it requires is the outward sign that environmental values and consequences have been considered during the planning stage of agency actions" (Andrus v. Sierra Club, 442 U.S. 347, 350 (1979)).

The NRC's regulations implementing NEPA are contained in 10 C.F.R. Part 51. As relevant here, these regulations provide detailed instructions governing the preparation of a draft environmental impact statement (DEIS), which must include: (1) "a preliminary analysis that considers and weighs 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" (10 C.F.R. § 51.71(d)); and (2) "a preliminary recommendation by the NRC Staff respecting the proposed action" (id. § 51.71(e)). Upon completing the DEIS, the NRC Staff releases it to the public and requests comments (id. §§ 51.73, 51.74). The NRC Staff then prepares a final environmental impact statement (FEIS), which includes responses to any comments on the DEIS (id. §§ 51.90, 51.91).[3]

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[3] The Council on Environmental Quality (CEQ) also has promulgated regulations addressing NEPA compliance (42 U.S.C. § 4342 (2000); 40 C.F.R. Pts. 1500-1518). Although the Commission is "not bound by CEQ regulations that it has not expressly adopted, [it] gives those regulations 'substantial deference'" (Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 348 n.22 (2002) (citation omitted)). Cf. Baltimore Gas & Elec. Co., 462 U.S. at 99 n.12 (declining to decide whether CEQ regulations have binding effect on "an independent agency such as the [NRC]").

It bears emphasizing that NEPA does "not require agencies to elevate environmental concerns over other appropriate considerations. Rather, it require[s] only that the agency take a 'hard look' at the environmental consequences before taking a major action" (Baltimore Gas & Elec. Co., 462 U.S. at 97 (citations omitted)). "If the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA from deciding that other values outweigh the environmental costs" (Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989)). Thus, "[NEPA] does not mandate particular results, but simply prescribes the necessary process" (ibid.).

B. THE RELEVANT ADMINISTRATIVE PROCEEDINGS IN THIS CASE

In January 1998, the Staff granted HRI's application for a license to perform ISL uranium mining at four proximately clustered sites in McKinley County, New Mexico – Sections 8 and 17 in Church Rock, and Crownpoint and Unit 1 in Crownpoint – that HRI plans to develop and mine in phases over a twenty-year period, beginning with Section 8.[4] The Intervenors asserted

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[4] HRI's ISL uranium mining process, briefly explained, will involve two principal steps. First, HRI will inject a leach solution called lixiviant – which is a mixture of groundwater charged with oxygen and bicarbonate – through injection wells located in a targeted zone containing uranium oxide. The uranium oxide, which occurs as small mineral grains within a sandstone host rock, dissolves when it comes into contact with the lixiviant. HRI will also operate production wells located within a pattern of injection wells. The production wells create a reduced pressure in the mined region by withdrawing slightly more water from the ground than is injected, thus controlling the horizontal spread of the pregnant lixiviant (i.e., the lixiviant that now contains dissolved uranium oxide), and causing it to flow toward the production wells where it is pumped to the surface. See Final Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico, NUREG-1508, at 2-2 to 2-5 (Feb. 1997) [hereinafter FEIS].

The second step of the ISL mining process occurs after the pregnant lixiviant is pumped to the surface. HRI will pipe the pregnant lixiviant through columns of ion exchange resin, during which the uranium oxide will attach to the resin. Upon leaving the ion exchanger, the now-barren lixiviant will be re-charged as necessary with oxygen and bicarbonate, and it will then be re-injected into the ore zone to repeat the leaching cycle. When the ion exchange capacity of a column of resin is depleted, that column is taken off-line and the uranium oxide is chemically stripped from the resin. The resulting uranium oxide slurry is filtered and dried to produce the finished product – uranium oxide concentrate, or yellowcake – which is packaged

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that HRI's license was not valid for operations at any of the four sites. Given HRI's plan to begin its mining operations at Section 8, the then-Presiding Officer, in September 1998, granted HRI's request to bifurcate this litigation, focusing initially in Phase I on the Intervenors' challenges relating to Section 8 and the overall validity of the license. See CLI-01-04, 53 NRC 31, 35-36 (2001). The Intervenors' challenges relating to operations at the other three sites (Section 17, Unit 1, and Crownpoint) would be litigated in Phase II, promptly after completion of the Phase I litigation. See id. at 38-44.

1. The Relevant Phase I Administrative Proceedings

As relevant here, during Phase I of this litigation, the Intervenors argued that the environmental impact statement relating to Section 8 operations contained numerous defects that rendered HRI's license to perform ISL uranium mining at Section 8 invalid. Specifically, the Intervenors alleged that (LBP-99-30, 50 NRC 77, 112-24 (1999)): (1) the FEIS contained an inadequate statement of purpose and need; (2) the FEIS failed to perform an adequate cost-benefit analysis; (3) the FEIS failed to consider the impacts that mining at Section 8 would have on groundwater; (4) the FEIS' proposed mitigation for relocating residents was inadequate; (5) the FEIS failed to consider the environmental costs of radioactive air emissions; (6) the FEIS failed to consider the environmental costs of liquid waste disposal and cultural impacts; (7) the FEIS unreasonably undervalued the costs of the proposed project; (8) the FEIS failed to evaluate the action alternatives and the no action alternative; (9) the NRC Staff failed to supplement the FEIS and recirculate it for public comment; (10) the FEIS failed to explore the impact of measures to mitigate or reduce environmental effects; (11) the FEIS failed to consider the impact on livestock; (14) the FEIS failed to consider the secondary effects of mining; (15)

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[4](...continued)
and stored for final shipment. See FEIS at 2-5 to 2-12.

the FEIS failed to consider the cumulative environmental impacts; and (16) the FEIS failed to perform an environmental justice analysis.

The then-Presiding Officer rejected the Intervenors' attacks on the adequacy of the FEIS for Section 8 (LBP-99-30, 50 NRC at 112-24). He concluded that the FEIS reflected that the NRC Staff had taken the "'hard look' required for NEPA determinations, for consideration of cumulative impacts, and for environmental justice" (id. at 81). The Commission affirmed (CLI-01-04, 53 NRC at 44-71).[5]

Thereafter, the Intervenors moved to have the the NRC Staff supplement the FEIS with respect to Sections 8 and 17 (which are contiguous sites at Church Rock) based on a proposed housing development project – the Springstead Estates Project – that allegedly would be built approximately two miles from the southern boundary of Section 17 and would comprise up to 1000 residential single-family apartment and townhouse units (LBP-04-23, 60 NRC 441, 443-47 (2004)). The Intervenors argued that supplementation of the FEIS was required pursuant to Commission regulations (10 C.F.R. § 51.92(a)), because the housing project allegedly constituted a significant new circumstance relevant to environmental concerns and bearing on HRI's proposed action. The then-Presiding Officer denied the Intervenors' motion (LBP-04-23, 60 NRC at 450-60). Observing that it was conjectural whether the putative housing project would ever be built (id. at 452), the Presiding Officer concluded in any event that "the requirements of NEPA have been satisfied, and that the Intervenors have not presented a prima facie case that the [Springstead Estates Project] represents a 'significant new circumstance' such that supplement to the existing FEIS is warranted" (id. at 448-49). The Commission "agree[d] with the Presiding Officer that there is no reason warranting FEIS supplementation as to [Sections 8 and

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[5] In 2001, at the request of the parties, this proceeding was held in abeyance for approximately two years while they attempted to negotiate a settlement. Unfortunately, those efforts were unsuccessful, and active litigation resumed in 2003. See CLI-04-33, 60 NRC at 583.

17]" and, accordingly, it denied the Intervenors' petition for review (CLI-04-39, 60 NRC at 658 n.2).

With the Commission's rejection in December 2004 of the last of the Intervenors' challenges to the validity of HRI's license insofar as it authorizes mining operations at Section 8 (CLI-04-39, 60 NRC 657 (2004); CLI-04-33, 60 NRC 581 (2004)), this litigation entered Phase II.

2. The Present Phase II Administrative Proceedings

The Intervenors now argue that HRI's license to conduct ISL uranium mining operations at Section 17, Unit 1, and Crownpoint should be invalidated because the FEIS fails to satisfy NEPA and its implementing regulations. Specifically, the Intervenors contend that NEPA was violated because: (1) the FEIS fails adequately to analyze cumulative environmental impacts; (2) the statement of purpose and need in the FEIS is inadequate; (3) the FEIS inadequately analyzes alternatives; (4) the FEIS fails adequately to evaluate the impact of proposed mitigation measures; and (5) the NRC Staff improperly failed to supplement the FEIS and recirculate it for public comment. See Intervenors' Written Presentation in Opposition to HRI's Application for a Materials License with Respect to NEPA Issues for Church Rock Section 17, Unit 1, and Crownpoint (June 24, 2005) [hereinafter Intervenors' Written Presentation]; Intervenors' Reply to HRI's and the NRC Staff's Responses in Opposition to Intervenors' Written Presentation with Respect to NEPA Issues for Church Rock Section 17, Unit 1, and Crownpoint (Aug. 19, 2005) [hereinafter Intervenors' Reply].[6]

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[6] In a Joint Motion filed by the Intervenors and HRI, the Intervenors agreed to forgo presenting new evidence with respect to the adequacy of the FEIS relative to the three remaining sites, stating that they would instead "file a pleading incorporating by reference their arguments raised with respect to the adequacy of the [environmental impact statement] for Section 8, thereby preserving those arguments with respect to Section 17, Unit 1, and Crownpoint" (Intervenors' and HRI's Joint Motion for Change in Schedule of Written Presentations at 3 (Jan. 18, 2005) [hereinafter Joint Motion]).

HRI and the NRC Staff oppose the Intervenors' challenges, arguing that the FEIS for Section 17, Unit 1, and Crownpoint is compliant with NEPA and its implementing regulations and, accordingly, that HRI's license to conduct ISL uranium mining at those sites should be sustained. See HRI's Response in Opposition to Intervenors' Written Presentation Regarding Environmental Impact Statement Adequacy (July 28, 2005) [hereinafter HRI's Response]; NRC Staff's Response to Intervenors' Presentation on NEPA Issues (Aug. 12, 2005) [hereinafter NRC Staff's Response].[7]

For the reasons set forth below, I conclude that HRI and the NRC Staff have demonstrated by a preponderance of the evidence that the Intervenors' challenges relating to the adequacy of the FEIS do not provide a basis for invalidating HRI's license to perform ISL uranium mining operations at Section 17, Unit 1, and Crownpoint.

III. ANALYSIS

A. THERE IS NO MERIT TO THE INTERVENORS' CLAIM THAT THE FEIS FAILS ADEQUATELY TO ANALYZE CUMULATIVE ENVIRONMENTAL IMPACTS

The Intervenors argue that HRI's license to mine at Section 17, Unit 1, and Crownpoint is invalid because the FEIS allegedly fails adequately to analyze cumulative environmental impacts that will occur as a result of the proposed mining operations at those three sites. Specifically, they claim that the analysis is deficient with respect to cumulative impacts on radioactive air emissions, groundwater, radiological levels and health effects, and land use (Intervenors' Written Presentation at 20-33).

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[7] The parties also submitted supplemental briefs in May 2006 following the Commission's decision in CLI-06-14 (affirming LBP-06-01, which rejected the Intervenors' claims regarding HRI's radiological air emissions), because the Commission's decision touched on NEPA-related issues raised here by the Intervenors. See Intervenors' Supplemental Brief Regarding the Impact of CLI-06-14 on Intervenors' NEPA Claims (May 30, 2006); HRI's Supplemental Brief Regarding Final Environmental Impact Statement Adequacy for the Crownpoint Uranium Project (May 30, 2006); NRC Staff Supplemental Brief on the Intervenors' Presentation on Phase II NEPA Issues (May 30, 2006).

Before I address the Intervenors' arguments, it is useful to understand the meaning of the term "cumulative impacts analysis" in the NEPA context. Cumulative impacts analysis is not concerned with the singular impacts an individual project may have on the environment. Rather, as relevant here, it looks to whether "the proposed action's impacts will be significantly enhanced by already existing environmental effects from prior actions" (CLI-01-04, 53 NRC at 60). Pursuant to this approach, a "cumulative impacts review examines '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'" (ibid.) (quoting 40 C.F.R. § 1508.7).[8]

With this definition in mind, I turn now to the Intervenors' arguments. I conclude that none has merit.[9]

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[8] Although not relevant here, cumulative impacts analysis may also look to whether the proposed action's impacts will have interregional synergistic effects (CLI-01-04, 53 NRC at 57). This approach may be implicated "'[w]hen several proposals for . . . actions that will have a cumulative or synergistic environmental impact upon a region are pending concurrently before an agency'" (ibid.) (quoting Kleppe v. Sierra Club, 427 U.S. 390, 410 (1976)). Because the Intervenors do not raise concerns regarding the potential interregional synergistic effects of HRI's project, that issue is waived. See LBP-05-17, 62 NRC at 98 n.14.

There are several instances where the Intervenors purport to preserve arguments they advanced in Phase I of this proceeding by making wholesale references to prior pleadings and testimony (e.g., Intervenors' Written Presentation at 22 (citing Bernd Franke Testimony attached to Intervenors' Section 8 Air Brief); id. at 26 (citing Intervenors' Section 8 and Section 17 Air Briefs); id. at 27 (citing Wallace Testimony attached to Intervenors' Section 8 Groundwater Presentation); id. at 28 (citing Intervenors' Section 8 Groundwater Presentation, Intervenors' 2005 Groundwater Presentation, Intervenors' Cumulative Impacts Brief)). Although the Intervenors may incorporate by reference arguments that they adequately identify and tailor to this Phase II context (supra note 6), they many not blithely incorporate arguments that are ill-defined or undeveloped. It is not the duty of an adjudicative body to "dig through the reams of paper which [litigants] have deposited" to construct and develop their arguments (LBP-05-17, 62 NRC at 99 n.14) (internal quotation marks omitted). Indeterminate or unexplained arguments are waived (infra note 21).

