



## 3. POLICY

### 3.1 Mission

#### 03.01 (001) Mission

#### COMMENT

Commentors express various opinions related to the costs of DOE programs, funding of better uses of the same funding resources and time for the benefit of society as a question of the nation's ability to afford cleanup of DOE mismanagement. Commentors also express an inability to keep track of money, or the Federal Government's inability to keep track of some of which the commentors characterize as secret. One commentor indicates that nuclear fuel should be a routine task not requiring significant resources.

#### RESPONSE

DOE recognizes the significant cost of environmental restoration, waste management, spent nuclear fuel (SNF) management activities, none of which is considered by DOE to be routine. Whereas a significant portion of these costs is the result of past management practices that be unsound, the need for cleanup and the necessary fiscal resources required have been sources of necessary funds for DOE program elements, the level of appropriation to DOE and the associated priorities are essentially determined by Congress and the President that are outside the scope of this EIS. DOE is held accountable for the expenditures and undergoes regular oversight by the Office of Management and Budget and the General Accounting Office. This EIS addresses the environmental impacts, and the needs and purpose of DOE SNF, and environmental restoration and waste management activities at the Idaho Engineering Laboratory (INEL) only. The estimated costs of the programmatic management of each alternative have been made available to decisionmakers and the public in the Management Cost Evaluation Report (Draft), which was prepared independently of this EIS. This is available in the reading rooms and information locations listed in the EIS.

#### 03.01 (002) Mission

#### COMMENT

The commentor asks DOE how it can help Americans achieve a higher quality of life through new technology development and what kind of legacy do we want to leave succeeding generations of Americans. The commentor expresses the opinion that it is necessary to support the technology to improve the quality of human life.

#### RESPONSE

Although the general topic of technology development is not within the scope of the ongoing programs for technology development and transfer of these technologies developed

the private sector for constructive and safe use. Over the period of interim SNF m development will likely occur.

### **03.01 (003) Mission**

#### **COMMENT**

The commentor questions whether DOE and INEL are undergoing an identity crisis as t missions and asks if INEL's mission can be refocused to continue contributing valu people. In addition, the commentor asks how this fits with the issues in the EIS.

#### **RESPONSE**

Volume 2, section 2.2.3 states that the current mission of INEL is to develop, demo advanced engineering technology and systems to improve national competitiveness and the production and use of energy more efficient, and to improve the quality of life Specific activities at INEL have shifted over time to meet changing national needs. included changing from the application of nuclear power to commercial uses, SNF rep storage, to the current emphasis on science and technology related to advancing and and waste management at INEL and applying the knowledge gained at INEL to other nat The purpose of this EIS is to determine the manner in which DOE will manage its SNF pending ultimate disposition.

### **03.01 (004) Mission**

#### **COMMENT**

The commentor expresses the opinion that there is more effort to build up the Idaho Laboratory and add new technology than there is to fulfill promises of cleanup and

#### **RESPONSE**

The environmental restoration program at INEL is specifically discussed in Volume 2 7.2.5. DOE, the Environmental Protection Agency (EPA) Region X, and the State of I agreement, the INEL Federal Facility Agreement/Consent Order (FFA/CO), on December cleanup activities at INEL. The INEL FFA/CO established the procedural framework a developing, prioritizing, implementing, and monitoring appropriate response actions Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Conservation and Recovery Act (RCRA), and the Idaho Hazardous Waste Management Act. The current INEL mission is to develop, demonstrate, and deploy advanced engineerin systems to improve national competitiveness and security, to make the production an efficient, and to improve the quality of life and the environment. Areas of primar include waste management and minimization, environmental engineering and restoratio renewable energy, national security and defense, nuclear technologies, and advanced methods. The Environmental Restoration and Waste Management Program is a top prior

### **03.01 (005) Mission**

## **COMMENT**

The commentor states that DOE has a hidden agenda, which is to build new nuclear waste facilities under the guise of waste processing.

## **RESPONSE**

The purpose of this EIS is to provide a basis for making decisions on options for SNF management and site-specific approaches regarding the future direction of SNF restoration and waste management and SNF programs at INEL. The EIS was prepared for this purpose, and DOE has no hidden agenda associated with the management of SNF.

### **03.01 (008) Mission**

## **COMMENT**

The commentor expresses the opinions that the Idaho National Engineering Laboratory is not credible, and that the Idaho National Engineering Laboratory mission is for war rather than peaceful, uses of nuclear energy.

## **RESPONSE**

As discussed in Volume 2, section 2.2.3, the current INEL mission is to develop, demonstrate, and advance engineering technology and systems to improve national competitiveness and the production and use of energy more efficiently, and to improve the quality of life. Specific activities at INEL have shifted over time to meet changing national needs, including changing from the application of nuclear power to commercial uses, to SNF waste storage, to the current emphasis on science and technology related to advanced remediation and waste management at INEL and applying the knowledge gained at INEL to other needs. DOE does not agree that this is talking about war energy. The public's trust in DOE has eroded, and it will take great effort and some amount of time to rebuild that trust. DOE is addressing many of the problems associated with its loss of public trust. Energy publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. DOE is formally committed to protecting the health, safety, and the environment of its workers, the public, and the environment. DOE is working as quickly as possible to eliminate adverse environmental impacts from past programs. The commentor should also know that DOE's complex-wide Environmental Management Site-Specific Advisory Board has been chartered under the Federal Advisory Committee Act. The Environmental Management Site-Specific Advisory Board consists of independent citizens tasked with advising DOE on local and national policy. Aggressive public outreach and stakeholder initiatives are being implemented to keep the public informed of DOE activities.

### **II 03.01 (009) Mission**

## **COMMENT**

The commentor expresses the opinion that the Department of Defense should manage nuclear waste and DOE should manage the "Energy War." The commentor states that references to Navy nuclear waste are classified and should be removed from the EIS.

## **RESPONSE**

The information contained in this EIS is not classified. The missions of the Department of Energy are defined by Congress and the President.

### **II 03.01 (014) Mission**

## **COMMENT**

The commentor states that DOE should take advantage of the scientific and engineering capabilities of the Idaho National Engineering Laboratory to generate technological breakthroughs in waste management and cleanup.

## **RESPONSE**

Volume 2, section 2.2.3 states that the current INEL mission is to develop, demonstrate, and apply advanced engineering technology and systems to improve national competitiveness and the production and use of energy more efficiently, and to improve the quality of life. Areas of primary emphasis at INEL include waste management and minimization, environmental engineering and restoration, energy efficiency, renewable energy, national security technologies, and advanced technology and methods. The Environmental Restoration and Management Program is a top priority at INEL.

### **II 3.2 Authority and Responsibility**

## **II COMMENT**

The commentor asserts that the Navy and DOE are playing a bureaucratic game of not passing the buck. The commentor further states that while DOE carries out the policies of Congress, it lacks a comprehensive national policy that avoids interagency indecision and confusion.

## **RESPONSE**

DOE is responsible for managing U.S. Government-owned SNF. The Naval Nuclear Propulsion Program is a joint Navy and DOE program responsible by law for all matters pertaining to Naval nuclear waste; therefore, Naval SNF is also DOE's responsibility. DOE, as directed by Congress in the Energy Policy Act of 1982, as amended, is committed to developing Federal geologic repository and isolation of these materials. Pending availability of such disposal options, DOE maintains environmentally sound storage and management of these materials.

## **II COMMENT**

The commentor refers to the sale of surplus reprocessing equipment to a scrap-metal



## RESPONSE

This administrative issue is beyond the scope of this EIS. As a result of the even refers, DOE is evaluating its surplus material policies.

## II COMMENT

The commentor discusses the issue of the cooperative effort between DOE and the Nav EIS and identifies the need for DOE to take the lead.

## RESPONSE

DOE is the lead agency and has the lead role for preparing this EIS. The Navy part cooperating agency for several reasons. First, under the Council on Environmental regulations (40 CFR 1501.6) Cooperating Agencies, the CEQ emphasizes the need for a in the National Environmental Policy Act (NEPA) process. Thus, any other Federal a special expertise with respect to any environmental issue, if requested by the lead cooperating agency.

The Navy has gained extensive expertise during nearly 40 years of Naval SNF operati valuable in assessing the impacts of the proposed alternatives. In addition, there between DOE and the Navy, because the Naval Nuclear Propulsion Program is a joint N and DOE program responsible by law for the nuclear propulsion plants aboard nuclear as well as for the Naval reactor fuel at INEL.

## II 3.3 Credibility

## II COMMENT

A number of commentors express a general lack of trust in DOE based on its record o as at the Waste Experimental Reduction Facility. They recommend that DOE and the N establish public trust, and recommend that the EIS be more specific about what will under each alternative.

## RESPONSE

In response to the lack of trust expressed by the public, the Secretary of Energy p openness and public involvement. The Secretary's July 29, 1994, Guidance on Implem Department's Public Participation Policy states, "The business of the Department mu view of those whom it serves, consistent with applicable laws, regulations, and con marks a clear break with past practice by challenging the Department and its contra new standard of openness and service. The Department will incorporate public input where appropriate and feasible and will provide feedback to the public on its reaso involvement for this EIS included numerous public scoping meetings and public heari DOE is increasing the number of forums for information exchange in addition to oppo involvement required by NEPA and other laws. Many DOE sites, including INEL, have citizens advisory boards to review and provide advice on DOE policies and proposals DOE accepts responsibility for solving the problems associated with management of w nuclear fuel. Lessons learned from past waste management practices and the knowled research and development programs are incorporated into new management programs. In many cases, it is not possible to be specific about what will happen and when. intended to provide the public and decisionmakers with a programmatic, rather than of the proposed actions and alternatives. Alternatives in Volume 1 will be impleme

20 years, depending on the alternative chosen. Volume 2 is a site-specific assessment of environmental restoration, and waste management alternatives at INEL. In general, 2 will be implemented over 10 years. More detail about these specific projects is in Volume 2, Appendix C.

Volume 1, section 5.1.1 summarizes the impacts from waste management activities and action alternatives, and the site-specific details are discussed in Volume 1, Appendix C. Experimental Reduction Facility operations were suspended in February 1991 to upgrade documentation, operating procedures, and management systems. These upgrades were mandated by DOE Order 5480.23, Analysis Reports. These upgrades have been completed. This facility must pass a D readiness evaluation before operations will be resumed. Operational readiness evaluations by entities such as the State of Idaho and the Defense Nuclear Facility Safety Board. Combustible radioactive materials would take place under the Ten-Year Plan and Maximum Storage, and Disposal alternatives, but not the No Action and Minimum Treatment, Storage, and Disposal alternatives. Stack emissions under the Ten-Year Plan and the Maximum Treatment, Storage, and Disposal alternatives would be monitored continuously by radiation sensors to avoid total release.

## II COMMENT

The commentor states that DOE should have foreseen the problems with management of SNF long ago, before there were any problems.

## RESPONSE

The Secretary of Energy has publicly affirmed that current DOE policy and practice emphasize environmental considerations above other program goals. DOE is formally committed to safety and health of its workers, the public, and the environment. Furthermore, DOE will construct, and operate facilities in a safe manner, relying on lessons learned from years of SNF management. DOE is working as quickly as possible to rectify and eliminate environmental impacts from past programs.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of SNF are small.

## II COMMENT

Commentors express a lack of trust in DOE based on past lies, misinformation, secrecy, poor documentation and recordkeeping, the conduct of nuclear experiments on humans, dishonesty of ethics and regard for human health and the environment. Although the openness of DOE is appreciated, one commentor states that today will someday be the past as DOE also expresses the opinion that DOE has not been responsive to public concerns and of the people.

## RESPONSE

DOE is addressing many of the problems associated with public confidence in its operations. The following are a few examples of DOE's corrective actions. The Secretary of Energy has affirmed that current DOE policy and practice emphasize safety and environmental considerations above other program goals. DOE is committed to protecting the safety and health of its workers and the environment. DOE is working to rectify and eliminate adverse environmental impacts from past practices. A DOE Environmental Management Advisory Board has been chartered under the Environmental Management Advisory Board Act. The Environmental Management Advisory Board consists of citizens advising DOE on local and national policy issues. In addition, aggressive public outreach initiatives are being implemented to keep the public well informed of DOE activities. Decisions regarding the programmatic management of DOE's SNF over the next 40 years will be made by the Secretary of Energy based largely on the analysis in this EIS.

of this process is the presentation of the EIS to the public to solicit comments on engaged in a substantial effort to obtain information from the public, including 33 locations and an extended comment period. All persons and organizations had an opportunity to request information from DOE and to provide comments during both the scoping process and comment period. The comments received by DOE were given serious consideration where pertinent to the EIS or the related actions under consideration. Public comments were given weight with programmatic factors in arriving at DOE's preferred alternative. DOE is evolving openness, as demonstrated by the recent releases of information regarding past programs. See also the response to comment 08.03.01 (005).

## II COMMENT

The commentor expresses the opinion that DOE has a disregard for human health and safety of Russians.

## RESPONSE

No significant environmental impacts have been identified for any of the alternatives for managing SNF. Additionally, the Secretary of Energy has publicly affirmed that DOE's policy and practice emphasizes safety and environmental considerations above other programmatic concerns. Formally committed to protecting the safety and health of its workers, the public, DOE is working to remediate and eliminate adverse environmental impacts from past programs. Over alleged mishaps in Russia are beyond the scope of this EIS.

## II COMMENT

The commentor is apprehensive about spent nuclear fuel storage at the Hanford Site and its practices.

## RESPONSE

Impact analyses associated with managing SNF show that effects on human health or the environment would be small for all of the alternatives considered. The potential impacts due to hypothetical accident conditions for management of SNF present little risk for all alternatives considered.

## II 3.4 Legal/Regulatory

## II COMMENT

The commentor requests inclusion of the Washington Model Toxics Control Act in the Appendix A, section 2.2.1 list of significant Federal and state laws.

## RESPONSE

The Washington Model Toxics Control Act applies to the Hanford Site mainly as a source of relevant and appropriate requirements under CERCLA. The Washington Model Toxics Act has been added to the list in Volume 1, Appendix A, section 2.2.1.

## II COMMENT

The commentor asks to have the current radiation safety standards included in the E

## RESPONSE

DOE Orders 5480.11 and 5400.5, Radiation Protection for Occupational Workers and Radiation Protection of the Public and the Environment, which cover radiation protection of occupational workers and radiation protection of the public and the environment, respectively, provide the requirements for DOE operations. These Orders are listed in Volumes 1 and 2, sections

## II COMMENT

The commentor suggests that compliance with the Federal Facilities Agreement/Consent be linked with the continued acceptance of spent nuclear fuel.

## RESPONSE

There is no link between compliance with the INEL FFA/CO and the receipt of additional SNF. The Action alternative, required under NEPA, provides a baseline, minimal activity level for SNF. Other alternatives. This baseline does not consider the need to comply with regulatory requirements. The alternative analyzed in Volume 2 assumes that the conditions required to remain in INEL FFA/CO will not be met because those conditions constitute more than the minimum activity level under the alternative. Likewise, SNF will not be received under this alternative because additional SNF would be above the minimal activity allowed by the alternative. The consequences, therefore, are consequences of the alternative, and one is not conditional on the other.

## II COMMENT

The commentor suggests that the EIS does not adequately address applicability of the National Conservation and Recovery Act to management of spent nuclear fuel, and that the commentor be consulted on this issue closely when the Final EIS is published.

## RESPONSE

DOE discusses RCRA in Volume 1, section 7.1 and Volume 2, section 7.2. In addition, the applicability of RCRA to some DOE SNF is discussed in Volume 1, section 7.2.5. DOE responsibilities under RCRA for conducting its waste management activities. Historically, DOE has reprocessed SNF to recover valuable products and fissionable materials. The SNF was not considered a waste under RCRA. Some SNF resulting from this recovery process and was not considered a waste under RCRA. Some SNF resulting from reprocessing are considered hazardous wastes under RCRA and are managed as such. However, because of world events, DOE is phasing out reprocessing for the recovery of SNF. There is some uncertainty with regard to the regulatory status of some of DOE's SNF. DOE has initiated discussions with EPA on potential applicability of RCRA to SNF.

## II COMMENT

The commentor requests that reference to the Tri-Party Agreement milestones be added to Appendix A.

## RESPONSE

The Tri-Party Agreement is discussed in Volume 1, Appendix A, section 2.2 as well as sections. Adding it as a reference would not provide any further clarification or process, as compliance with the Tri-Party Agreement is independent of the alternative information has been provided in Volume 1, Appendix A reflecting the fourth amendment of the Tri-Party Agreement. Applicable SNF milestones are provided in Volume 1, Appendix 3.1.1, Table 3.3.

## II COMMENT

The commentor states that in the case of the Hanford Site, the No Action alternative would not be able to fulfill agreements with states or other Federal agencies" rather than not... "

## RESPONSE

Volume 1, Chapter 3 has been changed to respond to this comment.

## II COMMENT

The commentor expresses the opinion that importing the foreign fuel through U.S. ports which are large cities, violates the National Defense Authorization Act. The commentor envisions the selection of a port of entry to minimize the risk to the human population.

## RESPONSE

Management of foreign research reactor (FRR) SNF is addressed in Volume 1 for consideration of assessments of cumulative SNF management impacts. However, whether the United States accept this SNF and which ports would be used are matters being addressed in a separate Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Nuclear Fuel (Draft) (FRR EIS), as announced in Volume 58 of the Federal Register, through 54340. The FRR EIS may select the ports of entry in accordance with all laws including the National Defense Authorization Act, as appropriate. Alternatives for SNF management are being analyzed in the FRR EIS, including alternatives regarding the ports of entry.

## II COMMENT

Commentors ask which laws and regulations DOE must observe to operate interim spent storage facilities. Commentors specifically question whether Nuclear Regulatory Commission will apply to the centralized storage facility. Additionally, commentors suggest that certain DOE Orders are being codified, and that they are applicable.

## RESPONSE

The Federal and state laws that DOE believes are potentially applicable to the various are identified in Volume 1, section 7.2 and Volume 2, section 7.2. Former DOE Orders codified into regulations are included. More detailed discussions of relevant statutes are provided in Volume 1, Appendices A through F. DOE believes that, although Nuclear Regulatory Commission (NRC) regulations do not apply to storage facilities for noncommercial fuel, such standards should be considered in planning to ensure that any needed treatment for interim storage is compatible with

## II COMMENT

The commentor wants to know why DOE is exempt from state taxes.

## RESPONSE

DOE, like all Federal Government agencies, is exempt from state taxes because of so granted to the Federal Government by the U.S. Constitution. Although DOE is exempt sales and use taxes are paid on all construction materials, supplies, and associate contractors.

## II COMMENT

Commentors state that DOE should not be self regulated; rather, there should be ind DOE, Navy, and Nuclear Regulatory Commission activities pursuant to Executive Order Nuclear Propulsion Program, with the Occupational Safety and Health Administration Protection Agency empowered to penalize or shut down DOE operations that violate pu standards. Additionally, commentors ask that medical information be declassified.

## RESPONSE

The Atomic Energy Act gives DOE the authority to regulate SNF, but like other Feder subject to regulation by EPA and state agencies that have been granted primacy by E primacy, a Federal agency allows a state agency to enforce state regulations that c responsibility as the Federal regulations. The state agency must, in general, demo agency that its regulations are at least as restrictive as the Federal regulations to manage its enforcement program. DOE facilities, therefore, face the same penalt with EPA and equivalent state agency regulations as any private facilities, includi and facility shutdowns. DOE sites have Site-Specific Advisory Boards consisting of who advise DOE on local and national policy issues and provide recommendations on p prescribed by Section 318 of the Atomic Energy Act.

Executive Order 12344, Naval Nuclear Propulsion Program, enacted as Public Law 98-5 the authority and responsibility of the Naval Nuclear Propulsion Program, including occupational safety and health aspects of the program. Such activities are also su regulatory review as discussed above for DOE.

Although the activities cited by the commentor are exempt from the standards promul Occupational Safety and Health Act (OSHA), DOE maintains an occupational safety and which the Secretary of Labor has deemed to be comparable to the OSHA program. This implemented through a series of DOE Orders and applies to both DOE and contractor o DOE is assessing the potential impacts to the interim SNF management program of NRC the geologic repository being developed by the Office of Civilian Radioactive Waste potential impacts of future NRC oversight of its activities, as discussed in Volume Additionally, in late 1994, DOE formed a task force to evaluate whether DOE operat under the jurisdiction of NRC or OSHA. The evaluation is still in progress.

To the extent that disclosure of medical records does not violate the privacy of in continue its review and disclosure of medical records. The President has launched DOE is participating fully in this initiative.

## II COMMENT

Commentors question the adequacy of the Nuclear Regulatory Commission and the Envir Protection Agency regulatory standards and state that these agencies may not be any DOE.

## RESPONSE

Federal agencies, including NRC, EPA, and DOE, have public processes by which they approve regulations, pursuant to the Administration Procedures Act. These processes and other justifications for proposed regulations and allow the public, including opportunity to comment and to provide evidence to support or refute the agency's ju

## II COMMENT

The commentor indicates that DOE Orders can change, thereby changing requirements, (e.g., dose restrictions).

## RESPONSE

Volume 1, section 7.2 and Volume 2, section 7.2 of the EIS discuss the major Federal environmental protection and compliance requirements on DOE. These sections include DOE Orders related to environmental, health, and safety protection. Through the Atomic Energy Act, DOE is responsible for establishing a comprehensive health, safety, and protection program for its facilities. The regulatory mechanisms through which DOE are the promulgation of regulations and the issuance of DOE Orders. DOE Orders generate policies and the programs and internal responsibilities for implementing those policies subject to change as situations, requirements, conditions, and statutes change. DOE has changed without a thorough evaluation of the issues and impacts associated with the

## II COMMENT

The commentor opposes DOE committing to meet Nuclear Regulatory Commission requirements for interim storage options or the Department of Transportation requirements for interim storage of other activities. In addition, for spent nuclear fuel transportation, the commentor attempts to impose transportation requirements above and beyond those required by the Department of Transportation or the Nuclear Regulatory Commission.

## RESPONSE

In Volume 1, section 3.3.7, DOE discusses the possibility of having interim storage reviewed for compliance with NRC licensing standards, even though DOE is not regulated by the Department of Transportation regulations, even in instances where they do not apply. In these cases, as with all regulations, DOE looks to other agencies for guidance. Other agencies have expertise or experience. DOE believes that this results in reduced risk for conducting an activity. At times, however, the unique characteristics of DOE activities require requirements more stringent than provided by external regulations and guidance to ensure that the performance and safety is achieved.

## II COMMENT

Commentors state that DOE must identify in the EIS, and obey, all state and Federal laws. Specifically, the laws and regulations of the States of New York and Washington, and those associated with the West Valley Demonstration Project should be identified.

## RESPONSE

DOE is committed to operating its SNF management program in compliance with all applicable regulations, Executive Orders, DOE Orders, and permits and compliance agreements with agencies. This commitment is independent of the regulations and laws identified in and 2, section 7.2 identify the laws and regulations that are appropriate and applied proposed in this EIS. The DOE regulations that implement NEPA require consultation agencies, when appropriate, to incorporate any relevant requirements.

The alternative selected will be implemented within existing laws and DOE's legal obligations. November 1986 agreement with the New York State Energy Research and Development Authority (NYSERDA), Agreement Between NYSERDA and DOE on the U.S. Department of Energy Spent Fuel Located at the Western New York Nuclear Service Center. Negotiations are currently between DOE and NYSERDA, per section 8(c) of their November 1986 agreement, regarding the date for removal of the SNF from West Valley. A decision regarding removal of West Valley depends on the Record of Decision (ROD) for this EIS.

See also the response to comment 02.01 (024).

## II COMMENT

The commentor states that the fear of liability has so haunted the U.S. nuclear weapons contractors and the Atomic Energy Commission demanded and got complete immunity for gross negligence or violation of contract.

## RESPONSE

The commentor confuses immunity with indemnity. The Price Anderson Act provides for DOE for liabilities that may arise from a nuclear incident as a result of activities of contractors. This means that if a nuclear incident were to occur, such as a release from a facility, and damages were incurred as a result of the incident, DOE would indemnify from liability. In other words, DOE would take responsibility for ensuring that such activities are appropriately compensated under the liability scheme of the Price Anderson Act. In the Price Anderson Act Amendments of 1988 subject indemnified contractors to civil and criminal penalties if they violate any applicable nuclear safety requirements at any facility under the contract.

## II COMMENT

Commentors express the opinion that DOE's past performance in the areas of management calls into question DOE's claims of regulatory compliance, management oversight, and safety. Commentors note that these are the responsibility of DOE, not its contractors.

## RESPONSE

It is DOE policy to operate its facilities in compliance with regulatory requirements and to impose the same penalties as private industry for violations. DOE has programs for management and safety subject to oversight by the Defense Nuclear Facilities Safety Board, which is an independent oversight organization, EPA, and state requirements. DOE operations contractors are subject to DOE Orders, and contractor performance is monitored by DOE. The major DOE Order regarding the construction and operation of SNF management facilities within the DOE complex is DOE Order 419, Table 7-1 of the EIS.

## II COMMENT

The commentor asks for an assessment of proposed regulations on the use and expansion of the National Engineering Laboratory Radioactive Waste Management Complex. The commentor mentions the Resource Conservation and Recovery Act Reauthorization. The commentor



that DOE has mismanaged Idaho National Engineering Laboratory radioactive wastes, b practices do not comply with Resource Conservation and Recovery Act Subtitle D or C

## RESPONSE

DOE has not evaluated potential environmental impacts based on proposed statutory m RCRA. However, when reauthorization is complete, DOE will review and evaluate the the statutory changes on current operations. DOE is currently disposing of low-lev the INEL Radioactive Waste Management Complex in accordance with DOE Orders and oth requirements. These low-level wastes do not fall within the definition of RCRA sol and thus are not subject to regulation under RCRA. All wastes are disposed of in a protection of human health and the environment.

## II COMMENT

The commentor refers to pending legislation to give local communities greater autho inspecting nuclear waste shipments.

## RESPONSE

This is a matter appropriately addressed by Congress.

## II COMMENT

The commentor notes that in the Volume 1, Chapter 7 discussion of the Safe Drinking correct citation for the beta dose limit, but that corresponding citations for gamm that Chapter 7 discusses the current U.S. Environmental Protection Agency regulatio 4, the text compares levels with proposed regulations. The commentor suggests that the discussion of two different sets of regulations.

## RESPONSE

DOE made appropriate changes to Volume 1, Chapter 7 to explain the two regulations to limits for gamma- and alpha-emitting radionuclides, as suggested. Proposed rule materials' maximum contaminant levels were published July 18, 1991. To date, those have not become final. For this analysis, however, the more conservative proposed

## II II COMMENT

The commentor questions the motives of DOE and the Navy, suggesting that without a people of Idaho, these agencies would have acted without public input on the EIS.

## RESPONSE

DOE was in the process of preparing a site-wide EIS on the environmental restoratio management (ER&WM) programs at INEL and a programmatic EIS on ER&WM, including SNF, the lawsuit. As a result of the lawsuit, the EIS that analyzed SNF activities was

## II COMMENT

Commentors state that the court decision *Public Service Co. of Colorado v. Andrus*, (D. Idaho 1993) involving the shipment of spent nuclear fuel from the Fort St. Vain Station in Colorado to the Idaho National Engineering Laboratory was right and good Idaho. Further, commentors state that the EIS does not address everything that DOE Court Order to address.

## RESPONSE

DOE believes this EIS is complete and accurately reflects the potential environment reasonable range of alternatives.

## II COMMENT

The commentor states that the EIS does not assess the effects of shipping and storing at the Idaho National Engineering Laboratory, as ordered in 1993.

## RESPONSE

Volume 2, Chapter 5 assesses the environmental consequences of the various alternatives described in Volume 2, Chapter 3. These alternatives cover a spectrum of the shipping and storage for SNF management at INEL.

## II COMMENT

The commentor cites a court finding of NEPA violations by DOE and "that DOE has no showing that there is no reasonable expectation that National Environmental Policy will not reoccur . . ."

## RESPONSE

As a result of the Court's finding and other programmatic issues, DOE prepared this EIS to address the environmental impacts of receiving, transporting, storing, and managing SNF. DOE EIS meets the requirements of NEPA and the Court Order.

## II COMMENT

The commentor does not consider the EIS as meeting the intent of the Court Order or the National Environmental Policy Act for the preparation of a comprehensive site-wide EIS addressing receiving, processing, and storing spent nuclear fuel at the Idaho National Engineering Laboratory.

## RESPONSE

DOE has met the requirements of the Court Order in Volume 2 of the EIS, which includes SNF at INEL under all alternatives considered, and in Volume 1, which addresses management of SNF. To comply with the part of the Court Order evaluating the management of SNF at sites other than INEL, DOE coupled the reviews in the EIS. Thereby DOE integrated evaluation of the overall SNF management picture with the site-specific

DOE believes that this EIS meets the requirements of NEPA and the Court Order.

## **II 3.5 Government Policy**

### **II COMMENT**

Some commentors question the wisdom and ethics of storing nuclear wastes and spent aquifers, near inhabited areas, near seismically active areas, and near environment there are risks to natural resources and the public.

### **RESPONSE**

Volume 1, Chapters 3 and 5 and site-specific Appendices A through F, and Volume 2, and Appendix F discuss risks to the public, workers, and the environment over a range of accidents. Volumes 1 and 2, Chapter 5, state that the potential environmental impacts would be small.

Relative to the potential impacts on the Snake River Plain aquifer, a maximum reasonable accident associated with the high-level waste tanks was performed for the EIS, as required by section 5.1.4. A more detailed description of the assessment is given in Accident Analysis at National Engineering Laboratory Facilities. The analysis assumed a seismic event of magnitude 6.0 to cause one or more tanks to fail and 300,000 gallons of high-level waste to be released into the soils beneath the tank farm. Modeling of migration of contaminants into the aquifer without any mitigation measures, the maximum concentration of radionuclides at the boundary of the aquifer would be within the requirements of safe drinking water standards.

### **II COMMENT**

The commentor urges DOE to manage spent nuclear fuel responsibly.

### **RESPONSE**

The EIS will allow DOE to carefully weigh public comments, environmental impacts, and health effects in making decisions regarding safe and responsible management of SNF. See also the response to comment 03.08 (010).

### **II COMMENT**

The commentor expresses the opinion that the funds being spent on transporting the waste are better spent on alternative energy sources and detoxification of waste. The commentor also argues that where it can be seen, rather than burying it.

### **RESPONSE**

The cost of transporting waste and SNF is a relatively small portion of the management costs. DOE has prepared a report that estimates the cost of each alternative, including its associated risks. See also the response to comment 03.01 (001).

The priorities for funding activities and programs of the Federal Government are determined by Congress and the President. A discussion of Federal spending priorities is beyond the scope of this EIS. Funding to support interim management of SNF covered in this EIS will be established by the President as part of the annual DOE budget process.

## II COMMENT

The commentor asks if DOE has a plan to take spent nuclear fuel from reactors in the Atascadero (Mescalero) Apache Indian Tribe per its proposal to store it on their reservation.

## RESPONSE

DOE has no such plans. The Mescalero Apaches previously indicated an interest in storing nuclear waste on their reservation. Such agreements regarding storage of waste are beyond the scope of this EIS.

## II COMMENT

The commentor advocates a strong environmental restoration program at all DOE sites.

## RESPONSE

Environmental restoration and waste management activities at DOE sites other than are within the scope of this EIS. However, DOE is addressing necessary environmental management at its sites.

See also the response to comment 03.08 (010).

## II COMMENT

Several commentors focus on the economic viability and environmental impacts of various energy technologies or development. Most of those opposed to nuclear power ask DOE to modify nuclear power over alternative, renewable energy sources and energy conservation. Comments specifically suggested for more research and development include solar, wind, hydro, fusion with the Russians, and fossil fuels.

## RESPONSE

Comments on DOE's energy-related policies, conservation of energy, and the preference for one energy technology over another are outside the scope of this EIS. None of these are affected by decisions made based on this EIS.

## II COMMENT

Commentors express general opposition to or question the ethics of continued general nuclear fuel, operation of existing or new nuclear reactors, modernization of the defense nuclear weapons, and further nuclear technology development for defense purposes. Commentors specifically oppose use of highly enriched uranium in DOE reactors, reprocessing of spent nuclear materials, and transportation of nuclear materials. Others encourage phasing out of nuclear-powered ships, and ceasing nuclear waste generation. One commentor states that the United States should set the example with the end of the Cold War. Other commentors express support for specific reactor technologies or projects such as the Integral Fast Reactor in Idaho and the Advanced Reactor in South Carolina, citing a number of benefits.

## RESPONSE

Policies regarding the operation of nuclear reactors, nuclear-powered ships, the generation, production of nuclear weapons and defense technology development, and to manage additional SNF in the future are established by Congress and the President. Decisions regarding the alternatives to manage such SNF are within the scope of and EIS.

Most of the SNF addressed in this EIS has already been generated and is currently being managed. Although vulnerabilities exist, DOE is managing SNF with safety as the primary focus. DOE has announced a decision to phase out reprocessing SNF for the purpose of recovering fissionable materials. Transportation of nuclear materials is necessary for DOE to carry out its various missions. Policies in this EIS with respect to the proposed alternatives for managing of DOE SNF. Policies of highly enriched uranium in DOE reactors are beyond the scope of this EIS. Preferences for reactor technologies and opinions about the benefits of such technologies have been expressed. The development and implementation of such technologies are outside the scope of this EIS.

## II COMMENT

Commentors state that a more rational waste policy needs to be formulated in which waste is categorized according to their actual long-term hazards, waste generation is minimized, costs are paid up front, and shallow burial is banned. One commentor states that the United States needs a comprehensive nuclear waste policy with full public debate.

## RESPONSE

Decisions regarding the programmatic management of DOE SNF over the next 40 years will be made by the Secretary of Energy based largely on the analysis in this EIS. The EIS process is the presentation of the EIS to the public to solicit comments on its content. This is a national effort to address the problems associated with DOE SNF (see Volume 1). Volume 2 addresses alternative approaches for managing DOE ER&WM and SNF activities. The EIS does not evaluate DOE complex-wide programmatic alternatives or policies for environmental restoration and waste management. Those issues are being evaluated in a separate EIS being prepared by DOE.

DOE currently classifies and manages SNF and wastes with consideration of the long-term risks associated with these materials. A discussion of the waste types managed by DOE is in Section 2.2.7. Shallow land burial of low-level wastes is a common practice throughout the country. This is DOE policy for those wastes that meet strict site-specific waste acceptance criteria. Shallow land burial is being addressed in the DOE Waste Management Programmatic EIS. Public comments that document will be solicited by DOE, including comments on policies and costs related to various waste forms. Likewise, disposal costs of high-level wastes and SNF are addressed in the EIS.

## II COMMENT

The commentor questions continued nuclear energy development or production, except for the production of weapons-grade plutonium.

## RESPONSE

This EIS pertains to programmatic SNF management and INEL SNF management and ER&WM. Policies regarding nuclear energy development or production are beyond the scope of this EIS.

## II COMMENT

The commentor expresses a general objection to generating spent nuclear fuel, to fueling reactors with enriched uranium in DOE reactors, to reprocessing, and/or to transportation of nuclear materials.

## RESPONSE

Most of the SNF addressed in this EIS has already been generated and is currently being managed. Policies regarding the need to generate and manage additional SNF in the future are addressed in this EIS; however, decisions regarding the alternative to managing such SNF are not analyzed in this EIS.

Although vulnerabilities exist, DOE is managing SNF with safety as the primary focus. The decision in 1992 to phase out reprocessing of SNF for the purpose of recovering fissile materials is necessary for DOE to carry out its various missions. Transporting nuclear materials is necessary for DOE to carry out its various missions. EIS with respect to the proposed alternatives for managing DOE SNF. Policies relating to enriched uranium in DOE reactors are beyond the scope of this EIS.

## II COMMENT

The commentor expresses the need for a new vision for the United States, in that it should not sensibly allow management of long-lived radioactive materials.

## RESPONSE

Most of the SNF addressed in this EIS has already been generated and is currently being managed.

## II COMMENT

The commentor suggests that it should be left to the scientists to decide on the most beneficial methods for successfully disposing of radioactive wastes. In addition, a three-part program to accomplish this, which would include reduction of the need for byproduct and disposal of wastes in areas least detrimental to life.

## RESPONSE

DOE has a program for safely managing and storing all radioactive materials at each site. This is addressed in the EIS, which includes research, development, and demonstration activities. Managing SNF, including waste reduction, recycling, and storage, are discussed in Volume 1, section 1.1.3 and Appendix J. Current management practices for radioactive wastes are described in Volume 2, section 2.2.7. Although Volume 2 is specific to INEL, it is applicable to wastes at other DOE sites. Disposal options for DOE complex-wide were beyond the scope of this EIS, but are being addressed in the DOE Waste Management Programmatic EIS.

## II COMMENT

Commentors note that spent nuclear fuel continues to be generated and that greater efforts should be made to solve the problems with existing storage facilities. They also note the ultimate disposition of spent nuclear fuel, and that the spent fuel should be left in place.

## RESPONSE

Eliminating all current and future generation of DOE SNF would not significantly diminish the challenges facing DOE. Inventories of DOE SNF are addressed in Volume 1, section 1.1 of the EIS. Approximately 86 percent of the current inventory is at INEL.

weapons-production reactors that have ceased to operate. Another 8 percent was gen experimental reactors, most of which have been shut down. According to Volume 1, T SNF to be generated over the next 40 years (until 2035) will amount to only a 3-per current inventory. Eliminating sources of DOE SNF altogether would require halting operations and nuclear research at universities, which is not within the control of scope of this EIS.

Problems at existing storage facilities have been identified in the Spent Fuel Work Inventory and Storage of the Department's Spent Nuclear Fuel and Other Irradiated N and Their Environmental, Safety and Health Vulnerabilities. This report, called th vulnerability assessment, and associated action plans to resolve identified vulnera in Volume 1, section 1.1.2 and Appendix J-2. Additional site-specific information Appendices A through F. Environmental consequences of SNF management are presented alternatives in Volume 1, section 5.1, and mitigation measures are discussed in sec alternatives analyzed, DOE is committed to complying with applicable Federal, state and DOE Orders to ensure protection of the environment and the health and safety of employees.

General technologies and practices for managing SNF are discussed in Volume 1, sect Appendix J. Technologies for final disposition of SNF cannot be specified in advan acceptance requirements. These requirements are several years from completion and combination of the technologies described in Volume 1, Appendix J may satisfy the e criteria. Furthermore, consideration is given by the alternatives analyzed in the maintaining processing flexibility that may be necessary to meet the acceptance req Consequently, although the ultimate disposition of SNF is a high priority for DOE, disposition activities have not been finalized and are beyond the scope of this EIS Several alternatives in this EIS evaluate leaving all or most of the SNF at locatio or generated. In addition, other EIS alternatives were evaluated to give considera maintaining DOE's flexibility to safely, efficiently, and responsibly manage SNF un decisions are made.

## II COMMENT

The commentor states that this EIS and its alternatives represent a delay rather th

## RESPONSE

Volume 1, Chapter 2 discusses the purpose and need for DOE action. This action inc strategic decisions on managing SNF for the next 40 years. These discussions inclu these activities; determining appropriate capabilities, facilities, and locations f developing activities to support the SNF management program.

## II COMMENT

The commentor states that solutions do not exist to solve the problem of the spent has already generated, citing the failure of Yucca Mountain and the Waste Isolation waste or special nuclear material from weapons.

## RESPONSE

General technologies and practices for managing SNF are discussed in Volume 1, sect Appendix J of the EIS. Technologies for final disposition of SNF cannot be specifi repository acceptance requirements. These requirements are several years from comp but a combination of the technologies described in Volume 1, Appendix J may satisfy acceptance criteria. Furthermore, consideration is given by the alternatives analy providing or maintaining processing flexibility that may prove necessary to meet th requirements. Although ultimate disposition of SNF is a high priority for DOE, the activities, including Yucca Mountain for SNF and high-level waste and the Waste Iso

transuranic waste, have not been finalized and are beyond the scope of this EIS. P an option in the EIS under the Volume 2, Maximum Treatment, Storage, and Disposal a INEL. Managing waste generated from dismantling weapons and disposing of weapons m subjects of other DOE EISs.

## II COMMENT

The commentor states that the statement in Volume 1, Appendix A, "The DOE intends t institutional control of the site in perpetuity," conflicts with other DOE commitme portions of the Hanford Site to other entities for non-DOE uses.

## RESPONSE

DOE intends to maintain institutional control of certain portions of the Hanford si however, some portions of the Hanford Site may be released from DOE institutional c land-use planning activities mature.

## II COMMENT

The commentor questions why DOE is building more permanent storage facilities for w supposed to go to the Waste Isolation Pilot Plant, and questions whether Idaho is g permanent dump.

## RESPONSE

Although the ultimate disposition of SNF, high-level waste, and transuranic waste i DOE, the details of final disposition of these wastes have not been finalized and a this EIS. DOE is committed not only to developing Federal geologic repositories fo of SNF and transuranic waste, but to providing safe interim storage pending availab disposal facilities. No permanent storage facilities in Idaho are proposed for the

## II II II COMMENT

The commentor expresses the opinion that nuclear power generation should be emphasi plutonium and uranium should not be discarded.

## RESPONSE

This EIS pertains to programmatic SNF management and INEL ER&WM programs. Policies emphasis on nuclear power production are not within the scope of this EIS. Regardi a resource, such decisions are beyond the scope of this EIS, which evaluates only i decisions on ultimate disposition are made. Decisions regarding the disposition of materials are being addressed in the forthcoming Programmatic EIS for Storage and D Weapons-Usable Fissile Material.

## II II COMMENT

The commentor indicates that all sources of energy have associated problems, which through research.



## RESPONSE

No response is required.

## II COMMENT

The commentor is of the opinion that DOE should work toward an international ban on

## RESPONSE

DOE announced a decision in 1992 to phase out reprocessing of SNF for the purpose of fissionable materials for use in weapons production. Establishing a U.S. policy to international ban on reprocessing is beyond the scope of this EIS.

## II COMMENT

The commentor states that the United States should maintain reprocessing capability. The commentor indicates that centralizing spent nuclear fuel management activities would allow the U.S. to establish global reprocessing capability to support the Pacific

## RESPONSE

In April of 1992, The Secretary of Energy directed INEL and the Savannah River Site defense-related chemical separations activities due to a reduction in the demand for nuclear weapons. DOE no longer produces strategic isotopes, and at INEL, the phaseout has been completed. Phaseout activities at SRS continue. DOE has committed to prohibit the separation or stabilization of weapons components during the phaseout, shutdown, and cleanout of weapons component nuclear explosives purposes. Use of DOE chemical separations facilities for nondefense purposes is part of the various alternatives.

## II COMMENT

Commentors state that nuclear waste materials should be considered for potential reuse as substances, such as separating certain radioactive isotopes for use as potential fuel

## RESPONSE

As acknowledged in Volume 1, section 1.1.3, DOE is considering several specialized separating radioactive elements from SNF and radioactive wastes, including recovery of plutonium to be used to fuel nuclear reactors. For example, Volume 1, Appendix J discusses processing of fissile material.

## II COMMENT

The commentor urges DOE to not select an alternative for SNF management that would forego all of the technological gains, including reprocessing, that have been made in the United States over the last 50 years. The commentor believes that abandonment of reprocessing in the United States to solve the problems that continue to accumulate and that the United States

the future to provide a "magic" solution to the problems of SNF management. The co why reprocessing is on hold if processing is being considered in the EIS.

## RESPONSE

Processing and reprocessing are defined in the Glossary (Appendix H) for Volume 1 o Processing means "applying a chemical or physical process designed to alter the cha (SNF) matrix." Reprocessing is defined as "processing of reactor-irradiated nuclea SNF) to recover fissile and fertile material, in order to recycle such materials pr programs." Thus, reprocessing is only one type of processing. As discussed in Vol made a policy decision in 1992 that reprocessing of SNF for weapons production woul This policy is still in effect. Since that time, all of DOE's reprocessing faciliti operate or are phasing out operations.

Volume 1, Chapter 1 also indicates that several forms of SNF processing may still b certain types of SNF for safe storage. In addition, there are many different types differing characteristics that may require treatment for safe storage and final di repository acceptance criteria for receipt of SNF and high-level waste for final di defined; therefore, the types of fuels that may require treatment cannot be determi treatments being studied do not separate fissile materials, although some do. Beca acceptance criteria are not defined, it is not currently possible to determine whet have to be separated from some fuels to meet disposal criteria. Consideration of p existing reprocessing facilities are evaluated in this EIS, because these facilitie currently being stored underwater. Specific technologies for managing SNF are desc Appendix J.

## II COMMENT

The commentor states that essentially all DOE spent nuclear fuel could be reprocess not ceased reprocessing, and asks why reprocessing was stopped.

## RESPONSE

As discussed in Volume 1, Chapter 1, all of DOE's reprocessing facilities either ha are phasing out operations because continued recycling of plutonium and uranium for has been discontinued as a matter of national policy. This policy results from the Union and consequent reduced need for strategic nuclear weapons and the fissile mat fabrication. DOE recognizes that processing may be an effective tool for managing included as an option in several of the alternatives.

## II COMMENT

The commentor considers it strange that with the end of the Cold War, the decision nuclear fuel has been supplanted by storage for the next billion years.

## RESPONSE

In April 1992, The Secretary of Energy directed INEL and SRS to phase out defense-r separations activities due to a reduction in the demand for new material for nuclea longer produces strategic isotopes, and at INEL, the phaseout activities have been activities at SRS continue. DOE has committed to prohibit the use of materials sep during the phaseout, shutdown, and cleanout of weapons complex facilities for nucle purposes. Use of DOE chemical separations facilities for nondefense-related activi SNF, is a reasonable option, the impacts of which are evaluated in the EIS as part alternatives.

## **II COMMENT**

The commentor encourages consideration of "the recycling approach alternative."

## **RESPONSE**

In the past, DOE reprocessed SNF. Reprocessing is defined as "processing of react material (primarily SNF) to recover fissile and fertile material, in order to recyc for defense programs." As discussed in Volume 1, Chapter 1, all of DOE's reproce have ceased to operate or are rapidly phasing out of operations, because continued and uranium for weapons production is no longer a national priority. Specific tec SNF are described in detail in Volume 1, Appendix J of the EIS.

## **II COMMENT**

The commentor recommends using the Integral Fast Reactor to recycle spent nuclear f

## **RESPONSE**

The Integral Fast Reactor program was discontinued and is not addressed in this EIS project, Electrometallurgical Processing Demonstration, which, if successful, could metallic spent fuel for disposal, is discussed in Volume 2, section 3.1 and in Volu

## **II 3.6 Foreign Research Reactor Fuel Return Policy**

## **II COMMENT**

The commentor states the need for a global commons analysis for foreign research re fuel.

## **RESPONSE**

Global commons analysis refers to analyzing potential environmental consequences of United States receipt, FRR SNF over the oceans outside the jurisdiction of any nati only the transportation of FRR SNF from U.S. ports of entry to DOE facilities so th impacts of the alternatives considered are included. In compliance with Executive Environmental Effects Abroad of Major Federal Actions, the EIS entitled Proposed Nu Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Dra environmental impacts of transporting FRR SNF over the global commons.

## **II 3.7 Equity and Environmental Justice**

## **II COMMENT**

The commentor expresses the opinion that secondary impacts from accidents, such as withdrawal, interdiction of agricultural products, and economic impacts, would fall the Shoshone-Bannock Tribes.

## RESPONSE

Volume 1, Chapter 5 and Appendices B and D, and Volume 2, Chapters 3 and 5 and Appendix 5.2.2, discuss the risks to the public, workers, and the environment due to facility accidents at INEL. Appendix 5.2.2 also discusses impacts to the public, as well as the Shoshone-Bannock Tribes, from accidents would be the alternatives considered.

The overall review indicated that the potential impacts calculated for each discipline proposed alternatives present no significant risk to the surrounding population. A Volume 1, Appendix L, the impacts also do not constitute a disproportionately high any particular segment of the population, minorities or low-income communities include present an environmental justice concern.

DOE consulted with the Tribes on this issue. The impacts on human health or the environment from facility or transportation accidents associated with managing SNF at INEL would be considered for all alternatives considered. For example, it is unlikely that a single additional fatality would result from SNF activities under any alternative. Because the potential impacts due to transportation or a facility accident for any of the alternatives considered would be expected to be similar, effects from accidents associated with managing SNF would be expected for any part of the population, minorities and low-income groups included.

## II COMMENT

The commentor expresses the opinion that if centralization is the preferred alternative, the community should be given extra care, guarantees, and mitigation and compensation measures.

## RESPONSE

The sources, appropriations, and accounting for fiscal and other resources to support Federal Government are determined by Congress and are beyond the scope of this EIS. As discussed in Volume 1, Chapter 3, safely managing SNF requires that many factors including site security, presence of skilled workers, safety, and the affected environment impacts for a number of potential storage locations are included in the EIS. These factors for all alternatives. As part of the public comment process, public input regarding SNF management activities was sought. DOE considered this public input when identifying an alternative. The preferred alternative and other factors will be considered in the final action.

See also the response to comment 05.09 (015).

## II COMMENT

Commentors express the opinion that a specific state or site hosts a large share of waste/spent nuclear fuel, which raises the question of equity. Other commentors in done its fair share or has enough involvement and should not be asked to do more, o "dumping ground." In addition, the opinion was offered that all atomic wastes from should be spread around other states or divided equally.

## RESPONSE

Several DOE sites do manage a significant percentage of DOE SNF and waste. This is established capability to safely manage such materials (for example safeguards and force, facilities, and historic mission) and associated support infrastructure (for management, emergency response, and stakeholder involvement programs). Decisions and conduct such programs are also influenced by a system of checks and balances and the control of the DOE, such as Congressional funding allocations, state and local and potential judicial scrutiny.

Additionally, NEPA provides opportunities to involve the public in and promote info regarding major Federal decisions. Accordingly, this EIS objectively evaluates 10 alternatives for some level of SNF management activity. The analyses in the EIS in considerations, socioeconomic impacts, and the potential risks to the public from b reasonably foreseeable accidents for a number of options for managing SNF. The EIS would be no significant risks to the public or the environment due to SNF management the 10 sites considered.

See also the response to comment 03.07 (004).

## II COMMENT

Many commentors state that sites that are politically weak, relatively unpopulated, depressed, and/or publicly inactive are being taken advantage of or targeted as was dumps due to their inability to object effectively.

## RESPONSE

This EIS objectively evaluates 10 sites as reasonable siting alternatives for some activity, without regard to political factors. The analysis includes environmental socioeconomic impacts, and potential risks to the public from both operations and r accidents for a number of options for managing SNF. The EIS concludes that there w risks to the public or the environment due to SNF management activities at any of t DOE considered public comments in the preparation of this EIS, upon which a decisio Although the EIS provides a basis for making decisions from the perspective of envi public comments, decisions also will be based on such considerations as cost, progr and the Navy, and implementability. In addition, implementation of decisions are s funding and regulatory oversight processes. DOE intends to develop and implement a management strategy that serves the overall needs of the nation.

See also the response to comment 03.07 (003).

## II COMMENT

The commentor states that decisions regarding remediation, waste management, and st provide for the protection of the Shoshone-Bannock Tribes' cultural and natural res

## RESPONSE

The environmental restoration actions that would occur under the alternatives consi be subject to the provisions of CERCLA, which provides for ecological risk assessme of injury or potential injury to natural resources resulting from past releases of alternatives in this EIS include projects for protecting the vadose zone and cleani cleaning up and/or retrieving buried wastes. The environmental impact analyses are reasonable projection of the upper bound for potential environmental consequences. and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all all alternatives would be small.

## II COMMENT

The commentor notes that the West Valley Demonstration Project is located on the Ca upstream of the Cattaraugus Reservation of the Seneca Nation of Indians. The comme this creates environmental justice concerns, and that DOE should pay particular att adverse environmental impacts. The commentor also states that the Reservation shou opportunity to participate in the National Environment Policy Act process.

## RESPONSE

Volume 1, Appendix L addresses environmental justice concerns related to SNF manage impacts to the Seneca Nation of Indians arising from SNF management activities asso Valley Demonstration Project are considered to the extent that they are within the Consultation with the Seneca Nation of Indians on the Cattaraugus Reservation resul the tribe be notified of impending shipments across their lands. DOE is considerin

## II COMMENT

The commentor notes that the presidential memorandum accompanying Executive Order 1 Actions to Address Environmental Justice in Minority Populations and Low-Income Pop Federal agencies to analyze the environmental effects on minority communities and l communities when such analysis is required by the National Environmental Policy Act commentor is of the opinion that the EIS does not adequately address environmental

## RESPONSE

The Draft EIS committed to further analysis of environmental justice based on DOE's strategy for Executive Order 12898, which was unavailable at the time. Though admi was still evolving at the time of Final EIS preparation, the analysis of environmen expanded based on appropriate interim guidance. The EIS addresses environmental ju directives in Volume 1, section 5.8 and Appendix L for programmatic SNF management section 5.20 for ER&WM activities at INEL; and in the EIS Summary. See also the response to comment 03.07 (003).

## II COMMENT

The commentor states that DOE must meet the requirements of Executive Order 12898, Address Environmental Justice in Minority Populations and Low-Income Populations, a consider the Shoshone-Bannock Tribes' comments on the EIS, the impacts of its propo Tribes, the Fort Hall Reservation, and on other disadvantaged populations living in National Engineering Laboratory. The commentor further indicates that the Tribes a "minority population," but are governments that have a special relationship with th and its agencies, and have certain authorities to regulate others, including the Fe

## RESPONSE

The EIS addresses environmental justice and associated directives in Volume 1, sect L for programmatic SNF management; Volume 2, section 5.20 for INEL ER&WM programs; Summary. Potential impacts to the Shoshone-Bannock Tribes and the Fort Hall Reserv SNF management and waste management and environmental restoration program activitie INEL are considered to the extent that they are within the scope of the EIS, includ impacts. Impacts of all of the alternatives considered would be small. To fully u and be responsive to the Tribes, DOE consults regularly with the Shoshone-Bannock T comments on and concerns about the potential siting of proposed activities at INEL. Shoshone-Bannock Tribes as a sovereign nation.

## II 3.8 Miscellaneous

## II COMMENT

The commentor forwards to the State of Oregon questions related to shipping foreign through the Port of Portland, Oregon, including such matters as the associated risk emergency plans and resources, and details of possible shipments.

## RESPONSE

In a letter to the commentor (Nuclear Free Port Coalition) on July 20, 1994, the Or Energy answered each of the questions raised. This letter states that while all tr materials poses a risk, the chance of an accident occurring during movement of FRR of Portland, which could harm those exposed to radioactive materials from such an a evacuation of people downwind of the accident site, is extremely small. The letter Federal, and local emergency plans, supporting resources and trained responders, an procedures are available, rehearsed, and updated as needed. The Oregon Department identified applicable Federal, state, and local regulations governing such shipment information on the properties of some of the materials involved and controls on exp The letter stated that if the Oregon Department of Energy knew of changes to the sh would substantially increase safety, it would ask DOE or other shippers to make tho also stated that the Oregon Department of Energy has no evidence that changes to ex would increase safety.

In summary, the Oregon Department of Energy specifically answered each of the comme and those answers are consistent with the discussions and analyses in this EIS. Th the risks associated with transporting SNF would be small for all of the alternativ

## II COMMENT

A commentor suggests that the EIS be updated to reflect more current information on nuclear fuel. Additionally, the commentor states that no licensed cask exists for nuclear fuel from Fort St. Vain.

## RESPONSE

Volumes 1 and 2 contain the most current information DOE has on Fort St. Vain SNF. specific information regarding the quantity of Fort St. Vain fuel currently stored that could be received in the future. The EIS provides an upper limit on the indiv impacts.

The TN-FSV cask, U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9 been approved by NRC for shipping SNF by truck from Fort St. Vrain. The Certificat the TN-FSV cask does not expire until May 31, 1999, and the Public Service Company registered as a user.

## II COMMENT

The commentor encourages DOE support for a grant proposal (the Equal Partners Act) associated with the storage of spent nuclear fuel in South Carolina.

## RESPONSE

Support for specific grant proposals is outside the scope of this EIS; however, DOE unsolicited proposals related to managing SNF.

## II COMMENT

The commentor points out that even with citizen's groups "going to bat" to stop was the country, waste is still being shipped.

## RESPONSE

DOE is mandated by Congress to perform certain activities, among them to manage its secure manner. With this EIS, DOE is examining a range of management alternatives amounts of transportation of SNF among sites for management.

## II COMMENT

The commentor is opposed to the Idaho National Engineering Laboratory's perceived t Nuclear Weapons Complex Reconfiguration Program, also known as Complex 21.

## RESPONSE

The Nuclear Weapons Complex Reconfiguration Programmatic EIS, which has been split the Programmatic EIS for Tritium Supply and Recycling and the Stockpile Stewardship Management Programmatic EIS, is discussed in Volume 1, section 1.2.2 of this EIS; h issues related to that program are beyond the scope of this EIS.

## II COMMENT

Commentors express the need to inform the public of DOE activities and note the val information on radiation, waste management, risk, and other related topics. Such i end with the siting of a facility or program or be in the self interest of anyone.

## RESPONSE

DOE has engaged in substantial public information programs and stakeholder initiati information to the public. All major Federal actions invoking NEPA review are publ hearings are advertised throughout potentially affected communities. All persons a an opportunity to request information from DOE and to provide comments during the s public review periods. Activities include providing speakers on a variety of topic range of audiences, promoting student awareness of the sciences, numerous public in and publications, and public information offices at all major DOE locations. DOE's objectively inform the public of its activities and to involve the public in decisi practicable.

See also the response to comment 03.03 (008).

## II COMMENT

The commentor indicates that there should be objective international standards of a money being spent on weapons and their impacts on life.

## RESPONSE

This EIS addresses interim management of DOE SNF until ultimate disposition. Inter accountability and the fiscal efficiencies of cleanup activities are beyond the sco



the response to comment 03.01 (001).

## II COMMENT

The commentor makes statements regarding activities such as the 106C tank at the Hanford litigation, performance assessment, and waste management activities at the Nevada Test

## RESPONSE

The activities in question are unrelated to the proposed actions, alternatives under decisions being facilitated through this EIS.

## II COMMENT

Commentors express the opinion that DOE has not shown recent or historical concern for the public, future generations, workers, or the environment. Commentors mention both safety and adverse impacts from past DOE programs and operations, and charge that DOE has demonstrated abuse of responsibility.

## RESPONSE

DOE is very much aware of public criticisms of its operations, both ongoing and historical. The Secretary of Energy has publicly affirmed that current DOE policy and practice place environmental responsibility above all other program goals. DOE is formally committed to the safety and health of its workers, the public, and the environment in consideration of future generations. DOE is also working to rectify and eliminate adverse environmental impacts from past programs, while ensuring that current activities are conducted without environmental

## II COMMENT

Commentors express the need for or urge DOE to consider independent review and re-evaluate the priorities, national policy, and/or scope of nuclear waste or spent nuclear fuel DOE activities. Commentors mention the need for a comprehensive nuclear policy and DOE activities, public debate, referendums, appointment of independent commissions or panels, or other "balanced" advisory groups including participation of citizens, state and local officials. Such groups should be independent of DOE and/or the Navy. DOE suggests that the supervision of radiation health research be conducted by a nonmilitary independent of the military and weapons production, and that oversight be conducted by independent scientists and representatives of site workers and nearby communities.

## RESPONSE

DOE has and continues to take advantage of independent assessment and oversight of its operations. DOE is subject to independent regulations and oversight under numerous federal regulations such as the Clean Air Act, the Clean Water Act, and CERCLA under the jurisdiction of the states, as appropriate. Policy regarding additional oversight is under review; DOE requests or cooperates with review of independent organizations such as the National Academy of Sciences, the Congressional Defense Nuclear Facilities Safety Board, the recently appointed Galvin Commission, and the Disease Control and Prevention is conducting radiological dose reconstruction studies.

The DOE complex-wide Environmental Management Advisory Board has been chartered and

Advisory Committee Act. The Board consists of independent citizens from various backgrounds with advising DOE on local and national policy issues. Local site-specific advisors are established. For instance, the INEL Site-Specific Advisory Board reviewed and commented on DOE recognizes the value of independent and interdisciplinary review of not only its documentation, but its policies, priorities, and practices. In the case of this EIS, the Secretary of Energy and will include consideration of public and agency comments.

## II COMMENT

Commentors express opinions regarding whether the nonproliferation policy justifies nuclear fuel of United States origin from foreign research reactors. Most commentors state that countries where such spent nuclear fuel currently exists do not pose a nonproliferation threat and support return of spent nuclear fuel of United States origin to research reactors.

## RESPONSE

While nuclear nonproliferation policy is an issue affecting decisions regarding the either within the United States or abroad, that issue and the merits of various aspects of nonproliferation policy are determined by the President and Congress. The nonproliferation consideration in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Foreign Research Reactor Spent Nuclear Fuel (Draft), which analyzes the environment returning FRR SNF to the United States and after it has reached a U.S. port and been transported to a DOE SNF storage location.

See also the response to comment 06.09 (013).

## II COMMENT

Commentors express humorous or other opinions regarding institutions, officials, or the process.

## RESPONSE

Such comments do not provide substance conducive to a response. DOE recognizes that commentors disagree with the need for and the alternatives being considered to manage SNF.

## II COMMENT

The commentor notes that cost factors are not addressed in the EIS, but will likely be addressed in the decision process. The commentor also states that in combination with other factors, the Fast Reactor already being at the Idaho National Engineering Laboratory, the decision toward keeping spent nuclear fuels at the Idaho National Engineering Laboratory and bringing more in, just based on cost considerations, suggesting that this is both a waste of resources and "piecemealing" the EIS.

## RESPONSE

DOE prepared and issued the Spent Nuclear Fuel Management Cost Evaluation Report (DOE-NE/0001). A summary of the report is included in Volume 1, Chapter 3 of the EIS for the convenience of the public. The cost evaluation report is intended to be only one of many factors considered in management decisions.

The purpose of the cost evaluation report is to not only provide information to decision makers but also to provide a basis for the decision-making process.

but also for other management decisions. The decision process for this EIS will include only of environmental factors, but also of public comments, technical and practical DOE's mission.

## II COMMENT

The commentor states that the EIS conclusion that the alternative proposals for spent nuclear fuel management have small environmental effects is logical if it is assumed that there are no existing Federal laws and regulations.

## RESPONSE

DOE is committed to comply with all applicable Federal and state laws and regulatory policy to implement legally applicable radiation protection standards and to consider appropriate, recommendations by authoritative organizations (e.g., the National Council on Radiation Protection and Measurement, the International Commission on Radiological Protection Regulatory Commission). The No Action alternative in the EIS, which provides an environment for comparison of the impacts of the other alternatives, would not meet all regulatory requirements considered regulatory compliance in its identification of the preferred alternative.

## II COMMENT

Commentors indicate that DOE must select, in its preferred alternative and in the EIS, an alternative that supports its contractual obligation to remove spent nuclear fuel from the West Valley Demonstration Project site.

## RESPONSE

In developing its preferred alternative and the ROD, DOE has and will consider all commitments, including those with the West Valley Demonstration Project. Negotiations are under way between DOE and the New York State Energy Research and Development Authority under section 8(c) of their November 1986 Agreement, regarding extension of the date for removal of spent nuclear fuel from West Valley. A decision regarding removal of the SNF from West Valley must await the ROD for this EIS. See the response to comment 04.04 (008) for management of spent nuclear fuel under the ROD alternative.

## II COMMENT

Commentors state that all DOE sites are contaminated, and cleanup is not progressing. Some commentors support continued research at Idaho National Engineering Laboratory to see past issues resolved before additional wastes are brought in.

## RESPONSE

DOE accepts the responsibility to operate its waste management activities in compliance with requirements and continues to improve the procedures and technologies associated with waste management. Accordingly, lessons learned from past practices and knowledge gained from research and development programs are incorporated into future waste management programs. The purpose of this EIS is to further these objectives. DOE's Environmental Restoration Program is responsible for responding to past releases and restoring the environment. Specific decisions related to cleanup at INEL are generally addressed

agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991. The FFA/CO establishes a comprehensive process to integrate the remediation requirements and the corrective action requirements of RCRA and the State of Idaho's Hazardous Waste Act. Cleanup activities are conducted under the process and schedule established under the FFA/CO process and are signed by all three agencies and represent a joint determination that protection of human health and the environment will be achieved through implementation of the remedy.

Environmental restoration efforts at INEL have progressed substantially since the February of March 1995, 10 of the 25 scheduled RODs have been successfully negotiated and signed by the State of Idaho. These RODs have resulted in the implementation and/or completion of final actions designed to reduce or eliminate hazards to human health and the environment. The enforceable milestones set in accordance with the FFA/CO have been met, either on or before the scheduled date. Additional work is scheduled over the next several years, as detailed in this EIS. At other DOE sites, DOE is responsible for negotiating similar agreements with the appropriate state and managing environmental restoration activities in accordance with these agreements. Volume 1, Appendices A through F.

Specific details of the overall DOE Environmental Restoration Program are provided in general in this EIS. The INEL Environmental Restoration Program is discussed in Volume 2, Section 7.2.5.

## II COMMENT

The commentor suggests adding "current" to clarify the DOE and Navy mission statements.

## RESPONSE

The Summary has been edited to clarify the missions of both DOE and the Navy.

## II COMMENT

The commentor states that DOE spends too much money, whether for environmental evaluation meetings, or waste and spent fuel activities.

## RESPONSE

Congress dictates the responsibilities for which DOE will be held accountable. This includes proper justification of the planning budget and fiscal accountability. This is pursuant to NEPA. The entire NEPA process, while sometimes costly, is expected to continue because it provides the opportunity to be part of DOE's decision-making process. This benefits the public and the government by helping ensure cleaner and safer environmental Federal facilities.

## II COMMENT

The commentor indicates DOE has been motivated or influenced by the corporations or entities that manage the DOE sites, and requests that DOE not damage the environment.

## RESPONSE

This EIS, while supported by significant work by outside consultants, was prepared by consultants who were carefully reviewed by DOE. Contractors who participated in preparation have no financial interest in decisions that will be made by the Secretary of Energy.

None of the management and operating contractors at the sites prepared the EIS, alt data that was used in the preparation of the document. For this EIS, public comme significant role in the decision process. The final decisions will be made using a will include such factors as DOE mission, cost, and technical feasibility. DOE's f influenced by corporations.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environme all the alternatives considered in this EIS. The analyses show that the impacts of small.

## II COMMENT

The commentor suggests that DOE change its radiation protection standards.

## RESPONSE

It is beyond the scope of this EIS to establish radiation protection standards for standards are established by the National Association of Science and the National C Protection, considering the latest scientific information. These standards are als with international standards set by the International Council on Radiation Protecti

## II COMMENT

Commentors suggest that funding for cleanup at the Idaho National Engineering Labor sufficient.

## RESPONSE

Funding issues are beyond the scope of this EIS.

## II COMMENT

The commentor states that the public should have a say in what waste comes into Ida

## RESPONSE

NEPA and its implementing regulations require public participation prior to an agen on a major proposed action. For this EIS, DOE provided extensive public participat In accordance with CEQ regulations, a Notice of Opportunity to comment on preparati DOE Programmatic Spent Nuclear Fuel Management and Environmental Restoration and Wa Management at the Idaho National Engineering Laboratory was published in the Federa September 3, 1993. DOE received numerous letters from individuals and organization questions or raising issues related to the EIS. Each of these letters was answered information provided as requested. An Implementation Plan was prepared and release October 29, 1993; the amended Implementation Plan was available on May 9, 1994. A Availability was published in the Federal Register on July 1, 1994, to announce the Draft EIS. The Draft EIS was offered on request and was available at 64 public lib locations. The Draft EIS was delivered to all who requested it, and was sent to al agencies, organizations, and individuals who were believed likely to be interested comments were solicited and written comments were received from June through Septem excess of the NEPA requirement. Thirty-three public hearings were held in 20 locat country, including 4 locations in Idaho, and comments were received at these hearin and through a toll-free telephone line, which accepted comments both orally and by

the dates, times, and locations of the public hearings were published in the Federal Register in 1994. In addition, advertisements were placed in local newspapers prior to the meetings. Additional information briefings were provided to organizations and individuals. In areas where communities not previously involved, DOE advertised the hearings in alternative Spanish-language newspapers and on Spanish-language radio programs; and also had responsibilities to use available avenues for public awareness and for solicitation in the EIS process. DOE continues to seek ways to improve the public involvement process and to incorporate comments to improve public involvement plans for future EISs.





