NOT YET CALENDARED FOR ORAL ARGUMENT

Case Nos. 01-1516, 02-1036, 02-1077, 02-1179, 02-1196

IN THE

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

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

v.

UNITED STATES DEPARTMENT OF ENERGY, *et al.*,
Respondents.

PETITION FOR REVIEW FROM FINAL DECISIONS, ACTIONS, AND FAILURES TO ACT OF UNITED STATES DEPARTMENT OF ENERGY AND FINAL DECISIONS AND ACTIONS OF THE PRESIDENT OF THE UNITED STATES

PETITIONERS' OPENING BRIEF

Charles J. Cooper
Robert J. Cynkar
Vincent J. Colatriano
COOPER & KIRK, PLLC
1500 K Street, N.W., Suite 200
Washington, DC 20001
(202) 220-9660
(202) 220-9601 Fax

Frankie Sue Del Papa, Attorney General
Marta A. Adams, Senior Deputy Attorney General
STATE OF NEVADA
100 North Carson Street
Carson City, NV 89701
(775) 684-1237
(775) 684-1108 Fax

Antonio Rossmann
Special Deputy Attorney General
Roger B. Moore
Special Deputy Attorney General
LAW OFFICE OF ANTONIO ROSSMANN
380 Hayes Street, Suite One
San Francisco, CA 94102
(415) 861-1401
(415) 861-1822 Fax

Joseph R. Egan*
Special Deputy Attorney General
Charles J. Fitzpatrick
Howard K. Shapar
EGAN & ASSOCIATES, PLLC
7918 Jones Branch Drive, Suite 600
McLean, VA 22102
(703) 918-4942
(703) 918-4943 Fax

* Counsel of Record

December 2, 2002

Additional counsel listed on reverse

William H. Briggs, Jr.
ROSS, DIXON & BELL, L.L.P.
2001 K Street, N.W.
Washington, DC 20006-1040
(202) 662-2063
(202) 662-2190 Fax

Elizabeth A. Vibert
Deputy District Attorney
CLARK COUNTY, NEVADA
500 South Grand Central Parkway
Las Vegas, NV 89106
(702) 455-4761
(702) 382-5178 Fax

Bradford R. Jerbic, City Attorney
William P. Henry, Senior Litigation Counsel
CITY OF LAS VEGAS, NEVADA
400 Stewart Avenue
Las Vegas, NV 89101
(702) 229-6590
(702) 386-1749 Fax

CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

Pursuant to Circuit Rule 28(a)(1), Petitioners respectfully certify as follows:

(A) Parties and *Amici*: As these consolidated actions involve the direct review of agency and Presidential decisions and actions, there were no proceedings before the district court. The parties, intervenors, and *amici* before this Court are as follows:

- Parties: (1) State of Nevada, Petitioner
  (2) Clark County, Nevada, Petitioner
  (3) City of Las Vegas, Nevada, Petitioner
  (4) United States Department of Energy ("DOE"), Respondent
  (5) Spencer Abraham, Secretary of Energy, Respondent
  (6) George W. Bush, President of the United States, Respondent
- Intervenors: The Nuclear Energy Institute ("NEI") has intervened in Action No. 01-1516.
- *Amici*: NEI has been granted leave to participate as an *amicus curiae* in Actions Nos. 02-1179 and 02-1196. The National As-

sociation of Regulatory Utility Commissioners has been granted leave to participate as an *amicus curiae* in action No. 01-1516.

Because Petitioners are not corporations, associations, joint ventures, partnerships, syndicates, or other similar entities, Circuit Rule 26.1 does not require the filing of a disclosure statement.

(B) Rulings Under Review: Petitioners seek review of the combined final rules issued by DOE, titled "Office of Civilian Radioactive Waste Management; General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories; Yucca Mountain Site Suitability Guidelines; 10 C.F.R. Parts 960 and 963," published at 66 Fed. Reg. 57,298 (Nov. 14, 2001). A copy of these rules may be found in the Statutory/Regulatory Appendix that Petitioners have filed with this brief.

Petitioners also seek review of the Secretary of Energy's February 14, 2002 recommendation to the President of the Yucca Mountain site. To Petitioners' knowledge, no official citation to this recommendation exists. A copy of this recommendation will be included in the deferred appendix.

Petitioners also seek review of the President's February 15, 2002 recommendation to Congress of the Yucca Mountain site. To Petitioners' knowledge,

no official citation to this recommendation exists. A copy of this recommendation will be included in the deferred appendix.

Petitioners also seek review of the Final Environmental Impact Statement ("FEIS") prepared by DOE and released on February 14, 2002. To Petitioners' knowledge, no official citation to this recommendation exists. Relevant excerpts from the FEIS will be included in the deferred appendix. Petitioners also seek review of whether DOE and the Secretary of Energy have failed to take certain actions required by law.

(C) Related Cases: The matters under review were not previously before this Court or any other court. While Petitioners do not believe that there are any cases pending before the Court that constitute "related cases" within the meaning of the Court's rules, Petitioners note that pending before the Court are two groups of cases, involving different respondents, that, like this case, generally concern issues relating to the proposed nuclear waste repository at Yucca Mountain, Nevada:

- *Nuclear Energy Institute, Inc. v. Environmental Protection Agency*, No. 01-1258 (consolidated with Nos. 01-1268, 01-1295, 01-1425, and 01-1426) (the "EPA Case");

- *State of Nevada, et al. v. United States Nuclear Regulatory Commission*, No. 02-1116 (the "NRC Case").

By order dated November 7, 2002, this Court directed that this case be heard in tandem with the EPA Case and the NRC Case, and that the Clerk calendar all three groups of cases for oral argument on the same day or the same week, and before the same panel, in September 2003.

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Authorities upon which Petitioners chiefly rely are marked with asterisks.

Statutes

Legislative History

Regulations and Regulatory Materials

Other

GLOSSARY

CEQ – Council on Environmental Quality

DOE – United States Department of Energy

EA – Environmental Assessment

EIS – Environmental Impact Statement

EnPA – Energy Policy Act (1992)

EPA – Environmental Protection Agency

FEIS – Final Environmental Impact Statement

GWTT – groundwater travel time

HLW – high-level radioactive waste

ISFSI – Independent Spent Fuel Storage Facility

MRS – Monitored Retrievable Storage installation

NAS – National Academy of Sciences

NEPA – National Environmental Policy Act (1969)

NRC – United States Nuclear Regulatory Commission

NWPA – Nuclear Waste Policy Act of 1982. Citations to the NWPA in this brief are to the Public Law section rather than to the United States Code section. A copy of the NWPA as amended, with cross-references to Code sections (*e.g.*, NWPA § 113 is codified at 42 U.S.C. § 10133; NWPA § 114 is codified at

42 U.S.C. § 10134), is included in the statutory / regulatory appendix filed with this brief.

NWPAA – Nuclear Waste Policy Act Amendments of 1987.

NWTRB or TRB – Nuclear Waste Technical Review Board

RCRA – Resource Conservation and Recovery Act

ROD – Record of Decision

SCP – Site Characterization Plan

SNF – Spent Nuclear Fuel

NOTE: Citations to the three Certified Records submitted by DOE are identified herein by source, document number, and page number in the following formats:

Guidelines Case Record:	GR-25-10
Recommendations Case Record:	RR-1.0025-10
NEPA Case Record:	NR-1.0025-10
Supplemental Appendix:	SA-025-10
Final Environmental Impact Statement:	FEIS-2-25

The Supplemental Appendix contains documents important to this case that Petitioners believe should have been included in the record.

JURISDICTIONAL STATEMENT

This action involves five petitions for review. Actions 01-1516 and 02-1036 challenge final regulations issued by the Department of Energy ("DOE") pursuant to the Nuclear Waste Policy Act ("NWPA") on November 14, 2001, and DOE's failure to take actions required by the NWPA. This Court's jurisdiction derives from NWPA Section 119(a)(1). These actions were timely filed (December 2001 and January 2002) within 180 days of the challenged decisions or failures to act, under NWPA Section 119(c).

Action 02-1077 challenges DOE's February 14, 2002 decision recommending the Yucca Mountain, Nevada ("Yucca") site, and the President's February 15, 2002 decision approving that selection. This petition also challenges DOE's failure to take actions required under the NWPA. This Court's jurisdiction derives from NWPA Section 119(a)(1). This action was timely filed (February 2002) under NWPA Section 119(c).

Actions 02-1179 and 02-1196 challenge DOE's February 14, 2002 Final Environmental Impact Statement ("FEIS"), as well as procedural violations related to issuance of the FEIS and DOE's February 14, 2002 recommendation. This Court's jurisdiction derives from NWPA Section

119(a)(1). These June 2002 actions were timely filed under NWPA Section 119(c).

STATEMENT OF ISSUES

(1) Whether final rules issued by DOE (the "Guidelines") conflict with NWPA requirements that:

(a) deep geologic isolation form the primary means of containment for the nation's nuclear waste;

(b) DOE's guidelines specify detailed geologic considerations that shall be primary criteria for the selection of repository sites;

(c) DOE's guidelines specify factors that qualify or disqualify any candidate site, including Yucca, from development;

(2) Whether DOE, upon determining in fact that Yucca's geologic characteristics were not primarily capable either of qualifying Yucca as a suitable repository or of assuring that a Yucca repository could meet applicable statutory or regulatory requirements, failed to take actions required by the NWPA.

(3) Whether DOE failed to take actions required by the NWPA when the Secretary of Energy ("Secretary") recommended Yucca to the President without having completed site characterization.

(4) Whether the Secretary's and the President's recommendations of the Yucca site were contrary to law because they were predicated on application of DOE's unlawful Guidelines.

(5) Whether the Secretary violated the NWPA, the National Environmental Policy Act ("NEPA"), and NEPA regulations by:

(a) withholding from Nevada the FEIS, thereby failing to receive and respond to Nevada's comments prior to the recommendation;

(b) rendering his site recommendation without providing thirty days for public availability of the FEIS;

(c) rendering his recommendation without preparing a Record of Decision;

(d) adopting a distorted and implausible definition of the "no action" alternative in the FEIS that undermined the baseline comparison between the proposed action and the reasonably foreseeable consequences of rejecting it;

(e) selecting a "proposed action" in the FEIS that is *ultra vires* and inconsistent with the NWPA's commitment to a geologic repository;

(f) defining a "proposed action" in the FEIS that diverged from the action recommended to and approved by the President;

(g) adopting an unstable, inconsistent, and incomplete definition of the "proposed action" in the FEIS and recommendation, and segmenting out the project's transportation component;

(h) including in the FEIS a design option proscribed by the NWPA;

(i) including in the "proposed action" and recommendation disposal of wastes precluded from Yucca by the NWPA;

(j) ignoring the requirement to obtain from Nevada disposal permits under the Resource Conservation and Recovery Act ("RCRA"); and

(k) failing to consider the risks and reasonable consequences of sabotage in spent fuel transport to Yucca.

STATUTORY / REGULATORY APPENDIX

Pertinent statutes and regulations are included in a separately bound appendix.

STATEMENT OF THE CASE

Petitioners bring this action challenging guidelines promulgated by DOE setting the criteria for selecting the site for the nation's permanent

nuclear waste repository. Petitioners further challenge the decisions of the Secretary and the President, made pursuant to those criteria, to select Yucca Mountain in Nevada as that site. Those new guidelines, and accordingly those decisions, violated the NWPA. The site selection also violated NEPA.

With the NWPA, Congress answered this question: How are we to isolate highly radioactive material from the human environment for the almost unimaginable time necessary for its toxic properties to diminish to safe levels? Based on the judgment of the scientific community and of DOE itself, Congress concluded the best course was to put the wastes in packages as formidable as engineers could devise, *but*, as a mandate for longer-term assurance, bury them deep underground in isolating rock formations. Thus, the animating idea of the NWPA was to dispose of wastes through a sequence of independent "barriers," both man-made and natural.

Congress assigned DOE the task of developing more detailed guidelines by which a potential repository site would be evaluated, or "characterized." Congress charged the Nuclear Regulatory Commission ("NRC") with the responsibility, after a site suitable under the NWPA's

standards was selected, to license construction and operation of the repository.

DOE's original guidelines, specifying qualifying and disqualifying conditions for a site, conformed to the NWPA. Due to the expense of evaluating several sites, in 1987 Congress focused DOE's characterization activity on Yucca, but Congress neither changed the standards nor mandated that the Yucca site be found suitable.

By the late 1990s, the data from DOE's characterization work determined that Yucca site's geology would disqualify it under DOE's guidelines, particularly with respect to Yucca's inability to constrain groundwater flow through the repository and into the biosphere. Such a development was clearly contemplated by Congress. As one House Committee noted:

> The risk that a site which had been considered probably adequate for development could be abandoned after significant commitment had been made to the site is a technically unavoidable aspect of repository development. It is a result of the limit of our ability to know with certainty all the characteristics of a rock formation deep underground until the rock site has actually been excavated and surveyed from the 'horizon' or level of the repository.

H.R. Rep. No. 97-491, Part 1, at 32 (1982).

Notwithstanding this premise, DOE stopped site characterization and aborted its standards, substituting new guidelines that are the subject of this case to justify Yucca's selection. Under these guidelines, no specific examination of the contribution of the natural setting to isolate waste is to be made, in favor of a gross examination of how the "total system" of the repository will work. If DOE's new guidelines are lawful, a repository need not be put underground, since man-made barriers will do all the work – at least until they fail.

Petitioners contend the actions of the Executive Branch to secure the Yucca selection violated express terms of the NWPA and NEPA, terms that rest on both the Congressional determination that safe, permanent disposal must rely on the geologic setting as the primary barrier to isolate wastes from the biosphere, and Congressional insistence that the environmental impacts of this major federal action be fairly analyzed.

STATEMENT OF FACTS

A. Spent Fuel and High-Level Waste

The operation of nuclear power plants, research reactors, and military reactors all produce spent fuel. Spent fuel is lethally radioactive,

posing a serious hazard not only to those exposed to it,[1] but also, because resulting biological effects can be passed on, "to future generations." H.R. Rep. No. 97-785, Part I, at 46 (1982). Moreover, radioactive elements in the wastes remain dangerous for millennia, FEIS-1-6, having "half-lives" (the time it takes a substance to decay to half of its initial radioactivity level) of up to 2 million years. FEIS-A-17. Some of these elements decay into other elements that become even more dangerous over time. *See* H.R. Rep. No. 97-785, Part I, at 46.

In addition, in the process of decay, the wastes produce heat so intense it can boil water out of desert rocks. FEIS at 2-9-2-11. As a result, spent fuel must be cooled three to five years in pools at reactor sites before it can be transported. H.R. Rep. 97-785, Part I, at 40. Originally, these pools provided storage for spent fuel. As they became filled to capacity, utilities began constructing above-ground storage facilities that can store fuel in casks that are continuously monitored and secured by armed guards. NRC, which licenses such "dry storage" facilities, has determined they can remain safe for at least 100 years, SA-022-3, though the industry has testified spent fuel "can be stored for centuries safely" at

[1] Mere micrograms of plutonium ingested in drinking water can cause cancer. *See* Voelz and Lawrence, "A 42-Year Medical Follow-Up of

such facilities.[2] Utilities have already constructed 24 such facilities and are planning to build 21 more. SA-005-23-24. Utilities are also developing a dry storage facility in Utah that will hold nearly 87-percent of the industry's existing spent fuel inventory. FEIS-1-22.

