

**NATIONAL IGNITION FACILITY
DRAFT SUPPLEMENTAL ENVIRONMENTAL
IMPACT STATEMENT TO THE SSM PEIS**

1 INTRODUCTION

This Supplemental Environmental Impact Statement (SEIS) is being prepared pursuant to a Joint Stipulation and Order approved and entered as an order of the court on October 27, 1997, in partial settlement of the lawsuit Civ. No. 97-936 (SS) (D.D.C.), *Natural Resources Defense Council [NRDC] et al. v Richardson et al.* (Attachment 1). In the Joint Stipulation and Order, the U.S. Department of Energy (DOE) agreed to prepare an SEIS to the Programmatic Environmental Impact Statement for Stockpile Stewardship and Management (DOE/EIS-0236) (SSM PEIS) (DOE 1996a) evaluating specific issues related to the National Ignition Facility (NIF). The Notice of Intent (NOI) to prepare the SEIS was published in the *Federal Register* on September 25, 1998 (63 FR 51341) (Attachment 2). This NOI was amended on August 5, 1999 (Attachment 3).

1.1 BACKGROUND

The SSM PEIS addressed alternative plans for DOE's defense program activities related to nuclear weapons stockpile issues at several DOE laboratories, including Lawrence Livermore National Laboratory (LLNL) in Livermore, California. The environmental consequences of construction and operation of the NIF were addressed in detail in the SSM PEIS, Volume III, Appendix I, entitled *National Ignition Facility Project Specific Analysis* (NIF PSA). The NIF PSA analyzed four alternative site locations and two design options for NIF, as well as the no action alternative of not constructing and operating NIF. The analysis concluded that the impacts of constructing and operating NIF would be minor, including a very low radiation dose to the public during operation and an extremely low potential for an accident resulting in radiation releases. Doses from these sources would be well below levels set in applicable regulations and guidelines. The analysis estimated that the impacts from such an accident would be small. The PSA concluded that there would be few significant differences in adverse impacts among the alternative sites. The Record of Decision (ROD) for the SSM PEIS was published in the *Federal Register* on December 26, 1996 (61 FR 68014). In the ROD, DOE announced its decision to construct and operate NIF at LLNL. Groundbreaking occurred on May 29, 1997. Construction of the NIF is ongoing and is expected to be completed by October 2003.

On September 3, 1997, excavation activities at the NIF site uncovered capacitors containing a polychlorinated biphenyl (PCB) oil, as well as some nonhazardous items. Several of the capacitors had leaked, contaminating surrounding soil with Diacolor, a mixture of several PCBs (Bainer and Berg 1998). The possibility of such an occurrence was unforeseen and therefore not addressed in the SSM PEIS. A total of 112 capacitors, 694 metric tons (766 short tons) of PCB-contaminated soil, and approximately 75 corroded waste drums were promptly

removed, and the site was cleaned up in accordance with applicable federal, state, and local requirements under a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal action under paragraph 300.415 of the National Contingency Plan (40 CFR 300). This cleanup was conducted in September 1997 by LLNL with oversight by DOE and in coordination with the CERCLA Remedial Project Managers (RPMs). The RPMs represent the U.S. Environmental Protection Agency (EPA), the California Department of Toxic Substances Control, and the California Regional Water Quality Control Board-San Francisco Bay Region. The CERCLA RPMs agreed to a soil cleanup standard of 25 parts per million (ppm) based on Toxic Substances Control Act (TSCA) guidance if the soil could be reused at the NIF construction site. It was later determined that most of the soil did not meet the engineering criteria for reuse at the construction site and would need to be shipped to an approved off-site hazardous waste disposal facility. To expedite removal and to avoid further delay in NIF construction, a cleanup level of 1 part per million (ppm) was proposed and agreed to by the RPMs. This level was the reporting limit for chemical analysis of these soils and was consistent with the EPA Region 9 Preliminary Remedial Goal (PRG) of 1.3 ppm for unspecified PCBs in soils of an industrial site.