## 4. PROPOSED ACTION AND ALTERNATIVES

### 4.1 Purpose and Need

#### 04.01 (001) Purpose and Need

##### COMMENT

Many commentors state that the EIS does not adequately describe the purpose and need action. One commentor is of the opinion that the stated purpose failed to demonstrate programmatic EIS.

##### RESPONSE

The purpose and need for DOE actions are described adequately in Volume 1, Chapter 1. Volume 1, Chapter 2 describes the need for DOE to provide a management range of types of spent nuclear fuel (SNF) in varying conditions. Volume 2, Chapter 1 for DOE to implement a waste management program at the Idaho National Engineering Laboratory that complements its environmental restoration program as set forth in the Federal Consent Order (FFA/CO).

The decisions that must be made to establish an effective SNF program are (a) where management activities, (b) the appropriate facilities, capabilities, and technologies and (c) the research and development activities to support the SNF management program. The integration of programmatic management of SNF and the INEL environmental restoration management programs into a single EIS was based on an analysis of the requirements regarding SNF management activities at INEL. To fully evaluate all reasonable alternative management activities at INEL, including Fort St. Vrain and Naval SNF, DOE considers evaluate the national strategy for managing SNF. This allows the public and decision perspective of reasonable alternatives. It also serves as a means to address national stated in Volume 1, Chapter 2. To meet the deadlines agreed to during litigation, withdraw programmatic SNF management from the Programmatic Environmental Restoration Management EIS (now the Waste Management Programmatic EIS) and include it in the IN Environmental Restoration and Waste Management EIS.

See also the response to comment 05.09 (008).

#### 04.01 (002) Purpose and Need

##### COMMENT

The commentor states that the EIS does not define the problem and motivation for ge solved, except in terms of transportation.

##### RESPONSE

The problem varies with SNF type and waste type. The decision criteria used to compare alternatives and select the preferred alternatives was based in part on public comments to address specific problems and the public's desire to minimize transportation. Table T shows the maximum potential impacts among the proposed alternatives.

This information is used by the decisionmakers. Volume 1, Chapter 5 and Appendix K Chapter 5 summarize the environmental impacts of all the alternatives considered in show that the impacts of all alternatives would be small. While there would be differences among the alternatives, these differences by themselves are not sufficient to distinguish alternatives.

#### 4.01 (003) Purpose and Need

##### COMMENT

The commentor expresses the opinion that the EIS is really justifying continued operation facilities, and a real mission needs to be established.

RESPONSE

The EIS evaluates a full range of alternatives to safely and effectively manage pre foreseeable quantities of SNF pending its permanent disposition. The purpose and n actions are in Volume 1, Chapter 2. DOE believes this EIS adequately describes the

## 04.01 (004) Purpose and Need

COMMENT

The commentor suggests that a range of possible solutions be developed.

RESPONSE

Volume 1 of this EIS is programmatic; that is, it evaluates a full range of reasona management activities on a nationwide basis. Volume 1, section 3.1 describes the p SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF environmental restoration, and waste management at INEL.

Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, waste being converted into a vitrified glass for repository disposal) is authorized repository. This authorization is subject to the physical and statutory limits of DOE SNF meeting repository acceptance criteria, and payment of fees. As part of it program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, existing SNF inventory to assess compliance with the first repository's acceptance determine what processing, if any, is required to meet the criteria. Decisions reg disposition of DOE SNF would follow appropriate review under NEPA and be subject to NRC. This path forward would be implemented so as to minimize impacts on the first

## 04.01 (005) Purpose and Need

COMMENT

Commentors state that DOE is wasting taxpayer dollars focusing on temporary storage disposition and question why preparing spent nuclear fuel for final disposition wou addition, commentors express opinions that solutions are not evident for solving th with spent nuclear fuel management.

RESPONSE

DOE and the independent Defense Nuclear Facility Safety Board have determined that could arise within several years unless additional interim SNF storage capabilities Mountain is being studied as the potential site for the first geologic repository. acceptance of commercial SNF is expected to begin 2010. Although the date for acce finalized. While DOE is committed to developing a Federal geologic repository for SNF and high-level wastes, technologies for final SNF disposition cannot be specifi repository performance and associated acceptance criteria for SNF and high-level wa acknowledges these challenges by allowing up to 40 years for ultimate disposition t repository.

The 40-year period is not needed to prepare SNF for final disposition, but is judge the time needed for a repository to be available. Pending availability of such dis committed to provide safe and environmentally sound storage and management of SNF. Although activities associated with licensing and opening the SNF and high-level wa are outside the scope of this EIS, general solutions for safe interim management of EIS. General solutions for managing SNF have been developed and are discussed in V section 1.1 and Appendix J. Technologies that have been developed to enable SNF t during the storage period are described in Volume 1, Appendix J. A combination of may satisfy many of the eventual repository acceptance criteria. In addition, cons alternatives analyzed in the EIS for providing or maintaining processing flexibilit meet the repository acceptance criteria.

## 04.01 (008) Purpose and Need

COMMENT

The commentor states that the EIS needs to explain the actions needed, problems ide



and then identify locations.

#### RESPONSE

Volume 1, Chapter 2 describes the purpose and need for the proposed action. The alternatives in Chapter 3, provide potential solutions to these problems/needs. DOE considers environmental mission impacts, cost effectiveness, and public input in making its decision after

## 04.01 (009) Purpose and Need

#### COMMENT

The commentor states that the EIS should not address the a nationwide inventory of This unnecessary evaluation along with configuring this programmatic and INEL site- believe that the INEL is designated as the national site for spent fuel management,

#### RESPONSE

This EIS is a comprehensive national review of management options for a large inventory response to requests to do so by the State of Idaho. In 1991, the State of Idaho was in litigation over SNF. In a Court opinion dated May 2, 1992, DOE was advised to a fuel from the Fort St. Vrain reactor in a comprehensive EIS, which also analyzes an proposed shipments of nuclear waste to INEL from all sources. The State of Idaho requested Court allow it the opportunity to amend its pleading, which the court allowed. In counterclaim, the State of Idaho argued that DOE must analyze, in a comprehensive EIS involving receiving and storing SNF, and must study all reasonable alternatives to INEL. This argument by the State of Idaho helped shape the scope of the EIS. INEL with four other DOE sites for the management for DOE SNF under a number of reasonable alternatives. Additionally, five sites are being considered for the management of decision have been made regarding any sites. See the response to comments 04.04 (0

## 4.2 Proposed Action

### II COMMENT

The commentor states that the EIS is not adequate because it fails to clearly define actions.

#### RESPONSE

DOE has revised Volume 1, Chapter 2 and Volume 2, Chapter 1 to more clearly state the actions. Volume 1, Chapter 2 describes the background factors leading to the proposed forth the action proposed by DOE. DOE states that as a primary part of establishing management program, DOE must first analyze complex-wide strategic questions regarding management. These questions include analyzing the most appropriate location(s) for the methods for managing SNF; and the necessary research and development activities integrated into the management program. This type of EIS is commonly known as a "program" EIS, and is acceptable under the Council on Environmental Quality (CEQ) regulation CFR 1502.4(b). As emphasized in Volume 1, Chapter 2, once decisions are made regarding appropriate locations(s) for SNF management, questions on site-specific and technical the SNF management program will be analyzed in subsequent tiered NEPA reviews, as a Volume 2, Chapter 1 of the EIS describes the purpose and need for agency action at that section that as part of developing and implementing a program for SNF management restoration, and waste management at INEL, site-specific decisions must be made regarding development activities, compliance with legal requirements, and management of waste environmental restoration projects, all in an environmentally sound manner. The proposed Volume 2 of the EIS is adequate under CEQ regulations. Volume 2 evaluates the INEL alternatives for managing SNF under all programmatic alternatives evaluated in Volume

## II 4.3 Alternatives Analyzed

### II COMMENT

Many commentors state that the generation of spent nuclear fuel should be minimized

there is a long-term management plan in place, existing facilities and problems are means of ultimate disposition. Some commentators state that the No Action alternative process, while others state that the EIS is inadequate because it does not address aspects of spent nuclear fuel.

#### RESPONSE

Eliminating all current and future generation of DOE SNF would not significantly dis storage, and final disposition challenges facing DOE. Also, many products produced reactors would cease to exist, as stated in Volume 1, Appendix E, section 2.1.1. D addressed in Volume 1, section 1.1 and for INEL in Volume 2, section 2.2.5. Approx the current inventory originated in DOE weapons-production reactors that have ceased experimental reactors, most of which have been shut down, generated another 8 percent Volume 1, Table 1-1, the additional SNF, in metric tons of heavy metal (MTHM), to be next 40 years (until 2035) will amount to only a 3-percent increase in the current operations that generate DOE and Navy SNF are carried out to implement programs and established by the President and Congress; therefore, cessation of these activities these policies and programs. Such changes are outside the scope of this EIS. Problems at existing storage facilities have been identified in the Spent Fuel Work Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Materials and Their Environmental, Safety and Health Vulnerabilities. This report, nuclear fuel vulnerability assessment, and associated action plans to resolve identified acknowledged in Volume 1, section 1.1.2 and Appendix J-2, and Volume 2, section 2.2. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, section mitigation measures are discussed in section 5.7. For all alternatives analyzed, in General solutions for managing SNF have been developed and are discussed in Volume 1 and Appendix J. Therein it is noted that technologies for final disposition of SNF advance of repository acceptance criteria. These requirements are several years for approval, but a combination of the technologies described in Appendix J may satisfy acceptance criteria. Furthermore, consideration is given by the alternatives analysis providing or maintaining processing flexibility that may prove necessary to meet them. Consequently, although the ultimate disposition of SNF is a high priority for DOE, disposition activities have not been finalized and are beyond the scope of this EIS. Pending availability of such disposal options, DOE must provide for safe and environmental storage and management of these materials. Several of the action alternatives being also provide the flexibility to economically site facilities that may be necessary implementation of safe interim storage, and the capability to meet necessary repository represent the solution that DOE seeks to define with this EIS.

## II COMMENT

The commentator states that the United States is planning to receive foreign spent nuclear fuel but it should be kept outside the United States. The commentator also raises an issue of capacity to currently store such spent nuclear fuel.

#### RESPONSE

Alternatives related to the policy on managing SNF of United States origin from foreign (FRRs) are being analyzed in a separate EIS. However, this EIS does analyze the impacts of and managing FRR SNF should a decision to accept such fuel be made. This effective analysis for reasonably foreseeable management of the SNF under consideration. DOE final decision on the acceptance of that fuel until the EIS entitled Proposed Nuclear Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) are completed. Depending on decisions made under this EIS, capacity at the Savannah River, INEL, or both may need to be enhanced to support on-site SNF management activities.

## II COMMENT

The commentator suggests that foreign and domestic non-DOE shipments should not be included in the Decentralization alternative, and only the no-exam case for the Navy spent nuclear fuel included.

#### RESPONSE

The changes to the Decentralization alternative the commentator recommends essentially

Action alternative. The EIS evaluates environmental impacts of all alternatives, i alternative, and concludes that these impacts would be small.

## II COMMENT

The commentor states that all alternatives present catastrophic risk to present and are enormously expensive.

### RESPONSE

The estimated costs of the alternatives are summarized in Volume 1, section 3.3. F considered in this EIS, the impacts presented in Volume 1, Appendix K would be small response to comment 05.12.07.01 (001) regarding risks due to postulated accidents a 05.10.02 (007) regarding fears.

## II COMMENT

Commentors express the opinion that the EIS fails to assess an inclusive range of a considered all options or sites, and that DOE and Navy minds are limited to out-of-RESPONSE

DOE believes that the range of alternatives analyzed in the EIS are inclusive and i requirements of considering a reasonable range of alternatives under the NEPA and C Alternatives range from the No Action alternative to an alternative that would cons single site, the Centralization alternative. Alternatives dismissed are discussed and Volume 2, section 3.2. DOE believes the discussions of the bases for dismissin alternatives are adequate. Analysis and discussion of all alternatives that can be impossibly large task and is not required by existing regulations. See also respon 04.03.01 (001) regarding selection of alternative sites.

## II COMMENT

The commentor states that the alternatives provided are too broad and the EIS shoul storage possibilities and technologies.

### RESPONSE

The purpose of Volume 1 of the EIS is to provide the public and decisionmakers with of the proposed action and alternatives. The alternatives are discussed at a level covering all DOE SNF at a large number of sites and aimed at reaching a decision on managing of DOE SNF. Once an alternative has been selected, each action within the may require additional documentation at the site-specific level to satisfy the prov Volume 2 is a site-specific assessment of SNF management, environmental restoration management alternatives at INEL. Therefore, the alternatives discussed in Volume 2 those in Volume 1. However, some actions under Volume 2 alternatives may also requ environmental documentation if they are part of the selected alternative.

## II COMMENT

The commentor states that the environmental restoration and waste management altern components that are unreasonable, and none of them matches what DOE plans to do.

### RESPONSE

The proposed action presents a complex, almost infinite, number of possible alterna circumstance, NEPA requires evaluation of a reasonable range of specific alternativ cover the full spectrum of reasonable alternatives ranging from minimizing environ waste management activities at INEL, to maximizing those activities at the site. A alternatives will be contained in the Record of Decision (ROD).

## II COMMENT

The commentor notes that the structure of the Decentralization alternative appears targets the Savannah River Site and the Idaho National Engineering Laboratory.

RESPONSE

It is true that if the Decentralization alternative is selected and implemented as strategy for SNF, SRS and INEL would receive most of the limited fuel transfers with These receipts are only a small fraction of those proposed under other action alternatives currently managed at these sites.

## II COMMENT

The commentor suggests that the EIS include some solutions like on-site storage in RESPONSE

Dry-cask storage is included in the activities identified in the overview of technology Appendix J. If a dual-purpose cask were licensed, it could be used for the SNF and In addition, DOE is preparing an EIS that considers use of a multi-purpose canister managing certain types of SNF.

## II COMMENT

The commentor considers interim centralization integral to a deep geologic repository number of processing and remediation actions be taken.

RESPONSE

The processing and remediation suggestions proposed by the commentor are beyond the but will be addressed in the Waste Management Programmatic EIS or in site-specific

## II COMMENT

Commentors state that the EIS does not explore alternatives for storing spent nuclear Idaho National Engineering Laboratory.

RESPONSE

This EIS explores alternatives that would store SNF at locations other than INEL, a Volume 1, Chapter 3 and Appendix F, section 2.2. If INEL is not chosen as the best be stored at the Hanford Site, the Savannah River Site, the Oak Ridge Reservation, Site under the Centralization alternative and by the Regionalization by geography alternatives, all SNF currently stored at INEL would be moved to other sites. The Decentralization alternatives would store the SNF close to the point of generation.

## II COMMENT

The commentor states that in some respects, it is difficult to determine the difference "decentralized" and "regionalized" approaches.

RESPONSE

The Decentralization alternative would maintain existing SNF at current locations at the site of generation. The Regionalization alternative involves transporting SNF another, with all of it stored at two or three DOE sites, based on fuel type or geo do have some features in common, e.g., under some options of each alternative, SNF would be transported to DOE sites.

## II COMMENT

The commentor states that the EIS fails to identify alternative projects and analyze streams drive the EIS.

RESPONSE

The alternatives were identified in the EIS Implementation Plan for the Department Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory scoping process. Waste streams are identified individually in each alternative by handling, treatment, and storage needs; environmental regulations; and safety requirements. The activities included within the alternatives.

Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management, section 3.4 describes the preferred alternative for SNF management, and environmental waste management activities at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

## II COMMENT

The commentor asks why other nations are not considered in this EIS as spent nuclear alternatives.

RESPONSE

The United States nuclear weapons nonproliferation policy is summarized in the White House Nonproliferation and Export Control Policy, September 27, 1993. Under its nuclear policy, the United States seeks to reduce or eliminate, where possible, the accumulation of highly enriched uranium or plutonium. Based on these considerations, this alternative is detailed analysis (see Volume 1, section 3.2 and Volume 1, Appendix D, section 3.6) design and operating characteristics of the fuel for Naval reactors and certain power reactors. As such, foreign access is prohibited without going through a complex Atomic Energy Act involving a government agreement approved by the President and the Congress. Such access is not allowed under existing agreements and strict Nuclear Regulatory Commission (NRC) licensing requirements.

## II COMMENT

The commentor notes that the alternatives evaluated in the EIS do not reflect DOE's plan.

RESPONSE

DOE issued the DOE-Owned Spent Nuclear Fuel Strategic Plan on December 30, 1994. The plan is consistent with the alternatives in the EIS. The strategic plan needs to be revised to reflect the strategic management options selected in the EIS ROD.

## II COMMENT

The commentor states that adding a "transition time" to the No Action alternative is not an alternative.

RESPONSE

The transition period required relates to the time needed to implement a specific alternative. For any of the alternatives, time is needed for safe, orderly transition. For example, the transition time needed for the No Action alternative is described in Volume 1, section 3.8. As described therein, the transition would make use of existing facilities and methods described under the alternatives considered. The risks associated with all alternatives are considered for management of Naval SNF, summarized in Volume 1, Appendix D, Chapter 3. The risks are small, so the risks associated with the transition period would be just as small. The EIS has been revised to reflect the transition period of 3 to 20 years, with the 1992/1993 Planning Basis alternative, which has no transition period.

## II COMMENT

Commentors state that the alternatives or the range of alternatives are inadequate.

RESPONSE

Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management.

2, section 3.4 describes the preferred alternative for SNF management, environmental management activities at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

The programmatic action that DOE ultimately selects is not necessarily limited to o presented. For example, a hybrid alternative could be developed that would incorpo or more of the five alternatives analyzed. Moreover, the programmatic decisions wi

## II COMMENT

The commentor states that the EIS does not scientifically examine if Idaho would be and asks if any evidence exists.

### RESPONSE

Volume 2, Chapter 5 examines the potential environmental consequences of the altern many of which involve storing waste. This chapter explains the evaluations conduct Volume 2, section 3.3 summarizes and compares the potential consequences of the alt alternatives considered, including storing SNF in Idaho, would be safe, as evidence environmental impacts reported in this EIS. Supporting appendices and reference ma increasing levels of detail on the scientific investigations conducted.

## II COMMENT

Commentors state that some of DOE's spent nuclear fuel or foreign research reactor processed overseas at existing facilities and must be included as an alternative in expresses the opinion that the option of shipping spent nuclear fuel to British Nuc processing facilities in England is not the best choice.

### RESPONSE

Volume 1, section 3.2.5 and Appendix A have been revised in response to comments to of foreign processing of DOE SNF is being evaluated in the FRR EIS. SNF reprocessi uranium and plutonium for defense purposes is being phased out. As discussed in Vo SNF processing is being evaluated for certain fuel types for purposes such as stabi eliminate the need for storage and ultimate disposition, such as disposal. Any fut overseas processing of N-Reactor or any other specific SNF type will be subject to or program-specific NEPA review tiered from this EIS.

## II COMMENT

The commentor notes that solutions do not exist to solve the problem of the spent n has already generated.

### RESPONSE

Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives nationally and at the INEL, respectively. See also the responses to comments 04.04 04.04 (011).

The programmatic action that DOE ultimately selects is not necessarily limited to o presented. For example, the ROD could incorporate actions from one or more of the analyzed. Moreover, the programmatic decisions will not identify all site-specific options. If appropriate, the decisions would be implemented after additional site-evaluation.

## II COMMENT

The commentor states that under some alternatives it could take years to build requ suggests that specific language be included under each alternative to permit necess shipment of spent nuclear fuel to other sites and the provision of additional stora

### RESPONSE

Volume 1, section 3.1 and Volume 1, Appendix D, section 3.8 describe the transition implementation of the alternatives considered, and the impacts associated with the

programmatic action that DOE ultimately selects is not necessarily limited to one of those presented. For example, a hybrid alternative could be developed that would incorporate more of the five alternatives analyzed. Moreover, the programmatic decisions will require additional site-specific NEPA evaluation.

## II COMMENT

The commentor questions how spent nuclear fuel handling experience accumulates with the Summary statement on page 21 that "DOE does not consider the Nevada Test Site to be the management of spent nuclear fuel because of the...Nevada Test Site's lack of spent nuclear fuel handling experience."

### RESPONSE

An overview of SNF management is in Volume 1, section 1.1, and the consequences of the alternatives are presented in Volume 1, Chapter 5. Current management practices at the sites are discussed in Volume 1, site-specific Appendices A through F, and the history of these sites are also presented in these appendices. Supporting information on the origins is given in Volume 1, Appendix J. Experience with handling DOE SNF generally has been acquired in connection with operating DOE nuclear reactors, particularly during refueling activities. Several DOE sites also were prominently involved in past reprocessing activities for reuse. Relatively little reactor operation has occurred at the Nevada Test Site. No SNF handling activities have occurred at the Nevada Test Site since 1986, as discussed in Volume 1, Appendix F, Part Two. See also the response to comment 028).

## II COMMENT

The commentor states that the EIS leads one to believe that the Savannah River Site manages spent nuclear fuel material as effectively as the INEL.

### RESPONSE

This EIS analyzes all alternatives objectively. Volume 1, Chapter 5 and Appendix K Chapter 5 summarize the environmental impacts of all the alternatives considered in the EIS to show that the impacts of all alternatives would be small.

## II COMMENT

The commentor states that the EIS does not consider leaving Fort St. Vrain spent nuclear fuel where it is currently stored in a Nuclear Regulatory Commission licensed storage facility. The commentor acknowledges that the foreign research reactor fuel could be processed or safely stored in the United Kingdom.

### RESPONSE

Volume 1, Appendix E, section 2.2 addresses the alternative of leaving the Fort St. Vrain SNF at the Fort St. Vrain SNF Shipment and Storage Project. Under all alternatives considered, the impacts of the proposed alternatives would be small. See also the response to comment 04.03 (027).

## II COMMENT

The commentor notes that the description of the No Action alternative includes minimal research and development and it is not obvious why, because there is already spent nuclear fuel at the Idaho National Engineering Laboratory that could be used for reprocessing and development.

### RESPONSE

Volume 1, section 3.1.1 discusses the No Action alternative. Section 3.1.1 shows that the No Action alternative includes additional shipments to INEL, except during the transition period. The No Action alternative analyzes a baseline condition of minimal activity against which the other alternatives are compared. Therefore, it is defined as having minimal research and development. Minimal research and development is defined as having minimal research and development.

not a consequence of ceasing shipments of SNF to INEL.

## II COMMENT

Commentors state that alternative descriptions in Volume 1, Tables 3-1 through 3-4 storage problems at Test Area North, but not at other storage facilities at the Idaho Laboratory that were identified as not meeting current standards. The commentor ad alternative is selected, spent nuclear fuel should be moved from all facilities tha standards.

### RESPONSE

Volume 1, Appendix B, Table 3-2, and Volume 2, Appendix F detail potential SNF proj each alternative. Other potential upgrades or replacement facilities that may be r specific alternative at the site are included for each alternative analysis in Volu detailed analyses are provided in the Volume 1 site-specific Appendices A through F

## II COMMENT

The commentor states that after identifying the spent fuel problems to be addressed alternatives for resolution should have been explored, including design of storage processing and handling are needed, and whether alternative types of fuel can impro

### RESPONSE

Volume 1, Chapter 2 states that DOE needs to make complex-wide strategic decisions for the next 40 years. The EIS further states that because DOE is not ready to dec disposition of SNF, alternatives for technologies for disposition are not within th The EIS discusses the various vulnerabilities identified with existing SNF storage complex. These problems are addressed in the EIS under the various alternatives. resolving problems at individual sites will be addressed on a site-specific basis i documentation.

DOE believes that the range of alternatives analyzed in the EIS are inclusive and i philosophy of considering a full range of reasonable alternatives, as required by N regulations. Analysis and discussion of every alternative that can be postulated is and is not required by existing regulations.

Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives management, and SNF management, environmental restoration, and waste management at respectively. See also the responses to comments 04.04 (008) and 04.04 (011).

## II COMMENT

The commentor notes that projections of and disposition plans for the volume of was generated by spent fuel activities are key issues that merit attention in the EIS.

### RESPONSE

The projections of waste generation associated with SNF management activities are s alternative in Volume 1, section 5.1 of the EIS. For example, Figure 5-1 summarize the No Action alternative. All waste generation data is summarized in Volume 1, Ap Additional site-specific information is provided in the Volume 1 site-specific Appe DOE disposition plans will be negotiated on a site-specific basis under FFA/COs.

## II COMMENT

The commentor objects to the indefinite dates of storage and transport to a possibl commentor asserts that nuclear fuel has been and will continue to be stored improp disagree with DOE's position that the No Action alternative could result in a prog of the safety margin. The commentor questions why such deterioration is expected u Action alternative.

### RESPONSE

Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had



SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, waste being converted into a vitrified glass for repository disposal) is authorized repository. This authorization is subject to the physical and statutory limits of DOE SNF meeting repository acceptance criteria, and payment of fees. As part of it program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, existing SNF inventory to assess compliance with the first repository's acceptance determine what processing, if any, is required to meet the criteria. Decisions regarding disposition of DOE SNF would follow appropriate review under NEPA and be subject to NRC. This path forward would be implemented so as to minimize impacts on the first repository. Given the current first repository schedule and queue for emplacement, DOE must be SNF for an extended period, currently estimated not to exceed 40 years. DOE believes the EIS represent reasonable alternatives for safely managing SNF. The No Action alternative, which is required by NEPA, is an alternative analyzed as comparison. This alternative assumes only minimal safety upgrades to existing facilities. Under this alternative, existing conditions would largely continue and deteriorate. On the other hand, all other alternatives proposed would use upgrades ensure improved storage conditions and to stabilize deteriorated SNF. See also the 06.01 (002).

## II COMMENT

The commentor states that the EIS should clarify in detail how hazardous waste managed at the INEL will be handled under each alternative and how their differences will affect compliance with current regulatory requirements, such as land use requirements.

### RESPONSE

A discussion of hazardous waste management practices at INEL is provided in Volume 2, which notes that the DOE complex relies primarily on the private sector for disposal of licensed and permitted facilities. Few changes from these practices are assumed for the facility's ability to comply with current regulatory requirements, such as land use, which is basically unaffected.

## II COMMENT

The commentor expresses the opinion that the mix and match of various proposals with the EIS frustrates meaningful comment on the environmental acceptability of the future management alternatives.

### RESPONSE

Please see responses to comments 04.03.02 (007) and 05.08.03 (015). Additionally, the EIS are purposefully broad so that courses of action, bounded by the analyses of environmental consequences, can be developed and tailored within and between alternatives. Narrowing each alternative or increasing the number of alternatives to be more detail specific would complicate the analysis and clear presentation of environmental consequences. DOE preferred alternative in the Draft EIS, but has in the Final EIS following consideration including consultation with the Shoshone-Bannock Tribes. The course of action to be published in the ROD.

## II COMMENT

The commentor states that the EIS does not contain an alternative for low-level waste disposal.

### RESPONSE

Volume 2, section 3.1 discusses alternatives for low-level waste disposal. Volume 2 also discusses project-specific options for low-level waste disposal. The impacts for the alternatives are discussed in Volume 2, Chapter 5, and would be small for all of the alternatives evaluated.

## II COMMENT

The commentor states that all storage should be monitored and not be in caverns or

monitored and retrieved if necessary.

RESPONSE

Volume 1, section 3.1 summarizes the alternatives considered for managing SNF in th  
All of the alternatives considered would provide monitored and retrievable storage  
discussed in this EIS.

## II COMMENT

The commentor suggests that the No Action alternative take maximum actions for safe management of spent nuclear fuel.

RESPONSE

DOE agrees that actions must be taken for safe and secure SNF management. Volume 1 describes the No Action alternative, which is required by NEPA.

The DOE assessment of SNF vulnerabilities summarized in Volume 1, section 1.1 demon must implement a minimal program to protect the environment and the health and safe the public. The No Action alternative provides a baseline for comparison of the im alternatives. These impacts are summarized in Volume 1, Table 3-1.

## II COMMENT

The commentor states that the alternatives are not acceptable.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believe this EIS are adequate to support a decision on this subject.

The NEPA, 42 USC Section 4371 et seq., and CEQ regulations at 40 CFR Section 1500 e that an EIS describe the purpose and need for the proposed action; alternatives, in affected environment; and environmental consequences associated with the proposed a alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume the purpose and need for the proposed action; Chapter 3 describes the alternatives Chapter 4 describes the affected environment; and Chapter 5 describes the environme

## II COMMENT

The commentor states that the EIS does not cover research and development activitie nuclear fuel to a stable, environmentally benign form.

RESPONSE

Volume 1, section 3.1 and Appendices A through F cover a range of research and deve including an overview of potential technologies for SNF management. DOE's preferre management, discussed in Volume 1, section 3.1, states that research and developmen undertaken for SNF management, including stabilization technologies.

## II COMMENT

The commentor asserts that the document indicates differences between alternatives alternatives that are better than others be identified.

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environme associated with all the alternatives considered in this EIS. The analysis shows th alternatives considered would be small. While there are differences in the impacts alternatives, the differences, by themselves, do not distinguish between the altern such as agency mission, costs, ease of implementation, and public comments were con identification of the preferred alternatives. These alternatives are identified in Volume 2, section 3.4. See also the responses to comments 04.04 (008) and 04.04 (0

## II COMMENT

The commentor states that foreign and private domestic processing of spent nuclear as an alternative in the EIS.

### RESPONSE

Volume 1, Chapter 3 describes the alternatives considered in this programmatic EIS. input, Volume 1, section 3.2 was revised to include the evaluation of an option for DOE SNF that could serve as reasonable alternatives compared with those evaluated i DOE has an obligation under the NEPA to evaluate a range of reasonable alternatives Action alternative, whether deemed reasonable), NEPA and CEQ regulations clearly gi discretion of the agency, in this case DOE, to dismiss alternatives that the agency given the parameters of the purpose and need for the agency action. DOE believes reasonable range of alternatives, and has been responsive to public comments by eva foreign processing in Volume 1, section 3.2, as discussed. See also the response t (001).

DOE has evaluated the potential need for processing SNF for stabilization purposes. in Volume 1, Appendices A through C. Volume I, Appendix D, section 3.6.2 has been explain why this alternative is not reasonable for Naval SNF.

## II COMMENT

The commentor questions why the alternative with the least environmental impact is preferred.

### RESPONSE

There are no clear environmental discriminators between alternatives.

## II COMMENT

The commentor states that the EIS should discuss the use of existing spent nuclear at the Nevada Test Site, specifically E-MAD and R-MAD, in tandem with disposal at site as a viable and cost-effective alternative that would minimize transportation RESPONSE

Although the Nevada Test Site (NTS) is evaluated in the EIS as an alternative site activities, DOE does not consider it to be a preferred site because Nevada is the h Mountain Site Characterization Project and the Nevada Test Site lacks current SNF h As stated in Volume 1, Appendix F, Part Two, section 3.1, the Nevada Test Site pro other potential sites because it represents a site that has no existing SNF infrast currently generate or store any SNF. The existing SNF handling facilities mentione were not built or maintained to current design standards and without extensive anal whether they may meet the minimum requirements necessary to consider them for modif the response to comment 04.04 (008).

## II COMMENT

The commentor states that the Barnwell Plant should be considered and discussed in viable alternative site for spent nuclear fuel management.

### RESPONSE

The Barnwell Plant is considered for examination and storage of Naval SNF. A descr Barnwell Plant and a discussion of its capabilities for Naval SNF storage and exami Volume 1, Appendix D, Attachment E. As summarized in Attachment E, the Barnwell P to be acquired by DOE from its present private owners, and it would cost about \$800 and modify the plant. Once modified, the plant would provide the full range of wat facilities at INEL.

## II COMMENT

The commentor expresses an opinion that the EIS does not address alternatives, it s nuclear fuel around.

### RESPONSE

Further shipments of spent nuclear fuel (SNF) would likely be needed when a decisio ultimate disposition in a repository. Assessment of the impacts of these shipments EIS because the method for ultimate disposition has not been selected and such anal premature. Volume 1 of the EIS describes the alternatives for managing of SNF unti of time may be required to make and implement a decision on ultimate disposition of evaluated in the EIS a range of reasonable alternatives for safely managing SNF dur 2035.

To inform the public concerning SNF transportation issues, this EIS evaluates the i for a reasonable range of alternatives. The alternatives vary from no action, invo radioactive material, to centralization, which involves extensive transport of radi analyses in the EIS show that the potential risks from transportation of SNF would alternatives considered. Based on comments received during public review of this E transportation is one of the factors to be considered in the DOE decision-making pr ultimately lead to a ROD.

## II COMMENT

The commentor states that the EIS fails to adequately assess alternatives, stating remains at the INEL under all alternatives analyzed. A specific example given was alternatives presented by DOE keep INEL high-level waste management activities at t Processing Plant, a site directly above the Snake River Plain aquifer.

### RESPONSE

The EIS adequately considers a reasonable range of alternatives for managing high-l commentor's implication that DOE should consider an alternative to move high-level is not technically feasible. Because the Snake River Plain aquifer is hydrological beneath, the entire INEL site, on-site movement of the calcine for storage achieves perceived risk to the aquifer. Liquid high-level waste can be transported, only by that would move this waste to another location, whether onsite or offsite, is thus The amount of high-level waste that is subjected to calcining to convert from a liq does, however, vary by alternative. The option of relocating the calcine bins from Processing Plant to another DOE facility is not reasonable because the cost of cons prohibitive. Therefore, for purposes of this EIS, proposed high-level waste manage assessed at the INEL Idaho Chemical Processing Plant.

## II COMMENT

The commentor requests that the EIS include specific corrections regarding spent nu the Oak Ridge Reservation.

### RESPONSE

Volume 1, section 4.5 summarizes the affected environment of the Oak Ridge Reservat section has been modified to clarify that the Y-12 Plant stores SNF but does not g

## II COMMENT

Commentors question DOE's expertise and infrastructure with regard to capability to fuel.

### RESPONSE

DOE has a program to safely manage and store radioactive materials (including both SNF) at each of the sites considered in this EIS. The potential impacts of storing mitigation measures are discussed in Volume 1, Chapter 5. Supporting information o storage options for them is provided in Volume 1, Appendix J. Management and stora

wastes at INEL are described in Volume 2, Chapters 1 and 2. DOE's policy is to comply with applicable Federal, State, and local regulations and DOE Orders. All radioactive materials are managed to ensure protection of the environment and the health and safety of the public and employees.

One of the concerns that must be addressed prior to ultimate disposition is that the storage methods. While ultimate disposition is outside the scope of this EIS, DOE is developing disposition technologies that will address the issue of the longevity of the public and environment are protected.

General solutions proposed for managing SNF fuel are discussed in Volume 2, Chapter 2. However, alternatives for safely managing SNF in the meantime are discussed in Volume 3.

## II COMMENT

The commentor states that placement of the West Bear Creek Valley site for spent nuclear fuel demonstrates a total lack of regard for local populations and the environment.

### RESPONSE

In response to public comments during the scoping process for this EIS, DOE conducted a process to identify additional reasonable alternative sites. The screening process to identify additional reasonable alternative sites for consideration and analysis in the EIS. Reasonable alternatives were not included in this process, because they had already been identified by DOE. Pursuant to the screening process, the Oak Ridge, Tennessee, and the Nevada Test Site (NTS) near Las Vegas, Nevada, were added as alternatives for the full scope of SNF management activities, bringing the number of sites to 10. Other sites were not considered reasonable for analysis in this EIS.

Identification of potential sites was based on factors including land ownership or former spent nuclear fuel management infrastructure, transportation, and relocation. Realistic sites then were evaluated by using statutory and regulatory restrictions, socioeconomic and transportation factors, and implementation considerations. Final selection of sites was based on factors such as programmatic needs, mission conflicts, and timing. The conclusions from this process are documented in the Alternative Site Selection Decision which is summarized in Volume 1, section 3.2.3.

Specific information is not available on facilities that have not been fully designed. Data are also not available for future activities, such as decontamination projects, treatment of waste streams whose treatment plans have not been finalized. Generic information is included in the EIS to present readers with as comprehensive a range of forthcoming projects as possible. These projects or facilities may require additional analysis under the National Environmental Policy Act. By analyzing generic projects at the various alternative sites, DOE can assess the impacts of these activities on a programmatic level.

## II II COMMENT

Commentors request that sites being analyzed in the EIS be removed from consideration. Various locations may be illegal, and that other sites represent reasonable, or more than those under consideration. One commentor notes the distinction between a proposed retrievable storage facility and facilities under the Centralization alternative.

### RESPONSE

In response to public comments during the scoping process for this EIS, DOE conducted a process to identify additional sites to the eight sites then considered reasonable for SNF. As a result of the screening process, ORR near Oak Ridge, Tennessee, and NTS near Nevada, were added as reasonable alternative sites for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10. Other sites were not considered in this EIS.

Potential sites were identified based on such factors as land ownership or current SNF management infrastructure, transportation, and relocation of SNF. Realistic sites were identified by considering statutory and regulatory restrictions, environmental factors, socioeconomic factors, and implementability. As a result of this screening process, based on the locations of the sites, a list of seven sites was forwarded to the decisionmakers as alternatives in addition to the eight sites already deemed reasonable. In addition to the location, the decisionmakers also considered factors such as programmatic needs, mission, and timing. The conduct and conclusions of this process are documented in the Alternatives Analysis.

Decision Process Report, which is summarized in Volume 1, section 3.2.3 of the EIS. Section 145(g) of the Nuclear Waste Policy Act, as amended (the Act), prohibits the monitored retrievable storage facility [pursuant to Section 142 (b) of the Act] in However, a facility to manage DOE SNF would not be classified as a monitored retrievable within the meaning of Section 142(b) of the Act. A facility to manage DOE SNF would be constructed and operated pursuant to the Atomic Energy Act of 1954 and would serve from that served by a monitored retrievable storage facility.

DOE believes that the range of alternatives analyzed in this EIS are inclusive and philosophy of considering a full range of reasonable alternatives required by provisions of regulations. Analysis and discussion of all alternatives that can be postulated is and is not required by existing regulations. Although a site may represent a reasonable alternative in the EIS, no decision has been made as to the level of SNF management and a decision will be made by the Secretary of Energy in a published ROD.

## II COMMENT

Commentors request that the Oak Ridge Reservation or the Nevada Test Site be removed from consideration, stating that state legislative actions or the Nuclear Waste Policy Act prohibit nuclear fuel storage at these sites. Other commentors also question why only two of the original three sites selected for possible spent nuclear fuel management.

### RESPONSE

The Nuclear Waste Policy Act, as amended [section 145(g)], prohibits the storage of monitored retrievable storage facility in Nevada. In addition, the Nuclear Waste Policy Act [section 142(a)], annulled and revoked the DOE proposal to locate a monitored retrievable storage facility on or near ORR in Tennessee. However, a facility to store DOE SNF is not considered retrievable storage under the Nuclear Waste Policy Act, as amended. Consequently, viable alternatives for the purposes of this EIS and, therefore, were added to the EIS. In response to public comments during the scoping process for this EIS, DOE conducted an analysis to identify additional sites to the eight sites then considered reasonable alternatives. As a result of a disciplined screening, ORR and NTS were added as reasonable alternative sites for SNF management activities, bringing the number of sites to be analyzed to not considered reasonable for analysis in this EIS. The Nevada Test Site is not considered a site because of the state's current role as the host site for the Yucca Mountain Site and due to the site's lack of SNF infrastructure.

Potential sites were identified based on such factors as land ownership or current use, former SNF management infrastructure, transportation, and relocation of SNF. Realistic alternatives were then evaluated considering statutory and regulatory restrictions, environmental, socioeconomic and transportation factors, and implementability. Final decisions on such factors as programmatic needs, mission conflicts, and timing. The conduct and results of this process are documented in the Alternative Site Selection Decision Process Report summarized in Volume 1, section 3.2.3 of the EIS.

As indicated in the May 9, 1994 Amendment to the Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Impact Statement, DOE developed a three-step process to screen the potential number of siting options that could exist for various levels of SNF management activities. During the hearings, DOE became aware that some commentors thought the amendment to the Implementation Plan was intended to be the detailed report of the alternative site-selection process. The details of the Alternate Site Selection Decision Process Report for the details and conclusions of the process.

## II COMMENT

The commentor notes that the location selected for the potential spent nuclear fuel storage at the Oak Ridge Reservation will be next to the Y-12 "walk-in pits," which contain highly radioactive chemical wastes.

### RESPONSE

The Y-12 pits are actually 4 miles from the West Bear Creek Valley site selected for management activities at ORR. The distance is accounted for in accident impacts analysis in the EIS, and no significant adverse environmental or health and safety impacts are foreseen as a result of the proximity of the Y-12 pits.

## II COMMENT

The commentor is of the opinion that the selection of the West Bear Creek Valley site Reservation was improper and did not adequately consider the site's geology. The commentor is also indicating that the proposed spent nuclear fuel management facilities in the watershed of the commentor also indicates that State of Tennessee geologists have concluded that hydrogeologic conditions indicate that Bear Creek Valley is not suitable for storing or disposing of material of any type, as stated in a U.S. Geological Survey report. The commentor states that the mechanism for transport of contaminants in the subsurface is too complex and that there is too great a potential for contaminating the Knox aquifer.

### RESPONSE

ORR and NTS were selected as alternative sites as a result of the public comments received during the scoping process. Information about the selection process for the site on ORR is provided in Support in Preparing the Spent Nuclear Fuel and INEL Environmental Restoration and Management Environmental Impact Statement. The selection of the West Bear Creek Valley site on ORR did include consideration of impacts to geology and water resources. The West Bear Creek Valley site was selected and evaluated and compared in the EIS. Adequate information is provided for programmatic decisions. If ORR is selected to be the SNF management facility, more information about the site would be provided in the NEPA documentation.

There is very little potential for water quality impacts to Grassy Creek and the Clinch River from the operation of proposed SNF management facilities, which are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics. These facilities would be designed to include secondary containment, leak detection, and water balance monitoring equipment. Therefore, no significant environmental consequences related to water quality impacts to water quality in either Grassy Creek or the Clinch River are anticipated from the operation of SNF management facilities.

The State of Tennessee Department of Environment and Conservation correspondence dated 1994, commented extensively on the EIS. State geologists cite Geologic and Hydrologic Survey (1959) as concluding, "It appears that the favorable areas are sufficient to warrant consideration of Bear Creek Valley for use as a regional burial site for radioactive waste." The EIS does not consider any burial alternatives for SNF management. Alternatives considered include only SNF interim storage and treatment facilities. The ORR Energy Systems Waste Management Office has identified large portions of ORR management areas. The proposed SNF management site is included in the areas. The selection is due primarily to soil type that meets specific waste management criteria and the site is within the ORR. Again, no materials would be buried as part of the alternatives in this EIS.

If ORR is chosen as a site for SNF management, site-specific surface and groundwater monitoring would be required to support follow-up NEPA reviews.

There is very little potential for contamination of the Knox aquifer from the operation of proposed SNF management facilities, which are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics. These facilities would be designed to include secondary containment, leak detection, and water balance monitoring equipment. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities.

Impacts to geology and water resources for ORR are discussed in the EIS in Volume 1, sections 5.6 and 5.8, respectively.

## II COMMENT

The commentor indicates that the selection of the Oak Ridge Reservation and the Nevada Test Site do not logically flow from the siting parameters stated. In addition, the commentor indicates that program missions were not considered and that DOE ought to better coordinate the activities with the Office of Civilian Radioactive Waste Management.

### RESPONSE

As documented in the Alternative Site Selection Decision Process Report, the parameters used to evaluate categories of sites, such as DOE sites with infrastructure, were used. The commentor is also referred to this report for details as to the conduct of the process.

the EIS, Volume 1, section 3.2.3. Once categories of sites were considered realistic screening, individual sites were evaluated through a set of screening factors to determine which sites appeared attractive for further consideration by DOE decisionmakers. Thus, sites 1 passed both screenings, along with five other sites, and were considered candidate reasonable sites. NTS, which has no SNF infrastructure, passed the initial screening for infrastructure. Both sites were considered reasonable for consideration due to the report.

The site-selection task process was designed to present DOE managers with a list of the most attractive based on individual site qualities, including relative location, with most considerations such as conflict in site missions. Although in cases where the site-selection process has potential mission conflict concerns (see Attachment 4 to the report), the weighing of considerations such as mission conflicts and implementation practicabilities were left to DOE decisionmakers. There is regular coordination of activities between the Office of Waste Management and Defense Programs concerning DOE SNF covered in this EIS.

## II COMMENT

The commentor states that the proximity to an aquifer or the presence of groundwater characterized as a disadvantage when evaluating alternative sites for consideration in the same disclosure for the INEL. The commentor also states that hydrogeologic conditions are of importance in the siting decisions for spent nuclear fuel. Groundwater concerns the event of releases from leaks or spills. Also the potential for seismic action should be considered evenhandedly in the selection of sites to be considered for SNF management activities.

### RESPONSE

Under NEPA, DOE is required to consider a full range of reasonable alternatives, which includes sites with nearby surface-water and groundwater resources. The potential consequences of implementing the alternatives at the alternative sites have been evaluated in Chapter 5 of the EIS, which concludes that such impacts from all alternatives would be minimal. The conclusion includes the potential impacts on nearby or adjacent water resources at sites. A discussion of this topic can be found in the water resources sections in associated site-specific Appendices A through F. DOE will consider these potential impacts in its final decision.

The site-selection task team did consider the proximity to aquifers and seismic conditions as a disadvantage in evaluating a number of potential sites through detailed screening criteria as is in Attachment 4 to the Alternative Site Selection Decision Process Report. This criteria was used to identify sites that appeared attractive for further consideration. Proximity to aquifers and areas of high seismicity are certainly appropriate considerations for siting activities, including managing SNF.

INEL was one of three DOE and five Naval sites originally identified as reasonable for consideration in this EIS. In response to public comments during the scoping process, DOE committed to conduct a screening process to identify additional sites for managing SNF. DOE and five Naval sites were not considered in this process.

The EIS pays particular attention to geologic considerations such as seismicity at sites under consideration, including the Snake River Plain, upon which INEL is located. Characterization and its potential impacts were evaluated and discussed in the EIS.

## II COMMENT

The commentor expresses the opinion that potential sites on the priority list for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act are being characterized as disadvantages when evaluating alternative sites for consideration in the EIS required for INEL.

### RESPONSE

DOE did consider that potential sites were on the priority list for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as a relative disadvantage when evaluating a number of potential sites through detailed screening criteria. This criteria is in Attachment 4 to the Alternative Site Selection Decision Process Report. This set of criteria was used to identify sites that appeared attractive for further consideration by DOE despite potential conflicts with CERCLA activities are certainly appropriate to consider in siting activities, including SNF management.



INEL was one of eight sites originally identified as reasonable siting alternatives EIS. In response to public comments during the scoping process for this EIS, DOE conducted a screening process to identify additional sites. The original eight sites were not re-evaluated. The EIS characterizes sites under consideration including INEL, as to CERCLA activities. The EIS bounds such activities within the alternatives under consideration for INEL through SNF management activities (or any activities) at each of the sites must integrate or include those being managed under CERCLA. Large sites, such as INEL, usually present opportunities to accommodate siting additional activities without conflicts to those in progress.

## II COMMENT

The commentor expresses the opinion that in several instances, the process used to select sites considered proximity to tribal lands and cultural resources as a disadvantage to tribes in the proximity of sites originally considered for evaluation.

RESPONSE  
The site-selection task team did consider the proximity to tribal lands and cultural resources as a disadvantage in comparing a number of potential sites through detailed screening criteria. This is in Attachment 4 to the Alternative Site Selection Decision Process Report. This criteria identified sites that appeared attractive for further consideration by DOE. Proximity to tribal lands and cultural resources is certainly appropriate to consider in the context of SNF management.

INEL was one of eight sites originally selected as reasonable siting alternatives for this EIS. In response to public comments during the scoping process for this EIS, DOE considered additional sites. The original eight sites were not considered in this process. DOE does not dismiss the interests of the tribes near existing sites, nor take them into account when operating its facilities. Consultations have taken place during the preparation and implementation of the EIS, as well as their concerns regarding the potential effects of the EIS on the tribes' homelands and interests. The EIS has been revised to more adequately address concerns as presented in the tribes' comments on the EIS and in related consultations.

## II COMMENT

Commentors note that the site-selection process used to identify additional reasonable sites for consideration in the EIS was skewed away from sites where interim storage only can be used. Commentors note that sites where spent nuclear fuel has been handled. Processing decisions have not been made and are unlikely to be made in the future. Commentors also state that too much emphasis is placed on infrastructure in evaluating potential alternative sites for consideration. Factors such as proximity to tribal lands and cultural resources were not used for the baseline decision, interim storage.

RESPONSE

In response to public comments during the scoping process for this EIS, DOE committed to considering additional sites to the eight sites then considered reasonable siting alternatives. The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is summarized in Volume 1, section 3.2.3 of the EIS.

Potential sites were identified based on such factors as land ownership or current use, SNF management infrastructure, transportation, and relocation of SNF. Realistic siting also considered statutory and regulatory restrictions, environmental factors, socioeconomic factors, and implementability. Final decisions also considered such factors as proximity to tribal lands, conflicts, and timing.

Site size and location is an appropriate consideration for interim management of SNF disposition. In addition to SNF storage, there is a possibility that additional processing facilities could be developed and operated to further stabilize and possibly tailor SNF to meet whatever criteria are developed for ultimate disposition of the various types of SNF. Therefore, as discussed in the process report, assumptions were made as to minimum order of magnitude site sizes for potential activities. The larger sites provide more flexibility to fully manage SNF disposition than the smaller sites, and thus have the attractive advantage of possible shipments of SNF to larger sites for further processing or tailoring in the future, consistent with the criteria for ultimate disposition. The Alternative Site Selection Decision Process Report provides the considerations and the basis for assumptions used in the conduct of the process. I

large sites for consideration, smaller sites were also evaluated for a lesser scope activity, limited to storage and research and development only. Only sites considered for storage operations were eliminated from further consideration of any management activity. The sites that were ultimately recommended to the decisionmakers as appearing most promising were mostly larger sites due to the relative attractiveness that site size presents from more complex activities, but also to provide more isolation from the public and proximity to site activities without conflict with other activities on site, either current or future.

## II COMMENT

The commentor expresses an opinion that the EIS improperly excludes sites from consideration alternatives. The commentor further states that the criteria used to select candidates favors remote sites, and involves shipments to INEL under all spent fuel management alternatives.

INEL is one of three DOE and five Naval sites originally selected as reasonable alternatives for consideration in this EIS. INEL was selected because of the many years of DOE experience with large-scale SNF management operations at that site. The same is true for the Savannah River Site and the Hanford Site in Washington. Accordingly, these sites, and the five other sites (which have similar years of SNF management experience), were considered for consideration of various levels of programmatic SNF management activities at one of the other five main sites. INEL would continue to receive SNF alternatives due largely to its current infrastructure and historical expertise in SNF management. Under the No Action alternative, there is a 3-year transition period in which the NRC would ship SNF to INEL for examination.

In response to public comments during the EIS scoping, DOE screened to identify additional alternative sites for consideration and analysis in the EIS. Thus, the existing reasonable alternatives were not reevaluated in this process, because they had already been selected as reasonable alternatives by DOE.

Potential sites were identified based on such factors as land ownership or current SNF management infrastructure, transportation, and relocation of SNF. Realistic sites were identified considering statutory and regulatory restrictions, environmental factors, socioeconomic factors, and implementability. As a result of this screening process and based on the locations of the sites, a list of the seven sites was forwarded to the decisionmakers in the EIS in addition to the eight sites already deemed reasonable. In addition to the sites, the decisionmakers ultimately also considered such factors as programmatic needs, management timing, expertise, and infrastructure. The conduct and conclusions of this process are described in the Alternative Site Selection Decision Process Report, which is summarized in Volume 1 of the EIS.

Pursuant to the screening process, ORR and NTS were added as reasonable alternatives for SNF management activities, bringing the number of sites to be analyzed to 10. DOE believes that the range of alternatives analyzed in the EIS is inclusive and in accordance with the philosophy of considering a full range of reasonable alternatives required by NEPA.

## II COMMENT

The commentors express an opinion that DOE consider sites such as the Capitol building and the like for the management of spent nuclear fuel.

RESPONSE

Such comments do not provide substance conducive to a response. DOE recognizes that some commentors disagree with the need for and reasonable alternatives being considered to manage SNF. 3.1 describes DOE's preferred alternative.

## II COMMENT

The commentor states that the sites selected initially as reasonable alternatives for management of spent nuclear fuel were selected only because they already manage nuclear waste.

RESPONSE

The original eight sites selected as reasonable alternatives for some level of SNF experience in such activities, which range from large-scale SNF management (storing the three large DOE sites, to handling activities limited to Naval SNF at the five these sites represent reasonable siting alternatives for a range of SNF management this EIS, per the October 29, 1993, Implementation Plan for the Department of Energy Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environment Statement.

In response to public comments during the scoping process for this EIS, DOE committed additional reasonable sites for SNF management. After a screening process, ORR and reasonable alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10.

Potential sites were identified based on such factors as land ownership and current SNF management infrastructure, transportation, and relocation of SNF. Realistic siting by considering statutory and regulatory restrictions, environmental factors, socioeconomic transportation factors, and implementability. Final decisions also considered program conflicts, timing, etc. The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is available in the reading rooms and information locations identified in the EIS.

## II COMMENT

The commentor states that the Oak Ridge Reservation is artificially constrained to Centralization alternatives when the Alternative Site Selection Decision Process Report indicates that site that is qualified for those alternatives is worthy of consideration for the other alternatives.

Prior to selection as a reasonable site for all SNF management alternatives, ORR was a reasonable alternative for SNF management activities under the No Action, Decentralization, and 1992/1993 Planning Basis alternatives. Under these alternatives, ORR either would manage its current and future SNF onsite, or would ship such SNF offsite per the 1992/1993 Planning Basis alternative. Based on the alternative site selection process discussed in Volume 1, section 3.2, ORR was also selected as a reasonable alternative for all levels of SNF management activity consideration under the Regionalization and Centralization alternatives. The Alternative Site Selection Decision Process Report indicates that any site considered reasonable for the Regionalization alternatives is also considered reasonable for a lower level of SNF management activity. If a site is considered reasonable for managing all DOE SNF, it must also be reasonable for managing a smaller portion of the SNF. Of the two sites added as a result of the Secretary of Energy's decision, ORR is considered reasonable for all levels of SNF management activity, while NTS is considered only for the Regionalization and Centralization alternatives. This is because NTS does not currently manage SNF, and Decentralization, and 1992/1993 Planning Basis alternatives do not apply.

## II COMMENT

The commentor indicates that spent nuclear fuel management is an international problem and that the commentor does not want it managed at the North Pole or in the South Pacific as suggested in the EIS.

### RESPONSE

In response to public comments during the scoping process for this EIS, DOE committed additional sites to the eight sites then considered reasonable alternatives for management. After the screening process, ORR and NTS were added as reasonable alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10.

Potential sites were identified based on such factors as land ownership and current spent nuclear fuel management infrastructure, transportation, and relocation of SNF. Realistic siting by considering statutory and regulatory restrictions, environmental factors, socioeconomic transportation factors, conflicts, timing, etc. The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is available in the reading rooms and information locations identified in the EIS.

## II COMMENT

The commentor raises questions about what might actually be done with spent nuclear Savannah River Site and about future site-specific decisions.

#### RESPONSE

Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, waste being converted into a vitrified glass for repository disposal) is authorized repository. This authorization is subject to the physical and statutory limits of DOE SNF meeting repository acceptance criteria, and payment of fees. As part of it program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, existing SNF inventory to assess compliance with the first repository's acceptance determine what processing, if any, is required to meet the criteria. Decisions regarding disposition of DOE SNF would follow appropriate review under NEPA and be subject to NRC. This path forward would be implemented so as to minimize impacts on the first Future site-specific decisions will involve NEPA reviews tiered from this program decisions will also include input from the public as appropriate under NEPA.

## II COMMENT

The commentor states that nowhere in the EIS can one find consideration of the suitability of the sites being considered for spent nuclear fuel management.

#### RESPONSE

Volume 1, section 1.3.1 summarizes the consideration of the suitability of the site details are in the Alternative Site Selection Decision Process Report, which is referenced.

## II COMMENT

The commentor states that the logic of designating the Nevada Test Site as a "nonpreferred" equity concerns and lack of infrastructure is flawed. The commentor states that the National Environmental Policy Act for a nonpreferred alternative, and nothing in the Act would prohibit storage of DOE spent nuclear fuel in Nevada. The commentor also event that DOE does not site the repository in Nevada, a reasonable site for spent have been eliminated without cause. Further, the commentor states that equity is not designate the Nevada Test Site as nonpreferred, because other sites have spent nuclear storage; nor is the site's lack of infrastructure a reasonable basis to designate any grainfield site lacks infrastructure, and the EIS acknowledges the need to build nuclear fuel storage facilities at any of the sites under consideration.

#### RESPONSE

The designation of NTS as a nonpreferred site is to alert EIS reviewers that DOE has equity reservations that make NTS less attractive than other reasonable alternative intended to communicate DOE's programmatic reservations with this site.

DOE identified NTS as a reasonable alternative site despite its lack of infrastructure the lack of infrastructure may be considered unfavorably in comparison with the other considered, as one of numerous considerations in arriving at a ROD. The consideration infrastructure is in keeping with public comments on the EIS Implementation Plan. DOE recognizes that the other four DOE sites being evaluated as reasonable alternative SNF for years, and may continue to do so for the period of time analyzed in this EIS management at these sites will either decrease, increase, or remain the same. DOE the Nuclear Waste Policy Act (NWPA), as amended, would preclude siting SNF management DOE SNF in Nevada. However, the provisions of NWPA, as amended, that preclude siting retrievable storage facility at NTS are based partially on equity. NTS is currently by Congress in the NWPA, as amended, for the characterization of the nation's first SNF and high-level waste. At present, the Yucca Mountain Project is primarily designed for fuel disposal, but DOE SNF and high-level waste not exceeding 10 percent (by weight capacity limit (70,000 metric tons heavy metal) could be placed in the repository. Decisions regarding actual disposition of DOE SNF will follow appropriate NEPA review forward" would be implemented so as to minimize impacts on the first repository schedule response to comment 04.04 (008).

## II COMMENT

The commentor indicates that although DOE conducted a site-selection process that a consideration of grainfield sites, only the Nevada Test Site was selected, and it was a site under its designation as a "nonpreferred alternative."

### RESPONSE

The alternative site selection process, as documented in the Alternative Site Selection Report did allow for the consideration of sites with no current spent nuclear fuel to be considered. The screening process was used to evaluate every DOE site and a Department of Defense (DOD) sites, which appeared to be reasonably representative of NTS is a greenfield site, in that it is not involved in, nor does it have the infrastructure management of SNF. DOD sites, which were also greenfield sites, were considered without the conflict in DOE missions with those conducted by DOD.

Due to its lack of infrastructure and equity concerns with the potential siting of a repository, DOE considers NTS a less attractive alternative than the other DOE sites. Despite this nonpreferred status, NTS is evaluated in the EIS to the same level as alternatives and, thus, gives the public a basis for comparative review of a repository as well as giving decisionmakers the tools to fully consider NTS as a reasonable site for spent nuclear fuel. Decisionmakers will consider the environmental impacts, program and public comments in arriving at a ROD.

See also the response to comment 04.03.01 (028).

## II COMMENT

The commentor states that DOE arbitrarily excluded potential greenfield sites from EIS; instead DOE predetermined a greenfield site that could be readily struck down.

### RESPONSE

No sites evaluated in the EIS have been eliminated from consideration for the management of spent nuclear fuel. It is true that a number of representative Department of Defense "greenfield" sites were not selected by DOE's site-selection team, based largely on the relative location and availability. However, consultations with the Department of Defense regarding the availability of their elimination due to mission conflicts with current site activities. Nevertheless, the analysis of NTS gives decisionmakers (and the reviewing public) the full perspective on the environmental impacts of a representative greenfield site to form a basis for comparing reasonable sites analyzed in the EIS. In addition, nothing in the EIS eliminates on the basis of environmental impacts. The programmatic considerations of lack of infrastructure, existence of concerns over equity will be part of decisionmaking, as well as factors of implementability, environmental impacts, and technical considerations. See responses 04.03.01 (028).

## II COMMENT

The commentor is of the opinion that DOE improperly excludes foreign facilities from alternative fuel repositories.

### RESPONSE

DOE has an obligation under NEPA to evaluate a range of reasonable alternatives, including a No Action alternative. NEPA and the CEQ regulations clearly give deference to the agency, in this case DOE, to dismiss alternatives that the agency considers unreasonable parameters of the purpose and need for agency action. DOE does not consider storing domestically stored SNF in foreign countries to be reasonable compared with the range of domestic storage and management alternatives analyzed in this EIS, for which the environmental impacts of all alternatives would be small.

The alternative of foreign storage of foreign research reactor (FRR) SNF of U.S. origin in this EIS, which evaluates the management of any such SNF once it is returned to the U.S., and the reasonable alternatives for managing FRR of U.S. origin is returned to the U.S., and the reasonable alternatives for managing material, is within the scope of the FRR EIS.

Volume 1 of this EIS assumes that all FRR spent nuclear fuel is returned for disposal so that the environmental impacts of managing a reasonably foreseeable inventory can be

EIS. If a decision is made not to return FRR SNF to the U.S., the EIS analysis would be conservative in its evaluation of cumulative impacts due to the reduced domestic inventory. In response to public comments, Volume 1, section 3.2 of the EIS has been expanded to include processing of DOE N-Reactor SNF overseas for the purpose of stabilization as an example of reasonably foreseeable impacts. See also response to comment 04.03 (054). Unlike domestic SNF, overseas processing presents a reasonable option to domestic processing both in cost and availability of facilities.

## II COMMENT

The commentor notes that for many activities, the Minimum Treatment, Storage, and Disposal is no different than the No Action alternative for the INEL.

### RESPONSE

While many activities may be similar in the alternatives cited, there are also differences. Shaded boxes in Volume 2, section 3.1.3. Different activities and projects are planned for each waste alternative. Shaded boxes identify the major activities by alternative for each waste alternative. Shaded boxes are in Volume 2, section 3.1.3 for transuranic waste, low-level waste, greater-than-Class-C waste, and hazardous waste. Additional activities are shown in Volume 2, section 3.1.2 for environmental restoration, and section 3.1.3 for INEL nuclear fuel.

## II COMMENT

Commentors state that the EIS should consider an alternative that truly calls for managing spent nuclear fuel at those sites in closest proximity to origin of the fuel, thereby minimizing transportation.

### RESPONSE

The EIS does consider managing SNF at or close to sites closest to the fuel's origin. The EIS discusses the centralized alternative, discussed in Volume 1, section 3.1.1, and the Decentralization Alternative, discussed in Volume 1, section 3.1.2. The EIS demonstrates that SNF can be safely managed with transportation.

## II COMMENT

The commentor suggests that Volume 1 alternatives, except for No Action, be modified to include a general statement that the alternative would include any actions necessary to permit operation or to place spent nuclear fuel in safer storage, including shipping offsite.

### RESPONSE

The programmatic action that DOE ultimately selects is not necessarily limited to one alternative. For example, a hybrid alternative could be developed that would incorporate actions from the five alternatives analyzed. Moreover, the programmatic decisions will not identify specific management options. If appropriate, the decisions would be made after additional evaluation.

## II COMMENT

The commentor states that completely remediating the Idaho National Engineering Lab site has been dismissed.

### RESPONSE

Remediation of INEL site has been negotiated and documented in the FFA/CO Action Plan. Volume 2, section 3.1.2, of this EIS, FFA/CO Action Plan would be followed under each alternative, subject to funding constraints, except the No Action alternative. The Maximum Treatment and Storage Alternative analyzes remediating INEL under a residential land use scenario in substantial cleanup of the site with little contamination left in place.

## II COMMENT

The commentor states that there are waste shipments to DOE sites from non-DOE sites. The Decentralization alternative, including spent nuclear fuel from foreign research reactors, is of the opinion that allowing these shipments to take place will erode support for a permanent waste repository.

### RESPONSE

The EIS addresses a number of alternatives for SNF management, including the Decentralization alternative. The Decentralization alternative considers SNF management essentially stored or generated, with the basic exception of fuels from university research reactors, which would be managed at INEL or SRS. This is to avoid construction of university campuses, or forcing such reactors to shut down due to the lack of such facilities overseas. Conversely, the No Action alternative does not accommodate the receipt of research reactors and does not allow the transfer of university reactor SNF to DOE. DOE does consider an alternative that the commentor appears to favor. Whether leaving sites places increased emphasis on the development of a permanent waste repository is a conjecture beyond the scope of this EIS.

Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, waste being converted into a vitrified glass for repository disposal) is authorized for a permanent repository. This authorization is subject to the physical and statutory limits of DOE SNF meeting repository acceptance criteria, and payment of fees. As part of the program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) determine SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding disposition of DOE SNF would follow appropriate review under NEPA and be subject to NRC. This path forward would be implemented so as to minimize impacts on the first repository.

## II COMMENT

The commentor expresses the opinion that the assumptions on which the spent nuclear fuel management alternative are based are not valid in light of current ongoing INEL activities; spent nuclear fuel remediation activities are limited to activities already planned for removal of fuel pools, but the necessary increased rack capacity needed at ICPP-666 is not included in other areas of the Idaho National Engineering Laboratory.

### RESPONSE

The No Action alternative, as described in Volume 2, section 3.1, includes activities already been initiated or that may be initiated after June 1, 1995, and have been excluded from the provisions of NEPA by June 1, 1995.

New activities would be limited to minor environmental safety and health activities and operations. There would be no new major upgrades, and the use of ICPP-603 storage would be phased out. The ICPP-603 fuel is being removed under the Court Order. Reracking is necessary to accommodate that fuel. Other on-site fuel consolidation activities are described in separate NEPA documentation, as described in Volume 2, section 2.1.3 for other NEPA alternatives at INEL. The No Action alternative, as described in Volume 1, section 3.1, represents a comparison with the other alternatives. Projected impacts of alternative management compared in the EIS with those impacts projected for the existing conditions against greater and lesser activities. DOE believes that the No Action alternative in the requirements to include a No Action alternative, and that the activities under the alternative with assumptions stated in Volume 1, section 3.1.

## II COMMENT

The commentor disagrees with the statement in the EIS that the No Action alternative is environmentally more acceptable than other alternatives because no new research would be required.

Volume 1, section 5.1.2 actually states: "This makes the No Action alternative appear environmentally acceptable than the other alternatives when, in fact, this research

after the time period covered by this EIS." The intent of this statement in the EIS is that the No Action alternative projects slightly smaller impacts, because fewer projects the impacts would not be reduced, only deferred. The sentence has been modified to this.

## II COMMENT

The commentor notes that the EIS does not discuss the impacts of the No Action alternative on the research reactor spent nuclear fuel. In particular, the commentor notes the United States policy to accept that SNF. The proposed policy and its impacts are analyzed in a series of decisions for both EISs will be closely coordinated to ensure consistency, the commentor's concerns are specific to the FRR EIS and are outside the scope of this EIS. The relationship between the FRR EIS and this EIS is discussed in Volume 1, section 1.2.3. The description of ongoing NEPA reviews has been revised. See also the response to comment 04.04 (008).