Because spent fuel contains reusable uranium and plutonium, the government undertook for years to "reprocess" it to extract such materials. For years, a solution to the problem of spent fuel disposition was postponed because it was assumed spent fuel would be reprocessed, leaving liquid radioactive wastes which are far less volatile than spent fuel, and which are "vitrified," or immobilized, into solid glass logs that can be stored safely indefinitely. FEIS-1-7. In 1976, the government, for non-proliferation reasons, ended reprocessing in the U.S. FEIS-1-8.

In 1957, the National Academy of Sciences ("NAS") completed the nation's first comprehensive study of the management and disposal of nuclear waste. RR-1.0512. "Unlike the disposal of any other type of waste," NAS said, "the hazard related to radioactive waste is so great

---

Manhattan Project Workers," *Health Physics*, Vol. 37 (1991).

[2] Hearings on S.637, Senate Energy Committee (Pub. No. 97) and Senate Environment Committee, 97th Cong., 14 (1981) (Statement of Sherwood Smith, Chairman, American Nuclear Energy Council).

that no element of doubt should be allowed to exist regarding safety." *Id.* at 3.

Deep burial in a stable, isolating geologic setting was urged by NAS, particularly in salt deposits, since "no water can pass through salt" and its "fractures are self-sealing." *Id.* at 4. As NAS put it: "The question should not be phrased: 'How can we dispose of waste at X site?' but should be: 'Can or cannot waste be disposed of at X site?'" *Id.* at 6. NAS recommended "returning those wastes to nature in some place where they can be held for very, very long periods of time without jeopardy to our environment or property." *Id.* at 18.

The central recommendation of NAS for disposal, "deep geologic isolation," became the cornerstone of every repository program in the world. This scientific tenet strongly informed the government's practices and laws that led to the U.S. repository program.

In 1980, using the NAS recommendation to plan a strategy focused on geologic disposal, the President ordered DOE to prepare a full Environmental Impact Statement ("EIS") so as to recommend a preferred long-term alternative. FEIS at 1-9. DOE's 1980 EIS evaluated deep geologic isolation and every other conceivable method of disposal, including subseabed and ice-sheet disposal, deep-well injection, transmutation, and

even disposal in outer space. RR-1.0312-1-1.16-1.20. In the end, the solution proposed by DOE for spent fuel was disposal "in mined repositories in geologic formations," *id.* at 1-3, which would be so effective that "it is extremely improbable that wastes in biologically important concentrations would *ever* reach the human environment." *Id.* at 1-3-4 (emphasis added).

The effectiveness of geologic isolation did not mean man-made, "engineered barriers" were to play no role. DOE explained:

> The multiple barriers that could contain nuclear waste in deep mined repositories fall into two categories: (1) geologic or natural barriers, and (2) engineered barriers. Geologic barriers are expected to provide isolation of the waste for at least 10,000 years after the waste is emplaced in a repository and probably will provide isolation for millennia thereafter. Engineered barriers are those designed to assure total containment of the waste within the disposal package during an initial period during which most of the intermediate-lived fission products decay. This time period might be as long as 1000 years.

Id. at 5.1. DOE emphasized that "[m]ultiple barriers are intended to act independently to prevent waste migration and enhance isolation." *Id.* at 3-272. "The engineered components of the multi-barrier system would be of greatest importance in the short term and the repository medium and the surrounding geology would be the critical elements over the long term." *Id.* at 281.

To ensure long-term safety, DOE required any site to have "geologic," "hydrologic," and "geochemical" characteristics "compatible with waste isolation." *Id.* at 1-55. Echoing NAS, DOE concluded, "The host rock with its properties provides the justification for geologic disposal and is the main element in containing the waste within the repository and in isolating the waste from man's environment for the long term." *Id.* at 2-B.15.

DOE likewise evaluated the length of time the geologic setting should be capable of containing wastes to ensure long-term safety. DOE advocated an isolation target of *250,000 to 500,000 years* because of lethal long-lived isotopes like plutonium in spent fuel. *Id.* at 3-360-61.

Together, the NAS study and the EIS established the scientific framework for evaluating the suitability of a "mined geologic repository." It was this scientific foundation that informed Congress as it considered nuclear waste legislation beginning in 1980, culminating with enactment of the NWPA. Indeed, DOE later acknowledged that its decision in the 1980 EIS to pursue "mined geologic repositories as the preferred means" for disposal of nuclear waste "has since been supported by the [NWPA]." SA-039-31.

B. The Congressional Response

Congress first attempted to address nuclear waste disposal in 1980 with H.R. 7418, offered by the House Science Committee, and with S. 2189 in the Senate Energy Committee.

The House bill sought to establish a demonstration program that would facilitate development of repositories. H.R. Rep. No. 1156, Part 1, at 9 (1980). DOE was to nominate demonstration sites "using criteria based on the principle that the primary means of preventing the release of waste to the biosphere are engineered barriers. … Primary reliance *on geology* which *can assure* that uncontained waste will be *completely isolated* from the biosphere is not required." *Id.* at 17-18 (emphasis in original).

That engineered barriers were sufficient for isolation reflected the contemporaneous presumption that *all* the wastes being buried would be reprocessed wastes from spent fuel, *not* the spent fuel itself. *Id.* at 25. The Committee pointed to "reduced geological requirements" for "repositories which are to be used only for reprocessed high-level wastes and which emphasize engineered barriers." *Id.* at 27.

DOE opposed the bill on grounds that it was inappropriate to place primary reliance on engineered barriers *even for repositories without spent fuel*. In DOE's words:

> Engineered barriers are an essential ingredient in a technically conservative approach to an actual repository, but we do not feel that the existence of such barriers should be used as a basis for a less careful selection of an acceptable geologic media.

Id. at 37.

Recognizing the nation's policy shift away from reprocessing, the Senate Energy Committee reported S. 2189, which proposed development of repositories for disposal of unreprocessed spent fuel. S.Rep. No. 548, at 11 (1980). In a separate bill, the Senate Environment Committee, at DOE's urging, emphasized both natural and engineered barriers, noting that:

> [i]n explaining this conservative, defense-in-depth approach to repository design, [DOE] states:
>
> "The multibarrier concept requires that the success of the system be protected against deficient barrier performance or failure by using a series of relatively independent and diverse barriers that would not be subject to a common mode of failure. Barrier multiplicity is required both as a hedge against unexpected occurrences or failures and to provide an appropriate means for protecting against a wide variety of potentially disruptive events. Acceptable system performance must not be contingent on the performance of any non-independent barrier combinations."

S.Rep. No. 96-871, at 3-4 (1980).

In summer 1980, the House Interior Committee reported a revised version of H.R. 7418. Recognizing DOE's opposition to its earlier bill,

and the fact that "the option to reprocess spent nuclear fuel is presently foreclosed to the nuclear industry," the Committee concluded "it is necessary at this time to do preliminary planning on the basis of geologic disposal of spent fuel." H.R. Rep. No. 1156, Part 2, at 2 (1980). As the Committee explained:

> The form of the waste itself and engineered barriers will provide the first level of defense against release of radionuclides. But locating appropriate rock formations, and gathering data to adequately confirm their ability to provide protection over very long periods of time, are crucial elements of the repository development program.

Id. at 29.

This dramatic turnaround was the result of Congressional recognition that disposal of unreprocessed spent fuel presented a far more dangerous and longer-term risk. The Committee noted, for example, that some isotopes would need "to be isolated for at least 245,000 years." *Id.* at 13.

> [T]he ability of any man-made containers to endure for a quarter of a million years is obviated by the fact that the ultimate barrier which prohibits the release of any radioactivity into the biosphere is the geologic media itself. The effectiveness of this method is dependent upon finding a geologic media whose integrity is intact, meaning that it does not have openings which would allow radioactivity to escape into the atmosphere or into the groundwater.

Id. at 14. Underscoring this principle, the revised bill mandated site suitability requirements designed to ensure primary geologic isolation for spent fuel.

> All site characterization activities in the site selection process itself in both the preliminary and final stages are to be based upon the premise that the geologic media is to be the ultimate barrier which isolates the waste from the biosphere, and that engineered barriers are but intermediate and short-term forms of isolation.

Id. at 29.

In 1981, the Senate committees reported a new bill containing provisions for "deep geologic repositories capable of accommodating either high-level nuclear waste or spent fuel." S.Rep. No. 97-282, at 6-7 (1981). This meant geologic isolation would remain the primary requirement for site suitability, a position codified in the April 1982 House version of the nuclear waste bill, H.R. 3809. *See* H.R. Rep. No. 97-491, Part 1, at 4 ("Such Guidelines shall specify detailed geologic considerations that shall be primary criteria[3] for the selection of sites in various geologic media."), 50 (1982).[4] This exact language persisted through sub-

---

[3] DOE has consistently read "primary criteria" in this text to mean "*the* primary criteria." *See, e.g.*, 66 Fed. Reg. 57,298, 57,300 (Nov. 14, 2001) (emphasis added); 64 Fed. Reg. 67,054, 67,056 (Nov. 30, 1999).

[4] Identical language appeared in the House bill. H.R. Rep. No. 97-785, at 5, 45-48.

sequent revisions of the proposed legislation and ultimately was incorporated into the NWPA.

Indeed, Congress was explicit about the "essential elements of the program" it was codifying in the NWPA:

> Commitment to a waste disposal technology relying on primary geologic containment provided by a solid rock formation located deep underground, together with containment by engineered barriers including the form and packaging of the nuclear waste, which will provide safe containment of the waste without reliance on human monitoring and maintenance after an initial period of testing and subsequent closure of the repository.

Id. at 30. *See also* H.R. Rep. No. 97-785, Part I, at 48 (1982).

C. The NWPA: Primary Reliance on Geologic Isolation

In the NWPA, Congress prescribed a complex process for selecting one or more sites from among several "candidate sites" for detailed site characterization. The NWPA required DOE to hone in on a preferred repository location by conducting successive geologic and scientific studies. FEIS-1-9. Upon completion of such "site characterization," the Secretary was to make a recommendation to the President as to his choice of any site for development.

From the beginning, three agencies shared independent responsibilities for the assessment and potential development of the repository.

Those responsibilities included site characterization and selection by DOE, establishing radiological and health standards by the Environmental Protection Agency ("EPA"), and licensing the construction and operation of the repository by NRC.

The NWPA prescribed a two-step process leading to repository development. First, DOE would determine site *suitability* under Sections 113 and 112, and second, NRC would determine overall *licensability* under authority given it in Section 114. Only then could a construction permit be granted by NRC. *See* RR-7.0004 at 9.

Reflecting its history and purpose, the NWPA defines "repository" as a system to be used for "permanent deep geologic disposal." NWPA §11(18). "Candidate sites" are defined as areas "within a geologic and hydrologic system" that undergo DOE site characterization, NWPA §11(4), which, in turn, means DOE activities "undertaken to establish the *geologic* condition" of a candidate site, NWPA §11(21), and which was to have been *completed* prior to any site recommendation. NWPA §114. Section 112(a) requires DOE to establish guidelines for the selection and recommendation of sites, which "shall specify detailed geologic considerations that shall be primary criteria" for site selection. Moreover, "[s]uch guidelines shall specify factors that qualify or disqualify any site from

development as a repository, including factors pertaining to … hydrology, geophysics [and] seismic activity…." *Id.*

D. Original Repository Rulemaking Activity

Pursuant to NWPA requirements, DOE, NRC, and EPA published rules intended to discharge their obligations. 10 C.F.R. Part 960 and 60, 40 C.F.R. Part 191, respectively. In publishing its first set of site suitability rules in 1984, DOE paid careful attention to the geologic requirements and the physical qualifying and disqualifying conditions recommended by NAS and the 1980 EIS and required to be specified by NWPA Section 112(a). 49 Fed. Reg. 47,714, 47,718 (Dec. 6, 1984). NRC concurred in the draft regulations, but only upon DOE's promise to specify "that engineered barriers cannot constitute a compensating measure for deficiencies in the geologic media" during suitability evaluations. *Id.* at 47,719-20. EPA also warned DOE not to over-rely on engineered barriers. *Id.* at 47,727.

DOE's final rules accordingly provided that "engineered barriers shall not be used to compensate for an inadequate site; mask the innate deficiencies of a site; disguise the strengths and weaknesses of a site and the overall system; and mask differences between sites when they are compared." 10 C.F.R. § 960.3-1-5 (1984). Thus, while this geologic quali-

fying criterion formed the key requirement for comparative analysis of proposed sites, it was equally clearly a requirement for the absolute scientific evaluation of *any* site. DOE knew that establishing performance of the "total system" was not inconsistent with establishing performance of each part of that system.

As Section 112(a) requires, DOE also specified both qualifying and disqualifying conditions. Part 960 defined "disqualifying condition" as "a condition that, if present at a site, would eliminate that site from further consideration." 10 C.F.R. §960.2. A key disqualifying condition was that of groundwater travel time ("GWTT"). As DOE explained, "The most likely mechanism for the release of radionuclides from a repository to the accessible environment is transport by groundwater." 49 Fed. Reg. at 47,732. Accordingly, DOE specified that surface rainwater trickling through Yucca must take no less than 1000 years to descend from the repository through the dry, "unsaturated" zone and into the water table and the accessible environment:

> A site *shall be disqualified* if the pre-waste emplacement groundwater travel time from the disturbed zone [the underground waste area] to the accessible environment is expected to be less than 1000 years along *any* pathway of *likely and significant radionuclide travel.*

10 C.F.R. §960.4-2-1(d) (emphasis added). The Part 960 conditions were not intended to foster selection of a perfect or even superior site, but were "the *minimum* conditions for site qualification." RR-1.0315-6-2 (emphasis added).

E. The 1987 NWPA Amendments Act ("NWPAA")

In 1987, due to rising cost estimates for site characterization at three sites chosen by DOE, Congress amended the NWPA to provide that Yucca would be the only site characterized. Significantly, Congress did not prejudge the site's physical suitability but made clear that "[i]f the Secretary *at any time* determines the Yucca site to be *unsuitable for development as a repository*," he was to terminate all activities and notify Congress. NWPA §113(c)(3) (emphasis added). Moreover, the Secretary was in that circumstance to report to Congress with DOE's "recommendations for further action to assure the safe, permanent disposal of [waste], including the need for new legislative authority." *Id.*

In the NWPAA, Congress did nothing to change the physical siting requirements it had enacted in the NWPA in Section 112(a). Indeed, Section 113, which was amended to provide for characterization only of the *Yucca* "candidate site," still required DOE to develop "criteria to be used

to determine the suitability of *such candidate site* for the location of a repository, *developed pursuant to Section 112(a).*" (Emphasis added).

In the NWPAA, Congress also created a limited exception to NEPA Section 102(C)(iii), which requires agencies planning major federal actions to consider reasonable alternatives to the proposed action. Congress created this exception with the understanding that the proposed disposal action would be mined *geologic* disposal in a repository at Yucca. Section 114(f)(6) provides that, in licensing Yucca, NRC must adopt, to the extent practicable, DOE's FEIS and need not consider "nongeologic alternatives to such site." Likewise, "compliance [by DOE] with the [NWPA] shall be deemed adequate consideration of … all alternatives *to the isolation* of high-level radioactive waste and spent nuclear fuel in a repository." NWPA §114(f)(2) (emphasis added). DOE's FEIS need not "consider … alternatives to geological disposal." NWPA §114(a)(1)(D).

