

**UNITED STATES COURT OF APPEALS  
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

**Hearing Date: February 20, 2003**

**STATE OF NEVADA, et al., Petitioners,**

D.C. Circuit No. 01-1425

v.

**UNITED STATES, et al., Respondents.**

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**NATURAL RESOURCES DEFENSE COUNCIL, et al.,  
Petitioners,**

D.C. Circuit No. 01-1426

v.

**CHRISTINE TODD WHITMAN, et al., Respondents.**

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**NUCLEAR ENERGY INSTITUTE, INC., Petitioner,**

D.C. Circuit Nos. 01-1258,  
01-1268, 01-1295

v.

**UNITED STATES, et al., Respondents.**

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Original Petition for Review

**JOINT BRIEF OF PETITIONERS STATE OF NEVADA AND NATURAL RESOURCES  
DEFENSE COUNCIL, ET AL.**

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**CERTIFICATE OF PETITIONERS NEVADA AND NATURAL RESOURCES DEFENSE COUNCIL, *ET AL.* AS TO PARTIES, RULINGS AND RELATED CASES**

Pursuant to Circuit Rule 18(a)(1), petitioners State of Nevada (petitioner in Case 01-1425) and petitioners Natural Resources Defense Council, Inc., Public Citizen, Citizen Alert, Nevada Nuclear Waste Task Force, Nevada Desert Experience, Citizen Action Coalition of Indiana, and Nuclear Information and Resource Service (petitioners in Case 01-1426; collectively, “Environmental Petitioners”) submit the following certificate as to this case:

A. Parties

In this Court the following entities are parties to this cases and the cases consolidated with this case:

1. State of Nevada ex rel.. Robert R. Loux, Executive Director of the Nevada Agency for Nuclear Projects, Petitioner in No. 01-1425
2. Environmental Petitioners, petitioners in No. 01-1426
3. Nuclear Energy Institute, Inc., petitioner in Nos. 01-1258, 01-1268, 01-1295.
4. United States of America, respondent in Nos. 01-1425, 01-1426, 01-1258, 01-1268, 01-1295.

5. Christine Todd Whitman, Administrator, Environmental Protection Agency, respondent in 01-1425, 01-1426, 01-1258, 01-1268, 01-1295.

6. United States Environmental Protection Agency, respondent in 01-1425, 01-1426, 01-1258, 01-1268, 01-1295.

B. Ruling Under Review: the issuance by the United States Environmental Protection Agency of a Final Rule entitled “Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada,” 66 F.R. 32074, *et seq.* (June 13, 2001).

C. Related Cases: This matter has not previously been before this Court. Related cases in this Court include:

1. *State of Nevada, City of Las Vegas, Nevada, and Clark County, Nevada v. United States Department of Energy and Spencer Abraham, Secretary*, Case No. 01-1516 (c/w Consolidated with Case No. 02-1036) and No. 02-1077.

2. *State of Nevada, Clark County, Nevada, and City of Las Vegas, Nevada v. United States Nuclear Regulatory Commission*, No. 02-1116.

Date: May 3, 2002

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**OTHER AUTHORITIES CITED:**

*An International Peer Review of the Yucca Mountain TSPA-SR*, International Atomic Energy Agency and Nuclear Energy Agency, OECD, 2002 .....49, 50

R. B. Moore, *Counting and Shaping the Right to Vote*, in R. Harbeson, R. Hopkins, D. Smith, eds., RESPONSIBLE GOVERNANCE 80-83 (1994). .....30

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## GLOSSARY

**Alluvial** refers to material deposited by a stream or running water.

**APA** is the Administrative Procedures Act. 5 U.S.C. §§701 *et seq.*

**Aquifer** is an underground geological formation or part of a formation that is capable of yielding a significant amount of water to a well or spring. 40 C.F.R. §191.12.

**AEA** is the Atomic Energy Act, 42. U.S.C. § 2201 *et seq.*

**Barriers** as defined by EPA means any material, structure or feature that, for a period to be determined by the NRC, prevents or substantially reduces the rate of movement of water or radionuclides from the Yucca Mountain repository to the accessible environment, or prevents the release or substantially reduces the release rate of radionuclides from waste. 40 C.F.R. §197.12.

**Contamination** is introduction of radionuclides into Yucca Mountain's surroundings via a breach of the repository.

**Controlled Area**, as defined by the Yucca Mountain Rule is "(1) the surface area, identified by passive institutional controls, that encompasses no more than 300 square kilometers. It must not extend farther: (a) South than 36, 40' 13.6661" north latitude, in the predominant direction of ground water flow; and (b) Than five kilometers from the repository footprint in any other direction; and (2) The subsurface underlying the disposal area." 40 C.F.R. §197.12.

**DEIS** is the report entitled Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, July 1999

**DOE** is the United States Department of Energy.

**EPA** is the United States Environmental Protection Agency.

**EnPA** is the Energy Policy Act of 1992, Pub. L. No. 102-486.

**FEIS** is the report entitled Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, February, 2002  
(<http://www.ymp.gov/new/official/reports/feis/index.htm>)

**Flowpath** is the path traveled by a zero-charged, floating particle released into a groundwater flow field. Also flowpath is a preferential channel for groundwater movement.

**NAS** is the National Academy of Sciences

**NRC** is the United States Nuclear Regulatory Commission.

**NRDC** is the Natural Resources Defense Council

**NWPA** is the Nuclear Waste Policy Act. 42 U.S.C. §10101 *et seq.*

**Radionuclide** is a radioactive species of an atom, i.e., isotopes with an unstable nucleus that is subject to spontaneous decay. For example, tritium and strontium-90 are radionuclides of elements of hydrogen and strontium, respectively.

**RMEI** is Reasonably Maximally Exposed Individual

**SDWA** is the Safe Drinking Water Act. 42 U.S.C. §300h *et seq.*

**TSPA** is the Total Systems Performance Assessment

**WIPP** is the Waste Isolation Pilot Plant, an underground nuclear waste repository in Carlsbad, New Mexico designed by DOE to receive retrievably-stored transuranic nuclear wastes from the DOE weapons program.

**Yucca Mountain Rule** is “Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada,” published in the Federal Register on June, 13, 2001 at 66 Fed. Reg. 32074-32135.

## INTRODUCTION

Petitioners State of Nevada (“Nevada”), and the Natural Resources Defense Council (“NRDC”) and its fellow petitioners (“environmental petitioners”), challenge respondent Environmental Protection Agency (EPA)’s abrogation of its statutory duties, including the paramount duty to protect public health and safety, in issuing final environmental radiation standards governing the proposed high-level nuclear waste repository at Yucca Mountain, Nevada (the “Yucca Mountain Rule”).

Faced with one of the most critical responsibilities in its institutional history—establishing the public health and environmental radiation protection standards for the first and only proposed national repository site for high-level waste and spent nuclear fuel—EPA committed several discrete, but dispositive violations of law. EPA’s oddly configured “controlled area” for its groundwater standards, reminiscent of a classic gerrymander, would allow dilution of radioactive contaminants to spread through an unprecedented area 18 kilometers in length, violating EPA’s duties under the “non-endangerment” provision of the Safe Drinking Water Act (“SDWA”), 42 U.S.C., §300h. EPA also limited its compliance period to 10,000 years, well before the occurrence of peak radiation doses, ignoring the warnings of a National Academy of Sciences panel that doing so would lack any scientific basis and could endanger public health and safety. That decision flouted the requirement of section 801 of the Energy Policy Act of 1992 (“EnPA,” Pub. Law 102-486, title VIII), which requires EPA’s Yucca Mountain standards to be “based upon and consistent with” that panel’s findings. Finally, EPA unilaterally altered the definition of “disposal” from that set by Congress in the Nuclear

Waste Policy Act (“NWPA”), 42 U.S.C. §10101(9), referring for the first time to isolation of wastes “*for as long as reasonably possible.*” That new definition, which could be read as requiring only temporary delay of radiation releases with engineered barriers to qualify as “disposal,” marks a departure from the Congressional objective in the NWPA to base repository siting primarily on the principle of long-term geologic isolation.

#### **JURISDICTIONAL STATEMENT**

The final Yucca Mountain Rule, entitled “Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada,” was published in the Federal Register on June, 13, 2001 at 66 F.R. 32074-32135. By its terms, that rule became effective on July 13, 2001. Nevada’s petition for review (No. 01-1425) was originally filed in the Ninth Circuit on June 27, 2001. NRDC and the environmental petitioners’ petition for review (No. 01-1426) was also originally filed in the Ninth Circuit on the same date. Pursuant to 28 U.S.C. §2112(a)(3), the Judicial Panel on Multidistrict Litigation ordered petitions filed by Nevada and NRDC in the Ninth Circuit to be transferred to this Court and consolidated with the petitions filed by the Nuclear Energy Institute (NEI) in this Court between June 6 and June 29, 2001 (No. 01-1258, 01-1268, and 01-1295).<sup>1</sup>

Jurisdiction rests in this Court pursuant to the AEA (42 U.S.C. §2239(b)); the Hobbs Act (28 U.S.C. §§2342, 2343); the Administrative Procedure Act (“APA,” 5

U.S.C. §§701-703); the Energy Policy Act of 1992 (Pub. L. 102-486, title VIII, section 801); and the Nuclear Waste Policy Act (42 U.S.C. §§10139(a)(2)).

## **ISSUES PRESENTED**

1. Whether EPA's definition of "controlled area" for the Yucca Mountain Rule, allowing for dilution of radioactive contaminants over a 300 square kilometer area and 18 kilometers in length, 40 C.F.R. Part 197.12, violates:

a) the Safe Drinking Water Act's "no endangerment" provision, 42 U.S.C. §300h;

b) EPA's obligation to protect public health and safety (under section 801 of the Energy Policy Act of 1992 and related laws) in promulgating radiation standards for the Yucca Mountain site;

c) the Administrative Procedure Act's proscription of agency action that is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law, 5 U.S.C. §706(A)(2).

2. Whether EPA's limitation of the period of compliance for the Yucca Mountain Rule to 10,000 years, prior to the occurrence of peak doses, violates:

a) the requirement of section 801 of the Energy Policy Act of 1992 that its radiation standards for the Yucca Mountain site be "based upon and consistent with" the findings and recommendations of the National Academy of Sciences;

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<sup>1</sup>NEI challenges other aspects of the Yucca Mountain Rule, including the EPA's authority in that rule to promulgate a separate public health and safety standard for groundwater.

b) EPA's obligation to protect public health and safety (under section 801 of the Energy Policy Act of 1992 and related laws) in promulgating radiation standards for the Yucca Mountain site;

c) the Safe Drinking Water Act's "no endangerment" provision, 42 U.S.C. §300h;

d) the Administrative Procedure Act's proscription of agency action that is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law, 5 U.S.C. §706(A)(2).