On September 22, 1997, the plaintiffs in *NRDC v. Richardson* filed a motion under Rule 60(b) of the Federal Rules of Civil Procedure in which they alleged that DOE knew but did not adequately analyze and disclose the risk of building NIF in an area that may contain buried hazardous, toxic, and/or radioactive materials or waste. DOE denied the allegations in the plaintiffs' motion. In the Joint Stipulation and Order of October 27, 1997, which settled all claims in the plaintiffs' Rule 60(b) motion, DOE agreed to conduct an assessment of "... the reasonably foreseeable significant adverse environmental impacts of continuing to construct and of operating NIF at LLNL with respect to any potential or confirmed contamination in the area by hazardous, toxic, and/or radioactive materials" and to present the results in an SEIS (this document).¹

As agreed upon in the Joint Stipulation and Order (Attachment 1), DOE conducted characterization studies to determine the presence of any additional buried hazardous, toxic, and/or radioactive materials in the northeastern corner of LLNL, where the NIF site is located. The progress of the characterization activities was documented to the court in quarterly reports (DOE 1997, 1998a-d, 1999b-c). Those characterization activities are now complete, and the results are analyzed in this SEIS. As discussed in Sections 2.3 and 4, the characterization studies did not detect the presence of any additional buried hazardous, toxic, and/or radioactive materials that would adversely impact human health and the environment.

¹ On April 30, 1997, the NRDC and 38 other environmental and antinuclear groups filed a complaint and a motion for a preliminary injunction against DOE, alleging, among other things, that the SSM PEIS failed to analyze the environmental impacts of, and the reasonable alternatives to, construction and operation of the NIF at LLNL. On August 8, 1997, the U.S. District Court for the District of Columbia denied the plaintiffs' motion for preliminary injunction. In their September 22, 1997, Rule 60(b) motion, the plaintiffs renewed their request for a preliminary injunction as it applied to the NIF; that request was resolved by the October 27, 1997, Joint Stipulation and Order. On August 18, 1998, the court granted DOE's motion for partial summary judgment, including that portion dealing with all other issues raised by the plaintiffs relating to the NIF. Therefore, preparation of this SEIS pursuant to the Joint Stipulation and Order resolves all the remaining issues in *NRDC v. Richardson* regarding the NIF.

Over the period October 7-12, 1998, approximately 1 year after the Joint Stipulation and Order, workers conducting routine drainage maintenance operations in the center of the East Traffic Circle (ETC) Area uncovered debris (wood, metal, plastic, etc.) while trenching down to a depth of about 1.4 m (4.5 ft). This location is outside the NIF Construction Area. Soils from the ETC Area were tested, and the PCB Aroclor 1254 was found. This PCB is believed to represent residual contamination from capacitors previously excavated during the ETC Landfill Closure in 1984. The soil removed for the drainage maintenance operations was stored on plastic in an area away from the excavation, and two composite samples were collected for chemical analyses. On December 18, 1998, the two samples were confirmed to contain Aroclor 1254 at 98 and 120 ppm. No other chemical constituents of concern (volatile organic compounds, metals, and radionuclides) were detected. After it was confirmed that the soil removed from the ETC Area contained Aroclor 1254, the RPMs were immediately notified. Subsequent actions, such as soil disposal, geophysical surveys, and soil sampling, were planned and implemented with the RPMs' concurrence. The cleanup level agreed to by the RPMs was 18 ppm, which is the EPA Region 9 PRG for Aroclor 1254 in soils at an industrial site. During the week of January 4, 1999, the PCB-contaminated soil was sent to an off-site EPA-approved hazardous waste disposal facility. With the approval of the RPMs, sampling was conducted to verify that no residual contamination remained where the soil was stored and loaded for off-site disposal.

The extent of the residual contamination remaining after PCB removal was assessed, and although interviews and historical searches indicated that there was a low likelihood of finding any additional buried sources of contamination, surface geophysical surveys and sediment sampling were conducted in the area under the oversight of the CERCLA RPMs. Soil samples collected in the ETC Area indicated that shallow soil (0–0.75 m [0–2.5 ft]) in some locations contained residual PCB concentrations above the cleanup level of 18 ppm required by the CERCLA RPMs. With approval of the RPMs, surface soil was scraped off of these areas and confirmatory samples were collected to determine the concentrations in the remaining surface soil. Areas where residual Aroclor 1254 concentrations were still above the cleanup level were scraped until eventually the surface soil concentrations were below 18 ppm (Bainer 1999).

On August 5, 1999, DOE issued an amended NOI for preparation of this SEIS for the SSM PEIS (64 FR 42681). The amended NOI announced the revised schedule for preparation of the Draft SEIS.