F. DOE's 1988 Site Characterization Plan

As required by the NWPAA, DOE released a "Site Characterization Plan" ("SCP") in December 1988. In it, DOE acknowledged that the NWPAA did nothing to alter the NWPA's requirement that DOE must apply site suitability guidelines developed pursuant to the requirements of Section 112(a). RR-1.0316-I-8-9.

DOE described the physical character and basic design of the Yucca repository. Yucca's natural setting is composed largely of "tuff," a compacted form of glassy shards and rock crystals formed from volcanoes. SA-054-15. Just below the surface, an "unsaturated" zone in the tuff, presumed largely free of water, extends roughly 2000 feet to the underlying water table. The level of the water table begins what is called the "saturated zone," where the tuff is essentially saturated with water.

The repository area was to be hewn out of the mountain approximately halfway through the unsaturated zone, about 1000 feet deep.[5] SA-054-15, 41. Waste packages were to be placed into a number of half-mile-long "emplacement panels" dug out of the tuff, in which holes are bored for waste emplacement. *Id.* at 41.

The SCP stressed that repository safety is inextricably linked to its geologic and hydrologic setting. "Geologic conditions are intrinsic to the performance of a repository…." *Id.* at 16. Likewise, "[h]ydrologic conditions at the site are critical to the long-term performance of the repository because [they] may affect the behavior of the waste package and because

[5] No other high-level waste repository in the world is being considered above the water table. SA-033-19.

the movement of ground water is the principal mechanism for transporting radionuclides to the accessible environment." *Id.* at 26.

Evidencing DOE's view in 1988 that Yucca would likely prove to have a suitable hydrogeologic setting, DOE said "[p]resent estimates of the time of ground-water travel from the proposed repository to the underlying water table range from about 9,000 to 80,000 years," long enough to pose no safety concern. *Id.* at 28. But DOE cautioned that "little is known about the occurrence and movement of water deep within the unsaturated, fractured tuffs...." *Id.* at 27. Therefore, extensive field investigations had "the highest priority in the program." GR-14-8.0-9.

DOE affirmed that site characterization could lead to the discovery of a "disqualifying" condition at Yucca. "The discovery and confirmation of such a flaw would bring site-characterization activities to a halt." SA-054-8.

G. The 1992 Energy Policy Act ("EnPA")

In EnPA, Congress resolved a longstanding battle over whether NRC or EPA had authority to set the primary radiological standards for waste emissions at Yucca by giving EPA the exclusive responsibility to promulgate such standards. EnPA §801(a)(1). But Congress did not alter

in any way the provisions of NWPA Sections 112(a) or 113. Indeed, the House Committee which sponsored the legislation emphasized that "[t]he provisions of Section 801 address only the standards of the [EPA], and the comparable regulations of the [NRC], related to protection of the public from releases of radioactive materials…. The provisions of Section 801 are not intended to affect in any way the application of any other existing laws to activities at the Yucca Mountain site." SA-040-4466-67.

Later that year, DOE made clear it viewed EnPA as not having altered the NWPA siting guidelines codified in Part 960. SA-032 at 4-5. Thus, DOE's site study would continue to "include an evaluation of potential disqualifying features and conditions…." *Id.* at 5. Though DOE had begun to apply "total system performance assessment" models of the entire repository system, it confirmed that site suitability would be evaluated independently of, and simultaneously with, repository "system" performance. GR-19-ES-2.

In August 1994, DOE made the point again in a formal announcement that the Part 960 guidelines "as they currently exist" would continue to govern "the site suitability process" for Yucca. 59 Fed. Reg. at 29,766. DOE did acknowledge that, because the NWPAA eliminated all candidate sites but Yucca, "comparative evaluation is no longer rele-

vant," and therefore that portion of the 960 guidelines would no longer be employed. *Id.*

In 1995, DOE again confirmed publicly that it viewed the Part 960 siting guidelines "as the primary criteria required by section 113(b) of the NWPA to be used to determine the suitability" of Yucca. 60 Fed. Reg. at 47,738. DOE rejected any notion that it needed to develop a new set of guidelines just for Yucca. *Id.* at 47,739; s*ee also* SA-010, SA-041.

H. DOE's 1994 "Program Approach" to Suitability

In 1994, DOE put even greater programmatic emphasis on determining "technical site suitability," refocusing on "data most important for evaluating the qualifying or disqualifying conditions…." SA-042-27; SA-031-A-1. DOE stated on numerous occasions that the effort was "an attempt to realign the program closer to the original intent of the legislative and regulatory framework." SA-043-2; SA-044-2; RR-5.0034-1-4; GR-26-II-8; RR-5.0035-1-3.

In what DOE called its "Program Approach," the agency set as its primary goal completion of seven "technical suitability reports" covering each of the Part 960 qualifying and disqualifying conditions. SA-044-9; SA-045-7. Of the seven, the hydrologic suitability finding (including

GWTT) was regarded by DOE as "heads and shoulders above the others" in difficulty and importance. SA-046-65.

In late 1995, confirming the agency was working independently and simultaneously on repository "system" analysis *and* individual technical site suitability studies, DOE issued both its "Total System Performance Assessment-95" and the first of its seven planned technical site suitability reports. GR-30. But that technical report, concerning surface characteristics, pre-closure hydrology, and erosion, was determined by reviewers to be unsound. For example, an NAS panel concluded that the report "fails to establish credibility in the scientific basis" for numerical characterization of erosion. SA-047-65.

I. 1996: The "Perfect Storm"

DOE had not even started to rework the first of its seven suitability studies when it was hit in 1996 by the perfect storm.

First, Congress slashed the Yucca budget by forty-percent. SA-011-xi. In imposing what DOE called "draconian budget cuts" (SA-048-1) for fiscal 1996, the Appropriations Committee directed DOE to refocus *all* its efforts "to collect the scientific information needed to determine the suitability of the Yucca Mountain site" and to "defer preparation and filing

of a license application for the repository ['system'] with the [NRC] until a later date." *See* GR-32-11.

Second, in *Indiana-Michigan Power Co. v. DOE,* 88 F.3d 1272, 1275 (D.C. Cir. 1996), this Court ruled that DOE had an "unconditional obligation" to dispose of utilities' spent fuel by the NWPA's 1998 statutory deadline. In view of DOE's impending breach, the decision presented DOE with potentially crushing financial liability, perhaps up to $56 billion, according to the Nuclear Energy Institute. SA-009.[6] *See also Northern States Power Co. v. DOE,* 128 F.3d 754, 759 (D.C. Cir. 1997) (referring to "billions" of dollars of delay-related costs); *Alabama Power Co. v. DOE*, 307 F.3d 1300, 1302 (11th Cir. 2002) (referring to "tide of litigation arising out of this massive breach").

Third and worst of all, ominous results were pouring in from studies in a five-mile tunnel DOE had bored deep into the Yucca unsaturated zone. Geologists discovered Chlorine-36 in fractures found in the area where the repository was to be constructed. GR-41. The abundance of this rare isotope meant it had originated from fallout during atmospheric nuclear testing in the 1950s, suggesting it had migrated from sur-

face rainwater through hundreds of feet of tuff in previously unsuspected "fast flow paths" of less than 50 years. GR-31-1; GR-34-381; GR-44-ES-9. Geologists confirmed the finding by evaluating the "age" of surprisingly large "perched" (or trapped) water pockets found in the "dry" unsaturated zone, some of which amounted to up to *a million cubic meters* of water. GR-34-267.

After further studies, DOE's geologists confirmed "it has become increasingly evident that flow along fast preferential pathways through fractures is a *significant* and *perhaps the dominant* flow regime in the unsaturated zone," leading to "*travel times of less than 50 years from the land surface to the saturated zone*." GR-34-384, 399 (emphasis added).[7] Clearly, the site would not meet Part 960's GWTT disqualifying condition and

---

[6] Indeed, there are presently pending in the Court of Federal Claims numerous lawsuits by utilities to recover damages against DOE. *See Maine Yankee Atomic Power Co. v. U.S.*, 225 F.3d 1336 (Fed. Cir. 2000).

[7] For details of this dramatic discovery and DOE's response, *see* Affidavit of John W. Bartlett, former Director of DOE's Yucca Program. Dr. Bartlett confirms DOE's studies showed "rates of water infiltration into the mountain were on the order of 100 times higher than had been expected; that water flowed very rapidly through fracture pathways in some of the geologic layers (like flow through a pipe rather than dispersed flow through a medium like a bed of sand); and that there appeared to be unexpected 'fast pathways' for movement of radioactivity from the repository to the water table about 1000 feet beneath it." RR-7.0004-11-13. Thus, the Yucca site "cannot be shown to be capable of long-term geo-

would fail what DOE knew was the litmus test of any repository. Far from "permanently" isolating waste, Yucca's geology could not prevent groundwater from carrying radionuclides into the water table far sooner than required to prevent its toxic effects from being visited on the human environment.

Faced with these insurmountable obstacles, DOE's Yucca program office took extreme measures. It laid off hundreds of contractor personnel, SA-015-19, and then it did *precisely the opposite* of what Congressional appropriators had instructed it to do.[8] That is, instead of refocusing activities on an early determination of site suitability (step one in the statutory process) and deferring preparation of a license application (step two), DOE *cancelled* its suitability activities and placed all its efforts into developing a repository "system" design that could ostensibly meet NRC license requirements for a *construction permit* by relying almost totally on engineered barriers. SA-015-15; SA-016-406; SA-021-2; GR-32-19. By

---

logic isolation of high-level radioactive waste during the regulatory time period…." RR-7.0004-2.

[8] Explaining this departure to DOE's technical auditors, DOE's acting Yucca Program Director said, "The Congress of the United States is an educated body. But Lord, they're ignorant right now." SA-015-24.

January 1996, DOE informed the Technical Review Board,[9] "We're not doing suitability process any more." SA-015-406. The new focus would be "on the predictive performance of the repository … rather than on a comprehensive discourse on site characterization." SA-048-7.

Recognizing that this fundamental departure would require regulatory and legislative changes, DOE went to work on all fronts. By March 1996, DOE and its industry allies had lobbied the Senate Energy Committee to report a bill, S. 1271, which provided that DOE's site suitability guidelines in Part 960 "are annulled and revoked." The new standard proposed for disqualification of the Yucca site was not its physical unsuitability, but rather a mere determination of whether the repository "system" could potentially meet NRC construction permit requirements. S.1271, §205. The bill did not make it through Congress.[10]

On the regulatory front, DOE began intensively lobbying NRC and EPA to change their respective Yucca rules to focus on "system" performance analysis of the engineered barriers in the as-yet-

[9] The "TRB" is a board of scientists established by NWPA Title V that serves as a technical auditor of DOE's Yucca work.

[10] In 1999, another bill seeking to eliminate the Section 112(a) guidelines, the "Nuclear Waste Policy Act of 1999," H.R. 45, also failed to get enacted.

uncharacterized natural setting and to require no independent qualifications related to site features. SA-021-6; SA-017-16; SA-023-11; SA-030-332; SA-019-42; SA-020-10; SA-014-6. Rather than assess the *site's* "suitability," the NWPA's first repository development requirement, DOE would instead assess the *repository's* "viability" to meet re-tailored, system-based NRC licensing requirements. SA-049-13; SA-021-5, 17; RR-5.0037-ES-1; SA-021-5, 17.

DOE cautioned both NRC and EPA that, in formulating new rules, "[p]romulgating a standard that cannot be implemented may result in the *de facto* rejection of the Yucca Mountain site…." SA-21-16; *See also* SA-024-6. DOE now called its previous search for technical site suitability "a false target." SA-017-152.

In revising its Program Plan to accommodate this sea change, DOE emphasized that "[i]t became increasingly clear that many of the expectations embodied in the [NWPA] could not be met." GR-32-5. Now, "[w]e will concentrate our near-term design effort on the critical technology requirements of the engineered barriers." *Id.* at v. Accordingly, DOE noted that it had "cancelled [its] technical site suitability process." GR-32-19. *See also* SA-019-42; SA-030-325.

By December 1996, inverting reality, DOE announced in the *Federal Register* that it would be amending its guidelines because "Congress directed DOE in fiscal year 1996 to focus on only those activities necessary to assess the performance of a repository at the Yucca Mountain site." GR-48-1. Thus, new 10 C.F.R. Part 963 took flight.

By early 1997, having eliminated NWPA's first required step (determining site suitability) and having effectively replaced it with the NWPA's second step (licensing construction of the repository) DOE made an admitted effort to hide the fact it was focusing now on licensing. It created a new name for its core project directed at preparation of a license application, calling it the "Project Integrated Safety Assessment" ("PISA"). In May 1997 testimony before NRC's Advisory Committee on Nuclear Waste ("ACNW"), DOE's Licensing Manager explained the PISA:

> The way this came about was when we shut down our licensing activities that year [1996] that they [Congress] cut $85 million of our budget, we invented a PISA because *it was our stealth* [*License*] *Application*. We weren't allowed to work there. *So we invented a PISA so we could work on the side.*

SA-036-287 (emphasis added). *See also* SA-037-65-67. One Committee member responded, "I can see why Lake Barrett [DOE's Program Manager] was nervous." SA-036-289.

Barrett later admonished the TRB:

> The site suitability decision *need not and should not depend on individual attributes of the site* outside the context of an assessment of the performance of the proposed engineered repository.

SA-013-3 (emphasis added).

By this time, DOE's rejection of geologic isolation was complete, and the goal now was to change the rules and attempt to design a waste package that alone might last for the 10,000-year duration of EPA's compliance period.

J. Groundwater Travel Time

By late 1998, after reviewing DOE's reports to the TRB, Nevada's Governor urged DOE to disqualify the Yucca site pursuant to the groundwater travel time requirements of DOE's 960 guidelines and the NWPA. SA-025-2. The Secretary wrote back, conceding DOE's analyses showed that *up to 20-percent* of all water moving through the repository would reach the water table in less than 1000 years. SA-026-Encl-1. However, "additional study is warranted," he said, calling a disqualification decision "premature" and noting that "most of the water" would take more than 1000 years. *Id.*

In January 1999, DOE presented to the TRB the results of its repository performance assessment. In one run, DOE had "removed" the engineered barriers from the repository so as to model the performance of the natural setting alone, simulating performance in the event of failure of the engineered barriers. DOE's analysis showed that, because of fast water flow, annual doses to humans at the site boundary would rise precipitously above the 15 millirem / year EPA dose limit in well under 2000 years, peaking at nearly 1000 millirem / year in about 3000 years. SA-051-15; SA-012-77-100. DOE also presented a chart showing that the geologic setting was able to contribute almost nothing to the repository system's total waste isolation capabilities (less than 0.3%). SA-051-18. In short, DOE's model of the repository "system" showed almost total reliance for its safety on engineered barriers, which had yet to be fully designed. *See* RR-7.0004-16. Equally important, the "base case" analysis, with all barriers and packages in place, showed that even then doses would rise sharply above the EPA limit after 10,000 years.[11]

[11] Respondents will not dispute that *any* model of Yucca's performance will show the repository's failure to meet EPA dose limits during the longer periods (after 10,000 years) recommended for compliance by the NAS.

