

November 7, 2008

Chief, Rulemaking, Directives and Editing Branch
Mail Stop T6-D59
U.S. Nuclear Regulatory Commission
Washington, D.C.20555-0001
Electronic Mail: NRCREP.Resource@nrc.gov

RE: Uranium Recovery GEIS; Draft GEIS Comments

Dear Chief:

The Southwest Research and Information Center (“SRIC”), the Bluewater Valley Downstream Alliance (“BVDA”), Eastern Navajo Diné Against Uranium Mining (“ENDAUM”) and the Haaku Water Office of the Acoma Pueblo (“Haaku Water Office”), and with the support of the undersigned organizations and individuals, hereby submit the following comments on Nuclear Regulatory Commission’s Draft Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, NUREG-1910 (“GEIS”).

I. Introduction

The Nuclear Regulatory Commission’s (“NRC”) draft GEIS is grossly deficient and violates the National Environmental Policy Act of 1969 (“NEPA”), the Council on Environmental Quality (“CEQ”) regulations and guidance on NEPA, and the NRC’s own regulations implementing NEPA. The draft GEIS violates NEPA, CEQ regulations and guidance, and NRC regulations in a number of ways. Most important, issuing the draft GEIS before adopting regulations governing ISL operations clearly violates NEPA and

appears to be nothing more than a way to expedite the NRC's licensing process. The NRC also violates NEPA in other fundamental ways, including, but not limited to, failing to address regional cumulative impacts, failing to evaluate in any meaningful way mitigation measures and failing to address reasonable alternatives. By ignoring significant environmental impacts both past and present from an industry that has yet to fully clean up its pollution, the draft GEIS represents a significant, if not complete, abdication of the NRC's responsibility to carefully evaluate the environmental impacts of uranium mining. Equally important, the GEIS' substantial deficiencies have robbed the public of its opportunity to meaningfully participate in the NEPA process because its environmental analyses are so thin as to be meaningless. Because the GEIS's failures are so broad and deep, the NRC must withdraw the draft GEIS and start the scoping and drafting process again from the beginning.

II. Factual Background

On July 24, the U.S. Nuclear Regulatory Commission published a Notice of Intent ("NOI") to publish a Generic Environmental Impact Statement for Uranium Milling Facilities ("GEIS") in the Federal Register. 72 Fed. Reg. 40344 (July 24, 2007). The GEIS purports to assess the potential "generic" impacts of in-situ leach ("ISL") milling in the "western United States" and the impacts of alternative methods of uranium recovery, including conventional milling. *Id.* at 40,444 – 40,345. The Draft GEIS was issued on July 28, 2008. *Notice of Availability of Draft Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities*, 73 Fed. Reg. 43795 (July 28, 2008). The NRC held a series of public hearings in Nebraska, Wyoming and New Mexico. *See*, <http://www.nrc.gov/materials/fuel-cycle-fac/licensing/geis.html#schedule>.

Representatives from SRIC, ENDAUM, BVDA, the Haaku Water Office and the New Mexico Environmental Law Center provided oral comments at the hearings in Gallup, Grants, and Albuquerque, New Mexico. The following comments are intended to supplement, advance and incorporate by reference those comments.

III. The NRC Must Promulgate ISL Regulations Before Issuing an ISL GEIS.

The GEIS's stated purpose is to "improve the efficiency of NRC's environmental reviews for ISL license applications" under NEPA. GEIS at 1-1. However, issuing the GEIS before the NRC has any regulations that apply specifically to ISL operations violates NEPA and places already polluted communities at further risk of environmental contamination.

Currently, the NRC has no regulatory framework that specifically addresses ISL operations. The Commission has acknowledged this fact on several occasions. In *Hydro Resources, Inc.*, the Commission stated:

We agree with the Presiding Officer's general conclusion that section 40.31(h) and Part 40, Appendix A, "were designed to address the problems related to mill tailings and not problems related to injection mining." In passing the Uranium Mill Tailings Radiation Control Act (UMTRCA), Congress sought to address the potential harm arising from unregulated uranium tailings piles left at milling sites. Likewise, when the NRC promulgated regulations to implement UMTRCA, it did so with the primary focus of ensuring the control of tailings at sites involving conventional mining and milling. While, as a general matter, Part 40 applies to ISL mining, some of the specific requirements in Part 40, such as many of those found in Appendix A, address hazards posed only by conventional uranium milling operations, and do not carry over to ISL mining. **In amending the requirements in Part 40 over the years, NRC has refrained from addressing issues specific to ISL mining and, instead, has generally addressed tailings from conventional operations.**

.....

We agree that those requirements in Part 40, such as many of the provisions in Appendix A, that, by their own terms, apply only to conventional uranium milling activities, cannot sensibly govern ISL mining. At the same time, there are a number of general safety provisions in Part 40, Appendix A, such as Criteria 2, 5A, and 9, that are relevant to ISL mining and, as such, have been appropriately reflected in the license. **The current version of Part 40 specifically addresses ISL mining only to a limited extent.**

.....

Until the Commission develops regulatory requirements specifically dedicated to the particular issues raised by ISL mining, we will have no choice but to follow the **case-by-case** approach taken by our Staff in issuing HRI's license.

Id., CLI-99-22, 50 NRC 3, 8-9 (1999) (emphasis added). This gaping regulatory hole creates significant problems for the NRC Staff. In considering a new Part 41 regulatory framework governing ISL operations, the Commission explained the impetus in considering new regulations for ISL:

Regulating the ISL facilities in the absence of specific regulatory requirements for ISL recovery activities has become increasingly problematic and more complicated for the staff, which has relied heavily on guidance documents and license conditions in this area, as the recovering uranium production industry seeks to expand ISL facility production and submits new applications for additional facilities.

Draft Rulemaking Plan: Domestic Licensing of Uranium and Thorium Recovery Facilities – Proposed New 10 CFR Part 41, SECY-99-11 at 2 (Jan. 15, 1999)¹. In particular, the current Part 40 regulations do not provide for groundwater protection, specific to ISL mining. *Id.*, *Draft Rulemaking Plan*, at 2. In sum, the NRC has been regulating new technology under an old regulatory framework – in essence trying to put a square peg into a round hole. *Id.*

¹The proposed Part 41 regulations were never promulgated.

Additionally, while NEPA goes beyond the requirements of the Atomic Energy Act (“AEA”), the concerns of the two statutes overlap. *Limerick Ecology Action v. NRC*, 869 F.2d 719, 730 (3rd Cir. 1989), citing *Citizens for Safe Power, Inc. v. NRC*, 524 F.2d 1291, 1299 (D.C. Cir. 1975). Indeed, by setting minimal requirements for the safe operation of nuclear facilities, including ISL operations, the AEA, NEPA and NRC implementing regulations establish the NRC’s first line of defense against environmental risks. *Citizens for Safe Power*, 524 F.2d at 1298-99 (holding that AEA requirements may not be viewed “separate and apart” from NEPA requirements).

In order to be compliant with *Limerick Ecology Action* and *Citizens for Safe Power*, every NRC EIS has or should have a section that addresses the question of whether the proposed action will comply with NRC regulations for protection of public health and safety. In the case of a generic environmental impact statement, where environmental impacts of an entire class of facilities are evaluated, it is particularly important that the EIS be able to address regulatory compliance issues on a generic rather than *ad hoc* basis.