3. Whether EPA acted in excess of its statutory authority by defining "disposal" in the Yucca Mountain Rule, 40 C.F.R. §197.12, inconsistently with the definition of that term in the Nuclear Waste Policy Act, 42 U.S.C. §10101(9).

### **STATEMENT OF THE CASE**

In 1982, Congress enacted the Nuclear Waste Policy Act (42 U.S.C. 10101 *et seq.*), to provide for a coordinated federal effort to address the national problem associated with the accumulation of high-level nuclear waste currently being stored at the nation's commercial nuclear reactors and at federal defense installations. Administered in large part by the United States Department of Energy ("DOE"), the NWPA also assigns specific responsibilities to the EPA and other federal agencies.

A key feature of the NWPA provides for the assessment and potential development of an underground repository designed to isolate *geologically* high-level nuclear waste from the human environment. The NWPA instructed the DOE Secretary to

prepare general guidelines for repository site recommendation, which “shall specify detailed geologic considerations that shall be the primary criteria for the selection of sites in various geologic media.” 42 U.S.C. §10132(a.)

In enacting the NWPA, Congress found that “high-level radioactive waste and spent nuclear fuel have become major subjects of public concern, and appropriate precautions must be taken to ensure that such waste and spent fuel do not adversely affect the public health and safety of the environment for this or future generations.” 42 U.S.C. §10131(a)(7). A central purpose of the NWPA is therefore to “provide a reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository.” 42 U.S.C. §10131(b)(1).

Under provisions of the 1982 NWPA, Congress prescribed a complex process for selecting the proposed sites for development of high level waste repositories. Three federal agencies share responsibility for the assessment and potential repository development under the NWPA. That responsibility includes establishing standards, characterization, licensing and building the proposed repository under the NWPA and related federal statutes. If duly authorized, DOE is to design, build and operate the repository. 42 U.S.C. 10134. The Nuclear Regulatory Commission ("NRC") has the responsibility to reject or license the repository. 42 U.S.C. 10134(d). Under its licensure powers, the NRC regulates the construction of the repository, licenses the receipt and possession of high level radioactive waste at the repository, and authorizes the closure and decommissioning of the repository. *See* 42 U.S.C. 10141(b).

The third federal agency, EPA, is charged with the statutory responsibility to set public health and safety standards governing the proposed radioactive storage and disposal facility. The NWPA requires EPA to promulgate “generally applicable standards for protection of the general environment from offsite releases from radioactive material in repositories.” 42 U.S.C. §10141(a). The NWPA also specified that the NRC’s repository licensing criteria “shall not be inconsistent” with the standards promulgated by EPA. 42 U.S. §10141(b)(1)(C).

In 1985, EPA established generic standards for the management, storage and disposal of spent nuclear fuel, high level radioactive waste, and transuranic waste. 40 C.F.R. Part 191; 50 F.R. 38066 (September 19, 1985). However, the First Circuit’s decision in *Natural Resources Defense Council v. Environmental Protection Agency (NRDC v. EPA)*, 824 F.2d 1258 (1st Cir. 1987), vacated and remanded to the agency a portion of these standards. The First Circuit vacated and remanded these generic standards in part because the EPA had failed to fulfill its separate duty under the Safe Drinking Water Act, 42 U.S.C. §300h, to assure that underground sources of water will not be “endangered” by any underground injection. 824 F.2d at 1271.

Eventually, EPA reissued provisions of the generic standards in 40 C.F.R. Part 191 affected by the ruling in *NRDC v. EPA*. 58 F.R. 66398 (Dec. 20, 1993). The standards in 40 C.F.R. Part 191 presently apply to the Waste Isolation Pilot Plant (WIPP) facility in New Mexico. Among other provisions, these regulations establish a 10,000-year period of compliance with its radiation standards. In addition, the generic standards

identify a five-kilometer “controlled area” extending horizontally from the outer boundary of the original location of the radioactive waste, in which groundwater contamination is permitted. 40 C.F.R. §191.12.

In 1987, the NWPA was amended to name the Yucca Mountain site in southern Nevada as the only site to be characterized for the development of the proposed high-level nuclear waste repository. 42 U.S.C. §10133.

In section 801 of the Energy Policy Act of 1992 (Pub. L. No. 102-486), Congress expressly assigned to EPA the duty to “promulgate, by rule, public health and safety standards for protection of the public from releases from radioactive materials stored or disposed of in the repository at the Yucca Mountain site.” *Id.* at §801(a)(1). Increasing the rigor of the generic standard-setting requirements,<sup>2</sup> Congress required EPA to contract with the National Academy of Sciences (NAS) to conduct a study addressing reasonable health and safety standards, directing that EPA’s own public health and safety standards governing the Yucca Mountain site were to be “based upon and consistent with” the NAS findings. *Id.* at §801(a)(1).

In August 1995, the National Research Council of the NAS published the study referenced under section 801 of the Energy Policy Act of 1992, entitled *Technical Bases for Yucca Mountain Standards* (“NAS Report,” Administrative Record (AR) II.A.1.) Among other findings, the NAS Report found that it would be scientifically

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<sup>2</sup> Concurrent 1992 legislation known as the Waste Isolation Pilot Plant Land Withdrawal Act removed the proposed Yucca Mountain site from the generic waste disposal standards in 40 C.F.R. part 191. Pub. L. No. 102-579, §8(a)(2)(B), 106 Stat. 4777, 4786.

unsupportable for the EPA to limit the period of performance for its Yucca Mountain site standards to the 10,000-year period used in its generic standards under 40 C.F.R. part 191. Concluding that peak radiation risks at the Yucca Mountain site were likely to far exceed that time limitation, the NAS panel recommended that the standards for individual risk apply at the time of peak doses. *Id.* at 55. Drawing on its own prior research, the NAS Report instructed EPA that adopting the 10,000-year limitation “might be inconsistent with protection of public health.” *Ibid.*<sup>3</sup>

EPA published its proposed Yucca Mountain Rule in August 1999. 64 F.R. 46976 (August 27, 1999). In the course of its review of the proposed rule, EPA reviewed written comments (AR IV.D), testimony at public hearings (AR IV.F), and an extensive collection of technical and background documents.<sup>4</sup> EPA also prepared a volume of responses to written comments and comments made at public hearings (AR V.C.1.) In June 2001, EPA published its final Yucca Mountain Rule. 66 F.R. 32074 (June 13, 2001); codified at 40 C.F.R. Part 197.

The subjects addressed in EPA’s final Yucca Mountain Rule are detailed and esoteric. The joint brief of Nevada, and NRDC and its fellow environmental petitioners, focuses on three specific aspects of the final rule:

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<sup>3</sup> The earlier National Research Council Report noted that the 10,000 year period of performance “makes compliance rather easy” and “may seem to simplify licensing,” but concluded that “we do not understand how such an exercise can support the finding, required in licensing, that there be no unreasonable risk to the health and safety of the public.” NAS Report, p. 55.

<sup>4</sup> See, e.g., AR II.A.1 (NAS Report), V.A.4 (Yucca Mountain Draft EIS), V.A.5 (Yucca Mountain Viability Assessment), V.B.1 (Final Background Information Document), and V.A.17 (Nevada Risk Assessment Management Program).

- The final rule does not apply the five-kilometer definition of the “controlled area” employed in EPA’s generic radiation standards under 40 C.F.R. Part 191. Instead, it defines the “controlled area” to include a broader area 18 kilometers in length in which groundwater contamination would be allowed to occur. 40 C.F.R. §197.12.
- **The final rule rejects the recommendation of the NAS Report to extend the period of performance though the time peak radiation doses are likely to occur. Instead, it imposes an arbitrary 10,000-year cutoff on the period of performance. 40 C.F.R. §§197.13, 197.14, 197.15, 197.20, 197.25, 197.30.**
- The final rule does not employ the same definition of “disposal” used in the NWPA. 42 U.S.C. §10101(9). Instead, it adds a new phrase not previously used in that statute or in previous regulations: *“with the intent of isolating it for as long as is reasonably possible ....”*

## SUMMARY OF ARGUMENT

**EPA’s novel and arbitrary definition of the “controlled area” for its groundwater standards would allow dilution of radioactive contaminants to spread through an unprecedented area 18 kilometers in length. The size and configuration of this “controlled area” contrasts markedly with the stricter five-kilometer standard that would apply to any other repository location, including the far less radioactive WIPP facility for storage of transuranic waste in New Mexico.**

Since the “controlled area” rule would allow radioactive contamination to spread to an “underground drinking water source,” 40 C.F.R. §144.3, it directly violates the “non-endangerment” provision of the SDWA, 42 U.S.C., §300h. The risks of contamination threatened by this rule also violate EPA’s obligation to protect public health and safety (under section 801 of the EnPA and related laws) in promulgating radiation standards for the Yucca Mountain site. Finally, review of the record pertaining to EPA’s definition of the “controlled area” confirms that it violated the APA’s

proscription of agency action that is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law, 5 U.S.C. §706(A)(2).

EPA also limited the Yucca Mountain compliance period to 10,000 years, well before the occurrence of peak radiation doses. This cutoff of the period of performance defied the express advice of the National Academy of Sciences panel convened under section 801 of EnPA to advise EPA on its final radiation protection standards for the Yucca Mountain site. That panel recommended extending the period of performance *100 times* longer, and warned that limiting it to a 10,000-year period would lack any scientific basis and could endanger public health and safety.

EPA's arbitrary defiance of the NAS panel's recommendation on the period of performance violated EnPA section 801, which requires EPA's Yucca Mountain standards to be "based upon and consistent with" that panel's findings and recommendations. EPA's 10,000-year cutoff excludes the entire period in which peak doses are most likely to occur, in which engineered barriers available during the initial 10,000 years are projected for failure. Since the period of performance undermines EPA's own regulatory standards during the time frame posing the greatest risk, that rule also cannot be reconciled with EPA's duty under EnPA section 801 of EnPA to protect public health and safety in its radiation standards for the Yucca Mountain site. The resulting long-term risk of radioactive contamination in this unregulated period also violates the "non-endangerment" provision of the SDWA, 42 U.S.C., §300h. Review of the record pertaining to EPA's 10,000-year period of performance also confirms that it violated the

APA's proscription of agency action that is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law, 5 U.S.C. §706(A)(2).