[9] The Intervenors include within the rubric of their "cumulative impacts" argument claims that are more aptly characterized as challenges to the adequacy or correctness of the FEIS. Rather than second-guess the Intervenors' claims, I adjudicate them as they are presented, because, as the Commission has instructed, an intervenor "bear[s] responsibility for any misunderstanding of . . . claims" that are unclear or indeterminate (CLI-01-04, 53 NRC at 46).

1. The Intervenors' Claims Relating To Cumulative Impacts On Radioactive Air Emissions Lack Merit

The Intervenors contend that the cumulative impacts analysis in the FEIS pertaining to radioactive air emissions violates NEPA because (Intervenors' Written Presentation at 22-26): (a) it misrepresents existing radiation levels at Section 17; (b) it inaccurately analyzes radiological air impacts that will result from mining operations; and (c) its air quality impacts analysis is incorrect and inadequate. I agree with HRI and the NRC Staff that these arguments are insubstantial. See HRI's Response at 25-29; NRC Staff's Response at 10-13.

a. The FEIS Properly Represents Existing Radiation Levels At Section 17

The Intervenors claim that the FEIS misrepresents radiation levels at Section 17. This claim can be parsed into the following two arguments (Intervenors' Written Presentation at 22-25): (1) the FEIS fails adequately to take into account the previous uranium mining operations in the Church Rock area and, accordingly, fails properly to analyze the radiological impact of the ISL operations; and (2) the FEIS, insofar as it characterizes the residual radiation from the previous mining operations as background radiation, miscalculates the total effective dose equivalent (TEDE).[10] The first argument is incorrect as a matter of fact, and the second is incorrect as a matter of law.

Contrary to the Intervenors' assertion, the FEIS expressly acknowledges that this region in general, and Church Rock in particular, has a history of conventional underground uranium mining that adversely affected the environment (FEIS at 4-124 to 4-125):

> Northwest New Mexico has a long history of uranium mining and milling. Effects of previous mining and milling operations in the area are considered here as they relate to the proposed licensing action. The Church Rock facility as proposed

[10] TEDE is defined as the "sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures)" (10 C.F.R. § 20.1003). Commission regulations proscribe licensed operations that will result in a TEDE to members of the public in excess of 0.1 rem per year (id. § 20.1301(a)(1)).

> would mine an area previously mined by underground mining to supply ore to the Church Rock mill site. Uranium mining was a large employer in the area and many individuals worked in the mining and milling operations. Early mines and mills operated under much less stringent standards than exist today, and this resulted in large exposures to radioactive materials, especially radon and its daughters. The exposures were large enough to result in a high incidence of cancer among workers, and information gathered on these workers resulted in development of risk factors on radon.
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> In addition, the methods used to mine and mill the uranium (i.e., "conventional" mining) resulted in very large amounts of radioactivity and chemically contaminated sands and slimes, also know as tailings. In 1978, the U.S. Congress passed the Uranium Mill Tailing Radiation Control Act, which required standards to be developed to control exposures from tailings and clean up past sites of uranium milling. In 1979, the tailings pond dam at the Church Rock site failed and approximately 3.56×10^5 m^3 (94 million gal) of tailings liquid and 1100 tons of tailings solids were released into the Rio Puerco River (NRC 1981a). The area contaminated by the spill was surveyed and cleaned to standards developed by the New Mexico Environmental Improvement Division.

The record[11] shows that the previous owner of Section 17 – United Nuclear Corporation (UNC) – conducted conventional underground uranium mining on Section 17 for about thirty years before selling the land to HRI. The uranium ore that UNC withdrew from the underground mine at Section 17 was not processed at that site; rather, UNC hauled the ore to a milling site more than three miles from the mine. Parts of Section 17 are contaminated with mining spoil left over from UNC's underground mining operation. The contamination is in the form of fugitive dust and rocks apparently lost from trucks that hauled the ore from Section 17 to the milling site, or possibly from excavated rock used to build the road. See FEIS at 4-73; Draft Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico, at 3-14 to 3-16, 4-13 (May 1994) [hereinafter DEIS]; LBP-06-01, 63 NRC at 52 & n.7; CLI-06-14, 63 NRC at __ (slip op. at 4).

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[11] The "'adjudicatory record and Board decision (and, of course, any Commission appellate decisions) become, in effect, part of the FEIS'" (CLI-01-04, 53 NRC at 53 (quoting Louisiana Energy Services, L.P. (Claiborne Enrichment Center), CLI-98-03, 47 NRC 77, 89 (1998)). Accord 10 C.F.R. §§ 51.102 and 51.103.

The FEIS treats the radiological consequences of the above-described spoilage on Section 17 as background radiation that, pursuant to 10 C.F.R. § 20.1301(a)(1), is excluded from the TEDE calculation (FEIS at 4-72; CLI-06-14, 63 NRC at __ (slip op. at 6)). Although the FEIS recognizes that background radiation – including "remnant radiation stemming from previous mining" operations (FEIS at 4-73) – is excluded from the TEDE calculation, it nevertheless discusses such radiation, estimating that individuals in Church Rock and Crownpoint receive about 225 mrem/year from background radiation:

> The primary radiological impact to the environment in the vicinity of the project results from naturally occurring cosmic and terrestrial radiation and naturally occurring radon-222 and its daughters. The average whole-body dose rate to the population in this part of New Mexico includes a dose of 1.5 mSv/year (150 mrem/year) from local natural background radiation and 0.75 mSv/year (75 mrem/year) from medical procedures, based on national average. Therefore, total background is estimated to be about 2.25 mSv/year (225 mrem/year).

Id. at 4-72.[12]

The Intervenors claim that the FEIS ignores that background radiation levels at discrete locations in Church Rock can result in exposures to the general public of about 1000 mrem/year (Intervenors' Written Presentation at 23-24). For example, they assert that a member of the general public could receive such a radiation dose at the "eastern fence of the Section 17 restricted area, on the west side of State Route 566" (Intervenors' Written Presentation in Opposition to HRI's Application for a Materials License with respect to Radiological Air Emissions for Church Rock Section 17 at 19-20 (June 13, 2005) [hereinafter Intervenors' Radiological Air Emissions Presentation]).

Contrary to the Intervenors' assertion, however, the NRC Staff did not ignore the existence of discrete sources of higher background radiation in Church Rock. Section 3.7.1 of the

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[12] According to the FEIS, the population within a 50-mile radius of the entire project is about 76,500 persons. The population dose from natural background radiation would be about 17,000 man-rem/year (FEIS at 4-124), which the Intervenors state "is equivalent to about 222 mrem/year per individual" (Intervenors' Written Presentation at 26).

DEIS shows elevated background radiation near the old mine road and State Route 566, which is "consistent with past use of the road, which was probably contaminated by the act of hauling ore from the Section 17 UNC mine to the UNC mill" (NRC Staff's Response to Intervenors' Presentation on Radiological Air Emissions (Aug. 5, 2005), Exh. 1, Affidavit of Christepher A. McKenney at 7-8 (Aug. 5, 2005)). See also HRI's Response in Opposition to Intervenors' Written Presentation Regarding Air Emissions (July 29, 2005), Exh. A, Affidavit of Mark S. Pelizza at 12-16 (July 28, 2005) [hereinafter Pelizza Affidavit]; infra note 15. Notably, however, background doses as high as 1000 mrem/year fall within the "'typical [range of] background doses for most United States citizens in a given year'" (LBP-06-01, 63 NRC at 61 n.16) (quoting NUREG-1501, Background as a Residual Radioactivity Criterion for Decommissioning at 30 (Aug. 1994) (Draft Report), in HRI's Response in Opposition to Intervenors' Written Presentation Regarding Air Emissions, Annex C (July 29, 2005) [hereinafter HRI Annex C]).[13]

But as a practical matter, the Intervenors' concern that a member of the general public will receive 1000 mrem/year due to background radiation near the eastern fence of Section 17 at State Route 566 appears to be illusory. The Intervenors acknowledge that for an individual to receive that level of exposure, he or she must "occupy that [particular] location for an entire year" (Intervenors' Radiological Air Emissions Presentation at 20). Given that no residence currently exists at that location, and given that the Intervenors do not identify any evidence to

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[13] The national average dose of background radiation received by an individual is 300 mrem/year (LBP-06-01, 63 NRC at 60 n.16). However, annual doses can vary significantly from that figure depending on where a person lives. For example, a person living on sandy soil near the ocean may receive an annual background dose of 100 mrem/year, whereas a person living in a mountainous area in Colorado may receive an annual background dose of 1000 mrem/year (ibid.). "This range of [100 mrem/year to 1000 mrem/year] – a span factor of 10 – 'is typical of the variation in background doses for most United States citizens in a given year'" (ibid.) (quoting HRI Annex C at 30). This broad range itself, moreover, is subject to variation, because the cosmic component of background radiation can vary by ten percent over the eleven-year solar cycle (id. at 61 n.16). Additionally, sporadic natural phenomena – such as volcanic eruptions, earthquakes, and floods – can contribute significant additional background doses to the environment (ibid.).

support the conclusion that an individual would spend any significant time there, I find it unlikely that an individual would occupy that area except on a transient basis. See Pelizza Affidavit at 18-19. Thus, on this record, I conclude that the *actual* typical background radiation level for the general public at Church Rock is closer to the 225 mrem/year estimated in the FEIS, rather than the 1000 mrem/year alleged by the Intervenors.[14]

Importantly, when the FEIS analyzed the cumulative radiological impact at Section 17, it took into account the background radiation – including the radiological remnants from the prior mining operations – and concluded that the radiological impacts resulting from HRI's proposed operations will be "only slightly higher (well below a 1 percent increase) than the dose received from natural background radiation" (FEIS at 4-117; accord id. at 4-83). More specifically, the FEIS determined that the radiological exposure from HRI's operations at the downwind residence closest to the Section 17 mining site will be about 0.5 percent of the allowable regulatory limit – that is, about 0.5 mrem/year (id. at 4-83, 4-85; LBP-06-01, 63 NRC at 70).

The FEIS explains that the increase in cumulative impacts resulting from HRI's operations will be de minimis due to the nature of the ISL mining process and the protective technology that HRI plans to use (FEIS at 4-125):

> The proposed project would result in a negligible increase in cumulative impacts in the area due to uranium mining and milling. HRI has proposed an ISL process which, by its nature, does not result in large amounts of tailings or environmental releases of radioactive particulate material. Additionally, HRI has proposed to use a vacuum dryer, which reduces the total releases of radioactive particulates to nearly zero, and a pressurized process circuit with a feedback system to return radon to the mine zone, which reduces environmental radon releases. The expected exposures from the remaining possible sources of radon are a very small fraction of the allowable limits for exposure of the public. The amount of generated tailings is very small, in the tens of cubic meters per year, and would be disposed of at an off-site licensed facility. In addition, the facility and

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[14] It bears emphasizing that HRI will – subject to oversight by the NRC Staff – maintain a rigorous radiological monitoring program to ensure mining-related operations do not threaten public health and safety (LBP-06-01, 41 NRC at 78).

> related well fields would be required to be decontaminated and decommissioned to the appropriate State and Federal standards.

See also id. at 4-72 to 4-85, 4-124 to 4-125 (FEIS provides a detailed analysis of the estimated radiological impacts of the proposed ISL operations to nearby individuals); id. at 4-124 (FEIS states that the "proposed project would make a minor contribution to cumulative impacts in terms of health physics and radiological impacts"). The FEIS concludes that the minor addition to overall preexisting radiological impacts caused by HRI's operations poses no significant threat to public health and safety (ibid.; see also LBP-06-01, 63 NRC at 60).

Thus, consistent with 42 U.S.C. § 4332(2)(C), the FEIS provides a "detailed statement" about the history and impact of past uranium mining. And consistent with Commission case law, the FEIS adequately considers the "'incremental impact of [the radiological consequences of HRI's proposed mining operations], when added to other past [mining operations]'" (CLI-01-04, 53 NRC at 60) (quoting 40 C.F.R. § 1508.7), determining that HRI's project "would result in a negligible increase in cumulative [radiological] impacts in the area" (FEIS at 4-125). I therefore conclude that the Intervenors' assertion that the FEIS fails adequately to consider the history and impact of past conventional uranium mining at Section 17 is factually untenable.[15]

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[15] The Intervenors complain that the FEIS does not accurately report the "[e]xisting radon levels at Church Rock" (Intervenors' Written Presentation at 24). The Staff candidly acknowledges that "information regarding background radiation was inadvertently omitted from the FEIS" (NRC Staff's Response at 10); however, states the Staff, that information "was made available in the DEIS and was available to the public" (ibid.) and, equally important, the FEIS took that information into account in performing its NEPA analysis (FEIS at 4-82 to 4-83; see also CLI-01-04, 53 NRC at 63 (Commission observes that the FEIS "fully recognizes" that background radiation levels at Church Rock are "probably slightly elevated" due to previous mining activities)). Although ideally this information on background radiation should have been included in the FEIS (CLI-01-04, 53 NRC at 63), I find that its absence neither prejudiced the Intervenors nor undermined the correctness of the Staff's TEDE calculations or cumulative impacts analysis. See ibid. (Commission states that Intervenors were not prejudiced when information that was omitted from the FEIS was "made publicly available in the DEIS, was considered by the NRC Staff in its licensing decision, and was used and referenced by the intervenors in the hearing. Moreover, to the extent that the Presiding Officer's decision in any respect differs from the FEIS, the FEIS is deemed modified by the decision.").

Nor is there merit to the Intervenors' assertion that the FEIS' characterization of radiation from the surface spoilage on Section 17 as background radiation "constitutes a major misrepresentation for purposes of calculating the [TEDE]" resulting from the proposed ISL mining operations (Intervenors' Written Presentation at 25). The Intervenors argue that – contrary to the analysis in the FEIS – such radiation is not background radiation pursuant to 10 C.F.R. § 20.1003 and, thus, should not be excluded from the TEDE calculation pursuant to 10 C.F.R. § 20.1301(a)(1). See Intervenors' Written Presentation at 24-25.