Thus, for example, the GEIS for renewal of nuclear power plant licenses contains various sections which address the question of whether nuclear plants will comply with NRC regulations during their license renewal term. NUREG-1437, *Final Generic Environmental Impact Statement for Renewal of Nuclear Power Plant Licenses* (1996) (“License Renewal GEIS”). In § 3.8.1.9, for example, the License Renewal GEIS evaluates radiation doses to the public during nuclear power plant license renewal terms, comparing them to the radiation dose limits in Appendix I to 10 C.F.R. Part 50. *Id.* at 3-41. Similarly, the GEIS for decommissioning of nuclear facilities evaluates the impacts

of decommissioning nuclear facilities against several proposed alternative regulatory schemes. *NUREG-0586, Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities* (1988). Finally, NUREG-0706, the last GEIS to address uranium milling impacts prior to the Draft GEIS, discusses the environmental impacts of uranium milling under a range of alternative schemes for regulating them. *NUREG-0706, Final Generic Environmental Impact Statement on Uranium Milling* at 3 (1980).

In contrast, the Draft GEIS admits that the NRC does not have a clear set of regulations for the protection of public health and safety from ISL mines. With respect to aquifer restoration — the most significant and potentially devastating environmental impact of ISL uranium mining — the Draft GEIS states that:

NRC's restoration standards are found in Appendix A to 10 CFR Part 40, and NRC historically has supplemented these regulatory standards through the use of guidance documents and conditions in NRC-issued licenses for ISL facilities. [NRC is currently engaged in a rulemaking that would clarify the requirements for groundwater protection at ISL mines.]

Id. at 2-26. In fact, Appendix A to Part 40 does *not* have restoration standards for ISL mines; those standards have historically been imposed through license conditions, with reference to non-binding NRC guidance documents. *See, Final Cited Brief for Federal Respondents* at 6-7, *ENDAUM et. al. v. NRC et. al.*, U.S. Court of Appeals for the 10th Circuit, No. 07-9505 (Nov. 19, 2007); SECY-99-11, *Draft Rulemaking Plan* at 2, n.2. Thus, the NRC has no regulatory basis against which to assess the environmental impacts of ISL mines. It does not even have a set of proposed alternative regulatory schemes that could be used as a basis for a comparison of environmental impacts, as was the case with NUREG-0706. Because the fundamental basis for an environmental analysis of regional

ISL operations — a regulatory framework — is missing, the NRC must withdraw the Draft GEIS, promulgate regulations governing ISL operations and begin the NEPA process for a new GEIS, if necessary.

IV. Most Environmental Impacts from ISL Operations are Site-Specific and May Not be Analyzed Generically.

Although programmatic environmental evaluations are acceptable and encouraged in some circumstances, because ISL operations take place in hydrogeologic environments that often vary wildly over a relatively small area, many of the environmental impacts of ISL operations cannot be reasonably evaluated in a region-wide generic manner.

Generally, programmatic environmental impact statements are used to evaluate the broad and common impacts of a proposed federal action. When a more detailed site-specific environmental analysis is required, site-specific EISs are “tiered” off the programmatic EIS. The Council on Environmental Quality regulations describe “tiering” as:

the coverage of general matters in broader environmental impact statements with subsequent narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared.

40 C.F.R. 1508.28. However, general environmental impact discussions from programmatic EISs are not appropriate for site-specific environmental impact statements or environmental assessments when there are significant and important site-specific environmental issues. *Natural Resources Defense Council v. NRC*, 606 F.2d 1261, 1270 n.32 (D.C. Cir. 1979). In this case, there are four impact areas that cannot be evaluated generically: groundwater, surface water, socioeconomics, radioactive air emissions, and environmental justice.

A. Groundwater Impacts Can Only be Reasonably Evaluated in Site-Specific Environmental Impact Statements.

In its description of the affected environment, the NRC offers only a broad description of the regional hydrogeology in northwestern New Mexico. GEIS § 3.5.4.3.1, pp. 3.5-18 – 3.5-21. At the same time, however, the information provided in the GEIS implicitly acknowledges local variability. *See, e.g.*, GEIS at 3.5-20, lines 44-45 (Crownpoint groundwater concentrations of TDS vary from 281 mg/L to 3180 mg/L). This implicit acknowledgement and the discussion at VI.C.3-4, below, demonstrate that local hydrogeology is highly variable and cannot be reasonably discussed in a generic manner. The importance of site-specific information is illustrated by the Nebraska Department of Environmental Quality’s (“NDEQ”) comments on Crow Butte Resources’ proposed North Trend Expansion to its Crow Butte Nebraska ISL operation. *NDEQ Technical Review of Aquifer Exemption Petition for North Trend Expansion*, Attachment A. There, Crow Butte Resources provided only gross regional formational hydrogeological information to support its North Trend Expansion, much like the NRC has provided in the GEIS. *Id.* at 1. However, NDEQ found this information inadequate, and required site-specific hydrological, geological, and geochemical data, even though the proposed expansion was only 1 ½ miles from the existing Crow Butte ISL mine. *Id.* at 1-2.

In addition to local hydrogeological variability, how local water uses will interact with local hydrogeology cannot be evaluated generically. The number of private and municipal wells in use nearby a proposed site and how the groundwater consumption

from those wells affects the local hydrological gradient are considerations that cannot be evaluated generically.

Moreover, as demonstrated in Section VI.C.7, no commercial ISL operation has ever fully restored groundwater quality to pre-mining conditions. Because irreversible groundwater contamination is an expected impact from ISL operations, this impact is “significant” and must be analyzed in site-specific EISs.

B. Surface Water Impacts Can Only be Reasonably Evaluated in Site-Specific Environmental Impact Statements.

Like groundwater impacts, surface water impacts are necessarily locally variable and must be evaluated in site-specific EISs. The GEIS gives only a cursory and general description of surface waters. § 3.5.4 at 3.5-14. The GEIS also describes the impacts to surface waters only in very general terms. § 4.2.4 at 4.2-14 – 4.2-17. However, like groundwater, surface water conditions are site specific. New Mexico often has locally important ephemeral streams and perennial water courses and springs. These surface waters can be and often are hydrologically connected to groundwater sources near proposed mining operations and therefore may be affected by groundwater pumping from the operation and other nearby private or municipal water system wells.

Further, the GEIS characterizes the impacts on surface water from ISL operations as “small” to “moderate”, indicating that a site-specific EIS on these impacts may not be necessary. GEIS at 4.2-14 – 4.2-17. However, as demonstrated in Section VI.C.7, below, discharges from an ISL operation in Texas completely destroyed an ephemeral water source. Additionally, because local surface and groundwater sources could be hydrologically connected, failure to restore groundwater could eventually affect surface water quality. Therefore, the impacts to surface water could be significant.

Because local surface water impacts from ISL operations are unique and significant, they cannot be evaluated generically. The NRC must evaluate these impacts in site-specific EISs.

C. Socioeconomic Impacts Can Only be Reasonably Evaluated in Site-Specific Environmental Impact Statements.

The GEIS describes socioeconomic impacts only in general terms. GEIS at 4.5-30 to 4.5-34. In particular, the NRC gives only cursory discussion to the socioeconomic impacts of aquifer restoration. *Id.*, § 4.2.10.3 at 4.2-50. However, as demonstrated by report by Dr. Thomas Power of the University of Montana,² attached as Attachment B, the economic impacts of uranium operations are quite site-specific, varying with such factors as ore grade, reserve size, and operation-specific worker productivity and salary levels. These site-specific conditions must be analyzed in a site-specific EIS.