Acting without statutory authority, EPA unilaterally altered the definition of "disposal" from that set by Congress in the NWPA, 42 U.S.C. §10101(9), referring for the first time to isolation of wastes "*for as long as reasonably possible.*" That new and broader definition, which could be read as requiring only temporary delay of radiation releases with engineered barriers to qualify as "disposal," cannot be reconciled with the plain language of the NWPA and marks a departure from its historic objective to make permanent geologic considerations the primary basis for repository site selection. 42 U.S.C. §10132(a).

## ARGUMENT

### I. EPA'S FINAL YUCCA MOUNTAIN RULE IS RIPE FOR ADJUDICATION

The issue of ripeness addresses the appropriate timing of judicial intervention. *Renne v. Geary*, 501 U.S. 312, 320 (1991). To determine the ripeness of an issue for adjudication, federal courts address both the "fitness of the issues for judicial decision" and the "hardship to the parties of withholding court consideration." *Abbott Laboratories v. Gardner*, 387 U.S. 136, 149 (1967); see also *Ohio Forestry Association v. Sierra Club*, 523 U.S. 726, 733 (1998). Under the Administrative Procedure Act and standard administrative law principles, final agency action is subject to judicial review without

additional delay. 5 U.S.C. §704.<sup>5</sup>

In its November 21, 2001 motion to dismiss, EPA conceded (on page 17) that its Yucca Mountain radiation standards are already final, which would “normally” make the matter presumptively suitable for judicial review now. Nonetheless, EPA argued that “unusual” circumstances involving the federal decision-making schedule on the Yucca Mountain repository suggested otherwise.

As detailed in the joint petitioners’ December 14, 2001 opposition, each of the traditional indicia of ripeness supports present judicial review. First, with respect to hardship, EPA would lose nothing by having the Court address the merits of its already-final radiation standards. By contrast, delaying judicial review would impose a “palpable and considerable hardship” on Nevada and the environmental petitioners, tainting final federal decision-making on the repository with the erroneous premise that lawful radiation standards are already in place.<sup>6</sup>

Second, with respect to “fitness,” EPA has already taken its final action on Yucca Mountain radiation standards and has no further role to play. Present judicial review of EPA’s radiation standards would not produce “inappropriate interference” with further

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<sup>5</sup> See also *Wyoming Outdoor Council v. United States Forest Service*, 165 F.3d 43, 49-51 (D.C. Cir.1979) (agency determination was final and no possibility existed that further agency action would alter claim).

<sup>6</sup> See *PG&E Co. v. State Energy Conserv. & Devel. Comm.*, 461 U.S. 190, 103 S.Ct. 1713, 1720-1721 (1983) (“to require the industry to proceed without knowing whether the moratorium is valid would impose a palpable and considerable hardship on the utilities, and may ultimately work harm on the citizens of California”).

administrative action. DOE and NRC have already relied on the EPA's Yucca Mountain Rule in promulgating their own final regulations. Without judicial review, any further federal decision-making on Yucca Mountain will be expressly premised on the adequacy of EPA's final Yucca Mountain Rule promulgated under EnPA section 801.<sup>7</sup> Moreover, the Court would not benefit from further factual development of the issues. Since the radiation standards are already final and the record has been prepared, no further contingency is necessary to assist the adjudication of EPA's final rule.

**Lastly, as Nevada and NRDC noted in their to-date unopposed March 2, 2002 request for judicial notice, key federal decisions described as future events in EPA's earlier motion have now taken place. Those include the Secretary of Energy's final decision on February 14, 2002 to recommend the proposed Yucca Mountain nuclear waste repository to the President and the President's final decision on February 15, 2002 to recommend that site to Congress. DOE also released the Final Environmental Impact Statement for the Yucca Mountain repository concurrently with its site recommendation. On April 8, 2002, Nevada exercised its notice of disapproval of the site designation under section 116 of the NWPA, 42 U.S.C. §10134, commencing the period allowed under section 115 (90 days of continuous session) for Congress to pass a resolution of repository siting approval, which would then become law. 42 U.S.C. §10135(c). In light of that timetable, final Congressional disposition of the siting decision on Yucca Mountain will predictably occur long prior to the February 20, 2003, the date set for hearing in this Court.<sup>8</sup>**

## **II. OVERVIEW: EPA'S YUCCA MOUNTAIN RULE CONFLICTS WITH WITH CLEAR REQUIREMENTS OF LAW, AND CONSTITUTES ARBITRARY AND CAPRICIOUS ACTION**

### **A. Established standards of judicial review apply to the Yucca Mountain Rule.**

This case tests EPA's fidelity to its express statutory obligations to protect public health and safety, and to prevent endangerment of underground sources of drinking

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<sup>7</sup> By contrast in *Ohio Forestry Association*, the Forest Service retained discretion to apply its own forest plan.

<sup>8</sup> If Congress approves a resolution of repository siting approval, the DOE Secretary would have 90 days to submit an application for construction authorization to the NRC. 42 U.S.C. §10134(c). No parties to this action, including EPA, contend that the Yucca Mountain Rule would be unripe under that scenario.

water, in its promulgation of the Yucca Mountain rule. Federal courts have long recognized that in challenges to final agency rule-making determinations, “we must make sure that the Agency followed proper procedures in developing the final standards and that the Agency acted within its statutory authority.” *NRDC v. EPA*, 824 F.2d 1258, 1267 (1st Cir. 1987); see also *South Terminal Corp. v. Environmental Protection Agency*, 504 F.2d 646, 655 (1st Cir. 1974). Courts will invalidate the standards if they are “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” 5 U.S.C. §706(2)(A).

The standards of review addressing agencies’ fidelity to their statutory obligations are well established and familiar. The threshold question is whether “Congress has directly spoken to the precise question at issue. If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress.” *Chevron USA v. Natural Resources Defense Council*, 467 U.S. 837, 842-43 (1984). Only if the statute is silent or ambiguous with respect to the specific issue does the court inquire whether the agency's answer is based on a permissible construction of the statute. *Id.* at 843. Accordingly, courts owe no deference to *ultra vires* exercises of agency authority. The judiciary remains the final authority on issues of statutory construction and must reject administrative constructions which are contrary to clear congressional intent. *Id.*; see *FEC v. Democratic Senatorial Campaign Committee*, 454 U.S. 27, 32 (1981).<sup>9</sup>

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<sup>9</sup> See also *Sea-Land Service, Inc. v. Department of Transportation*, 137 F.3d 640, 646 (D.C. Cir. 1998) (modification of agency orders not entitled to deference where based upon an erroneous view of the law).

In reviewing administrative actions, courts will also set aside an agency rule where the agency has failed to consider relevant factors and articulated a rational connection between the facts found and the choice made. *Motor Vehicle Manufacturers Association v. State Farm Mutual Insurance Co.*, 463 U.S. 29, 43 (1983); see also *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 415-17 (1971). In *State Farm*, the Supreme Court offered examples of circumstances in which an agency action "normally" would be considered arbitrary or capricious; situations where "the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *State Farm*, 463 U.S. at 43.<sup>10</sup>

As detailed below, EPA violated clear requirements of law in promulgating the Yucca Mountain rule, including direct violations of the section 801 of the EnPA, and the SDWA's "non-endangerment" rule. 42 U.S.C., §300h. Even if these violations were less clear on their face, review of the record confirms that EPA's actions were arbitrary, capricious and unlawful within the meaning of the APA, 5 U.S.C. §706.

**B. EPA must fulfill its statutory duties to protect public health and safety, and safeguard against endangerment of drinking water supplies.**

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<sup>10</sup> By contrast, if the agency decision was based on a consideration of the relevant factors and there has not been "a clear error of judgment," then the agency decision was not arbitrary or capricious. *Overton Park*, 401 U.S. at 416.

In a series of related statutes bearing upon the disposal of radioactive waste and spent nuclear fuel— including the Energy Policy Act, Atomic Energy Act, and Nuclear Waste Policy Act—Congress left no ambiguity about the paramount obligation of the federal government to protect public health and safety. Pub. Law 102-486 (EnPA); 42 U.S.C. §10131(b)(1) (NWPA); 42 U.S.C. §2012 (AEA). In both the general case and the specific provisions governing the Yucca Mountain site, the legal responsibility for setting public health and safety radiation standards meeting this Congressional mandate lies solely with the EPA. EPA’s radiation standards must also fulfill the agency’s express duties under the Safe Drinking Water Act (SWDA) to ensure that underground sources of drinking water will not be endangered by any underground injection. 42 U.S.C. §300h(b)(3)(c).

#### **1. Nuclear Waste Policy Act**

The NWPA states its purpose in unequivocal terms: "high level radioactive waste and spent nuclear fuel have become major subjects of public concern, and appropriate precautions must be taken to ensure that such waste and spent fuel do not adversely affect the public health and safety and the environment for this or future generations." 42 U.S.C. § 10131(a)(7). A central purpose of the NWPA is therefore to “provide a reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository.” 42 U.S.C. §10131(b)(1).

Under the NWPA and related statutes, three federal agencies share responsibility for the review, assessment and potential development of the proposed repository.

However, the EPA is solely responsible for the public health and safety standards governing radiation releases. See 42 U.S.C. §10141(a).<sup>11</sup> If duly authorized, DOE is to design, build and operate the repository in accordance with the requirements of the NWPA and EPA's radiation health and safety standards. 42 U.S.C. §10134. The Nuclear Regulatory Commission ("NRC") has the responsibility to reject or license the repository in accordance with these standards. 42 U.S.C. 10134(d).<sup>12</sup>

## **2. Energy Policy Act of 1992**

Section 801 of EnPA directs the EPA to “promulgate, by rule, public health and safety standards for the protection of the public from releases of radioactive materials stored or disposed of in the repository at the Yucca Mountain site.” By its clear terms, this statute authorizes EPA to set radiation standards appropriate for the Yucca Mountain *site*, rather than tailoring its regulations to fit the *design* of the Yucca Mountain Project proposed by DOE. AR II.D.44: 1.

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<sup>11</sup> EPA's general regulatory authority to promulgate health and safety standards also derives from the AEA. 42 U.S.C. §2012. EPA's generic standards for the management, storage and disposal of spent fuel, high level radioactive waste and transuranic waste are codified at 40 C.F.R. part 191. See *NRDC v. EPA*, 824 F.2d at 1258 (invalidating portions of original rule). The generic standards are presently applicable to the far less radioactive Waste Isolation Pilot Project (WIPP) facility in New Mexico. See *State of New Mexico v. Watkins*, 783 F.Supp. 628 (D.D.C. 1991).