This argument is foreclosed as a matter of law by the Commission's recent decision in CLI-06-14, where it squarely ruled that radiation attributable to the pre-existing radioactive residue from the prior mining on Section 17 is properly classified as background radiation that is excluded from the TEDE calculation (63 NRC at __-__ (slip op. at 6-12)).[16]

b. The FEIS Accurately Analyzes Radiological Air Impacts

The Intervenors assert that – independent of their allegation that the FEIS improperly fails to include radiation from past mining operations in the TEDE calculation – the TEDE calculation is still flawed, because "HRI presented no technical schematics, engineering diagrams, or operational history for its air effluent control system" (Intervenors' Written Presentation at 26). Because the FEIS allegedly fails to include adequate information to support the technical viability of HRI's proposed air effluent control system, the Intervenors claim that it fails adequately to analyze the radiological air impacts of HRI's proposed operations (ibid.).

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[16] The Commission explained that the pertinent regulation (10 C.F.R. § 20.1301(a)(1)), "ties the TEDE calculation to radiation from 'licensed operations'; it expressly excludes pre-existing 'background radiation'" (CLI-06-14, 63 NRC at __ (slip op. at 6)). In the instant case, "HRI's bare ownership of land containing radioactive mine spoil is not part of its NRC-licensed 'operation'" (id. at 7). Moreover, the mine spoil is not regulated by the Commission "both because Part 40 regulations exempt from regulations 'unimportant quantities' of source material and because the spoil is 'unrefined and unprocessed' ore" (id. at 9 n.39). See also LBP-06-01, 63 NRC at 52-71.

The Intervenors raised this precise argument on two prior occasions, and on each occasion, it was squarely rejected by the Presiding Officer. Initially, the Intervenors raised this argument in Phase I of this proceeding with regard to operations at Section 8, and the then-Presiding Officer found it to be "without merit" (LBP-04-23, 60 NRC at 458). Next, they raised it with regard to operations at Section 17 (LBP-06-01, 63 NRC at 77), and I rejected it for two alternative reasons. First, because the system that HRI will use at Section 17 is identical to the one it will use at Section 8, I rejected the Intervenors' challenge for the reasons articulated in "the former Presiding Officer's well-supported" decision (ibid.). Second, based on a plenary review of the record, I concluded that the Intervenors' argument was insubstantial in any event because: (1) the absence of technical documentation in the FEIS regarding HRI's proposed system was "understandable, because the design simply implements 'basic engineering fundamentals'" (id. at 78); and (2) HRI' proposed system was "not unusual," but rather was "tested and proven" and currently in use at NRC-licensed ISL sites in Wyoming and Texas (ibid.). Moreover, HRI will be required to implement a comprehensive radiological air emissions monitoring program to ensure its emissions "do not exceed regulatory limits and, thus, do not threaten public health and safety" (ibid.).[17]

The Intervenors present no new evidence to support their recycled argument, nor do they identify any error in LBP-04-23 or LBP-06-01 that would warrant revisiting those decisions. Accordingly, for the reasons articulated in LBP-06-01, 63 NRC at 77-78, I reject the Intervenors' argument.

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[17] The Commission declined to disturb my decision (CLI-06-14, 63 NRC at __ (slip op. at 5)), or the decision of the former Presiding Officer (CLI-04-39, 60 NRC 657 (2004)). I note that HRI will use the same technology at Unit 1 and Crownpoint that it uses at Sections 8 and 17.

c. The Air Quality Cumulative Impacts Analysis In The FEIS Is Adequate

The Intervenors argue that the "cumulative impacts section of the FEIS . . . convey[s] the false impression that there are no existing health impacts from prior human activities that could contribute to cumulative radiological and health impacts" caused by HRI's proposed ISL mining operations (Intervenors' Written Presentation at 26). More specifically, they assert that the FEIS is incorrect and inadequate because it "provides no information about the . . . higher non-background [radiological] levels in the Church Rock area" caused by prior mining activities at Section 17 (ibid.). I disagree, essentially for the reasons already discussed supra Part III.A.1.a.

The Intervenors are simply incorrect in their assertion that the FEIS conveys the absence of existing health impacts from prior mining activities. To the contrary, the FEIS states that the "primary radiological impact to the environment in the vicinity of the project results from [background radiation]" (FEIS at 4-72), which includes "remnant radiation stemming from previous mining and milling activities near the Church Rock site" (id. at 4-73). In its cumulative impacts analysis, the FEIS recognizes that past exposures to radioactive materials in earlier uranium mines "were large enough to result in a high incidence of cancer among workers" (id. at 4-124).[18] The FEIS emphasizes, however, that HRI's ISL mining operations will cause a "negligible increase in cumulative [radiological] impacts" (id. at 4-125), stating that it will (1) produce "less than 1 percent of the dose from natural background sources" (id. at 4-124), and (2) result in a "very small fraction of the allowable limits for exposure of the public" (id. at 4-125).

[18] As the FEIS explains, individuals who worked in the earlier uranium mines operated under less stringent regulatory standards and, as a result, were exposed to radiation levels that exceed what would be allowed today (FEIS at 3-87).

I find that – contrary to the Intervenors' assertion – the FEIS is neither inadequate nor incorrect in its cumulative radiological impacts analysis of the proposed project. Rather, the FEIS adequately considers the cumulative radiological impacts of HRI's proposed project (see supra pp. 11-16), and it rationally concludes that those impacts are acceptable (FEIS at 4-83).

2. The Intervenors' Claims Relating to Cumulative Impacts On Groundwater Resources Lack Merit

a. The FEIS' Representation Of Existing Water Quality Is Accurate

The Intervenors claim that the FEIS does not accurately represent existing water quality because: (1) it "does not address the impacts of [past uranium] mining on groundwater resources" (Intervenors' Written Presentation at 27); and (2) HRI improperly calculates the baseline water quality by combining lower quality groundwater from the ore zones with higher quality groundwater from the non-ore zones, thus "distorting the true quality of the groundwater" (ibid.). I agree with HRI (HRI's Response at 29-31) and the NRC Staff (NRC Staff's Response at 13-15) that the Intervenors' arguments lack merit.

First, contrary to the Intervenors' assertion, the FEIS addresses the impacts of past uranium mining on groundwater resources. In this regard, the cumulative groundwater impacts section of the FEIS states (FEIS at 4-123):

> Past actions that have contributed to cumulative impacts on groundwater in the region include underground uranium mining at the Church Rock site, which would have dewatered the Westwater Canyon aquifer and the Brushy Basin "B" Sand aquifer in the area of the existing workings and may have had some de-watering effects on the Dakota Sandstone aquifer. Dewatering effects would have lowered water levels in these aquifers for some distance around the work-ings and may have oxidized some of the rock around the workings by exposing it to the atmosphere. When mining stopped, the workings flooded, and after several years groundwater levels returned to pre-mining levels. Water quality in the workings was probably degraded, but groundwater quality outside the mine workings does not appear to have been affected.

The above discussion of the impact of previous uranium mining, coupled with the fact that the FEIS compiles the average background concentrations of principal chemical species in

the groundwater near the Church Rock and Crownpoint sites (FEIS at 4-15 to 4-16) – which reveals the *actual* impact of past mining on groundwater – refutes the Intervenors' assertion that the FEIS fails adequately to consider the impact of past uranium mining on groundwater quality.[19]

Nor is there merit to the Intervenors' claim that HRI's procedures for establishing groundwater baselines[20] will "distort" the true quality of the groundwater by combining lower quality groundwater from the ore zones with higher quality groundwater from the non-ore zones. The Intervenors raised the *identical* argument in Phase I of this proceeding as part of their challenge to HRI's proposed mining operations at Section 8 (LBP-99-30, 50 NRC at 93). The then-Presiding Officer ruled that the argument lacked merit (id. at 93, 99-100), and the Commission declined to disturb that decision (CLI-00-12, 52 NRC 1 (2000)).

Thereafter, in Phase II of this proceeding, the Intervenors raised the *same* argument as part of their challenge to HRI's proposed mining operations at Section 17, Unit 1, and Crown-point (LBP-05-17, 62 NRC at 92-98). I rejected the argument, concluding that: (1) the Intervenors failed to present a persuasive reason for re-visiting the issue (id. at 95); and (2) it

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[19] The Intervenors make a passing assertion that "[UNC's] mine and milling facilities at Church Rock [have] been declared a federal Superfund site because of extensive groundwater contamination there" (Intervenors' Written Presentation at 27). But the NRC responds – and the Intervenors do not dispute – that the above assertion is "inaccurate, because while the mill has been declared a Superfund site, the site of the old Church Rock mine on Section 17 has not been so designated. Thus, the mill tailings contamination is not relevant to any groundwater issues at Church Rock" (NRC Staff's Response at 14) (emphasis omitted).

[20] Prior to commencing mining operations, and subject to NRC inspection (FEIS at 2-20), HRI will obtain baselines for over 30 groundwater chemical constituents at the mining sites (id. at 2-21), which will serve as restoration criteria "on a parameter-by-parameter basis, [with] the primary goal of restoration . . . to return all parameters to average pre-mining baseline conditions" (id. at 2-20). If water quality parameters cannot be returned to pre-mining baseline conditions, "the secondary goal would be to return water quality to the maximum concentration limits specified in EPA . . . secondary and primary drinking water regulations" (ibid.).

lacked merit in any event (id. at 96-98). The Commission declined to disturb that decision (CLI-06-01, 63 NRC 1 (2006)).

The Intervenors' mere repetition of their argument has not improved its pedigree. For the reasons I rejected their argument in LBP-05-17, I reject it here.

b. The FEIS Accurately Portrays The Cumulative Effects Of HRI's Proposed Mining Operations On Groundwater

The Intervenors assert that the FEIS does not adequately analyze the combined effect of past and proposed mining activities on groundwater, because it fails to consider whether abandoned mine tunnels in Section 17 have collapsed, which could create "fractures that can transport contaminants" away from the ISL well fields (Intervenors' Written Presentation at 30). This argument lacks merit.[21]

The FEIS expressly states that "it [is] likely that many of the [old mine] workings [at Section 17] have collapsed, because the type of underground mining employed at the site would have caused some of the workings to collapse while the mine was in operation" (FEIS at 4-54). The FEIS nevertheless concludes that such collapsed workings, and any fractures resulting therefrom, do not pose a significant risk of horizontal or vertical excursions of contaminants (id. at 4-54 to 4-55).

Regarding horizontal excursions, the FEIS states that the potential for such "excursions should be low with a properly balanced [ISL] well field. HRI provided aquifer modeling results

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[21] Arguments that an intervenor fails – in derogation of 10 C.F.R. § 2.1233(c) – adequately to develop are treated as waived. See LBP-05-17, 62 NRC at 98 n.14; accord, e.g., Williams v. Eastside Lumberyard and Supply Co., 190 F. Supp. 2d 1104, 1114 (S.D. Ill. 2001); Carolina Power & Light Co. (Shearon Harris Nuclear Power Plant), ALAB-843, 24 NRC 200, 204 (1986). Consistent with this principle, I treat as waived the Intervenors' passing and unexplained assertion that the FEIS "misrepresents the hydrogeology and geochemistry of the [Westwater Aquifer] and its suitability for ISL mining; the true quality of existing groundwater, and the appropriate bleed rate used for controlling excursions" (Intervenors' Written Presentation at 28). It nevertheless warrants emphasizing that I am unaware of any record evidence (and the Intervenors fail to identify any) that supports their bald assertion.

that demonstrate that the project could be conducted while controlling [contaminant] migration" (FEIS at 4-54). Notably, the FEIS acknowledges that HRI's modeling improperly failed to take into account the possibility that old mine workings might extend into an ISL well field, which "may form preferential pathways for [contaminant] movement away from the well field. Therefore, the potential for horizontal excursions could be increased in areas of existing mine workings" (ibid.). However, states the FEIS, HRI will use a sensitive and efficacious monitoring system whose "potential to detect horizontal excursions . . . should be high" and whose ability to detect such excursions "would not be degraded by the presence of mine workings" (ibid.).[22] Accordingly, contrary to the Intervenors' assertion, the FEIS adequately considers the potential for horizontal excursions caused by collapsed mine workings, concluding that the risk of such excursions is not problematic, because HRI's "monitoring program should detect any horizontal excursions and . . . HRI would be required to correct [them] if they occurred" (ibid.).

The FEIS likewise adequately considers the potential for vertical excursions caused by old mine workings, determining that, for several reasons, the risk of such excursions is not problematic. First, in the event that any boreholes from the old mines are open, "pre-mining hydrologic testing will be used [by HRI] to identify and locate them; and during mining, overlying monitor wells will be used to identify and locate vertical excursions should they occur" (FEIS at 4-55).[23] Second, "HRI does not propose to drill any wells through old mine workings" (ibid.). If HRI were to determine, however, that it was economically feasible to extract uranium ore from

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[22] The Intervenors vaguely assert that "HRI's modeling used inappropriate analysis for Section 17" (Intervenors' Written Presentation at 29). To the extent the Intervenors meant that the FEIS failed to consider that HRI's modeling ignored the possibility that old mine workings might extend into an ISL well field, they are plainly in error (FEIS at 4-54). To the extent the Intervenors' intended their assertion to mean something else, I am constrained to treat their unexplained argument as waived (supra note 21).

[23] Although HRI did not discover any faults at the Church Rock site, the potential for faults to act as vertical pathways is not non-existent (FEIS at 4-55). "Therefore, HRI would conduct pre-mining tests to confirm aquifer confinement" (ibid.).

beneath old mine workings, it would employ a drilling technique – described in the FEIS – that would minimize the risk of vertical excursions (ibid.).