Moreover, the socioeconomic impact of groundwater restoration at ISL operations is significant. Although the NRC characterizes the socioeconomic impacts from groundwater restoration as “small”, indicating that site-specific EISs are unwarranted, the irrevocable loss of a natural resource can have far-reaching and significant economic impacts. Therefore, socioeconomic impacts from ISL operations cannot be analyzed on a generic level and site-specific EISs must be prepared for each proposed ISL operation.

D. Radioactive Air Impacts Can Only be Reasonably Evaluated in Site-Specific Environmental Impact Statements.

The NRC characterizes the air impacts from ISL operations during the construction and operations phases as “small”, suggesting that no site-specific EISs evaluating these impacts will be warranted. GEIS, §§ 4.2.6.1, 4.2.6.2 at 4.2-34 – 4.2-35.

² Thomas Michael Power, research professor and professor emeritus, The University of Montana. An Economic Evaluation of a Renewed Uranium Mining Boom in New Mexico. Prepared for the New Mexico Environmental Law Center (Santa Fe), October 2008 (hereinafter, “Power Report”).

However, in northwestern New Mexico, the existing ambient radiological air quality varies greatly from locality to locality.³ In some of these localities, ambient radon levels have been increased from past uranium mining and milling, and radioactive mine wastes have been dispersed by wind onto public rights-of-way and private grazing lands.

Declaration of Melinda Ronca Battista at 8-9 and 17-20, *In the Matter of Hydro Resources, Inc.* (ACN ML 051660423) (June 10, 2005) attached hereto as Attachment C.

The impacts of new ISL projects must be considered in addition to the existing radioactive contamination and could be significant in that light. Moreover, the NRC's policy of characterizing radiation from existing mine waste as natural background is inapplicable in the context of NEPA. *See*, note 8, p.14.

Finally, the NRC averages **regional** air quality to arrive at a background air quality level. GEIS, § 3.2.11.1 at 3.2.-80. This averaging masks the actual air quality at localities and implies a misleadingly low level of radioactive air contamination in certain areas of each of the regions analyzed. Because radioactive air impacts from ISL operations are locally variable and significant, those impacts cannot be evaluated generically and the NRC must require site-specific EISs on those impacts for each proposed ISL mine.

E. Environmental Justice Impacts Can Only be Reasonably Evaluated in Site-Specific Environmental Impact Statements.

Finally, the NRC concluded in the GEIS that it would require an environmental justice analysis **only** when a proposed project would cause adverse environmental

³ Thomas Buhl, Jere Millard, David Baggett, SueTrevathan. Radon and Radon Decay Product Concentrations in New Mexico's Uranium Mining and Milling District. Radiation Protection Bureau, New Mexico Environmental Improvement Division (Santa Fe, N.M.), March 1985 (hereinafter, "Buhl Study"). *See*, Declaration of Bernd Franke at 12 (June 12, 2005) and Exhibit C to Franke Declaration (copy of the Buhl Study), *In the Matter of Hydro Resources, Inc.* (ACN ML051660423) (June 13, 2005).

impacts. § 6.1.1 at p. 6-4. In other words, whether a site-specific environmental justice analysis is done hinges on whether the NRC finds a project will have significant environmental impacts.

As noted in the preceding four subsections, the NRC's characterization of most potential environmental impacts from ISL mining as "small" to "moderate" calls into question whether the NRC would ever require anything more than a site-specific Environmental Assessment for a single ISL license application. However, as demonstrated in the aforementioned sections, the actual environmental impacts from ISL operations are likely to be significant. Moreover, the NRC's own generic analysis indicates that all existing or potential ISL operations are located in low-income areas. GEIS at 6-12, lines 47-48. Likewise, most, if not all the existing or proposed ISL operations in New Mexico are located in or near predominantly minority areas⁴. Thus, the NRC should require a site-specific environmental justice analysis for each proposed ISL operation.

V. The Draft GEIS Fails to Analyze the Cumulative Impacts of ISL Mining on a Regional Scale.

Assuming that the GEIS is the NRC's version of a programmatic EIS, as stated in the GEIS, arguably the only utility the GEIS might have is to analyze the region-wide cumulative impacts of widespread ISL mining. GEIS at § 1.8, p.1-24, lines 47-49. However, the GEIS fails to analyze cumulative impacts in three significant ways.

⁴ The NRC incorrectly states that the Navajo Nation is located approximately 1 mile from the nearest potential ISL facility. GEIS at 6-8, lines 41-42. The Hydro Resources, Inc., Crownpoint Uranium Project has several sites that are squarely **within** the Navajo Nation. Section 17 in Church Rock Chapter is located on tribal trust land, the Unit 1 site is on Navajo allotted land in Crownpoint Chapter, and the Crownpoint site and main processing plant is located within the town of Crownpoint, which is the administrative hub of the Eastern Navajo Agency. See, *HRI, Inc v. EPA*, 198 F.3d 1224 (10th Cir. 2000)

A. The GEIS Ignores Radioactive and Toxic Contamination from Past Uranium Mining and Milling.

The Council on Environmental Quality (“CEQ”) defines a cumulative impact as:

The impact on the environment which results from the incremental impact of the action when added to **other past, present, and reasonably foreseeable future action regardless of what agency (Federal or non-Federal)** or person undertakes such other actions.

40 C.F.R. § 1508.7 (emphasis added).

Here, the NRC fails to address the significant cumulative impacts of new ISL mining combined with the impacts of radioactive and toxic wastes from past uranium mining and milling on groundwater quality, soils, radioactive air emissions and human health. Incredibly, the NRC has determined that impacts from past uranium milling are beyond GEIS’s scope. § 1.5.4, p. 1-13, line 14. Equally as incredible, the GEIS does not even **mention** environmental impacts from past mining. The NRC’s rational for these glaring omissions is both circular and nonsensical:

Because the need for the GEIS is to address NRC’s licensing reviews for ISL facilities, topics related to conventional milling will not be addressed in the GEIS. The legacy of past conventional uranium milling will be identified in terms of cumulative impacts in the GEIS; however, a detailed cumulative impacts analysis is a site-specific evaluation.

GEIS at A-26. From this explanation, the public is left to wonder what the NRC intends to cover in the GEIS. Whatever the NRC’s intent, NEPA requires more than merely listing or briefly acknowledging past impacts.

In this case, the impacts of past uranium mining and milling combined with the impacts of anticipated ISL operations are critical to a meaningful environmental analysis of ISL operations on a regional scale. It is well established that substantial areas of northwestern New Mexico have been contaminated by past uranium mining and

conventional milling operations. *See, e.g.*, Homestake Mining Company, Milan N.M. Superfund site (EPA ID# 007860935, www.epa.gov/earth1r6/6sf/pdf/files/0600816.pdf); United Nuclear Corporation Church Rock Uranium Mill Superfund site;⁵ uranium contamination on the Navajo Nation, including around the UNC Northeast Church Rock (www.epa.gov/region09/waste/sfund/navajo-nation/index.html); and *Abandoned Uranium Mine Field Survey Project* prepared for the New Mexico Mining and Minerals Division (July 18, 2008), attached hereto as Attachment D. As a result, large areas of land have elevated radiation levels⁶ and billions of gallons of groundwater have been contaminated.⁷ In addition to the damage to natural resources from past uranium mining and milling, historic contamination has led to increased death rates and illnesses among uranium workers and increased environmental exposures to people living in uranium-impacted communities. *See*, Shuey, Chris *Uranium Exposure and Public Health in New Mexico and the Navajo Nation: Literature Summary*, attached as Attachment E. The cumulative and synergistic effects of these historic impacts, both in terms of damage to natural resources and human exposure to dangerous levels of radiation and toxic heavy

⁵ Navajo Nation Environmental Protection Agency: www.epa.gov/ciconference/previous/2007/2007_presentations/wednesday/830am/unc_superfund_site.pdf; and NRC: www.nrc.gov/info-finder/decommissioning/uranium/united-nuclear-corporation-unc.html.