<sup>12</sup>Under its licensure powers, the NRC regulates the construction of the repository, licenses the receipt and possession of high level radioactive waste at the repository, and authorizes the closure and decommissioning of repository. See 42 U.S.C. §10141(b).

Section 801 “builds upon” the existing authority of the EPA administrator to establish radiation standards under the AEA and NWPA. H.R. Conf. Rep. No. 102-1018, *reprinted in* 1992 U.S.C.C.A.N. 2472, 2481. However, the statute also specifies that the site-specific Yucca Mountain standards would be the “only *such* standards” (i.e., radiation standards) governing the “the disposal of spent nuclear fuel or high-level radioactive waste in a repository at the Yucca Mountain site.” *Ibid.*

Section 801(a) of EnPA requires EPA to promulgate rules consistent with the findings and recommendations of the National Academy of Sciences (NAS) addressing reasonable standards for protection of the public health and safety. Section 801(a)(2) requires the EPA administrator to contract with NAS, which provides findings and recommendations on reasonable standards for public health and safety. NAS must then address at least three “mandatory” issues, with the opportunity to comment on other issues.<sup>13</sup>

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<sup>13</sup> The mandatory issues under section 801 are:

- a) Whether a health-based standard based upon doses to individual members of the public from releases to the accessible environment (as that term is defined in the regulations contained in subpart B of part 191 of title 40, Code of Federal Regulations, as in effect on November 18, 1985) will provide a reasonable standard for protection of the health and safety of the general public.
- b) Whether it is reasonable to assume that a system for post-closure oversight of the repository can be developed, based upon active institutional controls, that will prevent an unreasonable risk of breaching the repository’s engineered or geologic barriers or increasing the exposure of individual members of the public to radiation beyond allowable limits; and
- c) Whether it is possible to make scientifically supportable predictions of the probability that the repository’s engineered or geologic barriers will be breached as a result of human intrusion over a period of 10,000 years.

EnPA section 801(a)(1) expressly requires EPA’s final public health and safety standards governing the Yucca Mountain site to be “based upon and consistent with” the findings and recommendations of NAS. In its final Yucca Mountain Rule, EPA construed these NAS recommendations merely as “starting points,” asserting its discretionary authority to address “public policy issues that are addressed more properly in this rulemaking proceeding.” 66 F.R. 32083.

However, both the legislative history of EnPA and EPA’s own supporting documentation recognize that this discretion must be exercised in a specific statutory context. Section 801 does not limit the EPA Administrator’s discretion “in the exercise of his authority *related to public health and safety issues.*” 1992 U.S.C.C.A.N. at 2482 (emphasis added). Conversely, however, the EPA Administrator is not authorized under EnPA to serve “policy” ends outside its specific Congressional mandates to protect public health and safety. In the Background Information Document (BID) framing its final rule, EPA stated that it “will reach final determinations that are congruent with NAS analysis whenever it can do so *without departing from the Congressional delegation of authority to promulgate, by rule, health and safety standards for protection of the public.*” AR V.B.1: ES-5 (emphasis added).

In sum, EPA’s authority to make “policy” under EnPA is bounded by its Congressional mandate to protect public health and safety in its regulations governing the Yucca Mountain site. The Administrator’s rule-making authority for this site is limited to this purpose, and is statutorily distinct from the authority of DOE to review a particular

repository design, or the authority of NRC to review a repository license application. See, e.g., 42 U.S.C. §§10134 (NWPA).<sup>14</sup>

### **3. Safe Drinking Water Act**

EPA's public health and safety standards for the Yucca Mountain site must also be consistent with its statutory duties under the Safe Drinking Water Act, 42 U.S.C. §300h. Enacted first in 1976 and amended several times, the Act is designed "to assure safe drinking water supplies, protect especially valuable aquifers, and protect drinking water from the unlawful contamination of waste." *NRDC v. EPA*, 824 F.2d at 1268. Part C of the Act, 42 U.S.C. §300h, addresses the protection of underground sources of drinking water. The Act therefore imposes a duty on the EPA to assure that underground sources of drinking water will not be "endangered" by any underground injection. 42 U.S.C. §300h(b)(3)(C).

The First District's seminal ruling in *NRDC v. EPA* definitively addressed the SDWA's relationship to EPA standards addressing the storage of radioactive material in repositories. That decision, which reviewed and partly set aside the EPA's first version of generic nationwide radiation standards (40 C.F.R. 191; see 50 F.R. 38066 (1985)),

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<sup>14</sup> Public comments on the proposed rule also recognized that EPA's policy-making authority is rooted in specific Congressional direction to protect public health and safety at the repository site. See, e.g., AR IV.D.20: 2 (arguing that the NAS Report is authoritative unless there was an internal disagreement on the panel, in which case the EPA must fall back on its own scientific judgment; there are clear scientific or health protection grounds to reject the report's analysis and adopt a different approach; or the report "did not take into account certain health and environmental factors, thereby leaving the door open for EPA to use its own scientific judgment").

definitively rejected the notion that the NWPA or any other statutory provision excuses EPA's statutory obligation to comply with the "non-endangerment" provision of the SDWA. 824 F.2d at 1271. Harmonizing the respective provisions of the SDWA and NWPA, the court noted that the SDWA is "no mere incidental provision. It reflects a national policy and standard relative to the country's water supplies. Safeguarding such resources and their users is likewise implicit in the EPA's duty under the NWPA to promulgate HLW 'standards for the protection of the general environment from offsite offsite releases from radioactive materials in repositories.'" *Id.* at 1280 (citing 42 U.S.C. §10141(a)).

That reasoning applies equally to EnPA section 801, which applies parallel language to EPA's responsibilities relative to the Yucca Mountain site.<sup>15</sup> In short, EPA's Yucca Mountain Rule must independently comply with the non-endangerment provision of the SDWA. In framing the Yucca Mountain Rule, EPA was well aware of the holding of *NRDC v. EPA*, which ultimately led to a revision in the generic EPA radiation standards applicable nationwide and continue to govern the WIPP facility. 66 F.R. 32077.

### **III. EPA'S DEFINITION OF "CONTROLLED AREA" VIOLATES THE SAFE DRINKING WATER ACT AND IS ARBITRARY, CAPRICIOUS, AND NOT IN ACCORDANCE WITH THE LAW.**

#### **A. Background**

**In its final Yucca Mountain Rule, EPA established a groundwater standard that generally requires protection of**

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<sup>15</sup> Under section 801(a)(1), EPA must promulgate "public health and safety standards for the protection of the public from releases from radioactive materials stored or disposed of in the repository at the Yucca Mountain site."

groundwater that is a current or potential source of drinking water “to the same level as the maximum contaminant levels (MCLs) for radionuclides established under the SDWA.” 66 F.R. 32106. See AR II.A.3 (EPA groundwater strategy). However, in its definition of the “controlled area” for the Yucca Mountain Rule (40 C.F.R. 197.12), EPA produced a strangely configured “point of compliance” with groundwater standards that entirely vitiates the SDWA’s regulatory framework.<sup>16</sup>

In general terms, the “controlled area” is the area in immediate proximity to the buried high-level radioactive waste that is dedicated as a natural protective barrier, and hence, could become contaminated. *NRDC v. EPA*, 824 F.2d at 1276. Rather than holding DOE to a radiation protection standard that requires the waste to remain isolated, the Yucca Mountain Rule establishes a gerrymandered “controlled area” that expands rather than minimizes the threat of harmful contamination. That result would allow DOE to rely on dilution of radioactive contaminants through an 18 kilometer swath of the Nevada landscape, essentially creating an enormous radioactive septic field aimed directly at the nearest human cultivation and habitation.

The size and import of its new loophole violates the SDWA’s “no endangerment” provision, and dispositive case law. The Yucca Mountain Rule establishes a controlled area vastly larger (three times the size) of the standards that would apply elsewhere, including the significantly less radioactive WIPP facility in New Mexico. The Rule also establishes a point of compliance with SDWA standards substantially more distant than those that apply to WIPP without a rational basis. That weakened standard violates the public health and safety requirements of EnPA, the NWPA and the AEA, and its arbitrary nature cannot be reconciled with the APA. Reliance on dilution rather than isolation of the waste will result in exorbitantly higher doses of radiation to future persons using water extracted closer to Yucca Mountain, and without any reasonable barriers to protect them from extracting the radioactively contaminated water.

B. EPA’s gerrymandered “controlled area” violates the non-endangerment provision of the SDWA and is not in accordance with the law.

The Yucca Mountain Rule’s “controlled area” is not in accordance with the law because it would allow the spread of radioactive contamination over an enormous area of the aquifer toward or through existing and potential communities that are not in immediate proximity to the buried waste, in direction violation of the SDWA’s “no endangerment” mandate.<sup>17</sup> The “no endangerment mandate” of the SDWA protects existing and potential underground drinking water sources. The Amargosa Valley aquifer, which currently is the sole source of water for several Nevada and California farm communities, qualifies as an underground drinking water source.<sup>18</sup> EPA’s rule would allow significant contamination of that source at some point during the regulatory time frame.

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<sup>16</sup> The Yucca Mountain Rule defines its “controlled area” as “(1) the surface area, identified by passive institutional controls, that encompasses no more than 300 square kilometers. It must not extend farther: (a) *South than 36, 40' 13.5551" north latitude, in the predominant direction of ground water flow*; and (b) Than five kilometers from the repository footprint in any other direction; and (2) The subsurface underlying the disposal area.” 40 C.F.R. 197.12 (emphasis added).

<sup>17</sup> The SDWA defines what is meant by the term “endanger”: “Underground injection endangers drinking water sources if such injection may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such system’s not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons.” 42 U.S.C. § 300h(d)(2).

<sup>18</sup> An aquifer qualifies as an underground drinking water source if it (1) supplies any public water system, or it (2) contains enough groundwater to supply a public water system and either currently supplies drinking water for human consumption or contains fewer than 10,000 mg/l total dissolved solids and which is not an exempted aquifer. 40 C.F.R. §144.3.