In testimony to the TRB, DOE conceded that Yucca's natural barriers would be ineffective to protect against uncertainties in the performance of the engineered barrier system, and that "defense-in-depth" could only exist in the "system" by stacking one man-made barrier onto another, since geologic factors could make no significant contribution. SA-012-85-94. One TRB member concluded, "You can't even come close with the mountain…."[12] SA-012-100.

By 2000, DOE's performance analyses showed that, if the engineered barriers were presumed to fail, the flimsy natural barriers alone would permit a dose rate more than 666 times the EPA limit, or 10,000 millirem / year, within the first 10,000 years. RR-1.0291-E-11, Fig. E-1. This meant that any repository "system" at Yucca which did not have *perfectly operating* engineered barriers would rapidly become unsafe and noncompliant with EPA dose limits.

In 2001, EPA produced an extensive history of the site suitability issue, confirming the projected noncompliance of the geologic setting and the inability of the site to meet Part 960's GWTT disqualifying criterion.

---

[12] *See also* SA-033-73 (International peer review by repository scientists concluding DOE's assessment of water flow lacks "realism"); RR 7.0001-17 (noting "water…dripping liberally from the ceiling" of a test tunnel deep inside Yucca and "[a] DOE explanatory sign confirming this").

EPA also confirmed that water in the saturated zone which in 1995 had been expected by DOE to be capable of diluting radioactive wastes by factors of 1,000 to 100,000 before they reached the site boundary were assumed four years later to be capable of actual dilution of only a factor of 10. SA-034-3-6, 3-22. In short, wastes emerging from the repository in water seeping through the mountain would become vastly more concentrated at the site boundary than previously believed possible.

The last time DOE presented a repository performance analysis showing the actual anticipated performance of the geologic setting occurred at an NRC/DOE Technical Exchange in January 2001. DOE showed that, if engineered barriers were to fail, the annual dose at the site boundary was projected to be 100 millirems/year – more than six times the EPA limit – at only 1000 years. By the 3000-year mark, the expected dose would rise to over 1000 millirems/year, or 67 times the EPA limit. SA-027-17.

K. DOE's Part 963 Tautology

Late in 1999, DOE published proposed amendments to Part 960, announcing a new Part 963 applicable only to Yucca. Part 960 was to be revised to limit its application only to *other potential* repository sites. GR-186-67055. New Part 963 would establish new "site suitability criteria"

for *Yucca alone*, abandoning each of the geologic and hydrologic criteria of NWPA Section 112(a) and all qualifying and disqualifying site features. Instead, Part 963 would require DOE to meet just a single qualifying criterion – that a total system performance assessment of the entire repository "system" would demonstrate compliance with the EPA dose limit for the EPA's regulatory compliance period, and thus the repository could ostensibly get an NRC construction permit. GR-186-67066-70.

Having lobbied NRC and EPA for three years to change their rules to a system-based regime that would obscure the distinctive roles of natural and engineered barriers, DOE now blamed the abandonment of 960 and the promulgation of 963 on the rule changes by those agencies.[13] *Id.* at 67068-72; GR-201-3; GR-332-57299. The two agencies had finally relented on changes, largely on the premise that it was solely *DOE*'s statutory role to determine site suitability, not NRC's and EPA's. *See, e.g.*, SA-035-99 ("it is their call to make").

[13] This is especially ironic given that EPA had earlier objected to DOE's abandonment of 960, saying the "major reason" for the move was DOE's discovery of "significantly faster water flow" than its regulations allowed. GR-134-2. "Overall," EPA said, "the waste isolation capability of the natural features of the Yucca Mountain site is at present highly uncertain and largely unassessed." GR-134-3. Moreover, the "system approach proposed by the DOE could be viewed as masking this uncer-

With the new rule, DOE perfected a regulatory tautology: DOE's change was to accommodate NRC's change that was necessary because of DOE's change. With Part 963, no longer was site suitability a matter of assessing the isolation capabilities of the geology. Rather, as explained by DOE to NRC, "Simplistically, the suitability evaluation … is a DOE evaluation as to whether or not we feel we have enough information to have a credible License Application." SA-625-226. As DOE now viewed its job, its role was redundant to NRC's.

Part 963 (the "Guidelines") was issued in final form in November 2001.[14] GR-332.

L. The Site Recommendation

On February 14, 2002, barely two months after Part 963 became effective, the Secretary issued to the President a Site Recommendation for Yucca under NWPA Section 114(a)(1), saying the "site is scientifically and technically suitable for development of a repository." SA-052-1. The recommendation was accompanied by the Yucca FEIS but no Record of

---

tainty and the potentially insufficient waste isolation capability of site features…." *Id.*

[14] Just prior to issuance of the new rule, the Senate Appropriations Committee admonished DOE *not* to jettison the specific geological requirements of Section 112(a), saying the NWPA gave DOE no such authority. SA-028-106.

Decision. The FEIS, which had been privately circulated to select federal agencies, was not released to Nevada and the public until the date of decision.

One day later, the President, in a letter to Congress, approved the recommendation under NWPA Section 114(a)(2)(A). Sixty days later, Nevada's Governor submitted to Congress a Notice of Disapproval of the site designation pursuant to NWPA Section 116(b)(2). Pursuant to NWPA Section 115, Congress passed a joint resolution overriding the Notice of Disapproval, which the President signed on July 23, 2002.[15]

With that, DOE was both entitled and required to submit a License Application to NRC within 90 days. NWPA §114(b). DOE failed to do so

---

[15] Respondents have argued that Congress' override mooted Petitioners' challenges to the Guidelines, DOE's and the President's recommendations and the FEIS. The Court has deferred consideration of jurisdictional issues, and thus Petitioners will fully respond in their reply brief to any jurisdictional arguments raised by Respondents in their brief. We note here that Respondents' mootness argument rests on the unsupported proposition that in overriding Nevada's notice of disapproval pursuant to precisely-articulated and truncated NWPA procedures, Congress impliedly repealed the site suitability and the judicial review provisions of the NWPA, while simultaneously authorizing abdication by DOE of traditional NEPA requirements. But all Congress really did, in classic legislative veto fashion, was follow NWPA procedures to the letter and cancel out Nevada's veto of the President's siting decision; it did not forever shield that decision, or the DOE decisions and actions on which it was based, from judicial review.

and now says it cannot submit an application until December 2004 at the earliest.

SUMMARY OF ARGUMENT

In the NWPA, Congress unambiguously mandated a "system" for the "permanent deep geologic disposal" of nuclear waste. Congress required that the "geologic medium" form the primary barrier keeping waste from people and the environment over the millennia.

DOE's new Guidelines instead assert that DOE can lawfully evaluate Yucca from the perspective of "total system performance," essentially abandoning NWPA's mandate that the site's geology form the primary isolation barrier. But because Congress has spoken to the precise question at issue, there is no occasion for this Court to accord deference to DOE's strained construction of the NWPA.

The NWPA explicitly defines a "repository" as a "system" for the "permanent deep geologic disposal" of radioactive material. NWPA § 2(18). Moreover, Sections 112 and 113 obligated DOE to issue guidelines governing the suitability determination and the recommendation of sites for repositories that both establish "detailed geologic considerations" to serve as "primary criteria" in site selection and specify the physical factors that would qualify or disqualify a site from development. Pertinent

legislative history, from the initial efforts of Congress through the enactment of the NWPA and later amendments, shows a clear Congressional commitment to a repository deep underground, relying on multiple, independent barriers, including primarily the geology of the site.

Even if the NWPA left this point ambiguous, however, DOE's earlier consistent position, and its sharp break with that position in its new Guidelines, strongly argues against according DOE's new position any deference. Not only does the NWPA not delegate fundamental policymaking to DOE, it was intended to wrest such policymaking away from the Executive Branch.

DOE also failed to take key actions required by the NWPA. Although DOE had determined Yucca was unsuitable for development, DOE never took the actions required, including reporting to Congress, and recommended Yucca for development without first completing required site characterization.

In recommending Yucca, DOE also evaded its NEPA responsibilities, refusing against the advice of its own staff to prepare a Record of Decision supporting its final site recommendation, refusing to wait 30 days after EPA publication of notice of the FEIS's availability, and refusing to provide notice and an opportunity to comment to Nevada.

In its FEIS, DOE committed foundational errors that obfuscated the nature of the "proposed action" and invalidated its assessment of the comparative merits of the project versus the "no-project" alternative. DOE also defined the "proposed action" to leave critical aspects of the project unassessed; segmented out the transportation component for future analysis; failed to disclose statutory violations; and failed to evaluate realistically the consequences of terrorism in spent fuel transport.

ARGUMENT

I. Standard of Review

At issue here is a question of pure statutory construction, subject to *de novo* review. *See National Labor Relations Bd. Union v. FLRA*, 834 F.2d 191, 197-98 (D.C. Cir. 1987).

1. By refusing to give geologic considerations primacy, DOE exercised "its authority in a manner that is inconsistent with the administrative structure that Congress enacted into law." *FDA v. Brown & Williamson Tobacco Corp.* 529 U.S. 120, 125 (2000) (internal quotation omitted). The issue here does not "center[] on the wisdom of the agency's policy," but on whether it made "a reasonable choice within a gap left open by Congress." *Chevron v. NRDC,* 467 U.S. 837, 866 (1984). "Regardless of how serious the problem an administrative agency seeks to address, ...

[a]nd although agencies are generally entitled to deference in the interpretation of statutes that they administer, a reviewing 'court, as well as the agency, must give effect to the unambiguously expressed intent of Congress.' " *Brown*, 529 U.S. at 126-27 (quoting *Chevron,* 467 U.S. at 842-43). Thus, in measuring whether the Guidelines pass muster under the NWPA, this Court should accord DOE's new position no deference.

The fact that Congress has "directly spoken to the precise question at issue" (*Chevron,* 467 U.S. at 842) is evident from numerous provisions of the NWPA. *See American Bankers Ass'n v. NCUA,* 271 F.3d 262, 267 (D.C. Cir. 2001). Especially important is the fact that among these passages are specific definitions of key terms, such as "repository," that strongly support Petitioners. As this Court has said, "In the face of a clear statutory definition, ... there is no occasion for deference." *Time Warner Entertainment Co. v. FCC,* 56 F.3d 151, 190 (D.C. Cir. 1995). *See also Board of Governors v. Dimension Fin. Corp.*, 474 U.S. 361, 368 (1986); *ACLU v. FCC,* 823 F.2d 1554, 1568 (D.C. Cir. 1987). Here, DOE's new rules would excise the NWPA's references to geologic considerations from the statute. Such revisions were not an option Congress gave DOE.

Furthermore, identification of the "unambiguously expressed intent of Congress" is not limited to statutory text, but involves "traditional

tools of statutory construction," *NRDC v. Browner,* 57 F.3d 1122, 1125 (D.C. Cir. 1995) (quotation omitted), including examination of legislative history, *id.* at 1127, and the broader "context" of the relevant words, *American Bankers Ass'n,* 271 F.3d at 267, both of which strongly favor Petitioners.

Strikingly, when the NWPA was passed, DOE concluded it did *not* have authority to discard the primacy of geologic considerations. DOE maintained this position through enactment of the NWPAA and EnPA. Such an unvarying position by DOE, contemporaneous with enactment of the statute and amendments it must administer, is of great significance to the *Chevron*-One analysis. As the Supreme Court explained, "the want of assertion of power by those who presumably would be alert to exercise it, is … significant in determining whether such power was actually conferred." *BankAmerica Corp. v. U.S.,* 462 U.S. 122, 131 (1983) (internal quotation omitted). *See also EEOC v. Associated Dry Goods Corp.,* 449 U.S. 590, 600 n.17 (1981); *Middle South Energy, Inc. v. FERC,* 747 F.2d 763, 769-70 (D.C. Cir. 1984).

A consistent, longstanding understanding by DOE of the meaning of its operative statute "bolsters" the conclusion that Congress required geologic considerations to have primacy in isolating wastes at DOE's

chosen site. *See Brown*, 529 U.S. at 157. In short, from the evidence that should be considered in any *Chevron*-One analysis, it is clear Congress *did* speak to the precise question at issue, and thus no deference is due DOE's departure from that mandate.

2. Even if one were to conclude that the text, structure, and legislative history of the NWPA were ambiguous, under *Chevron* "Step Two," the consistency of DOE's earlier position, and its eleventh-hour break with that position in the new Guidelines, strongly argues against according the new view any deference. *See United States v. Mead Corp.*, 533 U.S. 218, 228 (2001) ("The fair measure of deference to an agency administering its own statute has been understood to vary with circumstances, and courts have looked to the degree of the agency's care, its consistency, formality, and relative expertness, and to the persuasiveness of the agency's position."); *NLRB v. United Food & Commercial Workers Union*, 484 U.S. 112, 124 n.20 (1987).

Though this Court has noted that an agency's "self-interest alone gives rise to no automatic rebuttal of deference," *Independent Petroleum Ass'n v. DeWitt*, 279 F.3d 1036, 1040 (D.C. Cir. 2002), the circumstances under which DOE undertook its change here combine with other evidence of Congressional intent to discourage deference to DOE's position.

See Transohio Sav. Bank v. Director, OTS, 967 F.2d 598, 614 (D.C. Cir. 1992) (observing danger of according deference to interpretation where it might "lead a court to endorse self-serving views" of agency). Here, DOE's change was influenced by its desire to minimize crushing liability to utilities for its past delays.

More important, none of the values that justify deference are implicated here. In particular, "an agency to which Congress has delegated policymaking responsibilities may, within the limits of that delegation, properly rely on the incumbent administration's views of wise policy to inform its judgments." *Chevron,* 467 U.S. at 865. In such a situation, an agency is indirectly accountable to the people (through the President) for "resolving the competing interests which Congress itself either inadvertently did not resolve, or intentionally left to be resolved by the agency." *Id.* at 865-66.

Not only does the NWPA not delegate fundamental policymaking to DOE, it was intended to wrest such policymaking away from the Executive Branch, in a calculated effort to restore Congressional leadership and control over the waste disposal problem. Indeed, Congress' work on the issue was provoked by perceived failures of the Executive Branch to address the problem. As one House Committee noted:

> The failure of the Federal government to have successfully demonstrated that it can dispose of high level radioactive materials after nearly four decades of allowing such materials to be generated and the recently announced proposal to delay the establishment of a repository for as much as two more decades, has resulted in the erosion of public confidence in the ability of the government to prove that it can dispose of these materials.

H.R. Rep. No. 96-1156, Part III, at 16 (1980). *See also* H.R. Rep. No. 96-1382, Part II, at 23 (1980) ("The decided emphasis of the Committee was on formulating a certain, Congressionally mandated pathway…."); S.Rep. No. 97-282, at 3 (1981). *See also* NWPA §111(a)(3), (b)(2). Thus, policymakers in Congress intended to resolve issues that policymakers in the Executive Branch had long failed to resolve. *See* H.R. Rep. No. 97-491, Part 1, at 29-30 (1982).