⁶ Bill Brancard, director, New Mexico Mining and Minerals Division. New Mexico Progress Report Abandoned Uranium Mine Work. Slide 8 in presentation to Joint Hearing of the Indian Affairs Committee and Radioactive and Hazardous Materials Committee, New Mexico Legislature (Crownpoint, N.M.), October 1, 2008.

⁷ Milton Head, Bluewater Valley Downstream Alliance. Grants Mineral Belt Uranium Mining and Milling: Identified Environmental Effects on Groundwater. Slide 2 in presentation to Joint Hearing of the Indian Affairs Committee and Radioactive and Hazardous Materials Committee, New Mexico Legislature, October 1, 2008. *See*, Attachment F.

metals, must be evaluated when combined with the impacts from anticipated ISL operations⁸.

B. The GEIS Fails to Meaningfully Analyze Impacts from Reasonably Foreseeable Regional Federal Projects.

The cumulative impact analysis in Chapter 5 with respect to reasonably foreseeable federal projects is wholly inadequate. As noted in Section V.A, above, a cumulative impact analysis must include an analysis of past environmental impacts as well as reasonably foreseeable future impacts, irrespective of whether those impacts are generated by Federal or non-Federal entities. Moreover, the GEIS must be detailed enough to foster both informed decision-making and informed public participation.

California v. Block, 690 F.2d at 761.

In the GEIS, however, the NRC merely lists draft and final environmental impact statements for concurrent and reasonably foreseeable federal projects that could contribute to cumulative impacts in each of the four targeted regions. *See, e.g.* Table 5.2-6 at 5-11. Merely providing a list of federal projects that could contribute to cumulative impacts in the four targeted regions and identifying which general areas (land use, groundwater, air, etc.) might be impacted is not a substitute for a reasonably detailed discussion of regional cumulative impacts as required by NEPA. In order to comply with NEPA, the GEIS must analyze, in reasonable detail, the cumulative impacts of proposed

⁸ The NRC's policy that radiation from mine waste is not included in calculation of Total Effective Dose Equivalent ("TEDE") because it is considered "background radiation" as defined by 10 C.F.R. § 20.1003 does not apply to a NEPA analysis. *Hydro Resources, Inc.*, CLI-06-14, 63 NRC 510, 517-518 (2006). The purpose of calculating TEDE is to measure the radioactive emissions from a licensed operation to determine compliance with 10 C.F.R § 1302. NEPA's purpose, however, is to force federal agencies to take a hard look at all the reasonable environmental impacts, past and present and to encourage public participation in that process. NEPA's goal is frustrated if the NRC adopts its policy on excluding mine waste from the TEDE calculation in the context of NEPA.

ISL operations with the reasonably foreseeable federal projects. The NRC must withdraw the GEIS and re-issue a new draft with this analysis for public comment.

C. The GEIS Fails to Evaluate Impacts from Non-Federal Projects.

In the GEIS, the NRC acknowledges the need to address reasonably foreseeable future actions in evaluating cumulative impacts. § 5.2., p. 5-3, lines 4-7. However, the NRC staff has decided to only consider future and concurrent Federal actions in evaluating cumulative impacts. § 5.2.2, p. 5-3, lines 45-46 (“[o]ne indicator of present and future RFFAs in the four uranium milling regions is the number of draft and final EISs prepared by federal agencies within a recent time period.”). This superficial treatment of projects that could contribute to regional cumulative effects undermines the purposes of NEPA. For example, concurrent and reasonably foreseeable oil and gas exploration and production on private and state lands, which are regulated by state agencies, within the four geographical regions covered by the GEIS could have substantial impacts on air and groundwater resources and land use that should be considered in conjunction with the proposed ISL projects in the region.

A similar analysis should be applied to impacts from concurrent reasonably foreseeable conventional uranium (and other hard rock) mining and milling operations. In New Mexico, this information is easily accessible at the New Mexico Mining and Minerals Division website and the New Mexico Oil Conservation Division website⁹. Because the GEIS fails to evaluate the cumulative impacts of reasonably foreseeable non-Federal projects, it is inadequate under NEPA. The NRC must withdraw the draft GEIS,

⁹ See, <http://www.emnrd.state.nm.us/mmd/MARP/MARPNewPermitApplicationsandCloseoutPlans.htm>; <http://www.emnrd.state.nm.us/OCD/Hearings.htm>.

provide a reasonably detailed analysis of cumulative impacts from non-Federal actions, and re-issue the GEIS for public comment.

VI. The Draft GEIS is Factually Inaccurate, Contradictory and Misleading.

NEPA's two primary goals are to promote informed agency decisions and facilitate informed public participation. *Baltimore Gas & Electric Co. v. Natural Resources Defense Council*, 462 U.S. 87, 97 (1983). Neither of these goals can be accomplished by an environmental impact statement that contains significant factual errors and misleading information. The draft GEIS contains substantial factual errors, incomplete information, and contradictory information. The GEIS, therefore, cannot serve as a basis for a reasonable environmental analysis. Below are some of the most glaring factual errors in the GEIS.

A. Pre-Construction Requirements are Misleading.

The NRC explains pre-construction requirements for ISL operations in Section 2.2, pp. 2-6 – 2-7; however, this explanation does not reflect NRC practice. For example, the GEIS states that ISL license applicants are required to determine baseline water quality for both the production zone and the adjacent non-mineralized zone. *Id.* at 2-6, lines 28-29. In practice, the NRC staff has permitted averaging of production zone water with non-production zone within the mine area to allow for artificially high baseline contaminant levels for the purposes of granting a license. *Hydro Resources, Inc.*, LBP-05-17, 62 NRC 77, 95 (2005). Additionally, with respect to characterizing radiation levels in soils at an ISL site, the NRC's policy is to allow applicants to characterize radiation from past mine waste as "natural background". *Id.* CLI-06-14, 63 NRC at 517-518. In order to facilitate informed public participation in compliance with NEPA, the

NRC must withdraw the GEIS, and re-issue a new draft disclosing the details of NRC practice as it relates to pre-construction requirements.

B. The Characterization of Impacts is Inconsistent with NEPA.

In § 1.4.3, the NRC states that impacts will be classified and analyzed in the GEIS based on three categories — “small impacts”, “medium impacts” and “large impacts”. GEIS at 1-6. However, nowhere in the GEIS does the NRC explain how these impact categories relate to NEPA’s requirement that a federal agency evaluate any “significant” environmental impact. In other words, it is unclear which category of impact would trigger a full-blown environmental impact statement and which category would be sufficient for an EA and FONSI.