### RESPONSE

Volume 1, section 3.1, discusses the No Action alternative and describes the action undertaken by DOE to the extent required by this alternative. Activities related to SNF, including research and development, would be included.

The EIS addresses only the sites at which FRR SNF would be stored if the United States policy to accept that SNF. The proposed policy and its impacts are analyzed in a series of decisions for both EISs will be closely coordinated to ensure consistency, the commentor's concerns are specific to the FRR EIS and are outside the scope of this EIS.

The relationship between the FRR EIS and this EIS is discussed in Volume 1, section 1.2.3. The description of ongoing NEPA reviews has been revised.

See also the response to comment 04.04 (008).

## II 4.4 Preferred Alternative

## II COMMENT

Commentors express the opinion that the EIS does not define a preferred alternative reprocessing as a reasonable option.

### RESPONSE

DOE believes that the range of alternatives analyzed in the EIS is inclusive and in line with the philosophy of considering a full range of reasonable alternatives, as required by NRC regulations. Analysis and discussion of all alternatives that can be postulated is required and is not required by existing regulations. Volume 1, section 3.1 describes the proposed SNF management. Volume 1, Appendices A, B, C, and J discuss stabilization activities, processing, passivation and canning, that could be employed at the sites for current management activities. See also the response to comment 04.04 (008).

## II COMMENT

Commentors question DOE's preference for alternatives and intentions or agendas for the nuclear fuel. Some commentors feel decisions have already been made and that their concerns are ignored.

### RESPONSE

After carefully considering the results of the analysis of alternatives in the EIS, DOE identified its programmatic needs, cost, implementation, and public comments, DOE identified its programmatic SNF management (see Volume 1, section 3.1). The preferred alternative is Regionalization by fuel type.

The decision as to whether the preferred alternative is selected for implementation will be made by the Secretary of Energy in the ROD analysis in the EIS, all environmental impacts would be small and there is no environmental impact that would clearly favor one alternative over another. Thus, DOE based its decision on programmatic management needs, known vulnerabilities, and the need to maintain maximum flexibility.



and meet criteria for ultimate disposition, when ultimate disposition is ready for Under the preferred alternative, DOE management of SNF would be centered on activit and Hanford. INEL could manage nonaluminum-clad types, and could receive nonalumin nonproduction fuels from Hanford. SRS could manage aluminum-clad fuel types, and c aluminum-clad fuels from INEL. Hanford would manage defense SNF such as the N-Reac and would not receive any significant amount of SNF from other sites. Naval SNF wo accordance with the Navy's preferred alternative, which was stated in the Draft EIS DOE's preferred alternative. Foreign research reactor SNF would be managed at eit both. In a publicly available cost analysis (independent of this EIS), the DOE pre estimated to cost between \$9 billion and \$18 billion over the 40-year interim manag 1995 and 2035.

Under all alternatives (over a 40-year period), the estimated number of latent canc from DOE SNF management activities (facility operations plus transportation) would latent cancer fatalities. There are no significantly high and adverse impacts iden

## II COMMENT

The commentor notes that detailed evaluations of environmental and human exposure p appropriate when selected alternatives are detailed in a Final EIS and site-specifi Policy Act reviews are conducted.

### RESPONSE

More specific analysis is possible when details about implementation of programmati available. Many of the issues the commentor expressed interest in would be best di NEPA reviews of site-specific projects. Such NEPA analyses will be performed when

## II COMMENT

The commentors are reluctant to have the Idaho National Engineering Laboratory play processing waste materials from other sites until a permanent storage site is avail RESPONSE

After careful consideration of the results of the analysis of alternatives in the E program needs, implementation of program needs, public comments, and the draft site identified its preferred alternative for SNF management, environmental restoration, at INEL (see Volume 2, section 3.4). The preferred alternative is similar to the T but includes elements of other alternatives for same waste type. Ongoing SNF manag restoration, and waste management activities would be continued and enhanced to mee expanded needs. The amount of newly generated waste would increase to reflect regu and environmental restoration activities. Transuranic and mixed low-level wastes r would be treated and the residues would be returned to the generating DOE site or t approved off-site disposal facility, as negotiated under the INEL FFA/CO. Environm activities would be conducted in accordance with FFA/CO and its action plan. Volum Chapter 5 show that the impacts of the preferred alternative would be small.

## II COMMENT

The commentor believes that a hybrid alternative being announced in the Record of D unacceptable.

### RESPONSE

Under NEPA and CEQ regulations, a hybrid of the alternatives discussed in the EIS m ROD. The alternatives examined in the EIS represent a range of reasonable alternat allowed to chose among variations of those alternatives, as long as the hybrid alte "qualitatively within courted spectrum of alternatives" that were discussed in the Most Asked Questions Concerning CEQ's NEPA Regulations, 46 FR 18026 (March 23, 1981

## II II COMMENT

The commentor expresses the opinion that the Navy and DOE have already selected a p  
RESPONSE

In accordance with NEPA, no decision on the alternative to be implemented has been made until the Final EIS is issued and a 30-day waiting period has passed. No acti the meantime that would prejudice future decisions. The final decision and the bas documented in the ROD, which will be published in the Federal Register in June 1995 At the time the Draft EIS was issued, DOE had not identified a preferred alternativ preferred alternative in the Draft EIS and discussed how this alternative would sup as established by Congress. Upon consideration of public comments received on the factors, DOE identified preferred alternatives. The decision process that led to t identification of these preferred alternatives is provided in Volume 1, Chapter 3, Chapter 3.

## II COMMENT

The commentor is of the opinion that the decision process represented by the Draft process with no vision, only fix-ups.

RESPONSE

NEPA, 42 USC Section 4321 et seq., and CEQ regulation at 40 CFR Part 1500 et seq. r an EIS describe the purpose and need for the proposed action; alternatives, includi affected environmental; and the environmental consequences associated with the prop alternatives. Volume 1 and 2 of this EIS meet these requirements.

Input was solicited from the public during a 90-day public comment period on the Dr allowed commentors to provide comments and attend one or more of the 33 public hear locations around the United States. Comments were received from 1,430 individuals, organizations. Many comments resulted in enhancement to the EIS (see Volume 1, sec Volume 2, section 2.1.5). Comments were also considered in the identification of D alternatives [see the response to comment 04.04 (008)].

Despite the aggressive schedule for completion, the environmental analyses presente very carefully and thoroughly examined for completeness and accuracy. The decision provide a path forward for a effective DOE SNF management program and will establis program for the foreseeable future.

## II COMMENT

The commentor recommends that specified criteria related to how waste material woul onsite be considered in DOE's decision-making process.

RESPONSE

Information on technical options for managing SNF at SRS can be found in Volume 1, Environmental evaluation of waste management practices and options at SRS may be fo Savannah River Site Waste Management Draft EIS.

## II COMMENT

The commentor states that past experience with spent nuclear fuel needs to be a cri fuel management decisions.

RESPONSE

SNF management experience was a factor used in determining DOE's and the Navy's pre See Volume 1, section 3.1.

## II COMMENT

The commentor suggests that a hasty decision is being made with respect to the stor fuel.

**RESPONSE**

DOE is devoting adequate time to evaluate a full range of reasonable alternatives f including the need for interim storage capabilities.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environme all the alternatives considered in this EIS. Volume 1, section 3.1 discusses DOE's managing SNF. The analyses show that the impacts of all alternatives would be smal differences in the impacts among the alternatives, they are not sufficient to disti based on impact alone. See the response to comment 04.04 (008) regarding the prefe SNF management.

**II 4.5 Miscellaneous****II COMMENT**

The commentor states that because the EIS did not find important environmental impa the alternatives to the proposed action, the final decision will be political.

**RESPONSE**

The content of the EIS follows CEQ and DOE regulations implementing NEPA, including topics of concern raised during the public scoping meetings. The analyses, data, a conclusions in the EIS have been prepared and reviewed by subject-matter experts an by an interdisciplinary team to ensure that environmental factors are fully conside agency mission, will be considered.

**II COMMENT**

The commentor states that projects necessary to provide the infrastructure for spen management at the INEL will divert limited resources from waste management and envi restoration projects on the site. The commentor states that DOE's conclusion that favorably with other potential sites is not justified, and the suitability of the I detail with other potential sites.

**RESPONSE**

INEL is one of eight sites originally selected as reasonable alternative sites for INEL was selected because of the many years of DOE experience conducting large-scal operations at that site. The same is true for SRS and Hanford. Accordingly, these other sites limited to Naval fuel only and with years of SNF management experience, reasonable alternatives for consideration for various levels of programmatic SNF ma In response to public comments during scoping for this EIS, DOE conducted a screeni additional reasonable alternative sites. The screening was used solely to identify alternative sites for consideration and analysis in the EIS. Thus, the existing re not included in this process, because they had already been selected as reasonable Pursuant to the screening process, ORR and NTS were added as reasonable alternative of SNF management activities, bringing the number of sites to be analyzed to 10. O considered reasonable for analysis in this EIS.

Potential sites were identified based on such factors as land ownership or current SNF management infrastructure, transportation, and relocation of SNF. Realistic si considering statutory and regulatory restrictions, environmental factors, socioecon factors, and implementability. As a result of this screening process, based largel locations of the sites, a list of the seven most attractive sites was forwarded to consideration in the EIS as reasonable siting alternatives in addition to the eight reasonable. In addition to site qualities and location, the decisionmakers ultimat factors as programmatic needs, mission conflicts, timing, expertise, and infrastruc process and its conclusions are documented in the Alternative Site Selection Decisi summarized in Volume 1, section 3.2.3 of the EIS.

Regarding the concern of diverting resources from waste management to SNF managemen Energy has publicly affirmed that current DOE policy and practice emphasizes safety considerations above other program goals. In this regard, DOE is working to remedi adverse environmental impacts from past programs, as well as to safely manage waste in the future. The integration and relative emphasis between waste management, env restoration, and SNF activities for the INEL through the year 2005 is addressed in

Volume 2 of the EIS for a range of alternatives. Although DOE will use the EIS as regarding these site-wide programs, implementation of decisions is subject to proceeding permitting.

## II COMMENT

The commentor recommends reducing the mass of the existing spent nuclear fuel.

### RESPONSE

The mass of spent nuclear fuel cannot be reduced. Radioactive long-lived nuclides cladding and other fuel structural materials, but the total amount of radioactive material. General solutions proposed for managing nuclear waste are in Volume 1, section 1.1 Volume 2, Chapters 1 and 2, respectively. More specific descriptions of how wastes under the proposed alternatives are in Volumes 1 and 2, section 3.1. SNF management discussed in Volume 1, Appendix J.

## II COMMENT

The commentor expresses the opinion that, contrary to the conclusions in the EIS, it has virtually no impact on anyone, common sense dictates that toxic substances, including fuel, should be managed to minimize potential exposure to people.

### RESPONSE

The evaluation in this EIS indicates that all of the alternatives would result in exposure to the public. All the alternatives include actions to minimize exposure to people (see Volume 1, section 5.7).

## II COMMENT

The commentor objects to the term "No Action" alternative because people who support it could be perceived as not caring about solving the problem.

### RESPONSE

The No Action alternative is a specifically named alternative required under CEQ in implementing the National Environmental Policy Act of 1969. Under the No Action alternative, DOE would limit actions to the minimum necessary to safely and securely manage the generation site or current storage location.

## II COMMENT

The commentor recommends that the legal and technical constraints at the Nevada Test Site, mentioned in the commentor's letter, be included in DOE's decision-making process for selecting an alternative.

### RESPONSE

All comments received during the public comment period were carefully reviewed and used in preparation of the EIS and identification of the preferred alternative. Although NTS is evaluated in the EIS as an alternative for SNF management activities, we consider it to be a preferred site in the EIS, because Nevada is the host site for the Characterization Project and because of NTS lack of current SNF handling experience. Volume 1, Appendix F, section 3.1, NTS provides a contrast to other potential sites. Responses to comments 04.03.01 (28) and 04.04 (008).

## II COMMENT

The commentor notes that environmental restoration and waste management activities are assessed separately for the INEL.

### RESPONSE

Environmental restoration and waste management activities cannot be separated entirely. Environmental restoration is a major waste generator. Reasonably foreseeable waste restoration will in part dictate waste management activities. Volume 2 of the EIS contains on and analysis of these subjects.

The alternatives analyzed were designed to cover the spectrum of potential impacts, activities (the Maximum Treatment, Storage, and Disposal alternative) to minimum action alternative). As identified in Volume 2, section 2.1.2, environmental restoration management activities discussed in the EIS are evaluated at both the site-wide level and project-specific levels. For environmental restoration, potential impacts are addressed only at the site-wide level. Project-specific impacts of these activities are addressed and evaluated in the future, as appropriate, as part of the CERCLA process.

The comparison of impacts is in Volume 2, section 3.3. This brief comparison of impacts is to help decisionmakers and the public understand the potential environmental consequences with each of the alternatives at INEL. In the ROD, DOE may also choose to combine activities from more than one alternative.

## II COMMENT

The commentor recognizes that the Savannah River Site may need to manage some spent nuclear fuel until ultimate disposition is available.

### RESPONSE

Under all alternatives, some SNF would be managed at SRS for a number of years, even under the Regionalization or Centralization alternative at a non-SRS location.

## II COMMENT

The commentor suggests that intermediate processing at multiple sites other than the Savannah River Site increases the potential for damage at multiple sites.

### RESPONSE

The EIS evaluates the impacts of managing SNF at multiple sites; the impacts would be evaluated in the future.

## II COMMENT

The commentor points out the benefits of the nuclear industry to U.S. citizens and it is time to recognize the responsibility of safely storing the "remnants of the industry."

### RESPONSE

Volume 1, section 3.1 describes the preferred alternative for programmatic SNF management. Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL. See also the responses to comments 04.04 (008) and 04.04 (011).

## II COMMENT

The commentor wants information on efforts to scale back the production of nuclear power.

### RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes that the EIS is adequate to support a decision on this subject. General discussions of procedures and plans are covered in Volume 2, Chapters 1 and 2. DOE has committed to emphasizing waste minimization and avoidance, where most new radioactive waste will be generated. Desirable cleanup activities and decommissioning of contaminated facilities that no longer are needed for DOE missions. Most DOE SNF was generated in DOE production and experimental reactors that are being phased out, so considerable source reduction has already occurred.

## II COMMENT

The commentor states that additional information is required to determine the extent of the No Action alternative in Volume 2 would not meet current regulatory agreements in place.

**RESPONSE**  
The No Action alternative, as described in Volume 2, section 3.1, includes activities that have been initiated or that may be initiated after June 1, 1995, and have been evaluated under NEPA by June 1, 1995.

New activities would be limited to minor environmental safety and health activities operations. There would be no new major upgrades and the use of ICPP-603 storage would be phased out. The ICPP-603 fuel is being removed under the Court Order. Reracking is necessary to accommodate that fuel. Other on-site fuel consolidation activities are described in separate NEPA documentation, as described in Volume 2, section 2.1.3 for other NEPA alternatives at INEL. The No Action alternative, as described in Volume 1, section 3.1, represents a comparison of the other alternatives. Projected impacts of alternative management in the EIS with those impacts projected for the existing conditions against plans for lesser activities. DOE believes that the No Action alternative in this EIS satisfies the requirements to include a No Action alternative, and that the activities under the alternative are consistent with the assumptions stated in Volume 1, section 3.1.

## II COMMENT

The commentor states that the alternatives for the INEL EIS are poorly labeled and described.

**RESPONSE**  
The Summary describes the relationship between Volumes 1 and 2, as well as the relationships between the alternatives in the two volumes. The Summary also lists the key points in each of the alternatives.

## II COMMENT

Commentors state that technologies and/or proper storage sites for safe, long-term management may not exist.

**RESPONSE**  
DOE has a program (including research, development, and demonstration activities) for managing and storing all radioactive materials at each of the sites considered in the EIS. Management of SNF, including storage, are discussed in Volume 1, section 1.1.3 and Appendix J. Management practices for radioactive wastes are described in Volume 2, section 2.2. INEL, but also generally applies to wastes at other DOE sites. The potential impacts of storing SNF and associated mitigation measures are discussed in Chapter 5. Supporting information on types of SNF and their storage options is provided in Appendix J. Management and storage of radioactive wastes at INEL are described in Volume 2, section 2.2. DOE's policy is to comply with applicable Federal, state, and local regulations. All radioactive materials are managed to ensure protection of the environment and the public and site employees.

## II COMMENT

The commentor emphasizes that the EIS and Record of Decision have the flexibility to select the best alternative.

**RESPONSE**  
The programmatic action that DOE ultimately selects is not necessarily limited to one of the five alternatives analyzed. A hybrid alternative could be developed that would, for example, incorporate elements from the five alternatives analyzed. Moreover, the programmatic decisions will not identify all management options. If appropriate, the decisions would be made after additional studies and evaluations.

## II COMMENT

The commentor suggests that information on the No Action alternative in the Summary  
RESPONSE

The Summary has been revised to clarify that the minimum facility upgrades necessary  
interim storage of SNF would be completed.

## II COMMENT

The commentor suggests DOE evaluate the railroad rights-of-way for temporary storage  
fuel.

RESPONSE

Because railroad rights-of-way are privately owned and do not provide infrastructure  
concerns, such as exposure to the public and potential for accidents, railroad right  
This was not considered to be a reasonable alternative.

## II COMMENT

The commentor requests specific information on secondary wastes to be produced from  
activities or not-yet-existent facilities related to possible processing of spent nuclear  
radioactive scrap/waste facility. In addition, the commentor states that the EIS for  
alternatives cited in the Spent Fuel Working Group Report on Inventory and Storage of  
Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental  
and Health Vulnerabilities and that continued avoidance of planning for the final disposal  
repository extends the risk and hazards of storage at the Idaho National Engineering  
RESPONSE

Specific information is not available on facilities that have not been constructed  
been conducted to acquire a valid baseline. Generic projects have been included in  
"placeholders" to present readers with as comprehensive a range of forthcoming projects  
possible. These projects or facilities would require additional analysis under NEPA  
accurate information on secondary waste generation will be provided for an assessment  
management. DOE acknowledges and discusses the vulnerability assessment in Volume 2  
The action plans for the correction of the vulnerabilities identified are referenced  
available in libraries and reading rooms that received this EIS.

## II COMMENT

The commentor notes that Volume 2, Table 3.3-1 and section 5.19 need to be clearly  
specific discussion on safety requirements and other resources needed to implement  
measures and monitoring for each alternative should be presented in the Final EIS.  
RESPONSE

Volume 2, section 5.19 of the EIS has been revised to show clear links between the  
and Table 3.3-1.





## 5. TECHNICAL ISSUES

### 5.1 Aesthetic and Scenic Resources

#### 05.01 (001) Aesthetic and Scenic Resources

##### COMMENT

The commentor states that the EIS ignores the presence of unusually aesthetically p particularly the buttes, on and adjacent to the Idaho National Engineering Laborato notes that the Middle Butte and other sites on the Idaho National Engineering Labor the Shoshone-Bannock Tribes. The commentor also states that visual impacts should based on what could be seen from the Idaho National Engineering Laboratory boundary the EIS should also analyze visual impacts for tribal members who have been granted access to the site.

##### RESPONSE

Volume 2, section 4.2 identifies that portion of the Idaho National Engineering Lab the Big Butte Resource Area, which is administered by the Bureau of Land Management section 4.5 has been revised to acknowledge that features of the natural landscape to the Shoshone-Bannock Tribes.

Volume 2, section 5.5 discusses the impacts of proposed projects on aesthetic and s for the various EIS alternatives. Most of the proposed projects would be confined areas and be in size and shape to adjacent structures. The locations of some new f determined for the Ten-Year Plan alternative; however, such facilities probably wou existing facilities and at least 1/2 mile from public roads. Although no final sit expected to occur on or near the buttes, the final siting determination will consid aesthetically pleasing landforms.

Volume 2, section 5.4 has been revised to state that the Shoshone-Bannock Tribes wo before any project is developed that could impact resources of importance to the Tr

#### 05.01 (002) Aesthetic and Scenic Resources

##### COMMENT

The commentor states that impacts to visibility and enjoyment of view at the Fort H as effects on tourism, are not considered in the EIS.

##### RESPONSE

The Fort Hall Reservation is approximately 27 miles southeast of the southern bound Although a specific analysis was not performed for the Fort Hall Reservation, the a the EIS concluded that the potential for impairment of the visual resource at Crate Monument, which is approximately 12 miles west of INEL's western boundary, could no The analysis used very conservative methods, including assumptions that many of th sources of emissions would not incorporate emissions controls, and that pristine co at Craters of the Moon. However, DOE would not be able to obtain an air permit for sources unless it could be shown to the satisfaction of the Idaho Division of Envir there would be no perceptible impacts on visibility at the Craters of the Moon Nati is the nearest Class I area to INEL. The control measures that would be required t Craters of the Moon would also serve to prevent impairment of visibility or enjoyme Fort Hall Reservation.

In addition, the Fort Hall Reservation lies outside the path of prevailing winds fl site. As noted in Volume 1, Appendix B, section 4.7, the mountain ranges bordering channel the prevailing westerlies into a southwest wind, away from the reservation.

#### 05.01 (003) Aesthetic and Scenic Resources



COMMENT

Commentors urge that the beauty of Idaho be preserved.

RESPONSE

DOE agrees. In developing the alternatives for management of spent nuclear fuel (S restoration and waste management at INEL, DOE was sensitive to the impacts that could disturbance of the natural landscape. Thus, for new facilities, DOE would use land disturbed or land that is adjacent to developed land. The amount of land required also be minimized. Even for the case in which all SNF would be shipped to INEL, on percent of the site land area) would be devoted to new facilities. In developing efforts to prevent degradation of views and prevent environmental damage that might natural flora and fauna.

## 5.2 Air Quality

### 05.02 (001) Air Quality

COMMENT

The commentor wonders about the effects on air quality of releases of polluting chemicals materials to the air.

RESPONSE

DOE's policy is to comply with all applicable Federal, state, and local regulations protect human health and the environment. Where possible, potential concentrations the various alternatives have been estimated, considering appropriate local meteorological each site. DOE employs pollution reduction techniques to minimize air releases when constructing, and operating facilities.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts including impacts to air quality, for all the alternatives considered in this EIS. Impacts for all alternatives would be small.

### 05.02 (003) Air Quality

COMMENT

The commentor states that the radiological risks of the various alternatives in the area and are consistent with other studies that have concluded that the risks of handling defense high-level waste or commercial fuel are not large.

RESPONSE

The comment is consistent with the EIS, which shows that the radiological risks for all alternatives would be low, including the risks of interim storage of high-level waste. The risks of handling commercial SNF, with the exception of certain special-case fuels are beyond the scope of this EIS.

### 05.02 (004) Air Quality

COMMENT

The commentor questions the appropriateness of the units of measure (picocuries per liter) in Volume 1, Appendix C, Table 4-18 to describe tritium activity in air moisture.

RESPONSE

The title of Table 4-18 has been revised to "Tritium measured in air at the Savannah River" to more clearly reflect that a volume of air rather than water (or precipitation) was measured.

### 05.02 (005) Air Quality

COMMENT

The commentor indicates that the Hanford Site is in a noncompliant area for particulate matter.

## RESPONSE

The commentor is correct. According to Volume 1, Appendix A, Table 4.7-2, the maximum average particulate concentration exceeds State of Washington standards. The EIS reflects this fact.

**II 05.02 (006) Air Quality**

## COMMENT

The commentor states that a definition of 95 percent meteorology should be provided in 5.14 or Appendix F-5. The commentor also notes that the definition given in Volume 2, section 5.3 is incorrect and should be replaced.

## RESPONSE

The commentor is correct. The following definition of 95 percent meteorology has been added to 5.14 and has replaced the incorrect definition in Volume 2, Appendix F: meteorology is defined as stable weather conditions, unfavorable to atmospheric contaminants, which are not exceeded more than 5 percent of the time."

**II 05.02 (007) Air Quality**

## COMMENT

The commentor cannot tell from the EIS analysis if susceptible populations, such as homes, have been considered, or whether pollutant deposition on local food crops has been considered.

DOE can determine no cases where susceptible subgroups, such as nursing home occupants, require specific evaluation. The basis for this statement is (1) air quality impacts at all sites are well below health-based standards for all pollutants considered, and (2) the impacts are based on dose-response data, which have already accounted for susceptible subgroups. Pollutant deposition on local food crops has been directly assessed in the case of criteria pollutants and indirectly assessed in the case of criteria pollutants. In the latter case, all of the pollutants are below the secondary air quality standards, which have been established to protect effects to vegetation, property, or other elements of the environment.

DOE has added a better explanation of source terms and a description of the direct and secondary pathways that were evaluated and included in the EIS. (See Volumes 1

**II 05.02 (008) Air Quality**

## COMMENT

The commentor considers the EIS presumptuous to claim that levels of all nonradioactive pollutants, with the possible exception of hydrochloric acid, which results from the incineration of mixed low-level waste, are below applicable standards. The commentor states that to confirm this, and it is impossible to be so positive about any proposed incinerator, asks if this incinerator is being evaluated under the Environmental Protection Agency's Strategy."

## RESPONSE

With respect to hydrochloric acid, the incinerator in question is the Waste Experimental Facility. This facility is included in Volume 2 for the Ten-Year Plan and Maximum and Disposal alternatives for processing low-level and mixed low-level waste. However, it is not a "proposed incinerator," but rather an existing facility that has had several years of low-level waste and limited amounts of mixed wastes. Thus, a considerable amount of operating experience exists. The Waste Experimental Reduction Facility has an air quality monitoring program with specific limitations for various pollutants. The facility can continue to operate and the reviewing agency will evaluate all data under applicable standards and guidelines, Environmental Protection Agency's (EPA's) new "Combustion Strategy," and will apply restrictions and emissions standards designed to ensure compliance.

Other incinerators proposed under these alternatives (e.g., the Idaho Waste Process Low-Level Waste Treatment Facility, and the private-sector Alpha-Mixed Low-level Waste Facility) are early in the conceptual design stage of development, and the projects are uncertain. Annual average increment levels, exclusive of baseline levels, should be

promulgated State of Idaho standards for noncarcinogenic toxics, including hydrochl analyses presented in the EIS used maximum 8-hour concentrations in accordance with Idaho guidelines. Due to the conservative approach used in these analyses, and the conditions that will be applied by the State of Idaho Division of Environmental Qua review function, DOE can state with confidence that all pollutant levels would be w standards.

## II 05.02 (009) Air Quality

### COMMENT

The commentor objects to any promise of adding combustion controls to mitigate impa cites the case in which DOE received a permit for nitrogen oxide emissions from the Processing Plant in 1989, and although the permit contained a requirement to instal for those emissions, the equipment has yet to be installed.

### RESPONSE

The activity in question was the Fuel Processing Restoration (FPR) Project. The pe operation of the FPR project and was not independently applicable. The FPR project the increases in nitrogen oxide emissions did not materialize. With regard to this promise to add combustion controls to mitigate impacts. Rather, each new project w determine whether controls are required or warranted. In some cases, combustion co required by the State of Idaho Division of Environmental Quality before a facility construction permit.

## II 05.02 (010) Air Quality

### COMMENT

The commentor states that Idaho air quality rules should be specified as "Rules for Pollution in Idaho," and references to the Air Quality Bureau should be updated.

### RESPONSE

The commentor is correct. References to Idaho air quality rules and the Air Qualit updated in Volume 2.

## II 05.02 (011) Air Quality

### COMMENT

The commentor states that ambient air concentrations at the Idaho National Engineer be modeled at the inner boundary of the grazing area on the site, because the publi that area.

### RESPONSE

As defined in Rules for the Control of Air Pollution in Idaho, "ambient air" refers atmosphere to which the general public has access. This is not the case with grazi site. Access to these areas is controlled and is restricted to certain individuals does not have access. DOE's position is that these grazing areas do not meet the contain "ambient air." Therefore, ambient air quality standards do not apply, and required for these areas.

## II 05.02 (012) Air Quality

### COMMENT

The commentor asked DOE to explain why the latest version of the SCREEN air quality SCREEN2) was not used.

### RESPONSE

The EIS used air quality baseline data for some toxic air pollutants that had been modeling efforts, which used the SCREEN model. Rather than repeat these analyses u approach was taken whereby: (a) for any screening level, baseline toxic results th were run to

determine if there were significant differences in the results obtained using SCREEN versus SCREEN2. For the manner in which the SCRE applied, test runs indicated that no difference would be obtained by reassessing th previously been performed. There is no requirement in Rules for the Control of Air perform the analyses that were done using SCREEN. The analyses to determine compli increment standards were performed using ISCST-2.

## II 05.02 (013) Air Quality

### COMMENT

The commentor disagrees with the statement about krypton-85 being "by far, the radi highest emission rate." The commentor also states that since reprocessing has been the radionuclide with the highest emission rate.

### RESPONSE

The statement cited by the commentor is from Volume 1, Appendix B. Volume 2 makes krypton-85 has historically been the radionuclide with the highest emission rate, b the activity primarily responsible for krypton-85 emissions, ceased in 1992. The w Appendix B, section 4.7 has been changed to correspond to that in Volume 2, section

## II 05.02 (014) Air Quality

### COMMENT

The commentor questions why Volume 1, Table 4.7-3 and Volume 2, Table 4.7-1 list no from Argonne National Laboratory-West that are higher than those listed in the 1991 Management Information System and the 1991 Idaho National Engineering Laboratory Na Emission Standard for Hazardous Air Pollutants, Annual Report.

### RESPONSE

As indicated in footnotes on the tables cited by the commentor, the emissions estim existing facilities and reasonably foreseeable increases to the baseline. Included Fuel Cycle Facility at Argonne National Laboratory-West. This facility has signifi krypton-85 (11,500 curies) and xenon-131m (127 curies), which account for the diffe values listed in the tables and the values reported in the Radioactive Waste Manage System and 1991 Idaho National Engineering Laboratory National Emission Standard fo Air Pollutants, Annual Report.

## II 05.02 (015) Air Quality

### COMMENT

The commentor states that emissions and visibility impacts should be evaluated for equipment associated with plant services that would be needed to support the Region Centralization alternatives at Idaho National Engineering Laboratory.

### RESPONSE

The specific projects associated with the alternatives for Regionalization or Centr would not require additional fossil-fuel-burning equipment beyond that which is alr exception of one minor source, a diesel generator associated with the Fort St. Vrai Project. The emissions from this source would be very low, and the statement that not add a measurable increment to emissions at INEL is accurate. Visibility impact would be small. A visibility impact analysis was also performed for the closest Cl Moon National Monument) for the cumulative emissions of all applicable sources comp 2 alternative.

## II 05.02 (016) Air Quality

### COMMENT

The commentor states that mercury is shown to slightly exceed the State of Idaho cr alternatives. The commentor states that given the uncertainty known to exist in th

Complex model, it is not possible to judge the health implications of this informat  
RESPONSE

The mercury levels reported in the Draft EIS are the maximum 8-hour levels that wou  
EIS reflects State of Idaho standards effective May 1, 1994, for calculating the ef  
on air quality. The State of Idaho now requires that state annual average levels s  
discussed in Volume 2, section 5.7, revised calculations show that mercury levels a  
Idaho standard. The revised mercury level is less than 3 percent of the state stan  
levels are predicted if mercury-bearing waste were processed at a very high rate.  
engineering controls could be employed to minimize and ensure that levels approachi  
would not result.

The EIS has been changed from an 8-hour reporting level to a 24-hour reporting leve

## II 05.02 (018) Air Quality

### COMMENT

The commentor makes the following recommendations: (a) use the same baseline year  
criteria pollutants, and toxic air pollutants, (b) clarify the distinction between  
projected emissions for some cases, and (c) present air emissions for 1990, 1991,  
analysis for each of these years.

### RESPONSE

The rationale for using different baseline years for radionuclides, criteria pollut  
pollutants follows: Generally, the most representative baseline year is the most r  
the time the analyses were performed, the availability of data varied for the three  
emissions. For radionuclides and criteria pollutants, 1991 was the most recent yea  
available when the baseline studies were conducted, and these were the data that we  
some SNF processing took place that year at the Idaho Chemical Processing Facility.  
longer performed at this facility and radionuclide emissions for this activity are  
of baseline conditions. Moreover, processing is an activity assessed in associatio  
alternatives, and inclusion of these emissions in both the baseline and alternative  
cause double counting. That is why the 1993 radionuclide emissions were used for t  
respect to toxic air pollutant emissions, only 1989 data were and currently are ava  
The only distinction made between existing emissions and a future baseline involves  
specific projects that are expected to become operational before June 1, 1995 (that  
period covered by the EIS alternatives). These projects are identified in Volume 2  
Appendix F-3. The analysis is conservative in that no credit is taken for future r  
DOE does not agree that 3 years of emissions should be analyzed. Conservative emis  
used for the baseline year, and all impacts based on these estimates represent an u  
impacts that would actually occur. For example, the maximum emissions scenario use  
toxic air pollutants exceeds actual emissions by a substantial margin (as illustrat  
4.7-4) and bounds the baseline conditions.

## II 05.02 (019) Air Quality

### COMMENT

The commentor states that the only Air Quality Related Value considered was visibil  
justification was given for not including other Air Quality Related Values, such as  
plants.

### RESPONSE

Air Quality Related Values other than visibility were assessed. Volume 2, section  
to soils and vegetation and impacts due to secondary growth. All off-site concentr  
pollutants are below the secondary air quality standards, which have been establish  
effects on vegetation, property, or other elements of the environment. Standards f  
vegetation have also been established for fluorides, although impacts of fluoride e  
only for comparison to the Toxic Air Pollutant Increments. Fluoride emissions asso  
alternatives would be very low and would not be expected to result in any impact.  
deposition on local food crops has been directly assessed for radionuclides; the r  
from ingestion of contaminated food products. With respect to other Air Quality Re  
evaluations were performed and described for ozone formation, stratospheric ozone d  
deposition, and global warming.

## II 05.02 (020) Air Quality

### COMMENT

The commentor points out that the statement "emissions of volatile organic compound to have a negligible effect on ozone formation" is incorrect. The commentor states inventory indicates emissions of more than 600 tons per year of volatile organic compound. The commentor recommends that the amount of ozone formation be estimated.

### RESPONSE

The 1990 emissions inventory for INEL quantifies the maximum potential emissions of compounds (VOCs) as more than 600 tons per year. VOC emissions from actual operations are 100 tons per year. VOC emissions from the proposed projects would be less than 10 tons per year, which is less than the applicable State of Idaho standards' significant level of 40 tons per year that would be used in the formation analysis. From Volume 2, Table 5.7-2 it can be seen that volatile organic compound emissions range from 5,583 kilograms (6.1 tons) per year for the No Action alternative to 8,800 kilograms (9.7 tons) per year for the Maximum Treatment, Storage, and Disposal alternative. The low potential for ozone formation from the proposed projects precludes the need for a detailed assessment. Air quality monitoring, requiring air quality permits, analyses for impacts resulting from specific pollutants would be performed, contingent on regulatory requirements.

## II 05.02 (021) Air Quality

### COMMENT

The commentor states that releases of carbon tetrachloride, freon, and greenhouse gases are extremely small compared with global loading, and considers this an unreasonable concern.

### RESPONSE

The statement in question attempts to characterize emissions associated with the alternatives. The potential for stratospheric ozone depletion (carbon tetrachloride and freon) and global warming (greenhouse gases, including carbon dioxide, methane, nitrous oxides, and chlorofluorocarbons) are global (not regional) effects, which are associated with global emissions. The alternatives represent an extremely small fraction of global levels, and it is reasonable to assume these emissions would have small impacts with respect to global effects. INEL has reduced or eliminated the use of chlorofluorocarbon compounds.

## II 05.02 (022) Air Quality

### COMMENT

The commentor requests that DOE demonstrate how the emission rates and concentrations of pollutants summarized in Volume 2, section 4.7 were calculated.

### RESPONSE

The methods used to calculate emission rates and concentrations are described in Volume 2, Resources, which is referenced in Appendix F-3. For radiological releases and assessments, details are provided in Estimated Radiological Doses Resulting from Airborne Radionuclides at the Idaho National Engineering Laboratory, and Maximum Individual, Collective, and Population Doses from INEL Proposed Action and No Action Sources, which are also referenced in Appendix F-3. The referenced reports are available for review in the reading rooms at the locations listed in the EIS.

## II 05.02 (023) Air Quality

### COMMENT

The commentor points out that previous documents have established that adequate upper atmosphere (upper height) data are not available for the Idaho National Engineering Laboratory vicinity. The commentor requests that the upper air meteorological data used for modeling be provided.

### RESPONSE

Verified measurements of on-site mixing height for the INEL vicinity are not available. The commentor requests that original nonradiological analyses (modeling of the baseline concentrations and impacts) be provided.

conservatively assumed a mixing height of 100 meters for modeling of both short- (an average) concentrations. The radiological modeling (which only involves annual average height of 800 meters. Additional nonradiological modeling, which has since been in compliance with Prevention of Significant Deterioration (PSD) increment limits, use for 3-hour and 24-hour averaging periods, and 800 meters for annual average assessment considered more reasonable estimates for short- and long-term mixing heights. The value is that 150 meters is reportedly the lowest mixing height ever observed at IN Handbook, Page 4-48). The 800-meter value is recommended by the National Oceanic and Administration as appropriate for long-term modeling (Sangendorf, J., U.S. Department of National Oceanic and Atmospheric Administration, Averaging INEL Mixing Depths, Memo EG&G-Idaho, Inc., February 11, 1991). For short-term calculations, the same result 100 or 150 meters is used; this is because the highest short-term concentrations are during conditions of slight-to-moderate atmospheric stability (that is, stability cases mixing height data are not used by the Industrial Source Complex Short Term-2

## II 05.02 (024) Air Quality

### COMMENT

The commentor points out that the toxic standards are now listed as increments and Review Toxic Policy was eliminated.

### RESPONSE

Volume 2, Figure 4.7-2 has been revised to reflect recent updates to the Idaho Toxic Standards. The New Source Review Toxic Policy was incorporated into the Rules for Pollution in Idaho.

## II 05.02 (025) Air Quality

### COMMENT

The commentor points out that the power of 10 is missing in the value of foreseeable tetrachloride emissions in Volume 2, Table 4.7-2.

### RESPONSE

Volume 2, Table 4.7-2 has been corrected to show the value for foreseeable increase tetrachloride emissions as  $4.5 \times 10^{-5}$  kilograms per year.

## II 05.02 (026) Air Quality

### COMMENT

The commentor notes that the correct characterization for the area around the Idaho Laboratory site is "in attainment or unclassified" for all National Ambient Air Quality

### RESPONSE

The commentor is correct. Volume 2, section 4.7.4 has been revised to read: "The National Engineering Laboratory site is in attainment or unclassified for all National Standards."

## II 05.02 (027) Air Quality

### COMMENT

The commentor states that the estimated impacts on air quality, especially on visibility presented for operation of the New Waste Calcining Facility and questions whether they are included in Volume 2, Figure 5.7-4. The commentor states that NOx reduction in Calcining Facility plume should be evaluated.

### RESPONSE

The impacts on air quality have been assessed for emissions associated with the New Facility. These impact assessments included comparison with ambient air quality standards include potential impacts on visibility. Visibility impacts were indirectly assessed visual range used for the visibility analysis of alternative projects reflects conditions

Waste Calcining Facility was operating. Volume 2, section 5.7 discusses impacts to Immobilization Facility, which would eventually replace the New Waste Calcining Facility (which has similar projected NOx emissions), has been evaluated for visibility impacts. The requirement to evaluate the New Waste Calcining Facility for NOx reduction. Visibility was evaluated in conjunction with obtaining necessary permits.

## II 05.02 (028) Air Quality

### COMMENT

The commentor notes that: (a) the discussion of cumulative effects of airborne emissions. National Engineering Laboratory omits discussion of visibility impacts and does not discuss effects of exposure to multiple pollutants or long-term dose or risk from historic operational accident scenarios do not seem reasonable.

### RESPONSE

Visibility impacts from airborne emissions are discussed in the Volume 2, section 5.15.8. The analysis determines the potential for visibility impacts because the analysis determines the potential for visibility impacts over the existing background, which is representative of conditions without emissions.

Potential synergistic effects from multiple chemical exposures are extremely difficult to quantify quantitatively because there is insufficient data to indicate synergistic effects. The potential for synergistic effects is small where the concentrations for each individual compound are low for the alternatives evaluated in this EIS. To ensure that potential impacts are not underestimated, high releases and exposure conditions were assumed. Further, the point of highest chemical release occurs at different times and places. It is unlikely that any one individual chemical species is more than one chemical species at the concentrations reported in this EIS.

Radiation doses from historic operations are discussed in Volume 2, section 5.15.8. The analysis is available in referenced technical support documents, which are available for review in the rooms that received copies of this EIS. DOE is not aware of any generally accepted methodology that has been developed to evaluate synergistic effects due to several airborne chemicals. DOE is aware that research into this area is continuing.

The evaluation of cumulative effects considers historic accidents only. The implementation of the National Environmental Policy Act (NEPA) at 40 CFR Paragraph 1508.7 specifies "impacts result from past, present, and reasonably foreseeable future actions..." DOE has consistently interpreted "reasonably foreseeable" to include construction, maintenance, and other planned activities, but not to include future hypothetical accidents, spills, and other unplanned activities. Potential chemical exposure resulting from historic operations is discussed in Volume 2, Appendix F-5.

## II 05.02 (029) Air Quality

### COMMENT

Referring to Volume 2, section 5.18.2, the commentor points out that application of the methods is not a mitigation measure.

### RESPONSE

The commentor is correct. While the information derived from the application of the methods may eliminate the need for mitigation measures, the process is technically a mitigation measure. The sentence in question has been revised. It clarifies what measures were used. The results of refined modeling confirm the findings of the screening-level analysis; the area of Craters of the Moon would be perceptibly impaired as a result of projected emissions.

## II 05.02 (030) Air Quality

### COMMENT

The commentor points out that the key word "net" is missing from the description of Significant Deterioration analysis must be performed.

### RESPONSE

Volume 2, Appendix F, section F-3.3.1 has been revised to clarify that a Prevention of Significant Deterioration (PSD) review is required whenever any modification would result in a net increase in emissions.



of any air pollutant.

## II 05.02 (031) Air Quality

### COMMENT

The commentor states that trace elements such as nickel may also be emitted by combustion generators and boilers) associated with the Pit 9 waste retrieval project.

### RESPONSE

At the time the Draft EIS was prepared, no generators or boilers were proposed for Project. Since that time, however, the project has been expanded to include two boilers. Modeling now includes the projected emissions from these boilers, which include the nickel, lead, and chromium. Emissions tables and dispersion modeling results in the updated.

## II 05.02 (032) Air Quality

### COMMENT

The commentor notes that radiological assessment methodology for air impacts treats results as constants with no uncertainty or variability, which is not consistent with environmental risk assessment. The commentor recommends that confidence statements estimates of the true, but unknown, value being calculated or the true, but unknown

### RESPONSE

The radiological assessment of air impacts used the GENII code to perform calculations. Results represent best estimates for dose to an off-site individual, on-site individual population. They are based on conservative release estimates, representative meteorological conservative assumptions regarding the location and habits of the receptors (especially exposed off-site individual). The dispersion model algorithms are generally accepted type of assessment (as opposed to research applications, in which a quantitative uncertainty may be appropriate), and the computer code has been benchmarked as defined by the Inter Energy Agency. It can be said with confidence that the dose results, especially the exposed off-site individual, overstate the doses that would actually occur, yet the below the most restrictive limit. Using a computer code that has been extensively quality assurance requirements is considered sufficient for an assessment of this type.

## II 05.02 (033) Air Quality

### COMMENT

The commentor recommends that the EIS clarify that a segment of past meteorological data has been chosen for the radiological assessments to be representative of average conditions over the 10-year period covered by the EIS.

### RESPONSE

Volume 2, Appendix F-3.4.2 states that the meteorological data used for the radiological assessments were obtained at the various facility monitoring stations over the 5-year period 1987 through 1991. It was not explicitly stated that these conditions are assumed to be representative of the 10-year period covered by the EIS. Volume 2, Appendix F-3.4.2 has been revised to clarify this assumption.

## II 05.02 (034) Air Quality

### COMMENT

The commentor states that when comparing predicted concentrations of toxic air pollutant to the annual increment standards contained in the May 1, 1994, Idaho rules, the concentrations are annual averages.

### RESPONSE

The analyses in Volume 2, sections 4.7 and 5.7 compare predicted 8-hour concentrations of toxic air pollutants to the annual average concentrations. The analyses for noncarcinogenic emissions have been revised to compare predicted annual average concentrations to the annual average concentrations.

## II 05.02 (035) Air Quality

### COMMENT

The commentor questions the basis for  $1.0 \times 10^{+04}$  curies of noble gases from the Idaho Chemical Processing Plant listed in Volume 1, Appendix B, Table 4.7-3, and Volume 2, Table 4.7-3.

RESPONSE  
The value of  $1.0 \times 10^{+4}$  curies represents an upper bound to the annual emissions of Idaho Chemical Processing Plant for a recent 1-year period. The actual releases are classified. Actual baseline krypton-85 emissions from this facility are very much less than the value of  $1.0 \times 10^{+4}$  curies was used in the radiological dose assessment. Because the fraction of the overall dose from krypton-85 at these levels is not a large fraction of the overall dose, this is acceptable for evaluation and comparison of alternatives required for a programmatic EIS.

## II 05.02 (036) Air Quality

### COMMENT

The commentor points out that Volume 1, Appendix B, Table 5.7-1 lists ammonium hydrofluoride as toxic air pollutants (carcinogens), yet these substances are not in the Air Pollutants Increments.

### RESPONSE

The commentor is correct. Ammonium hydroxide and hydrofluoric acid are not carcinogens listed in Idaho's Toxic Air Pollutants Increments. Hydrofluoric acid emissions were not included because total fluoride emissions are listed in Idaho's Toxic Air Pollutants Increments. Ammonium hydroxide emissions were assessed conservatively as ammonia, a substance that is listed in the Air Pollutants Increments. DOE has clarified that these pollutants are not carcinogens and their inclusion (as stated above) in the EIS.

## II 05.02 (037) Air Quality

### COMMENT

The commentor states that current emissions and projected increases should be listed in Volume 2, and the basis for projected increases in baseline emissions should be explained.

### RESPONSE

The comment concerns the listing of radionuclide emissions for potential projects. The commentor considers reasonably foreseeable increases to the baseline. These increases are currently listed in Volume 2, Table 4.7-1, but are not listed separately. They are listed in the separate Support Document for Air Resources, which is included as a reference for Volume 2. The emissions for these projects were estimated in the same manner as described for alternative projects in Appendix F-3.4.1.

## II 05.02 (038) Air Quality

### COMMENT

The commentor states that analyses of air impacts should be compared with Prevention of Significant Deterioration limits, which are typically two to four times more stringent than National Ambient Air Quality Standards. The commentor points out that the Idaho National Engineering Laboratory triggered the Prevention of Significant Deterioration baseline dates for nitrogen oxides and particulates and that the baseline conditions in Volume 2, section 4.7 are not Prevention of Significant Deterioration baseline conditions.

### RESPONSE

The baseline date for a criteria pollutant establishes the date to start tracking changes. Additional analyses have been performed to characterize the existing baseline conditions for alternatives in terms of the amount of PSD increment consumed. The methodology used with the Idaho Division of Environmental Quality, and a report documenting the methodology, has been completed and included as a reference in Volume 2. The results indicate that

conditions are within allowable increment consumption limits. When the contribution of the alternatives are added, the amount of increment consumption remains below the amount for each of the alternatives. The PSD baseline analysis have been incorporated into Volume 2, Appendix F-3 has been revised to reflect the methods used to calculate PSD consumption.

## II 05.02 (039) Air Quality

### COMMENT

Commentors state that DOE should analyze the existing and potential air quality impacts on the Fort Hall Reservation using all wind roses that indicate possible contributions from the Idaho National Laboratory site.

### RESPONSE

The air quality analyses in the EIS were based on meteorological data appropriate to the area at INEL. The analyses used the hourly meteorological data obtained from three on-site stations for 1991 and 1992 and are graphically presented as wind roses in Volume 2, sections 4.7 and 5.7. Stations are in the southeast, central, and northern sections of INEL. Similar analyses were performed at each facility. Maximum emissions concentrations from each facility were summed at various locations to determine the maximum baseline air quality impacts from present operations and cumulative impacts from proposed actions. Additional analyses were performed to evaluate impacts at points beyond the site boundary were less than those at the boundary (such as impacts at points with a tall stack were located in close proximity to the boundary). Similar analyses were performed to determine the air quality impacts to various locations on the Fort Hall Reservation. Impacts to the Fort Hall Reservation can be found in Volume 2, sections 4.7 and 5.7. Impacts would be small for the alternatives considered in this EIS.

## II 05.02 (040) Air Quality

### COMMENT

The commentor states that the Tribes object to any attempt to relocate projects to avoid impacts to the Moon Class I area if such relocation results in impacts to the Tribes, especially if such impacts have not been evaluated.

### RESPONSE

There are no specific proposals to relocate projects to avoid impacts at the Class I Moon National Monument. However, in cases where visibility impacts to the pristine environment of the Moon are shown to be a potential problem, all options, including changing or not proceeding with a project, would be evaluated. Potential visual impacts must be further defined before projects can proceed. Additional emissions controls and relocation of projects may result in potential impacts below acceptable criteria. As changes in visual setting, particularly in the southern portion of the INEL site, are seen by the Shoshone-Bannock Tribe as an adverse effect on an important Native American resource, the Shoshone-Bannock Tribe was consulted before any project is developed that could have impacts to resources of the area.

## II 05.02 (041) Air Quality

### COMMENT

The commentor suggests that the impacts from fugitive dust emission modeling should be evaluated between fugitive emissions from temporary and permanent sources.

### RESPONSE

The text in Volume 2, Appendix F-3.4.3 has been revised to more clearly distinguish between sources that are temporary (such as construction and demolition projects) and those that are permanent (such as unpaved roads and landfill operations). The specific fugitive dust sources have been identified.

## II 05.02 (043) Air Quality

**COMMENT**

The commentor notes there seem to be variations in the application of models from one to another, virtually no information regarding source terms is given, and it is difficult to know what emissions have been considered and what emissions data were used.

**RESPONSE**

In general, models were applied consistently between sites. However, site-specific modeling required a unique application. For example, the commentor mentions that site boundary impacts were assessed at some sites, but in other cases, off-site locations are considered. The commentor identified the ambient air location of highest predicted impact to the public and the maximum pollutant concentrations at that location for comparison with applicable standards of INEL, the maximum impacted ambient air locations tend to be along public roads. At other sites, the nearest ambient air location may be the site boundary, because it may traverse the site.

Temporary fugitive dust activities such as construction and demolition are exempt from quality standards; nevertheless, fugitive dust impacts from construction activities are reported in Volume 1, and Appendices A through F.

For the other DOE sites evaluated in Volume 1, source emission rates are provided, and characteristics (e.g., elevations, velocity, temperatures) are not provided in all cases more appropriate for a site-specific EIS. A discussion of the modeling and emissions are in Appendices A through F.

**II 05.02 (044) Air Quality****COMMENT**

Commentors assert that DOE cannot avoid responsibility for its past practices of categorizing its past activities as irreversible commitments of resources. Commentors put forward no compelling argument for further degrading the air of both the occupied land surrounding the Idaho National Engineering Laboratory and object to any irreversible air quality resources that could affect the Tribes' air quality, and also tourism. DOE provides no assurances that controls would be installed to avoid adverse impacts on air quality and visibility.

**RESPONSE**

The air quality impact analyses have detailed the potential for air quality impacts. The analyses, for the most part, have been conducted for the site boundary and road. Additional analyses have been conducted for the Craters of the Moon National Monument and Hall Reservation. The analyses for criteria pollutant impacts have shown that impacts are within applicable ambient air quality standards. PSD standards, which have been established to prevent the degradation of air quality, would be met. Toxic pollutant impacts would be within applicable criteria. Impacts to air quality and visual resources at the Fort Hall Reservation operations will be even less, and this should not impact tourism.

Visual resource screening analyses were conducted at Craters of the Moon National Monument and Hall Reservation (these analyses used a screening methodology to determine the potential for worst-case impacts under maximum operating scenarios and adverse meteorological conditions). These analyses used conservative assumptions, including that many of the important proposed sources of impacts incorporate no or minimal emission controls. In many cases, projects are in concept and adequate design of emission controls is not yet available. However, impacts are not underestimated when conservative assumptions are used. A key aspect of the screening analysis from the source to the potential impact area. The analysis showed some potential for impacts during the worst-case conditions. Methods to decrease the impact have not been determined. As discussed in the EIS, they will likely include controls to further reduce emissions and visibility. Siting factors will also be considered, as will refined modeling analyses (screening analyses). Through the Idaho Division of Environmental Quality's Permit Review process, proposed projects are required to demonstrate that there will be no adverse impacts on air quality and on visibility at Craters of the Moon. Any controls needed to avoid adverse impacts on air quality and visibility would be specified in permits.

Impacts to visibility, as well as criteria and toxic pollutant loading, should not be considered as irreversible commitments of resources, but rather short-term impacts over the life of the project. Volume 2, section 5.18 has been revised to state that impacts to air quality and visibility are not irreversible commitments of resources.

## II 05.02 (047) Air Quality

### COMMENT

The commentor points out that the model receptor grid spacing is very large, and that spacing is necessary in areas of maximum predicted impact.

### RESPONSE

After the Draft EIS was completed, DOE performed additional analyses, primarily for consumption. As part of this analysis, a finely spaced receptor array was developed with receptor points spaced at approximately 100-meter intervals in those areas where impacts were predicted to occur. This dense array has since been used in the PSD analyses for consumption and has been incorporated into the appropriate sections of the EIS.

## II 05.02 (048) Air Quality

### COMMENT

The commentor notes that statements in Volume 2 that ozone levels are "not recognized in the region" and that the Idaho Division of Environmental Quality has determined that ozone levels in the state are well below the standard "inaccurately describe ozone levels. The correct situation is that the Idaho Division of Environmental Quality has no ozone monitoring data in the vicinity and is not aware of problematic ozone levels in the area.

### RESPONSE

The statements cited by the commentor reflect verbal comments that were obtained by the Idaho Division of Environmental Quality. The authors acknowledge, however, that the statements could be misinterpreted to mean that ozone levels are not a problem. To substantiate this claim, monitoring data may not be available. The statements in Volume 2 have been revised as follows: "The Division of Environmental Quality has no ozone monitoring data and is not aware of problem ozone levels in the area."

## II 05.02 (049) Air Quality

### COMMENT

The commentor considers the statement that "no previous projects have consumed increment at the Moon National Monument) to be unreasonable.

### RESPONSE

The commentor raises a valid question. Increment consumption is established by assumptions submitted with PSD permit applications, and accepted by the Division of Environmental Quality. Although two PSD permit applications have been previously submitted for the INEL project of increment consumption at Craters of the Moon National Monument, if any, had not been approved. One of the two (the Fuel Processing Restoration Project at Idaho Chemical Processing Plant) has been withdrawn and currently is being modified. The other application (for the Special Use Permit at Test Area North) had not been formally "closed out" at the time the Draft EIS was completed. As a result of discussions with the Division of Environmental Quality, it was decided that it was required to firmly establish the amount of increment consumption at the time that the Manufacturing Capability permit application was submitted and accepted, as of May 1, 1990. Additionally, it was decided that further analyses showing increment consumption by project with the EIS alternatives was also required. These analyses have been completed. The commentor's concern has been revised to reflect the updated results.

## II 05.02 (050) Air Quality

### COMMENT

The commentor points out that the assumption of Gaussian dispersion tends to break down at short distances, or where flow direction changes. The commentor further states that Gaussian models seriously underpredict impacts in these scenarios, and predictions for the Idaho National Laboratory boundary locations may be low.

### RESPONSE

While it is true that Gaussian models used to estimate upper bound levels of toxic be subject to the shortcomings noted by the commentor, the Industrial Source Comple (ISCST-2) model is generally regarded as appropriate for the type of modeling perfo virtually every nonradiological case modeled, the highest ambient air impact occur locations. In these cases, the transport distances are not long and are well withi the ISCST-2 model is considered appropriate. Results of calculations indicate 80 t occurs in the first 20 miles. Computational assumptions selected by DOE were conse uncertainties in calculational models.

## II 05.02 (051) Air Quality

### COMMENT

The commentor notes that there is a lack of any recent or reliable data about the e filtering and ventilation systems in the building where the Fort St. Vrain spent fu Idaho National Engineering Laboratory. The commentor further states that the lack uncertainty about the degree to which radionuclides emitted from the spent fuel mig environment through the storage facility's stack.

### RESPONSE

There is no lack of recent reliable data about the effectiveness of the filtering a the Irradiated Fuels Storage Facility where Fort St. Vrain spent nuclear fuel is st is equipped with high efficiency particulate air (HEPA) filters having a verified f percent. Filter efficiency has been verified annually using standard Dioctyl Phtha Records of these filter tests are available from 1979 to the present.

Regarding the commentor's statement about releases to the environment, stack releas monitored and records show that nearly all radioactivity has been below detectable accurately assess historical releases to the environment, samples were obtained fro have been in place since the facility was constructed. From the analysis of the fi annual radionuclide emission rate and annual dose to a maximally exposed individual  $4.8 \times 10^{-6}$  millirem, which is significantly less than 1 percent of the limit of 10 for DOE facilities by the Federal National Emission Standards for Hazardous Air Pol

## II 05.02 (052) Air Quality

### COMMENT

The commentor asserts that it is incorrect to state that the GENII code tends to ov The commentor further asserts that neither the GENII code nor CAP-88 (with which it undergone a comprehensive validation study in the Idaho National Engineering Labora

### RESPONSE

The commentor refers to a statement in Volume 2, Appendix F-3 to the effect that th baseline assessment are not likely to underestimate actual baseline or future doses statement is that baseline results in the EIS (which were modeled with GENII) were contained in the 1991 and 1992 National Emission Standards for Hazardous Air Pollut were modeled with CAP-88). A study benchmarking these models in INEL settings has recently (Radioactive Waste Management Complex Low-Level Waste Radiological Perform Assessment) and is discussed in Volume 2, Appendix F-3. The point of the study is the model, including source-term and receptor-related assumptions, produces results conservative. The EIS has been revised to clarify this.

## II 05.02 (053) Air Quality

### COMMENT

The commentor notes that Volume 1, Appendix A, Table 5.7-1 does not show tritium re

### RESPONSE

Tritium emissions from the K-basins have not been monitored because the emissions h to contribute a very small amount to the dose received by the maximally exposed ind airborne releases at the Hanford Site. In 1993, the average measured tritium conce Site boundary was 0.90 picocurie per cubic meter and the maximum concentration was cubic meter. In 1993, the dose to the hypothetical maximally exposed individual fr

emissions to the atmosphere was estimated to be 0.01 millirem. Volume 1, Appendix been revised to reflect these data.

## II 05.02 (054) Air Quality

### COMMENT

The commentor suggests that releases from four thermal treatment facilities at the Engineering Laboratory should be included in the EIS.

### RESPONSE

The four facilities identified by the commentor are the Waste Experimental Reductio Experimental Pilot Plant, the Idaho Chemical Processing Plant Denitration Facility, Calcining Facility. These facilities exist at INEL and are included in the baselin site. The Idaho Chemical Processing Plant Denitration Facility uses the main stack Processing Plant and is included in that source. Other thermal treatment facilitie Volume 2, Appendix C. The sources of emissions from site facilities appear in Volu 5.8, and are discussed in Volume 2, section 7.3.

## II 05.02 (055) Air Quality

### COMMENT

The commentor suggests that there is a lack of information concerning model use and hinders review and verification of the EIS.

### RESPONSE

Volume 2, Appendix F-3 discusses air dispersion modeling data and assumptions and h each INEL facility. Actual and foreseeable doses are a very small fraction of esta and are well below the National Emission Standards for Hazardous Air Pollutants (40 limit of 10 millirem per year.

## II 05.02 (056) Air Quality

### COMMENT

The commentor asks about the purpose of the comparison of hazard indices contained Appendix B.

### RESPONSE

Hazard indexes are compared to show that the data indicate no change from the basel hazard indexes under any of the alternatives. Volume 2, section 4.7 discusses the emissions. DOE has expanded the language in Volume 1, Appendix B, section 5.12 to relationship between hazard indexes and reference concentrations or doses.

## II 5.3 Cultural Resources

### II COMMENT

Commentors suggest that requirements under Section 106 of the National Historic Pre implemented early in the project planning process at the Idaho National Engineering

### RESPONSE

DOE agrees that this evaluation should be done early enough to allow historic prope fully during site selection and facility design. Requirements of the National Hist implemented during conceptual design if DOE proceeds with a proposed project.

### II COMMENT

Commentors assert that the EIS does not adequately address impacts on cultural reso

alternatives affecting the Idaho National Engineering Laboratory.

#### RESPONSE

The EIS identifies the number of known sites (approximately 1,500) on and percentag surveyed only to indicate the magnitude of potential sites at INEL. Volume 2, sect of predictive models and discusses the National Historic Preservation Act inventori completed prior to any actions. Volume 2, section 5.19 further discusses the Natio Preservation Act Section 106 requirements concerning the evaluation of sites and mi A comprehensive inventory of prehistoric cultural resources within the boundaries o To date, surveys to identify these resources have been focused on areas where adver likely to occur (i.e., facility perimeters, along major roadways and utility corrid addition, a preliminary predictive model has been developed to identify zones of pr resource density across the entire 890-square-mile facility. This model can be use managers during the initial stages of project planning to avoid areas where prehist be particularly dense, thus reducing the impact of INEL activities on sensitive cul Refinement and testing of this model are also under way through the INEL Cultural R Office. This office also maintains a complete record of all cultural resource inve INEL, as well as a database of all known cultural resources. Prior to conducting a activities, INEL project managers are directed to consult with the INEL Cultural Re Office to avoid damage to any sensitive materials. Under the 1992 Working Agreemen Shoshone-Bannock Tribes of the Fort Hall Indian Reservation and the Idaho Field Off Concerning Environment, Safety, Health, Cultural Resources and Economic Self-Suffic are consulted and are given the opportunity to comment on any INEL project that has impact any cultural resource.

Based on public comments, DOE has expanded the EIS definition of cultural resources Volume 2, section 4.9 now includes a list of plants and vegetation important to the

## II COMMENT

The commentor expresses the opinion that there are not adequate agreements in place Shoshone-Bannock Tribes' archaeological artifacts and that options for removal of t and study should be considered, including executing a curation agreement.

#### RESPONSE

DOE has initiated the Working Agreement, Policy on Native American Consultation to communication with the Shoshone-Bannock Tribe relating to treatment of archaeologic excavation, as mandated by the Archaeological Resources Protection Act, and protect remains, as required under the Native American Graves Protection and Repatriation A DOE's Native American Policy (Memorandum EH-1: Management of Cultural Resources at of Energy Facilities, U.S. Department of Energy, Washington, DC, February 23, 1990) with Native Americans during the planning and implementation of all proposed altern remains are discovered, DOE notifies all tribes that have expressed an interest in as required under the Native American Graves Protection and Repatriation Act. The opportunity to claim the remains and associated artifacts. Also, the DOE Idaho Ope preparing a curation agreement pursuant to the Archaeological Resources Protection drafting a programmatic agreement for the protection of historic properties pursuan Historic Preservation Act. The handling of Native American cultural resource items American Graves Protection and Repatriation Act will be addressed by both of these Mitigation measures will be developed after these agreements are implemented. Volu been changed to reflect these agreements.

## II COMMENT

The commentor suggests that the EIS include mitigation measures in case cultural re inadvertently discovered during construction.

#### RESPONSE

This EIS is a programmatic document, based on current information and designed to p decisionmakers a broad base of knowledge about the affected environment, any forese any potential mitigation measures for an identified environmental impact associated of action. Providing specific, detailed mitigation measures, especially in areas w impact is foreseen, is beyond the scope of this document. Each DOE operations offi developing mitigation agreements, including actions to be taken in the event of dis



resources or human remains during construction. Such agreements will be negotiated with tribes and State Historic Preservation Officers. These agreements would be referenced in this information.

## II COMMENT

The commentor asserts that contamination resulting from transporting or storing SNF hunting and gathering, which is as an irreplaceable part of the food supply and an economic activity for the residents of the Fort Hall Reservation.

### RESPONSE

There is a comprehensive environmental monitoring program at INEL, and the results are in the INEL Site Environmental Report. The monitoring conducted to date has not shown any change in game species or food stuffs that would preclude or limit hunting and gathering. Monitoring programs gather game species and food stuffs from a wide area in southeastern Idaho well beyond the boundaries of INEL in all directions.

Volume 1, Appendices D and I discuss impacts from both incident-free transportation accidents. The analysis shows that impacts from transportation activities for all are small.

## II COMMENT

The commentor objects to DOE's cultural resource impact analysis, because it minimizes fragmenting them and focuses solely on material culture.

### RESPONSE

DOE performs an analysis first by looking at the individual parts. This approach, such as ecology, water use, land use, air quality, etc., to evaluate impacts specific to those parts. When impacts are evaluated, the overall impacts to the resources are evaluated, thereby providing a more comprehensive approach. DOE agrees that impacts to the Shoshone-Bannock Tribes include all discussed in the EIS; however, it is not feasible to include all these areas under cultural impacts. DOE does not presume to know the locations, absence or occurrence of items, sites, or values to the Tribes over the whole INEL site. Nor would it be more protective of the site to conduct a site-wide survey than to conduct a complete site-specific analysis in consultation with the Tribes prior to any surface- or subsurface-disturbing activities. Broadly, DOE's approach is to conduct an initial survey, consult with the Tribes, and develop appropriate mitigation measures. The actions may include mitigation of impacts up to or including the alternative site.

Volume 2, section 4.3 has been changed to discuss the Tribes' broad view of cultural resources. The response to comment 05.03 (002).

## II COMMENT

Commentors assert that the EIS does not adequately address impacts on cultural resources from alternatives affecting the Idaho National Engineering Laboratory and that the EIS requires DOE to continue consultations with the Tribes.

### RESPONSE

The number of known sites (approximately 1,500) and the portion (4 percent) of the sites that have been surveyed are identified in the EIS only to suggest the large number of potential sites. Volume 2, section 4.4 discusses the use of predictive models and discusses the National Historic Inventories that must be completed prior to any actions. Volume 2, section 5.19 fulfills the National Historic Preservation Act Section 106 requirements concerning the evaluation and mitigation of impacts.

A comprehensive inventory of prehistoric cultural resources within the boundaries of the facility. To date, surveys to identify these resources have been focused on areas where adverse impacts are likely to occur (i.e., facility perimeters, along major roadways and utility corridors). In addition, a preliminary predictive model has been developed to identify zones of prehistoric resource density across the entire 890-square-mile facility. This model can be used by project managers during the initial stages of project planning to avoid areas where prehistoric resources are particularly dense, thus reducing the impact of INEL activities on sensitive cultural resources.

Refinement and testing of this model are also under way through the INEL Cultural Resource Office. This office also maintains a complete record of all cultural resource inventory at INEL, as well as a data base of all known cultural resources. Prior to conducting activities, INEL project managers are directed to consult with the INEL Cultural Resource Office to avoid damage to any sensitive materials. Under the 1992 Working Agreement with the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation and the Idaho Field Office concerning Environment, Safety, Health, Cultural Resources and Economic Self-Sufficiency, the Tribes are consulted and are given the opportunity to comment on any INEL project that has impact on any cultural resource.

Based on public comments, DOE has expanded the EIS definition of cultural resources. Volume 2, section 4.9 now includes a list of plants and vegetation important to the area. DOE has increased its consultation with the Shoshone-Bannock Tribes. A series of consultations with tribal management and technical personnel from the Tribes and DOE have resulted in a better resolution of mutual concerns. DOE continues to meet with the Tribes and plans to implement the actions proposed in the EIS.

## II 5.4 Biological Resources

### II COMMENT

The commentor notes that many studies have been conducted by biologists, botanists, and archaeologists in the Hanford Site and Idaho National Engineering Laboratory areas with intriguing results.