II. Respondent's Guidelines and Siting Decisions Violate the NWPA

It cannot be denied that nuclear waste disposal represents one of the most important policy issues facing America today, with implications for health, safety, and the environment for centuries to come. It is equally undeniable, however, that "[r]egardless of how serious the problem an administrative agency seeks to address, ... it may not exercise its authority in a manner that is inconsistent with the administrative structure that Congress enacted into law." *Brown,* 529 U.S. at 125 (citation and

internal quotation omitted). *See also id.* at 161; *Wisconsin Elec. Power Co. v. DOE*, 778 F.2d 1, 8 (D.C. Cir. 1985).

Though DOE purports to rely on the NWPA as authority for Part 963, those rules are in no way grounded in the authority granted DOE by that statute. The rules are thus unlawful, and the site suitability and selection decisions by DOE and the President, based on those rules, are consequently invalid.

Part 963 reduces to an afterthought the hydrogeologic characteristics of the Yucca site. While Part 963 pays lip service to DOE's consideration of "criteria" that include these "properties" at Yucca, 10 C.F.R. §963.17(a)(1), such properties have no minimum requirements and become, in fact, unimportant in adjudging site suitability. The Guidelines specify no factors that would qualify or disqualify the Yucca *site* from development. Because Part 963 includes no requirement that the geologic setting independently provide waste isolation, the Guidelines effectively authorize DOE to find a "site" suitable solely through the use of man-made packages. If the package alone can contain wastes for 10,000 years, DOE's standard can presumably be met wherever that package resides, and any such site becomes "suitable."

The concerns raised by these features are not theoretical: It was these very features that authorized DOE to recommend Yucca to the President. These features authorized DOE to allow the purported (but speculative and untested) benefits of "engineered barriers" to completely mask Yucca's known geologic deficiencies. And Part 963's elimination of any disqualifying conditions allowed DOE to recommend the site notwithstanding the presence of at least one condition (GWTT) that disqualified it under the previous rules.

A. The NWPA's Plain Language Requires Geologic Considerations to be Primary in Determining Site Suitability

Numerous provisions of the NWPA make clear that geologic considerations are to be the primary factors considered by DOE in determining site suitability. At the heart of the statute, Congress defined "repository" as

> any system licensed by the [NRC] that is intended to be used for, or may be used for, the *permanent deep geologic disposal* of [waste]….

NWPA §2(18) (emphasis added).

To be sure, this definition does reflect Congress' intent that a "repository" constitutes a disposal "system," including natural and engineered barriers. It would be ludicrous to contend that Congress intended

engineered barriers to play *no* role in isolating waste, such that it would be sufficient for DOE to simply throw loose waste into a hole in the ground. By the same token, this definition's reference to "permanent deep geologic disposal" makes clear that Congress intended a site's geology to itself play the primary and "permanent" role in isolating waste. By authorizing DOE to find Yucca suitable *irrespective* of whether its geologic properties are capable of isolating waste that will remain lethal long after engineered barriers can be expected to work, Part 963 unlawfully redefines "repository" to mean a non-permanent system of engineered barriers that just happens to be placed underground.

In addition, NWPA Section 112(a) required DOE to "issue general guidelines for the recommendation of sites for repositories," which were to "specify detailed geologic considerations that shall be primary criteria for the selection of sites in various geologic media." And Section 113 required DOE to prepare for Yucca "a general plan for site characterization activities … which plan shall include … *criteria to be used to determine the suitability of such candidate site for the location of a repository, developed pursuant to section 112(a).*" NWPA §113(b)(1)(A)(iv) (emphasis added). *See Nevada v. Watkins*, 914 F.2d 1545, 1562 (9th Cir. 1990) (Section 113(b) "makes clear [that] the guidelines developed by [DOE] pursuant to section [112(a)] are to be util-

ized to determine the suitability of Yucca."). Sections 112 and 113 highlight the central importance of a site's physical characteristics to determining its suitability. There is no way the Guidelines, which barely pay lip service to consideration of Yucca's geologic properties, and which authorize selection of Yucca regardless of how little (if at all) its natural barriers can successfully isolate waste, can be squared with these provisions.

The NWPA also leaves no doubt that DOE's rules must include qualifying and disqualifying conditions: Section 112(a) unambiguously provides that "[s]uch guidelines shall specify factors that qualify or disqualify any site from development …, including factors pertaining to … hydrology, geophysics, seismic activity…." DOE's original guidelines did specify such conditions, and for years DOE consistently and correctly maintained that those conditions would apply to and govern its Yucca suitability determination. But Part 963 contains *no* qualifying or disqualifying factors, let alone factors pertaining to the specific topics listed in Section 112(a).

Whether read in isolation or as a coherent whole, these and other[16] provisions of the NWPA underscore Congress' emphasis on the critical

[16] *See* NWPA §§ 2(4), 2(21)(B), 113(b)(A)(ii), 114(a)(1)(D), 114(f)(6), 217(a)(6), 217(b)(3).

long-term role of natural barriers. *Cf. NRDC v. EPA*, 824 F.2d 1258, 1279 (1st Cir. 1987) ("Congress 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."). DOE itself fully understood what Congress intended, and construed the NWPA and the NWPAA in a manner designed to effectuate Congress' intent, at least until 1996 — when, facing liability for its "massive breach" of its duty to begin waste disposal in 1998, *Alabama Power*, 307 F.3d at 1302, and after uncovering fatal deficiencies in the Yucca site, DOE abandoned its longstanding construction of the NWPA in favor if its current expedient "construction."

B. Legislative History Reaffirms Congress' Intent

Though there is no need to go further than the plain words of the statute, the legislative history of the NWPA leaves no doubt that Congress intended what it said. *See supra* at 12-17. To summarize, the legislative effort originated from the proposed action recommended by DOE in its 1980 EIS ? deep geologic isolation ? itself reaffirming a key NAS study recommending the same. Congress at first proposed not to mandate geologic isolation and sought to require primary reliance on engineered barriers, but explicitly reversed this approach, at DOE's urging,

when it became clear that the nation would be burying long-lived spent fuel as well as less-volatile reprocessing wastes. This turnabout to primary reliance on geologic isolation provides unambiguous context to the meaning and intent of the NWPA provisions discussed above, which Congress left intact when revisiting the Act again in 1987 and 1992.

C. DOE's Justifications Dishonor the Congressional Mandate

DOE's justifications for adopting the Guidelines do not withstand scrutiny.

1. According to DOE, the guidelines mandated by Section 112(a) govern only "the process of selecting and comparing among potential sites to determine which sites are appropriate to proceed" to characterization, and nothing in the NWPA requires these guidelines to also "govern the process for determining site suitability and site recommendation under [S]ections 113 and 114." 66 Fed. Reg. at 57,312. DOE also contends that because Section 113 requires DOE to develop "criteria" and not "guidelines," and because the NWPA does not define "criteria," Congress did not mandate that there be any substantive relationship between the Section 112 "guidelines" and the Section 113 "criteria." *Id.*

These arguments all fail mightily. Section 112 does not limit the applicability of the guidelines it requires to the comparison of sites to deter-

mine which should be characterized, but provides that such guidelines are also to govern "the recommendation of sites for repositories," which includes DOE's recommendation of fully characterized sites. *Cf.* NWPA §114(a)(1). And Section 113(b)(1)(A)(iv) explicitly incorporates the salient aspects of DOE's Section 112(a) guidelines for the purpose of developing DOE's site suitability "criteria."

DOE's argument that Congress left "criteria" undefined ignores that Section 112 expressly equates "criteria" with "detailed geologic considerations." DOE elsewhere acknowledges that Section 112(a) "uses the term 'primary criteria' synonymously with the term 'detailed geologic considerations,'" and that "it seems likely that Congress used the word 'criteria' in [Sections 112 and 113] to have the same general meaning." 66 Fed. Reg. at 57,320. It is disingenuous for DOE to equate the meanings of "criteria" in both provisions when doing so suits its purposes, but then contend that Congress left the Section 113 "criteria" undefined when it came to the substantive content of DOE's siting guidelines.

DOE also contends that because Congress could have drafted Section 113 to refer to the Section 112(a) "guidelines" rather than "criteria," it is "unlikely that Congress intended to require the [Section 113] 'criteria' to be the [Section 112 guidelines] themselves." 66 Fed. Reg. at 57,312.

This argument misapprehends the issue. Everyone agrees there is not a complete overlap between the purposes served by the Section 112 guidelines and the Section 113 criteria. Because Section 112 is concerned in part with the drawing of comparisons between sites while Section 113 is not, there would be no need for Congress to require a wholesale incorporation of the Section 112 guidelines into Section 113. It does not follow, however, that the content of the Section 113 criteria need bear no connection to the content of the Section 112 guidelines. DOE itself had previously recognized as much, noting on numerous occasions that in carrying out its duties under Section 113, it could apply only the provisions of the 1984 guidelines relevant to those duties. *See*, *e.g.*, 60 Fed. Reg. 47,737, 47,740 (Sept. 14, 1995).

DOE's claim that Section 113's explicit reference to the Section 112 guidelines only requires DOE to observe the "special procedural requirements of section 112(a)" in formulating the Section 113(b) "criteria," 66 Fed. Reg. at 57,312, is groundless. Congress *could* have easily so circumscribed Section 113's reference to Section 112 if that were its intent; it could, for example, have provided that the Section 113 criteria were to be "formulated pursuant to the procedures specified in section 112(a)." It

did not, and DOE's argument is an attempt to re-write the statute. *See Watkins*, 914 F.2d at 1562.

Finally, DOE's position leads to absurd results. DOE necessarily contends that although Congress *required* geologic considerations to govern analyses of which sites to characterize, Congress did not care what role, if any, such considerations played in DOE's Section 113 analysis of whether a characterized site should actually be developed. But it would make no sense for Congress to require geologic considerations to play a critical (indeed, *disqualifying)* role in determinations that must be made *before* in-depth geologic information is available, but to be utterly indifferent to the role, if any, geology was to play in the far more critical decisions DOE was to make *after* it obtained such information.

2. DOE next argues that Congress redirected the waste program in a way that necessitated adoption of Part 963. Specifically, DOE contends that the NWPAA and EnPA directed that Yucca be the exclusive focus of the waste program, and that in 1996 and 1997 appropriations acts, Congress endorsed DOE's adoption of a "systems"-only approach. 66 Fed. Reg. at 57,312-13.

It is tellingly odd for DOE to suggest that the NWPAA or EnPA provided support for its actions, when DOE waited *nine years* after en-

actment of the NWPAA, and *four years* after enactment of EnPA, to even propose revising its guidelines. And DOE was not idle during this intervening period; on several occasions, extending as late as 1995, DOE gave serious consideration to the question of whether the NWPAA or EnPA required or justified amendment of the guidelines, and concluded they did *not*. It was only when DOE discovered that Yucca would not qualify for development that DOE confected the idea of using these later enactments to rationalize changing the rules. *See* Section I, *supra.*

To be sure, the NWPAA did direct DOE to characterize only Yucca. But, as DOE has itself insisted, the NWPA did not prejudge the issue of Yucca's suitability. *Cf. Watkins,* 914 F.2d at 1559. Moreover, neither the NWPAA nor EnPA made any substantive changes to the provisions of Sections 112 and 113 specifying standards governing the site suitability / selection analysis, or to any of the other provisions of the NWPA, discussed above, emphasizing the role of natural barriers in that test. *Id.* at 1562. EnPA did not even purport to address, let alone alter, DOE's duties in connection with the waste program; rather, EnPA relates solely to the responsibilities of EPA and NRC.

DOE's argument ignores the "cardinal rule ... that repeals by implication are not favored," *Posadas v. National City Bank*, 296 U.S. 497, 503

(1936). *See also J.E.M. AG Supply v. Pioneer Hi-Bred Int'l*, 122 S. Ct. 593, 601 (2001). Because changes in the waste program effected by the NWPAA and EnPA are not at all inconsistent, let alone "irreconcilable," with the NWPA's emphasis on geologic isolation, there is no reason to conclude that these later enactments impliedly repealed the numerous geologic isolation features of the earlier enactment. *Cf. Morton v. Mancari*, 417 U.S. 535, 550 (1974).

DOE's attempt to rely on a 1997 appropriations act, and language in an earlier appropriations conference report, is even more suspect. The rule that repeals by implication are disfavored "applies with especial force when the provision advanced as the repealing measure was enacted in an appropriations bill," *U.S. v. Will*, 449 U.S. 200, 221-22 (1980), and there is *no* authority that would allow substantive law to be amended through language in a committee report. The fact that an appropriations committee approved of measures by DOE to perform a Yucca "viability assessment" is surely not inconsistent, let alone irreconcilable, with Congress' direction in the NWPA that the physical characteristics of a site offer primary isolation capability. After all, DOE had been performing "system" assessments for years, *see e.g.*, 66 Fed. Reg. at 57,305, and had

never suggested they obviated the need for it to ensure the waste isolation capability of Yucca's natural barriers.

3. DOE next argues that because NRC's new regulations focus on the ability of the repository "system" to satisfy EPA standards, DOE too had to revise its Guidelines to conform to NRC's "total system approach." 66 Fed. Reg. at 57,313-14. Of course, the mere fact that EPA and NRC revised their regulations does not establish that those new regulations are lawful, or that DOE was justified in relying on them. Petitioners are challenging those regulations in separate actions pending before this Court. Furthermore, DOE's suggestion that it had little choice but to follow EPA and NRC is disingenuous, since those agencies adopted their regulations principally as a result of intense lobbying by DOE, which needed an excuse to change its own rules. As discussed above, DOE adopted its new regulations over the strong *objection* of EPA. For DOE to hide behind EPA's and NRC's new regulations is like the child who kills his parents and pleads for mercy because he is an orphan.

In any event, even if EPA's and NRC's regulations are lawful, that would not legitimize Part 963. DOE, NRC, and EPA have independent duties under the NWPA, and the site suitability determination is en-

trusted, subject to statutory standards, to DOE. Neither EPA's nor NRC's regulations purported to dictate how DOE should make its determination.

DOE's contention that its suitability determination amounts to little more than a prediction regarding the site's "licensability" represents a complete reversal of DOE's previous, contemporaneous, and long-held views. DOE had consistently maintained that suitability and licensability were substantively distinct concepts.[17] *See* RR-7.0004-9. Of course there is a relationship between the two; a site can hardly be considered suitable if it yields no prospect of later satisfying requirements for a construction permit. It does not follow, however, that the converse is true – that a repository designed to secure a construction permit is necessarily sited in a suitable setting. Thus, DOE's assertion that it would be "illogical" for it to maintain suitability criteria that NRC had removed from its licensing regulations, 66 Fed. Reg. at 57,314, is itself "illogical."

For similar reasons, the fact that NRC's new rules focus on a "total system" approach to licensing does not excuse DOE's abandonment of its own responsibility to ensure that Yucca's natural barriers can provide significant isolation capabilities. NRC's rules will come into play under

[17] Curiously, DOE elsewhere in its notice acknowledges this distinction between suitability and licensability. 66 Fed. Reg. at 57,322.

the NWPA only if, among other things, DOE fulfills its statutory duties regarding the suitability determination. The fact that NRC regulations may presume DOE's compliance with its statutory duties cannot serve as a basis for DOE to shirk those same duties.