The context in which the First Circuit addressed this issue is key to understanding the scope of EPA's violation of the SDWA. In *NRDC v. EPA*, 824 F.2d 1258, the First Circuit found that safeguarding groundwater resources is implicit in the NWPA's requirement that EPA promulgate standards that protect "the general environment from offsite releases from radioactive material in repositories." *Id.* at 1280. Measured by that seminal ruling, the arbitrary size and shape of the "controlled area" in EPA's Yucca Mountain Rule violates the non-endangerment provision of the SDWA as it endangers future and potential underground drinking water sources. 42 U.S.C. §300h. In approving the concept of a "controlled area" for the disposal of high-level radioactive waste in 1987, the First Circuit described a "controlled area":

Congress was aware that the area in immediate proximity to the buried [high-level waste] HLW would likely be dedicated as a natural protective barrier, and hence could become contaminated. We read the NWPA as containing, by implication, authority for the EPA to depart from SDWA standards in any "controlled area."

824 F.2d at 1276 (brackets inserted).<sup>19</sup> The Court further elaborated on the concept, citing to the legislative history of the NWPA and to its understanding of the scale and scope of the "controlled area:"

Since Congress knew that such underground disposal will inevitably contaminate some ground water, we cannot read the NWPA as intending that any ground water found within the geologic formations, acting as a containment mechanism, must be kept at drinking water quality ... the no endangerment provision [of the SDWA] does not apply to potential drinking water sources within the controlled area. This being so, the "endangerment" of these onsite waters is not contrary to law, nor obviously, would it be arbitrary and capricious, given the administrator's reasoned explanation *that contamination of this relatively small area is an essential part of his plan for protecting the outside environment.*

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<sup>19</sup> The First Circuit in *NRDC v. EPA* was clear that the planned disposal of high-level radioactive waste in underground repositories amounts to underground injection under the SDWA. 824 F.2d at 1271.

*Id.* at 1279. (brackets and emphasis added).

The "controlled area" to which the First Circuit referred is in the general environmental standards applying to the disposal of high level waste: "(1) A surface location, to be identified by passive institutional controls, that encompasses no more than 100 square kilometers and extends horizontally *no more than five kilometers in any direction* from the outer boundary of the original location of the radioactive wastes in a disposal system; and (2) the subsurface underlying such a surface location." 40 CFR 191.12. (emphasis added). This 5 kilometer distance is currently in effect at the WIPP facility.

The Yucca Mountain Rule's "controlled area" is a remarkable departure from the general standards and the concept of a "controlled area" approved in *NRDC v. EPA*. As previously noted, the Yucca Mountain Rule defines its "controlled area" as "(1) the surface area, identified by passive institutional controls, that encompasses no more than 300 square kilometers. It must not extend farther: (a) *South than 36, 40' 13.6661" north latitude, in the predominant direction of ground water flow*; and (b) Than five kilometers from the repository footprint in any other direction; and (2) The subsurface underlying the surface area." 40 C.F.R. 197.12 (emphasis added).<sup>20</sup>

The Yucca Mountain Rule's departure from the general standards in 40 CFR 191.12 is so notable as to merit a visual explanation, appearing on the next page:

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<sup>20</sup> The straight-line southern boundary of the "controlled area," the point of contention, just happens to coincide with the southwestern corner of the Nevada Test Site and the southern boundary of Bureau of Land Management property.

*Insert Map on its own page*

The map, drawn from the points of compliance in the Yucca Mountain Rule, illustrates the Yucca Mountain Rule's "controlled area" of a 5 kilometer radius except in the south/southeasterly direction of the ground water flow. The dramatically irregular line that represents the point of compliance has little precedent in the realm of environmental protection, and its shape is perhaps more reminiscent of gerrymandered political districts drawn on partisan or racial lines.<sup>21</sup> As EPA acknowledges, "during the post-closure period, the ground water will transport radionuclides released from the repository to the surrounding area" (AR V.B.1: 8-1) and "once radionuclides reach the saturated zone, they would move away from the disposal system in the direction of groundwater flow." 66 FR 32087.

The "controlled area" of the Yucca Mountain Rule bears no relation to the "controlled area" approved by the First Circuit in *NRDC v. EPA*. As the map demonstrates, EPA contemplates allowing for radioactive contamination not just in the immediate surroundings of the site, but throughout a wide-ranging, potentially 300 square kilometer radioactive septic field that will flow for thousands of years in the direction of the nearest human settlement solely dependent on groundwater. That result would sanction precisely the "endangerment" that the SDWA proscribes. Rather than promulgate protective groundwater standards that comply with the SDWA, EPA has

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<sup>21</sup> See Pildes & Neimi, *Expressive Harms, 'Bizarre Districts' and Voting Rights: Evaluating Election Districts after Shaw v. Reno*, 92 MICH. LAW REV. 483 (1993). While reminiscent of a political gerrymander, EPA's "controlled area" is distinct. Gerrymanders have historically evoked justiciability concerns in federal courts due to apprehensions about the "political thicket" of partisan politics. See R. B. Moore, *Counting and Shaping the Right to Vote*, in R. Harbeson, R. Hopkins, D. Smith, eds., RESPONSIBLE GOVERNANCE 80-83 (1994). But EPA is not constituted as a political entity. With respect to the Yucca Mountain site, it operates under an express statutory mandate to protect public health and safety in the setting of radiation standards.

pieced together a "controlled area" that both anticipates and allows for a plume of radioactive contamination that will spread several miles from the repository toward existing farming communities that depend solely on groundwater and perhaps through future communities closer to the site. In fitting the standards to the site, EPA has created an artificial "controlled area" that deliberately relies on dilution of the radioactive contaminants to meet the standards, rather than objective isolation of the wastes to protect this and future generations. Such an action violates the SDWA's prohibition against underground injection of wastes that endangers underground sources of drinking water. Moreover, by fitting the standards to the repository, EPA violates section 801 of the EnPA, which authorizes EPA to set standards appropriate for the Yucca Mountain *site*, rather than tailoring its regulations to fit the *design* of the Yucca Mountain Project proposed by DOE. AR II.D.44: 1.

**C. The administrative record demonstrates EPA's "controlled area" is arbitrary, capricious, and not in accordance with the law.**

**The record demonstrates EPA's failure to meet its statutory duties, and the arbitrary and capricious nature of the Yucca Mountain Rule's "controlled area" and southern point of compliance. In section 801 of EnPA, Congress charged EPA with the task of promulgating standards for the protection of the public from releases of radioactive materials stored or disposed of at the Yucca Mountain site. EPA acknowledges that ground water and its usage will be the main pathways leading to exposure of humans to radioactive contamination from the materials disposed of at the Yucca Mountain repository. 66 FR 32087. The Agency also notes that the flowpath from the repository will carry contaminants south and southeast of the repository toward existing communities in close proximity to Yucca Mountain and very likely, to potential communities much closer to Yucca Mountain. See AR V.C: 6-3. Finally, EPA acknowledges such likely and potential population growth:**

Based upon this information and the current understanding of ground water flow in the Yucca Mountain area, it appears that individuals theoretically could reside anywhere along the projected ground water flow path extending from Forty Mile Wash, starting approximately five kilometers (km) from the repository location, to the southwestern part of the Town of Amargosa Valley, Nevada, where the ground water is close to the land surface and where most of the farming in the area occurs.

*Id.* at 32091 (emphasis added). See also, AR V.C: 6-31.

Despite the acknowledgement of potential growth and the direction of contaminant flow, throughout the record EPA suggests that the difficulty of accessing water at the boundary of the site or at 5 kilometers from the site will somehow keep future generations that may move closer to the repository (from 5-18 kilometers from the site) from harmful exposures.<sup>22</sup> But EPA contradicts itself when it notes that "as one goes farther away from Yucca Mountain in the direction of ground water flow, it is easier to drill for ground water as the water table is closer to the ground surface. Additionally, the soil characteristics improve such that agricultural pursuits become more feasible and this is evidenced by the considerable agricultural activity in the Amargosa Valley some 30 km [downslope] from Yucca Mountain." AR V.C: 6-38.

At present, farming communities with drinking water wells only 20 kilometers downslope from Yucca Mountain at Lathrop Wells bump up against the southern boundary of BLM land and the Nevada Test Site. AR V.B.1: 8-25, 26; V.C: 6-38. EPA's assertion that water will not be accessed within 5 to 18 kilometers of the repository for the next 10,000 years is patently absurd. At present, DOE relies on two wells *within 9*

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<sup>22</sup> For example, EPA states: "Placing the point of compliance at 5 km violates our requirement that assumptions on future states not be overly speculative. We believe the point of compliance should reflect current land use, or reasonable projections of future land use, in terms of the volume of water used and its location ... Our understanding of projections of future land use do not indicate significant population growth much farther north of Lathrop Wells, which is approximately 20 km distant, although there are plans for development between Lathrop Wells and the NTS boundary. Given present and planned population patterns and the extreme difficulty *in accessing ground water at 5 km*, we think it unreasonable that a year-round resident will locate there. Therefore, we have not chosen a point of compliance at points less than 5 km from the repository footprint for the site specific standards at Yucca Mountain." AR V.C: 6-38 (emphasis added). See also: "We have not chosen a point of compliance at or within the site boundary for the site-specific standards at Yucca Mountain." AR V.C: 6-34

kilometers of the repository that provide the sole source of water for ongoing work at the site, including for human consumption. AR V.B.1: 8-22 and 8-80. See Map, *infra* at 29.

The crux of EPA's rationale for the strangely configured "controlled area" seems to be that the costs of drilling for water in the Amargosa aquifer will deter future users of the water in the area from drilling. EPA states:

We believe that, at approximately 18 km, a rural-resident Reasonably Maximally Exposed Individual [RMEI] will likely have the highest potential doses in the region because of both drinking contaminated water and eating food grown using contaminated water. That is, *the rural resident at 18 km will receive a higher dose than would an individual living much closer to Yucca Mountain because the cost of extracting the water likely will allow only drinking the water and not having a garden capable of supplying a portion of an individual's annual food consumption.*

66 F.R. at 32094 (emphasis added).<sup>23</sup>

EPA's rationale is meritless and fails to mitigate EPA's violation of the SDWA's prohibition against endangering underground sources of drinking water. 42 U.S.C. §300h. First, higher doses may result from an individual simply drinking water closer to the repository. AR V.B.1:8-70.<sup>24</sup> Second, farming at least 5 kilometers to 18 kilometers

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<sup>23</sup> See also, 66 FR 32093, where EPA states "If individuals lived nearer the repository, they would be unlikely to withdraw water from the significantly greater depth for other than domestic use, and in the much larger quantities needed for gardening or farming activities because of the significant cost of finding and withdrawing the ground water."