1.2 PURPOSE AND NEED

The purpose and need for the NIF is explained in the SSM PEIS (DOE 1996a, Section I.2) and is summarized here. The NIF will provide a unique capability as a key component of DOE's science-based stewardship of the nation's nuclear weapons stockpile. Planned experiments with NIF, at temperatures and pressures near those that occur in nuclear weapon detonations, will provide data needed to verify certain aspects of sophisticated computer models. As explained in the SSM PEIS, those models are needed to simulate weapons physics, thereby providing insights on the reliability of the weapon stockpile (DOE 1996a, Section I.2.2.3). As a multipurpose inertial confinement fusion facility, the NIF will also be

important to national energy (e.g., next critical step in scientific evaluation of inertial fusion energy as a future environmentally attractive energy source), basic science (e.g., providing insight to the origin of the universe), and technology (e.g., developing new technologies to aid U.S. industrial competitiveness in optics, lasers, and integrated circuit manufacturing) missions.

DOE's purpose and need for the preparation of this SEIS, consistent with the previously established need for NIF, is to determine how the results of the characterization studies completed pursuant to the Joint Stipulation and Order should affect the manner in which DOE proceeds with construction and operation of the NIF.

1.3 REQUIREMENTS OF THE JOINT STIPULATION AND ORDER

1.3.1 Phase I and Phase II Investigations

The site characterization activities necessary to meet the requirements of the Joint Stipulation and Order (Paragraphs 2-5) were carried out in two phases. Phase I, as defined in Paragraph 2, required a review of all available reports, studies, maps, aerial photographs, and other available records, as well as interviews with workers and retirees who are reasonably known to have knowledge of the potential existence and location of buried materials containing the mentioned substances in any of seven specified areas around and including the NIF construction site. Phase II consisted of the remainder of the required activities, as summarized here. Paragraph 3 required that in the event that activities under Paragraph 2 identified any areas where the materials in question may have been buried, appropriate geophysical surveys be carried out to further investigate such areas. Potential hazardous waste burial sites, according to Paragraph 4, would then be investigated by, at a minimum, conducting soil boring and/or soil vapor surveys. Finally, Paragraph 5 required the construction of one or more groundwater monitoring wells in the affected areas to monitor impacts from dewatering activities at the NIF construction site.

The Joint Stipulation and Order required (in Paragraph 6) that during performance of the activities in Phases I and II, DOE file a report every 90 days (1) summarizing the progress made in conducting the analyses in Phases I and II and in constructing the NIF, and (2) describing the analyses and NIF construction activities planned for the next 90-day period. DOE has filed seven such reports — in November 1997; February, May, August, and November 1998; and March and June 1999 (DOE 1997, 1998a-d, 1999b-c).

1.3.2 Stipulated Areas

The seven areas covered by the Joint Stipulation and Order occupy a large portion of the northeastern quadrant of the Livermore Site. Figure 1.1 shows that six of the areas occupy a