RESPONSE  
Every effort has been made to review all pertinent studies for inclusion in the EIS. The EIS moderator requested that the speaker identify any pertinent additional studies so they could be evaluated. None was provided by the commentor.

### II COMMENT

The commentor suggests that the EIS considers the Arco desert to be a wasteland suitable for spent nuclear fuel, which the commentor believes is a gross misunderstanding of the surrounding geography.

RESPONSE  
DOE and the Navy consider sensitive ecosystems and habitats when designing and siting facilities. DOE complies with the laws and regulations protecting wildlife resources, including those for threatened and endangered species, to ensure the impacts of proposed activities are minimal. In Volume 1 and 2, Chapter 5, measures for protecting ecological resources would be developed by the appropriate agencies if any sensitive ecosystems or habitats are identified on a project site. Preconstruction surveys would be conducted to determine the presence of these resources. DOE has designated INEL a National Environmental Research Park.

### II COMMENT

The commentor states that Idaho National Engineering Laboratory operations have caused the death of animals and endangered species.

RESPONSE  
DOE agrees with the commentor and notes that it has designated INEL a National Environmental Research Park. DOE considers threatened and endangered species and sensitive habitats when siting facilities and conducting its programs. It complies with the laws and regulations protecting wildlife resources, including those for threatened and endangered species, to ensure that the impacts of DOE activities are minimal. In Volume 1, section 5.7.7, measures to avoid or mitigate impacts to ecological resources would be developed in consultation with the appropriate agencies if threatened or endangered species or sensitive habitats are identified on a project site. Preconstruction surveys would be conducted to determine the presence of these resources.

## II COMMENT

The commentor asks about risks to the fragile ecosystem of marine waters near Seattle.

**RESPONSE**  
Volume 1, Chapter 5, Appendices D and K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts would be small. While there are differences in the impacts among the alternatives, the differences themselves are not sufficient to distinguish between alternatives.

## II COMMENT

The commentor states that the EIS must address wildlife management practices at the Engineering Laboratory as well as the impacts to wildlife that could result from the hunting rights on the site.

**RESPONSE**

While DOE manages the game habitat at INEL, the State of Idaho manages wildlife and over hunting rights within the INEL boundary. Issues relating to wildlife management and hunting rights must be addressed to the state.

Impacts to wildlife that could occur as a result of the various alternatives, and measures, are discussed in Volume 2, Chapter 5, sections 5.9 and 5.19.

## II COMMENT

The commentor states that Idaho National Engineering Laboratory impacts cannot be at specific sites selected for certain new construction projects, and that DOE should protect wildlife habitat by clustering new facilities near currently disturbed areas.

**RESPONSE**

Volume 2, Appendix C specifies the location of potential disturbances. DOE has at proposed activities in the most environmentally benign locations that will meet hearing requirements. Siting was considered in the following order of preference: (1) locate in undisturbed areas, (2) locate in existing industrial areas on previously disturbed areas, (3) locate in undisturbed areas, (4) locate outside, but immediately adjacent to, industrial area and away from existing industrial areas.

The three projects that would cause most of the disturbance outside and separate from industrial areas are the Idaho Waste Processing Facility, the Alpha-Mixed Low-Level Facility, and the Alpha-Mixed Low-Level Waste Disposal Facility. All three project conceptual design phase and would require project-specific NEPA documentation before committed. Because it is still in the design phase, the specific location for the Facility is not well defined. The EIS states that it may be located near the Radio Complex (RWMC) or at other existing industrial locations on the INEL site. For purposes of the ecological consequences section of the EIS, the Idaho Waste Processing Facility is located 2.5 kilometers (2.5 miles) east of the RWMC. This is the most conservative siting method that would result in the largest impact to ecological resources. Similarly, the Alpha-Mixed Low-Level Treatment Facility and the Alpha-Mixed Low-Level Waste Disposal Facility may be located near existing INEL facilities. The most conservative assumption was used for the analysis that would be built 4 kilometers (2.5 miles) west of the RWMC.

As stated in the EIS, DOE would perform site-specific preactivity surveys to identify resources on the site to ensure that impacts from the proposed actions are identified and measures can be developed and integrated into the project.

## II COMMENT

The commentor states that Volume 1, Appendix F should include language to ensure that preserve wetland resources, if such resources exist. The commentor also states that the wetlands on a proposed construction site is not addressed.

**RESPONSE**

As discussed in Volume 1, Appendix F, Part Two, sections 4.9.2 and 5.9.1, there are proposed SNF site at the Nevada Test Site (NTS); thus, no special preservation effort. Oak Ridge Reservation (ORR) wetlands are discussed in Volume 1, Appendix F, Part Two and 5.9.1. It is DOE policy to comply with Executive Order 11990, Protection of Wetlands, and government agencies to avoid any short- and long-term adverse impacts on wetlands with a practicable alternative. If ORR is chosen as a site for SNF management, the potential wetland resources on the site would be specifically analyzed, along with potential otherwise mitigate impacts. Unavoidable impacts to wetlands would be mitigated as policy.

## II COMMENT

The commentor states that mitigation measures, including those for the desert tortoise addressed in Volume 1, Appendix F.

### RESPONSE

A biological opinion concerning the desert tortoise has been issued by the U.S. Fish and Wildlife Service covering current projects at the NTS. (See Volume 1, Appendix F, Part Two, section 5.9, recommended mitigation measures including surveys for the tortoises and their removal from affected areas, as well as periodic backfilling, covering, or installation of tortoise-proof fencing around open construction excavations, and reducing speed limits on site roadways. After consulting with the Service and the Nevada Division of Wildlife, similar recommendations would be implemented if appropriate, if NTS were selected as the location for a SNF facility. Providing such measures is beyond the scope of this EIS and will be addressed in tiering NEPA documentation as appropriate.

## II COMMENT

Commentors state that the EIS failed to consider potential impacts on fish and wildlife from spent nuclear fuel and other hazardous materials. This includes accidents, alternative threat reduction, and mitigation of impacts to wildlife from transportation accidents.

### RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of the alternatives are small, including the impacts to fish and wildlife. While there would be differences between the alternatives, these differences by themselves are not sufficient to distinguish between them. Volume 2, section 5.19 addresses mitigation for both operations and accident conditions. Section 5.11 covers all transportation impacts, including incident-free transportation accidents. Regional traffic impacts are also covered. As noted in Volume 2, section 5.11, movements of materials and people due to all alternatives would result in no change of U.S. Highway 20, the regional highway with the highest use around INEL.

An accident with a release of radionuclides or hazardous material into the environment would result in temporary exposures of biota. The impact would likely be localized and of short duration. Fish and Wildlife Departments and Natural Resource Trustees would be consulted to determine the most appropriate response for the specific accident and current conditions. The emphasis would focus on cleaning the site and removing contaminants as completely and as rapidly as possible. While radiological impacts from accidents could result in loss of individual animal losses or large-area losses would not be anticipated. Impacts to fish would depend on the quantity spilled into the aquatic environment, and must be evaluated on a case-by-case basis. Volume 2, Chapters 4 and 5 have been modified to include information on threat reduction and mitigation of the impacts of collision accidents on wildlife.

## II COMMENT

The commentor states big game kills by trains are not reported in the EIS, and increased kills by train transport are not addressed in the EIS.

### RESPONSE

Information was obtained from the State of Idaho Division of Wildlife Management concerning

involving trains killing large numbers of pronghorn antelope. This information has Volume 2, section 4.11. See also the response to comment 05.04 (011) regarding how to evaluate impacts of transportation accidents.

## II COMMENT

The commentor asks about depredation problems associated with antelope and elk in the Engineering Laboratory area.

### RESPONSE

The alternatives would disturb up to 726 acres of land outside of current facility. While depredation may increase, the increase is likely to be low because most of the land is located about 5 kilometers (3 miles) from the RWMC, which is located within the INE far from any croplands. Policies concerning restrictions on hunting at INEL are not in the EIS.

## II COMMENT

The commentor notes that a statement that no Federally listed species are expected during construction and operation of the spent nuclear fuel management facility is in conflict with Appendix F, Part 3, Table 4.9-1.

### RESPONSE

Volume 1, Appendix F, Part 3, Table 4.9-1 lists species that "potentially occur on Oak Ridge Reservation" but not necessarily on the project site. Volume 1, Appendix 4.9.4 describes the expectation of species occurrence on the proposed project site. The species most likely to occur on the project site, none of which is Federally listed. None of the species listed in Table 4.9-1 has been observed on the proposed project site. No species listed as threatened by the U.S. Fish and Wildlife Service, in accordance with the Endangered Species Act, occur on the site and, thus, they would not be impacted. Impacts to state-listed species are described in Volume 1, Appendix F, Part Three, section 5.9.1. There may be impacts on other special-status species, which consist of two plant and five raptor species. The effect on wildlife habitats is discussed in Volume 1, Appendix F, Part Three, section 5.9.2. A forested habitat would be a small percentage of the total forested area on or in the

## II COMMENT

The commentor expresses the opinion that storing spent nuclear fuel at the Savannah River Site is a potential ecological problem.

### RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts are small. While there are differences in the impacts among the alternatives, these differences are not sufficient to distinguish between alternatives.

For the Savannah River Site (SRS), potential effects from operations conditions would be disturbance of habitat, rather than effects from radionuclides. Potential effects from accidents would result in exposures to biota. However, emergency response would limit the potential impacts to a localized area.

## II COMMENT

The commentor suggests that terrestrial biota may be subject to more radiation exposure because human exposure can be limited by special clothing and protective equipment.

### RESPONSE

Terrestrial biota are not subject to exposure under conditions that would require special protective equipment for humans. Work areas where potential radiation exposure is high, site workers use protective equipment and have controlled access measures that limit exposure. So long as exposure limits protective of humans are not exceeded, no substantial radiation impacts are expected.

biota would be expected as a result of waste management activities at the proposed facility.

Volume 1, Appendix F, Part Two, section 5.9 has been modified to clarify that most activities take place in enclosed environments and that outdoor radiation exposures regulatory requirements.

## II COMMENT

The commentor states that until surveys are conducted at the Oak Ridge Reservation sensitive flora, fauna, and habitat is in question and could be a factor in selecti plan.

### RESPONSE

The commentor is accurate in stating that until site surveys are completed, the sta and habitat remain in question and could be a factor in the selection of the specif selected. The analyses in the EIS are based on existing documentation.

## II COMMENT

The commentor suggests that animals near proposed new or expanded facilities in Ida relocated to a similar environment.

### RESPONSE

Generally, it is not feasible to relocate all animals disturbed by construction act that would be displaced include insects, reptiles, and small mammals. Preactivity conducted to determine if any endangered species or sensitive habitats are in the a practical, proposed facilities are clustered near existing facilities to minimize i Measures to minimize impacts to wildlife at INEL are discussed in Volume 2, sectio

## II COMMENT

One commentor states that DOE and the Navy have failed to study the possibility tha Columbia and Snake Rivers to Idaho could pick up radioactive particles, contaminate wilderness areas, and impact endangered species. Another commentor states that the be a poor storage area unless the already "depleted salmon" are protected.

### RESPONSE

Volume 1, Appendix A, sections 4.8 and 4.9 have been modified to address potential life in the Columbia River. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chap the environmental impacts of all the alternatives considered in the EIS. The analy of all alternatives would be small.

All liquid effluents from Hanford Site facilities are monitored to ensure that aqua protected. Fish populations are safe for human consumption. Radionuclide levels i Reach are not significantly higher than those of fish found upstream. Fish migrati River up the Snake River to Idaho would not pass through the Hanford area, because two rivers is downstream from the Hanford Site. Fish inhabiting or moving through would also not be expected to have elevated radionuclide levels.

Any new facility would be built using technologies to protect these resources, incl water-balance monitoring equipment. Excess process water from the proposed facilit before it is released to surface water or groundwater.

In some accident scenarios, such as a seismic event at Hanford with a frequency of every 1,000 years, contamination could reach the Columbia River. Individual fish i the river could become contaminated. However, contamination spread by the fish, an would be small compared with the environmental risk posed by more direct pathways i scenario. Monitoring at DOE facilities indicates the most critical pathways for en contamination are generally through direct airborne and waterborne releases, rather spread through animals or fish.

## II COMMENT

The commentor states that impacts of transport, storage, and accidental releases on and sensitive species should be considered.

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environment all the alternatives considered in this EIS, including those to threatened and endangered species. Analyses show that the impacts of all the alternatives would be small.

Threatened and endangered species and habitats are considered in the design and siting of facilities. Volumes 1 and 2, section 7.2.1 identify all Federal environmental statutes including the Endangered Species Act, that may apply to the programmatic alternative management. DOE and the Navy comply with all applicable laws and regulations designed to protect wildlife resources to ensure impacts are minimal. These regulations include U.S. Department of Transportation (DOT) regulations on transport of hazardous and/or radioactive materials. Minimizing impacts to sensitive species are described in Volumes 1 and 2, Chapter 5

## II COMMENT

The commentor states that there are virtually no data or literature references to support the Engineering Laboratory ecological analyses and conclusions.

RESPONSE

The Environmental Resource Document for the Idaho National Engineering Laboratory EIS provides an extensive compendium of documentation concerning the Idaho National Engineering Laboratory (INEL) environment and ecology. Additionally, Radioecology of the Idaho National Engineering Laboratory (Draft) provides a literature search and an evaluation of current INEL operations. Both of these documents are referenced in the EIS and are available in the rooms and information locations listed in the EIS.

## II COMMENT

The commentor questions the effects on endangered species in the Twin Falls Thousand Springs area as a result of impacts to the Snake River aquifer.

RESPONSE

Under all alternatives considered, possible future sources of aquifer contamination would be expected to improve under current waste management alternatives. Increased water use at INEL would range from 1.3 percent under the No Action alternative to 4.0 percent for the Ten-Year Plan alternative; or approximately 0.43 to 1.3 percent beneath INEL. Currently, a substantial portion of water pumped from the aquifer at the surface and eventually returned to the aquifer. The current water withdrawal represents 1 percent of a typical irrigation well pumped 365 days per year. Because of the small amount consumed, there would be a small impact to water levels or quantities in the aquifer for endangered species in the Thousand Springs area. A discussion and evaluation of potential impacts to water quality and quantity under the alternatives analyzed is provided in Volumes 1 and 2, Chapter 5.

## II COMMENT

The commentor states that it would be inappropriate to ship spent nuclear fuel through the Puget Sound great natural area.

RESPONSE

The EIS evaluates potential environmental impacts of transporting SNF in the Puget Sound area. Shipments of Naval SNF are made in accordance with all applicable regulations. Shipments of radioactive materials associated with Naval SNF have never resulted in a measurable release of radioactivity to the environment, nor has there ever been an release of radioactive material during shipment since the Naval Nuclear Propulsion Program. Potential impacts to the local environment at Puget Sound from transportation of Naval SNF are discussed in Volume 1, Appendix D, Chapter 5 and Attachment A.

## II COMMENT

The commentor states that the EIS neither describes ongoing activities nor analyzes association with past and future activities and is therefore not comprehensive.

### RESPONSE

Volume 2, Chapter 4 describes the existing environment at INEL. Volume 2, Chapter current activities, facilities, and missions at INEL. Site-specific impacts, included in Volume 2, Chapter 5 and Appendix F. Volume 1, Chapter 5 and Appendix Chapter 5 summarize all of the alternatives considered in this EIS. The analysis of all alternatives would be small.

## II COMMENT

The commentor states that the Draft EIS should address loss of habitat at the Oak Ridge Reservation and the effects on the region's ecosystems by a change in land use.

### RESPONSE

Both land use and habitat loss are considered in Volume 1, Appendix F. ORR occupies 54 square kilometers (54 square miles). In 1980, DOE designated 54 square kilometers of undeveloped ORR land as a National Environmental Research Park. Approximately 58 percent of ORR [80 square kilometers (31 square miles)] can be classified as undeveloped under the current designation. By comparison, the SNF program would require about 0.36 square kilometers (0.36 square miles). Volume 1, Appendix F, Part Three, section 5.9 assesses impacts to ecological resources and Regionalization alternatives. Neither alternative would preclude impacts to ecological resources through alterations or loss of habitat.

## II 5.5 Geology

## II COMMENT

The commentor notes that no geologists from the Oak Ridge area were used to help prepare Appendix F, Part Three.

### RESPONSE

The document was prepared using existing references and currently published information cited for the Volume 1, Appendix F, Part Three discussion of ORR includes current information in that area.

## II COMMENT

The commentor is of the opinion that the EIS is a coverup, especially regarding seismic geologic events.

### RESPONSE

The best available information relative to seismic hazards and geologic events is presented in Volume 2, section 4.6, the site-specific appendices to Volume 1, and associated reference material. The EIS provides sufficient information to allow independent evaluation of the seismic hazards and geologic events.

## II COMMENT

The commentor notes that the Knox Group is divided into five formations, not four.



are the Copper Ridge Dolomite, the Chepultepec Dolomite, the Longview Dolomite, the Formation, and the Mascot Dolomite.

RESPONSE

The EIS has been revised to incorporate the information.

## II COMMENT

The commentor states that the EIS does not address correcting current seismic deficiencies at National Engineering Laboratory facilities.

RESPONSE

DOE Order 5480.28, National Phenomena Hazards Mitigation, specifically requires facilities be reevaluated when there is any change in design and construction standards. Existing facilities have undergone continual safety analysis and seismic design review. Several of the projects in Volume 2, Appendix C are proposed by DOE to replace or upgrade facilities at INEL, such as the transfer of fuels from potentially vulnerable facilities to modern facilities for the ongoing safety analysis and seismic design reviews. Volume 2, Table 2.2.1 addresses seismic deficiencies identified with fuel storage facilities at INEL.

## II COMMENT

The commentor states that storing radioactive material in a seismically active area at National Engineering Laboratory could result in catastrophic consequences.

RESPONSE

Seismic hazards and geologic analyses can be found in Volume 1, section 4.2 and Appendix A and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in section 5.14 and Appendix F-5. The results of accident analyses (including seismicity) indicate that the risk to the public from INEL operations is small. DOE takes seismicity seriously, and INEL uses independently and extensively reviewed analyses to support implementation of DOE Orders and standards. An INEL seismic hazard assessment was completed in 1990. A more recent seismic hazard assessment for INEL is referenced in the EIS as Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory. See the response to comment 05.05.01 (040).

## II COMMENT

Several commentors state that geologic conditions at the Idaho National Engineering Laboratory result in a sequence of events that would cause contamination of the Snake River Plain aquifer.

RESPONSE

An accident scenario resulting in maximum potential for groundwater contamination is presented in the EIS in Volume 2, section 5.14 and Appendix F to determine the effects of such an accident on the Snake River Plain aquifer. The hypothetical accident involves the instant failure of a waste tank due to an earthquake. The groundwater analysis assumed failure of the containment measures to minimize flow from the waste tank into the soil immediately following the hypothetical scenario represents the situation with the maximum reasonably foreseeable release to the aquifer. Maximum radionuclide concentrations would be predicted to reach the INEL after the hypothetical accident in concentrations less than EPA maximum contaminant level (MCL) derived concentration guidelines (DCGs). See also the response to comment 05.05.01 (040).

## II COMMENT

Commentors express opinions that the selection of the Oak Ridge Reservation as an alternative site was performed in haste, and/or did not adequately consider the geology of the West Bear River area.

RESPONSE

The selection of ORR and NTS as alternative sites resulted from public comments received during the scoping process for this EIS. Information about the site-selection process at ORR and NTS is provided in Support in Preparing the Spent Nuclear Fuel and Idaho National Engineering Laboratory.

Environmental Restoration and Waste Management Environmental Impact Statement, and Selection Decision Process Report. The West Bear Creek Valley site was selected for evaluation and comparison in this geologic information was considered in making this selection. Adequate information programmatic decisions and evaluate alternatives in this EIS.

## II COMMENT

The commentor states that significant adverse geologic events could cause radioactive  
RESPONSE

The general geological features of the alternative sites are described in Volume 1, impacts associated with geologic events are summarized in Volume 1, Chapter 5, section the geological features and potential dangers associated with those features are in through F for the alternative sites. DOE recognizes the potential adverse effects have on facilities, and the EIS includes analysis of accidents and the potential co with geologic events, such as earthquakes. The accidents evaluated included those probability ranging from once in 1 million years to once in 10 million years. As discussed in section 5.1.6, the probabilities of accidents with the potential for significant impacts are small. The risks to the public from radioactive releases would be small for all of See also the response to comment 05.05.01 (016).

## II COMMENT

The commentor states that it is appropriate to acknowledge the zinc and fluorospar deposits northeast of Knoxville, Tennessee, and southwest of the Oak Ridge Reservation, respectively. The commentor also notes that zinc prospects and sulfide mineralization may occur in the  
RESPONSE

As required by Council on Environmental Quality (CEQ) regulations, the description of the environment is no longer than is necessary to understand the effects of the alternative geologic resources are expected from any of the alternatives; therefore, impacts to are not expected. If ORR is chosen as a site for new SNF management facilities, studies would be performed as necessary to determine the full extent of geologic resources at the site.

A discussion of the geologic resources at ORR is presented in the EIS in Volume 1, Three, section 4.6.

## II II COMMENT

The commentor questions the adequacy and conservatism of seismic hazard studies at Engineering Laboratory.

RESPONSE

Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4. Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5, and Volume 1, Appendix B, section 5.1.6. accident analyses (including seismically induced accidents) indicate that the risk of accidents is small. DOE takes seismic hazards very seriously, and INEL uses independent analyses to support the enforcement and implementation of DOE Orders and standards. Major DOE Idaho Operations Office-managed nuclear facilities currently in use at INEL have been evaluated to design basis accelerations that exceed accelerations that would result from a magnitude earthquake at the southern end of the Lemhi fault zone. There has been a commitment in the past several years to upgrade DOE Orders and standards related to natural phenomena. DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE procedures to assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifies that facilities to be reevaluated when there is any change in design and construction standards. Facilities have undergone substantial safety analysis and seismic design review. Studies described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the site. Likewise, actions such as the transfer of fuels from potentially vulnerable

have resulted from the ongoing safety analysis and seismic design reviews. The data and methods used in the seismic hazard report referenced in Volume 2, section 4.6, were extensively and independently reviewed. This report includes graphs showing risk versus acceleration for seismic events for each major facility at INEL. The seismic hazard analysis for the Idaho Chemical Processing Plant was included as an example of the information contained in the seismic hazard analysis [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho Chemical Processing Plant, Idaho National Engineering Laboratory (Draft)]. The final versions of this report may be incorporated into the architectural and engineering standards after review by the INEL Natural Phenomena Committee. The previous INEL seismic analysis (Earthquake Strong Ground Motion Estimates for the Idaho National Engineering Laboratory: Final Report) was also extensively reviewed and incorporated into the INEL standards after review by the Natural Phenomena Committee in 1992. This report is referenced in Volume 2, section 4.6 and Volume 2, Appendix F-2 and contains location-specific seismic hazard information. The EIS summarizes current scientific evidence relevant to understanding the existing seismicity, identifying reasonably foreseeable impacts, and evaluating potential consequences. The seismic hazard analysis is based on methods generally accepted by the scientific community. See also the response to comment 05.05.01 (007).

## II COMMENT

The commentor states that the Basin and Range Province north of the Idaho National Engineering Laboratory lacks adequate seismic monitoring.

### RESPONSE

During 1991 and 1992, DOE increased its network of seismic monitoring stations from 10 to 20, including stations in the Basin and Range Province. This network supplements measurements by U.S. Geological Survey (USGS) facilities. INEL regularly exchanges data with other seismic networks around the region, including data for earthquakes that occur between networks. Currently, the seismic studies of the 1994 Raney Peak earthquake sequence and have the 1983 Borah Peak earthquake studies.

## II COMMENT

The commentor questions why the overall level of seismic hazard calculated in the EIS for the Idaho National Engineering Laboratory is lower than the seismic hazard curves for either the Hanford River Site.

### RESPONSE

The possible reasons for the relatively low seismicity, with respect to the more seismically active Basin and Range Province, for the Eastern Snake River Plain (ESRP) are discussed in Volume 2, section 4.6. Differences noted by the commentor result from the site-specific data used to assess seismic hazard. In particular, INEL has modeled ground motions based on site-specific analyses. Ground motion characteristics result from using source parameters for Basin and Range Province earthquakes (e.g., lower recurrence intervals for the southern segments of the Basin and Range Province, Lost River, and Beaverhead), and the unique subsurface geology (interbeds of basalt and sandstone tend to deamplify ground motions).

Additional factors contributing to the relatively low seismic hazard for INEL are the lack of major faults in the Basin and Range Province, INEL-specific attenuation characteristics, and the seismicity of the ESRP.

The Hanford Site models use empirical data derived from California earthquakes and 1994 subduction zone earthquake. SRS has a thicker layer of soil and subsurface geology that causes more scattering during transmission of seismic waves. Both of these conditions tend to reduce seismic hazard at SRS.

## II COMMENT

The commentor notes that within 125 miles of the Idaho National Engineering Laboratory are several active fault segments, including 20 with proven late Quaternary or younger displacement. The commentor suggests that this observation is inconsistent with the relatively low seismic hazard for the Idaho National Engineering Laboratory presented in the EIS.

**RESPONSE**

In the Probabilistic Seismic Hazard Assessment studies [Site-Specific Probabilistic Analysis for the Idaho National Engineering Laboratory (Draft)] referenced in the E and determined the major seismic sources in the vicinity of INEL. Because most of noted by the commentor are some distance from INEL, they are not significant contri hazard. The closest and most significant seismic sources, the Beaverhead, Lost Riv considered in INEL seismic hazard assessments. The Probabilistic Seismic Hazard As INEL have been independently reviewed and are developed consistent with the require 5480.28, Natural Phenomena Hazards Mitigation. The details of the characterization seismogenic sources, and how they are incorporated into seismic hazard assessments Volume 2, section 4.6 or its references.

The possible reasons for the relatively low seismicity, with respect to the more se Province, for the ESRP are discussed in Volume 2, section 4.6. The differences not result from the site-specific data used to assess seismic hazards. In particular, motions based on site-specific analyses instead of empirical data. These curves re parameters for Basin and Range Province earthquakes with lower stress drops, lower for the southern segments of the Basin and Range Province faults, including the Lem Beaverhead faults, and the unique subsurface geology of interbeds of basalt and sed deamplify ground motions. Additional factors contributing to the low seismic hazar other DOE sites) are the distance from the facilities to Basin and Range Province f attenuation characteristics, and the low seismicity of the ESRP. See also the resp 05.05.01 (003).

**II COMMENT**

The commentor states that the coastal plain of South Carolina and Georgia is earthq faults in multiple directions" and is a poor site for temporary or long-term storag  
RESPONSE

The general geologic features of the alternative sites are described in Volume 1, C potential impacts associated with geologic events are summarized in Chapter 5, sect the geologic features and potential dangerous events associated with those features geologic events can have on facilities, and the EIS includes analysis of accidents consequences associated with geologic events, such as earthquakes. The accidents e with an estimated probability ranging from once in 1 million years to once in 10 mi described in Volume 1, section 5.1.6, the probabilities of accidents occurring with significant impacts would be small. The accident analyses (including seismically i indicate that the risk to the public from DOE operations would be small. Because D procedures and engineering design practices that minimize the effects of hazardous coupled with emergency response measures, the risks to the public from radioactive reduced.

The site-specific response can be found in Volume 1, Appendix C, section 4.6.3, whi region's geology, including fault systems and seismic history; section 5.8, which d of analyzed seismic events on both surface water and groundwater resources; and Vol Attachment A-2.1.3, which describes estimates of risk that consider both the probab consequences from a wider range of seismic events, ranging from local and regional documented earthquakes to postulated lower probability events with potentially grea

**II COMMENT**

The commentor quotes a Woodward-Clyde study, commissioned by DOE, as having more re measures of likely ground motions and suggests that DOE adopt these standards as an  
RESPONSE

DOE has adopted this study (Earthquake Strong Ground Motion Estimates for the Idaho Engineering Laboratory: Final Report) and has incorporated the resulting seismic g the architectural and engineering standards for INEL.

**II COMMENT**

The commentor states that a great deal more research, both onsite and in the surround necessary before the Snake River Plain can be declared "aseismic."

#### RESPONSE

Seismic hazards and geologic analyses can be found in Volume 1, section 4.2; Volume section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents in Volume 2, section 5.14 and Appendix F-5. The accident analyses, including seismic accidents, indicate the risk to the public from INEL operations would be small. The assertion that the Snake River Plain has a low rate of seismicity is supported in Volume 2, Figure 4.6-3, which represents a summary of the best available data at the time the EIS was compiled, and states the years over which the data were collected. The addition of seismic events in the region would not change the conclusion that the Snake River Plain is in the EIS to eliminate confusion.

Empirical evidence does not support the commentor's assertion that a major seismic event is likely in the future on the ESRP. Studies of fault scarps on the ESRP indicate that a seismic event with a moment magnitude of 5.3 is the maximum event recorded in the rocks at the surface, from 1.2 million to 2,100 years old. Thus, there is long-term geologic evidence with which to assess the magnitude of seismicity. The moment magnitude estimate is conservative with respect to earthquake magnitudes observed in similar tectonic environments assumed instantaneous stress release. Further conservatism in the seismic hazard analysis in the EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] is introduced through the use of a random ESRP earthquake, which has a moment magnitude of 5.5 to 6.0. The methods and data used in this study have been reviewed. The random earthquake is used to analyze the potential effects of potential events related to structures that do not have a surface expression.

Stress indicators show that the ESRP is subject to the same extensional stress as the Basin and Range Province. There is geologic evidence to support the hypothesis that the ESRP has the same rate as the Basin and Range Province but by the different, less seismicity in basaltic dike injection. The rate and magnitude assumed for the random earthquake is conservative with respect to these observations. These observations also indicate that energy is being stored for release in a major seismic event. Other possible explanations for seismicity on the ESRP can be found in Volume 2, section 4.6. The hypothesis that stored elastic energy could lead to a catastrophic brittle failure of the crust below INEL is not supported by published earth science literature or the local geology of INEL. Despite mapping of INEL and surrounding areas, a catastrophic faulting event has not been observed in surface basalt flows that are old.

The EIS summarizes existing credible scientific evidence relevant to understanding the environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The evaluation of impacts is based on methods generally accepted by the scientific community. The EIS evaluates the potential consequences of reasonably foreseeable events.

## II COMMENT

The commentor states the potential for major earthquakes on the Plain exists, and that earthquakes on the plain do not provide the clear threat to Idaho National Engineering Laboratory. Earthquakes on the fault systems north of the plain provide, the possibility of even larger earthquakes on the plain cannot be discarded.

#### RESPONSE

DOE assumes the commentor is referring to the ESRP. Empirical evidence does not support the commentor's assertion that a major seismic event is likely to occur in the future on the ESRP. Studies of fault scarps on the ESRP indicate that a seismic event with a moment magnitude of 5.3 is the maximum event recorded in the rocks at the surface, which range in age from 1.2 million to 2,100 years old. Thus, there is long-term geologic evidence with which to assess the magnitude of seismicity. The moment magnitude estimate is conservative with respect to earthquake magnitudes observed in similar tectonic environments and the assumed instantaneous stress release. The possibility of a major earthquake on the ESRP was not discarded and has been considered in the seismic hazard analysis in the EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] through the use of a random ESRP earthquake, which has been assumed to have a moment magnitude 5.5 to 6.0. The data and methods used in this study have been independently reviewed. The random earthquake is used to analyze the effects of seismic events related to structures that do not have a surface expression.

## II COMMENT

The commentor states that earthquake magnitudes used for seismic analysis in the EIS require more research, both onsite and in the surrounding region, is required to adequately assess seismic shaking possible on the INEL site.

### RESPONSE

The methods and data used in the Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft) have been independently reviewed, and the results therein, including the analysis and earthquake magnitude estimates that resulted in the assessment, are scientifically defensible. The important parameters for the seismic hazard assessment are discussed in Volume 2, section 4.6. More detailed discussions on INEL seismic hazard assessment are found in Volume 2, Appendix F-2. Additional detail on parameter selection and the incorporation into the seismic hazard assessment can be found in the Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft). In keeping with the requirements of CEQ, the EIS contains only enough information to support decisions required by the decision-maker. To reduce the bulk of the document, references are cited that contain the relevant empirical evidence. The empirical evidence does not support the commentor's assertion that a moment magnitude 5.3 on the ESRP is too low for adequate seismic hazard analysis of ESRP earthquake source areas. Scarp data on the ESRP indicate that a seismic event with a moment magnitude 5.3 is the largest recorded in the rocks at the surface, which range in age from 1.2 million to 2,100 years. Long-term geologic evidence with respect to the ESRP geologic record with which to compare the seismicity of the ESRP. The moment magnitude 5.3 estimate is mildly conservative. Earthquake magnitudes observed in similar tectonic environments and the assumed intensity release. Further conservatism in the seismic hazard assessment cited in the EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory] is introduced through the use of a random ESRP earthquake, which has been assigned a moment magnitude of 5.5 to 6.0. The methods and data used in this study have been extensively reviewed. Earthquake is used to analyze the effects of seismic events related to structures and their expression. Seismic hazards and geologic analyses can be found in Volume 1, section 4.6; Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously. INEL uses independently reviewed analyses to support the implementation of DOE Order 5400.6, The Accident Analyses (including beyond reasonably foreseeable accidents with potential for more severe impacts than seismically induced accidents) indicate that the risk to the public from INEL is small. Therefore, additional information on reasonably foreseeable seismic events and their impact would have no effect on the decision-making process.

No new analyses are required because, in accordance with NEPA (40 CFR 1502.22), the current credible scientific information relevant to understanding the existing environmental impacts, and evaluating potential consequences. The EIS uses the best available scientific analyses available, and the evaluation of impacts is based on methods generally accepted by the scientific community.

See also the response to comment 05.05.01 (001).

## II COMMENT

The commentor expresses the opinion that the discussion of the Nevada Test Site is incomplete. The magnitude 5.6 earthquake that occurred near Little Skull Mountain on June 28, 1992, was not factored into the analysis.

### RESPONSE

The information in Volume 1 is an overview of the more detailed discussions contained in the appendices. In Volume 1, Appendix F, Part Two, section 4.6.3, the discussion on seismicity includes the Little Skull Mountain earthquake and the problems associated with recurrence.

## II The commentor states that the New Madrid Seismic Zone is close enough to the reactor at the University of

Missouri to potentially cause damage should there be a large earthquake over magnitude 5.0.

seismic assessment for Missouri is based on outdated information.

#### RESPONSE

Research reactors are typically built to Uniform Building Code (UBC) requirements to meet Nuclear Regulatory Commission (NRC) requirements for power reactors. Because detailed seismic analysis is not likely to affect the assessment of impacts of the no more seismic data are required in the EIS.

The data source for the research reactor at the University of Missouri was the documentation of the research reactor in 1961. In 1974, a thorough evaluation of the site vicinity was conducted for siting the Callaway commercial power reactor. The 1961 data is more appropriate than an analysis done specifically for another facility. The data which demonstrates a low potential for seismic activity.

## II COMMENT

The commentor states that the seismic wave attenuation characteristics of the eastern United States are adequately represented.

#### RESPONSE

The fact that strong-motion earthquakes are felt over wider regions of the eastern United States than counterparts in the western United States is considered in DOE site-specific seismicity data for eastern United States sites. Any new DOE construction required by a decision support analysis would meet the stringent seismic hazard characterization requirements and design criteria which would include a detailed assessment of seismic attenuation characteristics.

## II COMMENT

The commentor states that the EIS Glossary definition of seismicity is incorrect.

#### RESPONSE

A new definition of seismicity, which relates to the location, size, and rate of occurrence, has been included in the EIS Glossary.

## II COMMENT

The commentor questions Volume 2, Figure 4.6-4 with respect to the relative magnitudes of the seismic hazard curves describing ground motions at Idaho National Engineering Laboratory and Savannah River Site.

#### RESPONSE

The reasons for a seemingly inconsistent seismic hazard at SRS with respect to INEL are the low attenuation characteristics of eastern bedrock, which makes sites in the eastern United States susceptible to larger ground motions resulting from low-to-moderate magnitude earthquakes in the eastern United States. Typically, Precambrian to Mesozoic rocks are overlain only by Quaternary sediments of Quaternary age, which are appropriate for recording surface faulting earthquakes widespread in the east. Therefore, the number of late Quaternary surface faulting earthquakes in the eastern United States is uncertain, which results in conservative seismic hazard estimates. Accident analyses indicate that the risk to the public from DOE operations would be small. Therefore, on reasonably foreseeable seismic events with lesser potential impact would have no

## II COMMENT

The commentor maintains that the seismic hazards at the Nevada Test Site are severe. The commentor states that the Nevada Test Site is in a high hazard area near faults that has experienced earthquakes triggered by other regional seismic events. Additional testing at the Nevada Test Site could have caused surface and subsurface failure levels.

#### RESPONSE

The discussion of seismicity at NTS (Volume 1, section 5.2.4, and Volume 1, Appendix

section 4.6) will be revised to indicate that a moderate seismic potential exists at a management site. As stated in the 1993 Nevada Test Site Technical Site Information DOE, the southern Nevada region is generally characterized as an area of moderate seismicity including the proposed SNF management site, is located in Seismic Zone 2B, as defined in the Building Code of the International Conference of Building Officials. Zone 2B signifies moderate damage potential. Areas further to the west (western Nevada and California) are in Seismic Zones 3 and 4. Seismic Zone 3 signifies areas with a major damage potential. Seismic Zone 4 signifies areas with a major damage potential and significant faults. Zone 4 areas are well to the west of the site.

NTS has probably experienced earthquakes associated with regional seismic events. Seismicity in the region is oriented favorably for site seismicity to be influenced by other regional seismic events. Determining exact relationships between regional seismic events is difficult. Nuclear testing has produced fresh fault scarps and surface cracks, generally local to nuclear tests. Recent geologic mapping of NTS shows faults that have ruptured in the past, presumably as a result of testing. However, wave propagation from nuclear testing may relieve tectonic stress. The hypothesis regarding the triggering of local earthquakes is still being evaluated and tested in the scientific community and is the best hypothesis. Any new DOE facilities required by decisions supported by this EIS will be designed to meet the requirements of DOE Order 5480.28, Natural Phenomena Hazards Mitigation, with rigorous, quantitative assessment and mitigation of natural phenomena hazards.

## II COMMENT

One commentor notes that the high seismic hazard in the vicinity of Idaho National Laboratory demands that DOE commit to an ongoing program of geologic hazards studies. Commentor also notes that basalt flows will interact with nuclear waste and how the risks will be minimized.

### RESPONSE

Seismic hazards and geologic analyses can be found in Volume 1, section 4.2; Volume 2, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and has independently reviewed analyses to support appropriate implementation of DOE Orders. There has been an extensive effort over the past several years to upgrade DOE Order 5480.28 to natural phenomena hazards. Studies have been under way for many years and are continuing to ensure that seismic hazard characterization is based on up-to-date information and methods. New geologic information on seismic hazard characterization is reviewed and additional geologic studies are needed.

DOE has analyzed the effects of a hypothetical lava flow event at INEL. The geologic flow is discussed in Volume 2, section 4.6.4, and the estimated consequences of such various alternatives are shown in Volume 2, section 5.14, Tables 5.14-3, -5, -6, -8. The methodology used for performing these analyses is documented in Volume 2, Appendix F-2.1.2. As stated in section 4.6.4, potential ashfall events are not expected. The risk associated with an ashfall event is bounded by the accidents evaluated in the Assessment of Potential Volcanic Hazards for New Production Reactor Site at the Idaho National Engineering Laboratory determined that hazards from volcanic events would be small. Therefore, a silicic ash-flow hazard at INEL does not represent a reasonably foreseeable impact on the human environment.

DOE has considered the potential for a volcanic ashfall event at INEL in Volume 2, Appendix F-2.1.2. As stated in section 4.6.4, potential ashfall events are not expected. The risk associated with an ashfall event is bounded by the accidents evaluated in the Assessment of Potential Volcanic Hazards for New Production Reactor Site at the Idaho National Engineering Laboratory determined that hazards from volcanic events would be small. Therefore, a silicic ash-flow hazard at INEL does not represent a reasonably foreseeable impact on the human environment.

A hypothetical accident involving the instantaneous release of the contents of a high-level waste container represents the situation with the maximum reasonably foreseeable impact on the Snake River Plain resulting from geologic conditions at INEL and is discussed in Volume 2, section 5. Under this scenario, maximum radionuclide concentrations are predicted to reach the years after the accident and predicted concentrations will be less than EPA MCLs or DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE procedures to assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifies that the impacts of natural phenomena hazards on DOE facilities will be reevaluated when there is any change in design and construction standards. At INEL, there have been substantial safety analysis and seismic design review. Several



described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities have resulted from the ongoing safety analysis and seismic design review. No new analyses are required for INEL facilities because the EIS summarizes existing evidence relevant to understanding the existing environment, identifying reasonably and evaluating potential consequences. The evaluation of impacts is based on methods by the scientific community.

See also the responses to comments 05.08.01 (014) and 05.08.01 (030).

## II COMMENT

Commentors note that the Idaho National Engineering Laboratory is designated a Uniform Seismic Zone 2B and suggest that this area is not of low seismic potential as indicated. RESPONSE

The UBC seismic hazard zones range from 0 to 4, with 0 being designated the lowest. The Snake River Plain of Eastern Idaho is currently classified as Zone 2B, based on meetings of the professional engineering community. A small portion of the INEL site. No INEL facilities are located in Zone 3. The characterization of DOE sites as having seismic potential is correct when taken in the context of UBC Zone 4, which includes intense seismic activity. In fact, the UBC accelerations are up to twice those shown on Earthquake Hazard Reduction Program Maps for most of INEL. Likewise, United States Service ground motion maps (1982 and 1990) show accelerations lower than UBC values. Comparisons point out that the UBC maps are extremely conservative for INEL and that the hazard is less than shown on the UBC map.

DOE Order 5480.28, Natural Phenomena Hazards Mitigation, requires that DOE facilities meet natural phenomena hazards mitigation requirements. The UBC design basis acceleration is 0.2g (the acceleration due to gravity is 1g). Most INEL moderate- or high-hazard facilities are designed to a design basis acceleration of 0.24g or higher. Low-to-moderate seismicity for INEL is further supported by the accelerations recorded at the site from the Borah Peak earthquake which ranged from 0.078g to 0.017g. This earthquake had a moment magnitude of 6.9 (surface magnitude of 7.3).

Regardless of the adjectival characterization of the seismic hazard at the DOE site, DOE Orders require a systematic quantification of the seismic hazard for its facilities. Probabilistic estimates of seismic hazards at other DOE sites have been used in the DOE has prepared, and INEL uses, an independently reviewed probabilistic seismic hazard analysis. This study estimates earthquake ground motions and how often they might occur. This independently reviewed and will be incorporated into the INEL architectural and engineering design after review by the site Natural Phenomena Committee per DOE Order 6130.1A, General. Included in this study is an estimate of ground motions at INEL facilities from a maximum earthquake occurring at the southern end of the Lemhi fault zone near the site boundary. Motions exceed those that would occur as a result of moment magnitude 7.0 earthquakes at the ends of the Lost River and Beaverhead fault zones. The 1983 Borah Peak earthquake had a magnitude of 6.9. A study has also been performed for the Navy's Expanded Core Facility which presents detailed data and comparable results. See also the response to comment 05.08.01. Quantitative estimates of seismic hazards at INEL sites are in or referenced in Section 4.2 of Volume 1 appendices; Volume 1, Appendix D, section 4.2; and Volume 2, Appendix B, section 4.2. These estimates are more useful than adjectival or UBC characterizations for the design of facilities.

## II COMMENT

The commentor indicates that the EIS is inadequate because no seismic hazard zone maps are shown. Specific reference was made to Volume 1, Appendix D, Part B.5.2 referring to seismic hazard zone maps and that three of four waste water pits are not up to current earthquake codes. The commentor states that facilities should be reconstructed to meet current codes of the Idaho National Engineering Laboratory with facility locations should be added. RESPONSE

Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4.6; Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced hazards are discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously. INEL uses reviewed analyses to support the implementation of DOE Orders and standards.

Volume 1, Appendix D, Chapter 4 contains sections that describe possible seismic hazards at the site, provide general background information regarding the seismicity at these sites, and provide references for more detailed information. In addition, the current UBC seismic classification is provided as a means for comparing the potential for seismic hazards among sites. The effects of seismic failure of Naval SNF management facilities have been evaluated in Volume 1, Appendix D, Chapter 5 and Attachment F provide summary and detailed discussions of the analyses that were performed and the public health risks that might result from a seismic event at a SNF storage facility. The seismic events considered in the analyses included both an earthquake magnitude used as the basis for the design of the facility (design basis earthquake magnitude, which is more severe than that for which the facility must be designed (design basis earthquake)). These analyses show that the risks associated with seismic events are small for all of the alternatives and sites considered.

The three water pits that the commentor refers to were built to standards that were in effect at the time they were built. These water pits have been reevaluated under current standards and found to be structurally adequate. An existing facility's seismic strength and on the building's specific characteristics as well as the seismic acceleration. All bounds any seismically induced failure.

The information on seismic hazards used in this EIS was obtained from the available site. Because this information is specific to each site, it is more useful in understanding seismic hazards than the classifications provided for large regions in the UBC maps. The evaluation was completed for all of the water pools at the Expanded Core Facility to show that they all can withstand earthquakes for both design basis events (peak ground acceleration of 0.24 g) and for beyond design basis events (peak ground acceleration of 0.4 g). The analyses in Volume 1, Appendix D, Attachment B that three of the water pools were designed to the seismic classification in effect at the time they were built is correct, but does not mean that they will withstand or that they do not comply with current building codes or other applicable standards. DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE policy to design and operate DOE facilities so that workers, the general public and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires that facilities be reevaluated when there is any change in design and construction standards. Existing facilities have undergone continual safety analysis and seismic design review. Several of the projects in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities resulted from the ongoing safety analysis and seismic design reviews.

The data and methods used in the seismic hazard report referenced in Volume 2, Section 4.6, Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering and Environmental Laboratory (Draft) were extensively and independently reviewed. This report includes graphs of seismic occurrence versus acceleration for seismic events for each major facility at INEL. The data were incorporated into the INEL architectural and engineering standards after review by the INEL Phenomena Committee. The previous INEL seismic analysis (Earthquake Strong Ground Motion Estimates for the Idaho National Engineering Laboratory: Final Report) was reviewed and incorporated into the site architectural and engineering standards after review by the Phenomena Committee in 1992 and is referenced in Volume 2, sections 4.6 and F-2 and provides location-specific seismic hazard information.

Most facilities currently in use at INEL are designed to withstand an earthquake acceleration higher than that specified in UBC Zone 2B, which requires that facilities be designed to withstand earthquake accelerations of up to 0.2g. A small portion of the INEL site lies in UBC Zone 1, and no facilities in that portion of the site. DOE seismic design standards for moderate seismicity exceed the UBC seismic Zone 2B design criteria.

The EIS was prepared using existing references and currently published information. The EIS is presented in a layered fashion and placed much of the technical details in appendices and documentation. The references cited for Volume 1 and for Volume 2 include current information on the existing environment and applicable environmental consequences for all sites evaluated. Studies are referenced in Chapter 9 of both volumes and are available in reading rooms at the INEL for review by the commentor and other interested members of the public. Low-to-moderate seismic potential for INEL is further supported by the acceleration from the Borah Peak earthquake, which ranged from 0.078g to 0.017g. This earthquake had a magnitude of 6.9 (surface magnitude of 7.3).

The EIS summarizes all known credible scientific evidence relevant to understanding and identifying reasonably foreseeable impacts, and evaluating potential consequences. The EIS includes up-to-date reviewed analyses when available, and the evaluation of impacts is based on the best available information accepted by the scientific community. The analyses reported in the EIS evaluate the potential consequences, including direct, indirect, cumulative, irreversible and irretrievable losses, and productivity losses.

## II COMMENT

The commentor states that the description of the Snake River Plain as having low seismicity by the Idaho National Engineering Laboratory's 1979 to 1981 Quarterly Seismic Report summarize data on earthquakes "registered on or originated on the Snake River Plain

### RESPONSE

The INEL Quarterly Seismic Reports cited by the commentor, available at the INEL Te show far fewer earthquakes originating on the Plain than recorded by INEL seismograph on the Plain. For example, the January 1982 report shows 470 earthquakes recorded by INEL on the Plain for the months October through December 1981 with magnitudes ranging from 0.1 to 1.3. Out of 470 earthquakes, only one event, with a magnitude of 1.1, was possibly located on the Snake River Plain. These reports typically show one to two events per quarter originating with magnitudes ranging from 0.1 to 1.3. When this data is compared with Figure 4.6-3, which describe the Snake River Plain as having a low-level of seismic activity with respect to the region, the term "aseismic" has been avoided in the EIS to eliminate confusion. Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4.6; Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced hazards are discussed in Volume 2, section 5.14 and Appendix F-5.

The assertion that the Snake River Plain has a low rate of seismicity is supported by Volume 2, Figure 4.6-3, which represents a summary of the best available data at the time the EIS was compiled. The addition of subsequent seismic events in the region would not change the conclusion that the Snake River Plain has a low rate of seismicity with respect to the region.

See also the response to comment 05.05.01 (007).

## II COMMENT

The commentor notes that the Borah Peak earthquake was a magnitude 7.3 and not a magnitude 6.9 as stated in an EIS reference.

### RESPONSE

The Borah Peak earthquake, as stated in Volume 2, section 4.6.1, had a surface wave moment magnitude for this earthquake was 6.9. Seismologists prefer to calculate earthquake energy in terms of moment magnitude because it is based on the physical and repeatable measurements (such as surface rupture length) as opposed to a surface wave magnitude which is a one-time measure of a seismograph's response to an earthquake. Other measures (such as Richter) cannot be determined for close, large events due to instrument saturation.

## II COMMENT

The commentor asserts that the EIS statement that the Hanford Site is historically seismically inactive is incorrect.

### RESPONSE

The seismic hazards at the Hanford Site are described in Volume 1, section 4.1, and provided in Volume 1, Appendix A, section 4.6.3. The area of the Hanford Site has experienced several moderate-sized earthquakes. The largest earthquakes near the Hanford Site are an approximate magnitude 4.5 event in 1918 near the town of Corfu, 35 kilometers (22 miles) from the Hanford Site, and a second event with the same approximate magnitude and location in 1971 near the location of N-Reactor. The 1971 earthquake within the Hanford Site occurred in 1971 near the location of N-Reactor and had a magnitude of 3.8.

DOE Orders require rigorous quantification of seismic hazards. Seismic hazard studies have been conducted at the Hanford Site to incorporate geologic estimates for the frequency of earthquakes associated with geologic faults and tectonic zones, as reported in Volume 1. The Hanford Site is in a UBC Zone 2B (Zone 0 represents low risk and Zone 4 represents high risk). The results of these studies lead to design requirements to withstand moderate earthquakes.

## II COMMENT

The commentor states that the Idaho National Engineering Laboratory is subject to m hazard and that other facilities at Puget Sound Naval Shipyard, the Hanford Site, L Laboratory, and Sandia National Laboratories have moderate-to-high seismic potentia  
RESPONSE

Estimates of seismic hazards at the sites considered are in or are referenced in Vo through F, and Volume 2, Appendix F-2. Quantitative estimates are more useful than characterizations for the decision-making process. However, the comment is acknowl rephrased the description of seismic hazard at DOE sites.

DOE Order 5480.28, Natural Phenomena Hazards Mitigation, requires that DOE facilit natural phenomena hazards mitigation requirements. The UBC design basis accelerati 0.2g (the acceleration due to gravity is 1g). Most INEL moderate- or high-hazard n currently in use are designed or have been evaluated to a design basis acceleration Low-to-moderate seismic hazard potential for INEL is further supported by the accel INEL from the Borah Peak earthquake, which ranged from 0.078g to 0.017g. This eart moment magnitude 6.9 (surface wave magnitude 7.3).

Regardless of the adjectival characterization of the seismic hazard at DOE sites as Orders require a systematic quantification of the seismic hazard for its facilities estimates of seismic hazards at other DOE sites have been used in the EIS when avai preparing and the EIS uses a probabilistic seismic hazard assessment for facilities Operations Office. This study estimates earthquake ground motions and how often th study has been extensively and independently reviewed and will be incorporated into and engineering standards after review by INEL Natural Phenomena Committee per DOE General Design Criteria. A similar process was used in 1992 to incorporate a scien seismic analysis of INEL into INEL architectural and engineering standards. Includ estimates of accelerations at INEL facilities that would result from a moment magni occurring at the southern end of the Lemhi fault zone near the INEL boundary. Thes INEL facilities exceed those that would occur as a result of moment magnitude 7.0 e southern ends of the Lost River and Beaverhead fault zones. The 1983 Borah Peak e moment magnitude 6.9.

The Lemhi Fault and other seismic sources are discussed in Volume 1, Appendix B, se Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discusse section 5.14 and Appendix F-5. These accident analyses indicate that the risks to small from seismic initiated events.

Existing facilities at INEL have undergone substantial safety analysis and seismic the projects described in Volume 2, Appendix C are proposed by DOE to replace or up INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities have resulted from the ongoing safety analysis and seismic design review All other major, moderate- and high-hazard facilities currently in use at INEL were withstand accelerations from a moment magnitude 7.0 earthquake at the southern end zone. This level of seismic safety is consistent with requirements contained in DO The accident analyses (including beyond reasonably foreseeable accidents with poten than seismically induced accidents) indicate that the risk to the public from alter EIS would be small. Therefore, additional information or characterization of reaso seismic events with lesser potential impact would have no effect on the decision-ma of detail and characterization for seismic issues is appropriate for the programmat made based on this document.

## II COMMENT

The commentor questions why the overall level of seismic hazard calculated in the E National Engineering Laboratory is lower than the seismic hazard curves for either Savannah River Site, and why U.S. Geological Survey data are not used.  
RESPONSE

The differences perceived by the commentor result from the site-specific data and m seismic hazards. Each site used data and models judged to be appropriate to comply standards for that location. Regardless of differences in modeling approaches, ste the professional and scientific integrity of these discussions and analyses for the adequate for evaluation and consideration of alternatives required for the programm

response to comment 05.05.01 (003).

DOE Order 5480.28, Natural Phenomena Hazard Mitigation, sets forth DOE procedures to assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. INEL uses the implementation of DOE Orders and standards.

U.S. Geological Survey (USGS) data are regional in scope and do not provide sufficient analysis of the programmatic alternatives discussed in this EIS.

## II COMMENT

The commentor states that a design basis earthquake using a two-segment rupture and 7.0 earthquake on the Lemhi fault is not conservative enough.

### RESPONSE

The Lemhi fault and other seismic sources are discussed in Volume 1, Appendix B, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in section 5.14 and Appendix F-5. These accident analyses indicate that risks to the environment from seismic-initiated events.

Existing facilities at INEL have undergone substantial safety analysis and seismic design. The projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace existing facilities at the site. Likewise, actions such as the transfer of fuels from obsolete facilities have resulted from the ongoing safety analysis and seismic design. All other major, moderate- and high-hazard facilities currently in use at INEL were designed to withstand accelerations that would result from a moment magnitude 7.0 earthquake at the south fault zone.

The probabilistic seismic hazard assessment is intended to capture the effects of the most severe high-intensity seismic events. Seismic events were the only identified common cause of potential to initiate radioactive and toxic material releases to the environment. Releases and impacts from individual facilities were considered in the identification of accident scenarios analyzed in this EIS. These results are conservative and ensure that the two-segment rupture model is consistent with observations to date on Basin and Range and general and paleoseismic indicators near INEL in particular.

See also the response to comment 05.05.01 (001).

## II COMMENT

The commentor states that seismicity at the Idaho National Engineering Laboratory is not included in the EIS analysis.

### RESPONSE

Volume 1, Appendix B, section 4.6 and Volume 2, section 4.6 discuss seismicity in the region. Volume 2, section 5.14 discusses how seismic events were used in the accident analysis. Accident analyses, including seismicity assumptions, are found in Accident Assessment for the Idaho National Engineering Laboratory.

## II COMMENT

The commentor suggests that the seismic study in Volume 2, section 4.6 is incomplete because ground acceleration curves for facilities other than the Idaho Chemical Processing Plant are not included.

### RESPONSE

The data and methods used in the seismic hazard report referenced in Volume 2, section 4.6 includes graphs showing rate of occurrence versus ground motion for seismic events at INEL. The seismic hazard curve for the Idaho Chemical Processing Plant was included in the information contained in the INEL seismic hazard analysis [Site-Specific Probabilistic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)]. This report was incorporated into the INEL architectural and engineering standards after it is finalized by the INEL Natural Phenomena Committee. The previous INEL seismic analysis (Earthquake Shaking Motion Estimates for the Idaho National Engineering Laboratory: Final Report) was reviewed and incorporated into the INEL architectural and engineering standards after it is finalized.

Natural Phenomena Committee in 1992. Earthquake Strong Ground Motion Estimates for National Engineering Laboratory: Final Report is referenced in Volume 2, section

## II COMMENT

The commentor notes that the Idaho National Engineering Laboratory is in an area of specifically referred to the Beaverhead, Lemhi, and Lost River fault zones.

### RESPONSE

Seismic hazards and geologic analyses can be found in Volume 1, section 4.6; Volume section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accid in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very serious independently reviewed analyses to support the enforcement and implementation of DO standards.

DOE Order 5480.28, National Phenomena Hazards Mitigation, sets forth DOE procedures assess, and operate DOE facilities so that workers, the general public, and the env from the impacts of natural phenomena hazards on DOE facilities. This Order specif facilities to be reevaluated when there is any change in design and construction st facilities at INEL have undergone continual safety analysis and seismic design revi projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replac facilities at the site. Likewise, actions such as the transfer of fuels from poten modern facilities have resulted from the ongoing safety analysis and seismic design INEL has prepared a probabilistic seismic hazard assessment for facilities at the s estimates earthquake accelerations and how often they might occur at facilities at been independently reviewed and will be incorporated into the INEL architectural an standards after it is finalized and reviewed by the site Natural Phenomena Committe conjunction with DOE Orders to design and build new facilities. Included in this s ground motions at INEL facilities that would result from a magnitude 7.0 earthquake southern end of the Lemhi fault zone near the site boundary. These ground motions that would occur as a result of magnitude 7.0 earthquakes at the southern ends of t Beaverhead fault zones.

Accident analysis results (including seismically induced accidents) indicate that t INEL operations would be small.

Major facilities currently in use at INEL were built to withstand accelerations tha earthquake at the southern end of the Lemhi fault zone.

## II COMMENT

The commentor notes that the West Valley Demonstration Project facility is only abo the probable causative structure for the 1929 Attica, New York, magnitude 5.8 earth RESPONSE

Volume 1, Appendix E, section 3.3.1 of the EIS has been revised to include seismic significance of seismic activity in the West Valley region.

## II COMMENT

The commentor expresses the opinion that the geologic map in Volume 2, section 4.6 because it does not define certain major geologic features; specifically, the Arco Lava Ridge-Hell's Half Acre Volcanic Rift Zone, and the Axial Volcanic Zone.

### RESPONSE

Rift zones at INEL, as discussed in the EIS, refer to volcanic rift zones in the re suggested by the commentor concerns continental or oceanic constructive tectonic pl while correct, is not appropriate with respect to local conditions.

Important regional geologic features are included in Volume 2, section 4.6. A map significant volcanic rift zones in and near INEL can be found in the Engineering De Water Resources Supporting Document for the INEL Environmental Restoration and Wast Management EIS (Draft) in Volume 2, Appendix F. Many geologic maps of INEL and ad available in the open literature. Some of this literature is cited and referenced i including USGS reports and maps.

DOE added a more detailed geologic map of INEL to the EIS.

## II COMMENT

The commentor suggests that analysis of seismic and volcanic hazards be fully reviewed by the Geological Survey and other qualified experts.

### RESPONSE

Consistent with DOE Orders and standards, INEL seismic hazards assessments and methods have been independently reviewed by many expert seismologists and geologists. These include the Events Review Group, a panel of seismic, geologic and structural engineering experts; the seismic siting and design of high-hazard facilities; the Lawrence Livermore National Security Defense Nuclear Facilities Safety Board; Woodward-Clyde, Inc.; Risk Engineering, Inc.; University of Utah; State University of New York at Binghamton; Southern University; Idaho State University; the U.S. Geological Survey; and Boise State University. Given the extensive nature of this review, DOE believes additional review is not necessary. See also the response to comment 05.05 (015).

## II COMMENT

The commentor points out that the Uniform Building Code contains four Seismic Risk Categories.

The EIS has been revised to reflect that there are more than three Uniform Building

## II 5.6 Land Use

## II COMMENT

The commentor notes that the list of Federal outdoor recreation facilities in Volume Three, section 4.2 should be expanded, and Figure 4.2-2 should be updated.

### RESPONSE

The list of Federal outdoor recreation facilities identified in the text and figure Part Three, section 4.2 is not intended to be all inclusive. However, the list of recreation facilities has been revised to include other major facilities.

## II COMMENT

The commentor, referring to Volume 1, Appendix F, notes that the acreage needed for whether 90 or 120 acres, is unclear.

### RESPONSE

Construction of SNF management facilities would require 90 acres. Under the Central Expansion Core Facility would also need to be constructed; this would require an expansion. The data in Volume 1, Appendix F, Parts Two and Three, Table 3.2-1 for the Central Expansion include the requirements of the Expanded Core Facility, which are discussed in Volume 1. To clarify the acreage requirements, a footnote has been added to Volume 1, Appendix Three, Table 3.2-1, and the text of Volume 1, Appendix F, section 3.2 has been revised.

## II COMMENT

The commentor supports the banning of grazing on Idaho National Engineering Laboratory and re-establishment of natural vegetation.

### RESPONSE

Grazing policies are not within the scope of this EIS. The U.S. Department of the Interior is responsible for those policies.

## II COMMENT

The commentor states that the EIS land-use analysis does not identify policies or process, or provide an opportunity for public input on specific projects.

### RESPONSE

The EIS identifies DOE land-use plans and policies applicable to INEL in Volume 2, land-use policies are also identified in Volume 2, section 4.2. For details of the commentor is encouraged to consult the specific documents referenced in the EIS, where reading rooms and information locations listed in the EIS. Also, DOE has established Office, which is identifying stakeholder-preferred future use options at the 25 DOE 1995. Future use options are defined as a select range of preferred uses forged with stakeholder desires and DOE missions, and tempered by technical, and legal constraints.

## II COMMENT

The commentor requests an explanation of how percentages were calculated for acres National Engineering Laboratory under each alternative.

### RESPONSE

Calculations of the acreage that would be disturbed by proposed projects under each based on figures contained in individual project data sheets found in Volume 2, Appendix section 3.3 has been changed to show how the acreages disturbed were calculated.

## II COMMENT

The commentor states that the EIS fails to consider impacts of the alternatives on Idaho National Engineering Laboratory land such as hunting, grazing, and tribal ceremonial purposes.

### RESPONSE

Volume 2, section 4.2 identifies the portions of INEL that are used for hunting and section 4.4 discusses traditional resources that are of cultural or religious importance to Native Americans. All of these land uses are outside of the facility areas where the proposed various EIS alternatives would be implemented. Consequently, no impacts to hunting nor to tribal ceremonial or religious uses, are expected. The future use of land with local Native Americans to assess any potential impacts of future proposed activities.

## II COMMENT

The commentor requests that the EIS describe and identify the locations of specific making land-use decisions under the Federal Facilities Agreement and Consent Order, identify the role of regulatory agencies in making future land-use decisions under Agreement and Consent Order for Idaho National Engineering Laboratory.

### RESPONSE

The specific location of proposed actions at INEL are identified in the project summary Appendix C. The number of acres disturbed for each project is also provided in this. The locations of projects not covered by this EIS will be identified in subsequent Environmental Response, Compensation, and Liability Act (CERCLA) documents.

The Federal Facilities Agreement and Consent Order (FFA/CO) process does not entail "decisions." Rather, assumptions for future land uses at INEL will be made for the appropriate level of cleanup at each operable unit. In August, 1994, the DOE issued for public comment the Idaho National Engineering Laboratory Long-Term Land Use Scenarios. This document set forth various land-use scenarios that could be assumed long-term activities at INEL. Public comments on the document were received, and are reviewed and addressed as appropriate.

In accordance with CERCLA and the FFA/CO, the Idaho Department of Health and Welfare Region X will be part of the decision-making process on the appropriate level of cleanup.



requested comments on the Idaho National Engineering Laboratory Long-Term Land Use Scenarios from the State of Idaho and EPA Region X.

## II COMMENT

The commentor states that the EIS needs to address whether the impacts from land use National Engineering Laboratory are permanent or temporary.

### RESPONSE

Volume 2, section 5.18 states that disposal of radioactive or hazardous wastes would be irretrievable (i.e., permanent) commitments of land resources under the Ten-Year Pl Treatment, Storage, and Disposal alternatives. The affected acreage is also identified for waste treatment, storage, and disposal activities would be reserved for those purposes. This land would be precluded during the time period addressed by the EIS.

## II COMMENT

The commentor states that the proposed placement of spent nuclear fuel facilities would be inconsistent with the DOE 1994 draft future land use plan for the Nevada Test Site designates that portion of Area 5 as a "nonnuclear test area."

### RESPONSE

The NTS future land use plan has three area designations: underground nuclear weapons proposed high-level radioactive waste repository area, and nonnuclear test area. The broad, providing general guidance for future activities. The underground nuclear weapons general characteristics suitable for nuclear weapons tests, although some localized areas suitable because of terrain, previous uses, local geologic features, or other reasons purposes. The proposed high-level radioactive waste area has been reserved to support site characterization at Yucca Mountain, and is not available for other uses at this test area is an area where weapons testing is not conducted and is available for other appropriate by DOE, such as siting SNF management facilities.

## II COMMENT

The commentor states that DOE has summarily dismissed the alternative of restoring the Engineering Laboratory to pristine conditions as unreasonable and that DOE is ignoring. Additionally, the commentor states that the presence of cultural resources on the Idaho National Engineering Laboratory should qualify the Idaho National Engineering Laboratory as a resource, thereby requiring restoration of the site.

### RESPONSE

Environmental restoration activities at INEL are being conducted in accordance with the December 4, 1991. Restoration activities will comply with the requirements of CERCLA not require restoration to pristine conditions, but are designed to assure protection of the environment in a cost-effective manner.

## II COMMENT

The commentor states that the analysis of land-use impacts is fundamentally flawed because "there are no Native American treaty rights that would affect any future land use." The commentor states that the Fort Bridger Treaty expressly reserves the rights of the Tribes to use unoccupied lands of the U.S., and the Tribes will exercise these rights if the National Engineering Laboratory goes away or releases portions of land.

### RESPONSE

The commentor is correct that the Fort Bridger Treaty of 1869 reserves certain future Shoshone-Bannock Tribes to use lands on the INEL site to the extent that those lands in the future become unoccupied. The analysis of land-use impacts in the EIS is limited to the scope of the EIS. The time period for Volume 2 analysis is the 10 years from June 2005; the time period for Volume 1 analysis is 40 years, with detailed impact analysis

actions occurring from June 1, 1995 to June 1, 2005. During the time periods cover does not plan to relinquish ownership and control of the INEL site. Discussions of of 1869 in Volume 1, Appendix B and Volume 2 of the EIS have been changed to more c this issue.

## II COMMENT

The commentor requests information be included in the EIS on the approach related t that would be used to transfer Idaho National Engineering Laboratory land to other sector and DOE's and other agencies' responsibilities in the land transfer process  
RESPONSE

The lands and facilities that are evaluated under the alternatives in this EIS are over to other government agencies or the private sector within the time considered Consequently, the subject of transfer of government lands to other government agenc sector is outside the scope of this EIS.