Moreover, there is nothing inconsistent between a "system" approach, properly conceived, and the statutory commitment to geologic isolation. As discussed, the NWPA contemplates that, at least for the initial period of repository operations, when it is possible to predict the performance of engineered barriers, the engineered and natural barriers will work together as a system to protect against harmful releases. But because no man-made barrier can be expected to work perfectly, or to last for the hundreds of thousands of years the wastes will remain lethal, Congress insisted that a site's natural barriers be themselves capable of isolating wastes. Congress' decision that NRC's licensing regulations "provide for the use of a system of multiple barriers," NWPA §121(b)(1)(B), thus fits comfortably with its insistence that a site's natural barriers themselves be independently (or "primarily") able to protect against releases. Only DOE's unlawful adoption and application of Guidelines that authorize selection of a site whose natural barriers con-

tribute little or nothing to waste isolation conflicts with this "multiple barrier" or "system" approach.

D. The Secretary's and President's Repository Siting Decisions Accordingly Fail

For the reasons discussed, DOE's Guidelines are not "grounded in a valid grant of authority from Congress." *Brown*, 529 U.S. at 161. Because the Secretary premised his suitability determination and site recommendation on application of the unlawful Guidelines,[18] that determination and recommendation must be invalidated and set aside. *Cf. SEC v. Chenery Corp.*, 318 U.S. 80, 88 (1943); *Prill v. NLRB*, 755 F.2d 941, 948 (D.C. Cir. 1985).

Section 114(a)(3)(A) makes clear that "[t]he President may not recommend the approval of the Yucca Mountain site unless the Secretary has recommended to the President … approval of such site." The unlawfulness of the Secretary's recommendation to the President also requires that the President's selection of Yucca be invalidated and set aside.

---

[18] SA-052-Encl-10 ("Using [DOE's] suitability Guidelines, I have concluded that Yucca Mountain is in fact suitable for a repository."); 10 C.F.R. §963.1(a).

III. DOE Failed to Take Actions Required by the NWPA

The NWPA authorizes judicial review of alleged "failure[s] of the Secretary, [or] the President ... to make any decision, or take any action, required under this subtitle." NWPA §119(a)(1)(B). This provision provides an independent basis for the Court's intervention, as DOE has failed to take critical actions required by the NWPA.

A. Failure to Declare Site Unsuitable and Report to Congress

NWPA Section 113(c)(3) provides that "[i]f the Secretary at any time determines the Yucca Mountain site to be unsuitable for development as a repository, the Secretary shall" take several actions, including "terminat[ion of] all site characterization activities" and reporting to Congress with "recommendations for further action" to provide for alternate disposition, "including the need for new legislative authority." As discussed in Sections I and J, *supra,* DOE *in fact* made just such a determination when it concluded after years of analysis that Yucca's natural barriers could not sufficiently impede the flow of water through the repository to the accessible environment to meet the groundwater travel time requirement in Part 960. This finding, pertaining to the very disqualifying condition DOE believed was "heads and shoulders above the others" in importance, was confirmed and re-confirmed over five ensu-

ing years, to the point were the agency lost hope of ever establishing significant, let alone "primary," geologic isolation in the natural setting.

This circumstance imposed a duty on the Secretary to declare the site unsuitable. The site's failure to isolate waste primarily by geologic means reflected a failure of the basic premise of a geologic repository, as reflected in the NWPA and the literal terms of DOE's own rules.

By 1998, as his letter to Nevada's Governor establishes, the Secretary had determined that up to 20-percent of all water moving through the repository would reach the water table in less than 1000 years. *See* Section J, *supra.* Part 960, in effect until December 2001 when the Secretary jettisoned its requirements and approved 963 just for Yucca, specified that a site "shall be disqualified" if GWTT is "less than 1000 years along *any* pathway of *likely and significant* radionuclide travel." 10 C.F.R. §960.4-2-1(d) (emphasis added). DOE's geologists confirmed that "flow along fast preferential pathways through fractures is a significant and perhaps the dominant flow regime in the unsaturated zone," leading to "travel times of less than 50 years from the land surface" to the saturated zone. GR-34-384, 399.

In his 1998 letter, the Secretary made unripe a threatened judicial challenge by Nevada for "failure to act" with his representation that DOE

was still studying the GWTT situation. But as is clear from the record, DOE's subsequent studies produced nothing to suggest that its dire GWTT estimates had been erroneous. Indeed, later studies (*e.g.*, SA-027-17) confirmed the worst with respect to the ability of Yucca's natural setting to isolate the flow of contamination to the accessible environment, showing that, because of poor geologic isolation, failure of the engineered barriers would *guarantee* violation of the EPA dose limit well before the end of the 10,000-year compliance period. *See* Section J, *supra*.

Upon determining in fact that the Yucca site was unsuitable, DOE did not take *any* of the actions Section 113(c)(3) required. Instead, in November 2001 the Secretary signed an order eliminating Part 960 for Yucca and approving an *ultra vires* Part 963.

B. Failure to Complete Site Characterization

DOE also failed to take actions required under Section 114(a). That provision required DOE to "complet[e] [its] site characterization activities" before the Secretary could recommend Yucca to the President. As described in the Statement of the Facts at Section I, *supra*, DOE recommended Yucca without coming close to fulfilling its statutory obligation to complete site characterization. Indeed, DOE "cancelled" site characterization (GR-32-19) and completed only part of one of the seven

separate analyses it and independent reviewers like TRB, NAS, and ACNW had deemed critical before site characterization could be considered finished.

IV. DOE Substantively and Procedurally Conducted a Flawed Environmental Review

A. DOE's NEPA and NWPA Violations Are Not Entitled to Deference

Faced with one of the most critical tasks in its history – the environmental review supporting its Yucca site recommendation – DOE committed foundational errors that irreparably damaged the comparisons in both the FEIS and the recommendation between the consequences of adopting the proposed project versus declining to do so. So fundamental were these errors that it is impossible for Petitioners, the public and other agencies to decipher the environmental consequences between the project and the "no project" alternative. DOE also refused to follow mandatory procedures designed to protect Petitioners' and the public's rights, despite the absence of any statutory excuse.

DOE's end run around the clear mandates of NEPA and related provisions of the NWPA constitutes the most glaring evasion of federal environmental review responsibilities in the 31 years since this Court's seminal decision in *Calvert Cliffs' Coordinating Committee v. AEC*, 449 F.2d

1109, 1115 (D.C. Cir. 1971). This Court "has repeatedly taken note of the sweeping scope of NEPA and the EIS requirement." *Environmental Def. Fund v. Massey*, 986 F.2d 528, 536 (D.C. Cir. 1993) (citing *Calvert Cliffs'*, 449 F.2d at 1122). *See also Idaho v. ICC*, 35 F.3d 585, 596 (D.C. Cir. 1994). NEPA requires agencies to "fully assess[] the possible environmental consequences" of activities "which have the potential for disturbing the environment." *Grand Canyon Trust v. FAA*, 290 F.3d 339, 342 (D.C. Cir. 2002) (internal quotations omitted).

Far from excusing DOE's performance under NEPA, NWPA Section 114 provides:

- The site recommendation *is* DOE's "major [f]ederal action significantly affecting the quality of the human environment" for purposes of NEPA compliance. NWPA §114(f)(1).
- An FEIS "prepared by the Secretary under [NEPA] shall accompany any recommendation to the President to approve a site for a repository." NWPA §§114(f)(1) and (a)(1)(D).
- With respect to three enumerated subjects, compliance with "the procedures and requirements" of the NWPA shall be deemed "adequate consideration" to satisfy the requirements of NEPA. NWPA §114(f)(2),

(3). In all other respects, including those addressed here, neither Section 114 nor any other provision of the NWPA limits the Secretary's obligation to comply with NEPA.[19]

NEPA "ensures that the agency will not act on incomplete information, only to regret its decision after it is too late to correct." *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 371 (1989).[20] NEPA Section 102, 42 U.S.C. §4332, directs agencies to comply to "the fullest extent possible." This mandate is "neither accidental nor hyperbolic," but rather "a deliberate command that the duty NEPA imposes upon the agencies to consider environmental factors not be shunted aside in the bureaucratic shuffle." *Flint Ridge Dev. Co. v. Scenic Rivers Ass'n*, 426 U.S. 776, 787-88 (1976). This language is not an "escape hatch for footdragging agencies," but a mandate to enforce NEPA's procedural require-

---

[19] *See also* H.R. Rep. No. 97-785, at 37, 69 (1982) ("Although specific sections of NEPA are suspended at specific points in the repository development program, the spirit and intent of the evaluation process established by NEPA applies throughout the program….").

[20] NEPA procedures "must insure that environmental information is available to public officials and citizens *before* decisions are made and *before* actions are taken." 40 C.F.R. §1500.1(b) (emphasis added). *See also Grand Canyon*, 290 F.3d at 340; *Sierra Club v.Peterson*, 717 F.2d 1409, 1415 (D.C. Cir. 1983).

ments "unless there is a clear conflict of *statutory* authority." *Calvert Cliffs'*, 449 F.2d at 1115 (emphasis in original).

In *Calvert Cliffs'*, this Court dismissed as a "paper tiger" the notion that compliance with NEPA's procedural requirements is "somehow discretionary," concluding that Congress established a "strict standard of compliance" and warning against "abdication" of the AEC's NEPA authority to other agencies. 449 F.2d at 1112-14, 1123. This Court posited that without rigorous consideration of all environmental factors at the time of the agency's final decision, its decision would become a "hollow exercise" failing the procedural mandates of NEPA. *Id.* at 1128. *See also Idaho*, 35 F.3d at 596 (deferral of review to future proceedings impermissible).

Like the AEC in *Calvert Cliffs'*, DOE's stubborn evasiveness here reveals a "thoroughgoing reluctance to meet the NEPA procedural obligations" in the agency review process. 449 F.2d at 1119. DOE's preliminary motion to dismiss displayed a novel view of its own FEIS as little more than an advisory report to Congress and the NRC that is simultaneously moot and unripe, rendering it impervious to judicial review. Since DOE relied on its "final" EIS to expedite a Congressional decision and facilitate its NRC license application, but disclaimed its finality for judicial ac-

countability, its disrespect for the most basic NEPA requirements is unsurprising.

But DOE's NEPA evasions are not entitled to deference. Since "NEPA's mandate is addressed to all federal agencies," an agency claim that NEPA requirements are inapplicable "is not entitled to the deference the courts must accord to an agency's interpretation of its governing statute." *Citizens Against Rails-to-Trails v. Surface Transp. Bd.*, 267 F.3d 1144, 1150 (D.C. Cir. 2001). Likewise, "this court owes no deference" to agency interpretations of the Council on Environmental Quality's ("CEQ's") NEPA regulations. *Grand Canyon*, 290 F.3d at 342. An agency's claim to be exempt from NEPA requirements is "a question of law, subject to *de novo* review." *Citizens*, 267 F.3d at 1151. In such review, this Court's duty is to "see that important legislative purposes, heralded in the halls of Congress, are not lost or misdirected in the vast hallways of the federal bureaucracy." *Calvert Cliffs'*, 449 F.2d at 1111.

B. DOE Blatantly Violated Mandatory Procedural Requirements of NEPA and the NWPA

Under CEQ's regulations, "the agency *must file* with EPA the [FEIS], along with public comments received regarding the proposed statement, which are then published in the *Federal Register*. *See* 40 C.F.R.

§§1506.9-10. … An agency *must wait* at least 30 days following publication before taking any action…." *U.S. Ecology, Inc. v. Department of the Interior*, 231 F.3d 20, 22 (D.C. Cir. 2000) (emphasis added). *See* 40 C.F.R. §1506.10(b)(2). DOE's own NEPA regulations concur. 10 C.F.R. §1021.315(a). As DOE understood, SA-031-A6, neither the NWPA nor other laws exempt the Secretary from following these rules prior to his site recommendation. To the contrary, NEPA's 30-day rule coincides with the NWPA's requirement, Section 114(a)(1), that Nevada have 30 days to comment on the Secretary's recommendation before its submission to the President. NWPA §114(a)(1).

DOE issued its site recommendation the *same day* it published the FEIS, and never submitted it for EPA publication of a notice of availability. The Secretary's failure deprived other agencies of the opportunity to refer the FEIS to CEQ pursuant to 40 C.F.R. § 1504.1, and deprived Nevada and the public of the opportunity to argue, based on the defective FEIS, that the Secretary not make his recommendation.

CEQ NEPA regulations also provide that "at the time of its decision," a federal agency "shall prepare a concise public record of decision." 40 C.F.R. §1505.2; *see also U.S. Ecology*, 231 F.3d at 22. DOE's NEPA regulations concur. 10 C.F.R. §1021.315(b). DOE's NEPA staff

recognized this black-letter requirement as early as 1994 for Yucca, concluding that "[i]f DOE decides to take action on a proposal covered by an EIS, a [ROD] is prepared and published in the *Federal Register*.... No action is taken until the decision has been made public." SA-031-A6.

The FEIS record repeatedly establishes that a ROD must precede any site recommendation, and that DOE understood this. *See* NR-1.00098-3; NR-1.01259-8, 9; NR-1.01318-5; NR-1.01258-13.

Nothing in the record explains why DOE abandoned its well-understood obligation to prepare a ROD supporting the site recommendation. Nevada was first informed of this abandonment in January 2001 by letter from DOE's Director of Institutional Affairs, who stated that DOE did not "presently anticipate" issuing a ROD because "the decision to approve the site rests not with the Secretary of Energy, but with the President." [21] SA-001. *See also* FEIS-CR1-49.

This case does not come close to the "clear conflict of statutory authority" required to exempt DOE's site recommendation from the basic

[21] DOE's "deferral" to the Presidential stage does not cure the error, since Presidential approval came one day after the Secretary's decision and included no ROD.

NEPA rule requiring a timely ROD. *Calvert Cliffs'*, 449 F.2d at 1115.[22] Indeed, the Secretary's recommendation apparently marks the first time that an agency took final agency action under the CEQ's regulations and described in an EIS without first issuing the required ROD.

Finally, NWPA Section 114(a)(1)(F) required the recommendation to include "the views and comments of the Governor and legislature of any State … together with the response of the Secretary to such views." This requirement served central purposes of the NWPA "to define the relationship between the Federal Government and the State governments with respect to the disposal…," NWPA §111(b)(3), and to "promote public confidence in the safety of disposal…." NWPA §111(a)(6). *See also* 40 C.F.R. §1508.27.

Betraying this federal/state comity, DOE withheld the FEIS from Nevada, other states, the public, and some key federal agencies for more than a month after completing it, while allowing several other federal agencies secretly to review and submit comments on it.[23] Nevada, as

---

[22] *See also Committee for Nuclear Responsibility v. Seaborg*, 463 F.2d 783 (D.C. Cir. 1971) (subsequent appropriations bill created no conflict); *Izaak Walton League v. Marsh*, 655 F.2d 346 (D.C. Cir.), *cert. denied*, 454 U.S. 1092 (1981) (subsequent legislation created no conflict).

[23] CEQ's January 9, 2002 letter to the Secretary, attached to his final site recommendation, noted it had completed preliminary review of the

well as other states and federal agencies that had submitted comments critical of the proposed action received no such opportunity. Nevada never even saw the FEIS for Yucca prior to the site recommendation.