<sup>24</sup> Despite the obvious problems with establishing a point of compliance for protective groundwater standards so far from the repository, EPA promulgated 40 CFR 197.12 in contradiction of its own observation that radioactive concentrations are much more harmful the closer one lives to the repository:

"One factor important to characterizing the Yucca Mountain RMEI is his/her location relative to the repository. For example, a subsistence farmer who derives all drinking water and homegrown food from contaminated ground water at a location 10 miles from the repository may be exposed to lower doses than persons whose exposure pathways are limited to drinking water, or fractional quantities of contaminated home-

from the repository is possible. AR V.C:6-37, 38. Third, EPA significantly inflated the costs of well drilling in their background information document, ignored evidence, and made no effort to resolve disparate well-drilling cost estimates.

EPA was aware that "[t]he water well data suggest that water use practice in the immediate vicinity of YM [Yucca Mountain] may have included a small cluster of homes supplied by one or more small-diameter, low discharge, high-lift wells or a community or suburb supplied by wells similar in construction to J-13 [DOE's drinking water well, see Map at 29] had the land not been withdrawn by the Federal government." AR V.B.4: 62 (WIT 96 at 21). Further, EPA cites five wells in its background documents with a per/foot basis of \$97/foot to \$524/foot. AR V.B.1: IV-1-13. EPA goes on to acknowledge its confusion about how to resolve the disparities:

Given the sparsity (sic) of data ...it is difficult to evaluate their reasonableness. In particular, the cost of \$524/foot for Well 3, designed for irrigation use, is difficult to reconcile with the estimate of \$40/foot quoted by a driller who has actual experience in providing well-drilling services in Amargosa Valley. Likewise, the estimated cost \$97/foot for a domestic well is difficult to reconcile with costs of about \$15/foot currently charged for drilling residential wells in a mountainous area of Colorado.

AR V.B.1: IV-2.

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grown food products, residing close to the repository boundary. *This is due to the fact that radioactivity concentrations in ground water are expected to decrease with increasing distance from the repository boundary as a result of dilution and dispersion.* AR V.B.1: 8-70 (emphasis added). See also AR V.B.1: 8-73, where EPA notes that using a lower amount of contaminated water drawn from a well close to the repository can lead to greater exposure than using a greater amount of contaminated water drawn from a well farther away from the repository: "Consequently, at or near the footprint of the repository, where contamination levels are likely to be the greatest, the restricted or unrestricted use of well water for drinking and limited food production may result in exposures greater than those to commercial, and even subsistence farmers, residing at more distant locations."

Finally, EPA also cites a marginal value of \$800 per acre foot for domestic use wells. AR V.B.1: IV-11. This value is not supported by any data, nor is EPA's conclusion that capital costs of domestic wells becomes prohibitive at depths between 300 and 600 feet.<sup>25</sup>

To ground a rule on the fallacy that a "controlled area" as vast in scope as that contemplated by the Yucca Mountain Rule will remain untouched for 10,000 years is, quite simply, arbitrary, capricious, and beyond the agency's lawful discretion. That action violates the Agency's responsibilities under the SDWA to protect underground sources of drinking water, as well as EnPA's requirement to protect public health and safety. EPA acknowledges that the site cannot rely on passive (e.g., signs or markers) or active (e.g., guns or guards) institutional controls to protect future generations from accessing areas that might expose persons to unsafe doses of radiation. EPA's own background document states in pertinent part:

According to the NAS report, there is no scientific basis for making projections over the long-term of either the social, institutional, or technological status of future societies .... there is no scientific basis for assuming the long-term effectiveness of active institutional controls to protect against human intrusion ... there is no scientific basis for making forecasts about the reliability of passive institutional controls. The likelihood that markers or barriers would persist, be understood, and deter intrusion cannot be assessed from a technical basis.

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<sup>25</sup> Gardening would be possible for the RMEI in the area between 5 and 18 kilometers from the repository using a domestic well producing water as specified in EPA's example domestic wells, at 10 gallons per minute, or 4 acre-feet per year. AR V.B.1: IV-8. For example, a household of three uses about 0.5 acre-feet of water per year. AR V.B.4: 62 (WIT 96 at 7). Using EPA's example well, there would be 3.5 acre feet available for other uses, i.e. gardening. For comparison, large scale agricultural irrigation consumes about 5 acre-feet of water. *Ibid.* (An acre foot is the quantity of water that would cover one acre to a depth of one foot.)

BID 8-89 (citing NAS 95). Therefore, there is no relevance or rational basis for EPA to rely on the artificially defined straight-line southern boundary of the NTS as a deterrence to future population spread or use of ground water closer than 18 kilometers to the repository.

The Yucca Mountain Rule's assertion that its vast "controlled area" is appropriate and lawful is patently absurd in light of the fact that, as discussed, EPA acknowledges all of the following: (1) radioactive contamination will flow from the repository via groundwater pathways to the south and east; (2) persons living closer to the repository will likely have higher doses than those living farther away from the repository as a result of dilution of radioactive contaminants in the ground water; (3) populations may spread from at least 5 kilometers south of the repository all the way to the current farming community commencing 20 kilometers away from the repository in the Amargosa Valley, (4) radiation protection standards cannot rely on active and passive institutional controls to protect future populations from risks posed by the site; and (5) wells within 9 kilometers are *currently* providing good quality drinking water to the Yucca Mountain project site. It seems that EPA's only stated basis for the asserted isolation of its "controlled area" is its unsupported and confused cost estimates of well-drilling—hardly the stuff of objective environmental regulation.

**In sum, instead of promulgating a rule protective of public health and the environment for this and future generations, EPA has fit the standards to the repository. Doing so violated EnPA's authorization to EPA to set standards appropriate for the Yucca Mountain *site*, rather than tailoring its regulations to fit the *design* of the Yucca Mountain Project proposed by DOE. AR II.D.44: 1. EPA's controlled area lacks any scientific or evidentiary credibility, violates the SDWA, and must be remanded to the agency for set-aside and adoption of a lawful standard.**

**IV. EPA'S 10,000-YEAR PERIOD OF PERFORMANCE IS NOT "BASED UPON AND CONSISTENT WITH" THE NAS PANEL'S FINDINGS, AND FAILS TO PROTECT PUBLIC HEALTH AND SAFETY DURING ACKNOWLEDGED PEAK DOSES OF RADIATION.**

**A. EPA adopted the 10,000-year period of performance despite the NAS panel's contrary finding and recommendation.**

In the final Yucca Mountain Rule, EPA chose to limit the required period of compliance with its public health and safety standards to the first 10,000 years after disposal. See 40 C.F.R. §§ 197.13, 197.14, 197.15, 197.20, 197.30. The regulation addressing "human intrusion" is also tied to that time period. 40 C.F.R. §197.25. This period of compliance is a lengthy one in layman's terms, but pales in comparison to the undeniable physics and irreversible risk of the project. EPA imposed its truncated standard in the face of an undisputed record showing that long-term radiation risks unprecedented in human history, dwarfing those present in the compliance period, would not reach their peak until 30 to 100 times as many years as the artificial 10,000-year period. EPA reached this result in defiance of the recommendations of the NAS panel, which warned that imposing this premature cutoff lacked any scientific validity and could interfere with the Agency's obligations to protect public health and the environment.

The 10,000 year period of performance drew uniformly sharp criticism from the NAS panel charged with the statutory duty under section 801 of EnPA to inform EPA on this issue. The NAS Report found that ". . .there is *no scientific basis* for limiting the time period of the individual-risk standard to 10,000 years or any other value," and that

“the 10,000-year limitation might be inconsistent with protection of public health.” NAS Report, p. 55 (emphasis added). Peak risks may well exceed that time limitation. *Id.* at 55-56. The NAS Report concluded that performance assessments *should* extend to periods of one million years. Moreover, the NAS panel carefully reviewed the potential for uncertainty and found that peak doses were indeed capable of study over the extended period that would include peak doses<sup>26</sup> Nonetheless, EPA arbitrarily chose to exclude 990,000 years from this proposed time frame.<sup>27</sup>

**B. EPA lacked any scientific basis to curtail the period of performance prior to the occurrence of peak doses.**

EPA does not contest the central point of the “period of performance” issue: as the NAS report concluded, there is *no scientific basis* for limiting this period to 10,000 years. NAS Report, p. 55. Far from contradicting the conclusions of the NAS panel about the timing and scale and peak risks, EPA conceded in its final rule that “existing performance assessment results indicate that the peak dose may occur beyond 10,000 years.” 66 F.R. 32096 (citing BID section 7.3); see AR V.B.1, section 7.3 (referenced text). Indeed, DOE’s own data, provided to EPA for technical and background reports,

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<sup>26</sup> The NAS Report concluded that the probabilities and consequences of relevant features, events, and processes that could modify the way in which radionuclides are transported in the vicinity of Yucca Mountain--including climate change, seismic activity, and volcanic eruptions--“are sufficiently boundable so that these factors can be included in performance assessments that extend over periods on the order of about [one million] years.” NAS Report, p. 91.

<sup>27</sup> As NRDC noted during public comment, EPA essentially canceled its own health and safety standards before they could become effective “by disabling them prior to the time they are most needed, which also avoids their affecting the design of the site or threatening its viability.” AR IV.D.41: 4.

confirm the dramatic leaps in the peak dose that are likely to occur long after the regulatory period has ended. See, e.g., AR V.B.1.

For example:

- In its “base case” of expected repository performance, DOE forecast the total peak dose rate to the average individual 20 kilometers from the repository to be 0.04 mrem/ year within the first 10,000 years; 5 mrem/ year within the first 100,000 years; and 300 mrem/ year—some 7500 times higher—within the first million years. AR V.B.1: 7-157.<sup>28</sup>
- Neptunium-237, which has a half-life of 2.1 million years, will not appear at the dose location in the first 30,000 years and will not significantly contribute to radiation doses until 50,000 years after repository closure. AR V.B.1.ES-15, 7-159. It then dominates the dose rate from 100,000 years until a million years after repository closure. AR V.B.1: 7-159.
- The dose rate after 300,000 years appears to be “essentially constant,” because by then the waste packages that have been modeled to fail have failed. AR V.B.1: 7-160. By contrast, the first 10,000 years encompass “the time of *highest uncertainty* in the effect of *repository design* factors important to waste isolation and safety performance.” AR V.B.1: 7-56 (emphasis added).