These impact classifications violate the NRC’s own regulations, which require that an EIS be prepared when a proposed action has a “significant” impact on the human environment. 10 C.F.R. § 51.20(a)(1). Without classifying an impact as significant or insignificant, the NRC cannot reasonably evaluate the environmental impacts of ISL operations, nor can the public meaningfully participate in evaluating environmental impacts. The NRC must withdraw the GEIS, characterize impacts as either “significant” or “insignificant” so that the public can meaningfully evaluate how the NRC will treat particular impacts, and re-issue a new draft.

Further, by failing to classify impacts as “significant” or “insignificant” the NRC is violating the Administrative Procedure Act and its own regulations with respect to promulgating regulations. 5 U.S.C §553; 10 C.F.R. § 2.802 (requiring an EIS when environmental impacts are “significant”). In essence, the NRC is re-writing its NEPA

regulations by introducing new categories of impacts without following the notice and comment process required by law.

Finally, in the chapter on environmental justice, the NRC states “[i]mpacts that are significant, unacceptable, or above generally accepted levels, such as regulatory limits or state and local statutes and ordinances may be considered high and adverse.” GEIS, § 6.1.1 at 6-5, lines 6-8. It is unclear from this statement whether ISL operations whose impacts would violate state or local laws would automatically require a full EIS or just stand-alone environmental justice analysis. If the latter is the case, then the NRC should disclose that **any** proposed ISL operations within Navajo Indian Country would require a full EIS, since any ISL operation within Navajo Indian Country would automatically run afoul of the Diné Natural Resources Protection Act, which prohibits uranium mining and processing. *See*, www.sric.org/uranium/DNRPA.pdf. Moreover, it seems that the NRC should be loathe to grant a license to **any** proposed ISL operation that would violate any federal, state, or local law, regulation or standard. The current impact classifications are meaningless under NEPA and should be changed or explained in the final GEIS.

C. The NRC’s Description of the Affected Environment is Incomplete and Misleading.

The NRC’s description of the affected environment in Chapter 3 is incomplete and misleading in several respects.

1. The GEIS Does Not Disclose Sites Where Previous Uranium Mining and Milling Occurred.

Although the NRC determined that the impacts from past uranium mining and milling would not be considered in the GEIS, it does not follow that the sites where past mining and milling occurred should also be excluded from the GEIS’s description of the

affected environment. Yet this is exactly what the NRC has done with respect to the northwestern New Mexico region. Maps of the region in the GEIS do not include the locations of the Anaconda Mill at Bluewater, the SOHIO L-Bar Mill at Cebolleta, the Mobil Section 9 Pilot Project¹⁰ near Crownpoint, nor any of the more than 200 uranium mine locations in the region. *See, e.g.*, GEIS at 3.5-3, 3.5-15, and 6-11; *see also*, Attachment D. As explained above, without this fundamental information, the NRC cannot reasonably evaluate environmental impacts, particularly cumulative impacts, and the public cannot meaningfully participate in the NEPA process. The GEIS therefore violates NEPA and must be withdrawn.

2. The NRC Fails to Disclose Contamination from Past Uranium Mining and Milling Sites.

The NRC also failed to disclose the contamination of groundwater and soil caused by past uranium mining and milling. Again, although the NRC has improperly and in violation of NEPA determined that the impacts from past uranium mining and milling are beyond the GEIS's scope, the fact remains that contamination has occurred and that fact should be disclosed in the GEIS. For example, there is no indication of the extensive groundwater contamination in the Ambrosia Lake-Milan area from past uranium mine water discharges and mill tailings seepage. BVDA has calculated that over 1.2 million acre-feet of alluvial and bedrock groundwater has been contaminated by past uranium mine and mill discharges. *Grants Mineral Belt Uranium Mining and Milling: Identified Environmental Effects on Groundwater*, powerpoint presentation from Bluewater Valley

¹⁰ That the U.S. Department of Energy has assumed ownership and control of the Bluewater and Cebolleta millsites and tailings disposal cells under licenses issued by NRC is not sufficient reason for NRC to have excluded their locations and any relevant information about them from the GEIS. The Mobil Section 9 pilot project failed to restore nearly 60% of contaminants after only 10 months of leaching in 1979 and 1980, and remains the only ISL mining experience in New Mexico. *See*, Table 4-13 and pages 4-38 – 4-39 of NUREG-1508 (February 1997); GEIS at 2-56 and 3.5-85. Lessons learned for groundwater protection from the experiences at each of these facilities are not addressed in the GEIS.

Downstream Alliance, slide 2, attached hereto as Attachment F. The public needs to have this information to determine, for example, if, as a policy matter, it would support additional contamination of natural resources before remediation of existing contamination. Further, this information is needed to reasonably evaluate cumulative impacts, alternatives, and mitigation measures. Failure to disclose this information violates NEPA and the GEIS must be withdrawn.

3. The NRC's Characterization of Groundwater Quality in Northwestern New Mexico is Inaccurate and Misleading.

The NRC characterizes the groundwater quality at the sites of the proposed Hydro Resources, Inc. ("HRI") Crownpoint Uranium Project as violating drinking water standards for some pollutants. However, this characterization is inaccurate because it is based on averaging good quality non-ore zone water with poor quality ore zone water. The groundwater in this locality is used for human drinking water and in fact supplies Crownpoint and at least seven other Navajo communities with their drinking water supply. Indeed, chlorination and fluoridation are the only treatments the Navajo Tribal Utility Authority ("NTUA") gives water from its Crownpoint wells; NTUA does not filter or otherwise treat groundwater to reduce or remove radionuclides and heavy metals. The NRC must accurately disclose this information in compliance with NEPA.

4. The NRC's Characterization of the Hydrology in Northwestern New Mexico is Oversimplified and Misleading.

The NRC's characterization of the ore bearing aquifers in northwestern New Mexico is grossly oversimplified and misleading. GEIS § 3.5.4.3.2, pp. 3.5-19 – 3.5-21. The NRC fails to disclose that much of the hydrogeology in the area, particularly the Westwater Canyon Member of the Morrison Formation, is characterized by overlapping,

meandering, discontinuous, and stacked paleo-stream channels that have higher permeability than surrounding rock. See, Condon, S. M. and Peterson, F., *Stratigraphy of Middle and Upper Jurassic rocks of the San Juan Basin: Historical perspective, current ideas, and remaining problems: American Association of Petroleum Geologists Studies in* 22 Geology 7-26 at 21 (1986). These paleo-channels are more permeable than the surrounding rock and act as preferred pathways that facilitate relatively rapid migration of contaminants. In contrast, the groundwater velocities disclosed by the NRC at p. 3.5-20, which suggests that groundwater would move very slowly, incorrectly assumes a homogeneous aquifer.

Additionally, the NRC's description of confining formations at p. 3.5-20 leaves the impression that ore bearing aquifers in northwestern New Mexico are always bounded by extensive and impermeable aquitards that preclude vertical movement between aquifers. However, it is well established that both the Recapture and the Brushy Basin formations are both locally and regionally discontinuous, and moreover, are also subject to local fracturing and faulting. Lucas, S. G. and Heckert, A. B., *Jurassic stratigraphy in west-central New Mexico*, 54 New Mexico Geological Society Guidebook 289-301 (2003). Accordingly, the NRC must disclose in the GEIS the true hydrogeology of the area and the fact that this hydrogeology will facilitate extensive and deep groundwater contamination, through contaminant migration through paleo-channels, faults and fractures. The NRC's failure to disclose this information prevents it from reasonably evaluating the environmental impacts of ISL operations and prevents the public from meaningfully participating in the NEPA process. The GEIS must therefore be withdrawn.