The FEIS acknowledges that ISL mining could cause additional collapsing of old mine workings. The FEIS concludes, however, that HRI's monitoring program for vertical excursions would promptly detect any problems, and HRI would "proceed immediately to determine the cause of the leakage and reverse the trend" (FEIS at 4-55; see also id. at 4-16 to 4-17 (explaining how "ISL monitoring programs are designed to ensure that any excursion is detected long before mining solutions can seriously degrade groundwater quality outside the well field area")). As the FEIS explains (id. at 4-55 to 4-56):

> ISL mining could increase the potential for old mine workings to collapse. Workings with walls near an injection well would experience an increase in pressure; those that were near a production well would experience a decrease in pressure. Thus, the workings as a whole might experience a range of varying pressures as mining proceeded through a well field. Vertical pathways for groundwater flow could be caused by the collapsing workings. If a collapse occurred during mining, vertical pathways could be created as the overlying rock layers collapsed into the workings or the collapse caused well casings to break. However, it should be possible to mine in the Westwater Canyon aquifer and not create a vertical excursion. This can be accomplished by sealing off the shafts or structuring well field pressures so that in the area around the shafts they are less than overlying aquifer pressures. However, HRI has not specifically demonstrated how this would be accomplished. Nevertheless, . . . HRI's commitment to perform monitoring near the old mine workings should provide adequate detection of potential excursions associated with the old mine shafts.

See also id. at 4-16, Table 4.5 (showing actual impact of previous mining on groundwater quality near the Church Rock and Crownpoint sites); id. at 4-60 to 4-63, 4-121 to 4-123 (discussing measures to mitigate discrete and cumulative impacts of HRI's proposed ISL operations on groundwater); id. at 4-123 (discussing impacts of previous mining on groundwater).[24]

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[24] As the above discussion shows, the Intervenors are manifestly incorrect when they assert that the "FEIS mentions the cumulative impacts of previous mining on groundwater in merely one paragraph at FEIS 4-123" (Intervenors' Written Presentation at 28).

I am satisfied that the FEIS adequately considers the cumulative impact of HRI's proposed ISL mining operation on groundwater contamination vis a vis the old mine workings. I therefore reject the Intervenors' claims to the contrary.

3. The Intervenors' Claims Relating To Cumulative Impacts On Radiological And Health Effects Lack Merit

The Intervenors assert that the FEIS does not adequately address "the cumulative levels of radiation that will result if the project proceeds" (Intervenors' Written Presentation at 30). Specifically, they allege that the FEIS' treatment of radiological health effects is deficient because (id. at 30-31): (1) the FEIS fails to account for the peculiar vulnerability of the affected population; and (2) the FEIS fails to assess the effects on Navajo workers of past uranium mining coupled with health and socioeconomic conditions. These allegations – which appear to focus on the cumulative radiological effects of HRI's project on "environmental justice" concerns[25] – lack merit. See HRI's Response at 25; NRC Staff's Response at 16-17.[26]

The FEIS expressly acknowledges that the relevant population for purposes of conducting an environmental justice analysis is the local Native American population, which "is almost entirely Navajo, and largely lives at a poverty level" (CLI-01-04, 53 NRC at 65) (citing FEIS at 4-112, 3-79, 3-56). Their impecunious condition sometimes requires that they "rely heavily on their livestock and gardens" for subsistence (FEIS at 3-86), which "could introduce exposure pathways . . . that potentially affect a population's exposure to – and health consequences of –

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[25] Pursuant to environmental justice principles, each agency should "identify and address, as appropriate, any disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (CLI-01-04, 53 NRC at 64) (internal quotation marks omitted). In the instant case, the "environmental justice analysis . . . is similar to a cumulative impacts analysis but also takes into account relevant features of the minority community" (id. at 69).

[26] The Intervenors also assert, without explanation, that the FEIS is "deficien[t]" because certain "data" – which the Intervenors never identify – is unduly "general" (Intervenors' Written Presentation at 30). This non-specific challenge to unidentified data is an undeveloped argument that must be treated as waived (supra note 21).

contamination" (id. at 3-85). Accordingly, states the FEIS, the models used to predict the radiological health impacts of HRI's ISL project "account[] for exposures possible from being outdoors much of the time and for consuming vegetative matter and animals affected by the project" (id. at 4-117; 4-75).

In addition to considering the local Navajo population's vulnerability to radiological effects due to subsistence living, the FEIS provides extensive health data, which shows that, "compared to the general U.S. population, the Navajo population suffers disproportionately from fatal accidents, alcoholism, diabetes, tuberculosis, and pneumonia" (CLI-01-04, 53 NRC at 65) (citing FEIS at 3-83 to 3-85). Infant mortality is also higher for the Navajo population, and the FEIS "highlights that there is a significantly higher rate of congenital anomalies among Navajo infants than for U.S. infants generally" (CLI-01-04, 53 NRC at 65-66) (citing FEIS at 3-80, 3-84 to 3-85). The higher rate of congenital anomalies is noteworthy because – although the evidence is not conclusive – the anomalies might be linked to past uranium mining operations. The FEIS explains (FEIS at 3-85) (citations omitted):

> [T]here is some evidence to indicate that radiation exposure may be related to the incidence of congenital anomalies. Researchers investigated the birth outcomes of Navajo infants born between 1964 and 1981 at the IHS hospital in Shiprock. The research concluded that there were trends in occurrences of adverse birth outcomes that lend limited support for the hypothesis that adverse genetic outcomes are related to radiation exposure. The associations were weak between unfavorable birth outcomes (including congenital anomalies and stillbirths) and radiation exposure of parents. The only statistically significant association was identified when the mother lived near uranium mill tailings or mine waste sites. However, when placing these conclusions in context, the researchers state that given the extensive uranium mining operations that have gone on for decades, including radiation exposures at levels greatly exceeding what would be allowed today, the lack of clear evidence for increased risk of adverse outcomes should be reassuring.

The FEIS also discusses the adverse consequences of prior uranium mining operations on former miners, stating that "[u]ranium mining was a large employer in the area and many individuals worked in the mining and milling operations" (FEIS at 4-124). Miners at that time

"operated under much less stringent standards than exist today, and this resulted in large exposures to radioactive materials, especially radon and its daughters. The exposures were large enough to result in a high incidence of cancer among workers" (ibid.). See also id. at 3-87 (miners who worked in prior mining operations "were exposed to radiation levels greatly exceeding what would be allowed today and were poorly informed of the potential health effects of radon gas"); id. at 4-124 to 4-125 (discussing how prior mining operations generated large amounts of radioactivity).

Notwithstanding the "effect of the long history of uranium mining in the area and the large exposures to radon . . . that occurred primarily to miners and resulted in a high incidence of cancer among them" (FEIS at 4-117), the FEIS concludes that the cumulative radiological impacts of HRI's ISL mining operations will be "negligible" (id. at 4-117, 4-125), even considering the particular circumstances of the environmental justice population (id. at 4-117). Accordingly, although "the local population largely lives at a poverty level, suffers disproportionately from various ailments, and may suffer from radiation-caused health effects" (CLI-01-04, 53 NRC at 69), the FEIS concludes that, because the incremental radiological effects of HRI's mining operations will be de minimis, "no cumulative environmental justice impacts are anticipated" (FEIS at 4-127).

I conclude that the FEIS adequately considers the cumulative radiological health effects on the environmental justice population (i.e., the Navajo Indians), and I reject the Intervenors' assertion to the contrary.[27]

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[27] That the Intervenors would have preferred that the FEIS contain additional details on any particular issue is not, standing alone, probative of the FEIS' adequacy. "One can always flyspeck an FEIS to come up with more specifics and more areas of discussion that conceivably could have been included" (CLI-01-04, 53 NRC at 71). The salient question is whether the FEIS took the required "hard look" at the relevant environmental consequences (see ibid.). Here, I have no difficulty answering that question in the affirmative.

4. The Intervenors' Claims Relating To Cumulative Impacts On Land Use Lack Merit

The Intervenors assert that the FEIS improperly fails to consider the cumulative impacts of the project on land use (Intervenors' Written Presentation at 32). More specifically, they allege that the "FEIS fails to evaluate the cumulative impacts to local residents of displaced land uses during the life of the project, or the risk that lands would be permanently closed to grazing due to the project's contamination of land or water" (id. at 33). Further, they assert that the proposed mitigation for any such displacement or disruption (i.e., monetary compensation) is inadequate (id. at 32). I agree with HRI and the NRC Staff that these arguments lack merit. See HRI's Response at 31; NRC Staff's Response at 17-19.

Preliminarily, I observe that the Intervenors raised this precise argument during their Phase I challenge to HRI's license to conduct mining operations at Section 8. The then-Presiding Officer rejected it, stating that the "FEIS has given adequate consideration to the relocation of individuals," and "grazing rights permittees and others who would be required to relocate will be compensated" (LBP-99-30, 50 NRC at 114) (citing FEIS at 4-118). In this regard, the FEIS states that McKinley County – where HRI's mining sites are located – is "largely rural and consists mostly of open range grazing land . . . . Of the nearly [3.5 million acres] in McKinley County, over 85 percent [3 million acres] is used for agricultural purposes [and livestock] grazing is the predominant agriculture land use with [2.7 million acres]" (FEIS at 3-53). Given the vast amount of grazing land available, the Presiding Officer said (LBP-99-30, 50 NRC at 118):

> [T]he land being removed from grazing is very small in comparison to the size of the vast desert in which it is located. I do not understand how anyone could possibly be prevented from raising livestock because ISL mining will take place on Section 8. Furthermore, there is no indication in the record that *any* family will be required to relocate. Accordingly, I find Intervenors' allegations about relocation and about grazing rights to be without merit.

The Commission affirmed (CLI-01-04, 53 NRC at 51), observing with approbation that even if HRI's mining operations disrupt grazing rights, the FEIS provides that such individuals "should be compensated accordingly" (ibid.) (citing FEIS at 4-95, 4-118). See FEIS at App. B-12, B-15 (HRI will be required to provide the compensation discussed in the FEIS).

The above rationale may logically be applied here to reject the Intervenors' argument regarding grazing rights and relocation, because: (1) the land being removed from grazing due to ISL operations at Section 17, Unit 1, and Crownpoint is small in comparison to the vast desert in which it is located, and it is therefore difficult to understand why anyone would be prevented from raising livestock due to such operations; and (2) even if grazing rights are disrupted or relocation is required, individuals will receive compensation.

My independent review of the FEIS confirms that the Intervenors' argument is insubstantial in any event. They are simply incorrect in asserting (Intervenors' Written Presentation at 32) that the FEIS fails to evaluate the cumulative impacts on land use. The FEIS explicitly acknowledges that HRI's project will "have adverse impacts on existing land uses" at the mining sites, the most obvious being "on-site disturbance[s] and restriction[s] during project construction and operations" (FEIS at 4-92). The FEIS explains, however, that such disturbances will be minor and short lived (id. at 4-93 to 4-94):

> [T]he impacts of [HRI's] land disturbance are expected to be temporary and insignificant because of the sequential nature of the project and HRI's proposals for site restoration and reclamation. During construction, land use in each well field would be restricted in only about [60 acres] at a time. Previous licensing experience indicates that well fields can be placed into production approximately [5 acres] at a time. Therefore, drilling activities would be concentrated in a small percentage of the proposed sites at any time.

In that regard, the FEIS states that HRI's operations will result in the "temporary disruption of livestock grazing at project sites," and it acknowledges that "[l]ocal residents have expressed concern that this disruption of grazing would adversely affect Navajo who have grazing permits for the land and rely on livestock as an important economic resource" (FEIS at

4-94). The FEIS observes that HRI has secured mineral leases from the entities possessing legal titles to the resources it plans to develop, and that under the Federal General Mining Law of 1872, "mineral rights owners can interrupt surface grazing permits in order to remove minerals" (ibid.). To mitigate this disruption, HRI will compensate individuals whose grazing rights on project lands would be interrupted during project construction and operation (id. at App. B-12, B-15; id. at 4-118).[28]

Another land use impact of HRI's project addressed in the FEIS is the "potential relocation of residents within the Unit 1 site boundaries" (FEIS at 4-94). The FEIS provides the following discussion of this impact (ibid.):

> Assuming a license were granted for [HRI's] project, it would not be possible to determine how many individuals or families might have to be relocated until well drilling began. Field interviews conducted by HRI and NRC in July 1993 indicated that there were seven residences occupied by 26 persons in the Unit 1 lease area. These persons are Navajo allottees (who own the surface and mineral rights) or their tenants. Leases for both the surface use and mineral rights on these allotted lands are administered by the BIA. The BIA and the allottees who would be affected by the proposed project have signed agreements with HRI authorizing mineral leases and surface use of the land for mining activities. In most cases, the individuals and families who would be relocated or denied access to their land were voluntary signatories to the leases negotiated by HRI. The need for relocations and access restrictions, which would be temporary (i.e., for the duration of mining operations in the lease area and until the area has been released for public access), was explained to the signatories as a condition of the leases.

The FEIS notes that "there might be some instances where individuals or families who were living on allotted lands but who were not signatories to the leases would be required to relocate"

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[28] The Intervenors are incorrect in asserting that the the FEIS inadequately considers the risk that lands would be permanently closed to grazing due to the project's contamination of land or water (Intervenors' Written Presentation at 33). As shown above in text, the FEIS expressly concludes that the impact on grazing will be temporary, not permanent (see FEIS at 4-125 to 4-126), and it recognizes that HRI will provide fair compensation for individuals whose grazing rights are adversely affected (see id. at 4-118). Moreover, the FEIS recognizes that if HRI is unable to restore the groundwater to preestablished quality levels at Section 8, "mining at the Church Rock site would cease and no mining would be allowed at either the Unit 1 or Crownpoint site" (id. at 2-28).

(ibid.). But in all such instances, the individuals will receive compensation for the disruption (id. at 4-118).

The FEIS concludes that – because the effects on land use will be temporary due to the nature of ISL mining operations, because HRI will compensate individuals who experience temporary disruptions related to land use, and because HRI will provide for site restoration and reclamation – "the combination of existing land disturbance, new disturbance related to the project, and disturbance from reasonably foreseeable future actions is not expected to represent a significant cumulative impact" (FEIS at 4-126; see also id. at 4-125 ("[t]he proposed project would not make a significant contribution to cumulative land use impacts in the region")).

I find that the FEIS' cumulative impacts analysis with respect to land use is adequate, and that the proposed mitigation measures are acceptable. I therefore reject the Intervenors' contrary arguments.