Rather than simply amounting to an inconsequential technical difference, EPA’s decision to cut off the regulatory period after 10,000 years produced at least two serious

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<sup>28</sup> See also AR IV.D.12: 1 (DOE concluded, in the 95-TSPA, that radiation doses from the repository would be about 500 times greater at 100,000 years than they would be at 10,000 years).

practical consequences affecting the ability of its regulations to protect public health and safety. First, DOE data provided to the EPA established that the after the first 10,000 years, but before the first 100,000 years, mean dose rates are likely to exceed both EPA's groundwater standard and individual protection standard. AR V.B.1: 7-226. These figures become far more dramatic at the time of the peak period.<sup>29</sup> Thus, EPA's decision to terminate the regulatory period at 10,000 years may well have been dispositive in "lowering the bar" of regulatory compliance so that the repository could be viewed as meeting public health and safety standards.

Moreover, cutting off the performance period at 10,000 years dramatically shifts the focus of regulatory compliance toward the performance of engineered waste packages during the relatively short-term compliance period, and away from site geology. Indeed, the 10,000-year cutoff effectively allows a man-made waste package to meet "repository" radiation standards without a repository. Beyond 10,000 years, "the technical factors associated with repository design features that dominate performance issues earlier may become less important to determining regulatory compliance at the time of peak dose." AR V.B.1: 7-56. By contrast, "it is in the time period beyond 10,000 years that the issue of long-term geologic stability becomes more important to repository performance." *Id.* at 7-57. In another instance of "lowering the bar," this shift, whether by coincidence or design, corresponded with the recognition in DOE technical reports of almost complete

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<sup>29</sup> Using DOE figures, the mean peak groundwater doses are estimate projected peak doses, occurring somewhere between 300,000 and 900,000 years after the repository opens, "are 350 to 2300 times the current groundwater protection standards." AR IV.D.41: 3.

reliance on an engineered waste package for repository performance, due to the negligible contribution of site geology. See AR IV.D.20, 30, 41.<sup>30</sup>

In addition to ignoring the NAS and the reports in its own file, EPA disregarded numerous public comments supporting extension of the performance period to the peak dose. AR IV.D (*passim*).<sup>31</sup> In its comments on EPA's draft radiation standards for Yucca Mountain, Nevada sharply criticized EPA's decision to limit the period of performance criterion to 10,000 years. Nevada noted that "[t]he safety issue for a Yucca Mountain geologic repository system is the magnitude of the peak expected dose from radionuclide releases, not when the event occurs. The uncertainty of when it would occur is such that there is no rational basis to truncate the performance calculation at an arbitrary point in time, since at some unknown and unknowable point in the future the peak dose will occur." AR IV.D.30: 9.

Nevada adopted the NAS determination that to effectively protect public health and safety, the applicable standard must remain in effect during the time in which peak doses are likely to occur. AR IV.D.30.8. Nevada's comments also observed that the waste

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<sup>30</sup> EPA was, or should have been, aware that a TSPA-VA peer review panel had found "important deficiencies" in dose estimates. Those deficiencies rested "in large part on potentially optimistic, or at least undemonstrated, assumptions about the behavior of certain barriers in the system (for example, performance of the cladding and the waste package)." AR V.B.1: 7-177; see AR V.A.5 (TSPA-VA).

<sup>31</sup>EPA recognized in the Final Rule that "[n]umerous comments suggested that a compliance period of 10,000 years is not reasonable. They urged us to extend the compliance period beyond 10,000 years for a variety of reasons. Foremost among these reasons is that NAS suggested a compliance period that would extend to the time of peak dose or risk, within the period of geologic stability for Yucca Mountain, which it estimated could be as long as one million years. The NAS based its recommendations on scientific considerations." 66 F.R. 32124.

isolation performance in the Yucca Mountain repository system would rely heavily on the projected longevity of an engineered barrier system whose long-term integrity is susceptible to significant uncertainty.<sup>32</sup>

Ignoring all these warnings, the Yucca Mountain Rule's limitation of the period of performance to 10,000 years therefore contravenes the requirements of the APA that agency action not be arbitrary, capricious, or in violation of law. 5 U.S.C. §706. The resultant risk of unregulated long-term radiation exposure vitiates EPA's ability to meet each of its specific statutory obligations, including the "non-endangerment" provision of the SDWA. *NRDC v. EPA*, 824 F.2d at 1271. The truncated period of performance also violates EPA's duties under section 801 of the EnPA, including the duty to protect the public from releases from radioactive materials stored or disposed of at Yucca Mountain.

**C. EPA's "policy" grounds for limiting the period of performance illustrate its compromises of public health and safety .**

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<sup>32</sup> As Nevada noted, "with a Yucca Mountain nuclear waste repository, the primary concern is protection of the quality of the potable water supply that would be impacted by releases of radionuclides from the repository, and protection of the people and environment that depend on that water supply." AR IV.D.30: 8.

In the Final Rule (66 FR 32124-32129) and its responses to comments (AR V.C.1: 3-1 to 3-12), EPA defends its non-scientific use of the period of performance solely upon what may be euphemistically termed “policy” grounds. EPA’s defiance of the NAS panel’s health-and-safety-based recommendation belies any claim that its standard is even remotely “based upon and consistent with” the NAS findings, as EnPA section 801 expressly requires. Indeed, one of the “policy” issues raised by NAS was whether the 10,000-year standard would violate internationally recognized ethical principles involving intergenerational equity. NAS Report, p. 56.<sup>33</sup> As noted above, EPA’s decision-making authority under that statute is rooted in its Congressional mandate to protect public health and safety, not in an unbounded authority to make policy decisions concerning the proposed repository itself.

EPA’s asserted “policy” grounds defy its basic legal duties under both EnPA and NWPA. Each of EPA’s principal policy positions on the 10,000-year standard merely show the agency’s defiance of science to reach a pre-ordained result. The first “policy” provision may be termed an appeal to uncertainty. Without providing any scientific or technical grounds to refute the NAS recommendation, EPA posited a series of general “concerns related to uncertainty in projecting human exposure over extremely long time periods (up to a million years).” AR V.C: 3-4. In essence, EPA asserted that over these time periods, long-term changes in such factors as global climate, possible biosphere

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<sup>33</sup> Reducing the prescribed public health protection to a mere “study” provision, as EPA defends, would not satisfy these concerns. By contrast, NAS did not suggest that adoption of a separate groundwater standard would be unlawful, and took no position on it from a policy standpoint. See 66 FR at 32107.

changes, and human behavior could complicate the specification of exposure scenarios.

*Ibid.*; 66 F.R. 32124.

The most straightforward answer to EPA's appeal to "uncertainty" is that it is already demolished in the NAS report. The NAS report not only finds that peak periods of exposure may come well after 10,000 years, but that longer periods *are* feasible to determine and study in performance assessments. NAS Report, pp. 55-56. Indeed, the BID supporting the Final Rule includes such calculations (AR V.B.1, chapter 7), and the final rule even calls for their inclusion in the Final EIS. 40 C.F.R. §197.25(a)(2). Thus, the issue is not whether such values can be determined, but whether they should be ignored for regulatory purposes long before the occurrence of peak doses. EPA's speculation contrasts with the detailed findings of the NAS Report, which concluded that major climate and geologic activities "are sufficiently boundable so that these factors can be included in performance assessments that extend over periods on the order of about [one million] years." NAS Report, p. 91.<sup>34</sup>

A second key problem with EPA's "uncertainty" theory is that it avoids meaningful discussion of uncertainty in the failure of waste containers, which emerge as the major source of uncertainty in DOE's Yucca Mountain performance assessment. Indeed, the climate change uncertainty is small by comparison to the uncertainty in the total system performance assessment.<sup>35</sup> As shown in the BID and corroborated in later

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<sup>34</sup> EPA incorrectly stated in the final rule that the NAS Report found "no scientific basis" for identifying performance scenarios based on possible future climate regimes. 66 F.R. 32124. The report never made that claim. Instead, the reference to "no scientific method" in the cited text (page 96) actually refers to speculation about the future of human society. With respect to future climate regimes, NAS expressly found those to be capable of sufficiently boundable performance assessments. *Id.* at 91.

<sup>35</sup> See AR V.A.5: 4-27, 4-51 (1998 Viability Assessment addresses

documents, uncertainties may *decrease* after 10,000 years due to the almost certain failure of waste packages, leaving site geology alone to determine repository performance.<sup>36</sup>

EPA's second policy position on the period of performance appeals to "consistency." EPA argues that 10,000 year periods of performance have been employed in other settings involving "long-lived" hazardous radioactive and nonradiative materials, including the land disposal requirements of the Resource Conservation and Recovery Act, several international programs, and notably, the generic radiation standard applicable to the WIPP site in New Mexico. This assessment ignores two key differences between these waste disposal programs and the appropriate period of performance for the Yucca Mountain site. First, the scale and projected radiation exposure are far greater at

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**increases in precipitation due to climate change over 10,000 and 1 million years). The Final EIS corroborates the central conclusions of the earlier assessment with respect to the comparatively small role of climate uncertainty. *Id.* at 5-4 (page 5-26). The spikes in the dose are related to short duration, very wet periods associated with glacial cycles. DOE's estimate is that the difference between the mean dose and 95th percentile dose is about a factor of four. According to DOE, the maximum dose uncertainty associated with climate change is on the order of a factor of four. If past climate history is reversed and projected forward, within the next 10,000 years there could be a climate at Yucca Mountain 2 to 4 times wetter than the current climate. This is also true after 10,000 years. Therefore, if there were no engineered barriers for waste containment, there could be measurable doses at the RMEI location within 10,000 years, or after 10,000 years without a great deal of difference in uncertainty relative to compliance with the dose standard.**

<sup>36</sup> See AR V.A.5: 6-8 to 6-11 (container failure due to corrosion as dominant factor). The FEIS looks at factors important to the variability in uncertainty through time (Table 5-5, page 5-19) and sees the humid air corrosion rate of the container lid welds as the primary factor up to and beyond 500,000 years after closure, and then, when essentially all the containers have failed, some elements of the natural system take priority. The *Yucca Mountain Science and Engineering Report, Rev. 1 (Feb, 2002)*, Figure 4-187, p. 4-473, shows the total system performance, where the uncertainty actually decreases through time from a factor of about 10,000 to a factor of about 100, as the number of failed containers increases. See also V.A.5: 4-66 (decreasing uncertainty after container failure).