## II COMMENT

The commentor objects to a land-use scenario projected by a draft DOE Idaho Operati and states that Idaho National Engineering Laboratory lands should remain as wildli not be returned to the public for uses such as housing.

RESPONSE

This is in reference to a draft document entitled Long-Term Land Use Future Scenari National Engineering Laboratory. The purpose of the land use scenarios document is decisions regarding environmental restoration activities at INEL by projecting reas scenarios for the next 100 years. The current land use status, that is, Federal Go INEL, would not change under any of the alternatives analyzed in the EIS.

## II 5.7 Utilities and Infrastructure

## II COMMENT

The commentor asks whether recycling and the use of lined evaporation ponds have re increase or decrease in net consumptive water use at the Idaho National Engineering  
RESPONSE

Currently, there are no major water recycling projects at INEL. Consumptive water probably increased since the use of lined evaporation ponds because water no longer No studies have quantitatively evaluated the magnitude of increase since switching However, it is likely that the increase is small with respect to total water use at

## II COMMENT

The commentor questions why the electrical usage rate at the Idaho National Enginee expected to decline.

RESPONSE

Volume 1, Appendix B, section 4.13 describes the 1995 baseline electrical usage at at INEL is expected to decline when Navy prototype training at the Naval Reactors F

## II COMMENT

The commentor notes that only sanitary waste water discharges are reported in Volum section 4.13.4, and that additional waste water discharges from specific projects w River Plain aquifer. The commentor asserts that the EIS seriously underestimates t

water discharge from 1989 through 1991, based on a comparison of discharges reported (537 million liters per year) with those reported in INEL Nonradiological Waste Management Information System (6.8 billion liters/year). The commentor asks how this difference whether this will impact the analysis of impacts on the aquifer.

**RESPONSE**

As used in Volume 1, Appendix B, section 4.13.4, the term "waste water" refers primarily to wastes. DOE has clarified this in the EIS. As noted in Volume 1, Appendix B, section 4.13.4, withdrawal from the aquifer by INEL is approximately  $1.9 \times 10^9$  gallons per year. Only a substantial portion is discharged to the surface and is eventually returned to the aquifer. These facts are presented in the EIS. Because of the small percentage of water consumed with respect to water rights, and volume of water in the aquifer under INEL, there would be a small impact on the aquifer under all alternatives considered.

## II COMMENT

The commentor identifies a discrepancy in terminology between sections regarding the Laboratory water rights.

**RESPONSE**

Volume 2, section 4.13 has been changed to refer to INEL water rights as a Federal

## II COMMENT

The commentor would like Volume 2, section 5.1.3 to clarify whether projected waste is limited to sewage.

**RESPONSE**

This discussion in section 5.13 has been modified as requested.

## II 5.8 Water Resources

## II COMMENT

The commentor states that the discussion in Volume 2 concentrates on radioactive and nonradioactive effluents.

**RESPONSE**

Contaminants, including nonradioactive contaminants, are discussed in Volume 2, section 5.8. Nonradioactive contaminants at INEL were included in the analysis process performed (Predicted Consequences on the Snake River Plain Aquifer of Alternative Actions 1 a screening identified just three analytes, all radionuclides, with plumes above current levels. Contaminants were selected for detailed analysis of potential consequences on the Snake River Plain aquifer and are the main constituents within the contaminant plumes. In addition, nonradioactive contaminants, are discussed in Volume 2, section 5.8.

## II COMMENT

The commentor suggests that there be more information on expected constituents and waste streams for proposed actions at the Idaho National Engineering Laboratory in the EIS. The commentor expresses the opinion that a decision of "no impact" can inadequately characterize waste streams or source terms.

**RESPONSE**

Anticipated projects have been included in the EIS to present readers with as comprehensive a picture of projects as is currently possible. These anticipated projects have been evaluated to attempt to bound reasonably foreseeable environmental impacts from such projects. A review is performed on such activities when applicable, prior to initiation. At such time as information on secondary waste generation would be available for an assessment of its management. NEPA status of environmental restoration and waste management projects

INEL is discussed in the Summary (see box titled Projects Related to Alternatives i of the Summary, and in Volume 2, Table 3.1-1.)

## II COMMENT

The commentor notes that data exist that indicate other contaminants in perched wat Waste Management Complex, Test Reactor Area, Idaho Chemical Processing Plant, and T have been detected in perched water zones, and that these data should have been inc Appendix B, section 4.8.2.

### RESPONSE

The EIS has been changed to address the comment by indicating the presence of other have been identified in the perched water at INEL.

## II COMMENT

The commentor states that in the Oak Ridge Reservation discussion, 914 meters (3,00 is inappropriately represented as being close to the source.

### RESPONSE

The discussion of water resources for ORR in Volume 1, Appendix F, Part Three, sect revised.

## II COMMENT

Commentors suggest addition of the location where Las Vegas currently gets its wate to the discussion on the Nevada Test Site in Volume 1 of the EIS.

### RESPONSE

Water use at NTS will not impact Las Vegas water use because NTS obtains its water groundwater basin that is separate from the Las Vegas groundwater basin. Additiona 70 to 80 percent of its water from the Colorado River. Volume 1, Appendix F, Part to more accurately reflect where Las Vegas gets its water.

## II COMMENT

A commentor states there is a need to clarify the assumption regarding the spent nu supply from the Area 5 wells and distribution system at the Nevada Test Site. A co that the increased use of an aquifer currently in overdraft should constitute a sig effect, regardless of the user's right to that water.

### RESPONSE

As indicated in Volume 1, Appendix F, Part Two, section 5.13, the water wells and p Area 5 of the NTS have sufficient capacity to meet the requirements for the propose proposed facility location is in the vicinity of the Area 5 water lines. Therefore infrastructure would be adequate to supply SNF facility water.

The commentor correctly states that water rights should not be a factor in the dete significance of groundwater use impacts, and in fact, those water rights given to t the area of NTS were not considered in the impact determination made in the EIS. T Federal water rights was included in the EIS for information purposes only.

The discussion of groundwater quantity issues in Volume 1, Appendix F, Part Two, se revised to include a more comprehensive analysis of potential impacts on groundwa the estimated perennial yield of the Frenchman Flat subbasin has been exceeded for with no decline in static water levels, it is likely that increased water use for S sustained. The overall impact of any groundwater withdrawal in Frenchman Flats is discharge in the deserts to the southwest of NTS. SNF operations would decrease th by 0.04 percent of the approximated 1992 discharge; therefore, impacts to groundwa be small from SNF operations. More detailed analysis, such as that proposed by th be done if the NTS were chosen as a site for SNF management activities.

## II COMMENT

Commentors state that a summary table of water used and water consumed be provided alternative, as well as a discussion of impacts in Volume 1, Appendix B, section 5. RESPONSE

Volume 1, Appendix B, section 5.8 discusses the alternative that would represent the use/consumption and provides water consumption in both gallons and cubic meters. The greatest projected water use is shown to have a small impact on the aquifer, the likewise be small. There is additional detail in Volume 2, section 5.8.

## II COMMENT

The commentor states that reference should be made to the increased consumption of National Engineering Laboratory as a result of the alternatives analyzed.

RESPONSE

The use of groundwater by the alternatives analyzed in the EIS for INEL is discussed in section 5.8 and Appendix C. In general, increased construction activity and new facilities result in a net increase in consumptive water use. The maximum increase in net consumptive water use for any alternative is expected to be less than 5 percent of current water use at INEL. This is to reflect more accurate water use estimates.

## II COMMENT

The commentor discusses the use of the term "aquitard" in Volume 1, Appendix F, Part 2 to describe certain geologic units on the Oak Ridge Reservation. The commentor notes published reports by State of Tennessee geologists, all the geologic units underlying the Reservation were referred to as "aquifers" and it was stated that sufficient water was usually obtained from wells at depths of 18 meters (60 feet) or less in the Conasauga Group, notably the Pumpkin Valley shale unit of the Conasauga Group, were noted to be poor.

RESPONSE

An aquifer is a body of rock or sediment in a formation, group of formations, or part of a formation saturated and sufficiently permeable to transmit economic quantities of water to wells or springs. An aquitard, on the other hand is a confining bed that will tend to retard, but does not prevent, the flow of water to or from an adjacent aquifer. It may serve as a storage unit, but will not yield water to wells or springs. The Geology Resources and Water Resources sections of the EIS were prepared from recently published material. No site-specific field study was conducted. Recent studies show there are several formations beneath ORR with varying ability to store and transmit water. It is agreed that the Pumpkin Valley Shale could very well be referred to as an aquitard. It has been shown to have poor transmissivity capabilities. Recently published reports, "Report: A Hydrologic Framework for the Oak Ridge Reservation, and Status Report on the Oak Ridge Reservation" have all used the term "aquitard" to describe the Pumpkin Valley Shale and the other geologic units beneath the ORR.

Pumpkin Valley Shale is the oldest of six formations within the Conasauga Group and is part of the group. No site-specific data are available to determine at what depth Pumpkin Valley Shale is beneath the West Bear Creek Valley site. It is logical, however, to think that at depth beneath the site, the water-bearing unit most likely to be encountered would be an aquifer within the Conasauga Group. If the ORR is chosen as a site for new SNF management facilities, water and groundwater studies would be performed to identify and characterize the site. The level of detail desired by the commentor for the data analysis is not appropriate for the EIS. The EIS will be based on this programmatic document, and would not provide any information to assist decisionmakers. This broad environmental review document has been prepared in accordance with the provisions of NEPA and CEQ implementing regulations, which allow for a broad focus on the subject of the decision. Additional, more specific data, such as that proposed by the commentor, would be provided, if necessary, in further site-specific environmental documents. Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix B, sections 4.6 and 4.8.

## II COMMENT

Commentors state that the EIS treats the complex fracture flow system in the clastic system of carbonate rocks of the Oak Ridge Reservation simplistically, that the system modeled, and that the system is not well enough understood to support the broad conclusion that groundwater in the "aquitards" is essentially static or that these units are able to respond.

DOE agrees that the ORR groundwater system is complex. It is difficult to characterize highly fractured and folded complex geologic settings. However, a full and detailed complex fracture-contaminated flow processes on the ORR is beyond the scope of this EIS. The EIS description and analysis of hydrologic conditions at ORR was developed from hydrologic literature, including Status Report: A Hydrologic Framework for the Oak Ridge Reservation. Based on these sources, the EIS analysis of potential groundwater impacts of SNF storage assume that the aquitards "contain contaminants," but rather that these units are characterized by short-flow paths and that solute residence times increase sharply with depth. In the Status Report, estimates of residence times from carbon 14 measurements and modeling are in thousands of years as stated in Status Report: A Hydrologic Framework for the Oak Ridge Reservation, Volume 1, Appendix F, Part Three, section 5.8.4 has been revised to more accurately reflect the EIS discussion of potential groundwater quality impacts. Very little potential exists for contamination of the Knox aquifer from the operating management facilities. These facilities would be constructed using technologies that include containment, leak detection, and water-balance monitoring equipment. Therefore, no environmental consequences related to water resources are anticipated from the operating management facilities.

A detailed description of groundwater flow would require an in-depth site-specific hydrogeology study. If ORR is selected as a site for new SNF management facilities, such a study should be performed.

Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix sections 4.6 and 4.8.

## II COMMENT

The commentor states that karst features at the Oak Ridge Reservation (e.g., sinkholes, etc.), exist in certain geologic units within the Conasauga and Chickamauga Groups, and that aquifers within those units are karstified.

### RESPONSE

This comment is addressed by statements included in the EIS, Volume 1, Appendix F, section 4.6. The EIS states that karst development is present to varying degrees in the Conasauga Group, most notably in the Maynardville Limestone, part of the Knox aquifer. The EIS states that "Although no site-specific geologic characterization has been conducted at the Valley site, it appears the proposed Spent Nuclear Fuel Management Facility is located in the Conasauga Group strata not normally characterized by karst development." Site-specific hydrogeologic investigations would be necessary to verify this if ORR is chosen as a site for new management facilities.

## II COMMENT

Commentors state they are concerned with the high cost to owners/operators of private systems to conduct water quality testing due to the potential impact of past, present, and future management activities on the Snake River Plain aquifer.

### RESPONSE

Independent assessments of the Snake River Plain aquifer water quality at INEL confirm environmental monitoring results that indicate that no contaminants in concentrations above DOE DCGs exist beyond the INEL boundary. With improved management practices and remediation efforts planned or under way, it is likely that water quality in the Snake River Plain will continue to improve. Therefore, there is no INEL-related cost to local water users for groundwater outside the INEL boundary, because independent assessments indicate that the extent of aquifer contamination outside the INEL boundary is small with respect to EPA MCLs.

## II COMMENT

The commentor states that the potential exists for a deeper, more active flow regime at the Oak Ridge Reservation.

The commentor states that it is erroneous to dismiss the possibility of deep contaminant groundwater at the Oak Ridge Reservation, suggesting that the reason there is little contaminant transfer is that there is little data on the deep aquifer.

### RESPONSE

Information provided in Volume 1, Appendix F, Part Three, section 4.8 was developed from published hydrologic literature on the ORR including Status Report: A Hydrologic Framework for the Oak Ridge Reservation and recent site environmental reports. For the purpose of this information was beyond that which would be necessary to understand the effects of the ORR is chosen as a site for new SNF management facilities, site-specific groundwater monitoring was performed.

The EIS discussion of groundwater conditions at ORR and the EIS analysis of potential impacts, including the statement that there is little deep groundwater flow in the aquitards, were based on information and analysis in published hydrologic literature (Volume 1, Appendix F, Part Three, section 4.8 and references cited there.) These studies dismiss the possibility of deep flow, but state that water budget analyses and observed groundwater flow and near-surface conditions indicate that almost all groundwater flows near the ground surface.

Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix sections 4.6 and 4.8.

## II COMMENT

The commentor notes that vadose zone conductivity values derived from slug tests at the Oak Ridge Reservation may be understated in the EIS.

### RESPONSE

It is true that smearing of clays by the drill bit during well installations, and over pumping during testing, could reveal conductivity values less than what actually exist in nature. The data quoted in the Water Resources section of the EIS were obtained from Status Report: A Hydrologic Framework for the Oak Ridge Reservation. This reference cites that saturated hydraulic conductivity measurements were in fact conducted using infiltration tests as well as packer test data. Geology and water resources for the Oak Ridge Reservation are discussed in the EIS in Appendix F, Part Three, sections 4.6 and 4.8.

## II COMMENT

The commentor states that the discussion in Volume 1, Appendix B, section 4.8 on perched aquifer is incorrect. Perching layers are impermeable, not impervious, and so do not occur and impact the aquifer.

### RESPONSE

Perching layers are relatively impermeable. While some small amount of water may pass through an impermeable layer, the main flow is lateral until the edges of the impermeable bed are reached and then continues downward. The section of the EIS cited by the commentor accurately describes the flow of water around and through these impermeable layers in the Snake River Plain aquifer.

## II COMMENT

The commentor notes that the likely source of nitrates detected in springs that flow from the limestone is the Conasauga Shales at the Oak Ridge Reservation. This contamination is due to the inability of the shales to keep contaminants from migrating to the Knox aquifer.

### RESPONSE

Most of the Y-12 Plant is underlain by units included in the Conasauga aquitard. H

Maynardville limestone (Knox aquifer) also underlies a portion of the Y-12 Plant. properties of these rock units, proposed SNF management facilities are designed to of waste water with hazardous chemical or radiological characteristics. These faci constructed using technologies that include secondary containment, leak detection, monitoring equipment. Therefore, no significant environmental consequences related are anticipated from the operation of SNF management facilities. Detailed analyses of existing contaminant sources and transport pathways are beyond If ORR is selected for new SNF management facilities, site-specific groundwater st performed. The level of detail desired by the commentor for the data analysis is n decisions that will be made based on this programmatic document, and would not prov that would assist decisionmakers. This broad environmental review document has bee accordance with the provisions of NEPA and CEQ implementing regulations that allow broad focus on issues related to the subject of the decision. More specific data, the commentor, would be provided, if necessary, in further site-specific environmen Geology and water resources for ORR are discussed in Volume 1, Appendix F, Part Thr 4.8.

## II COMMENT

Commentors discuss the porous nature of the Eastern Snake River Plain and the poten present, or future DOE activities related to spent nuclear fuel management at the I Engineering Laboratory on water quality of the Snake River Plain aquifer.

### RESPONSE

Water resources at INEL and impacts resulting from SNF alternatives are described i B, sections 4.8 and 5.8. There would be no significant impacts to the aquifer unde Environmental monitoring shows that INEL operations have not contaminated the Snake aquifer above EPA limits beyond the INEL boundaries. Liquid effluent monitoring an containment construction would limit operational releases from a new facility to ne modeling using assumptions, including scientifically defensible assumptions regardi increase the potential impacts to the aquifer from past, present, and future activi show that groundwater quality will not be significantly impacted, because radioacti contaminant discharges to the soil or aquifer would not occur in concentrations abo DCGs. Furthermore, it is likely that overall aquifer water quality will continue t regardless of the EIS alternative chosen for SNF management.

Water resources and impacts from all waste management and environmental restoration alternatives, considered for the INEL are described in Volume 2, sections 4.8 and 5 all the alternatives considered, the possible future sources of contamination would previous practices. This would be a result of waste management practices that incl discharge monitoring, as well as natural contaminant attenuation and radioactive de releases. Computer groundwater modeling using conservative parameters (discussed i Appendix F) indicates that existing contaminant plumes within the INEL boundary wou decrease at least through 2035. The modeling further indicates that overall aquife would actually improve in that period and probably continue to improve after 2035. A hypothetical accident involving the instantaneous release of the contents of a hi to a once-every-50,000-years seismic event represents the situation with the most p Snake River Plain aquifer and is discussed in Volume 2, section 5.14 and Appendix F scenario, maximum radionuclide concentrations are predicted to reach the INEL bound concentrations less than EPA MCLs or DOE DCGs 300 years after the accident.

Independent assessments of the Snake River Plain aquifer water quality at INEL conf environmental monitoring results that indicate that no contaminants in concentratio DOE DCGs exist beyond the INEL boundary. With improved management practices and re efforts planned or under way, it is likely that overall water quality in the Snake the INEL will continue to improve.

As stated in Volume 2 Appendix F-2, the effects of porosity have been accounted for described. The analysis shows that for all alternatives considered, impacts would

## II COMMENT

The commentor states the need for accuracy in modeling impacts of Idaho National En waste management activities on the Snake River Plain aquifer.



**RESPONSE**

A description of water resources and potential environmental consequences to water including the Snake River Plain aquifer, is discussed in Volumes 1 and 2, sections analysis performed for the EIS integrated available data and technical information to evaluate contaminant transport and predict future trends in aquifer water quality was completed through 2035 to add assurance to the conclusions reached in the document concludes that overall aquifer water quality would actually improve over this period. methodology and assumptions used for the computer modeling effort is in Volume 2, A

**II COMMENT**

The commentor suggests that the reburial of plutonium in Pit 9 will pose a threat to the aquifer.

**RESPONSE**

According to page 13 of the Pit 9 Demonstration Record of Decision (ROD), plutonium is in the Subsurface Disposal Area, but not in interbeds 9 meters (30 feet) or 73 meters (240 feet) surface. The presence of plutonium in the 34-meter (110-foot) sediment layer has been attributed to flooding of the Subsurface Disposal Area in 1969 from rapid thawing of permafrost. Flooding is now prevented by a 5-meter (15-foot) dike around the Subsurface Disposal Area. Transport modeling was conducted for the less than 10 nanocuries per gram transuranics to be left in or returned to Pit 9 to evaluate potential contaminant migration to the aquifer. Modeling results indicated that the Safe Drinking Water Act standard of 15 picocuries per liter alpha radioactivity will not be exceeded anywhere in the Snake River Plain aquifer layer of clean soil with a linear absorption coefficient of at least 500 milliliters per gram bottom of the pit and if the pit is backfilled to grade with clean soil. The Pit 9 Administrative Record evaluated human health risks from 10 nanocuries per gram residuals left in the pit after cleanup. Modeling of radionuclide transport to the aquifer indicates that no migration to the aquifer is expected within 1,000 years. Residuals will be reevaluated in the baseline risk assessment to be performed as part of the

**II COMMENT**

The commentor states that Volume 1, Appendix B, Table 4.8-1 should include actual detection background levels and asks if groundwater includes the vadose zone, perched water, and aquifer.

**RESPONSE**

Table 4.8-1 did not include the detection limits and background values because this would complicate the table. The point being made by the table is that recent conditions are within background levels and detection limits. Detection limits and background level references in Volume 1, Appendix B, Table 4.8-1 and references in section 4.8. Groundwater, and the vadose zone are discussed separately in the EIS.

Volume 1, Appendix B, Table 4.8-1 specifically refers to groundwater quality in the aquifer. As discussed and defined in the EIS, locally saturated conditions above the perched water, while groundwater refers to usable quantities of water within an aquifer in the vadose zone is referred to as vadose water. Because perched water occurs within the vadose zone, it is vadose water.

**II COMMENT**

The commentor notes that discussions in Volume 1, Appendix B, section 4.8 should compare aquifer conditions with both Environmental Protection Agency existing and proposed standards, and that proposed maximum contaminant levels are not appropriate for the quality in Volume 1, section 4.2 of the EIS.

**RESPONSE**

A comparison of each contaminant with existing EPA MCLs with proposed MCLs is in Volume 1, Appendix B, Table 4.8-1. The summary material in Volume 1 has been enhanced to compare contaminant levels, where established, with existing EPA MCLs.

For americium-241, plutonium-238, plutonium-239, and plutonium-240, comparisons have

gross alpha particle activity contaminant levels for drinking water.

The EIS includes comparisons with proposed EPA MCLs because the proposed standards comparative benchmark for comparison of radionuclide concentrations than do the exi

## II COMMENT

The commentor states he would like to see a single data base for Snake River Plain the development of a new model to analyze groundwater contaminant dispersion at the Engineering Laboratory.

### RESPONSE

Most of the Snake River Plain aquifer data collected historically at INEL is retain INEL became involved in environmental restoration, a significant quantity of additi has been collected. Efforts have been made to integrate this data, with maintenanc within each contractor organization. With the realization that contractors would b recognizing the advantage to both the public and INEL, the integration of data base repository is being evaluated by DOE and the new INEL contractor.

The modeling efforts conducted for the EIS used the latest information and developm INEL personnel. Details regarding this modeling effort are discussed in Volume 2, Additional efforts are under way to model contaminant transport and dispersion in s environmental restoration activities associated with Waste Area Group 10 for the Co River Plain Aquifer Remedial Investigation/Feasibility Study. This modeling effort continue to be reviewed by EPA, the State of Idaho, and DOE in accordance with the

## II COMMENT

The commentor recommends further discussion of the extent to which contaminant migr groundwater at the Idaho National Engineering Laboratory would differ as a result o remediation under each alternative.

### RESPONSE

Remedial Action activities at INEL would not differ between the Ten-Year Plan; Mini Storage, and Disposal; and Maximum Treatment, Storage, and Disposal alternatives, a Volume 2, section 3.1.2. The only change in remediation activities occurs with the Only ongoing remediation efforts would be continued under the No Action alternative with this alternative have been analyzed and are discussed in the EIS.

The differences in groundwater contamination are minimal for each of the alternativ modeling conducted for this EIS indicates that under all alternatives, overall grou continues to improve. Volume 2, section 5.8 and Appendix C describe groundwater re and indicate that groundwater quality is likely to improve under each of the altern

## II COMMENT

The commentor states that increased water use at the Idaho National Engineering Lab surface subsidence and collapse.

### RESPONSE

High transmissivity (ability to transmit water) and productivity (ability to produc drawdown or water level decline in or near the well) of the Snake River Plain aquif collapse of the surface above a producing well will not occur. Historically, groun pumping has not been observed at INEL. Any potential increase to aquifer pumping u alternatives is less than a 5 percent maximum increase in current production at the Additional discussion and references on INEL groundwater can be found in Volume 1, section 4.8, and Volume 2, section 4.8 and Appendix F-2.

## II COMMENT

The commentor asks that DOE specify the degree of certainty and scientific basis fo in Idaho National Engineering Laboratory groundwater modeling predictions.

## RESPONSE

High confidence in predicting future movement of existing contaminant plumes in the decades of monitoring by the USGS and others that have provided good estimates of plume kilometers (1 to 6 miles)] contaminant transport parameters and the importance of precisely known parameter) in contaminant reduction. For example, the tritium plume frequent samples in numerous wells has been receding in recent years. The position plume relative to the INEL boundary has been relatively stationary from 1980 to 1999 the rock and radioactive decay. The measured iodine-129 plume movement has been slow of the plume is shrinking. Predictive modeling of future contaminant movement is a quantitatively and independently measured trends. Parameters used in predictive model discharge monitoring and control (as discussed below) ensures that there is a high confidence these trends will continue.

INEL's decreasing impact on groundwater resources is verified by the results of groundwater monitoring conducted by independent agencies such as the USGS and the State of Idaho. Over the past 10 years, these independent assessments confirm DOE environmental monitoring results that no concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. Together with improved management practices and remediation efforts planned or under way, it is likely that water quality in the Snake River Plain aquifer below INEL will continue to improve. Areas with plumes (areas in the aquifer with contaminant concentrations above EPA MCLs or DOE DCGs) will continue to recede.

## II COMMENT

Commentors discuss cleanup of the aquifer at the Idaho National Engineering Laboratory. Commentors state that cleanup of contaminated groundwater is not addressed in the EIS. The rationale is presented for eliminating this alternative from further consideration, will result from failure to conduct complete cleanup. In addition, a commentor states nothing about radioactive contamination of the Snake River Plain aquifer.

## RESPONSE

Volume 2, section 3.1.2 of the EIS describes the alternatives for SNF management and environmental restoration at INEL within the 10 years covered by the EIS. All alternatives (including the No Action alternative) include the completion of all remedial investigations/feasibility studies under the INEL FFA/CO. The draft ROD for the Waste Area Group 10 Comprehensive/Snake River Plain Aquifer Remedial Investigation/Feasibility Study, scheduled for May 2001, will make the level of cleanup for the Snake River Plain aquifer.

Volume 2, Appendix C describes subsurface remediation projects at INEL. The evaluation of environmental impacts from environmental restoration (or cleanup) activities and specific decisions related to cleanup at INEL generally are addressed under an environmental impact statement. On December 9, 1991, the FFA/CO establishes a comprehensive process integrating the remediation requirements, the corrective action requirements of the Resource Conservation and Recovery Act (RCRA) and Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all parties and represent a joint determination that protectiveness will be achieved through the selected remedy.

DOE is committed to implementing RODs that result from this process. The EIS does not evaluate alternatives for specific remedial projects because these are inherently project-specific. It is DOE policy to use the CERCLA process to consider the environmental impacts of cleanup actions.

## II COMMENT

Commentors state that measurable effects on the Snake River Plain aquifer have occurred from Idaho National Engineering Laboratory activities and these effects should be discussed in excess of any water quality standard. Additionally, one commentor notes that water quality should be compared with existing, rather than proposed, standards.

## RESPONSE

Volume 1, Appendix B and Volume 2 of the EIS discuss natural water chemistry, past and present contamination levels in groundwater on the INEL site, at the site boundary. Contamination levels are presented even when they are below existing

standards. Because contamination levels are shown to be declining, and concentrations have been above levels that would prohibit any water uses, the subject was given appropriate Volume 1, Appendix B, DOE compares the water quality with both the current and the standards.

## II COMMENT

The commentor states that an explanation of the reasons that increasing subsurface attenuation and migration of localized contaminants is needed.

### RESPONSE

The commentor is correct, and the text has been changed to address the comment. The subsurface attenuation has been deleted from the text of Volume 2, section 4.8.

## II COMMENT

Commentors state they are concerned that geologic conditions and past practices at Engineering Laboratory could contaminate the Snake River Plain aquifer.

### RESPONSE

An accident scenario resulting in maximum groundwater contamination at INEL was analyzed and results are presented in Volume 2, section 5.14 and Appendix F. The analysis was performed to evaluate the effects of such an accident on the Snake River Plain aquifer. The hypothetical instant failure of a high-level waste tank due to an earthquake with a probability of once every 50,000 years. For comparison, DOE and commercial reactors are designed for seismic events that might occur once every 5,000 to 10,000 years.

The groundwater analysis assumed total failure of the containment and no mitigating flow from the waste tank into the soil immediately following the failure. This hypothesis represents the situation with the most potential impact on the aquifer. Maximum radionuclide concentrations would be predicted to reach the INEL boundary 300 years after the hypothetical failure, with concentrations less than EPA MCLs or DOE DCGs.

DOE is committed to operating INEL in compliance with all applicable Federal, state, and local regulations and standards pertaining to protecting surface and groundwater resources. That previous waste discharges to unlined ponds and deep wells have resulted in the migration of contaminants to the subsurface at INEL; however, because of improved waste management practices, discharges have been reduced or eliminated and regional groundwater quality continues to improve. Volume 2, section 5.8.6, the water resource impacts associated with the alternative. The conclusions are that implementation of any of the alternatives would result in no degradation of water leaving INEL.

The protection of water resources is verified by the results of groundwater monitoring by independent agencies such as the USGS and State of Idaho INEL Oversight Program. These assessments confirm DOE environmental monitoring results, which indicate that no concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary and that the concentrations of contaminants that would cause impacts exceeding those impacts associated with accidents analyzed in Volume 2, section 5.14. With improved management practices and ongoing efforts planned or under way, it is likely that water quality in the Snake River Plain will continue to improve.

## II COMMENT

The commentor asks what value defined the plume boundary in Volume 1, Appendix B, section 5.14.

### RESPONSE

The plume boundary is defined by concentrations greater than or equal to 0.5 picocuries per liter. The discussion in this section has been changed to incorporate this information.

## II COMMENT

The commentor states that the EIS does not address perched water associated with in

Idaho National Engineering Laboratory.

RESPONSE

The EIS in Volume 2, section 4.8, states that the occurrence of perched water bodies related to the presence of disposal ponds and other man-made surface-water features perched water bodies and are the ones of most concern. However, the EIS was modified to add zone disposal wells to the discussion.

## II COMMENT

The commentor suggests that the EIS incorrectly states that only tritium and nitrate Environmental Protection Agency drinking water standards at the Hanford Site. There are other contaminants that exceed EPA numeric standards or risk-based thresholds used when establishing drinking water standards.

RESPONSE

The commentor is correct. The discussion in the document has been modified to address the comment.

## II COMMENT

The commentor suggests evidence of long subsurface flow paths beneath the Oak Ridge Reservation found by reviewing data from Martin Marietta Energy System's Offsite Well Monitoring Program. The commentor has reported tritium levels in excess of background in wells south of the Oak Ridge Reservation.

Adequate information is provided in Volume 1, Appendix F, Part Three, section 4.8, primarily from published hydrologic literature on the ORR, including Status Report: Framework for the Oak Ridge Reservation, and other recent site environmental reports. The report states that no evidence of contaminant migration along deep, long subsurface flow paths. Interpretation of ORR off-site groundwater monitoring results is beyond the scope of this EIS. The commentor also suggests that elevated concentrations of tritium would not necessarily indicate subsurface transport, but might be due to atmospheric or surface water transport of tritium from past ORR operations. Additional information on the off-site monitoring program has been added to the groundwater discussion in Volume 1, Appendix F, Part Three, section 4.8.2. However, the schedule of environmental monitoring at ORR and the amount of data produced by the program are beyond the scope of this EIS. See also the response to comment 05.08.01 (003).

## II COMMENT

The commentor notes that the EIS states the existence of one instance of a groundwater plume crossing the Oak Ridge Reservation boundary and then cites two. The commentor also references the paragraph.

RESPONSE

Discussion of the solvent plume east of the Y-12 Plant is included in Volume 1, Appendix F, section 4.8.2 as additional supporting evidence of the one strongly suspected instance of groundwater crossing the ORR boundary. This reference is not intended as a second instance of groundwater crossing the ORR boundary. The discussion in the document has been modified to clarify the geology and water resources for the ORR are discussed in the EIS in Volume 1, Appendix F, sections 4.6, 4.8, and 5.8.

## II COMMENT

Comments were received concerning DOE making a decision on the proposed alternative information on the effect of aquifer heterogeneities on modeling to assess the extent of contamination in the Snake River Plain aquifer is not complete.

RESPONSE

The heterogeneities referred to in the comment are important locally, on the scale of the Snake River Plain (to 330 feet) with respect to calculating the distribution of contaminants from a point source of contamination. Local heterogeneities in contaminant distribution are averaged out in the regional-scale modeling.

1,000 meters (330 to 3,300 feet) and regional, 100 to 1,000 meters (330 to 3,300 feet) point source. Intermediate and regional scale parameters were used to calibrate the transport models. The model parameter values chosen were calibrated with contamination distribution time and space and data from INEL. This data is equivalent to long-term serves as the best empirical data for intermediate and regional parameter estimation. INEL water resources and potential impacts resulting from the alternatives considered are described in Volume 2, sections 4.8 and 5.8 and Appendix F. In accordance with the at 40 CFR 1502.22, the EIS summarizes all known existing credible scientific evidence understanding the existing environment, identifies reasonably foreseeable impacts, consequences. Assumptions and limitations in the groundwater analysis are identified in Appendix F. As stated in the analyses, DOE used conservative assumptions to account in modeling the effects of proposed actions on groundwater quality. Results indicate contaminants above EPA MCLs at the INEL site boundary as a result of operations and proposed alternatives.

## II COMMENT

The commentor states that groundwater contamination should be stated in absolute terms (year) and concentration differences from background for activities at Idaho National Laboratory, and that perched water quality data should be included in the EIS.

### RESPONSE

The effects of INEL operations on the Snake River Plain aquifer within the INEL boundary in terms of concentration, picocuries per liter for radionuclides, and milligrams per liter for contaminants. Absolute values of contaminant mass (metric tons per year, for example) are compared with regulatory guidelines, such as the Safe Drinking Water Act, which sets standards in terms of concentration. Because the concentrations of contaminants released by operations detected in the Snake River Plain aquifer outside the INEL boundary are DOE DCGs, regional groundwater quality is compared with background levels for those that occur naturally and detection limits for those that do not.

In accordance with the provisions of NEPA and CEQ implementing regulations at 40 CFR 1502.22, the EIS summarizes existing credible scientific evidence relevant to understanding the effects of the proposed actions, identifies reasonably foreseeable impacts, and evaluates potential consequences.

The net effects of INEL operations on groundwater resources are reflected in Snake River Plain aquifer monitoring results. Snake River Plain aquifer monitoring well data from wells in the INEL and other areas where contaminated perched aquifers may exist was included in the analyses in Table 4.8-1. The data indicate that no significant impacts at the INEL boundary or other contaminated perched aquifer releases to the Snake River Plain aquifer were not independently discussed in this EIS because Snake River Plain aquifer water quality near INEL discharges are adequately evaluated in Snake River Plain aquifer monitoring by independent agencies. Evaluating additional perched water information would not be evaluating reasonably foreseeable adverse impacts. This conclusion is further supported by modeling conducted for this EIS, which included analyses for the most likely initial release of contaminated water in perched water zones (percolation ponds and injection wells) on the Snake River Plain aquifer. Furthermore, the CERCLA ROD for the perched aquifer at the Test Reactor Area indicates that no remedial action will be required because the perched water contaminants will not pose unacceptable risks or consequences to the Snake River Plain aquifer. Characterization of contaminated perched water is proceeding under CERCLA. The regional effects of contamination on the Snake River Plain aquifer are bounded by the high-level waste tank failure in the Accident Analysis section. This analysis indicates that there will be no significant impacts at the INEL boundary from the failure of containment of a high-level waste tank.

The curie content, volume, and rate of release of the source term used in this analysis are based on parameters that could be reasonably used to characterize contaminated perched water at INEL. Independent groundwater monitoring results, groundwater modeling results, and discharge control and monitoring suggest that contaminants in the Snake River Plain aquifer decrease with time. Snake River Plain aquifer monitoring results are discussed in section 4.8 and shown in Table 4.8-1. Additional detail on subsurface water monitoring is found in Volume 2, Appendix F-2.

No discernible water quality impacts are expected, since under normal operating conditions there are no discharges of contaminants to the soil or directly to the aquifer above EPA MCLs. The hypothetical release due to an accident is discussed in Volume 2, Appendix F-5. Release amounts and modeled impacts in absolute terms and bounds any impacts from normal releases. Additional detail for the INEL is in Volume 2, section 5.8.

## II COMMENT

The commentor suggests that certain perched aquifer groundwater monitoring data be and that groundwater quality comparisons with proposed maximum concentration levels

RESPONSE

The data on water quality are provided in Volume 2, section 4.8. Data presented in with EPA MCLs, although MCLs are drinking water standards, not groundwater standard requirement to report contaminants in the Snake River Plain aquifer relative to MCL although this is usually done. The EIS used proposed MCLs because, for comparison best available tool for individual radionuclides not having current MCLs. Other MC are either adjusted gross alpha, or a calculated 4 millirem-per-year dose, with the strontium-90, and radium-226/228, which have specific MCLs. Volume 2, section 4.8 clarify that while the proposed MCLs may change, they are used for groundwater qual purposes.

The net effects of INEL operations on groundwater resources are reflected in ground results presented in the EIS. Monitoring well data were included in the analysis t contaminant releases to the Snake River Plain aquifer. Independent groundwater mon suggest that contaminants in the Snake River Plain aquifer are likely to decrease w are discussed in Volume 1, Appendix B, section 4.8 and are shown in Table 4.8-1.

A description of water resources and potential environmental consequences to water including the Snake River Plain aquifer, are discussed in Volumes 1 and 2, sections analysis performed for the EIS integrated available data and technical information to evaluate contaminant transport and predict future trends in aquifer water qualit using conservative assumptions was completed through 2035 to add assurance to the c in the document. Section 5.8 concludes that overall aquifer water quality would ac this period. A discussion of the methodology and assumptions used for the computer Volume 2, Appendix F .

Key contaminants were selected by comparing the contaminant data with the current 4 proposed EPA 1991 MCLs and contamination guidelines found in DOE Order 5400.5, Radi Protection of the Public and the Environment, derived concentration guides, radionu Contaminants with concentrations 50 percent of either of the regulatory limits were contaminants. More detailed data on the results of groundwater monitoring at INEL reading rooms and the INEL Technical Library.

The data indicate that no significant impacts at the INEL boundary have resulted fr releases to the Snake River Plain aquifer. Current independent groundwater monitor contaminants in the Snake River Plain aquifer are generally decreasing with time. cited by the commentor, which are reported to be thousands of times above the MCLs, found in any reference such as gross alpha at Test Area North, or apply only to per Reactor Area. The EIS did not attempt to assess perched water, but rather concentr River Plain aquifer. The CERCLA ROD for Test Reactor Area indicates that no remedi required, because the perched water contaminants will not result in unacceptable ri the aquifer.

Other perched water is not independently evaluated, because Snake River Plain aquif impacts from INEL discharges are adequately evaluated in Snake River Plain aquifer by DOE and independent agencies. Evaluation of additional perched water informatio relevant to evaluating reasonably foreseeable adverse impacts. This conclusion is results of modeling conducted for this EIS that included analyses for the most like contaminated water in perched water zones (percolation ponds and injection wells) o Plain aquifer .

## II COMMENT

The commentor states that the discussion in Volume 1, Appendix B, section 4.8 on ex contaminant levels in groundwater at Test Area North is misleading because the EIS contaminants first exceeded standards at a time when the commentor says they should

RESPONSE

The discussion in Volume 1, Appendix B, section 4.8 has been changed for clarificat on showing recent trends in groundwater quality at INEL. Any long-term accumulatio from these trends. Contaminant concentration data were reviewed for the period 198

modeling and sampling data have indicated that Snake River Plain aquifer contaminat INEL is decreasing with time.

## II COMMENT

Comments were received asking if any radioactively contaminated water has been found National Engineering Laboratory boundaries.

### RESPONSE

Extremely low concentrations of iodine-129 and tritium have migrated outside the IN In 1992, iodine-129 concentrations were measured in two wells south of the INEL sit EPA MCLs, as follows: (a)  $1.0 \times 10^{-5}$  picocuries per liter in Well No. 11, located kilometers (4 miles) beyond the boundary, and (b)  $3.0 \times 10^{-5}$  picocuries per liter i kilometers (8 miles) beyond the boundary (Mann, L.J., U.S. Geological Survey, perso with A.L. Lundahl, Science Applications International Corporation). Tritium concen observed much below MCLs just south of the INEL site boundary in 1985. By 1988, th had receded to within the INEL site boundary, and its size has continued to decreas Conditions and Distribution of Selected Chemical Constituents in Water, Snake River Idaho National Engineering Laboratory ). Cobalt-60, strontium-90, cesium-139, plut plutonium-240/241, and americium-241 have not been detected outside the INEL site b

## II COMMENT

The commentor notes that the geology of the Oak Ridge Reservation would result in s a leak were to occur.

### RESPONSE

A conservative analysis of the potential effects of a leak from an SNF storage faci Volume 1, Appendix F, section 5.8.2. The analysis found that exposures would be sm There is very little potential for contamination of the Knox aquifer from the opera facilities. The proposed SNF facilities are designed to have no liquid release of chemical or radiological characteristics through the use of modern technologies, in containment, leak detection, and water-balance monitoring equipment.

## II COMMENT

The commentor states concern that vadose zone contaminants and other buried waste c Idaho National Engineering Laboratory Radioactive Waste Management Complex were not the EIS groundwater model and may constitute a significant source of future contami River Plain aquifer.

### RESPONSE

Vadose zone contaminants at the INEL RWMC were not included in the groundwater mode zone contaminants and other buried waste constituents at the INEL RWMC were include FFA/CO. Characterization of these constituents is in progress as part of ongoing o investigations.

The net effects of INEL operations on groundwater resources are reflected in ground results. Snake River Plain aquifer monitoring well data from wells in the vicinity included in the analysis that resulted in Table 4.8-1. These data indicate that, t impacts to the Snake River Plain aquifer at the INEL boundary have resulted from RW releases to the Snake River Plain aquifer. Independent groundwater monitoring resu contaminants in the Snake River Plain aquifer are likely to decrease with time. Th in Volume 1, Appendix B, section 4.8 and shown in Table 4.8-1.

Recently completed flood and erosion control construction at the RWMC will reduce t through the unsaturated zone by minimizing surface flooding at the RWMC. This redu effectively increases natural contaminant attenuation processes that occur in the s impacts on aquifer water quality.

It is likely that the effects of RWMC contaminants on the Snake River Plain aquifer hypothetical accident scenario referenced in the EIS in Volume 1, Appendix B, secti hypothetical accident, representing a reasonably foreseeable accident, includes gro major contaminant release to the subsurface. The analysis indicates that the hypot



cause small impacts to the aquifer, with no contaminants above MCLs at the INEL bou

## II COMMENT

The commentor requests additional information on impacts from groundwater contamina  
RESPONSE

The purpose of this EIS is to evaluate the potential environmental impacts from pro this reason, assumptions were made to ensure that estimated doses are conservatively upper bound of potential impacts. The EIS is not intended to substitute for the as regulations. Any facilities constructed or operated under the chosen alternative w applicable regulatory requirements. In the example cited by the commentor, further chromium concentrations in groundwater at INEL is in Volume 1, Appendix B and in th sections of Volume 2.

Volume 2, section 5.12 discusses the potential health effects for on-site workers a analyses show that impacts would be small. The major impacts have been from past p impacts are projected to decrease because of changes in facility procedures. Subsu contaminant distribution are discussed in Volume 2, Appendix F-2.

## II COMMENT

The commentor states the Brookhaven National Laboratory is in the Long Island Nassa System, and the West Valley Demonstration Project is in the Cattaraugus Creek Aquif commentor also states that these have been designated as sole-source aquifers pursu Drinking Water Act and asks that the sensitivity and importance of these sole-sourc considered in the selection of the interim alternative. Specifically, that Nationa documentation should include a detailed assessment of the potential groundwater imp  
RESPONSE

Volume 1, Appendix E, sections 3.1.1 and 3.3.1 have been revised to acknowledge sol designations for aquifers underlying these sites. More detailed aquifer characteri will be incorporated by reference. Detailed sole-source aquifer characterization d because this is a programmatic EIS. Potential impacts from alternatives considered quality are expected to be small. Subsequent actions that may result from this EIS project-specific NEPA reviews and compliance, but impacts from previous activities scope of this EIS.

## II COMMENT

The commentor states that the discussions of groundwater occurrence, movement, use, are not consistent between all sites. Without consistent information, there is lit The commentor also states that consistent data probably does exist through investig CERCLA and RCRA, state and Federal permitting, and engineering design studies for b  
RESPONSE

For the analysis of impacts at a programmatic level, the hydrological information and its site-specific appendices is sufficient for purposes of the EIS. Additional or project level will provide more specific information as needed. While it appear inconsistency among the various sites on hydrologic information summarized in Volum is largely a reflection of the differences in water uses, availability, water sourc that are important at each site. The appendices do, with minor exceptions, include information on lithology, water use, contamination, well yields, and consumption. exception, a reference for further detail is provided, and additional information f included in Volume 1 to balance the discussion.

## II COMMENT

The commentor suggests that the elevated nitrate, chloride, and sulfate levels foun vicinity of the Idaho Chemical Processing Plant are not the result of agricultural

might be attributable to the Naval Reactors Facility.

#### RESPONSE

The discussion in Volume 1, Appendix B, section 4.8 has been revised to state that nitrates, chlorides, and sulfates are the result of the disposal well and infiltration at the Idaho Chemical Processing Plant. The related sections of Volume 2 of the EIS have also been revised to show no evidence to substantiate the suggestion that the contaminant levels at the Idaho Plant are caused by the Naval Reactors Facility.

## II COMMENT

The commentor states that in Volume 2, Appendix F-2.2.2 of the EIS, source terms for SNF storage uses Idaho Chemical Processing Plant Building 666 as the generic case. The commentor states that the facility is not generic or typical for the Idaho National Plant. Rather, the Idaho Chemical Processing Plant is atypical because it is the only facility that meets the standards. The commentor also states that because the other storage facilities will be near future and pose the greatest risk of discharge, the EIS must use one of these generic cases.

#### RESPONSE

Volume 2, Appendix F-2.2.2 referenced by the commentor states that Idaho Chemical Plant discharge and a hypothetical discharge from a generic facility were used to generate the bounding postulated leak scenario. The results indicate that releases from any facilities at the Expanded Core Facility are less than the results from the Idaho Chemical Plant. Results indicate that there will be no contaminants above the boundary resulting from a postulated operational leak.

## II COMMENT

The commentor points out that contamination of the Dublin-Midville aquifer (a regional aquifer) underlying the Savannah River Site is more widespread than the text of the EIS. The text notes that evidence of contamination has been found in only one production well. The commentor also notes that there may be an inconsistency in the discussion of contamination of the aquifer.

#### RESPONSE

The text in Volume 1, Appendix C, section 4.8 has been revised to indicate that contamination of the aquifer (trichloroethylene and tetrachloroethylene) have been detected above Primary Drinking Water Wells completed in the Dublin-Midville aquifer system.

Regarding contamination of the Gordon aquifer, there are several plumes of contamination. None has moved offsite and none is available to off-site users of this aquifer. Cleanup efforts are intended to prevent off-site movement of this contaminated groundwater.

## II COMMENT

The commentor suggests DOE sum the pumping rates for all production/potable wells of the Savannah River Site and submit the results to the National Engineering Laboratory to produce an estimate of maximum pumping capacity.

#### RESPONSE

While it is true that the capacities of all pumps could be summed to produce a maximum pumping rate, the likelihood of all pumps operating at one time is very small. Even during an extended power outage, it is unlikely that all pumps would be operating simultaneously. Maximum pumping capacity would not be reached. Maximum pumping capacities are therefore not relevant to assessing potential impacts from pumping.

## II COMMENT

The commentor states that contaminants released to the subsurface from the West Beach location at the Oak Ridge Reservation could reach the Knox aquifer, either directly or indirectly through fractures that could rapidly transmit contaminants to areas underlain by carbonates, or indirectly through macropores to Grassy Creek and entering the aquifer through losing reaches of the creek.

**RESPONSE**

Full resolution of these concerns would require detailed investigation of site conditions and pathways. If ORR were chosen as a site for new SNF management facilities, site-specific hydrologic studies would be performed. Available information provides a sufficient assessment that no significant environmental consequences related to water resource from the operation of SNF management facilities.

As discussed in the EIS, proposed SNF management facilities are designed to have no waste water with hazardous chemical or radiological characteristics. Facilities would be designed to prevent and minimize the impacts of leaks, including secondary containment, leak undetected subsurface release are, however, analyzed in the EIS (see Volume 1, Appendix F, section 5.8.2). The analysis indicates that most radiological constituents would be below standards at the point of release, and that additional substantial reductions in the concentrations of constituents would occur as a result of dilution with groundwater and the receiving water body. The worst-case undetected release is estimated to constitute less than 0.0003 percent of the average discharge of Grassy Creek at its confluence with the Clinch River. Any contamination in the Knox aquifer via the losing reaches of Grassy Creek would undergo a similar degree of dilution; there would be little, if any, impact on water quality in the aquifer.

It is not likely that macropores would provide a direct connection to the Knox aquifer from the proposed SNF management facility, because available information indicates that the Conasauga Group strata that are not normally characterized by karst development or are not well-connected to the Knox aquifer. (The only Conasauga Group information included in the EIS is the uppermost formation in the group, the Maynardville Limestone). If a connection did exist and allowed an undetected release to reach the aquifer, dilution in the aquifer would significantly reduce the potential for impacts on water quality. See Appendix F, Part Three, sections 4.6 and 4.8 for further discussion of site geology.

**II COMMENT**

The commentor states that past waste management activities have resulted in contamination of Clinch River and lakes near the Oak Ridge Reservation.

**RESPONSE**

Natural resources and impacts associated with the SNF management alternatives are discussed in Volume 1, Appendix F, Part Three. Current waste management problems, releases, and environmental restoration activities for cleanup of contaminated sites are within the scope of this EIS. Contact public affairs personnel at ORR for information on upcoming opportunities for public comment.

**II COMMENT**

The commentor states that the EIS did not mention storm water runoff and storm water storage at National Engineering Laboratory wells as a source of waste water.

**RESPONSE**

The EIS does address the use of storm water injection wells used at INEL. This discussion is in Volume 1, Appendix B, section 4.8; Volume 2, section 4.8; and Volume 2, Appendix C, section 5.16.4. Discussion of this subject also can be found in the Water Resources Supporting Document, Environmental Restoration and Waste Management EIS, a reference used for the EIS, a list of rooms and information locations listed in the EIS.

**II COMMENT**

The commentor discusses the production of toxic materials upstream from the town of Savannah on the South Carolina coast, particularly impacts to watersheds, such as the Savannah River local and regional aquifers.

**RESPONSE**

Potential impacts to surface water and groundwater of the various SNF management alternatives for SRS are evaluated in Volume 1, Appendix C, section 5.8. Cumulative impacts to water resources are presented in Volume 1, Appendix C, section 5.16.4. DOE expects the impact on water resources from implementation of any of the alternatives under consideration to be small. Each of

contribute to the very small releases of radionuclides that normal SRS operations discharge into water through Federally permitted waste-water outfalls. In the unlikely event of a release of contaminants to either the ground or directly into the subsurface, DOE does not expect impacts to surface water or drinking water aquifers under SRS. Cleanup of groundwater resources from past waste management practices at SRS are not part of this EIS. However, environmental restoration activities at DOE sites are performed under agreements negotiated with the appropriate regulatory agencies and in compliance with guidance and environmental regulations.

## II COMMENT

The commentor states that Volume 1, Appendix B of the EIS erroneously assumes that data from the Idaho National Engineering Laboratory over the last 8 years is indicative of the future.

### RESPONSE

Volume 1, Appendix B, section 4.8.1 has been changed to address this concern. The data from the very dry years at INEL, which may not be indicative of the future. The new discussion of dry years, surface water in the Big Lost River does not usually reach the western boundary because INEL is in a closed drainage basin, surface water never flows offsite.

## II COMMENT

The commentor expresses concern that, following the December 1991 tritium leak into the Savannah River, individuals in Savannah received a high dose of radiation from drinking the water.

### RESPONSE

The maximum dose to the public resulted from individuals who drink Savannah River water from public drinking water supplies that use Savannah River water are at Port Wentworth, Beaufort-Jasper, South Carolina, both near Savannah, Georgia, the residence of the maximum dose to an individual consuming 2 liters of water per day from the Port Wentworth system was 0.030 millirem. The maximum dose from the Beaufort-Jasper system was 0.0096 millirem (are 0.8 percent and 0.2 percent, respectively, of the EPA drinking water standard of 1 millirem per year). The maximum dose from this release to a hypothetical individual living on the 301 bridge just downstream of SRS was 0.035 millirem. There are no known consumers of Savannah River water at that location. The City of Savannah does not use the Savannah River for drinking water.

The low dose received by individuals consuming water from the two public systems does not result in adverse health effects. The values are very much less than the variation that normally results from day to day and from place to place within any city. Radiation from both normal and off-normal occurrences from storage of SNF at SRS are projected to be less than that from the December 1991 tritium release.

## II COMMENT

The commentor notes that Volume 1, Appendix B of the Draft EIS does not address local basin flooding at the Idaho National Engineering Laboratory.

### RESPONSE

Local basin flooding at INEL is discussed in Volume 2, section 4.8.1 and Appendix F. Appendix B has been changed to discuss local basin flooding at INEL.

The DOE Idaho Operations Office recently completed constructing new flood and erosion control at the RWMC, which will reduce the potential of localized flooding at the complex. The INEL accident assessment summarized in Volume 2, section 5.14 considers flooding phenomena as potential initiators of facility accidents. Some potential accident initiators were included in detailed analysis because they were considered reasonably foreseeable, and some initiators were not included because of their large potential consequences. The consequences of the high-level waste tanks were selected for detailed analysis over a flooding scenario because the radioactive inventory in the high-level waste tanks could have a larger potential for release than a flood. The impact evaluations show that the risk to workers and the environment would be small for all alternatives.

## II COMMENT

The commentor notes that past waste management activities have resulted in contamination of the Snake and Columbia Rivers.

### RESPONSE

No significant impacts to the Snake River and the Columbia River have resulted from surface water drains internally into natural sinks at or near INEL. No surface water drains from INEL into the Snake River. The protection of water resources is verified by the monitoring conducted by independent agencies such as the USGS and State of Idaho IN Program. These independent assessments confirm DOE environmental monitoring results that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL. With improved management practices and remediation efforts planned or under way, it is expected that water quality in the Snake River Plain aquifer under the INEL will continue to improve. Future impacts to the Snake and Columbia Rivers resulting from INEL past, present, and future are likely to occur.

As discussed in Volume 1, Appendix A, section 4.8, tritium, iodine-129, and uranium have higher concentrations downstream of the Hanford Site than upstream, but well below guidelines established by DOE and EPA drinking water standards. Cobalt-60 and iodine-131 are consistently found in measurable quantities during 1989 in samples of Columbia River water at Priest Rapids Dam, the 300-Area water intake, or the Richland city pump house. In 1989, the strontium-90 concentrations were essentially the same at Priest Rapids Dam (upstream) and the Richland pump house.

## II COMMENT

Commentors express concern about existing contamination of the Clinch River and main stem East Fork Poplar Creek.

### RESPONSE

Existing contamination of the local surface-water bodies is acknowledged in the EIS and other surface waters have been affected by activities at ORR as well as by others from ORR. Water quality in the Clinch River is routinely monitored by the Tennessee Department of Environment and Conservation, the USGS, and the Tennessee Department of Environment and Conservation.

The Oak Ridge Reservation Environmental Report for 1992 summarizes 1992 Clinch River results at the Gallaher and Kingston water treatment plants. While radionuclides are significantly greater than zero in the treated water for a number of radioactive elements, concentrations are not greater than the EPA primary drinking water standards for any element. The environment affected by water resources at ORR is discussed in Volume 1, Part Three, section 4.8.

The addition of Clinch River water to East Fork Poplar Creek is required by the Tennessee Department of Environment and Conservation in order to guarantee a minimum base flow as the limit of plant discharge permit are based on flow management in the creek. The purpose of the Project is to maintain a consistent flow in the creek of 7 million gallons per day for intended uses.

It is DOE policy to consider the protection of water resources in the design, construction, and operation of its facilities, and to comply with Federal, state, and local regulations and standards for water resources. The proposed SNF management facilities are designed to have no contact with water resources with hazardous chemical technologies, which include secondary containment, detection and water-balance monitoring equipment. Therefore, no significant environmental impacts related to water resources are anticipated from the operation of SNF management facilities. Water resources at ORR are discussed in Volume 1, Appendix F, Part Three, section 5.

## II COMMENT

The commentor notes that the EIS should include a discussion of the impacts to the Sound.

### RESPONSE

The environmental consequences associated with storage of Naval SNF at Puget Sound

discussed in Volume 1, Appendix D, section 5.1.1. The environmental consequences analyzed are based on estimates of the amount of SNF that would be stored at the site and current knowledge of the design features associated with SNF storage systems. Consequences for foreign fuel shipments are bounded by the analyses included in this report for shipment of Hanford N-Reactor fuel for overseas processing are discussed as an example for evaluation of reasonably foreseeable impacts. The review of the impacts associated with the alternatives shows that impacts on the environment from these are small. Foreign research reactor (FRR) fuel shipments and their impacts to the Port covered in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Conceptual Research Reactor Spent Nuclear Fuel (Draft).

## II COMMENT

The commentor states that DOE would be required to apply for water rights to withdraw water for new spent nuclear fuel storage and management activities at the Hanford Site.  
RESPONSE

As discussed in Volume 1, Appendix A, section 4.8.2, DOE withdraws water from the Columbia River under DOE's Federally reserved water rights. From a programmatic impact standpoint, the proposed alternative would use approximately 1 percent of the baseline of total Hanford usage (100,000 K). In general, new SNF facilities, if any, would use less water than existing facilities. The analysis for any new SNF storage or treatment facilities would address water usage.

## II COMMENT

The commentor asserts that the EIS assumes no surface water flow onsite and that this affects the evaluation of Snake River Plain aquifer recharge at Idaho National Engineering Laboratory.  
RESPONSE

The EIS does not make this assumption. Volume 1, Appendix B, section 4.8.2 discusses hydrogeology, which includes summary text regarding recharge of the Snake River Plain. Infiltration along stretches of the Big Lost River, Little Lost River, and Birch Creek is discussed in greater detail in Volume 2, section 4.8.1 and Volume 2, Appendix F-2.2 reference (Streamflow Losses and Groundwater Level Changes Along the Big Lost River National Engineering Laboratory) referred to by the commentor.

## II COMMENT

The commentor states that water tables at the Idaho National Engineering Laboratory and Nevada Test Site are contaminated with radioactive waste and that the Columbia River is contaminated by Idaho National Engineering Laboratory and Hanford Site waste.

RESPONSE

DOE evaluated the impacts to groundwater quality of proposed actions, where appropriate. Past practices have been analyzed to determine cumulative impacts. These analyses are in Volume 2, Appendix K and Volume 1, Chapter 5, Appendices A, B, and F.

## II COMMENT

The commentor suggests clarification of the discussion of the depth of excavation at the Nevada Test Site.

RESPONSE

As indicated in the preliminary design (Description of a Generic Spent Nuclear Fuel Facility in the Programmatic Environmental Impact Statement), the cask loading and unloading pool receiving and canning building are the deepest structures in the facility and are 15 meters deep. Allowing another 2 meters (6 feet) for secondary containment, leak detection system needs results in an estimated excavation depth of 15 meters (50 feet). As indicated in Volume 2, Part Two, section 4.8.2, the depth to the water table in Area 5 is 244 meters (800 feet). Perched water tables have been reported at 21 meters (70 feet) in some locations of

programmatic nature of the EIS and the preliminary status of the facility design, to demonstrate that the excavation is expected to occur within the vadose zone at NTS.

## II COMMENT

The commentor has concerns about seismic safety and the contamination of water resources at the Site.

### RESPONSE

Volume 1, Appendix A, sections 4.8 and 5.8 discuss water resources at the Hanford Site, including seismic hazards, is discussed in Volume 1, Appendix A, section 4.6. Volume 1, section 5.2.6, the proposed alternatives for SNF management would have small water resources. Impacts of management SNF at K-basin at the Hanford Site will be discussed in the EIS.

## II COMMENT

The commentor suggests that tougher water quality standards from the Clean Water Act be included in the EIS, rather than limits based on the Safe Drinking Water Act.

### RESPONSE

The Clean Water Act (CWA), 33 USC Section 1251 et seq., protects surface waters by regulating the discharge of pollutants to surface waters of the United States be controlled or regulated by EPA sets nationwide, industry-by-industry effluent standards. The CWA standards are established under the SDWA, 42 USC Section 300(f) et seq., ensures that water out of the tap is fit to be drunk. SDWA, EPA is responsible for setting national standards that must be met by the water at the tap. The drinking water standards under the SDWA are specifically set to protect against adverse health effects to persons from the consumption of drinking water. Drinking water quality has become the key Federal reference point for prevention and cleanup decisions under the CERCLA.

For a number of reasons, it is difficult to conduct a simple comparison of SDWA standards. First, for any one contaminant, CWA standards vary greatly from state to state and by industry. The quality of the "receiving waters" for any given facility also affects the standards imposed under a CWA permit. Whether the facility analyzed in the EIS is a new facility or an existing facility also impacts the CWA permit standards. For some constituents, from some states, with a new facility, the CWA permit standards might be more stringent than under the SDWA. But it is definitely not a correct generalization that CWA standards are more stringent than SDWA standards, and in fact in many instances, the opposite is true. Because the national standards set under the SDWA are more uniformly applicable to all facilities analyzed in this EIS, and more important, because the SDWA standards are consistent with human-health based, rather than technology based, they were used in this EIS as a comparison point.

## II COMMENT

The commentor states that DOE's activities at Idaho National Engineering Laboratory could irretrievably impact water resources.

### RESPONSE

Irreversible and irretrievable effects on resources are discussed in Volume 2, section 5.8.6. INEL have resulted in chemical and radioactive contaminant plumes in the Snake River Plain discussed in Volume 2, section 5.8.6. Water use and liquid effluent discharges at INEL have had a minimal effect on Snake River Plain aquifer water quality and quantity.

Water resources and impacts resulting from all waste management and environmental remediation (SNF) alternatives considered for INEL are described in Volume 2, sections 4.8 and 5.8.6. For all alternatives considered, the possible future sources of contamination would be small compared to previous practices. This would be a result of waste management practices, including improved monitoring, as well as natural contaminant attenuation and radioactive decay for high-level waste. Computer groundwater modeling using conservative parameters (discussed in Volume 2, section 5.8.6) indicates that existing contaminant plumes within the INEL boundary would continue to exist through 2035. The modeling further indicates that overall aquifer groundwater quality would remain acceptable.

improve in that period and probably continue to improve after 2035.

INEL's commitment to DOE policy regarding the protection of water resources is verified by groundwater monitoring conducted by independent agencies such as the USGS and State Oversight Program. These independent assessments confirm DOE environmental monitoring results that indicate that no contaminants in concentrations above EPA MCLs or DOE the INEL boundary. With improved management practices and remediation efforts planned it is likely that overall water quality in the Snake River Plain aquifer below the INEL will improve.

Recent improvement in groundwater quality at INEL is documented in report (e.g., Hydrology and Distribution of Selected Chemical Constituents in Water of the U.S. Geological Survey Review of the Production, Use, and Disposal of Groundwater and the Generation, Storage, and Processing of Radioactive Liquid Waste at the Idaho Chemical Processing Plant of the INEL Program) as referenced in the EIS. Although small irretrievable impacts to groundwater are possible, recent sampling results, computer modeling using mildly conservative assumptions, and liquid effluent discharge management ensure that impacts from current and future activities and the effects of past practices have a decreasing effect on aquifer water quality.

## II COMMENT

The commentor states that a full mass balance of water pumped from the aquifer and volume analysis must be conducted for the entire history of the Idaho National Engineering Experiment Station.

The net effects of INEL operations on groundwater resources are reflected in groundwater monitoring results. Monitoring-well data were included in the analysis that resulted in Volume 4.8, Table 4.8-1. This data indicates that to date no significant impacts at the INEL have resulted from INEL contaminant releases to the Snake River Plain aquifer. Independent monitoring results and groundwater modeling conducted for this EIS indicate that concentrations in the Snake River Plain aquifer are likely to decrease with time. These results are discussed in Appendix B, section 4.8 and shown in Table 4.8-1. Additional evaluation would not be necessary for evaluating reasonably foreseeable adverse impacts. Water usage is described in Volume 1. A description of water resources and potential environmental consequences to water resources, including the Snake River Plain aquifer, are discussed in Volumes 1 and 2, sections 5.1 and 5.2. Analysis performed for the EIS integrated available data and technical information to evaluate contaminant transport and predict future trends in aquifer water quality was completed through 2035 to add assurance to the conclusions reached in the document. Section 5.8 concludes that overall aquifer water quality would actually improve over time. A discussion of the methodology and assumptions used for the computer modeling effort is in Appendix F of the EIS.

In accordance with NEPA regulations at 40 CFR 1502.22, the EIS summarizes all known scientific evidence relevant to understanding the existing environment, identifies potential impacts, and evaluates potential consequences.

A full mass balance and waste discharge volume analysis conducted for the entire history of the INEL will not change the conclusions reached in the EIS.

## II COMMENT

The commentor states that the EIS de-emphasizes impacts on water resources by categorizing water resources as an "Issue Not Discussed in Detail" and ignoring water resources in the analysis. The commentor further states there is an overemphasis on water usage, rather than groundwater contamination, in addressing water resources in Volume 1.

RESPONSE

In response to public comments, section 5.3.2.6 has been added to Volume 1 to address impacts on water resources. Based on the site-specific analysis in appendices to Volume 1, addressing water resources under "Issues Not Discussed in Detail" has been enhanced. The radiological impact to water resources at each candidate site is small.

## II COMMENT



The commentor states that site-specific discussions on water resources and hydrology should be compared, rather than just scattered throughout six appendices.

#### RESPONSE

Volume 1, Chapter 4 summarizes the pertinent characteristics of the affected environmental sites under consideration in the EIS. Detailed water resource and hydrological characteristics of alternative sites under consideration are in Volume 1, Appendices A, B, C, D and F. Although not specifically provided in discussion or tabular form, a side-by-side comparison between the information in the site-specific appendices. Due to the complexity and hydrogeologic characteristics between sites, such comparisons are subjective and of interest to the reviewer, as well as decisionmakers.

## II COMMENT

The commentor states that water resources, and in the context of the comment perhaps resources, would be unavoidably adversely impacted because only limited remediation is possible.

The environmental restoration actions under the alternatives considered in this EIS are provided in the CERCLA. CERCLA procedures provide for ecological risk assessment of injury or potential injury to natural resources resulting from past releases of contaminants. Alternatives include projects for protecting the vadose zone and cleaning groundwater and/or retrieving buried wastes. In keeping with DOE's Native American Policy (Memorandum of Understanding on Cultural Resources at Department of Energy Facilities, U.S. DOE, Washington, February 23, 1990), DOE will consult with the Tribes during the planning and implementation of proposed alternatives. Additionally, DOE has implemented the Working Agreement, Memorandum of Understanding to ensure communication with the Shoshone-Bannock Tribes concerning treatment of archaeological sites as mandated by the National Historic Preservation Act, and the protection of human remains under the Native American Burial and Repatriation Act.

The prediction of unavoidable adverse impacts to groundwater was based on analyses of the extent of known contamination and potential effectiveness of existing and reasonable remediation technologies. Note that the impacts will not be caused in the future but will be from past actions and operations. CERCLA and the National Contingency Plan contain provisions for residual injury to natural resources and natural resource damage assessment. In a letter, the DOE Idaho Operations Office notified the State of Idaho, the Shoshone-Bannock Tribes, and the Department of the Interior of potential injury to trust resources caused by past releases.