5. The NRC's Description of Uranium Geochemistry is Inadequate.

Even in light of the NRC's "generic" description and evaluation of ISL impacts, its treatment of uranium geochemistry is astonishingly inadequate. In § 2.1.1, the NRC devotes a **single paragraph** to describing uranium geochemistry. GEIS at 2-1. This description ignores a number of significant issues. For example, there is no discussion about the range of redox values and concentration ranges for uranium, radium, arsenic, selenium, molybdenum or other significant contaminants generally seen in undisturbed ore deposits. Further, there is no discussion about how regional geochemistry has been affected by past uranium mining, milling, and exploration. Without disclosing this basic information, the public cannot meaningfully compare the anticipated impacts of ISL operations to pre-mining conditions.

6. The NRC's Evaluation of Socioeconomic Impacts is Inadequate.

In § 4.5.10, the NRC offers only a very superficial evaluation of socioeconomic impacts. GEIS at 4.5-30 – 4.5-34. The NRC fails to consider any of the following: how much of the existing uranium reserves in northwestern New Mexico might be exploited, which would affect the employment, revenue, etc. impacts; the effect of increased worker productivity on employment and wages; the effect volatile uranium prices would have on communities; and whether the increased pressure on infrastructure and services would be offset by increased revenue from uranium operations. Most important, however, the NRC fails to evaluate the economic impacts of lost natural resources caused by environmental contamination and how damage to the environment affects long-term economic stability in the region's communities. Given that **no** commercial ISL facility has been able to completely restore ore-zone groundwater to pre-mining conditions,

groundwater sources where ISL operations occur will necessarily be irrevocably contaminated and unfit for human or non-human consumption. *See* Section VI.C.7. The NRC must consider the costs of irrevocably losing an important natural resource.

Moreover, the socioeconomic and cultural impacts of irrevocably losing a groundwater source are highly variable from community to community. The socioeconomic impact from the loss of a particular groundwater resource in a completely isolated region would not be as significant as the loss of a groundwater resource in an existing community such as Crownpoint. Some of these impacts have been evaluated by Dr. Power, who concluded that negative economic impacts of renewed uranium mining in New Mexico could be significant. *See*, Attachment B. Because socioeconomic impacts will inevitably be significant and highly variable, the NRC should require site-specific environmental impact statements on socioeconomic impacts for every ISL permit application.

7. The NRC's Evaluation of the ISL Industry's Operational and Groundwater Restoration History and Impacts is Incomplete and Misleading.

Finally, the NRC's description of ISL industry's operating history and impacts is incomplete and misleading. In the GEIS chapter describing the ISL industry's operational and restoration record, the NRC leaves the impression that ISL operations have very few impacts and that groundwater restoration is invariably successful. GEIS Chapter 2. This superficial analysis is seriously misleading and simply inaccurate.

In reality, ISL operations, like most heavy industry, have a lengthy record of spills, accidents, leaks, and excursions. Adverse environmental impacts occur at all stages of the ISL process, which the NRC should disclose. For example, in Texas,

Uranium Energy Corp. was recently issued notices of violations and sued in Federal court because of groundwater and private well contamination it caused during exploration activities. The complaint in that case is attached hereto as Attachment G.

Perhaps the most notable recent example of operational and restoration problems occurred at the Smith Ranch-Highland Uranium Project in Wyoming — the largest uranium ISL mine in the U.S. The mine’s operator, Cameco Resources — the largest and likely best capitalized uranium mining company in the world — was issued three notices of violations in the past year alone, and fined nearly \$1.1 million, for, among many things, failing to initiate and achieve restoration of groundwater in compliance with state permit conditions, failing to properly plug and abandon wells, and failing to fully report leaks and spills. A series of Wyoming Department of Environmental Quality documents summarizing those violations is attached hereto as Attachment H. Among those documents is a November 21, 2007, investigations report by a Wyoming Department of Environmental Quality (“WDEQ”) district supervisor who reported that Cameco, and its subsidiary Power Resources, Inc., had restored only two of 12 operational wellfields in 20 years of ISL mining. One of those wellfields, Mine Unit A at the Highland Project, required nearly 13 years of active restoration and stability monitoring before being certified as “restored” by both WDEQ and NRC in 2003 and 2004, respectively. However, WDEQ officials feared that the continued presence of extraordinarily high levels of radium-226 remaining in the production zone (levels that exceeded, after restoration, the pre-mining baseline average¹¹) would move past the wellfield’s monitor

¹¹ The average post-restoration radium concentration in A-Wellfield was 675 picoCuries per liter (“pCi/l”), which exceeded the average ore-zone baseline level of 609 pCi/l and the Wyoming groundwater classification standard of 5 pCi/l. See Note 12 below for the sources of these data.

well ring, contaminating groundwater suitable for domestic use. To address this risk, WDEQ required Cameco to implement a “monitored natural attenuation” plan to determine, over an indefinite period, if natural conditions will lessen radium levels. NRC concurred with the plan in June 2004.¹² The GEIS (at 2-49) briefly discusses the restoration challenges at the Highland A-Wellfield, but does not use the experience to predict similar long-term groundwater impacts at future ISL mines or to suggest technical and management controls to mitigate the effects of failed groundwater restoration methods.

Additionally, the history of spills associated with the ISL industry is extensive. Attached as Attachment I is a spreadsheet summarizing the history of uranium mining spills in Wyoming since 1999.¹³

Further, discharges from ISL operations have resulted in significant environmental impacts. Uranium Resources, Inc. (“URI”), an ISL operator in Texas, serves as an example of how extensive and damaging discharges during operation can be. During the course of operations in Duval County, Texas, URI discharged significant amounts of uranium and radium contaminated water into an arroyo, completely destroying the riparian habitat. That spill resulted in a lawsuit, which URI subsequently settled. The complaint in that lawsuit and data on the extent of contamination is attached hereto as Attachment J.

Restoration at ISL sites has proven even more problematic. In addition to the restoration problems encountered by Cameco referred to above, a recent survey of

¹² Documentation for the A-Wellfield story is found in two documents cited in the GEIS (at 2-54 and 2-56): ML04180470 (NRC, June 29, 2004) and ML040300369 (PRI, January 15, 2004).

¹³ The attached list was compiled from Wyoming Department of Environmental Quality files and databases, including <http://deq.state.wy.us/wqd/events/1203rpt.htm>.

groundwater restoration at ISL operations in Texas reveals that ISL operators are almost invariably granted alternate concentration limits (“ACLs”) because they are unable to restore ore-zone groundwater to baseline standards. That survey is attached hereto as Attachment K.

The ISL industry’s inability to restore groundwater is not surprising given that injection of lixiviant into an aquifer irrevocably changes the aquifer’s geochemistry. In a study commissioned by the NRC, the U.S. Geological Survey concluded that long-term monitoring of ISL sites is necessary because even after treatment with hydrogen sulfide to encourage reducing conditions, contaminants such as uranium and arsenic that were mobilized by ISL operations remained mobilized, posing a threat to undisturbed groundwater outside the mine area. *Consideration of Geochemical Issues in Groundwater Restoration at Uranium In-Situ Leach Mining Facilities*, NUREG/CR-6870 at 18-22 (Jan. 2007). In the final GEIS, the NRC should disclose a comprehensive operating and restoration history of ISL operation so that both the agency and the public can make adequately informed environmental choices.