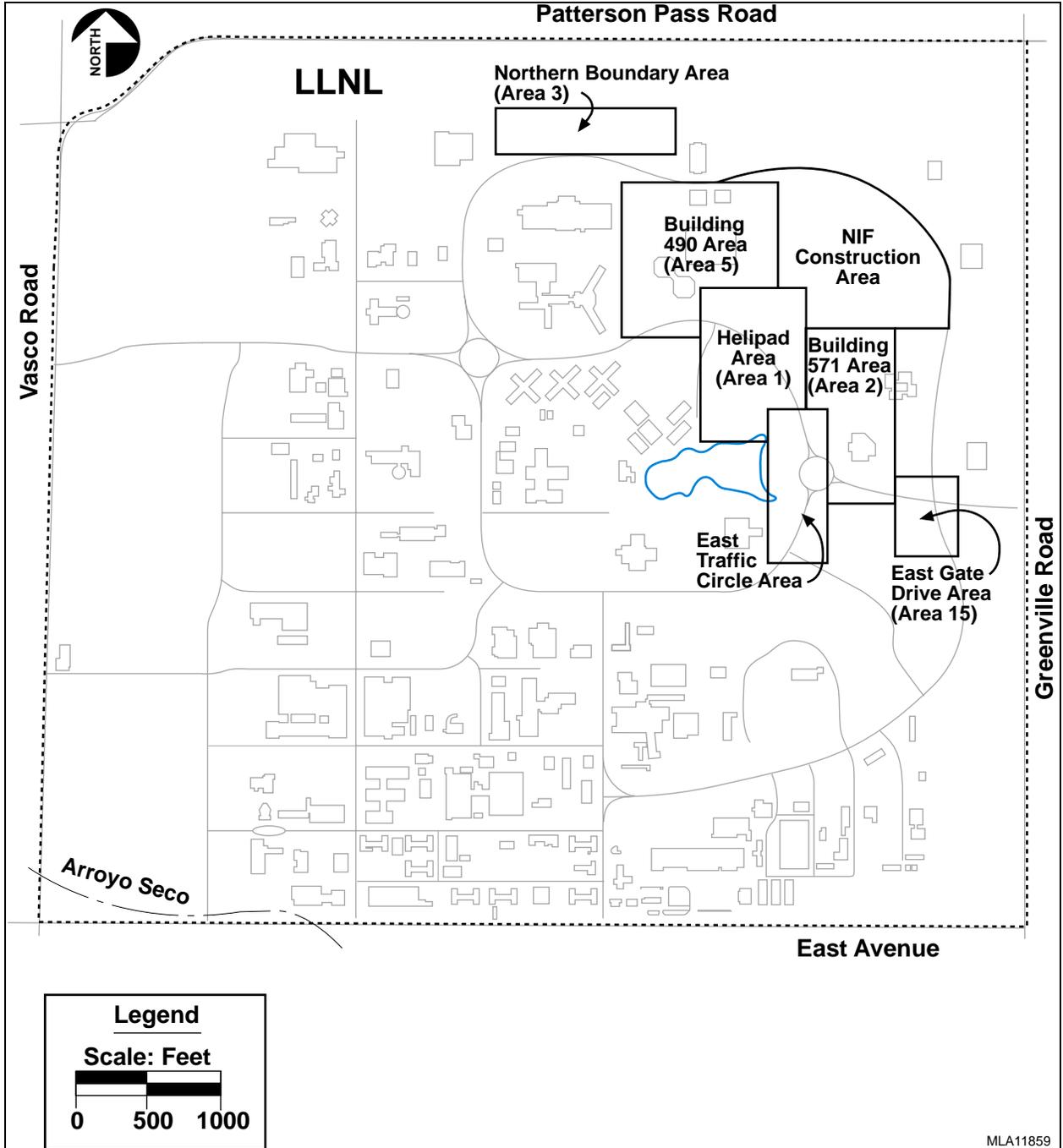


FIGURE 1.1 Areas Identified for Further Investigation in the Joint Stipulation and Order

single contiguous block, while the seventh, the Northern Boundary Area, lies a short distance northwest of the main block. The areas identified for investigation in the Joint Stipulation and Order are as follows:

- a. Area 1: Helipad Area;
- b. Area 2: Building 571 Area;
- c. Area 3: Northern Boundary Area;
- d. Area 5: Building 490 Area;
- e. East Traffic Circle Area;
- f. Area 15: East Gate Drive Area; and
- g. Area extending from Areas 1, 2 and 5 to and including the NIF construction site and beyond to the perimeter of the circular road immediately beyond the NIF construction site, as marked on the map in the Joint Stipulation and Order (in this SEIS this area is called the “NIF Construction Area”).

The above designations refer to current uses and are not necessarily linked to any past waste placement activities; waste burial sites are known to have been used within these areas. No past waste placement activities were known in the NIF Construction Area at the time of preparation of the SSM PEIS. Known waste placement locations in the stipulated areas were remediated by the end of 1984, with a CERCLA review completed in 1987. Those locations are as follows:

- The Northern Boundary Area contains a former garbage dump (landfill) used for the disposal of nonhazardous laboratory wastes. The landfill was operated from around 1965 to 1974. (An additional garbage pit from the same or earlier era located along the eastern border of the northeast quadrant is outside the stipulated areas [Dreicer 1985]).
- The East Traffic Circle Area includes a major landfill that was operated from the late 1950s to the early 1980s; some hazardous materials, including PCBs, were placed in the landfill. The East Traffic Circle Landfill (ETCL) was remediated and closed, and the East Traffic Circle was restored in the mid 1980s. As discussed in Section 1.1, soil containing the PCB Aroclor 1254 was excavated from the ETC Area during routine maintenance operations and disposed of under the CERCLA remediation process.

- The Helipad Area, Building 490 Area, and East Gate Drive Area are currently undergoing groundwater treatment and/or monitoring for volatile organic compound (VOC) contamination from past releases.

1.3.3 Supplemental Environmental Impact Statement

The Joint Stipulation and Order also provides for DOE to prepare and circulate for public comment a supplement to the SSM PEIS, in accordance with DOE National Environmental Policy Act (NEPA) regulation 10 CFR 1021.314(d). This SEIS has been prepared to comply with that provision. Paragraph 7 of the Joint Stipulation and Order provides that the SEIS will evaluate "...the reasonably foreseeable significant adverse environmental impacts of continuing to construct and of operating NIF at LLNL, with respect to any potential or confirmed contamination in the area by hazardous, toxic and/or radioactive materials." DOE believes that this requirement of the Joint Stipulation and Order defines the scope of the SEIS.