C. DOE's Faulty Definition of the "No-Action" Alternative Precluded Comparative Assessment of the Site Recommended Versus the Site's Disapproval

CEQ's NEPA regulations require an FEIS to analyze "the alternative of no action." 40 C.F.R. §1502.14(c). The no-action alternative serves a distinct role in NEPA analysis from that of project alternatives, since it "provides a benchmark, enabling decision-makers to compare the magnitude of environmental effects of the action alternatives." CEQ, *Forty Most Asked Questions Concerning CEQ's NEPA Regulations*, Question 3, 46 Fed. Reg. 18,026, 18,027 (Mar. 23, 1981).[24]

Without this benchmark, the FEIS could not fulfill NEPA's objective to adequately inform Congress, the public and the President of significant impacts of the proposed action. 46 Fed. Reg. at 18,027; *see* 40

"January 4, 2002" FEIS. (Emphasis added). CEQ's letter recognized Nevada had not yet been notified, and that CEQ's "detailed" review would follow in the 30 days after notification to Nevada. Although Nevada was notified on January 10 of the Secretary's intent to approve Yucca, Nevada was not provided a copy of the FEIS and was unaware of its existence until the site recommendation.

[24] *See also Grand Canyon*, 290 F.3d at 346; *Alaska Wilderness Recreation & Tourism Ass'n v. Morrison*, 67 F.3d 723, 729-30 (9th Cir. 1995).

C.F.R. §1500.1(a). NEPA regulations "require the analysis of the no action alternative even if the agency is under a court order or legislative command to act." 46 Fed. Reg. at 18,027. DOE is therefore required, as it has long recognized, *see* NR-1.01196-2, to assess the no-action alternative to Yucca. That duty remains even though the NWPA suspends the ordinary consideration of *action* alternatives with respect to *disposal* at Yucca.[25] The fact that Congress in the NWPA mandated an "up or down" decision on Yucca made it even more critical that the FEIS adopt a proper "no-action" benchmark to frame its assessment of the proposed action.

DOE's no-action analysis is audaciously contrived, against the advice of DOE's own staff and Program Manager, to direct decision-makers to the proposed action, and it ignores the logical and predictable consequences of what would happen if the project is cancelled or fails to receive an NRC license.[26] Under DOE's no-action scenario, utilities and

---

[25] DOE "shall not be required" to consider the need for the repository, alternatives to geologic disposal, and sites other than Yucca. NWPA §114(a)(1)(D).

[26] NRC regulations require DOE's FEIS to include consideration of what would happen in the event of license denial. NR-1.01196-2; 10 C.F.R. §51.67(A).

DOE sites would continue to store wastes where they now are indefinitely. FEIS-S-29. The FEIS concludes that, "[b]ecause it would be highly speculative to attempt to predict future events, DOE decided to illustrate one set of possibilities by focusing … on the potential impacts of two scenarios." *Id.* DOE recognizes, however, "that neither scenario would be likely" if Yucca is not developed. *Id.*

Scenario One assumes the waste would remain where it is "under institutional control for at least 10,000 years." *Id.* Scenario Two likewise "assumes that the wastes would remain at the 77 sites in perpetuity, but under institutional control for only 100 years." *Id.* In both scenarios, there would be no waste movement to centralized storage sites, and "no construction for onsite storage." NR-1.01196-4, 7; NR-1.01289-2. In Scenario Two, civilization as we know it would essentially cease to exist at waste sites, but would continue unabated elsewhere, except where radioactivity oozing from degrading sites made living conditions unacceptable. *See* NR-2.00142-26; FEIS-K; NR-1.01289-3.

DOE received hundreds of comments critical of its no-action approach, *see, e.g.,* FEIS-CR-5, but declined to change direction. Using its concededly unreal assumptions, DOE concluded that the proposed action

is less costly and safer than taking no action. But that assessment is fatally flawed.

First, the record extensively details the fanciful, result-driven nature of DOE's no-action assessment:

- DOE's FEIS Management Council conceded at the outset that selection by DOE of the no-action alternative would surely be an "unlikely event." NR-1.01196-8.

- Management Council member Lichtman reported in 1999 that "[t]he EIS appears contrived to favor the Proposed Action … by comparing disposal at [Yucca] only to the worst possible result of not proceeding…." NR-1.03341.

- DOE's Environmental Safety division proposed that the FEIS should analyze a more realistic scenario involving transfer to a few centralized sites for interim storage. Lichtman noted this scenario "eliminates [the] appearance of bias" and "better conforms to [CEQ] guidance." *Id.*[27] But he conceded the political risks of NEPA compliance given the Secretary's opposition to storage. *Id.*

[27] He concluded "the transfer scenario is at least as 'predictable' as continued *in situ* storage." *Id.* Other reviewers concurred, including the TRB. NR-1.01624-6. *See also* NR-1.01353.

• Though above-ground storage options were expediently taboo,[28] DOE's General Counsel sought in 1997 to ensure that transport analyses in the FEIS nevertheless were "sufficiently flexible to allow the inclusion of interim storage, if necessary in the future." NR-1.01290-3; *see also* NR-1.01287-2.

Second, DOE's assumption of "no spent fuel storage construction" ignores the certainty of such storage recognized elsewhere in the FEIS. Though its figures are low, the FEIS notes utilities have already constructed 18 dry storage facilities, and are planning to build an additional 15. FEIS-A-13; 1-22, 2-64, 8-89 (describing "reasonably foreseeable" large-scale Utah storage facility). These facilities are or will be built regardless of whether Yucca proceeds, yielding dramatic economies-of-scale and enhanced safety in spent fuel containment. NR-1.01289-12 (noting minimal health/safety impacts of storage).

---

[28] DOE was nervous that even analyzing the no-action alternative could be "alarming" to the public around its own sites and could "generate further unnecessary ill will with the commercial utilities." NR-1.101628-2; NR-1.01529; NR-2.00143. Construction of any storage facility, it was noted, "suggests there is no near-term need for a repository" and "may result in re-opening the decision process regarding alternatives to geologic disposal and set the program back 20 years." NR-1.01254-13. In 1998, FEIS preparers were instructed to avoid even using the words "storage facility" or "interim storage." NR-1.01624-1. *See also* NR-1.02011-6 ("Don't want to go there!").

Third, the premise that institutional control would be suddenly lost after 100 years is hardly a credible "bounding" assumption. In 1997, the Director of DOE's Yucca Program, in reviewing the planned no-action approach, insisted that the FEIS should make clear this scenario "is irresponsible and *will not happen*." NR-1.01263-2 (emphasis added). By 1998, however, the "bounding" approach had become entrenched in the EIS bureaucracy.

Fourth, DOE relied on faulty legal advice to support its approach. DOE's FEIS Project Manager opined that analysis of interim storage would constitute an "action" alternative proscribed by the NWPA. NR-1.01624-1. From this profoundly misguided legal analysis,[29] DOE avoided even the simplest study of what it knew would happen without Yucca. Even DOE's EIS contractor objected that "incremental storage costs of additional [storage] at reactors is estimated to be … less than a fraction of 1% of nuclear power generation costs. … It is expected that

---

[29] The NWPA contains elaborate provisions to promote and license interim storage at a monitored facility, and it requires NRC to establish a licensing regime for storage facilities built by utilities. *See* NWPA §133 and Subtitles B and C. NRC routinely licenses these sites under 10 C.F.R. Part 72. DOE and NRC are required by NWPA Section 132 to "take such actions as such officials consider necessary to encourage and

the cost impacts of extended spent fuel storage at reactors are not great enough to change the economic competitiveness of nuclear power." NR-1.03301. Nevertheless, DOE instructed its NEPA team to ignore this realistic, economical and predictable no-action scenario. NR-1.08514-2.

Fifth, DOE considered the alleged no-action impacts "of the continued storage of *the entire inventory* of DOE and commercial [waste]," NR-1.01522-2-3 (emphasis added), against the impacts arising only from the 77,000-ton statutory limit of waste slated for Yucca. This mismatch radically understated the impacts of the proposed action by ignoring the impacts that would continue to accrue at waste sites for the balance of the waste not able to fit into Yucca. *See also* NR-1.003325.

Ironically, DOE's EIS Management Council fully recognized what would really happen with "no-action." In 1998 the Management Council met

> to recognize (qualitatively) that in all likelihood shutdown of the Repository program (selection of no action) would include a combination of the following: (1) the accumulation of fuel at the reactor sites, (2) the need for new dry storage facilities and periodic maintenance of existing and new facilities, (3) an increase in the likelihood that an interim storage facility(ies) would be constructed pending ultimate disposition, (4) the consolidation of fuel among utilities to maintain

---

expedite the effective use of available storage, and necessary additional storage…."

> operational status of the reactors, (5) and the identification of other potential options until such time as the Nation decided how to proceed with the ultimate disposition of SNF and HLW.

NR-1.08640. Unfortunately, DOE made certain this no-action scenario would never be analyzed.

Finally, and most egregiously, DOE's no-action assessment conspicuously omits DOE's own watershed deal in July 2000 with PECO Energy to implement the one illustration of the no-action alternative that it later shunned in the FEIS. DOE would take title to the utility's spent fuel on the reactor site, and manage that fuel indefinitely in dry storage casks at a safe interim dry storage facility built by the utility and financed by DOE. SA-006.

In 1999 Senate testimony, DOE recognized this approach as "a "practical option" for DOE and utilities that would be "relatively easy to implement." In July 2000, DOE's Secretary hailed the first of these arrangements as a "precedent" for all utilities. SA-007; *Alabama Power*, 307 F.3d at 1306 (DOE "will use the [deal] as a settlement model on an industry-wide basis"). But because DOE chose to pay for the deal by allowing PECO to offset payments to the utilities' NWPA Nuclear Waste Fund, several utilities sued to block that part of the arrangement. The Eleventh

Circuit in *Alabama Power* invalidated this element, but *not* its underlying terms. *See* NR-1.01196-2

Thus, a proper analysis of the impact of not proceeding with Yucca would compare the *incremental* costs and impacts of simply storing and managing wastes for a longer period than will be the case *even if Yucca proceeds*.[30]

It is not necessary to prove here that the PECO alternative, implemented on an industry-wide basis, would be superior to proceeding with Yucca. Decision-makers clearly lacked sufficient information to make that determination. The important point is that DOE neglected to evaluate the very no-action scenario it had already begun to implement.

D. DOE's Distorted and Inconsistent Definition of the "Proposed Action" Masks Substantive Statutory Violations

Under NEPA, a stable and accurate definition of the "proposed action" is an indispensable threshold requirement, without which an agency cannot fulfill its obligation to take a "hard look" at environmental consequences. Federal agencies "shall make sure the proposal which is

[30] The only outstanding question is storage duration. Even if Yucca proceeds, such storage would necessarily occur for decades, since filling the repository to its statutory capacity will take until at least 2034. FEIS-S-20. According to nuclear industry testimony, such storage could safely go on for centuries. *See* Footnote 2, *supra*.

the subject of an environmental impact statement is properly defined." 40 C.F.R. §1502.4(a); *see also id.* §§1502.4, 1502.14, 1502.24. Adequate project definition is necessary to "allow those removed from the initial process to evaluate and balance factors on their own." *Calvert Cliffs'*, 449 F.2d at 1114. A defective project description is an "obvious deficiency" preventing NEPA compliance, making an EIS "insufficient on its face." *Montgomery v. Ellis*, 364 F.Supp. 517, 521 (N.D. Ala. 1973) (applying *Calvert Cliffs*).

1. The FEIS's "Project" is an Unlawful Non-Geologic Repository

The FEIS fails on the most fundamental level, positing that DOE's "proposed action" is one to "construct, operate and monitor, and eventually close a geologic repository…." FEIS-S-9, 1-3. However, as discussed above, the repository referenced in the site recommendation relies almost entirely on engineered barriers, not geologic containment. The representation that the project is for "permanent geologic disposal," FEIS-1-9, is a distortion of the facts.

The project description of geologic containment is not only wrong, but inconsistent. Addressing safety concerns, DOE attributes to Yucca

the *geologic* disposal promised in the NWPA. *See, e.g.*, FEIS-CR 1-1 to 1-4. Elsewhere, DOE responds to concerns about the *lack* of geologic isolation by recasting its project as a hybrid "system" of "natural and engineered" barriers. See FEIS-CR 2-1. The FEIS never quantifies the relative contributions of these barriers, *id*. at 2-2, S-9, or discloses the wealth of data, discussed above, showing the minimal contribution of geology.

The Secretary's site recommendation relied on the FEIS, but described the project merely as "an underground repository," abandoning the word "geologic." SA-052-Encl-6. His selection of an *ultra vires* disposal alternative is foreclosed by the NWPA and thus violates NEPA. 40 C.F.R. §1508.27.

2. The "Proposed Action" Does Not Match the Action "Recommended" by the Secretary and the President

The site recommendation described a project involving wastes "currently stored at over 131 sites in 39 states." SA-052-3. But the FEIS only "analyzes the potential impacts of transporting [waste] to the Yucca Mountain site from 77 sites across the United States," FEIS-1-3, in 37 states. FEIS-6.1-6.2; App. J (Fig. 2-22a). This divergence between the "recommended" final agency action and the "proposed action" in the

FEIS renders the latter "insufficient on its face." *Montgomery*, 364 F. Supp. at 521.

3. The FEIS Fails to Define the Basic Project Design of the "Proposed Action"

DOE published its FEIS so prematurely that it had yet to choose the rudimentary design of the repository and the fundamental aspects of the repository program. Instead, DOE seeks to apply a learn-as-you-go process over the next 50 to 300 years, conceding that, in the proposed action "DOE *would* design the repository." FEIS-2-14. The FEIS proposed only an opaque and ever-evolving *concept*, left for future definition and refinement, euphemistically termed "flexible design."

> This [flexible design] represents the current state of the ongoing process that identifies and develops ideas through conceptual, then preliminary, then more detailed designs to produce a design that DOE *would use for purposes of the [Secretary's] determination* of whether to recommend approval … to the President….

FEIS-2-61 (emphasis added).

This concept, which even as described appears to have been truncated prior to the recommendation, is code for DOE's abrogation of the core NEPA principle requiring disclosure of environmental information *before* agency action is taken. *Grand Canyon*, 290 F.3d at 340; *Peterson*, 717

F.2d at 1415; 40 C.F.R. §1500.1(b). The FEIS, therefore, fails to specify such key matters as:[31]

(a) Whether the repository will be designed, built, and operated in a "low-temperature" or "high-temperature" mode (i.e., below or above the boiling point of water). FEIS-2-8-2-12.

(b) Whether the repository will have a massive above-ground staging area for the aging of fuel for 50 years prior to its emplacement underground. *Id.* at 2-24.

(c) Whether vast facilities for ventilation of underground heat from decaying waste will be required, the type of such facilities, and the duration of ventilation (100 or 300 years). *Id* at 2-12, 2-25, 2-31-2-32.

(d) The amount of real estate needed for the repository, the volume of excavated material, and the basic spacing between waste packages.[32]

---

[31] *See generally*, NR-1.02694-2.