## II COMMENT

The commentor states that the spent nuclear fuel portion of the EIS does not discuss restoration at Oak Ridge Reservation, and the adverse impacts for the Y-12 Plant have not been discussed.

Detailed analysis of existing contaminant sources and transport pathways are beyond the scope of the EIS. If ORR is selected for new SNF management facilities, site-specific groundwater studies will be performed.

Geology and water resources for ORR are discussed in Volume 1, Appendix F, Parts 4.8, and 5.8.

## II 5.9 Cumulative Impacts

## II COMMENT

The commentor states the EIS does not adequately discuss the direct, indirect, or cumulative impacts of transporting spent nuclear fuel and other radioactive and hazardous materials.

#### RESPONSE

DOE believes the EIS and reference documents contain an adequate discussion of direct and cumulative impacts of transporting SNF and other radioactive materials. Incident-f

hazardous materials results in essentially no impacts, as discussed in Volume 1, section 5.1. of highway, railway, and barge transportation impacts and potential accident impact section 5.1.

The cumulative impacts analyses are discussed in Volume 1, section 5.3 and Volume 2 Cumulative impacts of radioactive and hazardous materials transportation have been 1, section 5.3.2.

DOE conducted a comprehensive transportation cumulative impacts analysis, evaluating future shipments of radioactive material, which include radioactive waste and SNF. cumulative impacts analysis include past transportation activities, transportation in this EIS, reasonably foreseeable future transportation activities, and general t The analyses described in Volume 1, section 5.3 and Volume 2, section 5.15 show that exposing the public to radiation hazards is low, and the overall impacts under all analyzed in this EIS would be small.

## II COMMENT

The commentor expresses an opinion that DOE hides behind a claim of national security information from the public, and thus prevents an accurate assessment of impacts.

### RESPONSE

In recent years, DOE has released a significant amount of previously classified data release additional information as it is declassified. Most environmental monitoring and significant amounts of information are available to the public, such as the annual published for each site. Some data on DOE activities remains classified until released Energy. Volumes of publicly available data were used in the preparation of this EIS list of references for each volume and the associated appendices. This EIS contains for members of the public to interpret and evaluate impacts.

## II COMMENT

The commentor is of the opinion that the EIS should evaluate the impacts and conditions generations from now.

### RESPONSE

The time periods being considered in this EIS are 40 years for the programmatic management ultimate disposition, and 10 years for environmental management and waste management INEL. The EIS evaluates reasonably foreseeable impacts associated with the proposed alternatives analyzed in the EIS. Volume 1, Chapter 5 and Appendix K, and Volume 2 summarize the environmental impacts of all the alternatives considered in this EIS. the impacts of all alternatives would be small. Because of the speculative nature associated with projecting actions and impacts many years in the future, meaningful horizon is not possible. Whereas this EIS addresses interim actions until ultimate analysis of disposition options such as geologic disposal will entail analysis of potential into the future. Such analysis will likely be part of a future EIS.

## II COMMENT

The commentor states that the EIS does not address the environmental impacts of breeder fuel into Idaho.

### RESPONSE

The environmental consequences of all SNF alternatives, including those that involve SNF to INEL, are extensively discussed in Volume 1, Chapter 5. This discussion is 1, Appendices B and D. Volume 2, Chapters 4 and 5 further discuss environmental impacts relative to waste management and environmental restoration projects.

## II COMMENT

The commentor states that specified matters are not adequately addressed as required

Environmental Policy Act and pursuant to Council on Environmental Quality regulation Act. The matters specified by the commentor are the different types of SNF storage the need for potential SNF processing; cumulative impacts, similar impacts, and res future permanent disposal; a monitoring and safety program that provides independent conditions; and activities and past problems associated with SNF management.

#### RESPONSE

Decisions regarding wet or dry storage and processing will be based on future NEPA Cumulative impacts, including impacts from connected or similar actions are address section 5.3 and Volume 2, section 5.15; residual impacts, assuming this term applies cannot be avoided, are addressed in Volume 1, section 5.4 and Volume 2, section 5.1 monitoring and safety programs that are open to public review. Activities including associated with SNF management are discussed throughout Volume 1 and its appendices issues being considered.

## II COMMENT

The commentor objects to DOE making a decision on the proposed alternatives when in extent of impacts to the Snake River Plain aquifer is not complete.

#### RESPONSE

The commentor refers to Volume 2, section 5.8.1. A sentence specifically refers to analysis for the impacts of a hypothetical leak to the soil from an SNF storage facility. Volume 2, section 5.8.1 states that based on the bounding accident scenario for impact Plain aquifer discussed in Volume 2, section 5.14, the impacts to the Snake River Plain are expected to be small. These hypothetical impacts are assessed with respect to EPA. Subsequent analysis of the hypothetical SNF storage facility leak and documentation groundwater modeling for the EIS have been referenced in and are available with the are consistent with conclusions stated in the EIS regarding the impacts of alternative Water resources at INEL and potential impacts from the alternatives considered in Volume 2, sections 4.8, 5.8, and Appendix F. In accordance with NEPA regulations the EIS summarizes all known existing credible scientific evidence relevant to the environment, identifies reasonably foreseeable impacts, and evaluates potential consequences. Assumptions and limitations in the groundwater analysis are identified in Volume 2, used conservative assumptions to account for the uncertainty in modeling the effect on groundwater quality. Results indicate that under all the alternatives considered contaminants above EPA MCLs at the INEL site boundary as a result of operations and proposed alternatives. This would be a result of waste management practices, including discharge monitoring, as well as natural contaminant attenuation and radioactive releases.

Independent assessments of the Snake River Plain aquifer water quality at INEL confirm environmental monitoring results that no contaminants in concentrations above EPA MCLs exist beyond the INEL boundary. With improved management practices and remediation or under way, it is likely that overall water quality in the Snake River Plain aquifer will continue to improve.

## II COMMENT

The commentor asserts that the conclusions on potential impacts are flawed and that on these conclusions, fails to pick the best solution.

#### RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts are small. While there are differences in the impacts among the alternatives, these differences are not sufficient to distinguish between alternatives.

Volume 1, section 3.1 and Volume 2, section 3.4 describe DOE's preferred alternative for SNF management, and SNF management, environmental restoration, and waste management.

## II COMMENT

Many commentors state that the EIS needs to provide cumulative impact assessments for activities at the Idaho National Engineering Laboratory.

#### RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environment including cumulative impacts, of all the alternatives considered in this EIS. The impacts of all alternatives would be small. Each alternative includes the appropriate Volume 2, including decontamination and decommissioning

Volume 2, Chapter 4 discusses the current environment at INEL, including impacts from waste streams and emissions from INEL facilities, including characterization data and inventories, are referenced in Volume 2, Appendix F.

Volume 2, Appendix C discusses 49 proposed projects and ongoing activities at INEL analyzed under each of the alternatives discussed in Volume 2, section 3.1 and includes foreseeable actions. These actions are subject to the outcome of negotiations with the FFA/CO.

Mitigation measures are discussed in Volume 1, section 5.7 and in Volume 2, section 5.15. See also the response to comment 04.01 (001).

## II COMMENT

The commentor states that while measuring small quantities, DOE loses sight of overall geology, and the national budget.

#### RESPONSE

DOE used the process described in regulations to ensure that the procedural requirements are satisfied. The scope of Volume 1 of this EIS is to evaluate impacts directly related to activities across the United States. The scope of Volume 2 is to evaluate impacts from management, environmental restoration, and waste management activities at INEL. Impacts from the activities associated with the proposed action, plus past, current, and other activities are evaluated in Volume 1, section 5.3 and Volume 2, section 5.15. The evaluation includes an evaluation of the overall impacts to the human and natural environment, geological resources. Costs of the alternatives are summarized in Volume 1, section 5.15.

## II COMMENT

The commentor states that the EIS violates the National Environmental Policy Act because impacts do not include an evaluation of supply and demand; for example, the demand for waste will increase.

#### RESPONSE

Volume 2 considers the potential consequences of a range of levels of waste and SNF. Under the Maximum Treatment, Storage, and Disposal alternative, INEL would respond to increased demand for management of waste and SNF. The assessment found that the impacts of other alternatives would be small. Cumulative impacts are included in the assessment of these impacts in Volume 2, section 5.15.

## II COMMENT

The commentor states that the EIS does not provide historical data on radioactive waste. National Environmental Policy Act requirements must be met in the EIS by providing an evaluation of cumulative impacts for past and proposed activities at the Idaho National Engineering Laboratory.

#### RESPONSE

Waste streams and emissions from INEL facilities, including characterization data and inventories, are included as references in Volume 2, Appendix F. Volume 2, Chapter 4 discusses the current environment at INEL, including impacts from past activities. The effects of the current environment at INEL, as discussed in Volume 2, Chapters 2 and 4, and potential effects of the proposed action, have been evaluated in Chapter 5.

## II COMMENT

The commentor takes the position that all projects included in the Nevada Test Site considered in the cumulative impact analysis for that site.

### RESPONSE

A site's master plan identifies all the projects desired to fulfill the current sit without regard to budgetary constraints, priorities, or current direction. It repr planning process, and remains relatively static. Projects are not well defined in contrast, the site 5-year plan presents more thorough development and definition of master plan that might be initiated or implemented over a 5-year period. In the 5-updated annually, projects are prioritized in light of the current site needs, budg current policy and direction. Because the 5-year plan identifies the mission-crit most likely to be funded and completed, it is a better indicator of planned activit master plan. Due to the nature of the planning and budget cycle, the 5-year plan i that are likely to be implemented in a 5-year period, but provides a longer perspec the 5-year plan is considered to be an appropriate basis for identifying projects f impacts. Additional discussion of the site master plan and relation to the 5-year impacts were added to Volume 1, Appendix F, Part Two.

Due to the nature of the planning and budget cycle, the 5-year plan is not limited to be implemented in a 5-year period, but provides a longer perspective. For these is considered to be an appropriate basis for identifying projects for analysis of c

Appropriate sections of the Nevada Test Site's Master Plan Projects are summarized Appendix F, Part Two.

## II COMMENT

The commentor asks that the EIS address the cumulative impacts from existing waste over the next 40 years at the Idaho National Engineering Laboratory. In addition, the EIS address the cumulative impacts from the waste at the Hanford Site and the p waste from the Trojan Nuclear Power Plant in the Columbia River basin.

### RESPONSE

Volume 1, Chapter 5 Appendix K, and Volume 2, Chapter 5 summarize the environmental the alternatives considered in this EIS. The analyses show the impacts of all alte The EIS addresses the cumulative impacts from current and future waste at INEL in V 5.15.

The EIS addresses the cumulative impacts from waste at the Hanford Site on the Colu Volume 1, Appendix A, section 5.8. The Trojan Nuclear Power Plant has operated with accordance with 10 CFR 20. Operation ceased on November 9, 1992. On January 4, 19 General Electric Company announced that the plant would not restart, and the plant January 27, 1993. The decommissioning plan was submitted to NRC on January 26, 199 spent fuel management for the Trojan plant. This is outside the scope of this EIS.

## II COMMENT

In supporting the preference for the Planning Basis alternative, the commentor stat fully address the cumulative impacts (specifically to public health and safety) of many different proposed sites under the various alternatives, and states that addin duplicating them at several sites may negatively impact safety.

### RESPONSE

This EIS evaluates 10 sites as reasonable siting alternatives for some level of SNF The analysis in the EIS includes environmental considerations, socioeconomic impact the public from operations and reasonably foreseeable accident conditions, site-spe and other environmental factors for a number of options for managing SNF. Cumulati site-specific projects or missions that are planned to occur simultaneously with SN are discussed in Volume 1, Appendices A through F. The EIS concludes that the alte environmentally suitable for management of SNF, and that risks to the public or the

managing SNF at any of the 10 sites under consideration would be small even when ne involved. Discussions on public health and safety can be found in Volume 1, section site-specific Appendices A through F, and in Volume 2, section 5.12.

## II COMMENT

The commentor states that socioeconomic impacts are not fully addressed from a cumu therefore, socioeconomic impacts are underestimated. The commentor suggests that, point be included under "cumulative effects" that there are large socioeconomic imp before the project starts. Further, the commentor suggests that the EIS not assume mitigation measure of payments in lieu of property taxes unless a specific plan is commentor states that DOE does not pay property taxes and rarely makes payments in taxes.

### RESPONSE

The commentor is correct that DOE facilities generally do not pay local or state pr various mechanisms exist for DOE to compensate state or local governments in the fo lieu of taxes or "special burden" payments. Special burden payments help offset in and population caused by DOE facility construction and/or operation (which may put on local services, utilities, and infrastructures). Each situation requires an ind determine whether such payments would be authorized to the appropriate state or loc assessing socioeconomic impacts, the EIS does not presume that payments in lieu of states or local communities, but only discusses the possibility of such payments as adverse impacts.

Volume 1, Appendix F, Parts Two and Three, section 5.16 discuss potential socioecon cumulative perspective. These sections do not explicitly "identify large socioecon occurred before the start of the proposed project." Rather, potential cumulative are discussed in terms of "the impact on the environment that results from the inc action when added to other past, present, and reasonably foreseeable future actions socioeconomic impacts from the SNF management alternatives are compared with baseli demographic forecasts. The effects on these regional economic growth rates from pr management are relatively insignificant. DOE would evaluate the need to implement adverse socioeconomic impacts on a site-specific basis.

Impact avoidance measures discussed in Volume 1, section 5.7.2 of the EIS could be site-specific basis when more detailed socioeconomic analyses are conducted. Altho pay property taxes to local jurisdictions, Federal and civilian employees working a employed by sites, do. Infrastructure projects such as roads and other capital exp are financed by the Federal Government, reducing the fiscal impact on public financ jurisdictions.

## II COMMENT

The commentor states that the EIS is defective because Volume 2 does not adequately cumulative effects of shipping, receiving, processing, and storing nuclear waste at Engineering Laboratory; nor does it address the cumulative impacts of past disposal present management actions, and reasonably foreseeable actions regarding spent nucl commentor expresses concerns about the cumulative impacts to the Snake River Plain the Idaho National Engineering Laboratory and the level of detail in project summar cumulative impacts, and cites an example.

### RESPONSE

Volumes 1 and 2 of the EIS comply with CEQ regulations regarding assessing the cumu programmatic SNF management and SNF management, environmental restoration, and wast at INEL, respectively. The regulations at 40 CFR 1508.7 define "cumulative impacts from the incremental impact of the action when added to other past, present, and re future actions. Cumulative impacts of SNF management activities at INEL are discus Appendix B, section 5.16. Impacts of past practices and present conditions at INEL Volume 2, Chapter 4. This serves as a baseline to add incremental cumulative impac actions, as in Volume 2, Chapter 5. The projects described in Volume 2, Appendix C one or more of the alternatives considered in Volume 2; their combined impacts are, the analyses of environmental consequences in Volume 2, Chapter 5. Volume 2, secti

comprehensive discussion of cumulative impacts (including the Snake River Plain aquifer, past, present, and future actions of DOE and others. Topics addressed include land cultural resources, air, water, transportation, health and safety, waste management resources. To aid in readability, many of these impacts have also been described in detail in Volume 2, section 5.15 is commensurate with the current state of plan development of such potential activities, including the example cited by the comment presented only to the extent known or reasonably foreseeable. Table 5.15-1 describes both onsite and offsite, that are not part of the proposed action but that have been included in the cumulative impact analysis. Volume 2, presents nonhealth-related transportation and cumulative impacts from the proposed, connected, and similar actions. See also the response to comment 05.09 (011).

See also the response to comment 05.09 (006) regarding impacts to the Snake River P

## II COMMENT

The commentor states that the EIS is inadequate because it fails to address the cumulative impacts of SNF shipments as they pertain to Idaho National Engineering Laboratory-specific projects.

The impacts due to SNF shipments are described in Volume 1, Appendices D and I. Cumulative impacts from SNF shipments are described in Appendices D and I for both radiological impact and accident impacts. Cumulative impacts due to past activities are presented for each site from the start of operations at a site to 1993. Impacts through 2035 are in a range for each alternative as an upper bound, which lends conservatism to the evaluation for alternative transportation. No other cumulative impacts are related to transportation; thus, the

## II COMMENT

The commentor states that longshoremen, sailors, and the general public will receive commercial shipping lanes are used and waste casks are off loaded in Portland, Oregon, Washington, and trucked to the Hanford Site or Idaho National Engineering Laboratory. Traffic in cars alongside or behind these waste shipments could receive a significant dose.

DOE believes the EIS and reference documents contain an adequate discussion of direct and cumulative impacts of transporting SNF and other radioactive materials. Incident-fuels, hazardous materials results in essentially no impacts as discussed in Volume 1, section 5.3 of highway, railway, and barge transportation impacts and potential accident impact. Environmental Consequences of Key Disciplines and Offsite Transportation of SNF section 5.3. The cumulative impacts analyses are discussed in Volume 1, section 5.3 and Volume 2, section 5.15. DOE conducted a comprehensive transportation cumulative impacts analysis, evaluating future shipments of radioactive material, which include radioactive waste and SNF. The cumulative impacts analysis includes past transportation activities, transportation actions in this EIS, reasonably foreseeable future transportation activities, and g activities.

The analyses described in Volume 1, section 5.3 and Volume 2, section 5.15.7 show that exposing the public to radiation hazards is extremely low and the overall impacts under all alternatives analyzed in this EIS would be small.

## II COMMENT

The commentor notes that the second sentence in Volume 2, section 5.7.4.3.2 incorrectly states that cumulative impacts from all major sources after the baseline date must be below Pre-Deterioration increment limits. Increases from minor sources also consume increment.

The commentor is correct in that it should be clarified that increases from both major and minor sources after the baseline date consume increment. In fact, the increment consumption analysis performed considered all applicable sources that became operational (or will become operational) after baseline dates. The sentence has been revised to clarify that the PSD analysis considers all applicable major and minor source emissions that occur after the baseline dates.

## II COMMENT

The commentor states that all alternatives except the No Action alternative have a releases to the environment, which will exacerbate existing contamination by both c radiological materials.

### RESPONSE

The proposed SNF facilities are designed to have no liquid release of waste water w or radiological characteristics through the use of modern technologies, including s leak detection, and water-balance monitoring equipment. The analysis in the EIS in considerations, potential risks to the public from operations and reasonably foresee conditions, site-specific cumulative effects, and other environmental factors for a managing SNF. Cumulative effect, involving existing site problems and site-specifi that are planned to occur simultaneously with SNF management activities are discuss Appendix F. The EIS concludes that the alternative sites are environmentally suita SNF, and that risks to the public or the environment due to SNF management would be new missions are involved.

Discussions on public health and safety are in Volume 1, sections 5.1 and 5.3 and s F.

## II 5.10 Safety and Health Effects

## II COMMENT

One commentor questions the use of legal limit radiation levels for DOE spent nucle and measured radiation levels for U.S. Navy spent nuclear fuel shipping casks.

### RESPONSE

Using legal limit radiation levels will overestimate potential impacts from DOE SNF assumption was necessary to maintain flexibility in the specific choice of shipping used by DOE. Even with this assumption, the risks are still small. The Navy inten shipping casks, which have been in use and for which there are measured radiation l required; therefore, these realistic measured data were used, and it was not necess assumptions to bound potential impacts.

## II COMMENT

The commentor states that transportation of radioactive materials involves minimal RESPONSE

The comment accurately reflects the analyses of impacts provided in Volumes 1 and 2 Volume 1, Appendices D and I. Volume 1, Appendix I summarizes the methodologies, k assumptions, and results of calculations for the transportation analyses. These an associated with the transportation of radioactive material would be small for all a The conclusion that such risks would be small is borne out by past experience with

## II COMMENT

The commentor states that traffic fatality risks are somewhat higher for Naval than The commentor states that the analysis uses the same documents for both Naval and n estimates and does not consider the increased non-Naval shipments.

### RESPONSE

Off-site shipments of non-Naval fuel are discussed in Volume 1, Appendix 1, while o non-Naval fuel are discussed in Volume 1, Appendices A, B, C, and F, for Hanford, I NTS/ORR, respectively. Off-site and on-site shipments of Naval fuel are discussed D.

DOE and the Navy reviewed their analyses of traffic fatality risks and did not iden



impacts would be small for both radiological and nonradiological risks. The differ between Naval and non-Naval SNF was considered in the analyses. When comparing Naval and non-Naval transportation impacts, some differences other t shipments are important. For example, all off-site Naval SNF shipments from shipya whereas all off-site test specimen shipments are by truck. The results are present number of each of these types of shipments. DOE shipments assume that all off-site by rail or by truck, and results are presented for both cases. Another example is shipments from Pearl Harbor have a portion of the trip on ocean transport vessels. for accident rates (Longitudinal Review of State-Level Accident Statistics for Carr Freight) lists a significantly higher nonradiological casualty rate for ocean trans nonradiological fatality rate listed for rail or truck transport.

## II COMMENT

The commentor states that the probabilities for transportation accidents represent single shipment. The commentor states that probabilities should be determined on t shipments, not individual shipments.

### RESPONSE

The results of the transportation accident risk assessment are cumulative risks tha shipments over the entire campaign (1995 to 2035). Probabilities for the maximum r transportation accidents are annual probabilities based on the total annual shipmen

## II COMMENT

Commentors identify issues regarding public and worker safety and risks, and the ef due to accidents caused by extreme weather and natural disasters at the facilities.

### RESPONSE

Volume 1, Chapters 3 and 5 and Appendices A through F, and Volume 2, Chapters 3 and F discuss risks to the public, workers, and the environment due to facility accident by extreme weather and natural disasters, such as high winds, floods, earthquakes, discussions include extensive evaluations and analyses of accidents. Protecting me public and workers from accidents is considered by DOE in the design, location, con operation of facilities. The analyses and other information in the EIS demonstrate and the public from all accidents, including those caused by extreme weather or nat small for all of the alternatives considered.

## II COMMENT

The commentor suggests that the EIS fails account for the long-term risks to the pu liability costs from damage scenarios under various options.

### RESPONSE

Even for INEL accidents with the maximum reasonably foreseeable consequences, and w unfavorable meteorological conditions, no long-term risks to the public are expecte 2, section 5.14, there is a potential for limited economic impacts associated with to public lands or up to a 1-year agricultural land withdrawal for land on and imme INEL. Relative to potential liability costs, DOE will use the statutory indemnity Price-Anderson Act (42 USC 2210) to ensure ready and prompt availability of funds t public for injuries and damages resulting from a nuclear incident arising from acti indemnified DOE contractors. Compensation provided under the Act would cover nucle arising at INEL, as well as nuclear incidents arising during the transportation of site.

Although the Price-Anderson Act is the primary means for compensating the public fo nuclear incidents, other remedies exist for claims not falling within the purview o claims against DOE or its employees may be cognizable under the Federal Tort Claims for environmental damage may fall within CERCLA. These and other laws afford any i mechanisms for seeking recovery for damages relating to operation of DOE facilities

## II COMMENT

The commentor suggests that DOE is not going to study ingestion of radioactive material at the National Engineering Laboratory because contaminated food and water would be impounded. The commentor also states that DOE's assumed cleanup of accidents does not account for particulates by wind.

### RESPONSE

For INEL facility accidents with the maximum reasonably foreseeable consequences under unfavorable meteorological conditions, some restrictions on uses of agricultural products have been implemented in accordance with established Protective Action Guides. However, this ingestion of radioactive material has not been analyzed in the EIS. There has been potential for health effects through ingestion, as well as other pathways, and is discussed in Appendices A and F-4. The accidents assessments summarized in Volume 2, section 5.1, discuss ingestion of radioactive materials. Resuspension of radioactive materials from the potential dispersion path. Wind-borne resuspension generally reduces the amount of material at distance from the point of release, but increases the area in which exposure might occur. Analyses generally did not take credit for mitigative measures. Nevertheless, the exposures to workers from all accidents analyzed in the EIS would be small.

## II COMMENT

The commentor states that agency officials should be able to answer over the telephone such as what is the longevity of radioactive spent fuel.

### RESPONSE

Because agency officials are accountable for answers to technical information given over the telephone, it is unreasonable to expect all technical information to be immediately available to the telephone. In addition, agency officials consider it prudent to check answers, against available references or with technical experts before providing them to the public. Whenever possible, questioners were intentionally referred to specific locations where they would answer their questions in detail, in language agreed to by a wide range of respondents.

## II COMMENT

The commentor would like DOE to minimize worker and public exposure to radiation during operation, and maintenance activities, using the principle of the "as low as reasonably achievable" approach.

### RESPONSE

Maintaining occupational exposure to radiation and radioactive materials as low as reasonably achievable (ALARA) is an integral part of all site radiological control programs. In addition, DOE implements legally applicable radiation protection standards and considers and adopts recommendations by authoritative organizations. Examples of such standards and organizations are DOE Order 5400.5, Radiation Protection of the Public and the Environment, the National Council on Radiation Protection and Measurements, and the International Commission on Radiological Protection. See also the response to comment 05.10 (029).

## II COMMENT

Commentors express the opinion that all facets of DOE's nuclear program are lethal to the environment and protection of bureaucrats.

### RESPONSE

Hazardous material resulting from DOE's past, present, and future nuclear programs is being disposed of in a safe manner. This EIS addresses the programmatic management of SNF and its ultimate disposition, as well as environmental management activities at INEL over the next 100 years. It concludes that there would be no significant environmental impacts under any of the alternatives being considered for implementation. Although vulnerabilities exist, DOE has the skill, scientific capability, and Secretarial mandate to safely manage SNF and INEL.

environmental restoration activities in the period covered by this EIS.

## II COMMENT

The commentor notes a typographical error on the first line of the last paragraph of Summary.

### RESPONSE

The commentor is correct that the word "facilities" should be "fatalities." DOE has corrected the Summary and in Volume 1.

## II COMMENT

One commentor refers to the degraded conditions in the Idaho National Engineering Laboratory as assessed by the Spent Fuel Working Group. This individual states that the known storage of spent nuclear fuel leads to the risk of radioactive contamination, health criticalities, meltdown, and explosions. Another commentor wants DOE to "address the problems that are a danger to us all."

### RESPONSE

Volume 2, section 2.2 discusses the vulnerability of SNF storage at INEL. Actions and vulnerabilities are identified in Volume 2, section 2.2, Table 2.2-1. Because of the criticality identified in Volume 2, section 2.2, a criticality at Building 603 at the Idaho Chemical Processing Plant was considered 10 times more likely than at a modern facility such as Building 666. Such a criticality is reported in Volume 2, section 5.14. The impacts to the public would be small; impacts to workers at the site could vary depending on the circumstances of shielding by water and concrete, it is not likely that radiation exposure would be significant. Workers could have an increased risk of developing cancer over their lifetimes.

## II COMMENT

The commentor requests clarification of the phrases "high, though not fatal, dose" and "likely" in Volume 1, Chapter 5.

### RESPONSE

The phrases were used in reference to an estimated worker dose of 120 rem resulting from a hypothetical accident. A dose of 120 rem is considered to be a dose with large potential health effects. A population that receives short-term exposures may have individuals who die from a radiation dose level for death to an individual with no medical intervention is 300 to 500 rem. Individuals could die with no medical intervention at lower doses. Thus, a short-term dose of 120 rem could result in death in part of a population. A short-term dose should not be considered a fatal dose for typical individuals. Occupational doses to workers are limited to 5 rem per year.

DOE has modified the EIS to clarify the phrases.

## II COMMENT

The commentor questions what number of latent cancer fatalities per year DOE considers significant.

DOE considers seriously the relationship between radiation exposure and the potential for fatalities. Rather than a "number" of fatalities that is considered significant, DOE considers the likelihood of a latent cancer fatality to a member of the public or in its work for Nuclear Safety Policy states that "the general public be protected such that no individual is exposed to an additional risk to health and safety from the operation of a DOE nuclear facility a member of the general population are exposed." Quantitatively, the goal is to reduce the chance of a fatal cancer to a member of the public to one chance in 500,000 per year of operations.

## II COMMENT

The commentor suggests that consistent definitions of maximally exposed individual exposed off-site individual (MOI) are needed. The comment cites the definitions in and text in Volume 2, Appendix F-3.

### RESPONSE

The definitions in Volume 1, Appendix H agree with the text in Volume 2, Appendix F. Volume 2 contains an expanded discussion of the details involved in evaluating the individual, appropriate for a site-specific NEPA document. The less-detailed text in Volume 1, Appendix H is appropriate for a programmatic analysis.

## II COMMENT

The commentor suggests that duplication of facilities and missions at several sites "degrade safety" and, in fact, can degrade the safety posture of those facilities.

### RESPONSE

Volume 1, Chapter 5 summarizes the radiological and health and safety impacts associated with alternatives considered in this EIS, including using existing facilities and construction alternatives. Volume 1, section 3.3.6 summarizes the cost evaluation. The health and safety of workers are considered in the evaluation of these alternatives and the identification of a preferred alternative. Information provided on radiological and health and safety impacts, including facility information, is adequate for evaluating and comparing the impacts of all the alternatives. Volume 1 has been revised to indicate that there are no widely accepted equivalence values between radiological exposures or other health effects or environmental impacts. See also the response to comment 04.04 (008) for management of SNF under DOE's preferred alternative.

## II COMMENT

The commentor states that a sentence in the Summary on public and worker health effects "deletes some connection between spent nuclear fuel and natural background radiation." The commentor is deleting the sentence.

### RESPONSE

The sentence states that radiation exposures also occur from natural sources. DOE wants for the reader to understand that natural radiation also contributes to the exposure. The EIS has been changed to clarify the intent of the discussion.

## II COMMENT

The commentor suggests that atmospheric testing be added to a discussion about underground releases.

### RESPONSE

Volume 1, section 4.4 has been changed to include discussion of atmospheric testing.

## II COMMENT

Commentors suggest that adequate baseline health studies need to be conducted at all along transportation routes, and at proposed DOE sites to support risk factors used in the EIS. Commentors request that all epidemiological studies be included in this EIS, or if not performed, explain why and what other public involvement activities were conducted.

### RESPONSE

In March 1990, DOE announced that it will turn over responsibility for research on health effects to workers at DOE facilities and the public in surrounding communities to the Health and Human Services. DOE directed that all worker health and exposure data and releases of radioactive and toxic materials be released. Baseline health effects studies

workers and for members of the surrounding public are either under way or planned a facilities. Results of all studies are available to the public. Some persons have proposed performing epidemiological studies of the people living vicinity of installations performing work associated with atomic energy. However, studies that have been attempted, such as those in Great Britain, the level of radiation communities from man-made radionuclides is very low with respect to the variations radiation and other factors introduced by individual lifestyles. This, plus other nature and other industries in the communities, has made it impossible to perform a develop definitive conclusions. Efforts in this area are expected to continue, but study, the standards of the International Commission on Radiological Protection report data available.

The epidemiological studies of baseline health effects at all existing DOE sites are decisionmakers to discriminate between the alternatives discussed in this program are not relevant to any reasonably foreseeable adverse impacts.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environment all the alternatives considered in the EIS. The analyses show that none of the alternatives adverse impacts.

## II COMMENT

The commentor notes that cancer fatalities are in the Summary as "one" for all alternatives  
RESPONSE

The values in the Summary were chosen for simplicity of presentation. The analyses appendices of the EIS provide health effects estimates for each site and alternative over a wide range and depend on a variety of factors. However, in all cases, the alternative than one fatal cancer would result from the activities under each alternative.

## II COMMENT

The commentor questions whether radiation from past practices may be the cause of cancer health effects in the area and discusses previous releases and accidents at DOE sites  
RESPONSE

Analysis of impacts from past releases and accidents at DOE sites is not within the however, it is DOE policy to identify and correct any inadequate practices concerning arising from operation of its facilities. In this regard, accidents and accidental reported, and accidents resulting in significant releases from DOE facilities are in monitoring reports that are publicly available. Detailed descriptions of the event accidents or releases are outside the scope of the EIS. The Hanford Environmental project currently is evaluating past releases from the Hanford Site.

Analyses in the Health and Safety sections of both volumes of the EIS evaluated potential off-site public from both radiological and nonradiological hazards for actions resulting in this EIS. For all alternatives, impacts were estimated to be small, hypothetical one additional fatal cancer in the surrounding population over that which would occur presence of these DOE activities.

## II COMMENT

The commentor notes that insufficient information is provided on dose assessment methodology verification of the accuracy and representativeness of the predicted impacts and dose  
RESPONSE

Methods for estimating releases to water are described in Volume 2, Appendix F-2. estimating releases to air are described in Volume 2, Appendix F-3. Exposure and risk methodology is described in Volume 2, Appendix F-4. Additional information is available reference material available in public reading rooms and information locations listed

## II COMMENT

The commentor suggests that nonradiation workers, visitors, and motorists at Idaho Laboratory should be defined as the maximally exposed individuals, rather than a site boundary residents.

Potential exposure to nonradiation workers, visitors, and motorists at INEL has been evaluated for radioactive and nonradioactive releases from site facilities. Descriptions of the situations are contained in Volume 2, sections 5.7 and 5.12. Further information is contained in Volume 2, Appendix F-4. Although such individuals may be closer to some site facilities, workers spend only about 2,000 hours each year at the site; visitors and motorists spend additional pathways for exposure are included for site-boundary residents that do not include visitors, and motorists. In particular, the potential for ingestion of radioactivity is included in the evaluation for site-boundary residents.

## II COMMENT

The commentor points out that risk estimates for all alternatives are higher for this site than for other sites.

### RESPONSE

The estimates of risk from releases of radioactive and nonradioactive materials and on many factors. These include characteristics of the local population distribution, groundwater, and surface water. They also include the characteristics of the facility addressed under each alternative. The assessment methods used for each site are described in Appendices A through F.

Specific information on the risks associated with the alternatives considered for Site 1, Appendices C and D, Chapter 5. The analyses in this EIS show that the risks for Site 1 considered would be small.

## II COMMENT

Commentors question the effects from exposure to radiation and the methods for reproductive effects dose response factors, particularly as related to induction of cancers.

### RESPONSE

The potential health effects from exposure to radiation are the subject of research throughout the world. Some published results have been subjected to enough review and confirmation by the community to become well accepted. Others have not stood up to careful scrutiny. Some are interesting, but unproven, hypotheses. None of these individual studies provides a basis for risk factors necessary to support the type of analysis required for the EIS. These studies, by themselves, are not a technically sound basis for setting radiation standards or making decisions on the dose response factors for cancer induction used in the EIS were taken from the International Commission on Radiological Protection recommendations (1990 Recommendations of the International Commission of Radiological Protection), which reflect the most recent accepted analysis of all currently available data. The authors of ICRP 60 reviewed Volume 1, Appendix D and Volume 2, Appendix F-4 provide useful primers on radioactive dose, and resulting health impacts. Volume 2, Appendix F-4 provides a discussion of how risks were calculated and how cancer risks were estimated.

## II COMMENT

The commentor questions how tritium could be present in urine after 400 days if its half-life is roughly 12 days.

### RESPONSE

The biological or retention half-life does not refer to the period of time required for tritium to be eliminated from the body. It is an estimate of the time for half the material to be eliminated. If the remaining tritium will be eliminated in another 12 days, leaving one fourth of the original amount, then this amount will be eliminated in the next 12 days, and so on. It is possible that detectable amounts would be eliminated 400 days later. Additional background information is provided in Volume 2, Appendix F-4.

radiation and its effects can be found in Volume 2, Appendix A.

## II COMMENT

Commentors suggest that the discussions of radiation and the term "latent cancer fa or insensitive.

### RESPONSE

The terms used in the EIS are not intended to be misleading or insensitive. They a used to describe the impacts being evaluated. A glossary is provided in the EIS to technical terms. With regard to the effects of radiation exposure, basic informati Volume 2, Appendix A. More detailed information is in Volume 2, Appendix F-4.

## II COMMENT

The commentor identifies specific inconsistencies within the EIS.

### RESPONSE

The section on Public and Worker Health Effects in the Summary has been modified to estimated health effects to the public include both operation activities and routin collective dose estimate provided in Volume 1, section 5.3.2 is to the worker, whic to the public.

## II COMMENT

The commentor asks whether the Advanced Neutron Source Facility and the Expended Co should be included in the assessment of potential impacts for the Oak Ridge Reserva

### RESPONSE

The Expended Core Facility was included in the analysis of potential SNF facilities Advanced Neutron Source Facility was evaluated separately. Both were included in e the maximally exposed individual. These assessments are in Volume 1, Appendix D an Appendix F, Part Three.

## II COMMENT

The commentor states that preservation of life and protection of property should be what government-sponsored activities are allowed.

### RESPONSE

The health and safety of people and the protection of property are accorded appropr deciding what activities could be implemented by the government (e.g., DOE Order 5 Environmental, Safety and Health Program for DOE Operations, Section 7, and EIS Vol Summary).

## II COMMENT

The commentor states that cancer morbidity, not just cancer fatality, should be use impact of radiation exposures.

### RESPONSE

The analyses of the potential effects of radiation exposure in this EIS do consider cancer fatalities and are based on the standards of the International Commission on Protection. Volume 1, Appendix D, Attachment F, section F-1.3.3 and Volume 2, Appe the terminology and risk factors used by the International Commission on Radiologic these factors were applied in calculating the effects on human health in this EIS. The International Commission on Radiological Protection defines "health detriments" of all fatal cancers, nonfatal cancers, and genetic effects. The health detriments radiation are calculated by summing all of these effects after multiplying each eff

intended to represent the severity of the impact of each type of effect on human health. EIS, the total health effects (deaths, nonfatal cancers, genetic effects, and other) may be obtained for the public by multiplying the latent cancer fatalities by the factors from the International Commission on Radiological Protection. Cancer fatalities were used to summarize and compare the results in the EIS because they are of the greatest interest to most people.

## II COMMENT

The commentor questions the accuracy of information in Volume 1, Appendix A on Hanford nuclear fuel management.

### RESPONSE

The information has been updated and the text clarified.

## II COMMENT

The commentor notes that the Summary presents numbers of fatal cancers in the population at each site for each alternative but does not give the sizes of the populations so they are estimated.

### RESPONSE

Several factors in each site analysis affect the estimate of cancer fatalities, including which are different for each site. These data are provided in Volume 1, Chapter 5. The EIS has been changed to reference Chapter 5 to identify the source of this information. The EIS is presented in a fashion with respect to technical depth of information. The Summary was intended to provide information so that it would be generally understandable to nontechnical persons. Each volume presents expanded information with more technical detail, but are still concise. The remaining chapters in each volume provide the technical information needed to support the conclusions. The appendices are the most technically detailed and provide sufficient thorough technical review by specialists. The appendices also provide references to information on the methods and results of technical analyses.

## II COMMENT

The commentor asks why the computer code used to estimate health risks associated with releases was not site-specific.

### RESPONSE

Because the purpose of the analysis was to allow comparison among the alternatives, use of the same source input is appropriate. The computer codes used to estimate health risks with releases from DOE facilities allow the input of site-specific data. Wherever site-specific data was used for such input parameters as source terms, hydrology, and demographics. A generic meteorology classes D, E, and F were used in modeling, no credit was taken for site-specific meteorology.

## II COMMENT

The commentor refers to Volume 1, Appendix B, section 5.12 and raises an issue that chemical impact focuses on cancer health effects. Some chemicals cause adverse noncancer effects at exposure levels below those predicted to cause unacceptable increases in cancer. The commentor states that the potential for synergistic effects from hazardous chemicals should be considered whenever possible.

### RESPONSE

Potential synergistic effects from multiple chemical exposures are extremely difficult to quantify because there is insufficient data to indicate synergistic effects. The potential for synergistic effects is small where the concentrations for each individual compound are low. For the alternatives evaluated in this EIS, to ensure that potential impacts are based on high releases and exposure conditions were assumed. Further, the point of highest potential impact was used.



chemical occurs at different times and places. It is unlikely that any one individual more than one chemical species at the concentrations reported in this EIS. Radiation doses from historic operations are discussed in Volume 2, section 5.15.8. available in referenced technical documents, which are available for review in read information locations listed in the EIS. DOE is not aware of any generally accepted methodology that has been developed to evaluate synergistic effects due to several constituents. DOE is aware that research into this area is continuing. The evaluation of cumulative effects considers historic accidents only. The implementation of NEPA at 40 CFR, Paragraph 1508.7 specifies "that cumulative impacts result from past reasonably foreseeable future actions..." For cumulative impacts, DOE has considered "reasonably foreseeable" to include construction, operation, maintenance, and other not to include future hypothetical accidents, inadvertent spills, and other unplanned chemical exposure resulting from an accident is evaluated in Volume 2, Appendix F-5 response to comment 05.10 (021).

## II COMMENT

The commentor points out an apparent inconsistency between the dose reported in the waste disposal operations and the dose given in the Radioactive Waste Management Co Waste Radiological Performance Assessment.

### RESPONSE

The commentor is correct that the doses reported in the cited reference for the post-period exceed those cited in the EIS for the operational period. However, the dose directly comparable because the assumptions used in each analysis are significantly cited in the EIS are evaluated at the site boundary and represent an upper bound for during the time period addressed in the EIS. The doses cited in the RWMC performance the post-institutional control doses evaluated for a location very near the waste drums (meters away) and represent an estimate of doses more than 100 years outside the time of the EIS. During this post-institutional time period, it is assumed that no control individual from approaching the waste disposal complex. Therefore, it is reasonable post-institutional control period could exceed those cited in the EIS for the operation. Further, the doses reported in the RWMC performance assessment do not account for potential of the RWMC under the CERCLA process. These remediation activities could significantly radiation doses expected from the RWMC over the long term. The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental cleanup activities at INEL. However, specific decisions related to cleanup at INEL addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process that remediation requirements of CERCLA and the corrective action requirements of RCRA and Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the schedule established in the FFA/CO. RODs under the FFA/CO process are signed by a DOE official and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.

## II COMMENT

The commentor asks why the GENII-S computer code was not used for Hanford Site assessment the GENII used in the EIS.

### RESPONSE

GENII-S incorporates the same models and data inputs for dose parameters used. The codes yield the same results when used in the deterministic mode. However, GENII-S capability to calculate the uncertainty in the atmospheric dispersion factors or the receptor. These calculations are important particularly where short-lived radionuclide contributors and distances are long. The model does not allow for any decay on the way and thus, overestimates releases. Considering these limitations, the use of GENII

## II COMMENTS

The commentor requests that radiation doses, expressed in effective dose equivalent Brookhaven National Laboratory, as well as for other sites considered in the EIS.

#### RESPONSE

Radiation doses, expressed in effective dose equivalent, are provided for current a National Laboratory in Volume 1, Appendix E, Chapter 3. The evaluation of potential alternative is in Appendix E, Chapter 4. No additional quantitative estimates of r presented in Chapter 4, because none of the alternatives would result in an increase Brookhaven National Laboratory.

## II COMMENT

The commentor asks whether the dose factors in Volume 2, Appendix F-4, Table F-4-5 by inhalation or ingestion.

#### RESPONSE

The values in Volume 2, Appendix F-4, Table F-4-5 are for unit intakes by ingestion referenced in the text under a discussion of dose evaluation for consumption of con

## II COMMENT

The commentor suggests that the high efficiency particulate air filter efficiency d not applicable to failed filters and cites a past occurrence at which a facility wa break.

#### RESPONSE

The EIS contains evaluations of atmospheric emissions for both intact and failed hi air (HEPA) filters. Several of the accident scenarios address situations in which assumed. These assessments provide an upper bound for the potential consequences o are discussed in Volume 2, section 5.14. Releases to the atmosphere from operating filtration systems are discussed in the Volume 2, section 5.7. The health and safe operational releases appear in Volume 2, section 5.12. The filtration systems are atmospheric emissions. Other systems, including emission monitoring and administra to ensure that filter efficiency is maintained.

To minimize airborne releases, projects involving radioactive particulates at INEL a double-confinement structure. Conservative assumptions normally are used to esti atmosphere, such as modeling only two filters in series when at least three are pla operations. Also, although HEPA filters have established particulate removal effic (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 for operational safety and accident analyses. These filters are capable of removin 0.001 micrometers from an airstream, but the manufacturer performs the rating calib micrometers using a standard aerosol-generating device. The filters are tested ann to ensure that their efficiency is maintained.

Safety analyses for forthcoming INEL facility operations will not presume perfect H Additional precautions will be taken to minimize airborne releases. The pressure d filter is measured continuously to detect formation of any holes or insecure filter temperature will be measured to promptly detect a filter fire. Finally, radiation downstream of the filters to continuously monitor atmospheric releases. Detection particulates above the natural background levels would result in a prompt shutdown See also the response to comment 05.11.03 (009)

## II COMMENT

The commentor notes that data mentioned in the text of the EIS on off-site radiatio provided.

#### RESPONSE

References have been added to Volume 2, section 4.7.3 that contain the data. Spec yearly environmental reports for INEL for 1987 through 1991 (The Idaho National Eng Laboratory Site Environmental Report for Calendar Year 1991). These references are

rooms and information locations listed in the EIS.

## II COMMENT

The commentor suggests that the statistical presentation of risks is misleading.

### RESPONSE

The terms used to describe risk are not intended to suggest that individuals can have cancer. Risks applied to individuals reflect the lifetime probability of fatal cancer. Risks applied to populations reflect the number of additional cancers expected in that population. EIS are the standard used to describe the impacts being evaluated. With regard to exposure, additional basic information is provided in Volume 2, Appendix A. More detail is provided in Volume 2, Appendix F-4.

## II COMMENT

The commentor suggests that other locations or extraordinary circumstances could result in exposures and require a redefinition of the maximally exposed individual.

### RESPONSE

Every reasonable effort was made to ensure that the doses estimated for the maximally exposed individual provide an upper bound for potential doses from site operations. For example, the evaluation corresponds to the highest air and ground concentrations where any member of the public resides. The dose pathways include conservatively high values for parameters such as breathing rates and dietary intakes of locally grown produce. The scenario definition is "generic" and includes a set of standard pathways for radiation exposure. However, site-specific evaluation of these pathways is required.

The suggested approach of conducting personal field interviews to determine the potential for receiving doses in excess of the maximum individual doses is not warranted. This is not relevant to estimating foreseeable significant adverse impacts essential to reasonable alternatives.

## II COMMENT

The commentor questions the statement that less than 1 percent of the average radiation dose to a member of the United States population comes from the nuclear fuel cycle and asks for clarification.

### RESPONSE

For the average member of the U.S. population, about 82 percent of total radiation dose comes from natural background, including radon (55 percent), cosmic radiation (8 percent), radon (19 percent), and natural radioactivity in the body (11 percent). About 18 percent comes from man-made sources including medical diagnosis and treatment (15 percent) and various consumer products (3 percent). Less than 1 percent results from the nuclear fuel cycle and global fallout. These facts are based on the 1990 Recommendations of the International Commission on Radiological Protection.

## II COMMENT

The commentor suggests that DOE adopt an informal de minimis criterion to avoid unnecessary expenditure of resources in protecting and reassuring the public.

### RESPONSE

DOE has not adopted a de minimis dose level for members of the public. Balancing dose level versus cost to further reduce the dose to the public is accomplished at DOE facilities in the context of state and Federal regulations applicable to exposure of the public to radiation. Balancing of public dose versus cost is effective in preventing the expenditure of the already-low public exposures from radionuclide releases at DOE facilities. It is the intent of this EIS to establish de minimis goals for DOE facilities.

## II COMMENT

The commentor asks if the term "health effects" in Volume 1, Appendix B, section 4 should be interpreted as "latent cancer fatalities."

### RESPONSE

There is no page 4.11-7 in Volume 1, Appendix B. DOE assumes that the commentor is on page 4.12-1 of the Draft EIS. The commentor is correct. The text has been changed to "latent cancer fatalities" instead of "health effects."

## II COMMENT

The commentor suggests that health risk-based standards be used to develop chemical hazard indices where possible.

Health risk-based standards were used to develop chemical hazard indices where possible. Where risk-based standards were not available, other methods were used. This methodology is described in Volume 2, Appendix F-4.

## II COMMENT

The commentor states that, contrary to statements in the EIS, measurable increments of emissions could result from spent fuel alternatives and suggests that the cited statement be clarified.

The statement in Volume 1 cited by the commentor has been clarified.

## II COMMENT

The commentor suggests that actual risk values be given and that the bullets in the Draft EIS Summary be used as a summary.

### RESPONSE

The EIS Summary is intended to summarize the information in a manner that would be understandable by nontechnical persons. The first three chapters of each volume contain more technical detail, but are still summary in form. Remaining chapters in each volume provide technical information needed to support the conclusions. The appendices are technical and provide sufficient information for a thorough technical review by specialists. The references that provide even more information on the methods and results of the technical review have been revised as suggested.

## II COMMENT

The commentor notes that the Idaho National Engineering Laboratory has kept radiations levels low and that it is a safe area.

### RESPONSE

The comment is noted.

## II COMMENT

The commentor expresses doubt that there are no significant adverse health effects from radiation exposures typical of those received by populations surrounding commercial nuclear reactor facilities, and does not believe that the Centers for Disease Control and Prevention have adequately studied the effects of radiation exposure on human populations.

The effects of radiation exposure on human populations has been studied by many different groups.

in addition to the Centers for Disease Control and Prevention. The International Commission on Radiological Protection (ICRP) has reviewed the state of knowledge of the effects of low-level radiation exposure. The 1990 Recommendations of the International Commission on Radiological Protection. It concluded that the effects of low-level radiation exposure were adequately represented by the high-dose exposures (B142, Page 142 of ICRP Publications). These high-dose exposures are used in the EIS to estimate the health impacts for radiation exposures. The health impacts to the public associated with the various alternatives would be less than occupational-accident caused fatalities. (See Volume 1, section 5.3 and Volume 2,

## II COMMENT

The commentor states that the latent cancer fatalities appear to be high (1.6 latent cancer deaths per year, centralization at the Savannah River Site) and asks that these numbers be checked. Additionally, the commentor asks if there are ways, such as more shielding, to reduce the fatalities.

DOE believes that the analytical approaches and technical information used in the EIS are accurate and reliable. Every attempt was made to ensure the data are accurate. The analytical approaches used in the analyses supporting this EIS were reviewed and evaluated by independent contractors. The information in the EIS also underwent internal DOE review, and all comments provided were considered in preparing the EIS.

More shielding will not be added, as designs comply with NRC regulations applicable to spent nuclear fuel materials transportation. These regulations are found in 10 CFR Part 71, which includes packaging design requirements and package certification testing requirements. Comprehensive design and safety analyses and results of the required testing are submitted to NRC for use. This certification testing involves the following components: heat, physical shock, unyielding surface, water submersion, puncture by dropping package onto a rigid surface. Some of the required tests simulate maximum reasonably foreseeable accident conditions.

## II COMMENT

The commentor raises questions regarding complete reliance on high efficiency particulate filters for preventing emissions of radioactive particulates, especially those less than 0.3 micrometers in diameter.

To minimize airborne releases, projects involving radioactive particulates at INEL will use a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for normal operations. Also, although HEPA filters have established particulate removal efficiencies (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 percent is used for operational safety and accident analyses. These filters are capable of removing 0.001 micrometers from an airstream, but the manufacturer performs the rating calibration using a standard aerosol-generating device. The filters are tested annually to ensure that their efficiency is maintained.

Safety analyses for forthcoming INEL facility operations will not presume perfect HEPA filter performance. Additional precautions will be taken to minimize airborne releases. The pressure differential across the filter is measured continuously to detect formation of any holes or insecure filter seals. Filter temperature will be measured to promptly detect a filter fire. Finally, radiation detectors downstream of the filters to continuously monitor atmospheric releases. Detection of radiation levels above the natural background levels would result in a prompt shutdown.

## II COMMENT

The commentor raises the issue that the most recent numbers on radiation were not used in the EIS.

RESPONSE

Volume 1, Appendix F, Figure 4.7-2 provides information on natural background radiation levels (radon, in homes (inhaled)). The information referenced is from the 1987 publication by the National Council on Radiation Protection and Measurement, Ionizing Radiation Exposure to the United States. This reference provides a number that is recognized nationally. The

indicative of the natural background radiation found in the Oak Ridge area. Values areas within the country are still being studied and may differ; they may be smaller or larger in others. This information does not affect the analysis, and there have been a brief discussion of occupational and public health and safety for ORR is included in Appendix F, Part Three, section 4.12.

## II COMMENT

The commentor observes that health and safety impacts from the Idaho National Engine have apparently been minimal.

### RESPONSE

The cumulative impacts analyzed in Volume 2, Chapter 5 for all of the alternatives agree with this observation.

## II COMMENT

The commentor does not want any additional spent nuclear fuel or activities at the site.

The analysis in Volume 1, Chapter 5 and Volume 1, Appendix F, Chapter 5 indicates that the environmental consequences of the alternatives considered in the EIS would be small including ORR. Therefore, bringing in additional SNF is not likely to add to environmental hazards that may already exist at this site. See also the response to comment 01.

## II COMMENT

The commentor asks whether a quantitative uncertainty analysis should be done for the impacts.

Volume 2, section 5.1 and Volume 1, Appendix D, section F.1.5 have been revised to include a quantitative uncertainty analysis. In general, however, environmental impact analyses are based on a reasonable projection of the upper bound for potential environmental consequences based on appropriately conservative assumptions and analytical approaches. In this context, an assumption or analysis would tend to overpredict, rather than underpredict. However, overly conservative analyses do not provide a useful basis for comparing alternatives. The aim has been to avoid overconservatism and base the environmental impact analysis on levels of conservatism so that the relative impacts of alternatives can be accurately compared. The analysis of the impacts of normal operations and hypothetical accidents are based on require input data and a model or analytical method for projecting potential impact. Input data for each analysis is slightly different. Socioeconomic analyses are based on, for example, while air resources analyses are based on estimated releases of pollutant models are also fundamentally different for similar reasons. For all analyses where assumptions have been required, generally accepted engineering and scientific approaches to ensure that these assumptions are not outside the range of uncertainty usually a detailed uncertainty analysis can sometimes be useful to evaluate environmental impacts, particularly valuable when projected impacts are large and it is important to know the range of projections. However, quantitative estimates of uncertainty in impacts for hypothetical accidents are difficult to determine. When appropriately conservative estimates of impacts are available, the exact degree of uncertainty diminishes in importance. The estimates of impacts are sufficient that detailed quantitative uncertainty analyses are not necessary to meet the requirements of the EIS.

## II COMMENT

The commentor suggests that professional engineers review Idaho National Engineering facilities and questions the accountability of personnel who sign off DOE safety documents.

All DOE facilities are reviewed for hazard classifications per DOE Order 5481.1B, Safety Review System. Higher-hazard facilities require extensive safety analysis and review.

includes independent reviews of these analysis summarized in safety evaluation report. The safety basis of the facility are approved by the Program Senior Official at DOE. Office of Environmental Safety and Health Oversight (EH) conducts independent review documents and must agree with all assumptions, conservatisms, and analyses. This is parameters and hazard classification of the facilities personnel conducting these are professional engineers. See also the response to comment 06.02 (019).

## II COMMENT

The commentor is concerned that the EIS underestimates the tritium release from the an accident. The commentor estimates that the tritium release to the environment is higher than estimated by the EIS.

### RESPONSE

Volume 1, Appendix A, section 1.1.2 has been revised to show that the amount of tritium is approximately 134 curies.

## II COMMENT

The commentor claims that past court cases have rejected shipments of nuclear waste from ports and that current government procedures do not adequately guarantee the safety of this fuel.

### RESPONSE

DOE complies with the DOT regulations for the transport of radioactive material. The EIS is designed to protect workers and the public by minimizing the risks associated with radioactive material. The EIS analyzes a full range of alternatives, from no action to extremely limited transport of radioactive material, to centralization, which involves transport of radioactive material. For all alternatives, the potential risks from transportation includes the risks associated with maximum reasonably foreseeable accidents. The potential consequences of maximum reasonably foreseeable transportation accidents are discussed in Volume 1, Appendices D and I. Although the consequences of an accident of this type, the probability of such an accident having high consequences is on the order of one chance in a million, the consequences of most accidents, including those with a probability of occurring would be less than those of the accidents analyzed.

With more than 50 years of radioactive material transportation in the commercial sector, there have been few transportation accidents involving radioactive materials, and there has been little or no release of radioactivity. Nonetheless, emergency response teams are in place throughout the United States to respond quickly in the event of a transportation accident. The importance of preparedness for potential accidents involving transportation of radioactive material is emphasized by the Federal Emergency Management Agency (FEMA) which provides training and materials to local responders to prepare them to handle accidents properly. DOE provides for Radiological Emergency Response teams, which consist of trained experts equipped and prepared to quickly respond and assist local emergency response personnel if requested. This response network, preventive safety measures, such as shipping container design and testing, and adherence to regulations, supports the continued safe shipping of SNF.

SNF shipping containers that could be handled by longshore workers are designed to meet international standards for safety, including radiation levels at the outside of the container. This EIS analyzes transportation from ports of entry. The potential for radiological accidents involving workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Act Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

As stated in this EIS, the Atomic Energy Act of 1954 authorizes DOE to establish standards to protect health and minimize dangers to life and property. Radiation protection standards are set to limit radioactive releases to as low as reasonably achievable (ALARA) levels to recognize the health risk associated with exposure to radiation. In addition, DOE adopted and enforces safety, and health protection requirements that are equivalent to those issued by the Occupational Safety and Health Administration (OSHA). DOE designs, locates, constructs, and operates facilities that provides a level of safety that is within the safety requirements for work in all comparable job categories, including high-hazard occupations such as construction and maintenance discussed in Volume 1, section 5.1.1; Volume 1, Appendices A through D, Chapter 4; section 5.12. Health and Safety sections of both volumes of the EIS evaluate both nonradiological impacts to the health of workers at DOE facilities. For all alternatives,

small. The Navy complies with OSHA regulations in the nonradiological occupational occupational medicine area.

## II COMMENT

The commentor suggests that a caveat be added to Appendix F to show that exposure f reasonable foreseeable accident is in addition to exposure from natural background  
RESPONSE

Volume 1, Appendix F has been changed to reflect the commentor's suggestion.

### II II 05.10.01 (001) Worker

#### COMMENT

The commentor states that chemical exposure risks are not included in the analysis impacts for hazardous chemicals at the Nevada Test Site.

#### RESPONSE

Chemical exposure risks associated with on-site transportation are associated only accidents, because, during normal transportation, the chemicals are in sealed conta Appendix F, Part Two, section 5.11.1 states that the transportation accident risk i evaluated for the chemical spill accident at the Expanded Core Facility in Volume 1

### II 05.10.01 (002) Worker

#### COMMENT

The commentor, quoting a passage from Volume 2, which states that "industrial hygie hearing protection for all workers," asks whether Idaho National Engineering Labora all site employees. The commentor suggests that if they do, no effort has been mad of all site workers.

#### RESPONSE

INEL procedures cover all workers for all operations. DOE Orders are used to enfor sites. DOE Order 5480.4, Environmental Protection, Safety, and Health Protection S mandatory compliance with Title 29 CFR 1910, Occupational Safety and Health. DOE Occupational Safety and Health Program for DOE Contractor Employees at Government-O Contractor-Operated Facilities, provides additional guidance for DOE contractor emp government-owned, contractor-operated facilities and specifically requires complian protection requirements.

### II 05.10.01 (003) Worker

#### COMMENT

The commentor suggests that workers may not be safe near leaking radioactive contain leaking tanks at the Hanford Site, while an effort is made to stop the source of th  
RESPONSE

DOE considers worker safety in its planning before performing any work in a radiati DOE policy regarding worker exposure to radioactivity is to minimize the exposure t is reasonably achievable. Radiation workers are intensively trained and follow rig procedures to ensure safety. Also, workers have the authority to stop any work if are unsafe. Work is not resumed until conditions are declared safe.

### II 05.10.01 (004) Worker

#### COMMENT

Commentors raise issues about the health and safety of the workers at DOE and Navy

#### RESPONSE



As stated in the EIS, the Atomic Energy Act of 1954 authorizes DOE to establish standards to protect public health and minimize dangers to life and property. Radiation protection standards for radioactive releases are as low as reasonably achievable (ALARA) levels in recognition of the health risk associated with exposure to radiation. In addition, DOE adopted and enforces safety, and health protection requirements that are equivalent to those issued by OSHA for its facilities, and operates its facilities in a way that provides a level of protection for workers in private industry for all comparable job categories, including occupations such as construction. Analyses are discussed in Volume 1, section 5.1. Appendices A through D, Chapter 4; and Volume 2, section 5.12. Health and Safety sections of the EIS evaluate radiological and nonradiological impacts to the health of the public. For all alternatives, impacts would be small. In the nonradiological and occupational medicine area, the Navy complies with OSHA regulations.

## II 05.10.01 (005) Worker

COMMENT

COMMENT: Commentors raise the issue of potential radiation exposure to longshore workers in RESPONSE

SNF shipping containers that could be handled by longshore workers are designed to international standards for safety, including radiation levels at the outside of the container. This EIS analyses transportation from ports of entry. The potential for radiologic workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Concerning Foreign Research Reactor Spent Nuclear Fuel.

### II 05.10.01 (006) Worker

COMMENT

The commentor states that not all adverse properties of toxic and radioactive mater may be exposed are addressed in the EIS.

RESPONSE

The risk of contracting fatal cancers from exposure to radiation was used as a measure of health throughout the EIS to provide a consistent document and to allow ready comparison of health impacts, such as those from exposure to chemical carcinogens. When nonfatal genetic effects from radiation are included in the analysis, the lifetime risk increases for fatal cancers to  $7.3\text{E-}4$  per rem of exposure for all health effects comparisons. For these health effects are provided in Volume 2, Appendix F-4.

The risk factors for cancer induction used in the EIS have been taken from the most Commission on Radiological Protection recommendations (1990 Recommendations of the Commission of Radiological Protection), which reflect the most recent and most wide of all currently available data. The authors reviewed all available studies. Volu EIS provides a useful primer on radioactivity and radiation dose. Volume 2, Append discussion of how radiation doses were calculated and how cancer risks were estimat Analysis of exposure of workers to toxic materials is addressed in Volume 2, sectio inventory of potential chemical releases at INEL was reviewed and all potentially t included in the analysis, even those that are only suspected of having adverse heal the records of all reported occupational injuries and illnesses, regardless of caus potential future health impacts to workers.

### II 05.10.01 (007) Worker

COMMENT

The commentor notes that Volume 1, section 4.12.1 does not mention anything about waste safety beyond radiation exposure and that there have been quite a number of off site occurrences at the 100-K area fuel storage basins and spent nuclear fuel storage areas. The commentor suggests that occurrences for the last 5 years at the Hanford Site be summarized.

RESPONSE

The EIS has been changed to provide additional worker safety and health information

## **II 05.10.01 (008) Worker**

### **COMMENT**

The commentor indicates that Idaho National Engineering Laboratory workers would no risks just to have a job.

### **RESPONSE**

DOE is formally committed to protecting the safety and health of its workers, the p environment. See the response to comment 05.10.01 (004).

## **II 05.10.01 (009) Worker**

### **COMMENT**

Commentors suggest that potential impacts to workers are deemphasized because they various sections of the document rather than in one place, and noted that the EIS d names and affiliations of those who prepared the various sections.

### **RESPONSE**

EIS preparers, their affiliations, their education, and their years of experience a and 2, Chapter 6. DOE is solely responsible for the preparation and content of the final form. Although various consultants assisted DOE in preparing this document, technical review and approval of the document.

## **II 05.10.01 (028) Worker**

### **COMMENT**

The commentor suggests that the national average value for radiation doses from rad value to use in describing the Oak Ridge Reservation area.

### **RESPONSE**

Radon doses were included as part of the description of natural background radiatio vary widely at individual locations, as well as across the nation. Results from in specific locations, change with time due to a variety of factors. Therefore, natio most useful for describing natural background from radon under most circumstances.

## **II 05.10.01 (029) Worker**

### **COMMENT**

The commentor notes that estimated radiation doses for one alternative appear to ex occupational administrative control level, and suggests a lower standard be applied

### **RESPONSE**

The purpose of the EIS is to evaluate the potential impacts from proposed activitie assumptions were made to ensure that estimated doses are conservatively high and re bound of potential impacts. Although conservatively high, the analysis shows poten the alternative in question would remain within legal limits for occupational expos intended to substitute for the assessments required by regulations or by DOE Orders constructed or operated under the chosen alternative will comply with applicable re

## **II 05.10.01 (030) Worker**

### **COMMENT**

The commentor states that the EIS does not adequately address worker fatalities fro accident conditions as a basis for comparing alternatives.

### **RESPONSE**

Volume 1, Chapter 5 discusses the disciplines studied that result in potential impa general interest, or may help discriminate among sites. The impacts from radiation from operations and accident conditions were analyzed for all alternatives containe

are summarized in Volume 1, Appendix K, Table K-2.

## II 05.10.01 (031)Worker

### COMMENT

The commentor states that contamination as a result of past nuclear weapons activities potential health and safety threats to many defense workers and surrounding communities.

DOE's policy is to identify and correct and inadequate practices concerning safety past or present operation of its facilities. DOE, with the assistance of other agencies initiated many in-depth investigations into these potential health and safety concerns and taken corrective actions as soon as possible in cooperation with the respective stakeholders within existing budgetary constraints. Detailed descriptions of the events concerning releases are outside the scope of the EIS.

## II COMMENT

The commentor states the source term inventories in Volume 1, Appendix I-20 to I-23 that no explanation was found to account for how the list was reduced. The commentor states that spent nuclear fuel typically contains a large number of fission products and their modeling purposes, the list is often truncated by combining certain parent-daughter radionuclides eliminating the minor contributors to dose.

### RESPONSE

In some cases to facilitate modeling, the radionuclide distributions for representative sites were truncated to eliminate minor contributors to dose. The radionuclides eliminated account for a small percent of the total dose. Volume 1, Appendix I has been revised to clarify this information is contained in documents referenced in Volume 1, Appendix I.

## II COMMENT

Commentors express a lack of confidence in the transportation analyses because they are not able to explain how the numbers were obtained. For example, one commentor questioned the centralization at the Idaho National Engineering Laboratory requires fewer shipments from the Hanford Site, when 80 percent of DOE spent nuclear fuel is already at the Hanford Site. Another commentor questioned the verification and testing of computer codes used in the EIS. Some commentors questioned the transportation accident probabilities used and are concerned about the transportation accidents caused by substance abusers. Additionally, commentors questioned the effects of individuals in Idaho transportation corridor cities have been evaluated.

### RESPONSE

Volume 1, Appendix I summarizes the methodologies, key data, assumptions, and results for the transportation analyses. Details on the methodology, computer programs, models, and calculations are contained in supporting technical documents that are referenced in the EIS. For example, in Volume 1, Appendix I, DOE Complex Wide Spent Nuclear Fuel Shipment Estimates, DOE Programmatic Spent Nuclear Fuel Management Environmental Impact Statement, is more detail on fuel transportation. Therein it is noted that the Hanford fuel shipping is more efficient, whereas most of the INEL fuel is shipped in casks holding only 25 kilograms of fuel, whereas fewer shipments of fuel required to move fuel from INEL to Hanford than from Hanford. Supporting technical detail is so extensive that it could not physically accompany the EIS. Supporting technical documents are available in the reading rooms and informally identified in the EIS.

The computer codes used in the transportation analyses included the generally accepted impact assessment programs RADTRAN 4 and RISKIND, and the generally accepted transportation routing computer codes HIGHWAY and INTERLINE. These computer codes have been used by agencies in numerous EISs, environmental assessments, and other analyses. The codes have undergone rigorous independent review and were determined to be adequate for use in the analyses. The computer codes were also chosen to be complementary in order to balance potential consequences with risks of transportation.