B. THE INTERVENORS' CHALLENGE TO THE FEIS' STATEMENT OF PURPOSE AND NEED IS BARRED BY THE LAW OF THE CASE DOCTRINE AND LACKS MERIT IN ANY EVENT

The FEIS is required to include a description of the "underlying purpose and need" of a proposed project (40 C.F.R. § 1502.13). The benefits described by the project's purpose and need are among the factors that are weighed against the project's costs in striking the cost-benefit balance required by NEPA. See, e.g., Public Service Co. of Oklahoma (Black Fox Station, Units 1 & 2), ALAB-573, 10 NRC 775, 804 (1979)). In the instant case, the Intervenors assert that the statement of purpose and need in the FEIS "does not describe the true purpose and need" for HRI's project (Intervenors' Written Presentation at 35), and that this deficiency has "skewed the entire review process and represents a fundamental flaw in the [FEIS]" (id. at 36). I reject this argument for two alternative reasons. See HRI's Response at 32; NRC Staff's Response at 19-21.

First, this argument is barred by the law of case doctrine.[29] In Phase I of this proceeding, the Intervenors raised this precise argument, contending that "the FEIS provides an inaccurate and simplistic statement of purpose and need which unreasonably distorts the entire FEIS" (LBP-99-30, 50 NRC at 112). The then-Presiding Officer rejected this argument (id. at 124), and the Commission affirmed, finding that (1) the FEIS "recognizes the general need for domestic uranium production" (CLI-01-04, 53 NRC at 48), and (2) the Intervenors "have not called into question the general interest in maintaining a domestic uranium production industry or HRI's possibly significant role as a domestic uranium producer" (ibid.). The NRC Staff rightly observes that, although the Commission's decision in CLI-01-04 adjudicated only the Intervenors' challenge to the Section 8 site, the "statement of purpose and need is independent of any specific project area" (NRC Staff's Written Response at 20). Accordingly, I conclude that the Commission's decision in CLI-01-04 regarding the correctness and adequacy of the FEIS' statement of purpose and need applies with equal force here and precludes the Intervenors' challenge.

Second, and in any event, I conclude – based on an independent review of the record – that the Intervenors' challenge to the FEIS' statement of purpose and need lacks merit. The Intervenors' principal argument is that the FEIS is flawed because it "does not describe the true purpose and need for [HRI's proposed ISL mining project], but rather describes the purpose and need . . . as the NRC's duty to license and regulate the proposal" (Intervenors' Written Presentation at 35). The Intervenors are incorrect.

It must be acknowledged that – as the Intervenors point out (Intervenors' Written Presentation at 34-35) – the FEIS section entitled "Purpose of and Need for the Proposed

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[29] Subject to limited exceptions not applicable here, "legal determinations made on appeal in a case are controlling precedent, becoming the 'law of the case,' for all later decisions in the same case" (CLI-06-11, 63 NRC at 488).

Action" is asthenic, glibly stating (as relevant here) that the "purpose of the proposed action is to license and regulate HRI's proposal to construct and operate facilities for ISL uranium mining and processing" (FEIS at 1-3).[30] The Intervenors, focusing exclusively on that sentence, urge me to find that the FEIS is deficient. But the myopic analysis urged by the Intervenors is inconsistent with Commission precedent, which directs that "the FEIS should be read and understood as a whole" (CLI-01-04, 53 NRC at 47).

Read in its entirety, the FEIS reveals that the purpose and need of HRI's project is to promote the critical goal of maintaining a domestic uranium production capability (CLI-01-04, 53 NRC at 48). In this regard, the FEIS states that the U.S. Secretary of Energy has a statutory responsibility "to encourage [the] use of domestic uranium" (FEIS at 5-1) (quoting 42 U.S.C. § 2296b-3). The FEIS thus recognizes that the "viability of the [domestic uranium mining] industry is a Federal concern and that there is a public interest in the uranium supply" (FEIS at 5-1). Between 1985 and 1994, states the FEIS, "annual domestic uranium production decreased by 75 percent, while annual imports of uranium increased by 300 percent" (ibid.). In 1994, domestic uranium production was less than 5 million pounds, while uranium imports totaled more than

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[30] The FEIS section entitled "Purpose of and Need for the Proposed Action" states in its entirety (FEIS at 1-3) (citations omitted):

> The purpose of the proposed action is to license and regulate HRI's proposal to construct and operate facilities for ISL uranium mining and processing. The NRC's need for action is to fulfill its statutory responsibility to protect public health and safety and the environment in matters related to source nuclear material. The [Bureau of Land Management's] and [Bureau of Indian Affairs'] need for action is to fulfill their statutory responsibilities to regulate mining activities on Federal and Indian lands.

HRI asserts that the above statement is correct to the extent it acknowledges the "NRC's statutory responsibility to properly regulate licensed activities" (HRI's Response at 32). HRI's assertion, while true, is beside the point. The proper inquiry for determining the sufficiency of the purpose and need statement is whether the FEIS, read as a whole, includes a correct and adequate description of the purpose and need of the *"proposed action"* (10 CFR Pt. 51, Subpt. A, App. A, § 4) (emphasis added), which, here, is HRI's plan to construct and operate an ISL mining facility, not the NRC Staff's prospective responsibility to regulate such a facility.

35 million pounds (ibid.). The FEIS concludes that HRI's "proposed project, which would produce about 1 million pounds of uranium per year at each of the . . . project sites, would have the beneficial effect of helping the United States offset this deficit in domestic production" (ibid.).

The FEIS thus "identifies domestic uranium production as the primary public benefit associated with this project" (CLI-01-04, 53 NRC at 47) and, relatedly, it indicates that the purpose and need of the project is – consistent with Congress' objective (FEIS at 5-1) – to maintain the "domestic uranium mining industry" (ibid.), which plainly is "in the national interest" (CLI-01-04, 53 NRC at 48). I find that, contrary to the Intervenors' assertion, the FEIS correctly and adequately identifies the purpose and need of the proposed project.

C. THE INTERVENORS' CHALLENGES TO THE FEIS' DISCUSSION OF ALTERNATIVES LACK MERIT

The FEIS must contain a discussion of alternatives, which is considered to be "the heart of the environmental impact statement" (10 CFR Pt. 51, Subpt. A, App. A, § 5). This discussion shall identify "reasonable alternatives" and present the "environmental impacts of the proposal and the alternatives in comparative form" (ibid.). It also shall "include a final recommendation on the action to be taken" (ibid.). The Intervenors contend that the FEIS' discussion of alternatives violates NEPA for the following four reasons (Intervenors' Written Presentation at 36-40): (1) the FEIS' improper statement of purpose and need fatally taints the discussion of alternatives; (2) the FEIS fails to explain why alternatives are rejected; (3) the FEIS fails adequately to address the "no action" alternative; and (4) the FEIS fails to perform an ultimate cost-benefit analysis among alternatives.

I address these arguments in turn, concluding that each lacks merit. See HRI's Response at 32-38; NRC Staff's Response at 21-27.

1. There Is No Merit To The Intervenors' Claim That The FEIS' Alternatives Analysis Is Fatally Tainted By An Improper Statement Of Purpose And Need

The Intervenors assert that the FEIS incorrectly identifies the purpose and need of the HRI's proposed action and, accordingly, the discussion of alternatives is flawed because it fails to take into account the project's true purpose and need (Intervenors' Written Presentation at 37). I summarily reject this argument, because its premise – that the FEIS misstates the project's purpose and need – is erroneous. As discussed supra Part III.B, the FEIS properly identifies the purpose and need of the project as maintaining the "domestic uranium mining industry" (FEIS at 5-1; accord CLI-01-04, 53 NRC at 48).

Nor is there merit to the Intervenors' claim that the FEIS is deficient because it fails to consider the possibility of blending down highly enriched uranium (HEU) for use as reactor fuel as a reasonable alternative to HRI's proposed mining project (Intervenors' Written Presentation at 37). This claim ignores that the primary purpose of HRI's proposed action is not simply to provide fuel for nuclear power plants; rather, it is "to help maintain the viability of a dwindling 'domestic uranium mining industry'" (CLI-01-04, 53 NRC at 55) (quoting FEIS at 5-1). Because blending down HEU for reactor fuel would *not* promote that goal and, hence, would *not* satisfy the primary purpose of the project, it is outside the scope of reasonable alternatives that must be considered under NEPA. See City of Angoon v. Hodel, 803 F.2d 1016, 1021 (9th Cir. 1986) ("When the purpose [of a proposed action] is to accomplish one thing, it makes no sense to consider the alternative ways by which another thing might be achieved."), cert. denied, 484 U.S. 870 (1987); Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 195 (D.C. Cir.) (same), cert. denied, 502 U.S. 994 (1991); Exelon Generation Co., LLC (Early Site Permit for Clinton ESP Site), CLI-05-29, 62 NRC 801, 808 (2005) (Commission states that NEPA imposes no obligation to "examine [alternatives] that would do nothing to satisfy this particular project's goals").

2. There Is No Merit To The Intervenors' Claim That The FEIS Fails To Explain Why Alternatives To The Preferred Alternative Were Rejected

The Intervenors argue that the FEIS fails adequately to explain why the alternative selected – i.e., HRI's proposed action – was preferred to the other alternatives considered (Intervenors' Written Presentation at 38). I disagree. See HRI's Response at 34-35; NRC Staff's Response at 23-24.

The FEIS takes a hard look at HRI's proposal to construct and operate an ISL mining facility, and it discusses reasonable alternatives that would promote the project's goal of "maintain[ing] the viability of a dwindling 'domestic uranium mining industry'" (CLI-01-04, 53 NRC at 55) (quoting FEIS at 5-1). At the outset, for example, the FEIS determines that conventional mining methods are not a reasonable alternative to HRI's proposed action (FEIS at 2-1):

> [S]urface and open pit mining are not reasonable alternatives because the ore bodies at the proposed sites are too deep to be extracted economically. Further, underground mining would have more significant environmental impacts than ISL mining, and the ore from underground mining would require processing at a conventional uranium mill to produce the final product. Significant quantities of tailings . . . would be produced by conventional mining, which are normally disposed of on-site at the conclusion of the mill's operating life. . . . The environmental impacts of underground mining and conventional milling would be more severe that those of ISL mining. Consequently, underground mining and conventional milling are not evaluated in this FEIS.

The FEIS then proceeds to examine HRI's proposed action, including a detailed description of the ISL well field procedures and equipment (FEIS at 2-2 to 2-5), the lixiviant chemistry used for the mining process (id. at 2-5 to 2-7), the processing facilities, including the central plant for yellowcake drying and packaging at Crownpoint (id. at 2-7 to 2-9), the uranium recovery process (id. at 2-9 to 2-12), the waste retention ponds for the storage of wastewater until treatment (id. at 2-12 to 2-14), the environmental and plant monitoring system (id. at 2-14), the control of gaseous effluents and airborne particulates (id. at 2-15), the control of liquid effluents (id. at 2-16), wastewater treatment and disposal options (id. at 2-16 to 2-19), aquifer restoration

(id. at 2-20), land reclamation (id. at 2-20 to 2-23), and plant decontamination and decommissioning (id. at 2-23). Additionally, the FEIS critically examines HRI's proposed mining sites and development plan – i.e., commencing mining operations at Sections 8 and 17 in Church Rock to be followed by operations at Crownpoint and Unit 1 in Crownpoint (id. at 2-26 to 2-28).

Regarding what it characterizes as "Alternative 2," the FEIS examines using different sites for mining and processing, as well as using different liquid waste disposal methods (FEIS at 2-28 to 2-31). The FEIS states that the alternative sites for ISL mining include the Church Rock site only, the Unit 1 site only, the Crownpoint site only, the Church Rock and Unit 1 sites only, the Church Rock and Crownpoint sites only, or the Unit 1 and Crownpoint sites only (id. at 2-31). Because the primary difference between these alternatives and HRI's proposed project is that ISL mining would occur at only one or two of HRI's proposed sites, the FEIS addresses the "potential environmental impacts of mining at the [alternative] sites . . . as subunits of the proposed project" (ibid.). That is, for each type of environmental impact, the FEIS breaks its discussion down into separate sections for Church Rock, Unit 1, and Crownpoint.

The FEIS also considers alternative sites for yellowcake drying and packaging. Specifically, the FEIS examines the potential environmental impacts if drying and packaging were performed at the following sites (FEIS at 2-31): (1) Church Rock; (2) Unit 1; (3) HRI's existing ISL facility at Kingsville, Texas; and (4) the Ambrosia Lake uranium mill, located north of Milan, New Mexico.

Additionally, observing that HRI proposes to dispose of liquid wastes "through a combination of evaporation ponds, aquifer reinjection, land application, and reinjection into the Westwater Canyon sandstone outside the mining area" (FEIS at 2-31), the FEIS addresses the potential environmental consequences if HRI were to use alternative combinations of evaporation ponds, deep-well injection, land application, and surface discharge (ibid.).

Regarding what it characterizes as "Alternative 3," the FEIS examines HRI's proposed action, but with additional measures required and recommended by the NRC Staff to promote safety and protect public health and the environment (FEIS at 2-32).[31]

The FEIS then, in Section 4, provides an in-depth discussion on how HRI's proposed action and the various alternative actions may adversely affect the environment and how these impacts may be mitigated. Specifically, the FEIS considers potential impacts on air quality and noise, geology and soils, groundwater quantity and quality, surface water quality and quantity, transportation risk, health physics and radiological exposures, existing ecological conditions, land use, socioeconomic conditions, aesthetic resources, and cultural resources (FEIS at 4-1 to 4-127). Based on that discussion, coupled with the discussion of the costs and benefits associated with HRI's proposed action (id. at 5-1 to 5-7), the FEIS concludes that the "potential significant impacts of the proposed project can be mitigated, and that HRI should be issued a . . . license from NRC" (id. at xxi). The license, however, "should be conditioned on the commitments made by HRI in its license application and related submittals . . . and the various NRC Staff mitigation requirements and recommendations discussed in Section 4 and Appendix B" (ibid.).