Yucca Mountain than at WIPP.<sup>37</sup> EPA's concern about establishing an "unprecedented" compliance period (66 FR 32124) must be measured against its cavalier acceptance of leaving the unprecedented peak doses for Yucca Mountain exempt from its public health and safety standard.

The second difference affecting the period of performance relates to site geology. Congress in the NWPA "ordered that these highly dangerous wastes be placed underground with the intent that the surrounding geologic formations would be the major component of the containment mechanism." *NRDC v. EPA*, 824 F.2d at 1279. In WIPP, which operates as a true salt-based *geologic* repository,<sup>38</sup> the 10,000-year standard was *scientifically* and *technically*-based standard rooted in the site geology. *Id.* at 1292-93. At WIPP, the only credible release mechanism for more than 10,000 years would be human intrusion, which could happen at any stage and is not readily susceptible to probability calculation.

By contrast, EPA has defended the Yucca Mountain rule on the unexplained *policy* ground that non-geologic containment should be encouraged. EPA opp. to stay, Nov. 21, 2001, p. 20; 66 F.R. 32099. EPA's defiance of the NAS panel's site-specific recommendations for the Yucca Mountain period of performance occurred amid a growing recognition, among DOE as well as members of the public, of the limited

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<sup>37</sup> The "predicted radioactive content in Yucca Mountain after 10,000 years of radioactive decay will be greater than the total amount of radioactivity placed in WIPP before any radioactive decay happens." AR IV.D.16.

<sup>38</sup> See *State of New Mexico v. Watkins*, 783 F.Supp. 628, 639 (D.D.C. 1991).

contribution of Yucca Mountain's site geology. EPA's "policy" on non-geologic containment contrasts with the language of the NWPA, which establishes geologic considerations as the primary criteria for repository site selection. 42 U.S.C. §10132(a). Such a radical shift from statutory repository policy, if authorized at all, must be ordered by Congress, not EPA.<sup>39</sup>

Taken together, these responses to comments confirm that in key respects, EPA's appeals to "policy" on the period of performance issue are not grounded in the Congressional delegation of authority to protect the public health and safety against radiation releases. In its final rule, EPA failed to heed the warning of NAS in its comment letter that its 10,000 year standard was "*strictly a policy choice.*" AR IV.D.31: 13 (emphasis added). NAS also noted that EPA's differences with its own approach on the period of performance "*may have a major impact on the licensing process without real benefit to protection of the public.*" *Id.* at 3 (emphasis added).

Regrettably, that observation proved to be an accurate prophecy of the agency's final rule. In arriving at that rule, EPA conceived of its own "policy" role not simply to protect public health and safety in accordance with its statutory duties, but to do so "consistent [*sic.*] with societal expectations," and in a manner that produced "*confidence in its results among stakeholders.*" AR V.B.1: 7-245 ) (emphasis added). On the crucial

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<sup>39</sup> Had Congress wanted to defer wholesale to EPA on such prerogatives, it would have done so. On the contrary, EnPA section 801 requires even the traditional technical evaluation to be "based upon and consistent with" the findings of an independent scientific body, the NAS. Likewise, in enacting section 801, Congress left intact the detailed geologic requirements specified in NWPA sections 112 and 113, 42 U.S.C. §§10132 and 10133.

issue of dose assessment, EPA even seemed willing to pass along its own responsibility to the NRC, which does not have the statutory duty of establishing the public health and safety radiation standards for the repository.<sup>40</sup>

Taken together, these EPA exercises of “policy” show that it consciously adopted a Procrustean period of compliance that served the needs of stakeholders seeking repository approval, while arbitrarily ignoring its own duty to protect the public against peak doses of radiation.<sup>41</sup>

#### **IV. THE EPA’S DEFINITION OF “DISPOSAL” EXCEEDS ITS STATUTORY AUTHORITY.**

The NWPA defines “disposal” as “the emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste.” 42 U.S.C. §10101(9). The Yucca Mountain Rule defines “disposal” as “the

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<sup>40</sup> See 66 F.R. 32124 (EPA describes the “degree of uncertainty in the dose assessments” as an “implementation decision” that should be the responsibility of the NRC during the licensing process).

<sup>41</sup> A DOE-commissioned international peer review of the Yucca Mountain TSPA-SR corroborated the deficiencies in EPA’s setting of radiation standards evident from the record. The scientific panel noted that the Yucca Mountain Project had met EPA’s radiation standards over the 10,000-year period of performance “by designing a waste package that, based on current corrosion data, would last 10,000 years without any release. While the IRT accepts this as one logical way to proceed, *it has resulted in a bias towards performance of the engineered barrier system*. It is not the only rationale that could have been used. The effect is to undervalue the considerable potential of the geological barriers.” *An International Peer Review of the Yucca Mountain TSPA-SR*, International Atomic Energy Agency and Nuclear Energy Agency, OECD, 2002, at 25. This review concluded that greater emphasis should have been placed on the geological barriers, and “a broader safety case should have been developed to support the site recommendation decision.” *Id.* at 61.

emplacement of radioactive material into the Yucca Mountain disposal system *with the intent of isolating it for as long as reasonably possible* and with no intent of recovery, whether or not the design of the disposal system permits the ready recovery of the material.” 40 C.F.R. §197.12 (emphasis added). Inclusion of the emphasized “intent of isolating it for as long as reasonably possible” language unlawfully dilutes the statutory standard.

Without foundation in either EnPA section 801 or NWPA, EPA and NEI defend EPA’s unilateral authority to weaken the definition of “disposal” found in the NWPA to include the qualifier “for as long as reasonably possible.” See 42 U.S.C. §10101(9).<sup>42</sup> In the Final Rule, EPA confirmed Nevada’s concern that it adopted the provision because Yucca Mountain could not meet the standards of a geologic repository. 66 F.R. at 32084. Like the examples of the point and period of compliance, EPA’s re-engineered definition of “disposal” amounts to a lowering of the statutory bar under the NWPA, shifting the focus of regulatory compliance away from long-term geologic isolation, and toward short-term delay of radiation releases. AR IV.D. 12, 30.

## CONCLUSION

This Court should grant the petitions for review filed by joint petitioners Nevada and NRDC, *et al.*, setting aside the challenged provisions of the Yucca Mountain Rule as

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<sup>42</sup> As one commenter noted, “[d]efining successful disposal by an arbitrary reasonableness standard is an effort to enable licensing of a dump, not fulfillment of the goal of geologic isolation.” IV.D.12: 2. Cf. 42 U.S.C. §10132 (geologic considerations shall be the “primary criteria” for NWPA site selection).

inconsistent with EPA's statutory obligations to protect public health and safety in establishing environmental radiation standards governing this proposed repository site.

Date: May 3, 2002

Respectfully submitted,

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**PROOF OF SERVICE**

I, Maria Hollowell-Fuentes, hereby declare as follows:

I am over the age of 18 years and am not a party to the within action. My business address is 380 Hayes Street, Suite One, San Francisco, California 94102.

On 3 May 2002 I served the **APPENDIX OF STATUTES AND REGULATIONS** by placing a true copy with postage fully paid in the U.S. mail in San Francisco, California; to the persons listed below:

G. Scott Williams\*  
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*\*Two copies served*

I declare under penalty of perjury that the foregoing is true and correct and that this certificate of service was executed on 3 May 2002 in San Francisco, California.

By: \_\_\_\_\_  
Maria Hollowell-Fuentes

## ADDENDUM OF STATUTES AND REGULATIONS

Administrative Procedure Act, 5 U.S.C. §701 *et seq.*\*

Atomic Energy Act\* 42 U.S.C. §2011 *et seq.*\*

Energy Policy Act of 1992, Pub. Law 102-486, title VIII

Hobbs Act, 28 U.S.C. §§2342, 2343

Nuclear Waste Policy Act, 42 U.S.C. §10101 *et seq.*\*

Safe Drinking Water Act 42 U.S.C. §§300f - 300j.\*

Record on Review and Enforcement of Agency Orders, 28 U.S.C. §2112

40 C.F.R. §191 *et seq.*

40 C.F.R. §144.3

66 F.R. 32074-32135 (June 13, 2001) (including 40 C.F.R. §197, *et seq.*)

64 F.R. 46976 (August 27, 1999)

H.R. Conf. Rep. No. 102-1018, reprinted in 1992 U.S.C.C.A.N. 2472, 2481\*

\* Relevant portions included.

## **Corporate Disclosure Statement**

Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure, Petitioners Natural Resources Defense Council, Inc., Public Citizen, Citizen Alert, Nevada Nuclear Waste Task Force, Nevada Desert Experience, Citizen Action Coalition of Indiana, and Nuclear Information and Resource Service (collectively “Environmental Petitioners”) submit that:

Petitioner NATURAL RESOURCES DEFENSE COUNCIL, INC. (NRDC) is a non-profit corporation with no outstanding shares or debt securities in the hands of the public and does not have any parent, subsidiary or affiliates that have issued shares or debt securities to the public.

Petitioner PUBLIC CITIZEN is a non-profit organization with no outstanding shares or debt securities in the hands of the public and does not have any parent, subsidiary or affiliates that have issued shares or debt securities to the public.

Petitioner CITIZEN ALERT a non-profit organization with no outstanding shares or debt securities in the hands of the public and does not have any parent, subsidiary or affiliates that have issued shares or debt securities to the public.

Petitioner NEVADA NUCLEAR WASTE TASK FORCE is a non-profit organization with no outstanding shares or debt securities in the hands of the public and does not have any parent, subsidiary or affiliates that have issued shares or debt securities to the public.

Petitioner NEVADA DESERT EXPERIENCE is a non-profit organization with no outstanding shares or debt securities in the hands of the public and does not have any parent, subsidiary or affiliates that have issued shares or debt securities to the public.

Petitioner CITIZEN ACTION COALITION OF INDIANA is a non-profit organization with no outstanding shares or debt securities in the hands of the public and does not have any parent, subsidiary or affiliates that have issued shares or debt securities to the public.

Petitioner NUCLEAR INFORMATION AND RESOURCE SERVICE is a non-profit organization with no outstanding shares or debt securities in the hands of the public and does not have any parent, subsidiary or affiliates that have issued shares or debt securities to the public.

**Dated: May 3, 2002**

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**BRIEF FORMAT CERTIFICATION**

I hereby certify that the attached JOINT BRIEF OF PETITIONERS STATE OF NEVADA AND NATURAL RESOURCES DEFENSE COUNCIL, *ET AL.*, is proportionately spaced in Times New Roman typeface and contains 13,696 words.

Date: May 3, 2002

Respectfully submitted,

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