[32] DOE's design "options" could change the habitat disturbed by 80 to 800 acres. NR-1.02512. Waste package spacing is anywhere from 0.1 meter to 6 meters (a factor of 60). SA-053-3. Yucca's underground area could be 4.7 to 10.1 square kilometers. FEIS-2-9. Excavated volume could be 4.4 to 8.8 million cubic meters. *Id.*

(e) The composition of the waste packages, and the number, type or design of those packages.[33]

(f) When closure of the repository would occur, or if it would be closed at all.[34]

(g) Whether repository design and development will occur in modular, or "staged" fashion or as a discrete project, and whether a modular approach can even presumptively meet NRC's regulations.[35]

(h) The actual inventory mix of spent fuel and high-level waste types.[36]

To account for the preliminary nature and uncertainties of its analysis, the FEIS claims to have performed various "bounding analy-

---

[33] DOE does not know whether fuel slated for Yucca would be mostly "canistered" or mostly "uncanistered." FEIS-2-7-2-8. If canistered, DOE does not know if wastes will be packaged in disposable or dual-purpose (storage/transport) canisters. *Id.* The number of waste packages could be anywhere from 11,000 to 17,000. FEIS-2-9.

[34] Closure could occur anywhere from 50 to 324 years. FEIS-2-19. "Future generations" would decide whether it should be closed. FEIS-4-3.

[35] FEIS-2-61-2-63.

[36] FEIS-A. DOE recognized that "changes in the inventory numbers for SNF and HLW have a dramatic effect on design … [and] EIS impacts…." NR-1.02386-5.

ses." FEIS-2-5. But these violate DOE's own understanding of NEPA.[37] DOE concedes its FEIS provides only "a representational range of potential environmental impacts the Proposed Action would cause." FEIS-2-14. By limiting analysis of impacts to a "representational range" of general conceptual options, DOE consciously avoided the "hard look" and "full and fair discussion" NEPA requires. *See NRDC v. Hodel*, 865 F.2d 288, 294 (D.C. Cir. 1988); 40 C.F.R. §1502.1.

4. The FEIS Unlawfully Segments Out Assessment of Yucca's Transportation Component

The FEIS identifies "the transportation of [waste] from commercial and DOE sites to the Yucca Mountain site" as an integral component of the proposed action. FEIS-S-9, 1-3. Yet remarkably, the very nature of the transportation program and its potential impacts remained a cipher at the time of the Secretary's final decision. DOE's refusal to define this critical program component prior to its final action runs afoul of well-established NEPA principles preventing segmentation of interrelated components. *See, e.g.*, *Foundation of Economic Trends v. Heckler,* 756 F.2d

[37] In its official guidance for EIS preparers, DOE warns that "[i]t is never appropriate to 'bound' the environmental impacts of potential future actions (not yet proposed) and argue later that additional NEPA analysis is unnecessary because the impacts have been bounded by the original analysis." SA-002.

143, 159 (D.C. Cir. 1985); *Fund for Animals v. Clark*, 27 F.Supp.2d 8 (D.D.C. 1998).[38] Nor could post-hoc definition cure this error. *See Thomas v. Peterson*, 753 F.2d 754, 760 (9th Cir. 1985) (NEPA's purposes "cannot be fully served" if assessment of successive steps "is delayed until the first step has already been taken.").

The FEIS reveals classic symptoms of NEPA segmentation:

- It does not disclose how many shipments will occur to Yucca, what mode of transport (truck, rail, or barge) these shipments will take, and over what routes. The number of shipments is perhaps less than 1000, or perhaps more than 100,000. FEIS-J.
- It announces DOE's intention to postpone any ROD selecting a mode, or any specific route through Nevada or elsewhere, until *after* the Secretary's final action. FEIS-S-2, 1-3, 2-2.
- It identifies DOE's preference for "mostly rail," but concedes it "would use both legal-weight truck and rail transportation, and would determine the number of shipments by either mode as part of future transportation planning efforts." *Id.* at 2-3; 2-46.

[38] *See also* 40 C.F.R. §1502.4(a); 40 C.F.R. §1508.25(a).

- If rail is ultimately chosen for Nevada, it is unclear where it would go, and how and when it would or could legally be built, and at what cost and impact to Nevadans. *See* FEIS-C.[39] "At this time, [DOE] has not identified a preference among the five potential rail corridors" in Nevada. *Id.* DOE conceded many necessary transport studies have not yet been commenced, *including* "*[NEPA]* reviews." *Id.* at 1-3-1-4 (emphasis in original).
- DOE's "preferred mode" of rail transport is currently *unavailable* in Nevada and at more than 24 of the proposed sites DOE intends to ship from, without the added use of barges and heavy-haul trucks, *id.* at J-11, which will necessitate upgrading of public highways – also not evaluated in the FEIS. *Id.* at S-23.

Lastly, DOE failed even to follow its own official guidance to EIS preparers on how to avoid illegal segmentation, which recommends that necessary "transportation activities" should be evaluated "as part of the proposed action …." SA-003.

---

[39] This new line could be several hundred miles long, and would itself require a major new EIS and comprehensive involvement by the federal Surface Transportation Board, whom DOE apparently did not consult.

5. The FEIS Unlawfully Includes an "Aging Facility" Component Prohibited by the NWPA

The FEIS proposes that as much as two-thirds of all commercial spent fuel slated for the repository would, in one of two preferred repository operating modes, be "aged" in a surface storage facility near Yucca for 50 years. FEIS-2-12. This "aging facility" is to be located somewhere "north and east" of the repository. *Id.* at 2-24 and Fig. 2-10. The FEIS lacks any description of this massive new facility, drawn by DOE to an approximate size of 4,250,000 square feet, which would make it the largest spent fuel storage facility in the world. *Id.*

The FEIS does not disclose that this Nevada-based aging facility would violate the NWPA. The facility would be both an "Independent Spent Fuel Storage Installation" ("ISFSI") as defined by NRC in 10 C.F.R. §72.3, and, because it is to be built and operated by DOE, a "Monitored Retrievable Storage" installation ("MRS") as also defined in 10 C.F.R. §72.3 and in NWPA Subtitle C. NWPA Section 145(g) expressly provides that "[n]o [MRS] authorized pursuant to Section 142(b) may be constructed in the State of Nevada." In designating a proposed site for the aging facility, the Secretary also unlawfully failed to follow the site selection criteria for a proposed MRS in NWPA Sections 145 through 149.

Assuming *arguendo* that the facility was not an MRS, it would nevertheless be an ISFSI, which would require a separate NRC license under 10 C.F.R. Part 72. Part 72 also requires completion of a stand-alone EIS for ISFSI construction. DOE's failure to provide this mandatory evaluation in the FEIS is a material departure from the requirements of both the NWPA and NEPA. 42 U.S.C. § 4332(c); 40 C.F.R. §1508.27.[40]

6. The "Proposed Action" Unlawfully Contemplates Disposal of Wastes Prohibited by the NWPA

The NWPA authorizes disposal in a repository of "high-level radioactive waste" ("HLW") and "spent nuclear fuel" ("SNF"). *See* NWPA §§2(18), 111(a)(4)-a(7), 113(b)(1)(A)(ii) and (b)(1)(B), and 123. "HLW" is defined as

> (A) The highly radioactive material resulting from the reprocessing of [SNF]…; and
>
> (B) Other highly radioactive material that [NRC], consistent with existing law, determines by rule requires permanent isolation.

NWPA §2(12). "SNF" is defined as "fuel that has been withdrawn from a nuclear reactor following irradiation…." NWPA §2(23). *See also* 10 C.F.R. §§60.2, 63.2, and 72.3; DOE Order 435.1.

---

[40] DOE understood such an "interim storage facility" could be constructed at Yucca only "if the NWPA were changed." NR-1.01412-4; NR-

The proposed action would include, in the inventory of materials slated for disposal, "surplus weapons-usable plutonium as spent mixed-oxide fuel or immobilized plutonium." FEIS-2-2. Immobilized plutonium does not meet the definitions above and is therefore not statutorily eligible for disposal. Though it is highly toxic, plutonium in its weapons-useable form is not a "highly radioactive material," and NRC has promulgated no rule requiring its permanent isolation (it continues to be used in U.S. nuclear warheads). As proposed in the FEIS, about one-third of the nation's surplus weapons-usable plutonium would be *mixed with* high-level radioactive waste. FEIS-A-50; NR-1.00186-1. But mixing a non-eligible waste with an eligible waste does not make the combination legally eligible. If that were the case, DOE could mix *any* substance (*e.g.*, nerve gas) with high-level waste and dispose of it at Yucca.

In 1996 and again in 1997, DOE recognized that surplus fissile materials such as plutonium "are *not* SNF/HLW." NR-1.01146-21; NR-1.01287-1(emphasis added). Therefore, DOE reasoned, if such materials were proposed for disposal at Yucca, DOE would require "law changes" or would need the materials "reclassified by NRC," neither of which have occurred. *Id.* DOE proposed to address such disposal "in supple-

---

1.02409-2.

mental analysis under NEPA," which also has not occurred. *Id.* *See also*, NR-1.01285-4, 13.

7. The FEIS Ignored the Requirement to Obtain Nevada RCRA Permits

Missing from the FEIS's list of "Statutory and Other Applicable Requirements," Table 11-1, is any mention of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §§6901 *et seq*., administered in Nevada by the Division of Environmental Protection ("DEP"). FEIS-11-14. But numerous records evidence views by DOE attorneys, FEIS preparers, and public commenters (FEIS-CR-4) that waste slated for Yucca will contain several listed hazardous materials under RCRA, many of which are toxic and soluble in water. *See*, *e.g.*, FEIS-I-52.

The FEIS notes that the repository's engineered barriers alone will include 190,000,000 pounds of "Alloy-22" containing 22.5% chromium, 57.2%nickel, and 0.35%vanadium. FEIS-5-7. They will also include 310,000,000 pounds of stainless steel containing 17% chromium and 12% nickel. Each of these is a listed hazardous waste under RCRA. 40 C.F.R. §261 App. VIII and §261.24. FEIS Tables A-15 and A-16 show that spent fuel slated for Yucca also contains metals and elements formally listed as

"hazardous" under RCRA, including barium. *See also* FEIS Table A-22, at A-34; FEIS Table I-8.

RCRA covers "solid waste" that, in this case, is not excluded as "source, byproduct, or special nuclear" material as defined in the Atomic Energy Act, 42 U.S.C. §1004(27). As DOE itself recognized, "irradiated reactor fuel" is defined by NRC's licensing rule, 10 C.F.R. §63.2, as "high-level radioactive waste," a definition consistent with DOE's intent to "dispose" of the material and not reprocess it. NR-1.01146-13. DOE also recognized that the "source, byproduct, and special nuclear" material exemption could not be invoked for metallic spent fuel assemblies and underground waste packages, but only for the actual radionuclides suspended in the waste substance making up spent fuel. NR-1.01146-14, citing 52 Fed. Reg. 15,937 (May 1, 1987) and 53 Fed. Reg. 37,045 (Sept. 23, 1988).

As was frequently noted in the record, if either spent fuel assemblies or Yucca waste packages contain hazardous substances, the project will require either a RCRA disposal permit from Nevada or, alternatively, a "de-listing" of waste constituents from cognizant EPA and Nevada authorities and state authorities with jurisdiction over particular

generators. *See* 40 C.F.R. §260.22. Neither possibility, nor its consequences, was analyzed in the FEIS.

Instead, the FEIS concludes without evaluation that, under DOE requirements, "DOE could not accept hazardous waste for disposal at Yucca," and thus it "does not expect to need a [RCRA] permit for its activities at the proposed repository." FEIS-11-13-14.

In 1996, DOE's Yucca Program Director conceded that "we do not know what materials the State of Nevada may determine are RCRA wastes." NR-1.01159-2. In 1997, he concluded that "disposal *could not proceed* if DOE had to obtain a RCRA permit to operate the facility from the state of Nevada." *Id.* (emphasis added). *See also*, NR-1.01287-3; NR-1.01290-4. DOE's NEPA Management Council recognized in 1998 that "delisting" RCRA wastes for burial in Yucca would probably require legislative changes. NR-1.08764-2. Recognizing that resolution would itself require a major NEPA analysis, DOE's General Counsel "noted that, if necessary, future supplemental EISs could be prepared." *Id.* But DOE's deferral of that assessment until *after* its final agency action is irreconcilable with NEPA. *See* 40 C.F.R. §1502.4; n. 20, *supra.*

8. The FEIS Conducted a Flawed Assessment of Sabotage Risks in Spent Fuel Transport

In the aftermath of 9/11, the FEIS failed to address realistic sabotage scenarios involving spent fuel transport and thus vastly understated the risks and consequences of undertaking thousands of such shipments if Yucca proceeds, contrary to the "hard look" NEPA requires.

The sole terrorist scenario analyzed by DOE, in a study conducted in *the late 1970s*, consisted of a single shot with an anti-tank missile at a traveling cask. FEIS-6-51-52, and referenced studies. DOE's own terrorism consultant recognized this analysis was outdated. NR-1.01483. DOE assumed sabotage would occur with a now-obsolete missile instead of a state-of-the-art "TOW" missile, of which over 500,000 exist in 36 countries.[41] DOE therefore assumed the missile would penetrate only one cask wall instead of both, leaving a small hole. DOE assumed no water would enter the hole, and that fire would not be co-located with it, despite the exploding warhead. Accordingly, the FEIS assumed the attack would cause only 9 to 48 early fatalities, and it made no estimate of cleanup costs from resulting contamination. FEIS-6-52.

DOE did not consider the risk that a warhead exploding inside a spent fuel container could cause fissile nuclear material inside to create a nuclear chain reaction, or "criticality," whose consequences would catastrophically exceed the postulated consequences of the relatively tame event described in the FEIS. *See* RR-1.0333 at 4-406-4-416; FEIS-5-38.

Ironically, DOE acknowledged the danger of criticality events in connection with the mere *storage* of these same casks in the "no action" alternative. See, e.g., NR-1.03317-6-7 (rainwater seepage may induce criticality); NR-1.03338-2 (fire near casks may induce criticality). Yet, DOE's assessment of the "proposed action" ignored the far more realistic risks of criticality occurring in a sabotage event, where, for example, an exploding TOW missile might shred the front and back hulls of a cask moving through a city, exposing spent fuel to rain, fire, or firefighters' spray, inducing criticality. Most significant, the fact that such a cask might be one containing fissile weapons-grade plutonium from dismantled warheads, as the FEIS contemplates, was not analyzed.

Indeed, for a terrorist with a four-mile range TOW mounted on a pickup truck, such a scenario would seem to involve the ultimate, read-

---

[41] *See* Military Analysis Network (February 2000) www.FAS.org/man/dod-101/sys/land/tow.htm.

ily available "dirty bomb." DOE's failure to examine a sabotage criticality scenario, while nevertheless imposing its evaluation in the far less dangerous circumstances of the "no-action" alternative, exemplifies bias and is arbitrary, capricious, and contrary to NEPA.

CONCLUSION

For the foregoing reasons, the Court should (1) declare unlawful and set aside DOE's Guidelines, DOE's Yucca site recommendation to the President, and the President's selection of that site for development; (2) declare that DOE has failed to take actions required under Sections 113 and 114 of the NWPA; (3) declare that DOE's FEIS is inconsistent with NEPA, closely related provisions of the NWPA, and NEPA regulations; (4) declare that DOE failed to act in accordance with NEPA, closely related provisions of the NWPA, and other applicable laws and regulations, as described herein; and (5) remand this matter to DOE for further proceedings in conformity herewith.