There is no merit to the Intervenors' assertion that the decision in Simmons v. United States Army Corps of Eng'rs, 120 F.3d 664 (7th Cir. 1997), supports their argument that the FEIS fails to show why HRI's proposed action is a "good one" (Intervenors' Written Presentation at 38) (quoting Simmons, 120 F.3d at 667). The FEIS amply explains why HRI's proposed action, as modified by the Staff, is acceptable. Namely, (1) the project serves the important federal interest of maintaining the domestic uranium mining industry (FEIS at 5-1), (2) the project will provide a number of socioeconomic benefits to the local community (ibid.), (3) potential

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[31] The FEIS also considers the "no action" alternative, which it characterizes as Alternative 4, and which I discuss infra Part III.C.3.

significant environmental impacts of the project can be mitigated (id. at xxi), and (4) the project is sufficiently protective of public health and safety and the environment (id. at xxi, 2-32).

To the extent the Intervenors complain nonspecifically that the FEIS' discussion of alternatives is inadequate (Intervenors' Written Presentation at 38), they ignore that the Commission has directed that, in situations like this where an agency is being asked to approve a private applicant's proposed project, the agency may – taking into account the applicant's economic goals – accord appropriate deference to the applicant's proposed siting and design plans (CLI-01-04, 53 NRC at 55-56). In the instant case, taking into account that (1) HRI is a private applicant, (2) HRI proposes to mine on sites where it has a property interest and where the uranium ore body is located, and (3) a principal purpose of HRI's proposed project is to help maintain the viability of the Nation's domestic uranium mining industry, I conclude that the scope of alternatives considered by the NRC Staff and the discussion thereof was reasonable. I further conclude that the FEIS – read as a whole – adequately discusses HRI's proposed action and alternatives to that action. Finally, I conclude that the FEIS adequately explains why HRI should be issued a license for its proposed action, as modified by the additional protective and mitigative measures required and recommended by the NRC Staff to protect public health and safety and the environment.

3. There Is No Merit To The Intervenors' Claim That The FEIS Fails Adequately To Address The No Action Alternative

One of the alternatives generally discussed in an FEIS is the alternative of taking "no action" (CLI-01-04, 53 NRC at 54; 10 C.F.R. Pt. 51, Subpt. A, App. A, § 4). Here, the Intervenors argue that the FEIS "could not evaluate the no action alternative in an evenhanded manner since the articulated purpose and need for the project was [deficient]" (Intervenors' Written Presentation at 39). I summarily reject this argument because its premise – that the statement of purpose and need is deficient – is erroneous (supra Part III.B).

Moreover, I am satisfied – based on my independent review of the FEIS – that the discussion of the no action alternative is adequate. The adequacy of the no action alternative discussion in an FEIS is governed by a rule of reason (Louisiana Energy Services, L.P. (Claiborne Enrichment Center), CLI-98-03, 47 NRC 77, 97 (1998)). The discussion "'need not be exhaustive or inordinately detailed'" (ibid.) (quoting Farmland Preservation Ass'n v. Goldschmidt, 611 F.2d 233, 239 (8th Cir. 1979)). Indeed, it "need not [contain] much discussion. It is most simply viewed as maintaining the status quo" (CLI-01-04, 53 NRC at 54) (citations omitted).

Here, the no action alternative would mean the non-issuance of HRI's license. This "alternative would have the advantage of obviating all of the health and environmental impacts associated with the project" (CLI-01-04, 53 NRC at 54), which the FEIS expressly acknowledges.[32] But the no action alternative "also would forego uranium production [from any of the sites] and the beneficial socioeconomic impacts discussed in the FEIS" (ibid.) (internal quotation marks omitted), which include long-term local employment, increased local income, growth of local businesses, the potential for local development, and additional tax revenues generated by the project for the Navajo Nation and McKinley County (FEIS at 4-96 to 4-103, 5-1 to 5-6).

The FEIS clearly, if not explicitly, rejects the no action alternative "because the impacts of the project were found acceptable, while the ISL mining would yield significant quantities of domestically produced uranium as well as some local socioeconomic benefits" (CLI-01-04, 53 NRC at 54) (citing FEIS at 4-120 to 4-127) (finding cumulative impacts either minor or, given

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[32] The FEIS examines the impacts of the no action alternative for each of the eleven resource categories considered in Section 4. See, e.g., FEIS at 4-5, 4-14, 4-63, 4-66, 4-72, 4-88, 4-92, 4-96, 4-105, 4-109, 4-112. Thus, insofar as the Intervenors aver that the FEIS fails to consider the impacts of the no action alternative (Intervenors' Written Presentation at 39), they are patently incorrect.

license conditions and other mitigative measures, acceptable for, inter alia, air quality, radiological health, ecology, land use, transportation risk, and groundwater).

Notwithstanding that the Intervenors – as well as some residents of McKinley County (FEIS at 4-117) – would prefer the no action alternative, "NEPA imposes no obligation to select the most environmentally benign alternative" (CLI-01-04, 53 NRC at 55) (citing Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989)). I conclude that the FEIS' treatment of the no action alternative comports with NEPA, and I reject the Intervenors' assertion to the contrary.

4. There Is No Merit To The Intervenors' Claim That The FEIS Fails To Perform An Ultimate Cost-Benefit Analysis Among Alternatives

The environmental impact statement must provide a cost-benefit analysis among alternatives that, inter alia, "considers and weighs the environmental effects of the proposed action [and the] alternatives available for reducing or avoiding adverse environmental effects" (10 C.F.R. § 51.71(d)). Here, the Intervenors claim that the FEIS' cost-benefit analysis is deficient because it fails to compare the project's costs and benefits or to draw a conclusion about whether the benefits of the project outweigh the environmental risks and harms (Intervenors' Written Presentation at 40). The Intervenors are incorrect.

Preliminarily, I find it significant that – with respect to the cost-benefit analysis for the Section 8 site – the former Presiding Officer found "no basis for disturbing the Staff's FEIS conclusion that it is desirable to initiate a project that creates minimum risks to public health and safety and to the environment and that increases local economic activity" (LBP-99-30, 50 NRC at 113) (footnote omitted). The Commission affirmed (CLI-01-04, 53 NRC at 50), but it left open the issue of the adequacy of the cost-benefit analysis for the remaining three sites, stating that the issue's resolution may be different if a subsequent hearing reveals "any significant new finding bearing on the overall project's costs" (ibid.). In the instant proceeding, the Intervenors

voluntarily limited themselves to the arguments and evidence they previously presented during the Section 8 adjudication. See supra note 6. Thus, as a matter of logic, it might reasonably be concluded that the rationale in LBP-99-30, as affirmed in CLI-01-04, governs here and mandates the rejection of the Intervenors' challenge to the cost-benefit analysis, because – given the litigative restraints the Intervenors' voluntarily assumed – they can not, and did not, present new evidence or arguments "bearing on the overall project's costs" (CLI-01-04, 53 NRC at 50). My independent review of the FEIS confirms this conclusion.

Section 5 of the FEIS – which is entitled "Costs and Benefits Associated with the Proposed Project" (FEIS at 5-1) – confutes the Intervenors' assertion that the FEIS fails to conduct a cost-benefit analysis for the project. As Section 5 states, the project will have the beneficial effects of: (1) promoting the Nation's interest in maintaining a viable domestic uranium mining industry (ibid.); (2) helping offset the Nation's multi-year deficit in domestic uranium production (ibid.); (3) generating revenues for HRI resulting from the sale of processed uranium (ibid.); (4) providing employment and income for the local community (id. at 5-1, 5-3 to 5-4); (5) providing royalty income for members of the local community who hold leases negotiated with HRI (id. at 5-1, 5-4); (6) possibly providing some improvement to over-grazed lands by closing off grazing for a limited period of time while well fields are developed and operated (id. at 5-1); and (7) providing significant tax revenues for McKinley County and possibly for the Navajo Nation (id. at 5-4 to 5-5). See also id. at 4-96 to 4-103 (discussing socioeconomic impacts of the project).

On the debit side of the cost-benefit balance, Section 5 examines the following costs to Crownpoint, Church Rock, McKinley County, and the Navajo Nation that may be caused by HRI's project (FEIS at 5-6 to 5-7): (1) the expenses of infrastructure related to population increases induced by the project's employment; (2) the expenses related to fires and emergencies arising from potential accidents on public roads; and (3) the expenses related to the risk of contaminating or degrading public water supplies. Notably, the FEIS concludes that HRI's

project will result in "no significant costs" to any segment of the local community for infrastructure growth (id. at 5-6). The FEIS likewise concludes that HRI's project will result in no costs to any segment of the local community due to emergencies arising from potential accidents on public roads, because "HRI would supply or pay for emergency response training and any costs for health care facility" (ibid.). Finally, no segment of the local community will incur costs relating to the risk of contaminating public water supplies, because HRI's project will pose "no risk to water supplies" for Church Rock, McKinley County, or the Navajo Nation (ibid.). As to Crownpoint, HRI will be required to "replace the town of Crownpoint water supply wells before mining at the Crownpoint site" (id. at 5-7). HRI will pay for "[r]eplacement wells and [the] distribution system, along with the additional annual costs of system operation and maintenance" (ibid.).[33]

In addition to considering the above monetary costs resulting from HRI's project, the FEIS considers the potentially adverse impacts in the following environmental-related areas: (1) air quality and noise (FEIS at 4-1 to 4-5); (2) geology and soils (id. at 4-6 to 4-14); (3) groundwater quantity and quality (id. at 4-15 to 4-63); (4) surface water quality and quantity (id. at 4-63 to 4-66); (5) transportation risk (id. at 4-67 to 4-72); (6) health physics and radiological exposures (id. at 4-72 to 4-88); (7) existing ecological conditions (id. at 4-88 to 4-92); (8) land use (id. at 4-92 to 4-96); (9) socioeconomic conditions (id. at 4-96 to 4-105); (10) aesthetic resources (id. at 4-105 to 4-109); and (11) cultural resources (id. at 4-109 to 4-112).

The FEIS ultimately concludes that the primary and secondary benefits of the project outweigh the costs and potential harm (FEIS at xxi), because: (1) the project promotes a federal interest (id. at 5-1); (2) the project provides the local community with a number of socioeconomic benefits (ibid.); (3) the project imposes no significant costs on the local community (id. at 5-6); and (4) the "potential significant impacts of the proposed project can be mitigated"

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[33] HRI's obligation to replace the water supply wells at Crownpoint is discussed in greater detail infra Part III.D.1.

(id. at xxi). The Intervenors thus err in asserting that the FEIS fails to perform a cost-benefit analysis or to determine whether the benefits of the project outweigh any harms.[34]

D. THERE IS NO MERIT TO THE INTERVENORS' CLAIM THAT THE FEIS' DISCUSSION OF MITIGATION MEASURES IS INADEQUATE

When preparing an environmental impact statement, in addition to considering the adverse environmental impacts of a proposed action (42 U.S.C. § 4332(C)(ii)), the NRC Staff must consider measures to mitigate such impacts by examining "alternatives available for reducing or avoiding adverse environmental effects" (10 C.F.R. § 51.71(d)). "Mitigation must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated" (Neighbors of Cuddy Mt. v. United States Forest Serv., 137 F.3d 1372, 1380 (9th Cir. 1998) (internal quotation marks omitted). Here, the Intervenors contend that the FEIS' discussion of mitigative measures is deficient because (Intervenors' Written Presentation at 41-42): (1) it fails adequately to evaluate the mitigative measure of moving the Crownpoint water supply; (2) it improperly defers consideration of certain mitigation measures; and (3) it fails to recognize that certain land use mitigation measures will have negative socioeconomic impacts. I agree with HRI and the NRC Staff that these arguments lack merit. See HRI's Response at 33-36; NRC Staff's Response at 27-29.

1. There Is No Merit To The Intervenors' Claim That The Mitigation Measure Of Moving The Crownpoint Water Supply Is Not Adequately Evaluated

HRI's license requires that, prior to commencing mining operations at the Crownpoint site, HRI "shall replace the town of Crownpoint's water supply wells . . ., construct the necessary water pipeline, and provide funds so the existing water supply systems of the Navajo Tribal

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[34] The Intervenors are also incorrect in asserting that the FEIS fails to analyze the costs and benefits of the various alternatives (Intervenors' Written Presentation at 40). That analysis, which is discussed in Sections 3 through 5 of the FEIS, is summarized in LBP-99-30, 50 NRC at 133-46 (Tables 4 through 15), which is properly considered "part of the FEIS" (CLI-01-04, 53 NRC at 53).

Utility Authority (NTUA) and the Bureau of Indian Affairs (BIA) can be connected to the new wells" (SUA-1508, License Condition (LC) 10.27(A)). The Intervenors argue that this requirement to relocate the Crownpoint drinking water wells is not adequately addressed in the FEIS, because (Intervenors' Written Presentation at 41): (1) the FEIS allegedly fails to discuss whether there are suitable locations for replacements wells; and (2) the FEIS allegedly fails to address the impacts of losing the current wells on the future needs of this growing community. These arguments do not provide a basis for invalidating HRI's license.[35]

First, the Intervenors are incorrect in asserting that the FEIS fails adequately to address whether there are suitable locations for replacement wells. The FEIS states that – prior to the injection of lixiviant at the Crownpoint site – HRI must replace Crownpoint's water supply wells, and must effect all necessary changes to the pumps, pipelines, and other water supply systems "so the system can continue to provide the same quantity of water" (FEIS at 4-62). 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" (ibid.). HRI must "coordinate with the appropriate agencies and regulatory authorities, including the BIA, the Navajo Nation Department of Water Development and Water Resources, and the [Navajo Nation Environmental Protection Agency], and the NTUA" in determining the appropriate placement of the new wells (ibid.).

The above requirements ensure that HRI obtains significant local involvement in the process of selecting suitable locations for the replacement wells, thus guaranteeing – contrary to the Intervenors' assertion – that the selection of well location will provide drinking water of

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[35] The purpose of moving the drinking water wells for the town of Crownpoint is twofold: (1) it avoids a cone of depression caused by the pumping of drinking water that could cause an excursion of lixiviant during mining operations (see FEIS at 4-43 to 4-44); and (2) it avoids the potential risk, based on conservative analysis, of contaminating drinking water wells with excessive concentrations of uranium (id. at 4-49).