D. The Characterization of Groundwater Impacts is Inaccurate.

Finally, the characterization of groundwater impacts from ISL operations and groundwater restoration as “small” to “large” is inaccurate and misleading. GEIS, Executive Summary at xli-xlii; GEIS at 4.2-18 – 4.2-27. Given that **no** commercial ISL operation has successfully restored groundwater to pre-mining conditions (*see*, Section VI.C.7), the impacts on groundwater can only reasonably be construed to be “large” or “significant”. Because groundwater impacts will necessarily and invariably be large or

significant, the NRC must require a full site-specific environmental impact statement for every proposed ISL operation.

VII. The Purpose and Need for the GEIS is Unrelated to Anticipated Environmental Impacts.

An environmental impact statement’s statement of “purpose and need” is the foundation for the rest of the document. The “purpose and need” statement frames the agency’s goals and is the basis for all other analyses, such as evaluation of alternatives, mitigation measures, and environmental impacts flow. The NRC has failed to provide an adequate statement of “purpose and need” in the GEIS because the purpose and need used to justify issuing the GEIS — NRC’s “need” to improve regulatory efficiency — is unrelated to the anticipated environmental impacts of the general actions which the GEIS will ultimately cover.

The purpose of an action evaluated by an agency must be sufficiently broad to allow reasonable exploration of alternatives. *Simmons v. U.S. Army Corps of Engineers*, 120 F.3d 664, 666 (7th Cir. 1997). Moreover, the environmental analysis and alternatives considered in an impact statement must be related to the general goal or action proposed by an agency. *Id.* at 669.

The GEIS’s stated purpose is to “improve the efficiency of NRC’s environmental reviews” for ISL license applications. GEIS at § 1.1, p.1-1, lines 13-14; § 1.3, p. 1-4. However, this purpose is unrelated to the actual environmental impacts analyzed in the GEIS. Instead, the GEIS’s entire architecture seems geared toward “improving” the NRC’s environmental review efficiency by glossing over environmental impacts, ignoring cumulative impacts, and shortchanging public participation in order to facilitate issuing ISL licenses. The NRC’s purpose cannot be to facilitate issuing licenses — under

the AEA, its primary purpose is to protect public health and safety. If the NRC were truly concerned with improving ISL licensing efficiency, it would have taken more obvious and meaningful steps, such as promulgating ISL-specific regulations or recruiting additional staff. These steps would improve efficiency without undermining the NRC's primary responsibility under the AEA or its NEPA obligations. Because the purpose and need are unrelated to the impacts or alternatives analyzed, the GEIS violates NEPA and must be withdrawn.

VIII. The NRC Fails to Fulfill its Trust Obligations with the GEIS.

Since the early years of this nation, the federal government has been a trustee for Indian Tribes. *Worcester v. Georgia*, 31 U.S. 515, 553-554 (1832). This responsibility extends to the entirety of the federal government, not just certain agencies. *Parravano v. Babbitt*, 70 F.3d 539, 546 (9th Cir. 1995). The federal government's trust responsibility extends not only to those rights established by treaty (*see, Worcester v. Georgia*, 31 U.S. at 553-555), but also for Tribes' natural resources. *Pyramid Lake Paiute Tribe v. U.S. Dept. of the Navy*, 898 F.2d 1410, 1420 (9th Cir. 1990). This obligation extends to impacts to treaty rights and tribal natural resources that occur **outside** tribal jurisdiction. *Id.*, *see also Parravano v. Babbitt*, 70 F.3d 539. Moreover, the NRC's trust responsibility extends beyond mere consultation with tribes that may be affected by ISL operations and inviting those tribes to participate in the licensing process in ways that are already guaranteed by statute and regulation and afforded to the general public. *See, U.S. Nuclear Regulatory Commission Strategy for Outreach and Communication with Indian*

Tribes Potentially Affected by Uranium Recovery Sites, <http://www.nrc.gov/info-finder/materials/uranium/ind-tribe-strat.pdf>.¹⁴

The Draft GEIS is deficient in that it fails to even acknowledge the NRC's trust obligations to Indian tribes in the areas where ISL mining is expected to occur, much less analyze how the expected ISL operations will affect tribal treaty rights and natural resources.

For example, the treaty between the Navajo Nation and the United States provides that Navajo tribal members have the right to maintain livestock and hunt within the reservation. *Treaty between the United State and Navajo Tribe of Indians*, Articles V, XIII (June 1, 1868) ("Treaty of 1868"). However, in instances where ISL operations occur on Tribal lands¹⁵, tribal members will effectively be excluded from those lands and will be unable to run livestock or hunt, breaching the right to do so guaranteed by treaty. The NRC's tribal trust obligation is particularly implicated when tribal members are precluded from hunting or maintaining livestock from large areas of land due to multiple ISL operations over the northwestern New Mexico region. *See, Parravano v. Babbitt*, 70 F.3d 539 (Court upheld Secretary of Interior reduction of ocean salmon harvest under Magnuson Act to protect upstream tribal fishing rights guaranteed by treaty). Additionally, Article II of the Treaty of 1868 provides that the Navajo Nation may exclude any individual except U.S. government officials exercising their official duties.

¹⁴ Compare the NRC's "strategy" with the Environmental Protection Agency's *Policy for Administration of Environmental Programs on Indian Reservations* (Nov. 11, 1984), most recently reaffirmed in 2005. <http://www.epa.gov/tribal/pdf/indian-policy-84.pdf>. In contrast to the NRC's "strategy" the EPA's policy recognizes the inherent sovereignty of Indian tribes and tribal authority over reservation resources. The EPA strives to incorporate these fundamental premises into EPA permitting, enforcement and policy actions that have any effect on a tribe's environment.

¹⁵ As explained in note 4, above, HRI's proposed Crownpoint Uranium Project has two sites that are on Navajo land.

Id. at Article II. Because the Diné Natural Resources Protection Act prohibits uranium mining and processing within Navajo Indian Country, the Navajo Nation could exclude any individual or company that is furthering such activity, even if the uranium mining or processing is occurring off-reservation, affecting access to ISL sites and transportation of yellowcake. The NRC must analyze how its obligation to respect tribal laws, vis à vis its treaty obligation, will affect ISL operations in the northwest New Mexico region.

Finally, widespread regional ISL operations could significantly impact the natural resources of tribes in the area, even when the ISL operations are outside tribal lands. For example, failure to restore groundwater at an ISL site upgradient from a tribe or Pueblo could ultimately affect ground or surface water that tribes or Pueblos have guaranteed rights to. The effects of widespread regional ISL operations, which will require substantial groundwater pumping, on the quantity of groundwater should be analyzed for its effect on the amount of groundwater available to Pueblos and tribes. Finally, the regional hydrological connection between groundwater pumping and surface water availability and quality must be analyzed in the context of the effects on tribal water rights and cultural use.

The cultural uses of ground and surface water, moreover, may be protected under federal statutes such as the American Indian Religious Freedom Act (“AIRFA”). The impacts of regional ISL operations must be analyzed in the context of AIRFA and other federal statutes, regulations and Executive Orders in order to fulfill the NRC’s trust obligations to tribes.