The derivation of the transportation accident probabilities is described in Volume 1, Appendix I.

accident probabilities used in the EIS are based on historical statistics observed industries and account for many phenomena, such as weather, road conditions, and so on. The transportation analysis evaluated shipments from their point of origin to their destination. Incident-free and accident risk transportation analyses are presented for the entire state of Idaho, if a shipment happened to travel through, originate, or terminate in Idaho. The accident consequence analyses are presented for transportation accidents with probability of occurrence exceeding  $1\text{E-}7$  per year. The results are for various combinations of population density (i.e., rural, urban, and suburban) and meteorology. Results were not given for specific locations because of the large number of towns and cities along a transportation route in which accidents occur. Instead, the results were presented for accidents in various population density zones: suburban, and urban. To determine which accident corresponds to their town or city, the commenter match their particular population density zone to a population zone analyzed in the EIS. To find the consequences of a transportation accident in a suburban area such as Idaho Falls, the reviewer would look up the consequences of an accident in a suburban area; these consequences are representative of the consequences in Idaho Falls or Pocatello.

## II COMMENT

The commentor notes that transportation impacts are underestimated and that transportation impacts have been trivialized by the comparison with traffic fatalities.

### RESPONSE

Analyses in the transportation sections of both volumes of the EIS evaluated potential impacts on the public from the transportation of radioactive material using models, data, and site-specific information. The analyses were chosen to overestimate the actual impacts of transportation. For all alternatives, the impacts from transportation would be small.

The comparison of transportation risks with traffic fatalities is appropriate because the risk from vehicular transportation accidents is from traffic fatalities that are not associated with the transportation of radioactive material or exposure to radionuclides released during a transportation accident. A comparison is needed to provide some point of reference or perspective for the risk management. There was no intention to trivialize transportation risks.

## II COMMENT

The commentor states that the transportation assessment for the waste being sent off-site is not identified and may present cumulative impacts and waste management concerns for which are not analyzed in the EIS.

### RESPONSE

The comment refers to Volume 2, section 2.2.7, which discusses off-site incineration alternatives. The EIS identifies INEL as one of the existing options for treating low-level waste. The EIS section does not discuss the transportation assessment for shipping waste offsite. A transportation assessment is included in Volume 2, section 5.11. Volume 2, Table 5 lists anticipated waste shipments associated with each alternative, including shipments to an unspecified private-sector facility. To bound the transportation assessment, the project was assumed to be located in the southeastern United States, which maximizes the shipping distances. Incident-free and transportation accident analyses include the assessment of waste management and treatment. These were also included in the cumulative impact analyses.

## II COMMENT

The commentor questions the use of average annual risk for transportation impacts with a large difference in the number of yearly shipments.

### RESPONSE

The total cumulative risks from transportation for the period 1995 through 2035 are presented in Chapter 5 of the EIS. The total cumulative risk accounts for all years, including years when the number of shipments is high; however, the annual shipping rates are not expected to be large, so the average annual rate was considered. The EIS Summary has been changed to add clarifying words as agreed with EPA.

## II COMMENT

The commentor expresses an opinion that contractors at the Hanford Site are in a co situation and their assessment of contamination of the Columbia River lacks credibi  
RESPONSE

This specific issue discussed is not within the scope of this EIS; however it is th other Federal agencies to ensure that their contractors are not placed in or allowe interest situations. This EIS was thoroughly reviewed by DOE technical experts to and accurate. See also the response to comment 03.03 (008) regarding DOE credibili

## II COMMENT

Commentors express general fears about the "dangers" of nuclear power; about residi spent nuclear fuel, and/or radioactivity; and what they breathe, drink, and eat. S recent health concerns with their families or neighbors, or the effect on property should occur.

RESPONSE

DOE is aware of general public fears regarding radiation and radioactivity. The EI cumulative effect of DOE and Navy operations at the 10 candidate sites for SNF man The EIS concludes that there is no significant risk due to operations or reasonably involving SNF management, including transportation at any of the candidate sites. comment 05.15 (005) regarding property values.

## II COMMENT

The commentor states that public exposures from past releases such as the accidenta unknown.

RESPONSE

Radiation exposures resulting from past accidents, including the 1978 accidental cr assessed as cited in Idaho National Engineering Laboratory Historical Dose Evaluati cited as a reference in Volume 2, section 5.14.1.

The 1978 accident involved an unplanned nuclear chain reaction at the Idaho Chemica shielded hot cell. The incident lead to an estimated release of 620 curies, result dose of less than 0.1 millirem to the general public. There were no on-site or off

## II COMMENT

The commentor states that while sodium does not have a maximum contaminant level, i recommended level and does have an effect on humans.

RESPONSE

Although sodium levels exceed the recommended levels in isolated groundwater areas disposal has decreased in recent years. Sodium levels are shown on Table 2-4 in th Engineering Design File, available in reading rooms and information locations liste concentrations in the Snake River Plain aquifer are at or below background concentr boundary. There are no increased effects on off-site populations from sodium in gr On-site groundwater used for human consumption complies with drinking water quality established in the Safe Drinking Water Act.

## II COMMENT

The commentor does not want to receive indirect exposure from radioactive contamina chain.

RESPONSE

The EIS evaluates the potential indirect exposure from contamination in the food ch

the risks of radiation exposure to the public and to workers would be small for all based on evaluations of operations and analyses of potential facility and transport sections in the EIS that cover public safety include Volume 1, Summary, Public and Effects; Volume 1, sections 5.7.10 and 5.7.12; Volume 1, Appendices A through F, se Occupational and Public Health and Safety, and Facility and Transportation Accident Summary, Accident section; and Volume 2, sections 3.3.11, 3.3.13, and 4.11.4.

## II COMMENT

The commentor states that probabilistic risk assessments are unreliable and should radiological risks to the public or as the basis for decisions.

### RESPONSE

The accident analyses in the EIS used combinations of deterministic and probabilist Deterministic assessments are based on inductive reasoning wherein the analyst eval proposed initiating events such as equipment failures, human failures, and natural Probabilistic assessments are based on deductive reasoning wherein the analyst assu as the release of radioactive materials from a facility) and then evaluates the nec to produce the assumed result. Risk professionals and analysts consider these tech complementary. In the EIS, reasonably foreseeable accidents over a range of likeli using these techniques. The EIS concludes that risk to workers and the public woul alternatives considered.

## II COMMENT

The commentor states that public health analyses may not be adequate due to the lac and materials characterization.

### RESPONSE

Many sites are preparing separate EISs on waste management, including SRS and Hanfo waste characterization will be analyzed for impacts to public health in those EISs. Volume 1 of this EIS covers SNF management. Radiological impacts are addressed in because these impacts are of greatest significance in managing this material, and a the public.

DOE has added better references to Volume 2 to characterize waste streams and has a mapping to those references.

## II COMMENT

The commentor asks why the time period for obtaining occupational injury and illnes its contractors differs from that for private industry.

### RESPONSE

The evaluation in the EIS is based on the latest available reported data from each for obtaining occupational injury and illness rates differ because DOE and the Nati report their data at different intervals.

## II COMMENT

The commentor states that the analysis of worker doses emphasizes large accidents a address smaller events, such as unscheduled maintenance, that may give high doses t commentor asks if these are included under routine operations.

### RESPONSE

As discussed in Volume 1, Appendix F, Parts Two and Part Three, section 5.15, the a considered a range of events from comparatively frequent operational upsets to very each range of frequency, accidents with the most severe potential consequences were the accident analysis evaluates the upper bound of consequences for the smaller, mo described by the commentor. In addition, these smaller events are included in the conditions. Potential impacts to workers from operations are based on historical d

records include any doses from unscheduled maintenance and other high-dose activities in the dosimetry database. (See also Volume 1, sections 3.3.2 and 5.1.1 and Appendices A and B)

## II COMMENT

The commentor finds a paragraph on radiological health effects difficult to follow

RESPONSE  
Volume 1, Appendix F, Part Two, section 5.12 has been reworded to clarify its meaning

## II COMMENT

Commentors raise questions about or state that the EIS did not adequately discuss the impacts on the public and environment as a result of operating facilities.

RESPONSE

Volume 1, Chapter 5 and Volume 2, Chapter 5 discuss radiological and nonradiological impacts on the public relating to SNF management activities and environmental restoration and waste management activities at INEL. For all alternatives considered in this EIS, impacts would be limited to safety impacts to the public from the rest of DOE's operations are beyond the scope of this EIS.

## II COMMENT

Commentors state that radiological health impacts other than fatal cancer, total dose, and genetic effects are not addressed in this EIS.

RESPONSE

Risk of fatal cancers from exposure to radiation was used as a measure of impact throughout the EIS to provide a consistent document and to allow ready comparison with impacts, such as those from exposure to chemical carcinogens. Nonfatal health effects from radiation are a legitimate concern and are included in the EIS. Volume 1, section 5.1 was changed to clarify fatal and nonfatal cancers and genetic effects.

The EIS analyses of the potential effects of radiation exposure do consider health effects fatalities and are based on the standards of the International Commission on Radiological Protection. The term "health detriments" includes the total impact of all fatal cancers, nonfatal cancers, and genetic effects. The health detriments caused by any exposure to radiation are calculated by taking each effect after multiplying each effect by a weighting factor intended to represent the relative contribution of each type of effect has on human health.

Volume 1, section 5.1 discusses the terminology and risk factors used by the International Commission on Radiological Protection, which are consistent with those used by NRC. These factors were used in calculating the effects on human health. Cancer fatalities were used to sum the results in the EIS, because this effect was viewed to be of the greatest interest to the public. The states that the number of total health effects (deaths, nonfatal cancers, genetic effects on human health) may be obtained by multiplying the factor of 1.46 times the latent cancer risk.

## II COMMENT

The commentor questions the safety of spent nuclear fuel when in a shipping cask, and the potential radiation exposure of 10 millirem per hour at 1 meter from the surface of the cask.

RESPONSE  
The comparison of the 10 millirem radiation dose with a chest x-ray was intended to show that the projected doses would be small. DOE did not intend to imply that there would be no health effects associated with exposure to a shipping cask. In fact, no members of the public are exposed to a radiation dose of as much as 10 millirem because they would be at greater distances from the cask and exposed for much shorter periods of time.

## II COMMENT

The commentor questions the presentation of radiation dose and risk impact in Volume 1, Table 3-1 as an example and states that as radiation exposure doubles, the chance of increases by approximately a factor of 10.

RESPONSE

The comment is inaccurate. In Volume 1, Appendix D, Table 3-1, units are the lifetime over the entire 40 years for the alternatives listed in the table. The numbers are hours.

## II COMMENT

Commentors suggest that estimated releases from proposed facilities are too near the dose limit established under the National Emission Standard for Hazardous Air Pollutants should be implemented to reduce the dose to as low as reasonably achievable.

RESPONSE

The purpose of the EIS is to evaluate the potential environmental impacts from proposed facilities. For this reason, assumptions were made to ensure that estimated doses are conservatively upper bound of potential impacts. The EIS is not intended to substitute for the National Emission Standard for Hazardous Air Pollutants or any other regulatory requirements, including assessments of radiation doses under the National Emission Standard for Hazardous Air Pollutants.

## II COMMENT

The commentor expresses an opinion that DOE is not fully committed to protecting public safety.

RESPONSE

The Secretary of Energy has publicly affirmed that DOE policy and practice now place environmental considerations above other program goals. DOE is working to expediently rectify and eliminate adverse environmental impacts as a result of previous practices committed to protecting the safety and health of its workers and the public, and to the environment. DOE intends to design, construct, and operate all proposed facilities at a level of safety and of safety assurance that complies with applicable Federal, state, and DOE Orders.

## II COMMENT

The commentor questions whether the environmental, safety, and health effects of the radioactive releases from the K-basins have been adequately considered.

RESPONSE

The health effects for members of the public from radioactive releases are described in Appendix A, section 4.12.2. This section describes the environmental monitoring and consequences to the public from the Hanford Site. Volume 1, Appendix A, section 5.1, describes releases and dose consequences to the public from current activities at specific facilities.

## II COMMENT

The commentor questions whether public health impacts are underestimated in the EIS.

RESPONSE

DOE believes that conservative analyses have been used to estimate public health impacts. Discussion of this matter has been added to the EIS. The environmental impact analysis produces a reasonable projection of the upper bound for potential environmental consequences. requires the use of appropriately conservative assumptions and analytical approaches. "conservative" means that an assumption or analysis would tend to overproduce, rather than underproduce, impacts.



any adverse impacts. However, overly conservative analyses do not provide a useful alternatives. Therefore, the aim has been to avoid over conservatism and base the analyses on realistic, site-specific information wherever possible. Each alternative uses similar methods and levels of conservatism so that the relative impacts of alternatives are assessed.

The analysis of the impacts of operations and hypothetical accidents are based on two elements: input data and a model or analytical method for projecting potential elements necessarily introduce some uncertainty in the estimated level of impacts. The nature of the input data for each analysis is slightly different. Socioeconomic and projected budgets, for example, while air resources analyses are based on estimated. The analytical models are also fundamentally different for similar reasons. Therefore, uncertainty varies among the analyses in the EIS. However, for all analyses where assumptions have been required, generally accepted engineering and scientific approaches to ensure that these assumptions are not outside the range of uncertainty usually are. Detailed uncertainty analyses can sometimes be used to evaluate environmental impacts particularly valuable when projected impacts are large and it is important to know the projections are. However, quantitative estimates of uncertainty in impacts for hypothetical accidents are difficult to determine. When appropriately conservative estimates of impacts are used, the exact degree of uncertainty diminishes in importance. The estimated impacts in this analysis that detailed quantitative uncertainty analyses are not necessary to provide a mean potential consequences.

## II COMMENT

The commentor notes that EIS doses reported in rem are not defined as either "committed equivalent" or "total effective dose equivalent."

### RESPONSE

For readability, the generic term "dose" is used throughout the EIS in place of the terms "committed effective dose equivalent" (CEDE) or "total effective dose equivalent." In general, the doses reported in the EIS are TEDE; that is, the reported dose accounts for equivalent (EDE) from external radiation sources as well as the 50-year CEDE from internal sources. For the accident analyses in the EIS, the TEDE is generally dominated by inhalation and ingestion pathways. On the other hand, occupational doses from operations are almost entirely EDE. In either case, it is appropriate to identify the doses provided that doses from both external and internal pathways are accounted for.

## II COMMENT

The commentor states that Volume 2, section 4.7.3 overestimates the significance of radiation when compared with other exposures and that exposures that are a small fraction of background radiation are not necessarily "acceptable" because the public is usually unaware of fluctuations in exposure to background radiation.

### RESPONSE

Volume 2, section 4.7.3 presents a comparison of doses from INEL activities to background doses and attempts to call these doses acceptable.

## II COMMENT

The commentor asks if multiple sclerosis was included in the health effects studied by the National Engineering Laboratory or anywhere else.

### RESPONSE

Multiple sclerosis was not one of the health effects studied for INEL or any of the health effects considered were the ones generally associated with exposures to radiation. The health effects are the clearest indications of the effects of DOE activities discussed in the EIS. The effects of radiation exposure have not indicated any association between radiation and multiple sclerosis. Multiple sclerosis has been studied by medical researchers. For more information, contact the Multiple Sclerosis Society at 800-624-8236.

## II COMMENT

The commentor suggests that, with regard to incident-free transportation calculations be an oversimplification in either the radiological or the nonradiological models be observed in the range of results presented.

### RESPONSE

DOE has reviewed the models used for incident-free transportation calculations for nonradiological fatalities and has not identified any over-simplifications. The basic conclusion is apparently a comparison of the range between truck fatalities and rail general population presented in Tables I-15 to I-19 of Appendix I. Radiological fatalities include both fatalities for the general population and for workers.

## II COMMENT

The commentor objects to the characterization of a 34-percent increase in cancer risk.

The term "minimal" relates to the overall risk from operations of SNF facilities at 1 year of operations would be  $2.9 \times 10^{-2}$ . In other words, a 34-percent increase in still a very small number.

## II 5.11 Accidents/Releases

## II COMMENT

The commentor is concerned about the effects from even small accidents.

### RESPONSE

Volume 1, Chapters 3 and 5 and Appendices A through F; and Volume 2, Chapters 3 and F discuss risks to the public, workers and the environment due to a range of large discussions include extensive evaluations and analyses of accidents. Small accidents the analysis, particularly if they have a high probability of occurring. The EIS shows workers and the public from all accidents would be small for all of the alternative

## II COMMENT

The commentor states that, although there are no known disasters in handling of the exists, no one can say that a disaster will not be created.

### RESPONSE

Volume 1, Chapters 3 and 5 and Appendices A through F, and Volume 2, Chapters 3 and F, discuss risks to the public, workers, and the environment due to facility and transportation including SNF- handling accidents. The EIS analyses also evaluate the potential consequences of accidents. These analyses have been extensively reviewed. The EIS shows that the public from such accidents would be small for all alternatives considered.

## II COMMENT

The commentor questions the rationale of including analysis of a spent nuclear fuel involving a release of large amounts of radioactive materials, as the historic record of transportation accidents shows no such releases.

### RESPONSE

DOE agrees with the commentor's assessment of the historical safety record for SNF activities. Consequently, DOE assigned a probability of  $1 \times 10^{-7}$  (one in one million) for SNF transportation accidents accompanied by a large release of radioactivity.

## II COMMENT

The commentor suggested that a rural population would represent a "best case scenario" in the event of a release from containment at the Oak Ridge site.

### RESPONSE

This comment concerns the description of the existing socioeconomic conditions provided in Chapter 4. These generalized population distributions were not used in accident assessment as discussed in Volume 1, Appendix F, Part Three, section 5.1.1. The most populous sector was used to maximize potential radiation population.

## II II COMMENT

The commentor states that DOE should more fully study the potential effect of mass storage tanks at the Idaho National Engineering Laboratory regarding impacts on all downwind, and on the site.

### RESPONSE

The evaluation of facility accidents in the EIS considered a range of large to small maximum reasonably foreseeable accidents. Reasonably foreseeable accidents as defined in Recommendations for the Preparation of Environmental Assessments and Environmental Statements include those for which impacts may have very large or catastrophic consequences. Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment all of the alternatives considered.

The maximum reasonably foreseeable accident considered in the EIS with a potential River Plain aquifer was the immediate release of 300,000 gallons of radioactive liquid waste tank at the Idaho Chemical Processing Plant. The assessment, discussed in Volume 2, shows that the impacts to the aquifer would be small; for example, drinking water supply would not be exceeded at the site boundary. No adverse impacts to other life forms would be expected from an accident.

Also discussed in Volume 2, section 5.14 is the maximum reasonably foreseeable accident result in an airborne release of radioactive or hazardous material at INEL. This is based on an earthquake at the Argonne National Laboratory-West Hot Fuel Examination Facility. Table 5.14-4, should such an incident occur, a potential exists for limited adverse impacts on wildlife onsite or downwind of the facility. No impacts would be expected to endanger species for this or any other reasonably foreseeable accident.

## II COMMENT

Commentors state that there are significant safety problems at the Idaho National Engineering Laboratory including historical accidents, and operational incidents.

### RESPONSE

DOE's accident history at INEL has been compared with other industries, as summarized in section 5.14.1. This comparison shows that the accident rate at INEL is lower than private industrial work. Past accidents were analyzed in Idaho National Engineering Laboratory Historical Dose Evaluation, and reasonably foreseeable accidents were analyzed in A for Idaho National Engineering Laboratory Facilities. Protection of members of the workers against accidents is considered by DOE in the design, location, construction, and operation of facilities. The EIS shows that the risk to workers and the public from facility accidents is all of the alternatives considered.

## II COMMENT

The commentor states that the work-day population of the Idaho Chemical Processing Plant is 1,000, and that DOE does not explain why a lower number of workers was used in the potential collapse of the main stack caused by an earthquake.

### RESPONSE

A seismic event large enough to cause a stack collapse would clearly initiate an emergency response. Workers would either take cover or evacuate as directed by the emergency response. A qualitative assessment of the number of workers either within the range of the stack or on the normal evacuation path might be impeded by debris from the stack collapse. Indicated workers could be affected.

## II COMMENT

The commentor states that the more material that exists at a particular location, the more likely an accident will occur.

### RESPONSE

DOE agrees with the comment. The likelihood of accidents as assessed in the EIS depends on the fuel handling rate and the amount of waste. Both of these considerations were included in the analyses discussed in Volume 1, site-specific Appendices A through F, and Volume 2,

## II COMMENT

The commentor states that the analysis associated with a radiological release following a release to the Snake River Plain aquifer.

### RESPONSE

In terms of the consequences to the Snake River Plain aquifer, the maximum reasonable potential impact was a release of the entire contents of a tank at the Idaho Chemical Processing Plant. This potential accident is discussed in Volume 1, Appendix F-5. The analysis assumed a seismic event of sufficient magnitude to cause a tank failure, and 300,000 gallons of high-level waste to be released to the soil beneath the tank. The migration of contaminants into the aquifer showed that even without any mitigation, the maximum concentration of radionuclides at the nearest site boundary was within required drinking water standards.

The analyses of accidents described in Volume 1 and Volume 2 of this EIS include a tank failure that might release radioactive material to the Snake River Plain aquifer or to the atmosphere. These analyses are described in Volume 1, Appendices B and D, and in Volume 2, section 5. These analyses show the risks to the public and workers would be small for all of the accidents considered.

## II COMMENT

The commentor expresses the opinion that the fuel handling control systems at the Idaho Chemical Processing Plant are inadequate, and suggests the likelihood of a criticality may be higher than in the EIS, particularly as the Idaho National Engineering Laboratory consolidates, and stores more spent fuel. The commentor states that a criticality accident at ICPP-666 would have a frequency closer to 1E-01 per year rather than 1E-03 per year. Thus, the commentor's evaluation of an inadvertent nuclear criticality in ICPP-666 is needed to complete the EIS.

### RESPONSE

DOE established an estimated annual frequency for a criticality accident during SNF storage in a water pool by consensus of a group of experts. To the knowledge of these experts, there has never been a criticality accident anywhere in the world during storage of SNF in a water pool. The experts' opinion was that a frequency of 1E-4 events per year was a representative value for accidental criticality in a water pool throughout all DOE SNF handling and storage. DOE's consensus that controls in effect at a specific facility and the condition of fuel in the facility may justify the use of a larger or smaller value, but that overall the probability is in the range of 1E-03 to 1E-05 events per year. Detailed review of the EIS would reveal the frequency of this accident in specific facilities.

Based on this consensus, the estimated annual frequency for a criticality accident is 1E-03 per year in Volume 1, Appendix B. The higher frequency of occurrence was based on the storage arrangement, and the type, age, and condition of fuel in ICPP-603. ICPP-603 and storage arrangements for fuel in ICPP-666 are better than for fuel in ICPP-603. DOE expects that the frequency of occurrence of an accidental criticality in ICPP-666 will be lower than in ICPP-603. Accordingly, a starting estimate of 1E-04 per year is more appropriate.

ICPP-666 has a larger fuel inventory than ICPP-603. Methodology was established in the EIS to adjust the frequency of occurrence for fuel inventories and for the number of operations. It was determined that a fuel inventory difference does not directly affect the occurrence of an inadvertent criticality, but only indirectly through an effect on the future

as it was in the past. Accordingly, it is appropriate to use  $1\text{E-}04$  per year as the estimated frequency of occurrence of a criticality accident for ICPP-666.

The commentor also implies that receipt of more reactive Navy fuel would cause the criticality accident to increase. Because fuel is more reactive does not necessarily increase the occurrence of an inadvertent criticality. ICPP imposes additional administrative controls on reactive fuel (e.g., when such fuel is being handled, only one module is allowed to be open at a time). Thus, the frequency of occurrence of an inadvertent criticality for handling ICPP-666 remains on the order of  $1\text{E-}04$  per year.

The commentor states that 1) ICPP has not performed a detailed assessment of nuclear fuel and ICPP-666 fuel-handling operations; 2) ICPP has not conducted comprehensive accident analyses of planned operations; and 3) ICPP has not developed and implemented a fuel control system. The commentor is incorrect. All of these actions were completed for ICPP-666.

The commentor further alleges that if SNF is consolidated at the Idaho National Engineering Laboratory, "there will be a much higher probability that an accidental nuclear criticality will be caused by the EIS." The results in the EIS for ICPP-603 represent the bounding inadvertent frequency of this event does not change for various alternatives, because movement of fuel would take place under all alternatives. If other fuels are consolidated at ICPP, used for storing that fuel. The frequency of occurrence of an inadvertent criticality somewhat in another facility, either existing or yet to be built, for storage of the fuel. For example, the frequency of an inadvertent criticality in ICPP-666 may increase from  $1\text{E-}04$  per year if all the consolidated fuel were handled there. Nevertheless, the bounding event frequency for all alternatives is expected to be an event in ICPP-603 as stated in the EIS.

## II COMMENT

The commentor states that the location selected for the potential spent nuclear fuel storage at the Oak Ridge Reservation will be next to the Y-12 "walk-in pits," which contain highly pyrophoric chemicals.

### RESPONSE

The Y-12 pits are actually 4 miles from the West Bear Creek Valley site selected for management activities at ORR. The distance is accounted for in accident impacts analyses in the EIS, and no significant adverse environmental or health and safety impacts are foreseen as a result of the proximity of the Y-12 pits.

## II COMMENT

The commentor asks for a description of the cask drop accident mentioned in Volume 1 of the EIS.

The cask drop accident mentioned is a postulated scenario in which a cask holding spent fuel rods overturned in the fuel transfer area of the 105-KE or 105-KW basins at the Hanford Site. Broken spent fuel rods might spill out of the cask and onto the floor of the building. This accident is described in detail in Volume 1, Appendix A, section 5.1 of the EIS has been changed to correctly reference the cask drop accident.

## II COMMENT

The commentor recommends clarifying how the estimated frequency of a fuel-handling accident at the Idaho National Engineering Laboratory, and the impacts associated with it, would change for the various alternatives.

### RESPONSE

The characteristics of accidents analyzed under the each of alternatives are adjusted to reflect the differences in fuel handling operations.

scaling factors developed for both frequency and consequences (see Accident Assessment National Engineering Laboratory Facilities). For example, the expected frequency of accident involving SNF would be greater in the 1992/1993 Planning Basis alternative because of the increased number of handling events in the 1992/1993 Plan compared with the No Action alternative. But no adjustments to the consequences would be made because the same type and amount of "material at risk" would be involved.

## II COMMENT

The commentor states that the accident impacts would decrease for Oak Ridge under the alternative due to storage upgrades not included in the No Action alternative.

### RESPONSE

Volume 1, section 5.1 has been modified as identified by the commentor.

## II COMMENT

The commentor notes that no liquid releases are planned for normal operations and to address whether these plans are subject to change; and if so, analyses should be made.

No current plans exist to change the operating scenario (i.e., no liquid releases to the environment, as stated in Volume 1, Appendix F, Part Two, section 5.8.1). Nevertheless, the release scenario was evaluated for this EIS, which represents a maximum amount of liquid that could be released under operating conditions. This evaluation should be sufficient for operations releases.

## II II COMMENT

Commentors indicate the EIS failed to analyze transportation accidents while transporting nuclear fuel through inland waters of the United States.

### RESPONSE

Volume 1, Appendix I has been expanded to include three additional shipping scenarios: N-Reactor SNF from the Hanford Site to Sellafield, England, for processing. The scenario and U.S. territorial water barge transport of SNF and transoceanic shipment of SNF. Accident consequences are included for port activities as well as during ocean transport. The public from these activities has been shown to be very small. This evaluation is an example of reasonably foreseeable impacts. Analyses, impacts, and consequences of research reactor (FRR) SNF on the open seas to the United States is addressed in the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactors and Nuclear Fuel.

## II COMMENT

Commentors suggest that the EIS describe the historical spent nuclear fuel accident in 1971 and 1993 to determine if any had occurred in urban or suburban areas where the accident was noted by the EIS to be very low (less than  $1 \times 10^{-7}$  per year).

### RESPONSE

The  $1 \times 10^{-7}$  per year probability cited by the commentors does not refer solely to SNF accident; rather, it refers to the probability of an SNF accident accompanied by radioactivity. Based on the historical record, no SNF accidents in any areas (rural or urban) have resulted in the release of large amounts of radioactivity.

## II COMMENT

The commentor notes that the EIS does not address the potential for shipboard fires

contamination as a result of those fires, or the impact to emergency response personnel should a shipboard fire occur.

#### RESPONSE

The analysis of accidents, including shipboard fires, in ports and on ships, and the emergency response personnel for FRR SNF is beyond the scope of this EIS. However, accidents and their impacts are being addressed in a separate EIS entitled Proposed Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft as well as a decision as to whether the United States will receive such SNF).

The criteria used to choose the ports of entry are outlined in the Notice of Intent Register Vol. 58, No. 202, October 21, 1993, pages 54336-54340). These criteria include (a) harbor and dock characteristics to satisfy the cask-carrying ship requirements, and secure lag storage, (c) adequacy of overland transportation systems from ports, (d) experience in safe and secure handling of hazardous cargo; (e) emergency preparedness and nearby communities; and (f) proximity to the proposed storage sites. A range of impacts also be analyzed in the FRR EIS. The decision regarding port selection will not be made until the FRR EIS is completed.

An analysis of a shipboard fire involving Naval SNF is included in Volume 1, Appendix Attachment F.

## II COMMENT

The commentor requests inclusion of a shipboard fire accident scenario in the EIS.

#### RESPONSE

Shipboard transport and handling of SNF is beyond the scope of this EIS. Policy alternatives for States origin foreign research reactor SNF, and for its transport, receipt, handling, and impacts addressed in a separate environmental impact statement (58 FR 54336). The FRR SNF impacts of marine transport and receipt of FRR SNF at six or more ports of entry, and potential accidents, including a shipboard fire, will be evaluated.

An analysis of a shipboard fire involving Naval SNF is included in Volume 1, Appendix Attachment F.

## II COMMENT

Commentors raise the issue that transportation-accident health impacts to Tribal members living along Interstate-15 through the Shoshone-Bannock Reservation are not included in the EIS.

As discussed in Volume I, section 5.11.2, radiological impacts for incident-free transport are determined for (1) crewmen (drivers) and (2) members of the public. The crewmen category includes drivers of the shipments, and the members of the public category includes Tribal members. For incident-free transportation, the radiological effects on a shipment inspector may be encompassed within the effects to a crewman or driver of shipments based on the time the inspector interacts with a shipment compared to the interaction time of the driver. The effects to the driver are based on the driver receiving radiological exposure, while in the cab of the vehicle and during detailed inspections of the cargo and the radioactive material.

Incident-free radiological impacts to Tribal members for SNF and radioactive waste shipments along a reservation are encompassed in the existing EIS analyses for members of the public density along a generic transport route.

A reservation-specific accident analysis would not provide information additional to that provided in Volume 1, Appendices D and I for the programmatic alternatives. The probability of an accident occurring along a specific 20-mile segment of interstate shipment is so small that it is beyond the range of analysis required for a programmatic EIS.

## II COMMENT

The commentor states that previous releases and accidents at DOE sites were intentional. The commentor also discusses previous and potential releases of radioactivity from government sites.

## RESPONSE

It is DOE policy to identify and correct any inadequate practices concerning safety operation of its facilities. In this regard, accidents and accidental releases are releases from DOE facilities under all operating conditions are included in annual Detailed accounts of the events related to prior accidents or releases are outside EIS addresses the impacts of a number of reasonably foreseeable accidents related to with no significant risk of health effects or environmental impacts identified. DO current, and reasonably foreseeable future activities in assessing the cumulative i small.

The environmental impact analyses are designed to produce a reasonable projection of potential environmental consequences. This requires the use of appropriately conse and analytical approaches. In this context, "conservative" means that an assumptio to overproduced, rather than underpredict, any adverse impacts. However, overly co not provide a useful basis for comparison among alternatives.

## II COMMENT

Commentors, when referring to the transportation discipline, state they are confuse reasonably foreseeable accident." For example, commentors state they wonder if thi worst-case accident and whether the EIS has evaluated such an accident. Commentors constitutes the maximum reasonably foreseeable accident, and commentors state they would deal with such an accident if it occurred.

## RESPONSE

The EIS evaluates two complementary aspects of the impacts from transportation acci aspect is the risk associated with transporting radioactive material; transportatio the probabilities and consequences of a complete spectrum of transportation acciden with high probabilities and low consequences, to accidents with low probabilities a The second aspect is the consequence associated with a bad transportation accident. is too subjective and statistically, has virtually no probability of occurring. In accident that better represents an accident that could occur, but one which has lit This kind of accident is termed the "maximum reasonably foreseeable accident." In guidelines for accident analyses in EISS, this accident was chosen based on having  $\times 10^{-7}$  per year or about one in 10 million per year. This kind of accident is roug used to be called a worst-case accident, except that it is chosen based on a specif  $\times 10^{-7}$ ).

For most alternatives, an accident involving a rail shipping container containing S reasonably foreseeable accident. The precise accident scenario that leads to the m foreseeable accident is not described because there are different combinations of f lead to the accident conditions. For example, a high-speed train collision with th followed by a high-temperature fire that lasts 2 to 3 hours could lead to these co other combinations of fire and impact that could lead to the same conditions. App various combinations.

The mitigation of transportation accidents may come either before or after the acci used before the accident include shipping the radioactive material in approved cont containing large amounts of radioactive material, such as SNF, only containers that designed to withstand hypothetical accident conditions are used. In addition, tran chosen to minimize the risk associated with transporting radioactive material. Mea a transportation accident include emergency response and EPA protective action guid to limit doses.

The EIS Summary was changed to clarify this concept.

## II COMMENT

The commentor asks about the impacts to the Idaho agricultural industry resulting f of hazardous materials to the air or to groundwater.

## RESPONSE

Volume 1, Chapters 3 and 5 and Appendices A through F, and Volume 2, Chapters 3 and F, discuss risks to the public, workers, and the environment due to facility accide impacts from accidents would be small for all of the alternatives considered.

The maximum reasonably foreseeable accident considered with a potential impact to t



aquifer was a release of the entire contents of a high-level waste tank at the ICPP 2, section 5.14. The assessment shows that even without taking credit for mitigating the aquifer would be small; for example, drinking water standards would not be exceeded. As shown in Volume 2, Table 5.14-4, for any accident involving an airborne radioactive or hazardous material at INEL, there is a potential for limited economic 1-year restrictions to public lands or up to a 1-year agricultural land withdrawal immediately adjacent to INEL (up to an estimated 10,000 acres).

## II COMMENT

The commentor notes that it is inconsistent to say no cases were found where an accident could cause an accident in a collocated facility when an earthquake could cause multiple facility and across the entire site.

### RESPONSE

Qualitative assessments of accidents associated with existing and proposed operations for causing accidents in another facility were part of the accident evaluation. No accident in one facility would cause an accident in another facility greater than accidents already considered in the EIS. The potential for simultaneous accidents with seismic initiator is described in Volume 2, section 5.14. DOE's analysis shows that would be bounded by those resulting from the postulated accidents at the Argonne National Laboratory, Appendix B, the consequences and risks associated with multiple facility accidents eliminated from further consideration because they do not represent the maximum realistic accidents within the frequency categories defined in Volume 1, Appendix B, Table 5.

## II COMMENT

Commentors state that the effects of a large earthquake at the Nevada Test Site show high consequence, low probability event.

### RESPONSE

In the EIS, the accident yielding the largest radiation dose (i.e., the bounding event) is the dry cell facility scenario. This accident scenario assumes a breach of the subsequent airplane fuel fire resulting in a plume of contaminants. The results of the analysis are provided in Volume 1, Appendix F, Part Two, Tables 5.15.1 through 5.15.6. A large-earthquake scenario was considered in the EIS. It was determined that the scenario differs from the airplane crash scenario in that there is limited combustible material spilled airplane fuel is not present during an earthquake, and ignition sources are limited. Impact of subsequent fires and resultant contaminant plumes was found to be less in the earthquake scenario than for the airplane-crash scenario. As a result, a more detailed analysis was not warranted.

## II COMMENT

The commentor expresses disbelief that impacts from accidents such as Three Mile Island would not cause damage if they occurred at the Idaho National Engineering Laboratory.

The nature of potential accidents associated with storing SNF, as well as treating wastes, at INEL differs from the types of accidents the commentor mentions. Nuclear accidents cited were so intensely radioactive that the heat they generated could melt or burn the fuels in the absence of cooling. For SNF in long-term storage at INEL, radioactivity has occurred long enough that the heat the fuel generates would be more than required for fuel melting. The fraction of radionuclides available to be released is smaller for nonmelted fuel than for reactor fuel that could melt by internally generated heat. This EIS shows that the risk to workers and the public from INEL facility accidents is less than for the alternatives considered.

## II COMMENT

The commentor notes that flooding could occur at the Idaho National Engineering Lab impacts to water resources should be addressed.

#### RESPONSE

The INEL accident analyses, summarized in Volume 1, Appendices B and D, and Volume 2, considers flooding and other natural phenomena as potential causes of accidents. Scenarios were selected for detailed analysis because they were comparatively likely, and some were selected for detailed analysis because of their large potential consequences. The consequences of the high-level waste tanks was selected for detailed analysis instead of flooding inventory in the high-level waste tanks has a larger potential for consequences to flood. The high-level waste tank failure accident is reported in Volume 2, section 2.2.1. The aquifer would be small under all the alternatives that were analyzed.

## II COMMENT

The commentor states that risks associated with Idaho National Engineering Laboratory storage, waste management, and reburial of wastes for the Pit 9 Retrieval project have been characterized in the EIS. The commentor further asks that if the Pit 9 waste is not on ground, what is the case with the safety of the tons of high-level waste in storage?

#### RESPONSE

The Pit 9 Retrieval Project is an on-going project initiated under INEL FFA/CO and other alternatives. Simply stated, the project will excavate previously buried wastes, separate components, and rebury the remaining waste. The separated components would be placed and stored in the Transuranic Storage Area of the RWMC. While the Project has separate documentation, the Pit 9 Retrieval Project impacts were included in this EIS as part of a summary of Pit 9 Retrieval Project is given in Volume 2, Appendix C. Risks, including those associated with the Pit 9 Retrieval Project are part of the baseline impacts summary in Chapter 5. Post-treatment low-level waste from Pit 9 could be stored safely above ground, contaminated with fewer than 10 nanocuries per gram alpha-emitting radionuclides, and returned to shallow land burial. The section in the EIS Summary entitled Public Works notes that the risk from facility accidents would be small for the alternatives considered.

## II COMMENT

The commentor states that collocation issues are not discussed, and that there is a potential for secondary impacts from an accident in one facility on other operating facilities at the Idaho National Engineering Laboratory.

#### RESPONSE

Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and to facility accidents at INEL. As indicated in the EIS, the discussion is a summary of the detailed Accident Assessments for Idaho National Engineering Laboratory Facilities includes evaluations and analyses of accidents that were extensively reviewed. Qualitative accidents associated with existing and proposed operations, and their potential for secondary impacts in another facility, were part of the accident evaluation. No causal link between an accident in one facility would cause an accident in another facility greater than already considered in the EIS. Secondary impacts to other facilities were limited to increased costs. No other collocation issues were identified.

## II COMMENT

Commentors suggest that particles released from the main stack at the Idaho Chemical Processing Plant on April 2, 1992, could be dispersed by wind and that a single 3-milligram particle could cause an exposure of 10 millirem in about 3 1/2 hours. Commentors suggest that the release of such particles was not analyzed because of the assumption of interdiction measures.

#### RESPONSE

In the incident at the ICPP main stack, a release of quarter-sized flakes of ammonium nitrate at an elevation of about 250 feet. All detectable material was found within an area 2,560 feet in diameter.

yards long, about 12 acres. Thus, it is unlikely that any detectable radioactivity the INEL boundary. A subsequent cleanup effort with high efficiency particulate air equipment returned the contaminated area to levels below those for noncontaminated with DOE Order 5480.11, Radiation Protection for Occupational Workers. Resuspension of radioactive materials from the ground by wind is acknowledged as a mechanism. Windborne resuspension reduces the amount of exposure at any given distance of releases, but increases the area in which some exposure occurs. The commentor is that direct contact with a 3-millirem-per-hour particle for about 3 1/2 hours would whole body dose of 10 millirem. Rather, only that part of the body in contact with receive a localized dose of 10 millirem. Depending on the exposure pathway, it may such particles to result in an effective whole body dose of 10 millirem. For the I with the maximum reasonably foreseeable consequences, and with the most unfavorable conditions, some restrictions on use of agricultural products might be implemented established protective action guides.

## II COMMENT

Commentors raise the issue of health risks involved should there be an accidental saturation water table at the Idaho National Engineering Laboratory.

### RESPONSE

Volume 1, Chapters 3 and 5 and site-specific Appendices A through F; and Volume 2, and Appendix F discuss risks to the public, workers, and the environment due to a facility accidents. The maximum reasonably foreseeable accident considered with a Snake River aquifer was the release of the entire contents of a high-level waste tank at the Processing Plant. This accident is discussed in Volume 2, section 5.14. The assessment without taking credit for mitigation measures, impacts to the aquifer would be small at the site boundary would be within requirements of the safe drinking water standards.

## II COMMENT

The commentor states that the EIS fails to fully assess the Idaho Chemical Processing waste tanks and vaults, including structural constituents, seismic (risks), leakage and service line leaks.

### RESPONSE

A maximum reasonably foreseeable accident associated with the high-level waste tank at the EIS, as reported in Volume 2, section 5.14. A more detailed description of the Accident Assessments for Idaho National Engineering Laboratory Facilities. The analysis of a seismic event of sufficient magnitude to cause one or more tanks to fail, and 300,000 gallons of waste to be released to the soils beneath the tank farm. Modeling of migration of Snake River Plain aquifer showed that even without any mitigation measures, the maximum of radionuclides at the nearest site boundary would be within requirements of safe standards.

## II COMMENT

Commentors express disbelief that a criticality would occur only once in 10,000 years at a fuel storage pool; risk methods used to estimate number of latent cancers are also not believable to commentors.

### RESPONSE

DOE acknowledges a typographical error in Volume 1, Chapter 5. The estimated probability of a criticality accident at the ICPP is 1 chance in 1,000 per year of operation, not 1 in 10,000. While DOE recognizes the potential for a criticality accident in an SNF storage pool, it is not a nuclear criticality in the history of the DOE complex or in the experience base represented by the commercial nuclear power industry. The evaluations in this EIS of the probability of an inadvertent criticality consider including facility design controls, administrative controls, fuel inventories, fuel of some fuels, and fuel-handling frequencies. In addition to the estimated probability, risk depends on the consequences of a criticality, which were conservatively calculated.

The risk factors for cancer induction used in the EIS were taken from the most recent Commission on Radiological Protection recommendations (1990 Recommendations of the Commission of Radiological Protection), which reflect the most recent and most wide of all currently available data. The authors of ICRP 60 reviewed all available studies. Appendix A provides a useful primer on radioactivity and radiation dose. Volume 2, provides a discussion of how radiation doses were calculated and how cancer risks were calculated. Volume 1, Appendix D, section F.1.3.3 and Volume 2, Appendix F-4 discuss the terms and factors used by the International Commission on Radiological Protection and how they were applied in calculating the effects of radiation on human health in this EIS. Cancer fatalities were used in the EIS to summarize and compare the results, since they are of the greatest interest to the most people. The typographical error in Volume 2 has been corrected.

## II COMMENT

The commentor asks DOE to clarify whether the "accident scenario with the highest risk" in the Summary is equivalent to the "maximum credible accident" or "maximum conceivable accident" or "maximum foreseeable accident" or "maximum reasonably foreseeable accident" as reported in Volume 2.

### RESPONSE

The accident scenario with the highest risk as reported in the Summary is not necessarily "maximum credible" or "maximum conceivable" or "maximum foreseeable" or "maximum reasonably foreseeable" accident. The evaluation of facility accidents in Volume 1, Appendix E.1.5; and Volume 2, section 5.14 consider a range of accidents, from relatively common handling accidents, to very rare events, such as an aircraft crash into a facility. "maximum reasonably foreseeable" accidents. For NEPA purposes, they are accidents with catastrophic consequences even if their probability of occurrence is low, provided the impacts are supported by credible scientific evidence, is not based on pure conjecture of reason" [40 CFR section 1502.22(b)]. In many cases, these accidents were beyond the facilities and more severe than the maximum reasonably foreseeable accident for the facilities. Accident risks were determined by multiplying accident consequences by accident probability. The accident scenario with the highest risk are reported in the Summary because they bound the risks from

## II COMMENT

The commentor suggests that because of the potential for causing contamination in the event of a seismically initiated Mackay Dam failure, a dynamic analysis of the dam structure is warranted to determine its level of seismic resistance.

### RESPONSE

DOE considered the failure of the Mackay Dam in its analysis and found that the potential event would be much less than the maximum reasonable foreseeable accident scenario. As a result, a dynamic analysis of the dam structure to determine its level of seismic resistance is unwarranted.

Mackay Dam is an earthenfill structure completed in 1917 and has a storage capacity of 1.5 million acre-feet. The dam was not built to conform to seismic or hydrologic design criteria. In 1978, the dam was classified as a high-hazard dam by the State of Idaho, based on inspections by the Idaho Department of Water Resources and the U.S. Army Corps of Engineers (Phase 1 Inspection Report). The dam is located 10 miles northwest of the epicenter of the 1983 Borah Peak earthquake. Following the earthquake, the dam was inspected and there was no structural damage to the dam or the outlet works. The dam's ability to withstand severe seismic activity is unknown, the performance of the dam during the Borah Peak earthquake demonstrated the stability of the embankment during moderate ground motion (Flood Routing Analysis for a Failure of Mackay Dam). Following the earthquake, stabilization work was completed on the right abutment of the dam and the outlet works were cleared of rock debris. The dam was inspected by the Idaho Department of Water Resources and the U.S. Army Corps of Engineers (Letter, Department of Water Resources to Mr. J. Doyle Jensen, Big Lost River Irrigation District, April 20, 1984). In spite of the good record for the dam, various postulated dam failure scenarios have been developed in regard to flooding of INEL facilities. These postulated failures include piping failure, dam collapse, and overtopping of the dam structure during the hypothetical probable maximum flood. In all cases, the reservoir was assumed to be full at the start of the initiating event.

failure, the failure was assumed to occur during the 25-year return period flood with full reservoir of 4,030 cubic feet per second (Flood Routing Analysis for a Failure of Mackay Dam). These conditions bound any additional water that could be impounded by ice dams above the Big Lost River plain is relatively flat and the depth of the river is relatively small (feet), making the storage of significant bodies of water behind ice dams beyond realistic. In all the above cases, it is assumed that the Big Lost River diversion dam would be the most likely failure, with the probable maximum flood being by far the worst case (Flood Routing Analysis for a Failure of Mackay Dam). The probability of a probable maximum flood leading to dam failure is estimated to be less than  $1.0 \times 10^{-6}$  per year [Flood Evaluation Study; Radioactive Waste Complex (Draft)]. Although the probability for a seismically induced failure of the dam was not calculated, the probability of seismic failure causing total collapse, coupled with the dam would overtop dikes at the RWMC (Safety Analysis Report for the Radioactive Waste Complex at the Idaho National Engineering Laboratory), although there would be some contamination of the Reactor Area, ICPP, Expanded Core Facility, and Test Area North areas (Flood Routing Analysis for a Failure of Mackay Dam). Even for probable maximum flood conditions, the flood water transported contamination would be contained within the boundaries of INEL (Flood Routing Analysis for a Failure of Mackay Dam). Groundwater contamination could be introduced during an accident has been bounded by the assessment of a seismic failure of the high-level tanks which is assumed to rupture one or more tanks, releasing 300,000 gallons of high-level waste beneath the ICPP tank farm. The maximum reasonably foreseeable event would be a seismic event more severe than flood-induced contamination over a large surface area.

## II COMMENT

The commentor expresses the opinion that DOE and the Department of Defense should be more cautious in disposing of radioactive waste because the area at the Idaho National Engineering Laboratory is seismically and volcanically active and could cause a radioactive release to the environment. SN RESPONSE

Seismic hazards and geologic analyses can be found in Volume 1, section 4.2 and Appendix F-2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and INEL has reviewed analyses to support the enforcement and implementation of DOE Orders and has made an extensive effort has occurred over the past several years to upgrade DOE Orders and address natural phenomena hazards. Studies have been under way for many years and are continuing to ensure that seismic hazard characterization is based on up-to-date information and improved methods. New geologic information on seismic hazard characterization is continually being determined if additional geologic studies are needed.

DOE has analyzed the effects of a hypothetical lava flow event at INEL. The geologic flow is discussed in Volume 2, section 4.6.4, and the estimated consequences of such various alternatives are shown in Volume 2, section 5.14, Tables 5.14-3, -5, -6, -8. The methodology used for performing these analyses is documented in Volume 2, Appendix F-2, Accident Assessments for the Idaho National Engineering Laboratory Facilities. As part of these analyses, the DOE used conservative assumptions to account for the uncertainty in modeling an accident involving molten lava coming into contact with radioactive materials. The results of these analyses are well below DOE's Nuclear Safety Policy.

DOE has considered the potential for a volcanic ashfall event at INEL in Volume 2, Appendix F-2.1.2. As stated in section 4.6.4, potential ashfall events at the site. The risk associated with an ashfall event is bounded by the accidents evaluated in section 5.14. The impacts on the Hanford Site resulting from the Mount St. Helens eruption were small. The Volcanism Working Group (Assessment of Potential Volcanic Hazards at the Production Reactor Site at the Idaho National Engineering Laboratory) determined that volcanic events are small for INEL. Therefore, a silicic ash-flow hazard at the INEL is not a reasonably foreseeable significant adverse impact on the human environment.

A hypothetical accident involving the instantaneous release of the contents of a high-level waste tank represents the situation with the most potential impact on the Snake River Plain aquifer under geologic conditions at the INEL and is discussed in Volume 2, sections 5.14 and Vol 2. Under this scenario, maximum radionuclide concentrations are predicted to reach the maximum within a few years after the accident and predicted concentrations will be less than EPA MCLs or DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE procedures to assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifies that the assessment be re-evaluated upon any change in design and construction standards. Existing f

undergone continual safety analysis and seismic design review. Several of the projects in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities resulted from the ongoing safety analysis and seismic design reviews.

No new analyses are required for DOE Idaho Operations Office-managed facilities because they summarize credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The analysis is based on methods generally accepted by the scientific community. The EIS evaluates the potential consequences including direct, indirect, cumulative, irreversibility effects and long-term productivity losses. See also the responses to comments 05.08.01 (030).

General discussions of waste management procedures and plans are covered in Volume 2. Therein it is noted that the DOE is committed to a strategy emphasizing waste minimization, with the goal being that most newly generated radioactive waste will be managed through necessary cleanup activities and decommissioning of contaminated facilities that no longer have missions. The DOE complex-wide management and cleanup of wastes associated with these activities is outside the scope of this EIS. However, they are currently being addressed in the Waste Management Programmatic EIS.

With respect to cleaning up INEL, the INEL Environmental Restoration Program, including remediation and decontamination and decommissioning, is discussed in Volume 2, section 4.8, description of the significant progress already made in this program at INEL, see table 02.04 (047).

The generation and storage of SNF is discussed in Volume 1, section 1.1. Therein it is noted that DOE SNF was generated in DOE production and experimental reactors that have ceased operations. Considerable source reduction has already occurred. See Volume 1, Appendix E for discussion of experimental reactors. In addition, the Navy is developing longer-lived Naval reactors, reducing the amount of SNF that will be generated. Completely eliminating the source of SNF is outside the scope of this EIS.

## II COMMENT

The commentor suggests that an additional failure scenario of the Mackay Dam be evaluated.  
RESPONSE

The Mackay Dam failure scenarios analysis in Flood Routing Analysis for a Failure of the Dam is cited in the EIS includes a probable maximum flood scenario considered to be the most reasonably possible using NRC siting criteria for commercial nuclear reactors. The study includes sensitivity analyses that indicate significant changes in parameters variations in flooding at INEL. Therefore, DOE believes the Mackay Dam failure model assesses reasonably foreseeable INEL flooding hazards that could occur as a result of a dam failure. The combination of probable maximum flood estimated frequency and adding their probabilities would result in flooding hazards with probabilities lower than those that are reasonably foreseeable.

No new analyses are required for DOE Idaho Operations Office-managed facilities because they summarize credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. This information is provided in Volume 2, section 4.8 and Volume 2, Appendix F-2.

The results of accident analyses (including beyond reasonably foreseeable accidents greater than seismically induced accidents) indicate that the risk to the public from this EIS would be small. Therefore, additional information or characterization of seismic events with lesser potential impact would have no effect on the decision-making process.

## II COMMENT

Commentors state that nuclear waste, spent nuclear fuel, and other dangerous materials could be involved in accidents.  
RESPONSE

Volume 1, Chapters 3 and 5 and site-specific Appendices A through F, and Volume 2, Appendix F discuss risks to the public, workers, and the environment, and secondarily from a range of potential accidents. The discussions include evaluations and analyses of the risks. Although DOE cannot guarantee that no accidents will occur, the results of evaluations and analyses indicate that the risks are small.

this EIS indicate that risks to workers, the public, and the environment would be as alternatives considered. (See the EIS Summary, Public and Worker Health Effects.)

## II COMMENT

The commentor suggests that the EIS discuss an accident at the Idaho National Engine involving up to 6,000 gallons of hydrofluoric acid.

### RESPONSE

An accidental release of hydrofluoric acid is discussed in Volume 1, Appendix B, where Hydrofluoric acid is stored outside in the ICPP facility area in a 30,290-liter (8, Although there are only about 11,356 liters (3,000 gallons) in the tank, the accident assuming a full storage tank. The tank is over a catch basin that would contain the tank ruptures or if there is a piping failure. All the tank's contents were as The amount of hydrofluoric acid released and the surface area of the acid in the catch considered in the analysis. Downwind concentrations of acid are independent of the spilled and depend only on the evaporation rate from the catch basin. The evaporation depends on the surface area of the catch basin, as well as other factors. The duration however, depends on the total amount of acid spilled.

The EIS shows that the consequence of this potential event at the nearest site boundary per cubic meter of hydrofluoric acid. As to the impact to the maximally exposed individual concentration represents 0.2 percent of the Emergency Response Planning Guide Level hydrofluoric acid. For reference purposes, 100 percent of the ERPG-3 level is the of the specific toxic material from which a person not wearing a respirator could escape without having his ability to escape impaired or experiencing irreversible side effects.

## II COMMENT

The commentor questions whether the maximally exposed individual is the person at the site recommends that further analysis be done to show that this individual has indeed received individual dose.

### RESPONSE

The accident analyses in the EIS were performed with the plume rise going to the location maximum dose is received. See Volume 1, section 5.1.

## II COMMENT

The commentor suggests that after an accident, communication with members of the public consume contaminated vegetables and other food produced in the vicinity is not well Idaho National Engineering Laboratory.

### RESPONSE

Volume 1, section 5.7 and Volume 2, section 5.19 discuss accident mitigation. DOE Orders specifying the requirements for emergency preparedness, and each DOE site has emergency management program. These programs are developed and maintained to ensure response for most accident conditions and to provide the framework to readily extend accidents not specifically considered.

The emergency management program incorporates activities associated with planning, response, including simulated emergency exercises with states, counties, and other preparedness requirements for the facilities would be part of the planning that would Command, control, and communication are key parts of these emergency management programs the details of such planning are beyond the scope of the EIS.

For the off-site population, the need for any protective action would be based on the the protective action guides developed by EPA. Interdiction activities by INEL accident personnel are expected to take place following an accident to limit doses to off-site This interdiction can limit ingestion exposure to the public.

For accidents with maximum reasonably foreseeable consequences at INEL, interdiction with protective action guides was assumed in the EIS analyses. Doses resulting from were calculated assuming contaminated foods comprised 10 percent of the person's 1-day the accident. More information on the parameters used in the accident analysis are

regarding ingestion of contaminated food can be found in Accident Assessments for I Engineering Laboratory Facilities, sections 2.1.2. and 2.1.3.

## II COMMENT

Commentors raise the issue of impacts a nuclear accident could have on the State of on tourism and the economy.

### RESPONSE

Volume 1, Chapter 5 and Appendices A through F, and Volume 2, Chapters 3 and 5 and the EIS discuss reasonably foreseeable accidents and their impacts. Although DOE c accidents will be prevented or that contamination will not occur, for all alternati the risk to workers and the public from facility accidents would be small. DOE exp reasonably foreseeable accidents on tourism and the economy would be limited and of noted in Volume 2, section 5.14, there would be a potential for limited economic im

## II COMMENT

The commentor wants to better understand the assumptions used to determine risk acc constitutes acceptable risk, and who is responsible for this determination.

### RESPONSE

Risks are presented in the EIS without a determination of acceptability. Acceptabl determined only by the individual.

As used in this EIS, risk is defined as the product of the probability of an event that event. Volume 1, Appendices A through F, and Volume 2, Appendix F provide the risk analyses for this EIS were performed.

## II COMMENT

Commentors state that accidents, accidental releases, and long-term effects of acci RESPONSE

DOE cannot guarantee that accidents will not occur. Given that Volumes 1 and 2, Ch the results of analyses of reasonably foreseeable accidents. Volumes 1 and 2, Chap impact avoidance and mitigation measures. These analyses show that the risks of re accidents under all the alternatives considered would be small.

## II COMMENT

The commentor states that assumed ground-level releases from a facility accident ma impacts to the off-site population, because the modeling assumptions bias the model conclusions of the accident analysis. An example provided is that a small number o release point receive a higher dose than the large numbers of members of the public perimeter.

### RESPONSE

The environmental impact analyses are designed to produce a reasonable projection o potential environmental consequences. This requires the use of appropriately conse and analytical approaches. In this context, "conservative" means that an assumptio to overproduced, rather than underpredict, any adverse impacts. However, unreasona analyses do not provide a useful basis for comparing alternatives. Therefore, the unreasonable conservatism and base the environmental impact analyses on realistic, information whenever possible. Facility accidents were modeled using a release ele the specific accident scenario. For example, some scenarios would have an elevated through a stack, and others would have a ground-level release point. Each alternat using comparable methods and levels of conservatism so that the relative impacts of assessed accurately.

Volume 2, Appendix F-5.3.1 has been revised to state that the methods used in the a higher estimates of radiation exposures near the point of release.



## II COMMENT

The commentor suggests that following an accident, certain roadways could be inaccessibility direction or weather conditions, and that this should be acknowledged.

### RESPONSE

The EIS has been changed to acknowledge that under certain conditions, the ability to use designated evacuation routes could be impeded.

## II COMMENT

The commentor requests clarification of what is meant by "not credible" with respect to the Hanford Site.

### RESPONSE

The EIS has been revised to explain that if an event has a probability of occurring in less than one million years, additional analyses were not performed.

## II COMMENT

The commentor states that there could be a considerable error in the assumption that the amount of contaminated foods consumed in the year following an accident for a person at the Engineering Laboratory's nearest site boundary would be 10 percent of their diet.

### RESPONSE

For the purposes of this EIS, accident assessments were performed using realistic, conservative assumptions. As part of the health impact analysis to the maximally exposed individual following a potential accident, that individual's total dose received comprises four pathways: immersion, inhalation, ingestion, and direct ground-surface exposure.

That portion of the dose resulting from the ingestion pathway was calculated assuming that 10 percent of the person's 1-year diet following the accident and thereafter would be from contaminated foods unless EPA protective action guides were projected to be exceeded. The assumption is based on an engineering judgment of what is reasonable for most of the people living near the site, as well as to try to make the scenario realistic, but generally conserving. Increasing the percentage to a greater value would represent an unwarranted overconservatism in the health impact analysis.

The environmental impact analyses are designed to provide a reasonable projection of potential environmental consequences. This requires the use of appropriately conservative and analytical approaches. In this context, "conservative" means that the analyses tend to overpredict, rather than underpredict any adverse impacts. However, overconservative analyses do not provide a useful basis for comparison among alternatives.

More information on the parameters used in the accident analyses and the assumption of contaminated food can be found in Accident Assessments for Idaho National Engineered Facilities, sections 2.1.2 and 2.1.3.

## II COMMENT

The commentor suggests that the degrading structural integrity of spent nuclear fuel storage casks and that the EIS should include this prominent factor in the discussion of each alternative. As an example, the commentor states that the degraded fuel at the Hanford Site is contributing to elevated radionuclide activities, which contaminates the groundwater in the Columbia River.

### RESPONSE

The accident risks presented in the EIS for the No Action alternative reflect an assessment of accident probabilities associated with SNF management, including the probabilities of degraded (vulnerable) fuels and facilities. Under the No Action alternative, DOE will implement the minimum necessary for safe and secure management of SNF at the generation site location.

Volume 2, section 5.1.2 has been modified to state: "Consequences would be bounded accident assessments, but likelihood may increase."

## II COMMENT

The commentor states that the cumulative impacts from more than one accident initiating a major earthquake must be evaluated in the EIS.

### RESPONSE

As discussed in Volume 2, section 4.6.3, seismic events were found to be the most likely initiators with the potential to cause releases at more than one facility and involuntarily. Further, the potential for simultaneous accidents caused by a single seismic event is discussed in Volume 2, section 5.14.2. DOE's analysis shows that potential multiple-facility releases resulting from the postulated accidents at the Argonne National Laboratory-West Hot Facility. Consistent with the accident selection methodology described in Volume 1, section 5.15.3, the consequences and risks associated with multiple facility releases were considered because they do not represent the maximum reasonably foreseeable accident frequency categories defined in Volume 1, Appendix B, Table 5.15-5.

## II COMMENT

The commentor states that nonradiological health effects resulting from an accident materials through a groundwater or surface water pathway at the Idaho National Engineering and Environmental Laboratory have been overlooked.

### RESPONSE

Such events are summarized in Volume 2, section 5.8. Under all of the alternatives possible future sources of contamination would be small compared with previous practices. This section DOE concludes that (a) only contaminant concentrations below EPA MCLs would migrate beyond the site boundary, resulting in small impact to the quality of the INEL site; (b) adverse effects to groundwater quality have occurred in localized site (contaminant plumes), but these plumes have not affected the regional quality of groundwater existing in water resources (through source reduction and reduction of through normal attenuation and radioactive decay); (c) computer modeling of vadose zone contaminant transport indicates that contaminant plumes with concentrations above MCLs would continue to decrease at least through 2030 and the overall quality of the site would be improving; and (d) water use at the INEL site for any alternative would have a minimum quantity of water in the Snake River Plain aquifer.

## II COMMENT

The commentor suggests a seismically induced accident associated with the 100-K basins included in the Hanford Site accident assessments since an "unreviewed safety question" was raised on May 5, 1994.

### RESPONSE

A discussion of the seismic effect on the 100-K basins has been added to Volume 1, section 5.15.

## II COMMENT

The commentor states that thousands of cancers could result from one mistake that could involve transportation or a criticality in an inversion layer.

### RESPONSE

Volumes 1 and 2, Chapter 5 discuss the probabilities and consequences of transportation accidents, including those caused by human error. These discussions and their supporting data include extensive evaluations of accident consequences using generally accepted engineering practices including analysis under various meteorological conditions. The EIS shows that the public from facility and transportation accidents would be small for the alternative

## II COMMENT

The commentor states that a dam failure, rather than flooding at the Hanford Site, inundate spent nuclear fuel facilities. A reference to the dam failure discussion  
RESPONSE

Volume 1, Appendix A, section 4.8 discusses natural flooding at the Hanford Site be potential for collapse of the shoreline along the riverbank in the White Bluffs area. A dam failure in Appendix A has been added. Neither the probable maximum flood, nor collapse of the shoreline in the White Bluffs area would impact SNF operations at t Flooding from a 50 percent failure of Grand Coulee Dam would inundate the K-basins.

## II COMMENT

The commentor states that only "worst case" accidents should be the basis for a dec  
RESPONSE

CEQ regulations no longer require analysis of worst-case accidents. Rather, CEQ re assessment of effects of reasonably foreseeable accidents. In accordance with CEQ guidance, the evaluation of reasonably foreseeable accidents in the EIS considers b section 5.15 and Volume 2, section 5.14.) The high-risk and high-consequence accid because they produce effects that are very unlikely to be exceeded by severe accide they could potentially represent a higher risk (risk = probability x consequence) probability accidents with higher consequences. The EIS shows that the risk to wor from all accidents analyzed would be small for all alternatives considered.

## II COMMENT

The commentor notes that spent nuclear fuel is dangerous, but that so is gasoline i If gasoline had the same handling requirements as spent nuclear fuel, it would be t  
RESPONSE

DOE agrees that potential consequences from accidents involving some hazardous mate greater than those from SNF management.

## II COMMENT

The commentor states that DOE has not considered impacts from shipboard fires and e  
RESPONSE

The EIS addresses seismicity in Volume 1, section 5.2.4, accidents in Volume 1, sec accidents involving shipboard fires in Volume 1, Appendix D, section F-1.4.4. Loca SNF management have emergency action plans and equipment to respond to accidents an emergencies. Shipboard fires would be included as one of the types of accidents, i location. The plans would be updated to cover any new SNF facilities and activitie coordinate activities with state and local agencies to establish and implement an a response training program for potential accidents for the location. The details of the scope of the EIS.

## II II II II COMMENT

The commentor states that the source terms in Volume 2, Table 4.7.1 are constants a range of values over a 10-year period. Additionally the commentor requests project under postulated abnormal conditions involving several facilities.  
RESPONSE

The projection requested by the commentor is provided in Volume 2, Chapter 5, which impacts of the alternatives, including impacts under abnormal and accident conditio

## II 5.12 Transportation Issues

### II COMMENT

Commentors object to the shipment of radioactive material because the risk is perceived. Commentors state that an adequate study of the worst-case accident is needed and a publicly funded response team training, and that some longshoremen may refuse to handle shipments.

#### RESPONSE

DOE complies with the DOT regulations for transporting radioactive material. These regulations are designed to protect workers and the public by minimizing the risks associated with the transport of radioactive material. The EIS analyzes a full range of alternatives, from no action, which involves no transport of radioactive material, to centralization, which involves extensive transport of radioactive material. For all alternatives, the potential risks from transportation would be the same risks associated with maximum reasonably foreseeable accidents. The probabilities of maximum reasonably foreseeable transportation accidents are discussed and evaluated in Appendices D and I. Although the consequences of an accident of this type might be of such an accident having high consequences is on the order of one chance in 10 million, the consequences of most accidents, including those with a probability of occurring more than those of the accidents analyzed.

With more than 50 years of radioactive material transportation in the commercial sector, there have been few transportation accidents involving radioactive materials, and a little or no release of radioactivity. Nonetheless, emergency response teams are in place throughout the United States to respond quickly in the event of a transportation accident. The importance of preparedness for potential accidents involving SNF transportation is emphasized. FEMA provides training and materials to local emergency responders to prepare them to respond properly. DOE provides for Radiological Assistance Program teams, which consist of personnel equipped and prepared to quickly respond to an accident, and assist local emergency responders. This response network, along with other preventive measures, such as safety audits and testing, and adherence to stringent regulations, supports the continued safe shipment of SNF shipping containers that could be handled by longshore workers are designed to meet international standards for safety, including radiation levels at the outside of the containers. This EIS analyzes transportation from ports of entry. The potential for radiologic accidents involving workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Concerning Foreign Research Reactor Spent Nuclear Fuel.

### II COMMENT

One commentor states a definition of the term "general transportation" in Appendix I.

#### RESPONSE

The term "general transportation" is discussed in Volume 1, Appendix I, section I-9. It refers to transportation activities that take place that are unrelated to the alternatives evaluated. Examples of these activities are shipments of radioactive material to nuclear medicine laboratories and shipments of commercial low-level radioactive waste to disposal facilities." The activities described by general transportation activities are independent of DOE work and over which DOE has no control.

### II COMMENT

The commentor states that the EIS should address the condition of the transportation infrastructure (e.g., rail lines, crossings, bridges, and tunnels).

#### RESPONSE

Adequate rail lines, crossings, bridges, and tunnels exist to support the SNF transportation. SNF requires no special transportation infrastructure that is not also necessary for other commodities in the United States today. DOT is the regulatory agency responsible for enforcing the standards for the transportation infrastructure.

## II COMMENT

The commentor states that DOE should halt shipments of spent nuclear fuel during in  
RESPONSE

Although the comment is not specifically related to the effects of weather on SNF t  
response applies for radioactive material transportation. DOT requirements for con  
modeling codes used to analyze potential impacts of transportation account for such  
accidents, natural phenomenon, etc.