"acceptable . . . quality and quantity" (FEIS at 4-49). I find that the FEIS adequately discusses this mitigation measure. To the extent the Intervenors are concerned that HRI may not find a suitable location for replacement wells, the FEIS and LC 10.27 provide for that contingency; namely, under such circumstances, HRI would not be permitted to commence mining operations at the Crownpoint site. As the former Presiding Officer stated when the Intervenors advanced this identical concern, "[i]f there is no appropriate way to move the wells, then they will not be moved and the no-action alternative for Crownpoint will be implemented" (LBP-99-30, 50 NRC at 117).

There is likewise no merit to the Intervenors' concern that the FEIS fails adequately to consider the impacts of losing the current wells on the future needs of this growing community. The FEIS explicitly observes that the town of Crownpoint "experienced rapid population growth recently" (FEIS at 3-56). During the 1980s, the Crownpoint population nearly doubled, and by 1990, a total of 2,108 persons resided there (id. at 3-56, 3-57). The FEIS concludes that this rapid growth was attributable to several factors, including (id. at 3-56): (1) the improved access to the town due to the completion of State Highway 371; (2) the fact that Crownpoint is a key center for Navajo Nation social services; and (3) the construction in the town of a new hospital, high school, and shopping center.

Against this factual backdrop of population growth, the FEIS states that HRI will be required "to relocate the town of Crownpoint drinking wells to an alternative location *with acceptable groundwater quality and quantity*, prior to mining at the Crownpoint site, *to ensure a continued source of high-quality water* to the town" (FEIS at 4-49) (emphasis added). The license condition that mandates this mitigative measure commands that the replacement wells will be located so that they "can continue to provide at least the same quantity of water as the existing systems" (LC 10.27(A)). Additionally, HRI must seal the old wells so they "cannot

become future pathways for the vertical movement of contaminants" (LC 10.27(B)). See also FEIS at 4-62.

Thus, the replacement wells for the town of Crownpoint will have at least the same capacity as its current wells and, accordingly, the loss of its existing wells will not adversely affect Crownpoint's future water supply needs. Moreover, the sealing of Crownpoint's current wells will ensure that its future water needs are supplied with high-quality water that is free from contamination related to HRI's mining activities. It bears reiterating that HRI will pay for all the costs associated with the "[r]eplacement wells and distribution system, . . . along with the additional annual costs of system operation and maintenance" (FEIS at 5-6). Finally, as stated previously, if it is determined – at the time HRI prepares to commence mining operations at Crownpoint – that replacement wells will not meet Crownpoint's future needs, the no-action alternative for Crownpoint will be implemented. I therefore conclude that the FEIS' consideration of mitigation measures associated with the relocation of Crownpoint's drinking water wells is adequate. The Intervenors' contrary arguments are without merit.

2. There Is No Merit To The Intervenors' Claim That The FEIS Improperly Defers Consideration Of Mitigative Measures

The Intervenors assert that the FEIS is flawed because, rather than discussing "other mitigative measures" at this time, it allows "HRI to submit [at a later date] additional tests or information that would normally be required in the license application" (Intervenors' Written Presentation at 41). For example, state the Intervenors, HRI's license "does not require HRI to submit a surety estimate or plan for the proposed mines and mill until after licensing, even though a surety is already required by NRC regulations prior to licensing of a source materials mining facility" (ibid.). I conclude that the Intervenors' claim does not provide a basis for invalidating HRI's license, because their attack on the timing of HRI's submission of its surety

estimate and financial assurance plan is an issue that already has been addressed and resolved by the Commission.

In CLI-00-08, the Commission considered the Intervenors' claim that "HRI's failure to submit a financial assurance plan with cost estimates renders its [license] application in violation of [Commission] regulations" (51 NRC 227, 237 (2000)). The Commission acknowledged that "the NRC Staff's review and approval of the financial assurance plan and its cost estimates most logically should come prior to, or be part of, the issuance of a license[, but this] was not done here" (id. at 238). The Commission nevertheless ruled that, in the circumstances of this case, there was "no need to set aside HRI's already granted license" (ibid.). Instead, to correct the effect of this omission, the Commission imposed an additional condition on HRI's license, which "prohibits use of the license until the required information [regarding cost estimates] is submitted and a financial assurance plan approved by the NRC Staff is in place" (ibid.) (emphasis omitted).[36]

HRI, in turn, submitted its cost estimates and financial assurance plan for the ISL project in 2001, and the NRC Staff approved the plan (LBP-04-03, 59 NRC at 88, 89 n.20). The Intervenors already have availed themselves of the opportunity to challenge that plan. See LBP-05-17, 62 NRC 77, 102-15 (2005), pet. for review denied, CLI-06-01, 63 NRC 1 (2006); LBP-04-03, 59 NRC 84, 89-108 (2004), aff'g in part and rev'g in part, CLI-04-33, 60 NRC 581 (2004).

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[36] The Commission emphasized that HRI was not required to provide the Staff with its actual surety arrangement before receiving a license. Rather, "[s]urety arrangements are matters appropriately addressed after issuance of the license, and even after completion of a hearing. Criterion 9 [of 10 C.F.R. Part 40, Appendix A] makes clear that a surety arrangement is necessary as a prerequisite to *operating*, not as a prerequisite to *licensing*" (CLI-00-08, 51 NRC at 240 n.15).

The Intervenors' renewed attack on the belated submission of HRI's financial assurance plan – which they curiously characterize as a challenge to the FEIS – lacks merit.[37]

3. There Is No Merit To The Intervenors' Claim That The Mitigation Measures For Land Use Impacts Are Unacceptable

As previously discussed (supra Part III.A.4), the FEIS recognizes that HRI's project will have temporary land use impacts at the mining sites, resulting in the temporary disruption of livestock grazing at project sites and the potential temporary relocation of residents within mining site boundaries (FEIS at 4-92 to 4-94). The Intervenors claim that the mitigation measure in the FEIS for ameliorating this impact – i.e., HRI's compensation of any affected individual (id. at 4-118) – is inadequate, because "monetary compensation cannot mitigate the damage done by forced relocation of families and livestock" (Intervenors' Written Presentation at 42).

The Intervenors raised this precise argument earlier in the context of challenging the FEIS' treatment of cumulative impacts on land use, and I rejected it (supra Part III.A.4). Consistent with the analysis in the FEIS (FEIS at 4-118, 4-125 to 4-126) and the rationale from

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[37] I reject the Intervenors' assertion that the NRC Staff improperly permits HRI to submit certain test results after the license is issued "rather than prior to licensing when they are subject to more rigorous mandatory review and licensing hearings" (Intervenors' Written Presentation at 41). First, this undeveloped assertion fails to state a litigable claim (see supra note 21). Second, even if this obscure assertion were litigable, it appears to be substantially equivalent to an argument the Intervenors previously advanced with their groundwater challenges, when they argued that certain "license conditions governing the establishment of groundwater baseline conditions and upper control limits for specified groundwater parameters deprive them of their hearing rights because HRI is permitted to determine these values *after* this hearing is closed and *without* any regulatory oversight" (LBP-05-17, 62 NRC at 93) (citations and footnote omitted). I determined that the Intervenors' argument lacked merit, because: (1) the challenged license conditions require HRI to adhere to a prescriptive and highly detailed methodology that will provide reasonable assurance that HRI's actions will not endanger public health and safety (id. at 93-94 & n.11); (2) the Intervenors had a full opportunity to identify flaws, omissions, or irregularities in the licensing methodology (id. at 93-94); and (3) HRI's future actions will be subject to continuing NRC regulatory oversight and enforcement authority (id. at 95). The Commission declined to disturb that decision (CLI-06-01, 63 NRC at 5), and the Intervenors provide no reason to revisit it.

relevant case law (LBP-99-30, 50 NRC 77, 117-18 (1999), aff'd, CLI-01-04, 53 NRC 31, 34 (2001)), I concluded that – because the effects on land use will be short-lived and because HRI will provide for site restoration and reclamation – the land use impact will not be significant and, accordingly, monetary compensation will adequately mitigate any temporary land use disruption or displacement (supra Part III.A.4). Absent the presentation of new facts or arguments – and the Intervenors present none – I decline to revisit that conclusion.

E. THE INTERVENORS' CHALLENGES RELATING TO SUPPLEMENTATION OF THE FEIS LACK MERIT

The Intervenors contend that the NRC Staff, in failing to supplement the FEIS, acted contrary to NEPA and its implementing regulations. Specifically, they argue that (Intervenors' Written Presentation at 44-51): (1) the inclusion of performance-based concepts[38] in HRI's license should have been discussed in a supplement to the FEIS; (2) the FEIS contains new or revised action alternatives that require supplementation; (3) the planned sequence for mining operations has changed, requiring supplementation; and (4) the proposal to build a nearby housing development and the 2005 passage of the Diné Natural Resources Protection Act are factual changes requiring supplementation of the FEIS. In light of these alleged defects in the FEIS, the Intervenors request that HRI's license for Section 17, Unit 1, and Crownpoint be

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[38] Performance-based licensing in the ISL mining context is explained as follows (CLI-99-22, 50 NRC at 17 n.51 (internal quotation marks omitted)):

> The performance-based license condition is structured such that uranium recovery licensees are required to submit applications for all license amendments, unless they can demonstrate that the provisions specified in the performance-based license condition have been satisfied. In addition, the performance-based license condition requires that a summary of all changes made under the condition be provided to NRC in an annual report. Therefore, the performance-based license condition provides the same degree of flexibility contained in the regulations and licenses for other nuclear facilities, and is consistent with established NRC policy.

revoked or, in the alternative, that the NRC Staff be ordered to circulate a supplemental environmental impact statement for public comment. See id. at 43-44.

Preliminarily, it is useful to review the legal standards governing the mandatory supplementation of an environmental impact statement. Pursuant to 10 C.F.R. §§ 51.72(a), 51.92(a), the NRC Staff shall supplement an environmental impact statement if: (1) "[t]here are substantial changes in the proposed action that are relevant to environmental concerns," or (2) "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." The Commission has provided the following guidance for implementing these standards (CLI-99-22, 50 NRC 3, 14 (1999) (quoting Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 373 (1989), and Sierra Club v. Froehlke, 816 F.2d 205, 210 (5th Cir. 1987)):

> A Supplemental [EIS] is not necessary "every time new information comes to light after the EIS is finalized." As a general matter, the agency must consider whether the new information is significant enough to require preparation of a supplement. The new information must present "a seriously different picture of the environmental impact of the proposed project from what was previously envisioned."

With the above principles in mind, I now examine the Intervenors' arguments. I conclude that none provides a basis for invalidating HRI's license or ordering that the FEIS be supplemented. See HRI's Response at 38-47; NRC Staff's Response at 29-35.

1. The Intervenors' Challenge To The Performance-Based Concepts In HRI's License Is Barred By The Law Of The Case Doctrine

The Intervenors argue that the performance-based concepts in HRI's license renders the license invalid for two reasons (Intervenors' Written Presentation at 44): (1) performance-based licensing violates NEPA and the Atomic Energy Act (AEA); and (2) even if performance-based licensing is not unlawful, the FEIS must be supplemented because, according to the Intervenors, the performance-based provisions in HRI's license could significantly and

adversely affect human health and the environment. Both arguments are barred by the law of the case doctrine.

First, the Commission has rejected the Intervenors' claim that performance-based licensing in HRI's license violates NEPA and the AEA. The Commission unequivocally ruled that performance-based licensing "is fully consistent with . . . sound NEPA practice" (CLI-99-22, 50 NRC at 17), and "does not run counter to any agency mandate contained in the [AEA] or any established Commission regulation" (id. at 16). Rather, the performance-based concepts in HRI's license "[comport] with the Commission's efforts over the years to allow reasonable flexibility in its regulatory framework. It is simply an additional means through which the NRC can decrease the administrative burden of regulation while ensuring the continued protection of public health and safety" (id. at 16-17). See also CLI-01-04, 53 NRC at 51-52 (Commission observes that it previously rejected the Intervenors' claim that performance-based licensing violates NEPA and the AEA). The Intervenors' attempt to resurrect this claim is thus barred by the law of the case doctrine.

Second, the Intervenors' claim that HRI's license must be supplemented to discuss the fact that HRI's license contains performance-based provisions is likewise barred by the law of the case doctrine. When the Commission previously considered this argument, it observed that an EIS must be supplemented only when changed circumstances "'cause effects which are significantly different from those already studied'" (CLI-01-04, 53 NRC at 52) (quoting Davis v. Latschar, 202 F.3d 359, 369 (D.C. Cir. 2000)). See also 10 C.F.R. §§ 51.72(a), 51.92(a) (Commission regulations *require* that an EIS be supplemented *only* if there are "substantial changes in the proposed action that are relevant to environmental concerns," or "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts"). Here, the plain language of HRI's performance-based licensing provision, LC 9.4, requires it to apply for a license amendment if any "change, test, or experiment" it wishes to

undertake is inconsistent with the findings in the FEIS (CLI-01-04, 53 NRC at 52) (internal quotation marks omitted). HRI is prohibited from taking any action that could "'affect the quality of the human environment in a significant manner or to a significant extent not already considered'" (ibid.) (quoting Marsh v. Oregon Natural Res. Council, 490 U.S. 360, 374 (1989)). There is thus "no reason to believe that performance-based licensing, as applied to this license, will result in any increased risks to public safety or to the environment" (LBP-99-30, 50 NRC at 116). Given these circumstances, the Commission had no difficulty ruling that the "inclusion of performance-based concepts in HRI's license does not warrant FEIS supplementation" (CLI-01-04, 53 NRC at 52). That ruling is the law of the case, and it governs here.