IX. The GEIS Fails to Adequately Address Mitigation Measures.

The GEIS also violates NEPA because it fails to adequately address mitigation measures. NEPA requires that an environmental impact statement include a detailed statement about adverse environmental effects that cannot be avoided. *Carmel by the Sea v. U.S. Dept. of Transportation*, 123 F.3d 1142, 1153-1154 (9th Cir. 1997). This requirement entails a duty to discuss measures to mitigate adverse environmental effects. *Id.*, citing 10 C.F.R. § 1502.16(h) and *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-352 (1989). Mitigation measures must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated. *Id.* at 1154.

The GEIS fails to meet NEPA's requirements. First, the NRC fails to disclose unavoidable environmental impacts. For example, in § 4.5.4.2.3, the NRC discusses potential impacts to groundwater from aquifer restoration. GEIS at 4.5-16 – 4.5-18. However, in this discussion, the NRC does not disclose which impacts to groundwater are unavoidable. Given that the no ISL operator in the United States has ever been able to fully restore ore-zone groundwater to pre-mining conditions, permanent groundwater contamination should have been disclosed as an unavoidable environmental impact. Further, because excursions have occurred at every ISL operation in the United States, contamination of water outside the mining area should have been disclosed as an unavoidable environmental impact. These and other unavoidable impacts must be disclosed in the GEIS.

Additionally, the NRC has failed to discuss in **any** detail mitigation measures for unavoidable environmental impacts. Instead, in the GEIS' section covering mitigation merely lists "best management practices" that an ISL operator might or might not employ

in its operation¹⁶. GEIS § 7. Listing potential best management practices cannot substitute for a reasonably detailed discussion of mitigation measures. The GEIS, therefore, fails to meet the NEPA requirement that mitigation measures be discussed.

X. The GEIS Fails to Adequately Address Alternatives.

Even if, for the sake of argument, the GEIS could be construed to adequately analyze environmental impacts on a programmatic or generic level, the GEIS nevertheless still violates NEPA because it does not adequately address alternatives. NEPA requires that an agency provide a reasonable discussion of alternatives to the preferred action in its evaluation of a proposal. Project alternatives derive directly from the impact statement's "purpose and need" section. *Carmel by the Sea v. U.S. Dept. of Transportation*, 123 F.3d at 1155. The stated goal of a project necessarily dictates the range of reasonable alternatives. *Id.* Consideration of a reasonable range of alternatives is critical to realizing the action forcing and public participation goals of NEPA. *Env't'l Defense Fund v. Froehlke*, 473 F.3d 346, 350 (5th Cir. 1972).

As with its discussion of cumulative impacts and mitigation measures, the NRC's alternatives discussion is hobbled by its failure to adequately describe a purpose and need. Indeed, the section in the GEIS that evaluates alternatives amounts to approximately one page consisting of four paragraphs. The GEIS neither identifies a preferred alternative, as required by NEPA, nor does it discuss any alternative except the no-action alternative. §§ 2.12 – 2.13 at 2-51 – 2-52. The NRC merely notes that the GEIS does not constitute the NRC's final consideration of reasonable alternatives for the site-specific environmental reviews of ISL license applications. § 2.12, p. 2-51, lines 37-

¹⁶ Some of the "best management practices" are actually regulatory requirements, e.g. "decontaminate and decommission facilities" and "plug and abandon wells". GEIS at 7-3. Actions required by statute or regulation should not be considered "best management practices".

39. As discussed below, the NRC missed the opportunity to discuss a range of alternatives that might better realize what are assumed to be the NRC's goals in issuing the draft GEIS.

Although it is not clear, there appear to be two distinct goals in the GEIS. One is expressed in the statement of purpose and need — to increase NRC's efficiency in processing ISL permit applications. The second, as revealed throughout the rest of the GEIS, is to facilitate development of uranium resources in four areas of the U.S. In neither case has the NRC adequately discussed alternatives.

If one assumes the NRC's goal in issuing the draft GEIS is to evaluate the environmental impacts of the NRC increasing its licensing efficiency, the GEIS fails absolutely. Nowhere does the NRC discuss alternatives that could increase licensing efficiency without compromising environmental analysis or public participation in the NEPA process¹⁷. For example, an alternative to the truncated environmental review advocated in the GEIS would be to promulgate a regulatory framework governing ISL operations. *See*, Section III. Indeed, the NRC has indicated that a new regulatory framework governing ISL operations would serve that exact purpose. SECY-99-11, *Draft Rulemaking Plan* at 7. Another alternative that could increase licensing efficiency would be to implement recruitment and retention programs within the NRC to increase NRC staff license review capability. Another could be reviewing and changing NRC internal staff procedures to make more efficient use of existing staff resources. Yet another alternative not discussed would be to encourage agreement state status or some other regulatory burden sharing framework in New Mexico, Wyoming, South Dakota and

¹⁷ As discussed in their comments on scoping, ENDAUM, SRIC, BVDA and the Haaku Water Office anticipate that the GEIS will be used to limit site specific environmental review and public participation. ENDAUM, SRIC BVDA and Haaku Water Office hereby incorporate those comments by reference.

Nebraska, so the NRC staff would not be solely responsible for reviewing ISL license applications in those states. The NRC does not discuss these or any other reasonable alternatives. The GEIS is therefore insufficient under NEPA and the NRC's own regulations, 10 C.F.R. § 51.45(a)(3).

If, on the other hand, one assumes the NRC's goal in issuing the draft GEIS is to evaluate the environmental impacts of increased uranium development in the four regions identified in the GEIS, presumably to meet national or global energy demand, the GEIS is also inadequate. As discussed above, the GEIS does not discuss **any** alternatives to regional uranium development. Such alternatives could include evaluating existing global reserves to determine whether any uranium development, including development in the four areas covered by the GEIS, is needed to meet demand for nuclear fuel¹⁸; limiting development to existing ISL operations; evaluating renewable sources of energy in the four regions to meet energy demand; or evaluating energy efficiency to decrease energy demand. Because the NRC failed to evaluate these or any other reasonable alternatives, the GEIS is deficient under NEPA and the NRC's own regulations. The NRC should withdraw the current GEIS and re-issue a new draft GEIS after considering all reasonable alternatives.

XI. CONCLUSION

The NRC has failed to provide the public with a meaningful opportunity to deal with the complex and significant issues involved in permitting ISL facilities. This failure

¹⁸ Such an inquiry would not be difficult to undertake. The Southwest Research and Information Center has already undertaken a preliminary analysis of global reserves and determined that global nuclear fuel demand can be met with existing mining operations. See, Paul Robinson, *Need or Greed? Uranium Prices and Demand*, 7 *Voices from the Earth* 2 (Fall 2006) attached hereto as Attachment L. Moreover, if this is the NRC's goal in issuing the GEIS, the U.S. Department of Energy would be required to be a cooperating agency. 40 C.F.R. § 1501.6; 10 C.F.R. 51.10(b)(2).

has taken place at a crucial phase of the NEPA process. The NRC is now just one step away from processing the current draft into a final GEIS that unless substantial measures are taken, will not comply with NEPA's requirements. In order to comply with NEPA's requirements, the NRC must now address all the gaps, errors, and other problems raised in these comments. After considering these comments and comments raised by others, the NRC should re-issue a draft GEIS and accept public comments on the new draft. Only in this way will NRC have realized its obligations under NEPA and its own regulations.

Sincerely,

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