## II COMMENT

The commentor states that the EIS used a generic approach to the mitigation of impa  
secondary route comparison factors discussed in the mitigation section are critical  
Idaho. The commentor also notes that TRANSAX-92 demonstrated that state corridor em  
responders are not prepared for radiological incidents.

RESPONSE

The primary and secondary route comparison factors discussed in the mitigation sect  
DOT; DOE and the Navy believe them to be accurate. Pursuant to 49 CFR 397.67, moto  
transporting hazardous material required to be placarded or marked in accordance wi  
and not subject to a nonradioactive hazardous material routing designation, shall o  
routes that do not go through heavily populated areas, places where crowds are asse  
streets, or alleys, except where the motor carrier determines that: (1) there is  
(2) a reasonable deviation is necessary to reach terminals, points of loading and  
food, fuel, repairs, rest, or a safe haven; or (3) a reasonable deviation is requir  
such as a detour that has been established by a highway authority, or a situation e  
enforcement official requires the drivers to take an alternate route.

DOE participates with other Federal, state, and local authorities to sponsor and fu  
response training courses throughout the United States. These courses are provided  
and local authorities responsible for public safety and emergency response to natur  
equipped state and Federal emergency response teams that are quickly available to a  
in the event of an emergency.

## II COMMENT

The commentor states that DOE does not have a good record with respect to building  
nuclear fuel casks and waste repositories, and getting the cooperation of the state  
period of time.

RESPONSE

The commentor is referring to lengthy delays in the construction and opening of the  
Waste Isolation Pilot Plant sites, as well as the 5- to-10-year time period for des  
radioactive material shipping casks.

DOE operates within the framework of Federal regulations and DOE policy, which are  
and stakeholder involvement when procuring shipping casks or constructing new facil  
such a process is costly and time consuming; however, DOE feels it is a process tha  
opportunity to obtain facilities or apparatus designed with the highest standards o  
public/stakeholder input into the process.

## II COMMENT

The commentor states that DOE did not address the environmental impacts of moving s  
RESPONSE

Volume 1, Appendices D and I analyze the transportation of SNF. NEPA, 42 USC Secti  
and CEQ regulations at 40 CFR Part 1500 et. seq. require that an EIS describe the p  
the proposed action; alternatives, including no action; the affected environment; a  
consequences associated with the proposed action and alternatives. Volumes 1 and

these requirements. In each volume, Chapter 2 describes the purpose and need for t Chapter 3 describes the alternatives being considered; Chapter 4 describes the affe Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period, which al send written comments, give oral comments and send a facsimile by a toll-free telep one or more of the 33 public hearings held in 20 locations around the United States All supporting documents referenced in the EIS are on file and are available to the

## II COMMENT

The commentor requests specific information on the number of 40-year-period spent n shipments, highway routes affected, and populations exposed to risks.

### RESPONSE

Specific information on the number of SNF shipments is in Volume 1, Appendices D an The HIGHWAY computer code predicts highway routes for transporting radioactive mate United States. The HIGHWAY code currently describes approximately 240,000 miles of complete description of the interstate highway system, United States highways, most highways, and a number of local and community highways are identified in the databa HIGHWAY computer code calculates routes that maximize the use of interstate highway allows the user to predict routes for shipping radioactive materials that conform t specified in 49 CFR Part 177). The routes calculated conform to applicable guideli therefore, they represent routes that could be used.

The impacts of transportation for all programmatic alternatives considered in this

## II COMMENT

The commentor questions the need for cross-country shipments under the Regionalizat alternative.

### RESPONSE

For the Regionalization by geography alternative, all existing and future SNF would destination site without crossing the Mississippi River. However, there would be c of Naval SNF. To examine all Naval SNF in a cost effective manner, examination wou location. Because the Navy defuels and refuels ships at shipyards on the east and the alternatives analyzed in the EIS are found in Volume 1, Chapter 3.

## II COMMENT

The commentor states that a history of the movement of spent nuclear fuel is not in specific example that gives the understanding that all previous shipments of spent the Savannah River Site from Newport News/Hampton Roads have been transported by tr many hundreds of shipments. Yet, the discussion of movements out of the Newport Ne area in Volume 1, section 4.6.2 mentions only 10 shipments, each conducted by rail.

### RESPONSE

The EIS conducted a comprehensive transportation cumulative impacts analysis, evalu present, and future or projected shipments of radioactive material, which includes SNF. Dose information is contained in Volume 1, Appendix I. The transportation cu analyses includes historical shipments of SNF and is found in Volume 1, Appendix D Appendix I for non-Naval SNF.

The example given by the commentor refers to Naval SNF shipments, which travel by r references provided in Table I-58 contain the historical data for non-Naval SNF shi predominantly travel by truck.

## II COMMENT

The commentor suggests specific information regarding Fort St. Vrain fuel, number o destination facility, and inventory be added to the Final EIS.

**RESPONSE**

The EIS already contains this information in either Volume 1 or Volume 2. Volume 1 1994 letter to distribution from T.L. Wichmann, Spent Nuclear Fuel Inventory Data,, information regarding quantity of Fort St. Vrain fuel currently stored at INEL and be received in the future. The quantity that could be received could be stored at may be managed in other facilities and in other ways. The EIS has bounded the info assumptions and methodologies used in calculating the individual and cumulative imp EIS is considered to bound the information suggested by the commentor, the EIS has

**II COMMENT**

The commentor states that the EIS concentrates on the radiological impacts of trans exclusion of the other hazardous materials.

**RESPONSE**

Volume 2, section 5.11 discusses the transportation of both hazardous and radioacti incident-free and accident cases. In incident-free transportation, there are no em being transported, so the only hazardous materials emissions considered were those sulfur dioxide present in urban population zones. The methodologies for determinin impacts associated with hazardous materials transportation accidents are discussed 5.11.1. The analysis of the maximum reasonably foreseeable case truck accident sce alternatives is in Volume 2, Table 5.11-15. The impacts of a hazardous material tr are low under all alternatives.

**II COMMENT**

The commentor states that the EIS should discuss the impacts of the increase in hig associated roadway congestion, as well as the impacts of increased rail traffic.

**RESPONSE**

A discussion of highway and rail transportation impacts and potential accident impa the EIS entitled Traffic and Transportation, Transportation, and Offsite Transporta public and agency comments, DOE has modified descriptions of on-site traffic patter DOE complies with the DOT requirements for off-site transportation of SNF, includin shipping containers that meet DOT performance requirements. As a result, the poten public to radiation hazards is extremely low. DOE further minimizes accident risks and route-selection guidelines and uses other procedural controls for hazardous and In the unlikely event of an accident, DOE and local governmental authorities will i response measures. As described in the EIS Summary, Public and Worker Health Effec overall risk from transportation would be small. See also the response to comment 05.12 (003).

**II COMMENT**

The commentor expresses concern that the EIS inadequately addresses the nonradiolog transportation activities, and questions the adequacy of the 1982 reference documen

**RESPONSE**

Incident-free nonradiological fatalities were estimated using unit risk factors. T account for the fatalities associated with exhaust emissions, but the distances use must be doubled to reflect the round-trip distance, because these impacts occur whe shipment contains radioactive material. Two sets of data were evaluated: 1) data Impacts of Transporting Radioactive Material and 2) data from the Motor Vehicle-Rel Study. In Non-radiological Impacts of Transporting Radioactive Material, the nonra factor for trucks was  $1.0 \times 10^{-7}$  fatalities per kilometer, and the nonradiological was  $1.3 \times 10^{-7}$  fatalities per kilometer. These unit risk factors are applicable on Vehicle-Related Air Toxics Study the unit risk factor was calculated to be  $7.2 \times 10$  kilometer; this unit risk factor is applicable in all areas (i.e., rural, suburban, routes analyzed in this EIS, the unit risk factors from Non-radiological Impacts of Radioactive Material were found to overestimate impacts by about 20 or 30 times rel factors from Motor Vehicle-Related Air Toxics Study. Therefore, the unit risk fact

Non-radiological Impacts of Transporting Radioactive Material were used as a conser the incident-free nonradiological fatalities presented in this EIS. Unit risk fact Impacts of Transporting Radioactive Material account for all fatalities, not just c effects of chronic exposure to diesel exhaust emissions have been followed in occup workers, but these data are not sufficient to make a correlation between the effec experienced (Motor Vehicle-Related Air Toxics Study). Therefore, these impacts wer EIS.

## II II II COMMENT

The commentor states that the Mackay Branch has been abandoned by the Union Pacific there is an application before the Interstate Commerce Commission to abandon the Sc Arco, Idaho, to Mile Post 43.

### RESPONSE

The map showing the Mackay Branch will be corrected to reflect abandonments by the Railroad.

## II II COMMENT

The commentor states that purpose-built ships would greatly add to the safety of ha reactor spent nuclear fuel shipped to ports in the United States.

### RESPONSE

The risks associated with the transport by ship of FRR SNF and its handling at U.S. purpose-built ships, are being evaluated in the EIS entitled Proposed Nuclear Weapo Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

## II COMMENT

Commentors question the choice of ports of entry to the United States that are anal state that the EIS does not consider transportation or radioactive material handlin shipboard fires, at port facilities.

### RESPONSE

The analysis of impacts at port facilities and nearby communities, the specific por the overseas transportation of FRR SNF to United States ports is being addressed in Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reacto Nuclear Fuel (Draft) (FRR EIS). Only the impacts of transportation of SNF from the DOE facilities are analyzed in this EIS.

The criteria used to choose the ports of entry are outlined in the Notice of Intent Register Vol. 58, No. 202, October 21, 1993, pages 54336-54340). These criteria in of harbor and dock characteristics to satisfy the cask-carrying ship requirements, secure lag storage, (c) adequacy of overland transportation systems from ports to t experience in safe and secure handling of hazardous cargo, (e) emergency preparedne and nearby communities, and (f) proximity to the proposed storage sites. A range o also be analyzed in the FRR EIS. The decision regarding port selection will not b EIS and the FRR EIS are completed. In addition, in response to public comments, thi that results in a shipboard fire approximately 2 miles from Seattle (Volume 1, Appe

## II COMMENT

The commentor is concerned that Puget Sound will be a possible point of entry for h of radioactive material and that the DOE fails to recognize the danger for this urb

### RESPONSE

The analysis of impacts at port facilities and nearby communities, the specific por the overseas transportation of FRR SNF to United States ports is being addressed in Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reacto Nuclear Fuel (Draft) (FRR EIS). Only the impacts of transportation of SNF from the



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In addition, in response to public comments, this EIS discusses the consequences of that results in a shipboard fire approximately 2 miles from Seattle (Volume 1, Appe

## II II COMMENT

A commentor raises the issue of the proposed movement of nuclear waste from Washing Tennessee in what his sources indicate are leaky containers.

### RESPONSE

DOE is not proposing to ship nuclear waste from Washington, DC, and believes that t have Washington state or other states with DOE facilities in mind. DOE is evaluati alternatives that would entail transporting SNF to ORR for storage. Any transporta conducted in compliance with DOT regulations using NRC transportation standards.

## II COMMENT

A commentor provides recommendations for the packaging of radioactive materials for RESPONSE

DOE complies with the applicable requirements of DOT regulations covering the packa materials. DOE has conducted analyses using representative packaging for radioacti if an alternative is chosen that requires transportation of radioactive materials, by the commentor will be considered. These analyses are adequate for comparison of consideration in this programmatic EIS.

## II COMMENT

The commentor believes the EIS does not adequately address the potential health eff radiation from spent nuclear fuel casks.

### RESPONSE

Volume 1, Appendices D and I provide analyses of potential health effects from exte associated with SNF transportation. These analyses show that the health effects fr under all alternatives considered in the programmatic EIS would be small.

## II II COMMENT

The commentor states that the EIS should analyze a more realistic scenario of trans shipments by truck or all shipments by rail. A combination of the two forms of tra analyzed.

### RESPONSE

The assumption of all shipments by truck or all shipments by rail serves to produce representing the limits of potential transportation impacts; any combination of tru would have impacts between these extremes. Therefore, additional analyses are not of transport by truck or rail, the potential impacts would be small.

## II COMMENT

The commentor states that the description of the regional transportation infrastructure at the Hanford Site implied that Interstate 90 would be used for shipping campaigns, and that the northern Idaho area is not considered in the EIS.

#### RESPONSE

The description of the regional transportation infrastructure is a discussion of the environment at and around the Hanford Site; it is not meant to imply that Interstate shipping campaigns. The analysis of transportation risks is provided in Volume 1, These analyses cover all appropriate shipping routes and show that the risks for all alternatives considered would be small.

## II COMMENT

One commentor questions the regulatory status of on-site shipments in noncertified RESPONSE

The Hazardous Materials Transportation Act applies only to hazardous material shipments in commerce." A letter written in 1991 from the U.S. Department of Transportation, Research Programs Administration, addresses the definition of the term "in commerce" and the Hazardous Materials Transportation Act to shipments conducted on DOE sites. The letter states that shipments conducted in areas to which the general public does not have access are not "in commerce" and as such, need not meet the requirements of 49 CFR. The above notwithstanding, DOE has implemented specific procedures, as required by DOE Order Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous and Hazardous Wastes, which ensures the health and safety of the public and workers on-site shipments. These procedures include (but are not limited to) speed restricted vehicles, and prior notification of appropriate emergency response personnel that take place.

## II COMMENT

Commentors question the adequacy of transportation regulations, including radiation accident safety requirements, and routing. For example, commentors question the extent associated with the shipping containers, the ability of a shipping container to withstand of radioactive material shipments.

#### RESPONSE

A brief discussion of transportation regulations is in Appendix I of the EIS. DOE has for shipping radioactive material, which include requirements for external radiation container to withstand hypothetical accident conditions (including fire), and transportation requirements were established by DOT to protect workers and the public and are designed to reduce risks associated with transporting radioactive material. DOE has no reason to question DOT regulations. As discussed in the EIS, the risk from transportation would be very low. The criteria used to choose the ports of entry are outlined in the Notice of Intent Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Reactor Spent Nuclear Fuel (FRR EIS). These criteria included: (a) adequacy of harbor and dock characteristics, (b) transportation systems from ports to the storage sites, (d) experience in safe and handling of hazardous cargo, (e) emergency preparedness status at the port and nearby communities to the proposed storage sites. A range of alternative ports will also be analyzed. The final decision regarding port selection will not be made until both this EIS and the FRR EIS are completed.

## II COMMENT

Commentors ask about notification and inspection of radioactive materials shipments. Commentors question the inspection of foreign research reactor spent nuclear fuel.

#### RESPONSE

The DOE complies with all DOT regulations regarding notification and inspection of radioactive shipments. The inspection of FRR SNF before it reaches the United States would be done by the shipper, who must certify that the radioactive material is in proper condition for shipment.

includes compliance with external radiation and contamination requirements.

## II COMMENT

The commentor states that the EIS has not acknowledged the right of Indian Tribes to transportation of spent nuclear fuel and other hazardous materials across Tribal Lands under the Hazardous Materials Transportation Act.

### RESPONSE

DOE is and always has been committed to safe and secure transportation of SNF to and from storage or other management activities. Consistent with this commitment, DOE will apply applicable requirements promulgated by a state, a political subdivision, or an Indian Tribe, if authorized and has not been preempted by the Hazardous Materials Transportation Act, or other applicable Federal law.

## II II II COMMENT

Commentors state that the consequences of the maximum reasonably foreseeable transportation accident are provided only for a rural population zone. The commentor asks about the consequences of an accident occurred in an urban population zone.

### RESPONSE

NEPA requires that an EIS evaluate reasonably foreseeable impacts from proposed action. An accident is considered reasonably foreseeable if it has a probability of at least 1 in 10 million years. Factors that affect accident probability include state of the art of transportation; the fraction of accidents that occur in rural, suburban, and urban zones; the probability that an accident will be of a certain severity; and the annual population in rural, suburban, and urban population zones. Weather conditions also affect the probability of consequences because stable, worst-case, weather conditions are only about one-tenth of average weather conditions.

Volume 1, Appendix I, Table I-41 summarizes the maximum reasonably foreseeable transportation accident for the Regionalization by geography alternative, in which all SNF is sent by rail. The footnotes to the table state that the maximum reasonably foreseeable accident occurs in a suburban population zone, not a rural zone. If this same accident were postulated to occur in a rural population zone, the accident probability would be less than  $1 \times 10^{-7}$  per year, which was not analyzed.

Volume 1, Appendix I, Table I-31 summarizes the maximum reasonably foreseeable transportation accident for the Decentralization alternative. Footnote "a" to the table states that the maximum reasonably foreseeable accident occurs in a rural population zone. If an accident of equal severity occurred in an urban or suburban population zone, the accident probability has been calculated to be less than  $1 \times 10^{-7}$  per year, which makes it so unlikely that the scenario was not analyzed. The probability of rail transportation accidents is summarized in Volume 1, Appendix I, Table I-55, summarizes the maximum reasonably foreseeable transportation accident for the Centralization alternative at ORR. The table shows that under neutral weather conditions the maximum reasonably foreseeable transportation accident could occur in an urban population zone with a probability of  $1 \times 10^{-7}$  per year. If the accident occurred under stable weather conditions, the probability would be one-tenth of the probability under neutral weather, or  $1 \times 10^{-8}$  per year, which is less than 1 in 10 million per year. Calculations documented in the references also show that the probability of an accident of equal severity in a suburban area also has a probability of less than  $1 \times 10^{-7}$  per year. In a rural population zone, because most of the distance traveled by the shipments would be in areas with a lower population density, the probability of an accident of maximum severity would be less than  $1 \times 10^{-7}$  per year for an accident of maximum severity to occur under worst-case, weather conditions. Other less severe accidents would have a probability of less than 1 in 10 million per year in urban and suburban areas under stable, worst-case, weather conditions, but their consequences would be less than the results shown in Table I-55.

The consequences of transportation accidents in rural areas include ingestion of radioactive material from predominantly agricultural areas where residents most likely eat what they produce. In contrast to the consequences for transportation accidents in urban and suburban areas, which include ingestion doses from food and water, residents of these areas are most likely not involved in producing what they eat at their resident location. Therefore, the consequences of transportation accidents in rural areas may be greater than the consequences in suburban or urban areas, even though population densities in the rural areas are higher.

## II COMMENT

A commentor states no emergency response systems are set up to respond to transport involving spent nuclear fuel.

### RESPONSE

DOE has developed and implemented emergency response systems to respond to transport involving DOE radioactive materials and SNF. This is discussed in Volume 1, Appendix A, Table 1.1, and in Volume 2, Appendix A, Table 2.1. In the event of an accident involving transit, local fire and police organizations are first to respond. DOE, DOT, and F and training materials to local emergency responders to prepare them to handle accidents. DOE provides Radiological Assistance Program teams, which consist of trained experts to quickly respond to an accident and assist local emergency response personnel if response network, along with preventive measures, such as shipping container design adherence to stringent regulations, supports the continued safe shipping of SNF. DOE uses the Transcom satellite tracking system for each of its SNF shipments. This transponder located on the trailer with the shipment that relays continuous position satellite to computer terminals at DOE facilities around the country. In the unlikely event of an accident with a shipment, the exact position of the shipment can be immediately determined in order to dispatch response teams and aid in assessing the situation.

## II II COMMENT

Commentors note that the future selection of a national central repository would require analyses of spent nuclear fuel and that analyses of these shipments should be included in the EIS. Commentors state that the public has not been properly sensitized to the full transportation impacts.

Further shipments of SNF might be needed when a decision is made regarding ultimate permanent repository. Assessment of the impacts of these shipments is not included in the EIS. Method for ultimate disposition has not been selected and such analyses would be prepared for DOE decision-making until 2035. This amount of time may be required to make and implement a decision for ultimate disposition of SNF. DOE has a range of reasonable alternatives for safely managing SNF during the period 1995 to 2035. To inform the public concerning SNF transportation issues, this EIS evaluates the transportation impacts for a reasonable range of alternatives. The alternatives vary from no action, involving no transportation of radioactive material, to centralization, which involves extensive transport of radioactive material. Analyses in the EIS show that the potential risks from transportation of SNF would be minimized if DOE decision-making process.

## II COMMENT

The commentor questions why and how these waste products must be moved.

### RESPONSE

Transportation of SNF and radioactive wastes may be necessary to implement alternatives for effectively managing these materials during the period evaluated by the EIS. The alternatives are discussed in Volume 1, Chapters 1 and 2, and in Volume 2, Chapters 1 and 2. Most SNF and radioactive wastes would be transported by truck or train using shipping containers that satisfy requirements of DOT and NRC. DOE follows DOT regulations for the shipment of radioactive materials, which include requirements for routing, external radiation limits, and the ability to withstand hypothetical accident conditions, including fire. A brief discussion of the alternatives is in Volume 1, Appendix I.

## II II COMMENT

The commentor notes that the increased shipments required to centralize spent nuclear fuel at the Test Site matter because of the low risk of transportation and the eventual need to

to Nevada for ultimate disposition at Yucca Mountain.

#### RESPONSE

The commentor is correct that for all alternatives, the potential risks from transport are small. It is true that centralization at NTS could provide interim storage of SNF at a potential site of ultimate disposition. DOE has considered these, as well as other alternatives, in the identification of a preferred alternative and the ROD. See also the response to commentor's preferred alternative.

## II 5.13 Emergency Preparedness

### II COMMENT

Commentors state that DOE has not agreed to pay for monitoring, training, and equipment for emergency responders at ports of entry and along shipping routes. One commentor states that DOE has responsibility for training emergency responders to DOE.

#### RESPONSE

As a shipper of radioactive materials, DOE is responsible for complying with the requirements to ensure the safety of its shipments. This includes assisting state, tribal, and local emergency responders in the event an accident occurs. DOE's Transportation Emergency Preparedness Program includes initial training, exercises, and technical assistance to state, tribal, and local government. DOE participates with other Federal, state, and local authorities to sponsor and fund emergency response training courses throughout the United States. These courses are usually provided by local, state, and tribal authorities responsible for public safety and emergency disasters or man-made accidents. The funds for these training sessions come from Federal allocations of state tax dollars. Trainees provide their own transportation to the training and provide their own emergency response equipment; however, Federal assistance is provided at times. The Federal Government has organized, trained, and equipped state and Federal emergency response teams, which are quickly available to assist local authorities in the event of an emergency.

### II COMMENT

The commentor wants to know the mechanics of dissemination of information to the public in the event of an emergency at the Idaho National Engineering Laboratory.

#### RESPONSE

The DOE Idaho Operations Office maintains a Warning Communications Center (WCC) that is open 24 hours a day, 7 days a week. WCC personnel operate in four teams, with each team on duty for 8 hours. Incident information is immediately passed to the WCC by INEL personnel and, depending on the nature of the incident, different media are informed. Incidents such as car accidents are sent to local radio stations only. With radioactive materials releases, however, information is immediately sent to not only local radio stations, but to a major state radio station, newspapers, and public officials. Information is updated as the incident develops, and additional personnel are brought in to answer questions from the public.

### II COMMENT

Commentors propose that DOE inform all those living within a 500-mile radius of nuclear sites of the wastes generated and stored nearby and the significant danger these wastes pose.

#### RESPONSE

The action proposed by the commentors is being accomplished by the preparation and implementation of EIS and other site-specific EISs that will be prepared to assess the environmental impacts of radioactive waste management at DOE sites. SNF and radioactive waste management practices designed to reduce or eliminate the hazards. Sites have emergency equipment to respond to accidents and other emergencies. DOE requirements for emergency preparedness are contained in DOE Orders 5500.1B, 2B, and 3A (Emergency Management Categories, Classes, and Notification and Reporting Requirements; and Planning and Reporting Requirements).

Preparedness for Operational Emergencies, respectively). DOE emergency notification based on the Emergency Response Planning Zone determined for each facility based on for the facilities. DOE notifies out to the distance required by the Emergency Res applicable state and local requirements.

## II COMMENT

The commentor points out that, in the event of an incident involving spent nuclear National Engineering Laboratory, large numbers of highly trained personnel are always the effect of any incidents.

### RESPONSE

The commentor is correct. INEL's highly trained work force includes a broad range and skills; this expertise, knowledge of plant systems and procedures, and training actions and priorities are key elements in the control of emergency situations and

## II COMMENT

The commentor questions whether statements related to the evacuation time for motor public highway to the Idaho National Engineering Laboratory are substantiated.

### RESPONSE

The commentor is referring to a statement in Volume 2 that a motorist at the nearest could be evacuated in 2 hours. In the event of an accident at an INEL facility the release to the environment, normal precautionary actions include establishment of road portions of public highways traversing the site. The road blocks prevent members of entering the affected area; site security personnel would also patrol the affected ensure no motorists remained after the road blocks were established. Evaluations of times indicate that these actions can be accomplished well within the 2-hour period Volume 2 accident analysis.

## II II COMMENT

The commentor suggests that switching from truck to train for transportation of spent result in inadequate emergency preparedness along the new routes.

### RESPONSE

The EIS addresses accidents in Volume 1, section 5.7.12. Locations considered for emergency action plans and equipment to respond to accidents and other emergencies. be updated to cover any new SNF facilities and activities. DOE would coordinate with local agencies to establish and implement an appropriate emergency response training potential accidents. The details of such planning are beyond the scope of the EIS.

## II COMMENT

The commentor states that the Shoshone-Bannock Tribes have limited emergency response lack any equipment in the event of an accident on the Fort Hall Reservation.

### RESPONSE

In the event of an accident involving a hazardous or radioactive material shipment Reservation, local fire and police organizations are first to respond. DOE, DOT, a training and training materials to local emergency responders to prepare them to handle If the accident involves a release of hazardous or radioactive material, assistance from the State Hazardous Materials Team located 15 minutes away in Pocatello. DOE Radiological Assistance Program teams consisting of trained experts equipped and prepared to respond to a radiological accident and assist local emergency response personnel, a response team could respond to a request for assistance from the Tribes in much less on documented response times to other locations such as Dubois, Idaho, and the State. Although the accident analysis presented in the EIS takes no credit for emergency response impacts of the potential accidents would be small.

## II COMMENT

The commentors state that emergency response systems are not set up to respond to accidents involving spent nuclear fuel.

### RESPONSE

To date, accidents involving SNF have been rare, but they do occur; however, no significant results resulted from any of the accidents during SNF transportation. In the event of an accident, a shipment in transit, local fire and police organizations are first to respond. DOE provides training and training materials to local emergency responders to prepare them to handle DOE provides for Radiological Assistance Program teams, which consist of trained experts prepared to quickly respond to an accident and assist local emergency response personnel if requested. This response network, along with preventive measures, such as design and testing and adherence to stringent regulations, supports the continued safe

## II COMMENT

The commentor states that DOE needs to define a position regarding the funding of emergency response in states along spent nuclear fuel transportation corridors.

### RESPONSE

DOE recognizes the importance of preparedness for potential accidents involving transportation. Currently, training is available on a limited basis at the awareness level for first responders working with state and local officials through the Transportation External Coordination Program. DOE is developing a national approach for training and technical assistance.

## II II II COMMENT

Commentors question the adequacy of notification of civil agencies and inspection of radioactive materials. In particular, some commentors express concern about the inspection of research reactor spent nuclear fuel.

### RESPONSE

DOE complies with DOT regulations and, when applicable, the International Atomic Energy Agency regulations regarding notification and inspection of radioactive material shipments transporting material to ultimate destinations within the United States are also regulated by DOT regulations. Inspection of FRR SNF before it reaches the United States is the responsibility of the recipient who must certify that the radioactive material is in proper condition for transport and compliance with external radiation and contamination requirements.

The Naval Nuclear Propulsion Program does not announce the times or routes of shipments, making it more difficult for terrorists, saboteurs, or hijackers to plan and execute an attack. This is in accordance with Federal Government policy and regulations governing such shipments. Navy's policy on notification is also in full compliance with the applicable state regulations for such shipments containing highly enriched weapons-grade uranium.

## II COMMENT

The commentor requests that DOE consider Governor Campbell's request for assistance with North Carolina's emergency response capability because of the shipment of foreign research reactor spent nuclear fuel within the state.

### RESPONSE

DOE responded to former Governor Campbell's request by providing funds to assist with North Carolina's emergency response capability.

## II 5.14 Not used

## II 5.15 Socioeconomics

### II COMMENT

The commentor states that the negative public perception of spent nuclear fuel storage at the Oak Ridge Reservation could lead to rejection by certain persons or businesses of the reservation as a suitable place to live or conduct business. That rejection would have a corresponding impact on the community.

#### RESPONSE

Volume 1, Appendix F, Part Three, section 5.3 discusses the socioeconomic impacts of the project on the region of influence around ORR. Because the actual environmental impacts as management under all alternatives considered in the EIS would be small, there is no storage or examination of SNF at any of the locations evaluated would have any adverse impact on the economy.

### II COMMENT

Commentors state they are concerned about the loss of spent nuclear fuel management under the alternatives.

#### RESPONSE

Employment and job issues are discussed in Volume 1, Chapter 5 and site-specific Appendix F, and in Volume 2, Chapters 4 and 5. These sections discuss direct and indirect jobs on the labor force of affected communities. The EIS Summary section Spent Nuclear Fuel Employment concludes that employment-related impacts would be small for all the alternatives considered.

### II COMMENT

Commentors suggest looking at clean energy sources and toward alternative jobs that are not within the scope of this EIS.

#### RESPONSE

The development of clean energy sources and the associated new jobs and employment are not within the scope of this EIS.

### II COMMENT

Commentors state that the EIS socioeconomic analysis should include effects on local economies, subsequent effects on the tax base, and the effects on the effort to diversify the local economies.

#### RESPONSE

Because the environmental impacts associated with SNF management under all alternatives considered are small, there is no reason to believe that storage or examination of SNF at any location would have a discernible effect on local property values, as described where appropriate in Appendix A through F, and Volume 2, section 5.3. Changes in the economic conditions under a project would be small relative to the local economies of the potential sites and the effort to diversify local economies would be small.

### II COMMENT

The commentor notes that in addition to the four county school districts, there are Oak Ridge and Harriman, Tennessee.

#### RESPONSE

The average daily memberships for city school districts, such as Oak Ridge and Harriman, are presented in the total average daily membership presented for the four county school districts in Appendix F, Part Three, section 4.3.3.



## II COMMENT

The commentor states that the EIS should include a more detailed socioeconomic analysis of Clark Counties in Nevada, including consideration of the impact of this project in activities planned for the Nevada Test Site.

### RESPONSE

The EIS, Volume 1, Appendix F, Part Two, section 5.16, presents the potential cumulative impacts of the proposed SNF management facilities. The approach for analysis in Volume 1, Appendix 5.3, is adequate for comparing alternatives in a programmatic EIS.

## II COMMENT

The commentor states that the environmental and health risks associated with nuclear power outweigh any economic benefit.

### RESPONSE

Volume 1, section 5.3 and Volume 2, section 5.15 of the EIS evaluate potential impacts to the public from both radiological and nonradiological hazards. The analyses show that impacts from these alternatives would be small.

## II COMMENT

The commentor is concerned that the unique situation of the Shoshone-Bannock Tribes Reservation is not discussed. The assumed migration rates fail to consider the unique situation of the Reservation, and greater household sizes on the Reservation must be addressed in socioeconomic analysis. The Reservation should be treated as a separate entity due to the high unemployment rate on the Reservation and because 70 percent of the food each year is acquired by hunting and gathering.

### RESPONSE

The purpose of this EIS is to analyze the potential impacts related to the alternative management changes in baseline conditions. Impacts are addressed in general to support the impact analysis. There would be no significant impacts to the socioeconomic resources of the region of influence from changes in regional economic, transportation, health, accidents, or environmental conditions from the SNF management alternatives at the potential sites or environmental restoration program alternatives at the INEL. Therefore, it was not considered necessary to separately evaluate potential impacts to the Shoshone-Bannock Tribes or the Fort Hall Reservation. Implementation of any of the EIS alternatives are expected to be small.

With respect to INEL, employees represent less than 2 percent of employed persons in the Fort Hall Reservation (25 out of 1,544). Employment changes at INEL as a result of the project are not expected to disproportionately affect the Tribes or the Reservation; therefore, separate analyses were not performed.

The migration assumptions do account for a proportion of the population remaining in the region of influence. If the commentor is concerned that residents of the Reservation would not be adequately reflected in the migration assumptions contained in the EIS, household size assumptions could be used to determine estimates of migrating population. Because it is unlikely that any additional migration from the Reservation would occur, the difference in household size does not impact the population. Transportation and accident analyses do not indicate that Reservation lands would be impacted. There is no impact to agricultural production or hunting or gathering are expected. The reservation is not expected to be impacted.

## II COMMENT

The commentor observes that there is no discussion on the adequacy of public facilities in the region of influence around the Idaho National Engineering Laboratory.

### RESPONSE

Data regarding community resources are presented in Volume 2, section 4.3.3. The data

any remarkable excesses or deficiencies in levels of service; therefore, their adequacy was specifically evaluated. The data-collection process did not reveal outstanding pro

## II COMMENT

The commentor disagrees with the use of current employment figures rather than more projections for the Idaho National Engineering Laboratory and states that the analysis impacts and reasonably foreseeable actions.

## RESPONSE

The EIS has been revised to reflect current projections of employment, including contractor consolidation including program changes at Argonne National Laboratory-W. Cumulative employment impacts are presented in Volume 2, section 5.15. The cumulative figures include the effects of (1) baseline changes at INEL, (2) alternative impact non-DOE) project impacts. The cumulative employment impacts are based on the best time of the analyses. The projected INEL employment figures are bounding for the r. With the announced INEL employment reductions, employment estimates for any of the alternatives are easily accommodated within the existing site and region of influence. The Final EIS and ROD will be issued in 1995; therefore, fiscal year 1995 would be for analyzing potential impacts that could result from implementation of the SNF and restoration and waste management alternatives. The analysis in Volume 2, section 5 potential impacts under each alternative relative to conditions in 1995. However, are provided beginning with fiscal year 1990 (Volume 2, section 4.4.3 and Figure 4. reader may compare the projected impacts to employment levels during years prior to raised in the comment regards baseline employment only. The absolute impacts of the the same regardless of which baseline year is chosen. It is the "relative" impact the analysis conducted estimates the impacts of the alternatives, not of changes in baseline employment is not an alternative, and therefore, is not analyzed as such.

## II COMMENT

The commentor states that the socioeconomic analyses should have identified local jobs surrounding the Idaho National Engineering Laboratory and discussed the fiscal health alternatives on those specific areas.

## RESPONSE

Community resources were analyzed, and the results are presented in Volume 2, sections 4.3-4. Existing economic, social, and community profiles for affected communities are provided. The potential socioeconomic impacts associated with the alternatives are so small that a detailed analysis of impacts on local jurisdictions is not needed. Most INEL employees live in Bonneville County (Idaho). Therefore, it could be expected that any potential impacts would be focused in that area.

## II COMMENT

The commentor states that the higher wage rate of Idaho National Engineering Labora compared to the average wage rate in the region of influence, was not considered in analysis.

## RESPONSE

It is true that INEL jobs on average are higher paying than the average private-sector jobs. However, job losses (under the Ten-Year Plan and Minimum Treatment, Storage, and Disposal alternatives) and job gains (under the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives), as discussed in Volume 2, section 5.3, are not expected to be sufficient to offset the impacts with or without wage differentials taken into account. Volume 2, section 5.3 was used to analyze impacts, including total employment and earnings impacts that were estimated using the Regional Input-Output Modeling System multipliers. As described in Volume 2, section 5.3, in 1990, INEL directly employed approximately 11,100 persons, while the population supported by INEL employment was estimated to be approximately 38,000 persons.

## II COMMENT

Commentors object to shipment and storage, and potential sabotage of nuclear waste Engineering Laboratory, because it would seriously affect the tourist industry and western Wyoming.

### RESPONSE

Because the actual environmental impacts associated with SNF management under all a considered in the EIS would be small, there is no reason to believe that storage or any of the locations evaluated would have any significant effect on tourism. Even hypothetical accidents are limited in extent and small enough that there should be

## II COMMENT

The commentor raises an issue about the lack of quantitative analysis of the socioe would result from a 1-year restriction of agricultural use of land surrounding the Engineering Laboratory that has been contaminated following an accident and release material.

### RESPONSE

The impacts have been addressed in Volume 2, section 5.14 in a qualitative manner. that the major part of the land that would be restricted following an accident at I there is a potential for existing agricultural land near INEL to become contaminate from use. More likely, however, is the possibility of a temporary restriction of l completion of surveys to ascertain whether contamination has occurred under allowab temporary restriction would be of short duration.

Although the economic value of any contaminated land is highly subjective, in the e incurred as a result of contamination and restriction of land use, persons injured their losses in accordance with applicable laws and regulations.

## II COMMENT

The commentor requests that the socioeconomic portion of the EIS address DOE's stra improve U.S. competitiveness in a world economy and to transfer technology from the sector. Specifically, the commentor asks what the impacts of each alternative are technology transfer.

### RESPONSE

DOE is in the process of identifying technologies for transfer from the public to t its facilities and has ongoing programs targeting improving U.S. competitiveness in The activities associated with SNF management use existing technologies and do not opportunities for technology transfer.

## II COMMENT

The commentor is of the opinion that managing spent nuclear fuel at the Savannah Ri projected employment declines, will impede economic development in the region and h impact on the quality of public education in Aiken County, South Carolina.

### RESPONSE

As noted in Volume 1, Appendix C, section 5.3, DOE believes that the projected decl SRS would be offset, in part, by the creation of operations jobs to support SNF man DOE does not anticipate any adverse impacts to the public education system under an alternatives being considered.

In terms of economic development in Aiken County and the region, DOE believes that development activities and opportunities that may accompany SNF management activiti economic development in the region.

## II COMMENT

The commentor notes the importance of maintaining the pool of experts.

### RESPONSE

The commentor is correct in noting the importance of maintaining a pool of expert p it is necessary to maintain the existing infrastructure and skilled resources neces as other nuclear materials and waste. One of the factors considered in identifying management was maximizing the use of existing expertise and overall SNF infrastru environment, safety, and health; waste management safeguards and security; and emer capabilities.

## II COMMENT

The commentor raises an issue about adverse employment impacts to the Shoshone-Bann asks whether DOE will mitigate those impacts.

### RESPONSE

Volume 1, section 5.7.2 states that DOE will minimize impacts by coordinating with planning agencies to address impacts on community services, housing, infrastructure transportation.

## II COMMENT

The commentor states that the number used for the population located within 50 mile Site is too low and that workers from the Nevada Test Site are not considered in th RESPONSE

Volume 1, Appendix F, Part Two, section 5.7 states that a population of 15,100 pers be within 50 miles of the proposed SNF facilities at NTS in 1995. This population 1990 census data extrapolated to 1995 using county growth rates. Volume 1, Append section 4.3, considers Nye and Clark counties, where most of the NTS work force res

## II COMMENT

The commentor states that DOE needs to make firm commitments to mitigate adverse em that could occur, ranging from retraining displaced workers to providing support fo RESPONSE

As stated in Volume 1, Chapter 5, DOE will coordinate its planning efforts with loc county planning agencies to address impacts on community services, housing, infrast transportation, and employment. In the past, DOE has worked to retrain and refocus changes in mission, such as the transition from past emphasis on defense-related ac War to current environmental restoration activities. Also, as in the case of the C working with community leaders to help diversify the economic base away from a larg DOE activities at INEL.

## II 5.16 Safeguards and Security

## II COMMENT

The commentor states that this EIS addresses nothing new in establishing a viable w moving nuclear wastes around only delays the problem to the next generation.

### RESPONSE

DOE is committed not only to developing Federal geologic repositories for permanent but to providing safe interim storage pending availability of permanent disposal fa SNF is necessary to varying degrees under the alternatives DOE is analyzing for pro

storage and management of SNF. The alternatives have definite purposes for relocating similar fuel types within a single secure facility. Thus, the alternatives transportation concerns with other worthy considerations, including nonproliferation cost effectiveness.

The potential impacts from storing radioactive materials associated with SNF are discussed in Chapter 5. Environmental consequences of SNF management for all alternatives are discussed in Volume 1, section 5.1, and mitigation measures are discussed in Volume 1, section 5.7. DOE is managing and storing SNF and other radioactive materials at each of the sites. It is DOE policy to design, construct, and operate its facilities in a way that provides assurance that meets applicable Federal, state, local, and DOE requirements and regulations. DOE will manage SNF in accordance with applicable Federal and DOE requirements and regulations in a manner that ensures protection of the environment, health and safety of the public and site employees.

## II COMMENT

The commentor states that there should be "a lot more" security associated with the alternatives described in Volume 1, and these alternatives should all be comparable with the most centralized alternative.

### RESPONSE

DOE has security systems in place at all facilities that handle nuclear materials. Security systems established for the various alternatives would be appropriate for the alternatives. Security precautions are routine for all shipments of DOE nuclear material. Security measures more than 40 years, resulted in no known theft of DOE nuclear materials. See also the response to comment 05.16 (001).

## II COMMENT

Commentors request declassification of environmental, safety, and health documentation establishing historical Idaho National Engineering Laboratory source terms (radioactive) unavailability of this previously classified documentation has prevented an accurate assessment of impacts.

### RESPONSE

This comment relates to DOE's dose reconstruction project, which is outside the scope of the EIS. The U.S. Department of Health and Human Services (HHS) and DOE have two Memoranda of Understanding (MOUs) for public health responsibilities around DOE sites. Under the MOUs, signed in December 1990, DOE transferred the responsibility for managing and conducting analytic epidemiologic research to HHS. HHS has delegated responsibility to the Centers for Disease Control and Prevention (CDC). Baseline health effects studies for both DOE workers and the surrounding public are either under way or planned at all facilities. To support the dose reconstruction project, DOE directed that all worker health and exposure data and all data regarding releases of radioactive materials be released. DOE is responding to all CDC requests for declassification of the dose reconstruction project. All studies will be made available to the public. In recent years, DOE has released significant amounts of previously classified data. For more information on this matter, contact the DOE Office of Public Affairs. DOE will release additional information as it becomes declassified. Although most environmental data are not classified, other data on DOE activities are very sensitive and will remain classified by the Secretary of Energy.

## II COMMENT

The commentor asks about the consequences of terrorist attacks, and states that storage facilities should be where the least damage could occur.

### RESPONSE

The EIS evaluates 10 sites as reasonable alternatives for some level of SNF management. The analysis in the EIS includes a number of factors including the potential risks to site operations and reasonably foreseeable accident conditions. Discussions on public health impacts are found in the Occupational Public Health and Safety sections in Volume 1 (and its appendices).

Appendices A through F), and in the Health and Safety section in Volume 2. The EIS would be no significant risks to the public or the environment due to SNF management the 10 sites being considered.

The consequences of postulated terrorist acts are expected to be bounded by the res analysis. SNF is not attractive to terrorists due to the bulk of the fuel and the high radiation fields surrounding unshielded SNF.

DOE and the Navy have extensive security systems at all facilities handling nuclear precautions are routine for all shipments of government-owned nuclear material. For security precautions have successfully prevented the theft of government-owned nuclear

## II COMMENT

The commentor is opposed to alternatives that centralize spent nuclear fuel at a site attack on a nuclear fuel storage facility could release large quantities of radioactive cause significant loss of human life.

### RESPONSE

DOE has extensive security systems in place at all facilities that handle nuclear material precautions, including emergency response team notification, are routine for all shipments material. Even in the event of a successful attack on a DOE nuclear facility, the in the EIS, which bound any credible terrorist attack scenario, describe consequences "the extinction of mankind" mentioned by the commentor. However, scenarios involving weapons are outside the scope of this EIS. Volume 2, section 5.14 has been changed terrorism as an initiating event.

## II COMMENT

The commentor is opposed to nuclear power because of the concern about nuclear materials "the wrong hands."

### RESPONSE

DOE has extensive security systems in place at all facilities that handle nuclear material precautions, including emergency response team notification, are routine for all shipments material. Security precautions have, for more than 40 years, successfully prevented nuclear materials. Questions and concerns regarding nuclear nonproliferation are outside the EIS. However, Volume 1, sections 1.2.3 and 1.2.4 refer the reader to other DOE-sponsored reviews. Nuclear nonproliferation policies will be addressed in two future DOE publications Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactors Nuclear Fuel and Programmatic EIS for the Management and Disposition of Excess Nuclear (Draft).

## II 5.17 Monitoring

## II COMMENT

The commentor states that adequate funds must be available to support environmental monitoring at Idaho National Engineering Laboratory.

### RESPONSE

INEL has adequate funds to support environmental monitoring activities per DOE Order Environmental Protection Program, which implements the established environmental program at INEL.

## II COMMENT

The commentor states that the EIS does not evaluate the potential need for additional monitoring of new Idaho National Engineering Laboratory facilities described under

### RESPONSE

The purpose of the EIS is to evaluate the potential environmental impacts from prop EIS is not intended to substitute for the assessments required by regulations. Any requirements for monitoring emissions from facilities and surveillance of the surro

## II COMMENT

The commentor has requested documentation of the results of the environmental monit particularly those of the Environmental Protection Agency, in the Volume 1 site des RESPONSE

DOE has added references to the environmental monitoring results at the various sit 1, Chapter 4.

## II COMMENT

The commentor requests that the EIS contain a detailed monitoring plan for the pref describe the feedback mechanisms by which the monitoring results are used to modify based on changing information.

### RESPONSE

The Idaho National Engineering Laboratory Environmental Monitoring Plan has been pr reference for the EIS. For existing facilities, it is independent of the alternati new facilities, more specific information, such as specific locations and facility required before an appropriate monitoring plan could be prepared. The facility-sp would be prepared after final issuance of an EIS. DOE believes that inclusion of a plan in this EIS would not provide useful information to decisionmakers, because it discriminator for comparison of the alternatives.

## II 5.18 General Operations

## II COMMENT

The commentor questions what techniques are being developed to ensure safe, long-te waste, and that this is not dangerous material and ways of safely storing it really RESPONSE

Numerous technologies are already available for managing radioactive materials, and considered for this purpose. Technological options for SNF management are describe section 1.1.3 and Appendix J. Current management practices for all types of radioa discussed in Volume 2, section 2.2.7, and technology development activities are des section 3.1. (Volume 2 is specific to INEL, but waste management technologies also other DOE sites.) DOE has established a policy of compliance with all applicable F regulations and DOE Orders. All radioactive materials will be managed to protect t health and safety of the public and site employees.

## II COMMENT

The commentor believes that technologies for safe, long-term storage of nuclear was not exist because the material being stored has a long half-life and will outlast t RESPONSE

DOE has a program to safely manage and store radioactive materials (including both SNF) at each of the sites considered in the EIS. The potential impacts of storing mitigation measures are discussed in Volume 1, Chapter 5. Supporting information o storage options for them is provided in Volume 1, Appendix J. Management and stora materials at INEL are described in Volume 2, Chapters 1 and 2. It is DOE's policy applicable Federal, state, and local regulations and DOE Orders. All radioactive m to ensure protection of the environment and the health and safety of the public and One of the concerns that must be addressed prior to ultimate disposition is the con

commentor that the waste may outlast some storage methods. While ultimate disposition scope of this EIS, DOE is researching and developing disposition technologies that the longevity of the waste and ensure that the public and environment are protected. General long-term solutions proposed for managing SNF at INEL are discussed in Volume 1 and 2. The alternatives for safe SNF management in the interim are discussed in Volume 1.

## II COMMENT

Commentors raise an issue about the disposing of hazardous and radioactive wastes using unacceptable methods.

### RESPONSE

DOE accepts the responsibility to operate its hazardous and radioactive waste management in compliance with applicable requirements. DOE continues to improve the procedures associated with waste management. Accordingly, the lessons learned from past waste practices and the knowledge being gained from current research and development programs are incorporated into future waste management programs. One purpose of this EIS is to achieve the following objectives.

Volume 1 is intended to provide the public and decisionmakers with a programmatic view of actions and alternatives for managing SNF. For all alternatives analyzed, DOE is complying with applicable Federal, state, local, and DOE requirements to ensure that SNF is safely managed, and health and safety of the public and site employees are protected. In the alternative, only the minimum actions necessary for continued safe management of SNF are implemented.

Volume 2 is a site-specific assessment of SNF and environmental restoration and was developed for alternatives at INEL. Again, the intent of Volume 2 is to provide the public and decisionmakers with the information necessary to select the best alternative for these activities at INEL. This EIS for waste management, which will provide a broader view of complete management programs similar to the way Volume 1 of this EIS addresses the programmatic management of SNF.

## II COMMENT

The commentor states that for Volume 1, high-level, transuranic, and mixed waste are treated with different risks, and should be dealt with separately in the EIS. The commentor also provides a definition of mixed waste.

### RESPONSE

DOE agrees with the comment that these three wastes are of different types, with different disposal requirements. While it would be necessary in a site-specific EIS to treat separate entities, for this programmatic EIS, they were lumped together (and separate wastes) for two reasons: (1) the volumes of high-level, transuranic, and mixed waste generated from SNF management under the No Action alternative are uniformly small compared to the volumes of these wastes already at DOE sites, and (2) high-level, transuranic, and mixed waste will eventually be disposed of offsite, whereas low-level wastes can be disposed of on-site. Mixed waste has been added to Appendix H.

## II COMMENT

The commentor indicates that Figure 5-2 and the text on page 5-25 do not agree.

### RESPONSE

The text in Volume 1, section 5.1.3.3 indicates that the Hanford Site would generate 10,000 cubic feet of high-level, transuranic, and mixed waste due to processing. Volume 1, Figure 5-2 shows the volumes of waste that would be generated from the Decentralization alternative.

## II COMMENT



The commentor has questions about safe temporary storage and ultimate disposal of r  
RESPONSE

DOE has a program to safely manage and store radioactive materials, including SNF, considered in this EIS. It is DOE's policy to design, construct, and operate its f provides a level of safety and safety assurance that is in accordance with applicab local regulations and DOE Orders. DOE will manage radioactive materials and wastes ensures protection of the environment and the health and safety of the public and s Management and disposal of radioactive wastes are discussed in Volume 2, Chapter 1. management practices for each type of radioactive waste (which are improvements on given in Volume 2, section 2.2.7. The potential impacts of storing radioactive mat SNF are discussed in Volume 1, Chapter 5. Specific supporting information on types options for them are presented in Volume 1, Appendix J.

## II COMMENT

The commentor asks about three waste treatment facilities under development by the Group, Inc. at the Oak Ridge Reservation site.

RESPONSE

Scientific Ecology Group, Inc., has three commercial waste treatment facilities und are not located at ORR. It has recently completed construction of a Carlsbad, New recently purchased property for a Hanford, Washington, site; and is in the planning Falls, Idaho, site. As stated in Volume 1, Appendix F-4, Scientific Ecology Group, considered, as stated in Volume 1, Appendix F, Part Three, section 5.16. While som this facility will be made, it will remain within the property boundaries of the si incremental impacts from the addition of a second radioactive incinerator are asses manner in the EIS.

## II COMMENT

The commentor questions the meaning of off-site disposal as a waste management acti Test Site.

RESPONSE

Off-site disposal in the context of Volume 1, section 4.4 means disposal off of the DOE facility or permitted and licensed commercial disposal facility. The destinati depend on the type of waste. The text in the Final EIS has been changed to clarify manage wastes offsite.

## II COMMENT

Commentors want all wastes disposed of in Resource Conservation and Recovery Act-pe waste and/or Environmental Protection Agency/Nuclear Regulatory Commission-permitte waste disposal sites as appropriate.

RESPONSE

DOE waste management policies and practices embrace numerous laws and regulations g hazardous and radioactive wastes. A comprehensive list of these requirements is pr Chapter 7, and associated environmental permits are also discussed there. Current for radioactive and nonradioactive wastes are described in Volume 2, section 2.2.7, INEL, but also generally applies to wastes at other DOE sites. DOE has established with all applicable Federal, state, and local regulations and DOE Orders, including establishing disposal requirements, including RCRA disposal of wastes in hazardous appropriate, EPA/NRC-permitted radioactive waste disposal sites. All radioactive materials will be managed to protect the environment and the health and safety of t employees.

## II COMMENT

The commentor states that several types of low-level radioactive waste should be co  
RESPONSE

DOE radioactive wastes are specifically managed according to DOE Order 5820.2A, Rad Management, which classifies radioactive wastes somewhat differently than regulatio NRC for commercial radioactive wastes. In particular, DOE has only one category fo which encompasses the A, B, C, and greater-than-Class-C distinctions made by NRC. management measures may still be prescribed for DOE low-level wastes according to t of radionuclides present, analogous to standards for disposal of commercial radioac example, DOE low-level waste analogous to NRC greater-than-Class-C waste is require 5820.2A, Radioactive Waste Management, to be handled as a special case, and is not buried in the RWMC. Additional information on special-case waste at INEL has been section 3.1.3.

## II COMMENT

The commentor urges that until we can eliminate the generation of nuclear waste, ke it and monitor it, and people have an interest in seeing that the generation is eve substantially curtailed.

RESPONSE

Under the No Action alternative, DOE would limit actions to the minimum necessary f management of SNF at the generation sites or current storage locations. Most DOE S DOE production and experimental reactors that have ceased to operate, so considerab has already occurred. SNF management plans are presented for all alternatives in V and mitigation measures are discussed in section 5.7.

## II COMMENT

The commentor expresses an opinion that all waste should be stored in a retrievable technologies available.

RESPONSE

Descriptions of how wastes would be managed under the proposed alternative actions and 2, section 3.1. These alternative actions also consider the best technologies development activities, including stabilization technologies, aimed at advancing th available for waste management are described in Volume 2, section 3.1.

## II COMMENT

The commentor wants to know if the statement on Volume 1, page 5-72 stating "but wi approximately 2 cubic meters per year (3 cubic meters per year) of high-level waste process or a reprocessing activity at the Savannah River Site.

RESPONSE

The statement refers to "processing," as shown in Volume 1, Appendix C, section 3.1

## II COMMENT

The commentor suggests a wording change in Volume 1, Appendix A, section 2.3 to bet characteristics of the Hanford Spent Nuclear Fuel Management Plan.

RESPONSE

The suggested wording change has been incorporated into the EIS.

## II COMMENT

The commentor states that the EIS should reconsider the procedures for burial at the Engineering Laboratory Radioactive Waste Management Complex of the material removed from fuel modules during examination at the Expanded Core Facility, and that the EIS does changes to this procedure.

#### RESPONSE

The Navy and DOE rely on definitions and classifications of nuclear materials set forth in the Waste Policy Act, as amended, and regulations issued by EPA (40 CFR 261) and NRC (10 CFR 20). The categories set forth in these regulations are "Spent Nuclear Fuel," "High-Level Waste," "Low-Level Waste," "Low-Level Mixed Waste," "Greater-than-Class-C Waste," and "Transuranic Waste."

Volume 1, Appendix H sets forth the definition of SNF used in this EIS as "fuel that has been removed from a nuclear reactor following irradiation, the constituent elements of which have been irradiated. The definition of high-level waste in Volume 1, Appendix H is "highly radioactive waste that results from the reprocessing of spent nuclear fuel, including liquid waste produced as a solid waste derived from the liquid..." Transuranic waste is defined as "waste containing significant quantities of alpha-emitting transuranic isotopes, with half-lives greater than 20 years..." Low-level waste is defined as "waste that contains radioactivity and is not transuranic waste, transuranic waste, or spent nuclear fuel."

The ends removed from Naval SNF modules at the Expanded Core Facility are structural and provide support and direct the flow of cooling water during operation. The material removed from the ends of the fuel modules does not contain any fuel or fission products from fuel and is not considered SNF. It does not contain transuranic elements or fission products and is not considered high-level waste or transuranic waste. The amounts of radioactivity in the ends are classified as low-level waste. Consequently, the material removed from the ends at the Expanded Core Facility is categorized as low-level waste due to the amount of radioactivity. Their disposal at the RWMC at INEL is accomplished in accordance with applicable regulations. As indicated in Volume 1, Appendix D, section 5.2.15, the amount of low-level waste generated from the Expanded Core Facility is 425 cubic meters. The radioactive isotopes, which represent the activity in the material removed from the ends of fuel modules, are identified

| ISOTOPE | HALF LIFE    |
|---------|--------------|
| Fe55    | 2.73 years   |
| Co60    | 5.271 years  |
| Ni59    | 76,000 years |
| Ni63    | 100 years    |

A description of the composition of material removed from the ends of fuel modules has been added to Volume 1, Appendix D, Attachment B.

## II II COMMENT

The commentor states that he was unaware that spent fuel storage generates transuranic waste and was concerned that this may be due to extensive fuel leakage.

#### RESPONSE

As reported in Volume 1, section 5.1.1 and site-specific Appendices A through F, transuranic waste is generated in small quantities by the routine operations associated with transporting and managing SNF (from filters, ion exchange columns, etc., particularly during examination activities) rather than extensive leakage.

## II II II COMMENT

The commentor points out that the vulnerability assessment states that fuel transferred to ICPP-666 could lead to contamination and additional vulnerabilities, and DOE will address this issue.

#### RESPONSE

DOE is aware of the potential for contamination if transfers are not conducted in a proper manner. All fuels to be transferred from ICPP-603 at the Idaho Chemical Processing Plant have been inspected for corrosion and other potential breaches. Potentially breached fuel elements will be placed in suitable containers to prevent release of radioactive material. Fuel elements are stored in shielded transfer casks. ICPP-666 has extensive monitoring and water purification systems. If a leaking container or fuel element would be identified and necessary corrective action taken.

additional vulnerabilities are anticipated.

The EIS discusses the Spent Fuel Working Group Report on Inventory and Storage of t Spent Nuclear Fuel and Other Irradiated Nuclear Materials and Their Environmental, Health Vulnerabilities (known as the vulnerability assessment) and associated actio identified vulnerabilities in Volume 1, section 1.1.2 and Appendix I-2 and in Volum

## II COMMENT

Many commentors raise issues about DOE's past record of waste-handling practices at Hanford, Oak Ridge, and Idaho National Engineering Laboratory, resulting in release  
RESPONSE

DOE has identified, or is currently evaluating many of the problems that exist with infrastructure, or that have resulted from past releases of contaminants to the env management strategies are continually evolving to meet current regulatory requireme of technology advancements. Many facilities across the DOE complex are either unde or planning upgrades or replacements to come into compliance with applicable regula contaminant releases are addressed by DOE's Environmental Restoration Program. Eac on EPA's National Priorities List must negotiate an agreement with the appropriate prioritize work and develop enforceable schedules for cleanup of contaminated areas INEL's FFA/CO, which is signed by DOE, EPA Region X, and the State of Idaho.

As discussed in Volume 1, Chapter 1, DOE is committed to complying with all applic state laws and regulations, DOE Orders, and interagency agreements governing SNF an restoration and waste management.

As discussed in Volume 1, Chapter 3, safe management of SNF requires that many fact including site security, presence of skilled workers, safety, and the affected envi reach a decision regarding in which state or states SNF will be stored. Analysis o potential storage locations were included in the EIS. As part of the public commen public input regarding the eventual location of SNF storage facilities was sought. input was part of the process used in arriving at the preferred alternative. The EIS, as well as other factors, will be considered in the ROD for the proposed actio Volume 1, section 5.1.1 summarizes potential impacts from waste management activit the SNF management alternatives. Site-specific details are discussed in Volume 1, Hanford Site, Volume 1, Appendix F, Part Three for ORR, and Volume 1, Appendix B fo

## II II COMMENT

The commentor wants mitigations measured for their effectiveness and addressed in t discussion of proposed mitigation for direct, indirect, and cumulative impacts shou Council on Environmental Quality regulation states that an EIS should include the m adverse environmental effects.

RESPONSE

As discussed in Volume 1, Chapter 5, the EIS evaluated impacts to socioeconomics, u waste management, occupational health and safety, public health and safety, and tra cases, the results indicate that impacts to the environment and to humans would be general mitigation techniques are discussed in Chapter 5. This level of detail is programmatic EIS. Follow-on-site-specific NEPA analyses would address specific miti considered for identified impacts. Comparison of specific impacts by alternatives in Table 3.3-1, with an indication of proposed mitigation measures. Possible mitig further discussed in Volume 2, Chapter 5. Specific mitigation measures to be under developed for the ROD, and if necessary, a formal mitigation action plan will be de

## II 5.19 Miscellaneous

## II COMMENT

Several commentors state preferences for truck, rail, barge, or air as modes of tra reasons were provided for favoring one mode of transportation over another.

**RESPONSE**

The EIS evaluates truck, rail, barge, and ship transportation because they are believed in terms of risk and cost. Other modes of transportation were not evaluated. Truck transport of radioactive material is a legal and viable option and the potential transportation are very small. Rail transport of radioactive material is also a legal EIS evaluates both truck and rail transportation for DOE shipments. Navy SNF has been barge rail, except for transportation by ship from Pearl Harbor Naval Shipyard to Puget Sound where the containers are transferred to railcars and heavy-lift transporters move containers to the nearest rail access at the Kesselring Site. Transport of SNF or radioactive waste under any alternative being considered in this EIS. An analysis of barge transport analysis has been added to the EIS.

**II COMMENT**

The commentor identifies errors or omissions in the text and suggests alternative meanings of the text.

**RESPONSE**

The errors or omissions identified by the commentor have been corrected in the Final EIS.

**II COMMENT**

The commentor expresses support for DOE ecological activities and research at the Idaho Engineering Laboratory, which are not specific to this EIS.

**RESPONSE**

The comment is noted.

**II COMMENT**

Commentors express fear of moral impacts and obligations, catastrophic events, radiological materials, and emotional concerns over the management of nuclear material such as spent nuclear fuel.

**RESPONSE**  
DOE has attempted in this EIS to develop reasonably foreseeable, quantifiable environmental impacts to the proposed action(s), including operations and accident consequences. Other potential impacts such as moral, emotional, and psychological (including fear, dread, mental anguish, negative attitudes, etc.) issues are beyond the scope of required NEPA evaluations. The U.S. Supreme Court in *Metropolitan Edison v. People Against Nuclear Energy*, 103 S. Ct. 1556 (1983), clarified the requirements for NEPA evaluative requirements.

**II COMMENT**

Many commentors state they are concerned about errors and inconsistent use of information in the document, while others express concern about misleading discussions that need to be corrected.

**RESPONSE**  
The EIS has been reviewed for errors and inconsistencies, including those identified by commentors. Changes have been made to the EIS to correct errors or clarify misleading information.

**II COMMENT**

Commentors express reservation and/or discontent about residing near nuclear waste management facilities.

**RESPONSE**  
DOE is aware of general public fears regarding radiation and radioactivity, a significant concern arising from a basic unfamiliarity with such risks. The EIS analyzes the cumulative impacts of operations at the 10 candidate sites for management activities involving SNF. The analysis concludes that there would be no significant risk due to either operations or credible accidents involving SNF.

SNF, including transportation, at any of the candidate sites.

## II COMMENT

The commentor questions the existence or effectiveness of quality assurance or quality control at its facilities.

### RESPONSE

DOE and its contractors implement quality assurance/quality control requirements for all DOE and facility operations. Formal quality program requirements are derived and implemented in DOE Order 5700.6C, Quality Assurance, which defines the interrelations of criteria and procedures for managing, achieving, and assessing quality that result in improved safety and reliability of products and services. In accordance with these requirements, approved quality programs are implemented at the project/program level. These quality programs are tailored to meet the specific needs of the projects/programs and apply the appropriate industry standard criteria unique to the project. DOE has adopted the Total Quality Management (TQM) approach for nuclear reactor operations, EPA environmental quality assurance management for remediation activities, etc. In recent years, DOE has adopted the Total Quality Management (TQM) approach whereby employees at all levels are encouraged to take ownership in applying quality assurance to all aspects of their respective duties and interactions, resulting in more immediate and effective quality control.

## II COMMENT

The commentor asks why the value for the State of Idaho appears to be omitted from Table 5.15-1 of the EIS.

### RESPONSE

This error has been corrected.

## II COMMENT

Commentors raise the issue of the potential impacts to the environment and the people from DOE activities. The EIS describes the potential impacts to the environment and the people from DOE activities. The EIS also describes the measures that DOE could implement to control or reduce impacts to the environment and the people from DOE activities.

### RESPONSE

Descriptions of the existing environment at INEL and the potential impacts to the environment and the people from DOE activities are in Volumes 1 and 2, Chapters 4 and 5. Chapters 4 and 5 discuss the current environmental situation and the expected consequences of DOE activities on the environment and show that the impacts would be small for DOE activities. DOE could implement measures to control or reduce impacts to the environment and the people from DOE activities. As described in these sections, DOE is operating its facilities in compliance with all applicable laws and regulations to ensure that the impacts of DOE activities on those resources are small.

## II COMMENT

The commentor notes that the EIS identifies irreversible and irretrievable commitments of resources likely to occur due to the proposed action and notes "the assertion that surface and groundwater resources already have been irretrievably impacted." The commentor asks if DOE has an obligation to protect natural resources under its jurisdiction and to recommit resources that have been committed.

### RESPONSE

The identification of irreversible and irretrievable commitments of resources is a key part of the EIS. Irreversible and irretrievable commitment of resources refers to the process of committing resources to a specific use that is unavailable for use as a result of past, present, or proposed actions. Irreversible commitment of resources does not imply adverse environmental impacts. The discussion of impacts in Volume 2, section 5.15 shows that the impacts from past, present, and proposed actions would be small.

## II COMMENT

The commentor suggests specific deletions, corrections, or additions to the EIS.

### RESPONSE

If the suggested change was considered editorial or significant to the decision-making, appropriate change has been incorporated into the EIS.

## II COMMENT

The commentor states that a discussion of Oak Ridge spent fuel inventories in Volume 1 incorrectly refers the reader to a section that does not exist.

### RESPONSE

Volume 1, Appendix F, Part Three, section 2.3.7 has been modified to correct this error.

## II COMMENT

The commentor expresses the opinion that all facets of DOE's nuclear program are for the protection of bureaucrats.

### RESPONSE

This EIS addresses the programmatic management of SNF in the interim to ultimate disposition of environmental restoration and waste management activities at INEL over the next 10 years. Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impact alternatives considered in this EIS. The analyses show that the impacts of all alternatives are acceptable. Although vulnerabilities exist, DOE has the management skill, scientific capability, and mandate to safely manage SNF and INEL waste management and environmental restoration during the period covered by this EIS. See also the response to comment 03.07 (004).

## II COMMENT

The commentor states that a description of the amount of radiation expected to be released from this project is a necessary item in the EIS.

### RESPONSE

This information is provided for all alternatives and all sites considered in the EIS. Chapter 5 summarizes information on potential releases to the environment. Additional information is provided in Volume 1, Appendices A through D and K, and Volume 2, Appendix F.

## 05.19 (017) Miscellaneous

### COMMENT

The commentor identifies sections of Volume 2 of the EIS that require clarification and requests information to more completely address the material in appropriate sections.

### RESPONSE

The EIS has been modified to include the additional information requested by the commentor in Chapter 4.

## 05.19 (018) Miscellaneous

### COMMENT

The commentor requests a specific change to the EIS.

### RESPONSE

The commentor's suggested language has been incorporated in Volume 1, section 5.1.1.

**05.19 (019) Miscellaneous****COMMENT**

The commentor is unclear what the term "estimated population dose" means and states Volume 1 refers to Figure 5-1 as representing the estimated population dose, but the comment contains that term.

**RESPONSE**

The statement should have referred to estimated annual latent cancer fatalities. The commentor has been revised in the EIS.

**VOLUME III Part B**

Department of Energy Programmatic  
Spent Nuclear Fuel Management  
and  
Idaho National Engineering Laboratory  
Environmental Restoration and  
Waste Management Programs  
Final Environmental Impact Statement  
Volume 3  
Part B  
April 1995  
U.S. Department of Energy  
Office of Environmental Management  
Idaho Operations Office

**VOLUME 3, PART B: CONTENTS**

SEE PART A FOR INTRODUCTION, ACRONYMS, AND CHAPTERS 1 THROUGH 5.

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