1.4 COMMENTS RECEIVED ON THE NOTICE OF INTENT

DOE received one set of comments, from the U.S. Environmental Protection Agency (EPA), on the September 25, 1998, NOI. The EPA commented that the SEIS scope should include seismic potential, environmental hazards of operating NIF that were not identified in the Joint Stipulation and Order, waste streams and waste management from operations, and permitting and regulatory approval. DOE has considered these comments and has addressed them in a manner consistent with the scope of the SEIS, i.e., whether they bear on the question of contamination by hazardous, toxic, or radioactive materials in the area of NIF. However, DOE does not believe that it is appropriate to expand the scope beyond that established by the Joint Stipulation and Order. DOE agreed to conduct the characterization activities described above and to prepare the SEIS in response to the discovery of the buried capacitors during the construction of NIF. No other new information has been developed that would call into question the analysis and conclusions contained in the SSM PEIS, and the NIF PSA contained therein, regarding the environmental impacts of constructing and operating NIF.

Although DOE believes that the Joint Stipulation and Order establishes the appropriate scope of the SEIS, careful consideration was given to EPA's comments. The responses to those comments, which are paraphrased in italics below, are as follows:

- *A clear statement of purpose and need was requested.* DOE believes that the Joint Stipulation and Order established the purpose and need for the SEIS. The purpose and need for NIF are contained in the SSM PEIS (DOE 1996a, Appendix I) and are incorporated by reference and briefly described in Section 1.2 of this SEIS.

- *A concise summary of the history of the project and events leading to this SEIS was requested.* Section 1 (including Section 1.1) of this SEIS provides the history of events leading to this SEIS.
- *A summary of the various elements of the NIF facility was requested.* A brief description of NIF is found in Section 1. The various elements of NIF are summarized in Appendix I of the SSM PEIS. Since the purpose and need for the SEIS are determined by the Joint Stipulation and Order, the requirements specified in this agreement are the focus of this SEIS. Further description of the NIF is not provided in order for the document to remain focused on the required investigations and the impacts of any soil or water contamination as a result of previously undiscovered buried materials.
- *A request was made to post the SSM PEIS and ROD on the World Wide Web and to reference the Uniform Resource Location (URL) on the abstract page.* The summary SSM PEIS is found at the following URL: <http://www.nepa.eh.doe.gov/eis/nometa/eis0236/toc.htm>. The ROD can be found at <http://www.tis.eh.doe.gov/nepa/docs/rods/1996/index.htm>.
- *Full results of all field examinations and remediation activities should be summarized.* Section 4 summarizes in detail the results of field investigations and describes whether residual contamination remains after completion of cleanup activities. Further detail is contained in the quarterly reports prepared as required by the Joint Stipulation and Order.
- *Include the environmental hazards of operating NIF.* This information is included in the SSM PEIS (Appendix I). The environmental hazards of operating NIF are not part of the Joint Stipulation and Order.
- *Include the most current East Bay seismic potential in the SEIS.* The affected environment section of this SEIS includes geologic information, including seismic potential.
- *Expected and potential waste streams from routine operations should be described.* This issue is discussed in the SSM PEIS (Appendix I). The waste streams generated during NIF operations are not part of the Joint Stipulation and Order. The scope of the SEIS is limited to buried wastes and contamination from past site operations.
- *DOE should examine its final purpose and need and the reason for the proposed action.* The purpose and need for NIF continues as stated in the SSM PEIS. A brief statement of purpose and need is contained in Section 1.2.

- *DOE should provide recommendations, where appropriate, as to how the ongoing project could be modified to most adequately mitigate any potential for adverse impacts.* Section 4 of this SEIS includes an analysis of whether any hazardous materials discovered during the characterization studies under the Joint Stipulation and Order would have impacts on human health or the environment. No impacts were discovered that would require further mitigation.
- *A cumulative impact discussion should be added.* Section 4.4 discusses cumulative impacts.
- Recommend that the SEIS contain a listing of various permits and other approvals required for construction and operations, including the name of the permit and the issuing agency. This SEIS identifies the regulatory framework of activities conducted under the Joint Stipulation and Order. In general, regulatory requirements for the construction and operation of NIF are covered in the SSM PEIS (DOE 1996a, Appendix I).

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