2. The Intervenors' Assertion That The FEIS Must Be Supplemented Based On Changes In the Action Alternatives Lacks Merit

The Intervenors assert that the FEIS must be supplemented because it "presents a set of alternatives that are substantively different than the alternatives presented in the DEIS" (Intervenors' Written Presentation at 45). In particular, argue the Intervenors, the second alternative in the FEIS "proposes various arrays of alternative mining sites, alternative sites for yellowcake drying and packaging, and alternative liquid waste disposal methods[, none of which was] presented for consideration in the DEIS" (ibid.), and the third alternative discusses mitigation measures that were not discussed in the DEIS (id. at 45-46). The Intervenors claim that the FEIS must be supplemented and made available for public comment on these alternatives (id. at 45). This argument is barred by the law of the case doctrine and lacks merit in any event.

During Phase I of this litigation, the Intervenors advanced the *identical* attack on the second and third alternatives in the FEIS. See Intervenors' Written Presentation in Opposition to HRI's Application for a Materials License with Respect to NEPA Issues at 65-66 (Feb. 19, 1999). The then-Presiding Officer rejected their argument, finding that the challenged alterna-

tives were not substantial changes that warranted supplementing the FEIS. He explained (LBP-99-30, 50 NRC at 116):

> [The second and third alternatives discussed in the FEIS do] not . . . involve any substantial change in the description of the project. What the Staff did was to pursue further analysis of the proposed project, including the evaluation of some fresh alternatives and the evaluation of some license conditions that helped to improve safety and reduce risk to the environment. Consistent with 10 C.F.R. § 51.72(a), I conclude that this further Staff analysis did not require a further circulation of the FEIS for comment. Nor was it necessary to develop further alternatives for evaluation.

The Commission affirmed (CLI-01-04, 53 NRC at 52-53), and that decision governs here.

Even if the law of the case doctrine did not preclude consideration of the Intervenors' argument, I would reject it on the merits. Regarding the Intervenors' attack on the second alternative in the FEIS, the alternative mining sites considered in the FEIS were *subsets* of the HRI's proposed sites and, hence, were "well within the 'spectrum' and 'range' of alternatives discussed in the [DEIS]" (CLI-01-04, 53 NRC at 53) (quoting Dubois v. United States Dep't of Agric., 102 F.3d 1273, 1292-93 (1st Cir. 1996), cert. denied, 521 U.S. 1119 (1997)). The different liquid waste disposal methods considered in the second alternative likewise were within the spectrum of alternatives proposed by HRI or considered in the DEIS. Compare FEIS at 2-31 ("[t]he FEIS examines the impacts of HRI's proposal and alternative liquid waste disposal methods, including various combinations of evaporation ponds, deep-well injection, land application, and surface discharge") with ibid. ("HRI proposes to dispose of liquid wastes through a combination of evaporation ponds, aquifer reinjection, land application, and reinjection into the Westwater Canyon Sandstone") and DEIS at 2-15 to 2-17 (the DEIS discusses as waste disposal methods evaporation ponds, deep-well disposal, land application, and surface discharge). Finally, the Intervenors' challenge to the second alternative's discussion of different sites for yellowcake drying and packaging is without merit, because the Staff simply pursued

further analysis of the proposed project, which resulted in no "substantial changes . . . relevant to environmental concerns" that require supplementing the FEIS (10 C.F.R. § 51.92(a)(1)).

Nor is there merit to the Intervenors' assertion that the third alternative in the FEIS improperly discusses mitigation measures that were not discussed in the DEIS. It is well established that "the FEIS, in response to comments received, may supplement, refine, or otherwise adapt the project alternatives" (CLI-01-04, 53 NRC at 53). The Staff's addition of mitigation measures to an FEIS is, thus, not only permissible, it is properly viewed as the Staff's conscientious performance of its NEPA responsibilities. See ibid. ("[t]he FEIS . . . might typically add 'mitigation measures' to an alternative").

3. There Is No Merit To The Intervenors' Claim That HRI's Change In The Planned Sequence Of Mining At Church Rock Requires Supplementing The FEIS

The Intervenors contend that HRI's decision to change the mining sequence at Church Rock by beginning mining operations at Section 8, rather than Section 17 (as stated in the DEIS), is a substantial change requiring that the FEIS be supplemented (Intervenors' Written Presentation at 46-47). I disagree.

In Phase I of this proceeding, the then-Presiding Officer considered the Intervenors' assertion that the above change in mining sequence at Church Rock is a substantial change requiring FEIS supplementation. He rejected the assertion insofar as it related to mining operations at Section 8, and he stated that the question was premature with regard to Section 17. He explained (LBP-99-30, 50 NRC at 116-17):

> Intervenors have . . . challenged whether the change in the order of mining Section 8 and Section 17 requires supplementation of the FEIS. . . . That question need not be answered in this phase of the case. If it is inappropriate to mine Section 17 after Section 8 or if subsequent mining of Section 17 raises important questions requiring supplementation[, that question] may be reserved for a subsequent portion of this case. In that portion of the case, Intervenors will need to raise some question concerning how the change in the order of mining will *affect drinking water.* Accordingly, I do reserve the question concerning the impact of the change in the order of mining.

The Intervenors were thus on notice that – if they wished to go forward with their claim that the FEIS should be supplemented due to HRI's decision to change the sequence of mining at Church Rock – they were required to "raise some question concerning how the change in the order of mining will affect drinking water" or some other aspect of the environment (LBP-99-30, 50 NRC at 117). This they failed to do. Rather, the Intervenors simply aver that the altered mining sequence is a "substantial change" (Intervenors' Written Presentation at 47) without demonstrating why this change is significant or relevant to environmental concerns. I therefore reject their claim that the FEIS requires supplementation based on HRI's change in the sequence of mining at Church Rock. See HRI's Response at 41; NRC Staff's Response at 32.

Notably, previously in Phase II of this proceeding, I rejected as insubstantial the Intervenors' argument that HRI failed to show that drinking water supplies would be protected during mining operations at Section 17 (LBP-05-17, 62 NRC at 115-22). As a matter of logic, that ruling negates the Intervenors' unsupported suggestion that HRI's decision to change the sequence of mining operations at Church Rock will adversely affect the drinking water during Section 17 mining operations. In any event, if new and significant information comes to light showing that HRI's mining operations adversely affect the drinking water (or any part of the environment), the Intervenors – or any member of the public – may seek to institute an action regarding HRI's authority to operate under its NRC license (10 C.F.R. § 2.206(a)).

4. There Is No Merit To The Intervenors' Claim That The Proposal To Build A Nearby Housing Development And The Recent Enactment Of The Diné Natural Resources Protection Act Require Supplementing The FEIS

The Intervenors assert that the following two events, which occurred subsequent to the issuance of the FEIS, are significant new circumstances that require supplementing the FEIS (Intervenors' Written Presentation at 47-51): (1) the proposal to build a 1,000 unit housing development, the Springstead Estates Project, which would be constructed within two miles of

Sections 8 and 17 in Church Rock; and (2) the passage in 2005 by the Navajo Nation of the Diné Natural Resources Protection Act, which bans uranium mining and processing within Navajo Indian Country. I agree with HRI and the NRC Staff that the Intervenors' arguments fail to provide a basis for supplementing the FEIS. See HRI's Response at 42-47; NRC Staff's Response at 33-35.

At an earlier stage of this proceeding, the Intervenors argued that the FEIS should be supplemented to discuss the impacts of mining operations at Sections 8 and 17 on the proposed Springstead Estates Project (SEP). The then-Presiding Officer rejected that argument. He explained (LBP-04-23, 60 NRC at 448-49) (footnotes omitted)):

> [M]y determination necessarily turns upon two related questions: (1) whether there has already been a "hard look" taken at the potential environmental consequences of HRI's mining operations affecting the proposed SEP as required by NEPA; and (2) whether the new circumstance, in this case the SEP, presents a "seriously different picture of the environmental impact of the proposed project." In short, will the SEP be affected by HRI's uranium mining "in a significant manner or to a significant extent not already considered." Following an examination of all the filings on this matter, including the affidavits of proffered experts, I find that the requirements of NEPA have been satisfied, and that the Intervenors have not presented a prima facie case that the SEP represents a "significant new circumstance" such that a supplement to the existing FEIS is warranted.

In concluding that the proposed SEP did not represent a significant new circumstance that warranted supplementing the FEIS, the former Presiding Officer rejected the *identical* arguments that the Intervenors present here (Intervenors' Written Presentation at 48-49). In a comprehensive and compelling analysis, he examined the following issues with regard to mining operations at Sections 8 and 17: (1) the possibility of horizontal groundwater excursions that could contaminate SEP drinking water (LBP-04-23, 60 NRC at 450-53); (2) the possibility of vertical groundwater excursions due to geologic faults that could contaminate SEP drinking water (id. at 453-54); (3) the possibility of vertical groundwater excursions due to old mine workings that could contaminate SEP drinking water (id. at 454-56); (4) the possibility of radiological airborne emissions that could affect SEP residents (id. at 456-58); (5) the possibility of

transportation risks associated with the SEP (id. at 459); and (6) the possibility of new environmental justice concerns resulting from the SEP (id. at 459-60). He concluded that the above issues were adequately discussed in the FEIS, and that the proposed SEP did not warrant supplementing the FEIS (id. at 448-49).

The Commission "agree[d] with the Presiding Officer that there is no reason [based on the proposed SEP] warranting FEIS supplementation as to [Sections 8 and 17]," and it therefore denied the Intervenors' petition for review (CLI-04-39, 60 NRC at 658 n.2).

I, too, agree with the former Presiding Officer. Because the Intervenors utterly fail to show "how the additional population from the proposed housing development would make any material difference to the extensive discussion and analysis already provided in the FEIS" (CLI-04-39, 60 NRC at 661), I reject as insubstantial their recycled argument that the proposed SEP warrants supplementing the FEIS.[39]

I also reject the Intervenors' argument that the Diné Natural Resources Protection Act (DNRPA), passed in 2005 by the Navajo Nation Council, is a "significant new circumstance" that requires FEIS supplementation (Intervenors' Written Presentation at 50). First, I agree with HRI and the NRC Staff that the Intervenors – having agreed to limit their NEPA-related arguments here to those they raised in the Section 8 proceeding (supra note 6) – are barred from raising this argument. See HRI's Response at 46; NRC Staff's Response at 34 n.13.

Even if the Intervenors were not precluded from raising this argument, I would conclude that it lacks merit. As previously discussed, a supplement to the FEIS is required when (10 C.F.R. § 51.92(a)): (1) there are substantial changes in the proposed action that are relevant to environmental concerns; or (2) there are significant new circumstances or information relevant to environmental concerns that bear on the proposed action or its impacts. Here, the Inter-

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[39] Whether the SEP ever will be built appears, on this record, to remain conjectural (LBP-04-23, 60 NRC at 452).

venors fail to provide evidence or argument to suggest that the DNRPA calls into question any of the environmental conclusions in the FEIS. Absent any indication that the DNRPA will result in a significantly new potential impact not considered in the FEIS, supplementation is not required.[40]

IV. CONCLUSION

For the foregoing reasons, I find – with the concurrence of Special Assistants Dr. Richard Cole and Dr. Robin Brett – that HRI and the NRC Staff have demonstrated by a preponderance of the evidence that the Intervenors' challenges relating to the adequacy of the FEIS do not provide a basis for invalidating HRI's license to perform ISL uranium mining operations at Section 17, Unit 1, and Crownpoint.

Pursuant to 10 C.F.R. §§ 2.786(b) and 2.1253, a party wishing to challenge this Decision before the Commission must file a petition for review within 15 days after service of this Decision. Any other party to this proceeding may, within 10 days after service of a petition for review, file an answer supporting or opposing Commission review (id. § 2.786(b)(3)). The filing of a petition for review is mandatory for a party seeking to exhaust its administrative remedies before seeking judicial review (id. §§ 2.786(b)(1) and 2.1253). If no party files a petition for

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[40] HRI persuasively argues that the DNRPA does not implicate a substantial NEPA-related concern in any event. The issue to be determined under the DNRPA, states HRI, is whether the sites on which HRI proposes to conduct NRC-licensed mining operations are in "Indian country" (HRI's Response at 47). Although resolution of this issue may affect HRI's ability to mine, it does not touch on a significant environmental concern relating to the impact of its proposed mining operations. Rather, HRI states that this issue is analogous to the requirement that HRI obtain EPA underground injection control permits and aquifer exemptions prior to commencing operations. Although federal permits and exemptions must be mentioned in the FEIS (10 C.F.R. §§ 51.90 and 51.71(c)), the absence of such mention does not perforce render the FEIS invalid. See HRI's Response at 46-47; cf. FEIS at A-5 (whether an agency has authority to grant a permit "has a strong bearing on the issuance of necessary permits and the operation of HRI's proposed project, [but it] has little bearing on the identification and evaluation of environmental impacts and mitigative measures in the FEIS"); LBP-06-01, 63 NRC at 71 n.29 ("[P]ursuant to the terms of its license, HRI will be required to ensure its operations do not run afoul of [the DNRPA] prior to commencing operations. See LC 9.14.").

review of this Decision, and if the Commission does not sua sponte review it, this Decision constitutes the final action of the Commission 30 days after its issuance (id. § 2.1251(a)).

It is so ORDERED.

BY THE PRESIDING OFFICER[41]

/RA/
E. Roy Hawkens
ADMINISTRATIVE JUDGE

Rockville, Maryland
August 21, 2006

[41] Copies of this Final Partial Initial Decision were sent this date by Internet e-mail transmission to counsel for: (1) HRI; (2) the Intervenors; and (3) the NRC Staff.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
HYDRO RESOURCES, INC.	)	Docket No. 40-8968-ML
	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LB FINAL PARTIAL INITIAL DECISION (PHASE II CHALLENGES TO IN SITU LEACH MINING MATERIALS LICENSE REGARDING ADEQUACY OF ENVIRONMENTAL IMPACT STATEMENT) (LBP-06-19) have been served upon the following persons by U.S. mail, first class, or through NRC internal distribution.

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[Original signed by Evangeline S. Ngbea]

Office of the Secretary of the Commission

Dated at Rockville, Maryland,
this 21st day of August 2006